voter registration in africa

A Comparative Analysis

edited by
ASTRID EVRENSEL

Voter Registration in Africa: A Comparative Analysis offers a comprehensive introduction to the single most complex process within the electoral cycle. It critically analyses the efficacy and sustainability of different voter registration systems across the African continent.

The first part of the book provides an overview of different voter registration methodologies, including combined civil and voter registration, periodic versus continuous registration and active versus passive registration. It identifies guiding principles for voter registration and introduces the reader to the latest technological developments in the industry, such as fingerprint and face or iris recognition. The challenges of using biometric technology in harsh African conditions are highlighted, and the responsibilities of national election management bodies, international donors and other decision makers in this million dollar business are critically examined.

The second part of the book offers detailed descriptions of the voter registration systems used in eight countries, namely – the Democratic Republic of Congo, Liberia, Malawi, Mozambique, Ghana, Rwanda, Senegal and South Africa. Some have established sustainable and effective systems that provide numerous best practice recommendations, while the lessons learned from those countries with less successful registration exercises are invaluable.

Voter Registration in Africa

A Comparative Analysis

Edited by
Astrid Evrensel

EISA

Electoral Institute for the Sustainability
of Democracy in Africa

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EISA is a non-partisan organisation which seeks to promote democratic principles, free and
fair elections, a strong civil society and good governance
at all levels of Southern African society.

All photographs used in this publication are provided by Astrid Evrensel, unless
otherwise mentioned. In order to ensure privacy, persons' private details on
documents, such as names, ID numbers, registration numbers and photographs,
have been altered in this publication.

CONTENTS

FOREWORD

I would like to congratulate the Electoral Institute for the Sustainability of Democracy in Africa (EISA) on the publication of *Voter Registration in Africa: A Comparative Analysis*. This is a study that is long overdue. The concept of the publication was partially triggered by a realisation at the United Nations (UN) and EISA that sustainability must be one of the key determinants of how voter registration processes should be designed, particularly in Africa but also in other parts of the world.

The United Nations Democracy Fund helped support this project as part of a larger initiative to examine voter registration and sustainability in different regions of the world, looking at contexts including post-conflict countries and transitional democracies. This publication is the first in a series of such publications, which together will form an invaluable contribution to the examination of this important topic.

A sound voter registration process is crucial to a successful election. Yet voter registration is also often the most expensive part of conducting elections, and therefore there is a need to look at how cost effective voter registration can be. We at the UN recognise that there is no 'one way' or 'best way' to conduct elections and, for that matter, voter registration. What works in one country does not necessarily work in another. Each country has its own political and socio-economic contexts, its own resource limitations and its own needs to take into consideration when designing a voter registration system.

Much attention has been given lately to the use of technology, particularly the use of biometrics, in voter registration. Some argue that biometrics will make the voter registry 'accurate' and 'fool proof'. But there never can be an absolutely accurate voter register, even in the most developed countries, due to the difficulties of constantly capturing deaths, movements of populations, etc. In addition, biometrics in itself will not increase confidence in a voter registration process if, for example, the entity that conducts voter registration does not have the confidence of the populace as a competent and impartial body.

What this timely publication is saying is that technology in itself will not solve problems rooted in issues such as mistrust among stakeholders or lack of political freedoms. Elections, at the end of the day, are a political process. 'Technically perfect' elections, even if they were possible, will not necessarily deliver the political acceptance of election results by the stakeholders.

At the same time, use of technology is not all bad. Indeed, it is both inevitable and invaluable. Email, for instance, has become a critical tool in elections just as it has in any other context requiring efficient communication. Those of us involved in electoral assistance must simply be aware of the new pitfalls that technology can introduce. For example, vendors and experts related to them may hide 'future

costs' when certain technologies are being marketed to election commissions. We should also be aware of who will have rights to the information gathered and the software used. Electoral assistance has – for both good and bad – become 'big business' to a number of entities, and this publication also makes reference to that important aspect.

We hope this publication and other similar efforts will advance the dialogue with electoral commissions, governments, electoral experts, donors and stake-holders on the many issues surrounding voter registration methodologies, so that decision-makers can make the most informed choices possible. This important publication discourages uniform solutions and instead helps to promote careful thought about what is best for each peculiar context. I am sure readers will find it highly useful.

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ACKNOWLEDGEMENTS

ACRONYMS AND ABBREVIATIONS

GENERAL

AFIS	Automated fingerprint identification system
CD	Compact disc
CD-ROM	Compact disc read-only memory
CPU	Central processing unit
CSO	Civil society organisation
DDE	Direct data entry
DFID	Department for International Development
DRC	Democratic Republic of Congo
EISA	Electoral Institute for the Sustainability of Democracy in Africa
EMB	Election management body
GDP	Gross domestic product
GPRS	General packet radio service
ICR	Intelligent character recognition
ICT	Information and communication technology
ID	Identification document
IT	Information technology
NGO	Non-governmental organisation
OCR	Optical character recognition
OMR	Optical mark recognition
PC	Personal computer
PDA	Personal data assistant
SDC	Swiss Agency for Development and Cooperation
SMS	Short message service
SQL	Structured query language
UK	United Kingdom
UN	United Nations
UNDEF	United Nations Democracy Fund
UNDP	United Nations Development Programme
UPS	Uninterruptible power supply
US	United States
USAID	United States Agency for International Development
USB	Universal serial bus
WAP	Wireless application protocol

COUNTRY SPECIFIC

Democratic Republic of Congo ———————————————————————

AFDL	*Alliance des forces Démocratiques pour la Libération du Congo-Zaire*
APEC	*Appui au processus electoral en Congo (DRC)* – Support for the Electoral Process in Congo
CEI	*La Commission Electorale Indépendante* – Independent Electoral Commission
CNT	*Centre National du Traitement* – National Processing Centre
IAPSO	Inter-Agency Procurement Services
ICD	Inter-Congolese Dialogue
Linelit	*Ligue National pour les Elections Libres et Transparentes*
MLC	*Mouvement pour la Libération du Congo*
MONUC	United Nations Mission to the Congo
PACE	Project to Support Electoral Capacity

PPRD   People's Party for Reconstruction and Development
Racoj   *Réseau des Associations Congolaises des Jeunes Contre le SIDA*
RCD   *Rassemblement Congolais pour la Démocratie*
RCDN   *Rassemblement Congolais pour la Démocratie Nationale –*
            Congolese Assembly for National Democracy
Renosec   *Réseau National d'Observation des Elections*
UDPS   *Union pour la Démocratie et la Progrès Social –*
            Union for Democracy and Social Progress

Ghana
CIDA   Canadian International Development Agency
NDC   National Democratic Congress
NIA   National Identification Authority
NPP   New Patriotic Party

Liberia
BOC   Board of Commissioners
CPA   Comprehensive Peace Agreement
Ecowas   Economic Community of West African States
IDP   Internally displaced person
IFES   International Foundation for Electoral Systems
LISGIS   Liberia Institute of Statistics and Geo-Information Services
NEC   National Electoral Commission
UNMIL   United Nations Mission in Liberia

Malawi
CEO   Chief elections officer
DPP   Democratic Progressive Party
DRS   Data and Research Services
MCP   Malawi Congress Party
MEC   Malawi Electoral Commission
MESN   Malawi Election Support Network
NICE   National Initiative for Civic Education
UDF   United Democratic Front

Mozambique
CNE   *Comissão Nacional de Eleições –* National Elections Commission
Frelimo   *Frente de Libertação de Moçambique –* Liberation Front of
            Mozambique
MDM   Mozambique Democratic Movement
Renamo   *Resistência Nacional Moçambicana –* Mozambican National
            Resistance
STAE   Technical Secretariat for Elections

Rwanda
EUEOM   European Union Election Observation Mission
MDR-Parmehutu   *Mouvement démocratique republicain Parmehutu*
Minaloc   Ministry of Local Administration, Information and Social
                Affairs
MRND   *Mouvement Revolutionaire Nationale pour le Developpement*
NEC   National Electoral Commission
NID   National Identification Department
PL   Liberal Party
PSD   Social Democratic Party
PSP   Party for Solidarity and Progress

RPF	Rwandan Patriotic Front
SIDA	Swedish International Development Cooperation Agency

Senegal

CENA	Independent National Election Commission
DAF	Directorate of the Automation of Files
DAGAT	Directorate of General Affairs and Territorial Administration
DFC	Directorate of Training and Communication
DGE	Directorate General of Elections
DOP	Directorate of Electoral Operations
NIC	National identity card
NIN	National identification number
ONEL	National Observatory of Elections
PDS	Senegalese Democratic Party

South Africa

ANC	African National Congress
CEO	Chief electoral officer
COPE	Congress of the People
DA	Democratic Alliance
HSRC	Human Sciences Research Council
IEC	Independent Electoral Commission of South Africa
IFP	Inkatha Freedom Party
MEO	Municipal electoral office
MPLC	Multi-party liaison committees
PEO	Provincial electoral office
SABC	South African Broadcasting Corporation
SACC	South African Council of Churches
SD	Secure digital
UDM	United Democratic Movement
WAN	Wide-area network

SENEGAL

LIBERIA

GHANA

DEMOCRATIC
REPUBLIC
OF CONGO

RWANDA

MALAWI

MOZAMBIQUE

SOUTH
AFRICA

INTRODUCTION

Astrid Evrensel

EXECUTIVE SUMMARY

Voter registration is highly complex and is the single most expensive activity within the framework of elections. Voter registration is not just the technical implementation of an activity; it is a holistic political, administrative and practical process. The role of voter registration is especially important when it comes to emerging democracies: it can make or break an election. The quality of the process and the product – that is, the voters' roll – can determine the outcome of an election and consequently the stability of the democratic institutions in a country.

Trust in democracy is promoted when the voter registration process is open and transparent and allows for the participation of all electoral stakeholders – namely, political parties, civil society organisations (CSOs), the media, security forces, the international community and all potential voters in a country. Importantly, the electoral process should support a culture of dialogue and shared responsibility.

There are many voter registration methodologies – some are cheaper, simpler or of higher integrity than others. In principle, the methodology chosen should provide for a transparent, effective, efficient and sustainable exercise. The voters' roll should be widely accepted by political participants and should be seen as equitable, comprehensive and accurate.

The choice of voter registration system depends on a number of factors including, but not limited to, political demands, legal provisions, the capacity of the institutions responsible for the establishment of the voters' roll, financial resources, the level of information technology (IT) skills available in a country and environmental constraints.

Relevant technology has developed rapidly in recent years and election management bodies (EMBs) have begun using new equipment and programmes for managerial and operational purposes. Technological solutions have also become available for voter registration purposes, for example, voters' information is stored in electronic databases. Where capacity exists within EMBs to use modern technology effectively, these developments have improved the capability of EMBs to plan and conduct elections more professionally.

Biometric technology – that is, recognition of humans based on one or more

intrinsic physical trait – has become usable for voter registration purposes and many countries have successfully incorporated this technology. Unfortunately, a tendency can be seen that control mechanisms generally embedded in an open process and stakeholder participation are increasingly being replaced by technology. Even international donors and technical electoral advisors seem to support the use of biometric-based voters' rolls and other high-tech solutions to deal with integrity issues and possible political challenges to elections.

A registration process that uses sensitive high-tech equipment not only adds significant 'integrity' costs to the core costs but also increases organisational and logistical challenges. These include the increased need for technical training as well as continuous supervision and support for registration staff in the field to ensure that the data is captured, collected and processed to the highest possible standard. If EMBs lack organisational and logistical resources while attempting to organise such a complex task, the resulting voters' roll can be replete with errors. If the voters' roll is too faulty, polling staff may not even use it on election day.

Following generally accepted principles, the voters' roll should be as accurate and complete as possible to provide for maximum inclusion of all groups. Voter inclusion and the enfranchisement of disadvantaged groups have to be balanced against the security features of a system, which prevent double registration by technological means. In Zambia the biometric system failed to enrol voters in the database, and even stable African countries like Ghana cannot finance equipment to offer registration at polling station level. Travelling long distances to registration centres disenfranchises thousands of voters especially women, people with disabilities and others who cannot journey easily for whatever reason.

Complex issues such as the establishment of citizenship or residence and the de-registration of deceased persons need to be addressed by means other than technology; for example, by a well-organised display of the voters' roll or by data exchange with the civil registry. However, only few countries in Africa have an established and functioning civil registry, which leaves EMBs with the task of having to decide on the eligibility of a person to be registered, capturing residential data and providing voter cards as identity documents (ID). EMBs are generally not tasked or financed by the state authority to take over civil registration tasks, but in practice voter cards remain the only valid form of identification in many African countries.

Combined civil and voter registration can utilise synergy effects of data exchange and can serve state administration effectively. In South Africa, this system works successfully and can certainly function as a best practice model for other countries. However, a combined system makes EMBs highly dependent on the performance of other state departments. The reliability of the civil registry, increased organisational challenges and the divergent responsibilities of state ministries have to be assessed realistically and must be factored into decision-making processes.

A complex voter registration system does not guarantee successful elections. On the contrary, the use of sophisticated technology can be a threat to the acceptance, transparency and security of the system. The use of high technology places critical components of the process in a 'black box'; 'cleaning' operations are done by computers, sometimes even out of the country. Advanced computerisation understood by only a handful of specialists can make it difficult for electoral stakeholders to observe the voter registration process and assess the results properly.

Vendors can play an important role in the decision-making process by stimulating demand for sophisticated, expensive, non sustainable solutions. Once equipment has been purchased and a system is in place, it is difficult to change suppliers (termed 'vendor lock-in') or even to revert to simpler solutions. African countries that have adopted sophisticated voter registration systems will continue to depend on external support for years to come if they do not take on the responsibility (financial and human resources) to maintain the high-tech systems. Sustainability needs to become a central concept when planning a voter registration system. The African Union has voiced a clear directive that African states should work towards self financing elections. In this regard, when planning a system donors need to look beyond the election at hand and should consider the financial and organisational implications in terms of future updates, equipment replacement and the EMB's capacity to maintain the voters' roll once donors have withdrawn. By the same token, EMBs have to take responsibility and should not opt for high-tech systems when it is apparent that the system might not be suitable or sustainable in their country.

There is no one right voter registration system that can be copied and pasted from one country to another. When assessing a system, one cannot only consider the technical aspects of a voter registration methodology and system. It is important also to look at how the system fits into the whole electoral and political environment of a particular country. Issues to consider here include political acceptance, administrative management capacities, lead times, available and trainable skills, available logistical support, current and future financial and human resources, and potential integration with other systems.

Systems with similar methodologies and technical specifications have had varying degrees of success across different countries. Some countries have established sustainable and effective systems that provide numerous best practice recommendations, while the lessons learned from those countries with less successful registration exercises are invaluable.

Objectives of the study

This publication provides an overview of the various voter registration systems used in Africa. Its aim is to promote the development and awareness of sustainable and cost-effective voter registration models in the future.

While we understand that a successful model used in one country may not necessarily be equally effective when used in another, the knowledge gathered and the analyses provided herein will enable election administrators, policy makers, advisors and donors to make more informed decisions on which path to follow and which method to adopt. The eight case studies provide a collection of experiences to be exchanged between stakeholders not only in the countries under review but across the continent, and serve as a platform for launching further discussions towards the development of best practices and sustainable voter registration models in Africa.

The 'Voter Registration in Africa' project was implemented by the Electoral Institute for the Sustainability of Democracy in Africa (EISA) with the support of the United Nations Electoral Assistance Division. The project was funded by the United Nations Democracy Fund and the Swiss Agency for Development and Cooperation.

Methodology

The research methodology comprised three main parts: desktop research, the findings of which were made available to the public via an online database; field research conducted in eight African countries; and a workshop to disseminate the findings and provide a starting point for discussions on the sustainability of voter registration methodologies in Africa.

The desktop research included a thorough review of literature, such as relevant electoral legislation, reports of international and national election observation missions, and donor and United Nations Development Programme (UNDP) reports. Other literature included media coverage and manuals, plans, forms and handbooks used by the various institutions in charge of voter registration in the countries under review. More than 1,300 relevant documents were registered and are now available on the internet at www.vrafrica.org.

Home page of the Voter Registration in Africa database, www.vrafrica.org. The site allows one to search with open key words or to select an advanced search featuring more specific search criteria such as country, year of publication or type of document.

The results page lists the relevant documents. One can choose to receive more detailed information on one document or to get the document with one mouse click.

Field studies were conducted in eight African countries to gain in-depth understanding of the systems used and their effectiveness. The criteria used for selecting the eight countries ensured coverage based on different technological levels, geographic and language diversity, as well as varying successes vis-à-vis system implementation and quality of the voters' roll.

Between July 2009 and June 2010 field research was conducted in the Democratic Republic of Congo (DRC), Ghana, Liberia, Malawi, Mozambique, Rwanda, Senegal and South Africa. Teams comprising a senior voter registration expert and one EISA staff member undertook the research. The teams spent five to eight days in their assigned country to conduct both open and structured interviews with a range of stakeholders. These included the EMBs, representatives of United Nations (UN) missions and UNDP country offices, donor organisations, embassies, government agencies and ministries, political parties, CSOs and international non-governmental organisations (NGOs), international development partners, representatives of the private sector and equipment vendors, journalists and media representatives, and the public. Focus groups comprising students or politically active youth were organised in some countries to broaden the analytical aspect of the research.

The research teams were very well received in all the countries and the interview partners supported the project by dedicating their time and sharing their experiences and documents. The EMBs in particular showed great support for the study, enabling the research teams to observe voter registration exercises and to take part in live demonstrations.

While the eight case studies follow the same structure to allow for cross referencing, this methodology did sometimes limit and restrict the authors. Each case study gives a thorough description of the system used in the particular country and provides a critical analysis of the successes and limitations thereof. A senior election expert review panel provided additional valuable oversight and practical input.

A two-day workshop on the 'Development of Sustainable Voter Registration Methodologies in Africa' was held in November 2009 in Johannesburg, South Africa. Thirty representatives of various African EMBs and CSOs met with senior electoral and voter registration experts to discuss underlying principles, best practice models and recommendations for the development of sustainable voter registration systems in Africa. Parts of the discussion papers and recommendations emerging from the discussions are integrated into this publication.

Voter registration: An overview[1]

Voter registration is understood as the process of registering eligible voters, while the voters' register or voters' roll is the result of this process. Both the process and the result of voter registration need to be accurate, sustainable and politically accepted. The following section provides an overview of the guiding principles of voter registration. In determining whether and how to register people to vote, there needs to be a clear understanding of what, if any, purpose voter registration may serve and what objectives it is meant to achieve. In order to develop and implement an effective system of registering voters, the legal framework, procedures, and administrative and technological processes need to be based on a set of guiding principles. Where a voter registry is taken directly from another database, such as a civil registry, these principles may also need to apply to aspects of the collection and processing of that information set.

Why register voters?

Although the vast majority of democracies have either a specially constructed voters' register or a voters' roll extracted from a civil registration system, the existence of a voters' roll is not always a prerequisite for a credible election: cases such as South Africa in 1994 and Latvia testify to this. It is possible to conduct free and fair elections without a voters' roll if, for example, the country is a single constituency and if voting takes place during a limited period, with voters clearly marked with indelible ink to stop them from voting more than once.

Overview of the case study countries

	DRC	Ghana	Liberia	Malawi	Mozambique	Rwanda	Senegal	South Africa
Population (million)	60	24	2.9	14.3	21.7	9.2	12	40
Registered voters (million)	25	12.8	1.35	5.9	9	4.7	4.9	24
Method for updating	Periodic – 2005, 2009	Periodic	Periodic – last 2005, next 2011	Periodic – updated before election, staggered process	Periodic – updated before elections	Continuous with periodic updates before each election	Periodic – every year	Continuous registration with registration drives before each election
Registration points	Polling station level	Registration centres covering up to five polling places	Polling station level	Polling station level	Polling station level with additional mobile teams	2007 door to door, later updates at village and cell level	Fixed and mobile administrative commissions	Polling station level
ID cards	No national ID card	Limited access to national ID card	No national ID card	No national ID; voter cards became de facto ID	National ID available but poor coverage	National ID introduced in 2007	National ID card based on biometric data security	National civil photo ID book with unique ID number
Voter ID	Produced on the spot with photograph and fingerprint	Produced on the spot with photograph	Produced on the spot with photograph	Produced on the spot with colour photograph and thumbprint	Produced on the spot with colour photograph and thumbprint	Voter cards produced centrally, distributed at a second stage	Voter cards produced centrally, distributed at a second stage	No voters ID

	DRC	Ghana	Liberia	Malawi	Mozambique	Rwanda	Senegal	South Africa
Field collection of data	Direct data entry with laptop, webcam and finger print scanner	Paper-based OMR forms and webcam	Paper-based OMR forms and camera	Paper-based OMR forms, webcam and fingerprint scanner	Direct data entry with laptop, webcam and fingerprint scanner	Biometric data collection with laptop, webcam, fingerprint and signature pad	Direct data entry with computer, webcam, fingerprint sensor and signature pad	Zip-zip machines scan South African ID document barcode, residential data filled in on paper form
Data exchange with national ID	No	No	No	No	No	Regular data exchange	NIC-Election is a combined database	Computerised regular data exchange
Donor involvement	High financial and technical involvement	No external involvement in recent years	High financial and technical donor involvement	Over 60% donor funded, major influence	Little external influence	Minimal donor support	No external donor involvement	High involvement in 1994, in recent years no involvement
Stakeholder acceptance and trust in system/ voters' roll	Stakeholders not satisfied with system, process and product	Stakeholders reasonably satisfied with the process and outcome	Voters' roll accepted by political parties	Data quality problem, not trusted by majority of stakeholders	Opposition parties have concerns; lack of transparency	Stakeholders still sceptical about the quality of data	Stakeholders still sceptical about the quality of data and the voter cards	Generally well accepted
Sustainability of the system	Relies heavily on external assistance	Yes	Relies heavily on external assistance	Relies heavily on external assistance	Political and financial sustainability not assured	Financially sustainable, but data is not reliable	Yes	Yes

There need to be compelling motives for undertaking a voter registration exercise, which is undoubtedly an administratively complex and often a highly expensive task. Some common reasons for going to the effort and expense of constructing a voters' register are that it:

- provides information that assists with election planning and logistics;
- sensitises the public to their electoral rights;
- separates the function of determining whether a person meets the eligibility criteria to participate in voting from the function of controlling balloting;
- augments controls on fraudulent attempts to vote, such as ineligible persons voting, impersonation, or voting for an electoral district for which the voter is not entitled to vote;
- assists in providing data for the determination of equitable electoral district boundaries;
- determines voter allocation to polling stations;
- allows for the calculation of electoral participation percentages;
- indicates citizen support for transitional democratic processes;
- supports the transparency of the process; and
- plays a major role in voter education.

However, the benefits of registering voters – and especially the benefits of using a particular system to register voters – need to outweigh the costs.

Objectives of voter registration

If the objectives of voter registration are not clearly defined or do not have widespread public support, both the legal/procedural framework for registration and its implementation can easily lose focus and become ineffective. Objectives may vary in emphasis and content from country to country depending on the challenges faced, available resources and current deficiencies in the voters' roll.

A high-level objective such as that from the Independent Electoral Commission in South Africa ties voter registration into its strategic objective framework: 'Maintaining an optimal network of voting districts and voting stations for elections to ensure reasonable access by voters and to maintain an accurate and up-to-date national common voters' roll.'[2]

Another example of a high-level objective is from the Australian Electoral Commission: 'Outcome 1: An effective electoral roll: Australians have an electoral roll which ensures their voter entitlement and provides the basis for the planning of electoral events and redistributions.'[3]

These objectives create the framework for the concrete operational objectives and tasks of voter registration, which could focus on such issues as:

- specific methods of maintaining a comprehensive, up-to-date and accurate voters' register;
- specific voter registration outreach and education activities;
- system, procedural and information and communication technology (ICT) development for voter registration;
- development of relationships with stakeholders;
- improving services to people registering to vote and potential registrants; and
- developing institutional partnerships.

All registration objectives and components of objectives need performance criteria that recognise both the real and desired outcomes that an EMB actively attempts to meet. Whether quantitative or qualitative, these criteria should be measurable and regularly measured, and the results should be made public.

Working to achieve voter registration objectives is not just a matter of technical implementation but a holistic political, administrative and technical process. Voter registration is not an end in itself: its true test is in its use – particularly in its control, authentication and access functions on voting day. Importantly, if there is no political will or intention to construct a voters' roll that follows the guiding principles noted below, and to conduct elections with a high level of integrity, it is questionable whether significant investment in developing and maintaining a voter registration system is worthwhile.

Guiding principles for voter registration[4]

Guiding principles for voter registration should be embodied in the electoral legal framework. As the key practitioner of and advisor on electoral processes, an EMB plays a key role in advising governments on aligning the content of the legal framework for voter registration with the guiding principles. EMBs can be supported in this by CSOs, including academia.

To the greatest extent possible within the boundaries of the legal framework, the rules, procedures, and administrative and technological processes adopted by the EMB and any other institutions responsible for registering voters or providing information to the voter registry should fully implement these guiding principles.

The commonly accepted principles as described below are illustrative only: they should not be regarded as limiting or comprehensive. Different political, administrative and knowledge environments may require different means for effective implementation.

Integrity

The voter registration framework and processes must be fair and honest, free from political and other manipulation or intimidation, allow all eligible persons

to register as voters and not allow ineligible persons to register as voters. The integrity of the voters' roll is one of the basic principles on which the legitimacy of an election is founded.

Inclusiveness

Voter registration frameworks and processes should not contain measures that exclude persons from registration to serve political advantage. For example, there should be no:

- criteria for eligibility to register;
- differentiation in resources provided for registration processes;
- differentiation in accessibility;
- differentiation in assurances for security or safety; or
- imposition of additional checks or administrative obstacles

that may deny one the opportunity to register to vote, or make it more difficult to register to vote for persons assumed to have a certain political tendency.

In a democracy, the voter registration processes should provide all adult eligible citizens equitable opportunity to register. It is crucial that the eligibility requirements are broad enough so that all, or virtually all, adult residents having citizenship can register to vote. There should be no systematic exclusion of any group – whether women, members of ethnic or linguistic minorities, poor or homeless people, or residents of remote areas. This may require implementing special measures to ensure that appropriate registration facilities are available to those for whom access may be more difficult – such as, refugees and other displaced persons, nomads, those with disabilities, the homeless and prisoners with voting rights.

Eligibility rules vary from one democracy to another but focus generally on citizenship, age and residence. Additional restrictions might include the absence of letters from authorities which would exclude citizens from the right to vote, for example, because of unsound mind or criminal charges.

Registration turnout decreases the stricter the rules to prove eligibility. In South Africa, for example, there is no legal requirement to prove one's residential address, which favours enfranchisement and easy access to registration.

Comprehensiveness

Voter registration exercises should aim at registering 100% of qualified persons, including those societal groups that may be less inclined to register to vote, such as women, youth and those to whom standard registration processes may be less accessible. Comprehensiveness and inclusiveness are closely related, complementary principles: inclusiveness ensures no group in society is denied equitable opportunities to register to vote; and comprehensiveness targets the registration of every eligible person in each societal group.

Accuracy

All voter registration information should be recorded accurately and maintained properly so that the voter lists used for elections are up to date. This may require implementing systems to check data validity and the accuracy of data recording, as well as proactive programmes to check that all data is up to date and to receive advice of and process any necessary amendments.

Accuracy relates to ensuring both the validity and correctness of all information on the voters' register. Measures that are commonly taken to enhance accuracy include procedures and processes to:

- ensure the identity for which a person attempts to register to vote validly belongs to that person;
- ensure that the address in respect of which a person attempts to register is a valid address and one for which the person is entitled to register to vote;
- ensure that previously registered voters are on the voters' roll for their current valid address for voter registration purposes;
- remove duplicate/multiple entries from the register;
- remove from the voters' roll all persons who are no longer eligible to vote; for example, those who are deceased or disqualified for other reasons specified in the law such as conviction of an offence, mental incapacity or loss of citizenship. This requires comprehensive and accurate provision of data from the relevant state or other authorities; and
- ensure all required details for voter registration are provided by an applicant for registration or change of registration, and that the details are fully and correctly entered on the voters' roll.

What is acceptable as 'up to date' may vary from country to country depending on the resources available, the extent of political trust and public perceptions of electoral integrity. Ideally a fully up-to-date register would allow registration up until or on voting day: however, this is only feasible if the resources and systems available and levels of political trust can verify and accept late registration without opening the system to duplicate and fraudulent registration.

Generally, there is a registration period or cut-off date for registration at a specified time before voting day. When setting this date, authorities should try to maximise the opportunity for people to register or amend registration details and for ineligible persons to be removed from the register, while also giving the voter registration authority enough time to verify and clean new data provided and to print and distribute the voters' lists used during polling.

There are many ways to keep the voters' register up to date. An example is the automatic inclusion in the voters' roll of newly eligible voters (age related)

based on the civil registry or on early 'provisional' registration records, as is done in South Africa. South African citizens can apply for registration as soon as they turn 16 but will only be included in the voters' roll after they have reached the official voting age of 18.

Accessibility

Voter registration processes should be physically and geographically accessible as well as readily understandable by all persons qualified to register. Any locations used for voter registration purposes and which require the public to attend to provide or check information should be:

- physically accessible to all – including the elderly and disabled;
- open at times that can service all employed, unemployed and rural farm populations;
- readily accessible on foot or serviced by regular public transport, and located within reasonable distance of all eligible voters in its catchment area – using mobile locations in more sparsely populated areas may assist in this; and
- at a place that does not intimidate potential voters. For example, locating voter registration centres near offices associated with the ruling party, or law enforcement/military agencies may in some instances deter people from attending.

Accessibility implies that the locations and hours of operation of any offices or other means of receiving information for voter registration are widely publicised, both before and while they are in operation.

The voter registration framework and processes need to be sufficiently simple and clear so that they are fully understood by the public. Factors that can contribute to this include:

- clear criteria governing who is and who is not eligible to register to vote for a specific electoral area;
- providing reasons for rejecting an application for registration;
- simple processes for lodging an application to register to vote or to change details of an existing registration; and
- registration application forms that are easily understood.

In keeping with the simple rule of 'where you register is where you vote', many African countries register voters at the same places that will later be used as polling stations. This system is easy to understand and reduces voter education costs. There are, however, two major deviations to this rule – namely, door-to-door registration and the use of registration centres. Door-to-door registration allows

and supports the inclusion of all voters, especially incapacitated or marginalised groups. It is an effective system for developing a current, accurate and complete voters' list. Additionally, it provides the most accurate residential data to establish voting districts or constituency boundaries. Regarding the second deviation, reasons for using registration centres could be financial or logistical. For example, it may make sense to set up registration centres if it is too expensive to purchase sufficient high-tech registration equipment or if it becomes too complicated to make logistical arrangements for the registration teams to move around owing to environmental constraints. In Ghana, for example, one registration centre services voters for up to five polling stations. This system, however, can lead to disenfranchisement of voters as people may be put off registering owing to the burden of having to travel long distances.

EMBs can use different modes of registration to provide for better inclusion of and accessibility for voters. Examples include mail registration, on-line systems, house visits (South Africa) or establishing registration centres at special locations such as hospitals, prisons or embassies. In all cases when registration is not conducted at the place of voting, voter information is crucial to ensure that voters know where their eligible polling station is on election day.

An informed public

Voter registration processes should be clearly explained and widely publicised to all potential eligible voters as well as to all stakeholder organisations in the electoral process, such as political parties, the media and CSOs. This may be an EMB responsibility or a task shared between the EMB and civil society. If multiple bodies provide information on voter registration, it is prudent to set up a coordinating mechanism under impartial control to promote accuracy, consistency and political neutrality of the messages, as well as to limit the overlapping use of resources.

Besides providing basic information on who is eligible to register to vote, how, where and when this may be done, and what rights registration confers, the focus of information campaigns will vary according to the registration methodology employed and the electoral environment. The effectiveness of information campaigns for voter registration can be enhanced by, among other things:

- providing information sufficiently in advance;
- holding regular media conferences and issuing press releases, and inviting the media to voter registration activities;
- using research to determine priority target groups, public information gaps, effective messages and effective message delivery and transmission mechanisms;
- inviting stakeholder representatives to attend training sessions for voter registration staff;

- the inclusion of traditional authorities in information campaigns; and
- forming a partnership with the media to insert voter registration information into normal entertainment and news programming.

Voter information advertising the opportunity to replace a lost or damaged registration card, Liberia.

More and more countries in Africa use modern technology to provide voters with information. South Africa and the Seychelles, for example, use the mobile phone short message system (SMS) to allow voters to check their registration data. The electoral commission in Uganda has set up a toll-free telephone line to enable registered voters to update their personal data or change voting location.

Transparency

Transparency in registering voters promotes public trust in the integrity of voter registration processes and products. Civil society, particularly through professional and impartial monitoring and reporting by CSOs, and fair investigation and reporting by the media can enhance the transparency of voter registration.

EMBs can implement wide-ranging administrative and technological practices that promote transparency. These practices include:

- allowing access to and reporting of EMB meetings and decisions on voter registration;
- allowing public scrutiny of tender processes for voter registration systems and equipment;
- conducting regular information sessions with electoral stakeholders on voter registration issues and responding positively to any criticisms raised;
- implementing widely accessible processes for public inspection of the voters' roll and allowing voters to check the recorded data;
- conducting internal audits, allowing independent audits of voter registration data and publicising the results;

- allowing independent organisations and political parties to observe all voter registration information collection, transfer, processing and output processes; and
- releasing for independent audit the code used to run the computer systems that process voter registration data.

Security

Field registration staff and people registering to vote must be assured of their safety and security. Voters must be able to trust that registering to vote will not result in their being subjected to consequent discrimination, intimidation or violence. Registration staff must be supervised and protected against any action by outside persons so that they can conduct their work in an honest, professional and impartial manner.

Voter registration information stored in both paper and electronic formats must be sufficiently secure to prevent unauthorised access, to protect against unauthorised alteration or disclosure and to ensure that any legal requirements for information privacy are met. Security measures are needed to prevent:

- intimidation or violence towards registration staff and persons who intend to register, are registering or have registered to vote;
- unauthorised access to physical locations through means such as perimeter and internal guards, locks and alarms;
- unauthorised access to manually or electronically recorded information through physical access restrictions and electronic measures such as encryption and passwords;
- unauthorised amendment, addition or deletion of information in the voters' register; and
- unauthorised disclosure of information in the voters' register.

Information privacy

In some countries information privacy is legislated and protected by law. If not, privacy rights should be included in the framework for voter registration. Information provided by people directly for the voter registration process should not be available to any government or private organisation that can use this information for purposes which could deter people from registering to vote. The purpose of voter registration is to allow citizens to exercise their basic political right to vote; it is not an information gathering exercise to be shared with other institutions, such as law enforcement authorities or for commercial interests.

In African countries that have no national ID card system, the voter card has become a generally accepted form of identification for business purposes. In Ghana, for example, citizens use their voter cards for identification at local banks. The electoral commission in Ghana argues that since voters voluntarily

use the cards at banks, they thereby give permission for data to be exchanged between these institutions and the voters' roll database.

The voter registration authorities should, however, inform people at registration if their information is to be made available to other organisations. People registering to vote should know which organisations would be included and the purposes for which the information may be used. Any external availability of such information should be controlled by legislation and should be subject to monitoring.

Cost effectiveness

Cost effectiveness implies that the voter registration system delivers an effective outcome relative to its cost. A common perception is that the greater the initial and running costs of a system the more it should deliver. However, an expensive, high-tech solution does not necessarily deliver more benefits than a cheaper, lower-tech system. Administrative or operational limitations, sustainability problems or the general political environment may undermine the high-tech system, in which case the more expensive option would not be cost effective. Conversely, a cheaper voter registration system may not necessarily be the most suitable. It may, for example, not meet the voter registration principles sufficiently or it may not be politically sustainable.

Voter registration systems should aim for cost effectiveness – that is, using the most economical means of meeting voter registration objectives while fulfilling the voter registration principles. Cost effectiveness indicates professionalism, thereby promoting the credibility of the entire voter registration process. However, what is cost effective in one political environment may not be so elsewhere.

The 'cost' of voter registration can be strongly affected by the external environment and may be difficult to define accurately. The Cost of Registration and Elections project identified three costs associated with voter registration:[5]

- *Core costs:* These are routine costs directly associated with imple-menting a voter registration process in a stable environment. Such costs include training, transportation and fees for field registration staff, field equipment (laptops, cameras), registration material (forms, stationary) as well as IT equipment at EMB headquarters and voter education during the registration period.
- *Diffuse costs:* These are costs at other agencies related to voter registration that cannot be separately identified from their budgets – for example, the proportion of civil registry information collection and maintenance costs that could be attributed to voter registration. Such costs can be difficult to identify and quantify fully, making comparisons of voter registration costs between countries less reliable.

- *Integrity costs:* These are additional costs necessary to provide safety, integrity, political neutrality and accessibility to voter registration. These costs can be high in environments where there is conflict or substantial political distrust. Such costs need to be carefully monitored to ensure that they provide the intended substantive improvements in safety, integrity, political neutrality and accessibility.

Administrative and political feasibility

The voter registration framework, systems and processes need to suit a country's cultural and political environment. In addition, they must be appropriate for the available skills and resource base as well as for the EMB's management capacities and structures, including any available assistance. Administrative feasibility deals with the practicality of implementing a voter registration system in the shorter term; sustainability looks at similar issues over the medium to longer term.

Accountability

The institution(s) responsible for voter registration must be subject to accountability mechanisms which ensure that the objectives of voter registration are achieved and that the principles of voter registration have been applied. These mechanisms could be internal (such as internal reviews and audits of the voter registration system, process and data) or external. External accountability mechanisms for voter registration that could be applied include:

- a process for public review of the voters' roll;
- rights of the public in general and stakeholders in particular to lodge administrative challenges to errors, omissions and inclusions in the voters' roll;
- independent external audits and evaluations;
- rights of affected parties to lodge judicial appeals against decisions made by administrative bodies in relation to the voters' roll;
- access for political party and independent observers to observe all voter registration processes, their right to lodge complaints about any irregularities and to have these resolved effectively; and
- public reporting and reporting to parliament by the EMB on the extent to which it has met its voter registration objectives.

Developing democracies that rely on or use donor funds for voter registration systems or operations have an additional challenge in terms of accountability – especially with the introduction of new high-tech systems. This accountability however is not limited to EMBs, but also includes donors and vendors in relation to the design of the system, the timing, as well as responsibility with regard to transparency and efficient use of funds.

Credibility

Importantly, no matter how well the framework and system for registering voters satisfies the above principles, it also needs to be publicly credible. Political parties and the public need to believe that voter registration has been conducted with integrity, equity, accuracy and effectiveness. Transparency measures and the provision of regular and accurate information on voter registration can promote public credibility in a well-implemented registration process, and can also provide knowledge to improve less well-implemented processes.

Stakeholder participation[6]

Stakeholders must be informed regularly and their views considered both at the decision-making phase and during the conduct of a voter registration exercise. This will increase stakeholders' support and trust of the overall process and its product – the voters' roll.

Primary stakeholders are directly affected by the voter registration process or its outcome. Included in this category are citizens who are eligible to register, the registration authority, political parties and candidates, executive government, legislatures, EMB staff, contractors, electoral dispute resolution and supervisory bodies, the media, observers and monitors, CSOs, donors and assistance agencies, and suppliers and vendors. Secondary stakeholders have an interest but are not directly affected by the exercise. Included in this category are the general public, academia, international or regional electoral networks and research institutes.

International IDEA identifies a number of areas for interaction, namely: communication; sensitivity; serious consideration of views; equitable treatment; transparency; ethics; respect for human rights; impartiality; and fair resolution of conflict.

There are many ways to ensure the active participation of stakeholders. These include:

- having a stakeholder presence at meetings determining voter registration issues;
- establishing formal liaison mechanisms between EMBs and political parties;
- ensuring stakeholder participation in training programmes;
- proactive and responsive information provision;
- actively engaging with criticism;
- having an effective complaint and dispute resolution policy; and
- ensuring that stakeholder involvement is not or does not appear to be stakeholder control – particularly from politically connected stakeholders.

The EMB must play a central role in ensuring that stakeholders are appropriately informed. Feedback from stakeholders has to be acknowledged and responded

to in the appropriate timeframe. The legislature should seek stakeholder input regarding legislative reform processes, allow stakeholders to participate in briefings on the system and progress made, and create consultative legislative reform mechanisms.

Political parties and CSOs should be consulted on relevant decisions, and should be allowed to observe decision-making and implementation processes. Political parties should be encouraged to participate in multiparty liaison forums and trainings so that they can motivate and inform supporters. The media should be encouraged to actively seek information, participate in briefings, facilitate fair reporting of voter registration events, include voter registration messages in news and entertainment programming, report on election dispute resolution bodies and receive regular official briefings from engaged stakeholders.

International assistance

In post-conflict elections and in fragile democracies, donor support may improve the quality of elections – and in some cases may even be necessary for it to occur. International actors can be actively engaged in the choice of system through consultancy, and can provide financial support to purchase equipment and material, as well as human resources to help conduct the voter registration exercise. One of the biggest challenges, however, is to ensure a sustainable, appropriate, cost effective and transparent system under such circumstances.[7]

A voter registration system is considered sustainable only when it can be conducted successfully in a repeated manner over time and with decreasing external support.[8] The availability of external funding for one election can have significant long-term financial and political effects. For example, some technology may have considerable long-term cost implications (such as costly licensing fees for software), or donor-driven high-tech solutions may create future political demands for externally provided technology upgrades.

Donors have the responsibility to ensure that the electoral assistance they provide to EMBs is effective and promotes sustainability. Key issues for donors to consider in this regard include:[9]

- planning the implementation of assistance to synchronise with the EMB's needs;
- the appropriateness of a proposed system for the EMB's environment;
- providing training for EMB staff;
- the inclusion of EMB staff in the management of donor-funded programmes;
- coordinating assistance with the EMB and other donors;
- the long-term costs of any systems and equipment;
- encouraging local ownership;

- ensuring a responsible and comprehensive hand over; and
- following a gradual and responsible retreat.

Sustainability

Sustainability is necessary to assure the future of the voter registration framework, systems and processes. Sustainability of voter registration is not just a matter of having sufficient assured future funds to continue voter registry operations. There are multiple aspects to the sustainability of any electoral process:

- *Institutional sustainability* requires that the legal framework for voter registration, and the manner in which it is implemented, is sufficiently accepted by stakeholders so as not to threaten the viability of the institutions responsible for voter registration.
- *Financial and economic sustainability* requires that all voter registration systems and processes are, in the medium to longer term, capable of being implemented with minimal or no reliance on funding from international institutions or other countries.
- *Human resource sustainability* requires that sufficient appropriately skilled staff and contractors are available within the EMB and other relevant local institutions to ensure the effective future implementation, maintenance and development of voter registration systems and processes.
- *Technological sustainability* requires that any equipment and automated processing used for voter registration is reliable when employed in local conditions, is capable of being operated and maintained within the country and is publicly accepted as appropriate for the local environment.
- *Political sustainability* requires that the voter registration framework, systems and processes are widely accepted across the political spectrum, promote the legitimacy, inclusiveness and integrity of elections, and assist in reducing the potential for conflict. Particularly in developing democracies and post-conflict situations, the attainment of political sustainability may mean having to accept lower levels of financial, human resource or technological sustainability – in the short- to medium-term at least – than would be ideal.
- *Environmental sustainability* requires that materials and equipment used for voter registration are produced, operated and disposed of in a manner that avoids or at least minimises potential damage to the environment.

Broadly speaking, the choice of registration methodologies and technologies should be based on the particular circumstances in each country, taking into consideration:

- the legal framework;
- the available time and financial resources;
- the historical and political context; and
- the level of skills and other capabilities.

Overview of voter registration methodologies

Active vs passive registration

A voter registration system is considered 'passive' if it requires no input from voters to generate a voters' roll. In this instance data for the voters' roll is usually retrieved from another database – for example, the civil registry – and all eligible citizens are automatically listed on the roll. The state informs citizens of their registration via mail sent to their residential address. Accurate residential data in the civil registry is thus a prerequisite if a passive registration system is to work properly.

Most African countries use an active form of registration since national registration systems, where these exist, often do not include current residential address data. With active registration, an applicant must physically visit a registration centre and apply to be registered as a voter.

Continuous vs periodic registration

Periodic registers are established for a single electoral event or for a sequence of elections occurring within a defined time period. After that time, a new register is established and previous voters' rolls are abandoned.

The simplest way to establish a periodic register is to use a manual paper-based system as there is no urgency to accommodate amendments and updates; however, advantages can still be gained by capturing and storing registration data electronically.

As there are limited possibilities to update the register, the accuracy and completeness of the voters' register will deteriorate from the day the register closes. This is because: some citizens will reach voting age after the register closes; some citizens may have missed the opportunity to register for whatever reason (eg. incapacitated or out of the country); some citizens may die; and registered voters may move from one constituency to another.

The voter registry therefore needs to be updated periodically. Update periods are determined by the capacity of the EMB, political will, stakeholder acceptance and financial resources. In Liberia, for example, the voters' register established in 2005 was used for the general election as well as for nine by-elections held over a period of five years – and this without any data updates or additions. In this instance the electoral stakeholders accepted use of the outdated voters' roll owing to the circumstances in the country and the limited capacity of the EMB to update the data.

There are other ways to establish a more accurate voters' roll while at the same time limiting the logistical and organisational burden of a full-scale registration drive. Senegal used a system based on a core register of voters and periodic updates. The core voters' roll is established based on the data of all those who voted in the most recent elections. Only those who did not vote at the last elections, those who have recently reached voting age or those who want to change their place for voting need contact the registration offices. A limited registration drive is sufficient for this purpose and reduces the costs and organisational challenges for the EMB. Another advantage of this system is an increased incentive to vote because regular voters do not need to re-register for the next elections.

A continuous register is one that is constantly updated and kept accurate. In this instance the EMB would maintain infrastructure throughout the year to receive new applications or to change the data of recorded voters. Modern technology and an electronic database support quick updates and the addition of new records, and keep track of amendments and deletions.

Many countries that have on-going opportunities for voters to register still run additional registration drives before an election. In South Africa, for example, 30% of voters use the registration drives held before elections to update their data despite voters' continuous access to registration centres. This trend is also seen in many developed countries that maintain continuous registers.

 While the registration of new voters and change of address data of existing voters is relatively easy to manage, the difficult task is to clean the voters' roll to ensure that numbers are not inflated, which could prompt political speculation of possible voter fraud. Cleaning the voters' roll involves de-registering voters who no longer live in a particular constituency and removing deceased voters. It can, however, be difficult for the state administration to receive information on deceased voters. For example, in some African countries it is considered bad luck to talk about the dead and many people are not aware of the importance of civil registration. In fact, population statistics for African countries show that unreported deaths alone can lead to a voters' roll inaccuracy of 10% within one electoral cycle of about five to six years. When the quality of a voters' register has deteriorated beyond acceptable standards, it is easier to abandon it and start a new register from scratch than to attempt repairing and updating the existing data.

Many developed countries use continuous voter registration models successfully. The benefits of continuous registration include reduced long-term costs, always having a complete and accurate register, reduced large-scale logistical challenges for the EMB and high service orientation for voters as they do not need to register repeatedly. Continuous voter register can be even more cost effective if it is combined with or can draw information from the civil registry. The feasibility of continuous voter registration for a country depends mainly on the prevailing infrastructure, the state of good governance and practical requirements.

Requirements for continuous voter registration[10]
Continuous voter registration is feasible and will bring the expected benefits and efficiency if the following requirements are fulfilled:

- *Developed government infrastructure, recordkeeping and integration:* The EMB must be able to efficiently collect information on changes to the eligibility of voters from other government institutions. The more reliable the data exchange between state institutions the less costly it is for the EMB to maintain an accurate register. For example, in South Africa the data on deceased persons is transmitted from the civil registration database to the EMB on a monthly basis.
- *Sufficient EMB infrastructure:* Large numbers of registration points are needed in adequate locations for voters to register or update their details. As a guideline, one centre should not serve more than 25,000 voters. The number of offices must increase the less likely it is that voters can reach an office due to weak infrastructure or the more transactions and data changes are expected owing to, for example, high population movements after a crisis situation.
- *Adequate resources and funding to support and maintain offices:* The costs for continuous voter registration need to be carefully calculated against the costs of registration update drives every couple of years. Especially in economically weak countries that rely on external budget support, it is easier to receive funding for a registration drive before general elections rather than having to secure continuous financing to support field offices, communication channels and on-going equipment maintenance.
- *Transportation and communication infrastructure:* Eligible voters must be able to easily reach or communicate with electoral offices to register or update their details. Communication channels must be maintained and secured for continuous data transfer between the EMB headquarters and registration centres.
- *Reliable national identification documents:* Continuous registration relies on the security and integrity of official documents to prove voters' citizenship and identity. Continuous voter registration can only be effective and accurate if these documents maintain a high standard.
- *Means of preventing multiple registrations:* It is much more difficult to prevent multiple registration attempts while maintaining continuous voter registration. If the national documents are not reliable, EMBs need to use biometric data to identify registrants uniquely and purge the voters' roll of multiple registrations – which is a challenge in itself.

- *Technical skills and experience to support a more complex system:* A continuous voter registration system requires more complex forms, procedures and computer systems. EMBs also need to recruit enough competent and technically skilled staff to plan and run the system. Capacity-building and development programmes are necessary to keep staff updated and trained.
- *Stable electoral and other legal requirements:* If the electoral and other legal requirements are not stable, registered voters would need to update their details to meet new requirements. This challenges the capacity of continuous voter registration systems and can undermine much of the benefit gained.
- *Ability to capture accurate geographic information:* Detailed and accurate geographic information is needed to ensure that voters are assigned to the correct polling stations. Accurate geographic data is vital if there are provisions within the electoral law for constituency-based organisation of elections.
- *Civic and voter education and information must be effective:* Voter registration drives are a good time to inform voters and electoral stakeholders about changes in the law and to raise awareness about citizens' rights. In terms of continuous registration, voter information is crucial to ensure that voters know the venues, times and procedures for voting.
- *Encourage citizens to update their data:* The system can only be effective if there is a high level of awareness among the population to register or report address changes. On-going civic and voter education is therefore needed to remind voters to update their data. A working and enforced legal requirement for citizens to update their records may be needed.

A continuous voter registration system is not recommended if these requirements are not assessed, considered and met. Most African countries therefore do not use a continuous voter registration system and have opted rather to establish voters' rolls periodically from scratch according to their electoral cycles, or roughly every five to ten years.

Civil and voter registration

There is a common perception that civil registration and voter registration can be easily combined, thereby saving on the costs and effort associated with two very similar databases. However, the challenges are many and must be carefully assessed. There are three possible scenarios when it comes to the civil and voter registries:

- Only one register is maintained by the state authority for civil registrations and the EMB does not deal with voters' data. This is passive voter registration whereby those registered in the civil database and who meet eligibility criteria are automatically put on the voters' roll. The EMB organises elections with the data given to it by another state authority.
- Two registers are kept – a civil registry and a voter registry – and data is exchanged between the two databases.
- The EMB maintains the voter registry and there is no data exchange with the civil registry, or there is no civil registry in the country.

Combined establishment of databases

This section focuses on cases where there is both a civil registry and a voter registry in a country, and will elaborate on the possible synergy effects and challenges involved.

In the case of Rwanda, the civil and voter databases were established from scratch in a combined effort. Field registration teams collected information for both databases. The process was efficient as equipment was shared and there was no duplication of work and tasks. A successful combined civil and voter registration process is less costly and produces shared databases that have multiple uses by different government departments and agencies.

Possible synergy effects at the establishment of the two databases include:

- reduced costs in the generation (capturing and processing) of initial data;
- reduced costs of equipment acquisition and maintenance;
- reduced costs for technical support of material;
- the opportunity to introduce unique identification standards; and
- mutual support of the two registries.

While it is easy to evaluate the efficiency gains for the combined establishment of both registers, it is more difficult to analyse the possible effects of maintaining and updating the registers. The benefits of combining the two systems can be undermined or completely jeopardised if one system lacks accuracy or integrity, as seen in Senegal in 2010. There, a voter can only be registered if s/he is registered and positively identified by the biometric database for national ID cards. As there was no production of ID cards for a period of eight months, the voter registration drive was effectively paralysed.

South Africa provides an outstanding example of a successfully combined civil and voter registry system. Firstly, new voters can only be added to the voter registry once they have been positively identified by the civil registry. Secondly, the

EMB receives monthly notice of recorded deaths from the relevant authorities and deceased voters are automatically removed from the voters' roll. Crucial for the success of the system is the relative high integrity of national identification in South Africa and the professional way in which both systems are integrated.

Expected synergy effects and potential challenges have to be strictly evaluated because the requirements concerning updates can follow different laws and criteria. In many countries, the task of the civil register is merely to register births, marriages and deaths and to administer the establishment of citizenship. The task of EMBs is to maintain an accurate voters' list, including updated voters' residential data.

The quality of the civil registry is not necessarily impacted if deceased citizens are not deleted from the database or if there are minor inaccuracies in people's ages. In terms of the voters' roll, however, there is a political imperative to keep the register 'clean', complete and accurate in order to prevent multiple voting attempts which could impact on the outcome of elections and destabilise the democracy.

The following are some possible constraints for an effective integration of the civil and voter registries:

- *Conflicting mandates:* The conflicting mandates of state departments and the (independent) EMB often produce duplication of work and complicated supervision and audit processes.
- *Different database content:* The national ID database deals with identities, not residential address data. However, in most African countries legal and organisational requirements mean that voter registration must be done according to constituency boundaries. As long as the civil registry does not include updated address data, the EMB will be responsible for maintaining this aspect.
- *Timing:* The compiling of the civil registry generally does not face time constraints and tight deadlines as is the case with the voter registry. The cost savings associated with a combined system will be negligible so long as there is a need for EMBs to continue with parallel registration processes – for example, if the electoral law requires yearly registration updates. There is, for example, no hard evidence that Rwanda's combined civil and voter registry process would be cost effective in the long run, since the EMB in that country is legally mandated to conduct periodic updates and to provide a timely and accurate voters' register.
- *Identification documents:* The use of civil identity documents as proof of citizenship before the issuance of voter cards can be problematic when the ministry falls behind in issuing identity documents, as this can impact negatively on those who are qualified and ready to

exercise their franchise. In Senegal, for example, the failure of one ministry (not to issue ID cards) completely jeopardised the voter registration drive in 2010.

- *Different review and update methods:* There can be a problem in terms of the periods, locations and data when the two systems use different review and update methods. It can, for example, be very difficult to record the names of deceased persons in countries where deaths are not reported to the administration through the medical examiner.
- *Unsynchronised databases with higher costs to maintain both:* EMBs need to find innovative ways to add more quality to the voters' roll and to expand it while making the review process less burdensome.

The benefits of a combined civil and voter registration process in Africa seem to be limited to the initial set-up stages. A combined system can only be sustained and maintained effectively once it has reached a certain level of integrity, structured organisation and infrastructure.

Technology for voter registration

EMBs use technological solutions to collect, transmit, compile, clean and store voters' data. The appropriate technology depends on what is expected of the system and the efficiency of the planning and operations involved. Several types of technology have voter registration applications, including:

- telecommunications technologies to support networked computer systems and other communication needs;
- data storage media such as disks, drives and magnetic tapes;
- database management software for storing and manipulating data;
- imaging technologies that can be used for data entry as well as for identification, data matching and data recognition; and
- geographic information systems (GIS) that can be used for assigning voters to geographic locations and for ensuring the quality and integrity of voter data.

The following needs to be considered when determining the appropriate technology for voter registration requirements:

- The legal provisions in a country and culturally accepted technology.
- Political requirements, including political will, stakeholder participation and transparency.

- The existing conditions and infrastructure – such as the availability of electricity and fuel, and the transport infrastructure.
- The capacity of the EMB to plan and implement effectively the registration drive and to provide appropriate training, logistics, supervision and auditing.
- The environmental conditions in the country, including temperature changes, humidity and rainfall.
- The lifespan and compatibility of the technology and equipment, including peripherals (fingerprint scanners, digital cameras).
- Timing – there should be sufficient time to test the system in all conditions and to allow for data collection, cleaning and display of the voters' roll well before the next election.
- Financial resources and cost implications including the initial purchase cost, as well as the costs of maintenance, storage, updating, replacement, staff recruitment and on-going training.
- The ICT capacity in a country – there should be a sufficient pool of trained IT personnel in the country from which the EMB can recruit and train staff to maintain and update the systems.

Based on this analysis one can determine which technologies would be more appropriate to implement and which voter registration system to implement.

Computerised registration systems
There are many data capturing and data processing methods. The three main data capturing methods are the following:

- Data can be keyed into a computer system using a computer keyboard.
- Data can be captured manually and processed using scanning technology.
- Voters' data can be retrieved from another database, for example, from the civil registry.

There are two main methods of capturing voters' biometric data:

- Data can be collected in the field by printing photographs or taking ink fingerprints. This data is later scanned centrally and processed as images.
- Data can be captured electronically in the field using, for example, fingerprint sensors or camera and face recognition software and only compiled centrally.

Staggered voter registration

The advantage of having a single, countrywide voter registration exercise is that it minimises the possibility of multiple registrations. If the registration exercise is held over a limited period and indelible ink is used to mark all registered voters, multiple registration is discouraged.

A number of factors need to be considered before deciding which mode of data collection to use in the field. These factors include the:

- capacity of the EMB to administer complex systems;
- financial resources available to procure sufficient registration kits;
- capacity of the EMB to train and supervise numerous registration personnel;
- availability of skilled personnel;
- communication systems, infrastructure and transportation; and
- the security situation in the country.

Staggering the registration process can help to simplify it and reduce the overall cost. Some of the positive effects of staggered registration are that the registration teams gain more experience and proficiency in capturing data. It is also easier for political parties and observers to monitor the registration process when it is staggered. At central level, the IT department will not be overwhelmed by a flood of data coming in at one time.

There are various ways to design a staggered voter registration process:

- A smaller number of registration teams can move from one constituency to another, registering voters at different times and at different registration centres.
- Data capture can be divided into a number of phases, as was done in Rwanda. During the first phase, text data was collected by going from door to door to increase the coverage of registered people. The biometric data was collected at a later stage at registration centres.
- Data can be collected in the field, with data verification and the production of voter cards done centrally. Voter cards can be distributed at a later stage, as was done in Ghana.

There are also other ways to reduce the costs associated with high-level technology. Togo, for example, leased voter registration equipment from the DRC and Liberia used scanners sourced from neighbouring countries.

Recruitment and training of registration staff

The resources for training and the availability of educated registration staff are crucial aspects to consider when choosing a voter registration methodology.

In the late 1990s when some EMBs in Africa adopted scanning (optical mark recognition – OMR) technology to compile the voters' register, special skills such as keyboarding or ICT were not required in order to operate the system. In most instances the same local registration officials (mainly teachers) who were employed to operate the old systems could handle the new system after a short training period. Even when the technology was upgraded (for example, to include photographs), it was possible to find suitable personnel in rural areas to operate the system.

It is important when choosing a voter registration methodology to weigh the advantages of a high-technology system against possible increased error rates in the field resulting from the complexity of the data capture procedure. This was the case in Mozambique in 2008 when widespread errors in data capture occurred because registration staff were not properly trained to use the equipment.

Under such circumstances any advantages of using a computerised system could be wiped out: the cleaning, correcting and auditing of errors at a later stage is very complicated and sometimes impossible. To maintain IT equipment and ensure sustainability of the system, EMBs need to consider the importance of employing highly skilled personnel and providing ongoing training. EMBs' dependency on external assistance and short-term international experts will decrease only if internal capacity within EMBs is built and maintained.

A number of questions should therefore be asked when contemplating a high-tech voter registration system:

- Does the system allow double entry or recapturing of the data if data is lost?
- What is the capacity of the 'average' voter registration staff member?
- What training is available for staff given the time and resource constraints?
- What are the general infrastructure conditions in the country – transport, communications, energy sources?
- What quality control mechanisms can be installed to safeguard against lost or damaged data?
- How effective is the system and can it prevent corruption and misuse?
- How complex is the system in terms of logistical and organisational challenges?
- Is the system transparent enough to allow for stakeholder participation and observation?
- How can the quality of the data be ensured?

In cases where countries need to include biometric identification technology, there

are still many medium- or even low-tech solutions – especially in terms of the power source used and storage of biometric data. For example, biometric data capture solutions can be coupled with the use of scannable forms, which would bring down costs and remove the drudgery of high-tech in voter registration.

System updates

Partial upgrading of systems implies that the system in place was tested in real conditions and only parts need to be changed. A smooth upgrading of technology over the years supports the sustainability of a country's voter registration system. It allows for the continuation of best practice and working methods and supports improvements in problem areas.

Sometimes, however, updating is not enough and industry developments can simply cause technological equipment to become outdated. For example, certain technical parts and accessories may not be easily available, and software could be outdated and incompatible with newer programmes. A good example is the change that had to be made from Polaroid cameras to digital cameras following Polariod's withdrawal of its instant photography products from the market. The experience in Mozambique shows that it can be cheaper to switch to a newer technology than to maintain an older one.

EMBs can face serious problems in terms of updating or changing systems if the commercial vendors supply software that is proprietary, rather than open source. For example, the EMB in Kenya is reliant on its electronic voter registration kit supplier should it wish to redesign elements of its digital registration system that was piloted for the voter registration exercise for the referendum in 2010. Senegal established its system in 2006 and is still completely dependent on four commercial IT companies for upgrading and even system maintenance.

It remains a challenge for EMBs to adopt specialised professional software applications while at the same time maintaining complete financial and technical ownership of the system.

Voter identification cards

Over and above producing a voters' roll, the voter registration system also produces provisional voters' rolls for exhibition, lists for registration centres, statistics and sometimes also voter cards. In countries without an established national ID card system, many EMBs are required to issue voter cards that incorporate a photograph of the voter.

Voter cards fulfil two purposes: they provide a document that registration officials can use on election day to validate the voter's identity; and they provide the voter with information regarding the station where s/he is registered and eligible to vote. In countries without a national ID card system, it has become standard practice to supply voters with a voter card for easy identification on election day.

Early voter cards were simple paper slips featuring the voter's name and registration number. New technology, however, has allowed EMBs to produce voter cards that include the voter's photograph and have other security features. High-integrity cards such as these are much sought after in countries that have no national ID card system, and in many instances voter cards have become de facto identification documents that are accepted at banks and are used in other commercial and official transactions.
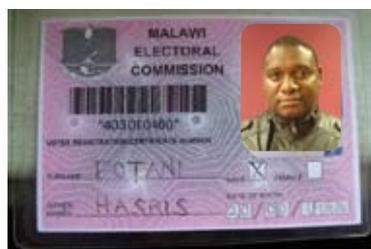
In many African countries a section of the voter registration form is filled in by hand, cut off and cold laminated, providing voters with a waterproof identification document that can be used for many years.
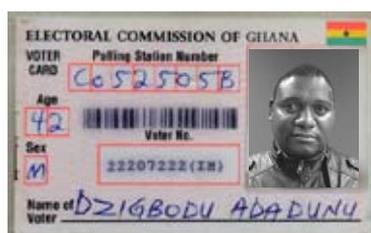
Example of voter card issued in Ghana.

Example of voter card issued in Mozambique.

Example of voter card issued in Malawi.

The voter card can be an important instrument to prevent electoral fraud, and EMBs make extra effort to integrate security features into the card. Voter card security features can include the following: [11]

- Displaying the voter's photograph, fingerprint and signature on his/ her card. Additionally, the more features that appear on the voters' roll used on election day, the greater the possibility for voting staff to prevent multiple voting at polling station level.

- Tamper-proof lamination, which prevents changes being made to the card (photograph or information on the card) without destroying the card itself.
- Printing the cards in colour and using holograms to prevent fraud through simple photocopying.
- A barcoded voter identification number corresponding to the number on the voter registration form controls the stock of forms and associated cards. This prevents the production of forged cards or stealing blank cards since the same name and identification number must appear on the card, the registration form and the voters' list.
- Including biometric data on the card, such as the voter's height, age and residential address.

Multiple attempts at voting can also be limited by cutting off a corner of the voter card or punching a hole in it at the voting station. This simple yet effective way to stop fraud was used in Liberia in 2005 and reduced the opportunity to reuse the voter card in an attempt to vote a second time at one election.

Producing voter cards is an additional burden for registration authorities owing to the extended logistical arrangements required and the costs of producing and distributing the cards. A simple solution is for the card to be pre-printed – for example, as part of the registration form. It can be filled in, a picture attached, laminated and handed over to the voter at the time of registration – a process used in Mozambique, Liberia (2005) and Sierra Leone (2007). In Ghana and Senegal the process was handled in two phases: in phase one the data was collected in the field; and voter cards were distributed in phase two. The EMB in South Africa does not produce voter cards since the country's national ID book serves as identification for voter registration purposes.

Field equipment for data capture

Digital voter registration kits

Field equipment for voter registration must cover multiple tasks – including capturing the applicants' data, storing the data, printing photographs and voter cards and communications for data transmission – while also ensuring a level of quality control and preventing any manipulation of data.

Many variations and combinations of technological equipment are currently used for voter registration across Africa – some of which feature highly sophisticated digital registration kits.

Registration kits usually include the following items: laptop computer (CPU, hard drive, mouse, keyboard, screen); digital camera or web cam with/without light source; barcode reader; fingerprint scanner; digital signature pad; inkjet printer (colour or black and white); GPS; 3G cellular communication (general packet

radio service – GPRS); wireless high-speed internet and network connections (Wi-Fi); power pack (battery); power source (portable generator or solar panel system); and carrying case.

Styles and combinations differ from country to country depending on the specific challenges presented. A major challenge in countries with poor infrastructure is the issue of a power source. Generators are portable and easy to handle, but the supply of fuel has to be guaranteed and can be difficult to supervise. Solar panels are sustainable and reusable for many years, but they are expensive and their handling and maintenance requires a degree of technical understanding. In Afghanistan car batteries served as a power source for voter registration teams.

It is also important to bear in mind that the power source would need to be more sustainable and the training and supervision would need to be more intensive, the more gadgets used. Also, high-tech equipment tends to get stolen or damaged, which can be crucial for the sustainability of a system and must be considered in the maintenance costs.

An example of a registration kit provided by a commercial vendor.
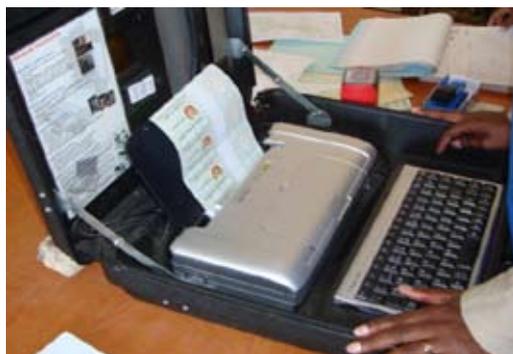
In Mozambique, voters' data is keyed into a small handheld PDA.

The DRC registration kit comprises a small handheld computer, a webcam and a printer.


The second generation registration kit used in Ghana comprises a computer, a digital camera and a printer. The first generation kit used a Polaroid camera.

Technical developments

DRS Technologies[12] has been involved in developing new technical solutions for the challenges of voter registration, and in 2009 released a prototype small, battery-powered, 'all in one' registration machine. The aim was to develop equipment that would work in harsh African conditions, and which was simple to operate, low powered and easily portable.

The 'PortaReg' features a digital camera, barcode reader and fingerprint reader and is sufficient to collect biometric data from voters in the field. The biometric data can be combined with personal text data collected on OMR and intelligent character recognition (ICR) forms. The PortaReg has build-in memory in the form of a secure digital card, and can store the data of up to 500 voters before the information needs to be transferred to another medium. However, the prototype was not developed further and was never operated in large-scale real conditions. EMBs have additional requirements, such as printers and communication devices, when it comes to voter registration equipment. The simplicity of the PortaReg, while desirable, thus became its biggest weakness. EMBs tend to prefer the 'laptop in a box' approach and will stagger registration to allow kits to move around the

country. However, initiatives such as the PortaReg, combined with advances in communication technology, will hopefully stimulate the research and design of more effective and robust registration equipment.
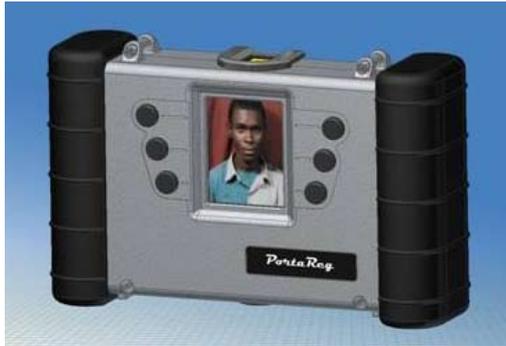
The PortaReg, developed by DRS Data Service Limited, features a digital camera, barcode reader and fingerprint reader.

Data capture technology

There are two major data capture methodologies: scanning technology for scanning special forms or barcodes; and keying data directly into a computer.

Scanning technology

In South Africa the identity and eligibility of an individual is established by the civil registry. Every registered person receives an ID book and a unique national ID number. This number is the connecting feature between the voter registry and the national ID registry. When a voter applies for registration, the barcode in her/his ID book is scanned using a 'zip-zip' machine and the voter's residential address is recorded on a form.

A South African national ID book featuring the citizen's unique ID number and barcode.

The zip-zip machine produces a label confirming the application for registration, and this label is stuck into the voter's ID book.
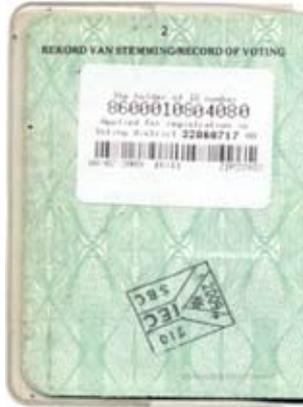
The zip-zip machine produces a self-adhesive label indicating the date of application for voter registration.

The recorded data is then checked against the entry in the civil registry using the voter's unique ID number. If the person is positively identified, s/he is added to the voters' list; if not, the voter is contacted and informed.

A voter can change his/her residential address information simply by referring to the ID number. As the recording of personal data is done by one state authority, the EMB does not collect and record any voter data. Even the barcode capture is done with a scanner, minimising the potential for human error.

The zip-zip machine used in South Africa is simple to handle and effective; 30,000 zip-zip machines are used in South Africa to facilitate the continuous voter registration process.

The zip-zip machines are also used on election day. They are uploaded with the national voters' roll and are used to scan the barcode stickers in voters' ID documents before voters enter voting stations. This assists in establishing a voter's eligibility to vote at a particular voting station. The system used in South Africa proved to be reliable and effective.

OMR, OCR, ICR and barcode

Optical mark recognition (OMR)

OMR technology is based on a special paper form used to capture structured data, and a scanner used to translate the captured data into a database. In order to fill in an OMR form correctly, the relevant area on the form must be 'shaded' or 'marked'. The use of OMR technology does not necessarily result in efficiency gains; rather, it shifts the workload to the local registration teams.

This process is error-prone and requires qualitative training as well as high concentration and dedication on the part of registration staff. In Liberia in 2005, for example, several steps were necessary to clean the forms and verify the data. Over 50 staff members were employed at the central data centre to clean data before and after the scanning process.

The latest series of scanners have an increased level of tolerance for the way forms are shaded. While these high-speed scanners are marketed to process up to 8,000 forms an hour, in practice it is difficult to process more than 3,000 forms an hour.

A completed OMR form: The scanner software can identify number 14 as 'A', number 15 as 'B', number 16 as 'A' and numbers 17 to 26 as 'B'. Some of the boxes have been marked using blue or black pen and pencil, but modern technology can still read the markings correctly.

Optical character recognition (OCR) [13]

OCR is the mechanical or electronic translation of scanned images of handwritten text into machine-encoded text. This technology allows the handwritten information given on voter registration forms to be converted into electronic information for use in the voter registration database.

Early OCR software versions needed to be programmed with the images of each character and worked on one font at a time. New 'intelligent' systems have a high degree of recognition accuracy for most fonts. This development has allowed for the use of OCR for registration purposes. As with the OMR forms, OCR forms are scanned and the information is integrated into the database. A combination of OMR and OCR techniques is useful to improve the accuracy of the information captured for the voters' roll.

Intelligent character recognition (ICR)

ICR is an advanced OCR technique. More specifically it is handwriting recognition technology that allows fonts and different styles of handwriting to be learned by a computer during processing in order to improve accuracy and recognition levels. Developers claim that the system can achieve up to a 97% accuracy rate in reading handwriting in structured forms. The system works well in combination with OMR, resulting in an even higher degree of accuracy of automated data capture.

Barcode system

Barcoding is a simple system to register and track different persons or items. Barcodes are already used in most computerised voter registration systems on application forms, voter cards as well as on the voters' roll used on election day. Barcode scanning technology allows for rapid processing of barcode data with very low error rates. This technology has proven to be stable and effective, as seen in the South African voter registration example. The system needs a device to read the barcode and software to translate the reading into database information.

A new development in barcoding is Semacode, which can be read by mobile phones using their built-in cameras. By capturing the picture and sending it to a phone number, information is available to the user in split seconds. The technology will continue to progress and might be useful for advanced voter registration purposes.

Example of a traditional barcode: A conventional barcode reader sends a laser light to the barcode and measures the light that is reflected back.

The latest development in barcoding, called Semacode, can be read using mobile phones with built-in cameras.

Form used in Liberia in 2005: Personal data is captured using ICR and OCR technology and barcoding. The form features pre-printed serial numbers and spaces for the applicant's photograph, signature and fingerprint.

High-speed scanners capture information in real time to a database. The system uses OMR and ICR technology and scans images such as signatures, fingerprints and photographs.

Future developments

Depending on the infrastructure of a country and future developments in data transfer speed and availability, developments are likely in the areas of active enrolment and identification and marking for voting purposes.

In terms of voter registration, linking registration devices with the central database could provide high-level security as a new applicant can be checked instantaneously against the existing voter database. Applicants not already recorded in the database could then be registered, thereby avoiding double registration. The system could also be connected online to the national population database, in which case applicants could only register to vote if they are positively identified in the national ID database.

For identification on election day, voters could be identified with biometrics before receiving their ballots. The voter could also be automatically marked in a real-time, live database as having voted and thus prevented from receiving another ballot anywhere else and attempting to vote more than once.

These scenarios are technically possible, and with some further developments in computer speed and programme security are probably even feasible. There are, however, still technical and infrastructural constraints (eg. limited bandwidth, communication problems and lack of reliable power sources) to using such systems in most African countries, and even in many developed countries.

Given the complexity associated with establishing and running an electronic biometric voters' register it is difficult to identify the exact benefits achieved and to justify the financial costs. One needs to consider carefully whether an electronic biometric register really improves the level of security compared to a system where the voter signs for receipt of a ballot and has his/her fingers marked with indelible ink.

Bio-identification systems

There are two main types of bio-identification systems: visual and electronic systems.

Visual identification methods

Visual bio-identification methods include the use of photographs, signatures and fingerprints. Computers and/or registration staff then compare the images to detect possible double entries. The system is relatively cheap to implement and administer. On election day, polling staff compare the photographs and signatures on the voters' identity cards with those on the voters' roll. The human eye is still an excellent recognition aperture and a voter card with a reasonable picture provides a high level of security.

Technological gadgets can be used to capture handwritten signatures or fingerprints electronically. These digitised images are then sent to the EMB central database over a computer network where EMB staff perform visual comparisons.

Digitised data can also be automatically analysed and compared using appropriate software. The software compares patterns in the digitised images and can flag possible mismatches for a human operator to investigate.

Comparing signatures or fingerprints does, of course, require specially trained staff and one cannot expect all polling staff to be able to master this skill. Nevertheless, such an identity system is sufficient in cases where the risk of voting fraud is not unacceptably high.

Electronic bio-identification systems

Biometrics is the technology by which the physical characteristics of a person's face, fingerprint and iris are attached to the individual's personal data and stored in the database. Future referencing of a person is based on this data. The system searches the existing database either to make a negative match (meaning that the person has not been captured in the database yet) or a positive match to a person's stored biological data.

The efficiency of biometrics can help to detect double registration attempts or to clean the database of unintentional multiple recordings. It cannot establish the identity of a voter as it only links biological features to the data provided by an individual. An individual's proof of eligibility to be included in the database (citizenship, age or place of residence) still has to be administered by EMB staff.

Software programmes have technological limitations and are only as good as the data fed into them and the programme features designed by the software developers. More transparent control mechanisms are needed the higher the level of technology used to establish the voters' roll since many of the processes are put into a 'black box'. Sophisticated systems are therefore needed to verify the accuracy and completeness of the data on a voters' roll.

As the acceptance of a voters' roll depends much on the political circumstances in a country, it is questionable whether additional benefits can be derived from a high-tech system. If all electoral stakeholders are actively involved in all stages of the process, then trust in the system can be established using a well-designed process with appropriate standard technology.

How secure is a system?

Two critical measurements indicate the level of accuracy, security and reliability of any given biometric system, namely – the false reject rate and the false accept rate. A person is falsely rejected, for example, when s/he is already enrolled in the database but the system fails to positively identify her/him. The false reject rate depends on the situation under which the system is used, such as operating conditions and user cooperation.

A slight change in one's fingerprint due to dust, moisture or other environmental conditions can increase the false reject rate. A person could be

falsely accepted, for example, when one person's biometric data is similar to another's and a match is made erroneously.

The difficulty of calibrating a biometric system lies in determining the required level of security. More false rejects could be recorded if emphasis is on high security, resulting in more voters being disenfranchised from registering and thus voting. If the system is designed to minimise the false reject rate, more false accepts could be recorded leading to possible double registrations and attempts at voting fraud.

Regardless of the accuracy of the matching algorithm, the performance of a biometric system is compromised if an individual cannot enrol or cannot present a satisfactory image. The 'failure to enrol' rate is the expected proportion of the population for whom the system is unable to generate repeatable templates.

The 'failure to acquire' rate is defined as the expected number of transactions that the system is unable to capture or locate an image or signal of sufficient quality. The failure to acquire rate may depend on adjustable thresholds for image or signal quality.

While the failure rates described above may appear to be overwhelmingly technical, they are important to take into consideration for voter registration purposes. In Zambia in 2010, for example, a 'failure to acquire' rate of over 10% was observed at field level in the system's attempt to capture the digital fingerprints of voters. In other words, even before any further processing of voters' data, already 10% of voters are excluded from the system's attempts to detect double registrations because of technological registration issues.

Comparison technology refers to how systems work to find matches or otherwise. For 'one against all', the system checks any given biometric data against all registered voters in the biometric database using, for example, fingerprint or iris recognition software.

Systems fail in practice because the templates crash due to failure to recognise and correctly identify fingerprints or photographs. These failures multiply when adding more identification data, for example, by adding more fingers to be scanned. In other words: the more security features that are added to a system, the greater the likelihood that the system will produce more errors.

The failure and error rates indicate that biometric technology is highly complex and not just an easy procedure to detect match or no match. The reliability and efficiency of a system depends greatly on the quality of the images, the number of identification points and the software's security definitions for detecting matches.

Text data comparison

Even without using biometric data, computer software can identify if a person is registered more than once. Double registrations are not only fraudulent attempts to qualify for multiple voting but can occur quite innocently if a person's address

data is changed without deregistering the old address, or if a person loses her/his registration card and does record her/his name correctly when applying for a new card.

Electronic searches that simply compare names can identify whether the person applying for registration is already in the database. Additional search criteria such as date of birth can also be used. Since people do not always use the exact same name each time they complete a form, software comparison routines need to make use of 'fuzzy matching' techniques to help identify possible duplicates. Fuzzy matching involves using programmes for matching data by applying various criteria. A possible match could be identified by a name that differs by only one letter. A system can be set up that compares different variations of the same name – eg., variations of 'John' could include Jon, Jonathan or Johnston.
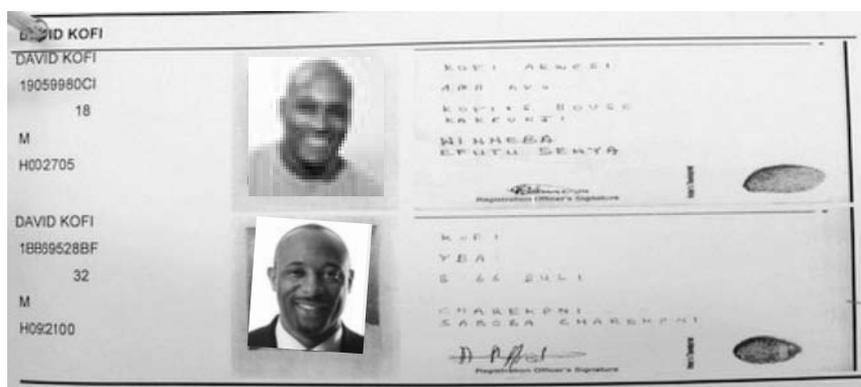
Here the software has flagged a possible double registration because the two voters' names are identical. The human eye, however, easily and efficiently recognises that the scanned handwriting, signatures and photographs are clearly different. The entries therefore represent two different voters and are valid.

Computer programmes can compile lists of possible double registrations for trained staff to compare according to name, scanned photograph, signature and fingerprint. While this appears to be cumbersome, experience shows that fully technological solutions also need to be validated by personnel. Biometric identity comparison produces a high number of false duplicates (sometimes even tens of thousands) that have to be 'hand cleaned' by trained personnel to identify 'real' duplicates as opposed to false matches.

The registration of 8.2 million voters during the 2008-2009 voter registration exercise in Afghanistan produced some 280,000 duplicates – false and otherwise. The data needed to be cleaned by adequately trained personnel, but the task was so great that the electoral commission decided to abandon it, resulting in a voters' roll of questionable quality.

In the DRC the total number of duplicates detected by the biometric system was less than one percent of all registered voters. In Mozambique it is likely that

400,000 or more ineligible entries (up to four percent of all registered voters) remained on the register for the 2009 elections despite the use of biometric technology.

If the overall goal of using biometric technology is to improve the quality of the voters' roll, then these results have to be measured against the enormous financial costs and the increased challenges involved in operating such equipment in harsh African conditions.

Security of the data

The more complex the software used, the higher the EMB's risk of not being able to control fully the system's inputs and outputs. The process of cleaning Senegal's voters' roll was conducted in France; only very few people have the capacity to supervise the programme and audit the results. Ultimately, we need to question whether money is being spent wisely on high-tech systems if the process loses transparency and stakeholders are systematically excluded.

Testing biometric systems

It may be difficult for some EMBs to analyse and fully understand study results presented by vendors who are eager to sell their products. Simple studies are good for obtaining a rough overview of a system's performance; however, more in-depth studies are crucial before a system is deployed to ensure that real performance will meet EMB requirements and that the system is fully operational in specific country conditions.

Comparisons of systems are difficult since the methodologies used to conduct the studies or the way errors are calculated can vary enormously. Vendors' calculations of a system's false reject and false accept rates often rely on research studies or small test applications of the system. Case studies conducted in an air-conditioned office using college students are not a realistic representation of how the voter registration system would work in extreme African conditions. For example, the scanners purchased by Ghana to process OMR forms quoted a processing speed of 5,000 forms an hour, while in practice the 'real' speed was some 1,000 forms an hour.

Understanding the basic principles and asking direct questions is the best way to ensure that the system chosen meets a country's needs. For the most accurate results, EMBs should insist that research studies be conducted in the field under 'real' conditions, or at least in a way that strongly simulates real-world conditions. In addition, the sample group should reflect a cross-section of voters' ages, professions and skin conditions. For example, the sample group should include senior citizens, smokers, gardeners, bricklayers, etc. and people whose fingers are, for example, very dry, broken, moist, etc. The environmental conditions must include testing under extreme high and low lighting conditions, and under different humidity and dust conditions.

Passive and active biometric systems

An active biometric system means that the database is checked on the spot and a voter can only register if the system establishes that the person is not already in the database. This system requires all registration points to be networked with the central database at the same time and all entries are checked against all other entries. An active biometric system is definitely the most secure but it is also the most complex and is very expensive to set up and run, even in developed countries.

With a passive biometric system, voters' details are collected in the field and each person who can positively establish their eligibility to register is allowed to do so. Only at a later stage is the information fed into the database and multiple registrations are detected and deleted using matching criteria. A passive system is most effective when voter cards are issued at a later stage – after the data has been cleaned of double registrations.

It is possible for voters to be in possession of multiple voter cards when voter cards are produced on the spot at the point of registration with the data being compared only later. This situation can potentially give rise to fraud. Additionally, a passive solution can result in serious legal challenges at a later stage vis-à-vis the removal of duplicates.

Owing to the sheer number of voters to be registered, time limitations and a limited technological environment, passive registration systems are generally used for voter registration purposes in African countries. But if multiple voting is best prevented by using indelible ink on election day, the additional security benefits derived from a passive registration system are questionable.

Fingerprint, face and iris recognition technologies

Fingerprint recognition

The use of an automated fingerprint identification system (AFIS) can ensure that no applicant is registered twice. AFIS identifies individuals based on their fingerprints and can search the voter database for matching entries.

Applicants' fingerprints are scanned using a fingerprint scanner device and the data is stored electronically in the database. The security level of this system is determined by the number of identification points. If the number of identification points is too low there will be too many hits for double entries, and if the number is too high then double entries will not be detected because even small alterations would appear as a different fingerprint.

Different scanners and software produce different fingerprint images depending on the particular environment or skin conditions of the applicants. Testing in real-life situations is therefore crucial before deciding on a product. A system must prove reliable at collecting and recording good quality data of a broad cross-section of all registered voters.

This software, produced by Face Technologies, identifies points and compares the features of these points.

Environmental influences and skin conditions can drastically affect the quality of images.

Despite the fact that AFIS is often considered fundamental when it comes to biometric technology, its efficacy has not yet been proven in the African context. The main benefit of AFIS – that is, ensuring a high rate of accuracy in the voters' roll by eliminating multiple registrations – is undermined by its high failure rate to actually enrol voters in the system and the relatively low numbers of detected double entries that have been found in many countries.

Iris and face recognition technology[14]

Iris and face recognition technology work on a similar principle to fingerprint recognition. Iris recognition involves recording the image of an iris (coloured part of the human eye) using a high-resolution digital camera. The software mathematically analyses the pattern of the iris and converts it into a 512 byte digital template that is stored in the database for future reference.

This technology is considered to offer the highest accuracy in capturing biometric data because no two human irises are alike. In addition, the iris is very stable: it does not change with age and is less influenced by environmental conditions. Iris recognition does not involve retina scanning (which is a completely different technology) and is therefore not invasive and unsafe. A picture of the eye can be taken without any personal contact, and contact lenses or glasses do not interfere with the accuracy of the image.

Facial recognition is similar to iris recognition, with the difference being that the system uses the features of the whole face to create an entry in the database. Unique facial characteristics – such as the distance between the eyes, the length of the nose and the angle of the jaw – are measured to create a unique template for each face. The system can use images from live video, digital cameras and photographs, including pre-existing photographs on the voters' roll or other identification documents.

How useful and necessary is biometrics?

In his contribution to this research project Michael Maley explained that, in terms of electoral maturity, a country can be characterised as mature, failing or somewhere in between. Electoral maturity within a country implies:

- strong, deep and widespread acceptance of electoral norms;
- intolerance of electoral fraud; and
- neutral, trusted and well-entrenched institutions.

Failing electoral maturity within a country implies:

- minimal support for electoral norms;
- that fraud is likely to be pursued with no special shame (often with impunity); and
- little commitment to democratic processes.

Within this taxonomy, a plausible argument can be made that there is little point applying advanced technological solutions to voter registration in either mature or failing countries. When a country has reached electoral maturity, no additional benefit is gained using biometric solutions when real protection of the election process comes from the cultural norms that discourage fraud. In failing countries

there is considerable risk that a high-technology solution would be ineffective. Under such circumstances there are numerous ways in which an election can be stolen, and devoting massive resources to advanced registration techniques – even if they are well implemented and work perfectly – may simply displace fraudulent activities into other areas of the process.

Electoral authorities and donors are attracted by the opportunity to make improvements to their systems rather than to address the more sensitive and difficult problems of misconduct by politicians, political parties and voters. These actors may in fact be happy to see the EMB and donors pursue a course of action which, in reality, would not disrupt their entrenched activities.

Dangerous trap: too fast, too high – no way back
The example of the DRC shows that once a high-tech system is introduced, it is not (easily) possible to revert to a less costly and easier to operate low-tech system. A strong argument is that once the equipment is bought it has to be used – even if the replacement or maintenance costs are more expensive than purchasing a new, efficient, low-tech system. Another factor concerns the voters: once they are provided with a photo ID there is strong demand for replacement cards and new cards for citizens reaching voting age. Unless the civil registry takes over this task, EMBs would be required to continue providing voters with photo voter cards. Countries like Ghana show that it is beneficial to introduce new technologies gradually and to make sure that the systems are fully tested before large-scale implementation. Countries need to pay careful attention when selecting voter registration methodologies, especially when faced with time pressures, and when there are limited long-term, secured financial resources and high political demands.

Biometrics – the black box approach
Does biometrics really improve the electorate's trust in the voter registration system or does the 'black box approach' give electoral stakeholders decreased control and little room for observation? In Mozambique, for example, several stakeholders accused the National Electoral Commission of lack of transparency because the EMB refused to disclose details of the computer processes used in the voter registration exercise and compilation of the voters' roll, and would not release data necessary to identify the number of voters registered at each voting station. In Senegal, even staff at the ministry in charge of the database considered the entire IT component of the data processing system (which is managed by external commercial companies) as a black box, with no real possibility to supervise or effectively audit the process.

What biometrics cannot identify
It is important to understand that the use of biometric technology will not solve all

voter registration challenges. For example, biometrics cannot detect the inclusion of foreign nationals (people from neighbouring countries) or the inclusion of underage voters in the voters' roll. By the same token, biometrics cannot assist in identifying and deleting deceased persons from the database. The integrity inherent in a voters' roll depends to a great extent on the active participation of the population and on the professional work of trained registration staff.

Enfranchisement of voters lost in technology

The use of high-level technology in voter registration has raised the issue of moving fragile electronic equipment across treacherous terrain, sometimes resulting in the loss or corruption of the very information that is being sought after. These days it has become difficult to register voters close to their homes (polling station level) resulting in confusion among voters when it comes to locating their proper voting stations on polling day. The once good precept 'where you register is where you vote' has been challenged by technology.

It is important to understand and evaluate the messages sent through the use of different technological approaches. Voter inclusion and the enfranchisement of disadvantaged groups (such as women or people living in remote areas) have to be balanced against the security features of a system that prevent double registration by technological means.

Practice shows that other transparency features of a system are important to the process. These include the display of the voters' roll at local level, the provision of sufficient time for the engagement of political parties and CSOs, and the involvement of citizens in the process. Intense civic and voter education raises awareness that a functioning democracy relies on the participation of each citizen and that a system of checks and controls is best implemented at grassroots level.

Key findings of the case studies

Key findings of the case studies are listed below: while some state the obvious, they collectively provide an overview of the issues and lessons learned in the course of this research project.

❑ Political reality determines the necessary security features of a system.

❑ Inclusiveness in planning and the evaluation of voter registration processes is needed to maximise system performance.

❑ Confidence in the voters' register is dependent on confidence in the impartiality and independent decision-making of the EMB.

❑ The best system designed will fail if it is not managed properly.

❑ Transparency of the system, regular communication and stakeholder participation is crucial for acceptance of the process.

❑ Efficient timing is critical: a delay in voter registration can jeopardise the whole electoral process; lead times for equipment purchase need to factor in potential delays in supply.

❑ A balance is needed between providing enough time for data processing and cleaning, and holding voter registration close to the election date.

❑ Systems need to be tested rigorously before being implemented nationally.

❑ Using a smaller number of well trained and well equipped field data collection teams in a staggered process is easy to manage and can ensure good coverage of remote areas.

❑ Training for a computer-based system has to be completed before the system is implemented and must fully account for participants' existing skills levels.

❑ Developing sufficient in-house technical skills to maintain a voter registration system is essential to sustain its reliability and integrity. However, it is difficult for EMBs to hold on to skilled IT personnel as they are likely to accept jobs in the private sector or with international organisations.

❑ Field equipment should be simpler and more robust the harsher the conditions in the field.

❑ There seems to be a negative correlation between the level of technology and the number of registration points offered to voters.

❑ High-tech systems cannot solve political issues or problems of trust in the overall process and can jeopardise sustainability issues.

❑ High-tech equipment tends to get stolen or damaged.

❑ Biometric data collection is difficult and expensive relative to the benefits that can be gained from de-duplication.

❑ The reliability of fingerprint matching as a security feature has not yet been proven.

❑ Providing a photo voter's card can be a strong incentive for registration.

❑ Computer equipment requires a realistic storage and maintenance plan.

❑ Once a high-tech system is in place, it is difficult to revert to a simpler system.

❑ Display of the voters' list and ensuring there is enough time for active citizen participation increases acceptance of the voters' roll.

❑ It is very difficult to improve an existing voters' roll; rather scrap it and start a new one from scratch.

❑ Printing photographs on the voters' roll is a high-level security feature to prevent impersonation.

❑ Capacity for equipment storage and maintenance is crucial for the sustainability of a system.

❑ Continuous registration is not cost effective if it is not supported by continuous voter education.

❑ EMBs cannot base the voters' roll on information gathered by other state sources unless state civil registration is very effective and requests citizens to notify the authorities of any changes of address.

❑ Voter registration methods, processes and management structures may be an appropriate basis for the development of a civil registry.

❑ Voter registry integrity controls have to be appropriate for the EMB's capacities and for external information availability, and where appropriate should be easily publicly accessible.

❑ Transparency in voter registration operations is essential for building trust in the integrity of the electoral process.

NOTES

1   This section is based on Wall A, 'Objectives and principles underlying voter registration'. Paper presented at the 'Development of Sustainable Voter Registration Methodologies in Africa' workshop, EISA, Johannesburg, South Africa, 18-19 November 2009.

2   IEC, Legislative Mandate and Strategic, *IEC Annual Report,* 2008, p 9. Available at http://www. elections.org.za/papers/366/IEC%20Annual%20Report.pdf [accessed 8 November 2009].

3   Australian Electoral Commission, '2008-2009 AEC Annual Report', p 28. Available at http:// election.aec.gov.au/About_AEC/Publications/Annual_Reports/2009/files/2008-2009-aec-annual-report.pdf [accessed 8 November 2009].

4   This section is based on Wall, 'Objectives and principles underlying voter registration', op cit.

5   As summarised in Wall A, Ellis A, Ayoub A, Dundas CW, Rukambe J & Staino S, *Handbook of Electoral Management Design.* Stockholm: International IDEA, 2006, pp 176-177.

6   This section is based on Wall A, 'Stakeholders participation'. Paper presented at the 'Development of Sustainable Voter Registration Methodologies in Africa' workshop, EISA, Johannesburg, South Africa, 18-19 November 2009.

7   ACE project, 'Focus on Effective Electoral Assistance'. Available at http://aceproject.org/ace-en/focus/focus-on-effective-electoral-assistance.

8   Based on Valenzuela C, 'Sustainability of voter registration methodologies'. Paper presented at the 'Development of Sustainable Voter Registration Methodologies in Africa' workshop, EISA, Johannesburg, South Africa, 18-19 November 2009.

9   International IDEA, 'Electoral sustainability and donor support', *Electoral Management and Design: The International IDEA Handbook*, 2006. Available at http://aceproject.org/ace-en/topics/em/emj/emj03/?searchterm=sustainability [accessed 23 July 2010].

10 The section is based on Blakley M, 'Continous vs periodic registration'. Unpublished discussion paper, United Nations Mission in Liberia, Electoral Division document, Liberia, 2006.

11 ACE Project, 'Voter Identification Card: Advantages and Disadvantages'. Available at http:// aceproject.org/ace-en/topics/vr/vra/vra08/vra08a [accessed July 2010].

12 DRS has supported voter registration in Mali, Kenya and Sierra Leone. See http://www.drs.co.uk/.

13 Wikipedia, http://en.wikipedia.org/wiki/Optical_character_recognition [accessed 29 June 2010].

14 This section is based on Miiro HN, 'Analyses of Biometric Technologies', 2006. Available at http://aceproject.org/today/feature-articles/combining-civil-and-voter-registration-advantages [accessed 23 September 2010].

COUNTRY
CASE STUDIES

1

DEMOCRATIC REPUBLIC OF CONGO

Hubert Akumiah

EXECUTIVE SUMMARY

After years of conflict and dictatorial regimes, the Democratic Republic of Congo (DRC) – the third largest nation in Africa – was struggling to install multiparty democracy and good governance. Faced with many constraints – such as the absence of population data and an electoral framework, lack of trust by political actors, persistent insecurity in parts of the country, the absence of road and transport infrastructure and a tight transitional calendar – the Independent Electoral Commission of the DRC (*La Commission Electorale Indépendante* – CEI) was in search of a voter registration system that would not only deliver an election but would be acceptable to all the feuding political blocs of the devastated nation.

Considering the peculiar circumstance whereby a great part of the electoral budget was to be funded from external sources, the decision on which system to choose was not the sole preserve of the CEI. Rather, it included input from the Electoral Assistance Division of the United Nations Mission in Congo (DRC) (MONUC) and Support for the Electoral Process in Congo (*Appui au processus electoral en Congo* (DRC) – APEC), which were interim structures that existed to provide technical advice and assistance to the CEI on a daily basis. MONUC was already in the DRC providing peacekeeping duties, but APEC was set up by the United Nations Development Programme (UNDP) to manage the 'basket' fund (a common fund that was instituted by the consultative group of international donors).

When the decision was finally taken, it was for a system that had the capacity to register approximately 30 million prospective voters within five calendar months from June to October 2005, and had the ability to ensure the integrity and adequacy of the electoral register produced. The exercise was one of the largest voter registration operations ever conducted in the sub-region. With over 10,000 biometric registration equipment kits and several thousand operation staff to manage, the exercise faced a number of technical and political challenges but was finally completed, paving the way for democratic elections in the DRC in July and August 2006.

Registration started in June 2005 as planned, but only in Kinshasa. For logistical and security reasons, the rest of the country was covered in a cascading manner. This delayed the process as registration was still ongoing in two provinces (Bandundu and Equator) when the referendum took place in December 2005. There were consistent operational and logistical delays despite the massive logistical support received from MONUC. At the end the system recorded approximately 25 million registered voters out of an initial estimate of 28 million prospective voters.

A staggering US$40,160,000 was needed to buy the 10,000 biometric registration kits and to have them transported by air from Brussels to Kinshasa. Apart from these initial costs, the CEI would have to raise a yearly or second yearly budget of some US$2.5 million[1] for equipment maintenance and replacement of lost or damaged equipment to ensure the continued use of this technology.

The system was criticised by some major stakeholders for being too expensive for a financially challenged nation such as the DRC. They also believed that the system was not able to capture most people because the number of units acquired was not sufficient to cover the entire country (especially the outskirts), and people who had to travel several kilometres to register either missed the chance or found it too difficult to make the effort. But the CEI believes that the US$546 million spent on the whole electoral process was reasonable if one compares the DRC's cost per gross domestic product (GDP) per voter of 1.8 to that of Liberia at 5.8, Afghanistan at 5.7 and Haiti at 1.2. See Table 1 for comparative details.

Table 1: Comparative costs per voter across four countries

Country	Total cost (US$ million)	Population (million)	Cost/ voter	Cost GDP/ voter	Rank
Haiti	41	8.4	4.9	1.2	1
DRC	546	60	9.1	1.8	2
Afghanistan	170	30	5.7	5.7	3
Liberia	17.5	3	5.8	5.8	4

Source: Budget General Du Processus Electoral de la Transition, CEI.

The CEI stated that the registration exercise achieved 92% population coverage. It believes this was reasonable (if the population data of 60 million used as estimated is realistic) considering the unstable political climate in the country at the time and the infrastructural limitations in which the process was held.

It would be justifiable to infer that given the unfriendly terrain and the time constraint in which the entire transition programme was to take place, the factors

that influenced the choice of voter registration methodology were many things – sustainability not being one of them.

The DRC voter registration experience features interesting scenarios; some are worth taking on board while others need to be seriously reviewed. The DRC will have to find ways of handling de-duplication (removing multiple registrations using the automated fingerprint identification system – AFIS) of the biometric data internally in order to maintain the confidence and trust of political parties.

COUNTRY CONTEXT

Political history

The DRC emerged from decades of dictatorship and misrule, made worse by a near decade-long civil war. The country was initially known as the 'Congo Free State' when it was formally allocated to King Leopold II at the Berlin conference of 1885. In 1908, Leopold II transferred the Congo Free State to the Belgian government and it was renamed the Belgian Congo. Following a series of mass revolts and political unrest which began in the late 1950s, a roundtable was held in Brussels at which the Belgian authorities and the Congolese leaders agreed on the country's constitution and set an independence date, among other things.

The Congo gained independence from Belgium on 30 June 1960. The first government of the independent Congo was led by the *Mouvement National Congoliais* of Patrice Emery Lumumba and a coalition of nationalist parties, including the *Parti Solidaire Africain* and the *Centre de Regroupement Africain*, which won the majority of parliamentary seats in the pre-independence elections of 22 May 1960. As a result, Lumumba became prime minister and head of government, while leader of the *Alliance des Bakongo*, Joseph Kasa-Vubu, became head of state. However, Congo's early days as a sovereign state were marred by political and social instability. The country went through a period commonly known as the 'Congo Crisis', which began with a mutiny by the armed forces on 5 July 1960 and ended with a military coup on 24 November 1965 led by Lieutenant General Joseph-Désiré Mobutu. It included, among other major events, the Kantanga and South Kasai secession attempts in several areas, particularly in eastern Congo, as well as the subsequent deployment of United Nations (UN) peacekeeping forces to restore order.

The Mobutu regime's 32-year rule was a military dictatorship and a system of absolute power and personal rule, during which Mobutu changed the name of the country from Democratic Republic of Congo to Zaire. Political pluralism was abolished and replaced with a single-party state characterised by violent repression of any form of political opposition. A dominant feature of Mobutu's rule was the 'institutionalisation' of corruption. As a result of increased internal and external pressures, Mobutu conceded in the late 1980s to end the one-party

system of government and to reintroduce multiparty democracy. The first transition to multiparty democracy formally began on 24 April 1990. A national conference known as the *Conférence Nationale Souveraine* was convened and held over close to two years, but did not lead to the establishment of a democratic order in the former Zaire.

Although presidential and legislative elections were scheduled to take place a number of times during the transition period, they were never held. The protracted transition placed the country's politics in a state of permanent crisis. This coincided with the crisis in the Great Lakes region that followed the 1994 genocide in Rwanda. By 1996 the civil war in neighbouring Rwanda had spilled over to the then Zaire. Rwandan Hutu militia forces commonly known as *Interahamwe* and troops from the *Forces Armées Rwandaises*, the former Rwandan army, were using Hutu refugee camps in eastern Zaire as bases for incursions into Rwanda. In October 1996 Rwandan Patriotic Army troops entered Zaire, backing a newly formed armed coalition – the *Alliance des forces Démocratiques pour la Libération du Congo-Zaire* (AFDL) led by the late Laurent Désiré Kabila's troops – with the military backing of Rwanda and Uganda. Kabila proclaimed himself president of the republic and renamed the country the Democratic Republic of Congo.

Despite the popular acclaim that greeted their accession to power, Kabila and his government did not meet the democratic aspirations of the majority of the Congolese people. At the same time, relations between Kabila and his erstwhile foreign backers deteriorated. It was against this backdrop that a second insurgency broke out in early August 1998 with the formation of a rebel group backed by Rwanda, the *Rassemblement Congolais pour la Démocratie* (RCD). In February 1999, Uganda backed the formation of another rebel group called the *Mouvement pour la Libération du Congo* (MLC). Other neighbouring states including Zimbabwe, Angola, Namibia and Chad intervened militarily to support the Kinshasa administration.

At this stage the DRC was partitioned de facto into three administrations: Laurent Kabila controlled much of western and central DRC including Kinshasa; the RCD was in charge of most of eastern DRC; and the MLC reigned in northern DRC. When Laurent Kabila was assassinated in January 2001, his son Joseph Kabila replaced him as head of state. The new president successfully negotiated the withdrawal of foreign forces occupying the eastern DRC and adopted a more conciliatory approach based on dialogue. In December 2002 the Pretoria Accord resulting from the Inter-Congolese Dialogue (ICD) held at Sun City in South Africa was signed by the government and all belligerent parties. The accord, known as the Global and All-Inclusive Agreement on the Transition, became the roadmap for the DRC's transition to a stable, peaceful and democratic state. It provided for political, military and economic power to be shared by the former government, the former rebel movements, civil society

and the non-armed opposition during a two-year transition, with two possible six-month extensions within which a referendum on the post-transition constitution and general elections were to be held.

Political system

Politics in the DRC takes place in the framework of a republic in transition from civil war to a semi-presidential democratic republic. On 18 and 19 December 2005, a successful nationwide referendum was held on the draft constitution which set the stage for elections in 2006. The voting process, though technically difficult due to the lack of infrastructure, was facilitated and organised by the CEI with support from MONUC. Early UN reports indicated that voting was for the most part peaceful, except for violence in many parts of the war-torn east and the Kasais.

Many Congolese complained, however, that the constitution was an ambiguous document and they were unaware of its contents. This is in large part due to the high rates of illiteracy in the country. However, interim President Kabila urged Congolese to vote 'Yes', saying that the constitution was the DRC's best hope for peace in the future. An impressive 25 million Congolese turned out for the two days of voting. According to results released in January 2006, the constitution was approved by 84% of voters. It also aimed to decentralise authority, dividing the vast nation into 25 semi-autonomous provinces drawn along ethnic and cultural lines.

The country's first democratic elections in four decades were held on 30 July 2006 with a run-off election between current President Kabila and his rival Bemba held on 29 October 2006. Polling was once again facilitated, but not run, by UN peacekeepers.

Post-election situation

After existing for three years (2003-06) in the interregnum between two constitutions, the DRC was now under the regime of the Constitution of the Third Republic. The constitution – adopted by referendum in 2005 and promulgated by President Joseph Kabila in February 2006 – established a decentralised semi-presidential republic, with a separation of powers between the three branches of government (executive, legislative and judicial) and a distribution of privileges between the central government and the provinces.

Executive branch

Following the July 2006 elections the DRC has been led by a semi-presidential, strongly decentralised state. The executive at the central level is divided between the president and a prime minister appointed by the former from the party with the majority of seats in parliament. The president appoints the government members (ministers) at the proposal of the prime minister. The president and the

government together have the charge of the executive. The prime minister and the government are responsible to the lower house of parliament, the National Assembly.

At provincial level, the provincial legislature (provincial assembly) elects a governor, and the governor with his/her government of up to ten ministers is in charge of the provincial executive. Some domains of government power are the exclusive provision of the province, and some are held concurrently with central government. This is, however, not a federal state but a decentralised one, as most domains of power are still vested in the central government. The governor is responsible to the provincial assembly.

Legislative branch

The parliament of the Third Republic is bicameral, with a National Assembly and a Senate. Members of the National Assembly – the lower but most powerful house – are elected by direct suffrage. Senators are elected by the legislatures of the 26 provinces.

Judicial branch

The judiciary is divided into three areas: the Appeal Court has jurisdiction over judicial matters; the Council of State has jurisdiction over administrative matters; and the Constitutional Court has jurisdiction over constitutional issues. They are supported by lower civilian and military courts and tribunals. Three members each of the Constitutional Court are appointed by the president, parliament and the judicial High Council. The latter is a body composed of the most senior members of the judiciary and has the power to nominate, promote, discipline and remove judges (other than Constitutional Court judges).

Administrative divisions

The administrative hierarchy in the DRC is as follows:

- Province (formerly *Région*)
  - ❏ *Mairies* (in urban areas)
    - Cities
      - Commune or incorporated grouping
        (formerly *zone urbaine* [urban area])
        - *Quartier* (neighbourhoods)

  - ❏ *Territoriale* (in rural areas)
    - District (formerly sub-region)
      - *Territoire* (formerly rural zone)
        - *Cité* (town)
          - *Quartier* (neighbourhoods)

> > • *Chefferie* (chiefdom formerly *collectivité chefferie*) or sector
> > > • *Groupement* (grouping)
> > > > • Village

- A province is led by a governor.
- A commune is led by a *bourgmestre* (mayor).
- A territory – generally named after its main town – is led by a territory administrator.
- A city is led by a mayor.
- A district is led by a district commissioner.

Decentralised administrative entities

The following entities have been decentralised: the province; the city; the territory; and the commune (in the case of the city of Kinshasa). Each province is divided into districts.

Provinces

Under the new constitution the following provincial divisions have been created: 25 provinces and a city* (*ville*): Bas-Uele; Équateur; Haut-Lomami; Haut-Katanga; Haut-Uele; Ituri; Kasaï; Kasaï oriental; Kongo central; Kwango; Kwilu; Lomami; Lualaba; Lulua; Mai-Ndombe; Maniema; Mongala; Nord-Kivu; Nord-Ubangi; Sankuru; Sud-Kivu; Sud-Ubangi; Tanganyika; Tshopo; Tshuapa; and Kinshasa.*

Socio-economic profile of the country

With a total land area of 2,344,885 km² and straddling the equator, the DRC is the third largest African country after Sudan and Algeria. Situated at the heart of the continent, the DRC is bordered by nine countries, namely Angola, Burundi, Central African Republic, Congo-Brazzaville, Rwanda, Sudan, Tanzania, Uganda and Zambia. The country's population is estimated at 60 million (in 2006) and is made up of as many as 250 ethno-linguistic groups. The DRC is endowed with tremendous natural resources and is drained by the Congo River and its many tributaries. The Congo River is the second longest river in Africa after the Nile, and is also the second in the world after the Amazon in terms of hydro-electric power potential.

The DRC has the second largest rainforest in the world. With 86 million hectares (215 million acres) covered by rainforests, the DRC accounts for over half the total remaining rainforests in the Central African region. Congolese forests are a vital resource, both for the Congolese people and the global environment. About 40 million rural Congolese depend on the forests for their food, income, energy, shelter, and medicinal and cultural needs. Indigenous groups, including the Pygmies, rely almost entirely on the forests. Described as the 'second lung' of

the planet for their ability to store carbon dioxide on a global scale, the Congolese forests play an important role in reducing the effects of climate change. The forests also harbour amazing animal and plant diversity including endemic species such as Bonobo chimpanzees and the Okapi, and have great potential for ecotourism.

THE ELECTORAL STRUCTURE

Legal framework

The electoral law of the DRC provides that the president shall be elected directly by universal suffrage. For a candidate to be elected president of the republic s/he must secure at least 50% plus one of the total valid votes cast. If no candidate receives an absolute majority of the valid votes in the first round, there is provision for a run-off between the two candidates with the highest number of votes.

The electoral law provides for a constituency-based electoral system with open lists of party and independent candidates for membership to the national and provincial assemblies. Voters can select their favourite candidates from a party's list or independent candidates. The alternative option of using closed lists, whereby votes can only be cast for parties rather than individuals, was not adopted. The 500 members of the National Assembly are elected by the electorate from 169 electoral districts. For the senatorial elections, a total of 108 senators are elected indirectly by the provincial assemblies. Each of the new 25 provincial assemblies elects four senators from within or outside the provincial assembly. The Kinshasa provincial assembly elects eight senators.

Recent elections and electoral history

The general elections held in the DRC on 30 July 2006 were the first multiparty elections in the country in 46 years. Voters went to the polls to elect both a new president of the republic and a new National Assembly, the lower house of parliament.

Over 25 million people registered to vote for the elections in a country where the exact population is unknown, but is likely to be in excess of 60 million. The Independent Electoral Commission (CEI or *La Commission Electorale Indépendante*) reported a voter turnout of 80%. Thirty-three candidates registered for the presidency and 9,000 for the 500 seats in the National Assembly.

The initial presidential favourites were Joseph Kabila (the incumbent) and Jean-Pierre Bemba, one of the four vice presidents. The polls were boycotted by veteran opposition leader Etienne Tshisekedi, who claimed that the voter registration system used could not be trusted. The international community donated US$460 million to fund the elections and deployed the world's largest UN peacekeeping operation, MONUC (which was already in the DRC to support the peace process), to help stabilise the electoral environment. While the election was conducted relatively peacefully, the collection of results was chaotic leading

to armed clashes and growing fears of instability. As a result, DRC election officials announced they would begin to release partial results earlier instead of only announcing the final count on 20 August.

First round presidential election results

On 20 August 2006, with almost all the votes from the country's 169 constituencies counted, the CEI released its full provisional presidential election results. These results showed that Kabila had won 44.81% of the vote, Bemba had won 20.03%, Gizenga had won 13%, Mobutu about 5% and Kashala around 4%. As no candidate obtained more than 50% of the vote, a run-off election was set for 29 October 2006.

Parliamentary results

The CEI postponed releasing the interim parliamentary results for several days after official sources had earlier indicated they would be released as early as 25 August. On 28 August 2006 the CEI began releasing the parliamentary results and by 4 September, of the 500 parliamentary seats released, the results showed Kabila had a strong lead with 45% of the seats to Bemba's 14%, the remaining going to other parties. On 8 September the CEI released the full results, revealing that no single party had gained the 251 seats needed to secure a majority. Kabila's People's Party for Reconstruction and Development (PPRD) won 111 seats, while Bemba's MLC won 64 seats.

Second round presidential election results

Voters went to the polls on 29 October 2006 to vote in a run-off election for the presidency and also to vote for provincial parliaments. The CEI released its full provisional results for the second round of presidential elections on 15 November 2006, indicating that Joseph Kabila had won. The results were, however, rejected by Bemba who claimed irregularities.

Supreme Court ruling

After gruelling court activities on 27 November 2006, the Supreme Court dismissed Bemba's challenge as 'unfounded' and confirmed that Kabila had won the election, stating that: 'Mr Kabila Kabange Joseph, is proclaimed president of the Democratic Republic of Congo, elected by absolute majority.'[2]

After being declared winner, Kabila hinted that Bemba would play a role in the new government, stating that 'the effort now must be nation building, it must be reconstruction. The government that will be put in place will be a government of coalition'.[3] Bemba, who boycotted the hearings after the Supreme Court refused to consider further challenges over alleged 'systematic cheating',[4] was not immediately available for comment. Bemba released a statement on 28 November 2006 saying that while he condemned the ruling, he accepted the results and was

prepared to lead a 'strong republican opposition in the interests of the nation'.[5] Kabila was sworn in as president on 6 December 2006.

The election management body

As provided by articles 154-160 of the Constitution of the Transition, chapters IV and V of the Global and Inclusive Agreement and ICD Resolution No DIC/CPJ/09 of 18 April 2002, the CEI is the body responsible for the preparation and organisation of both the constitutional referendum and elections in the DRC during the transition period.

Composition and functions

The composition and functions of the CEI are governed by Law No 04/009 of 5 June 2004, and the work of the commission is further defined by Law No 04/028 of 24 December 2004. The structure of the CEI at the national level comprises 21 members designated according to a quota agreed upon by all signatories of the ICD. Three members are drawn from each component (ex-government, the political opposition, the RCD and MLC) and two from the remaining entities that were parties to the ICD. The appointment of these members had to take into account women's representation – at least one representative from each component and entity must be a woman. According to articles 8 and 11 of Law No 04/009 of 5 June 2004, the tenure of the transitional CEI expired with the formal end of the transition.

The CEI has three main organs and an operations office (division):

- *The Plenary Assembly* is the policy-making and monitoring body made up of the CEI Bureau plus 13 additional members.
- *The Bureau* is the decision-making and management body, composed of eight members.
- *Specialised committees* are established on an ad hoc basis, each chaired by a member of the CEI Office, except for the president who assumes their overall coordination. There are seven committees each responsible for matters related to: civic and voter education; voter registration and candidate nomination; logistics and operations; electoral training; legal issues and election-related disputes; polling and compilation of results; and information, communications and public relations.
- *The National Office for Operations* is the implementing arm of the CEI and is headed by the Director of Operations. It is made up of the following departments and units: Coordination of Field Operations (Registration); National Processing Centre (*Centre National du Traitement* – CNT); Logistics; Legal; Education; Receipt and Processing of Candidates; Finance and Administration;

National Results Consolidation Centre; Technical Training; and Telecommunications.

The CEI Bureau comprises eight members with the following designations: president; first vice president; second vice president; third vice president; rapporteur; first deputy rapporteur; second deputy rapporteur; and third deputy rapporteur.

For elections, the CEI has 11 provincial offices each comprising eight members and 64 established liaison offices at local level throughout the country. To ensure effective coordination during elections, several coordination frameworks are established which may include government institutions, political parties, civil society organisations (CSOs) and international non-governmental organisations (NGOs).

The mission of the CEI is to prepare, manage and supervise, in an independent and neutral manner, the conduct of general elections in the DRC within the framework established by the post-transition constitution. In line with its mission, the CEI performs a number of specific tasks, such as:

- identifying and registering potential voters;
- compiling the voters' roll;
- conducting the polls;
- counting and announcing provisional results; and
- running civic and voter education programmes.

VOTER REGISTRATION

Legal framework, rules and regulations

Responsibility for organising and implementing voter registration is vested in the CEI by the following provisions:

- Resolution No DIC/CPJ/09 of 18 April 2002 of the ICD;
- Article 154 of the Constitution of the Transition; and
- CEI Organic Law No 04/009 of 5 June 2004.

Law No 04/028 of 24 December 2004 on the identification and registration of voters establishes the conditions under which the right of suffrage is allowed in the DRC. The double operation of identification and registration is compulsory for persons who qualify. To register as a voter one must:

- be a Congolese citizen;
- reside in the DRC during the registration process; and
- be 18 years old or older.

In articles 8 and 9 of the same law, the following categories of citizens are excluded from the registration process:

- Congolese nationals living abroad or physically absent from the national territory during the registration process.
- Congolese nationals serving in the military or police forces.
- People with a medically proven mental incapacity.
- People stripped of civic or political rights as a result of legal ruling.

Current or latest voter registration method

The registration method described here applies to that used for the 2005 voter registration exercise and also for the 2009 update of the voters' register.

The significant aspect of this method was the choice of a high-tech system for data collection and entry of registration data. The system captured and stored applicants' biographic and biometric data directly into a laptop computer as they were registered. Equipped with a portable printer, the system was also used in the field to print voter cards on the spot and to print a daily list of registered voters at the end of the day's registration. Each digital registration kit comprised a laptop computer, webcam, fingerprint scanner, colour inkjet printer, power pack (battery), portable generator (for areas without electricity) and carrying case.

Registration centres

For the 2005 voter registration exercise, 9,119 registration centres were used throughout the country to register 25,021,703 prospective voters. The registration centres later became polling centres, which hosted about 50,000 polling stations for the December 2005 referendum and the June 2006 presidential and parliamentary elections.

The basic point for registration is the registration centre, defined by law as an installation set aside for the operation of a registration activity. Registration centres are usually situated in schools or public and private places that have been hired or provided to the CEI free of charge for the period of the exercise.[6] Operations at the registration centres are delegated by the CEI through its representatives at grassroots level, namely: provincial offices, liaison offices, and territorial and community centres. Registration centres are not allowed to be set up in places of worship, on properties belonging to political parties and NGOs, in drinking places, police stations or military camps, schools or academies.[7]

Registration personnel

A registration centre is normally manned by four people, but to ensure operational efficiency the CEI decided to add an extra registration kit and an extra data entry

operator. Political party representatives (or observers), election observers and journalists who have been properly accredited by the CEI are allowed in the registration centres. The roles of the various registration personnel are described below:

- *The president* of the registration centre:
    – takes charge of the registration centre and all materials, equipment and documents found in the centre;
    – ensures proper application of identification and registration procedures;
    – ensures the issuance of duly signed photo laminated cards to registered voters;
    – maintains discipline and order at the registration centre and presides over meetings for mediation;
    – performs the opening and closing of the registration centre; and
    – performs the final closing of the registration centre at the end of the operation, and ensures that materials, equipment and official documents are kept safely until they are transferred to the liaison office.

- There are two *identification officials*, one of whom can play the role of a data entry operator. Their duties include the following:
    – The first official verifies an applicant's fingers for the presence or otherwise of a mark, checks the identity and qualification of the applicant and completes the application form.
    – The first official then transfers the completed application form to the data entry operator.
    – The second official laminates the voter's card and applies indelible ink to the left little finger of the registered voter.

- *The registration official* (data entry operator):
    – captures the required biographic and biometric information into the computer and prints the voter cards;
    – produces a daily list of registered voters at the registration centre for display;
    – archives data on to CD making two copies, one of which is transported to the National Processing Centre (CNT) in Kinshasa; and
    – arranges for equipment maintenance.

- *Political party observers:* Observers permitted at the registration

centres are representatives of only those political parties participating in the elections. A total of six observers for all participating parties are allowed in the centre at one time. In cases where the number exceeds six, the president of the centre organises a 30-minute rotation for each observer. The absence of observers does not invalidate the registration process. Observers:

- – are allowed to move around in the centre but cannot interfere with the registration process or perform any propaganda activities;
- – must be well informed of the regulations for holding elections in the DRC;
- – must themselves qualify as voters;
- – must treat all members of the centre with respect and courtesy; and
- – must carry identification cards issued by the CEI at the national, provincial or local level.

- *Registration observers:* A registration observer can be a Congolese national or foreigner from a local or international organisation recognised by the CEI. Observers must not supervise or be involved in the actual registration process but must simply follow the process as permitted by law and approved procedures. The objectives of their duties are to:
  - – guarantee integrity and transparency of the registration process;
  - – reduce the possibility of challenges to the final lists;
  - – encourage the population to fulfil their civic responsibilities and increase confidence in the democratic principles and institutions;
  - – reduce the risk of fraud; and
  - – contribute to the acceptance of the electoral lists.

- *Journalists:* Availability of information is essential for holding free, democratic and transparent elections. The media transmits electoral information and plays an important role in the electoral process. To achieve this, the media must:
  - – respect the laws of the country and the principles of press freedom;
  - – not have access to a registration centre without identification cards issued by the CEI at the national, provincial or local level;
  - – be neutral in the provision of information to voters;

- have the responsibility to encourage participation of the electorate in the electoral process;
- give out accurate and balanced reporting, backed by facts and figures;
- be circumspect in the use of technical terms, statistics and estimations; and
- not pose as members of the electoral commission, observers or any other person with the aim of getting information.

Technical personnel

Technical controllers are also involved in the registration process. They are responsible for supporting activities at the registration centres and are categorised according to their level of operation as technical controllers, technical supervisors and provincial technical supervisors.

Technical controllers cover six to seven registration centres and must know the exact locations of the registration centres as well as the personnel coming from that area. Technical controllers must:

- control the day to day activities of the centres;
- ensure progress of the work and assess the work of personnel at the centre;
- ensure the presence of party agents and despatch of CDs from the centres to the technical supervisors; and
- work with suppliers' technicians to repair faulty equipment and replace irreparable or stolen equipment.

Technical supervisors are responsible for the duties of five to seven technical controllers. They receive the CDs from the technical controllers and keep them at the liaison office, from where they are transferred to the provincial offices.

A provincial technical supervisor operates at the provincial level and reports to the chief of operations at the regional office.

Registration centre set up

A registration centre is usually located in an enclosed structure such as a room or hall. A queue of waiting applicants is formed outside the room about five metres away from the entrance to the room. Security personnel stand at the entrance to the room. They regulate the entry of applicants and ensure that no waiting applicant crosses the security line (five metres from the entrance) until it is his/her turn to enter.

Inside the room, registration staff are seated in a process-flow arrangement starting with the identification clerks at the first desk, followed by the data entry clerks, then the president of the centre and finally the laminating clerk at the

last desk. Registration and political party observers occupy a desk located a good distance from registration personnel where they can properly watch the process.

Registration process

The CEI's registration process can be broken down into two main activities, namely: a field operation (for data collection) which takes place at the registration centre; and a data centre operation (for data processing) which takes place at the CNT head office in Kinshasa.

Field operation

Opening of registration centres

Registration centres are open between 7:00 am and 6:00 pm but staff must be present an hour before opening to set up the registration kits according to the suppliers' instructions (i.e. installation and start-up of the kits, and calibration of the digital camera and fingerprint reader), display registration lists for the previous day, check that all staff are present, record the time of opening in the daily event log and prepare for the start of work.

Activities cover:

- verifying applicants' fingers (checking for indelible ink which would indicate that the applicant has already registered);
- identifying prospective voters and filling in their details on the official registration form;
- capturing data into the laptop computer;
- scanning applicants' fingerprints;
- photographing applicants using a digital camera;
- printing completed voter cards;
- signing of voter cards by the registration centre president;
- laminating voter cards;
- applying indelible ink on a voter's little finger;
- daily backup of registration data; and
- printing the daily list of registered voters.

Settlement of disputes

Displaying the daily list of registered voters at the centre allows for verification of the voters' list and for petitions to be made to the centre president. A petition can be made by anyone wishing to: challenge the inclusion of a name on the list; report the omission of a name on the list; correct the details of a voter on the list; or appeal against refusal of registration. Anyone who is not satisfied with a decision taken by the registration centre president regarding a petition can take it to the next level – that is, the peace tribunal or customary tribunal.

Closure of registration centre

Registration centres officially close at 5:00 pm, but usually stay open until the last applicant for the day is registered. The decisions taken by the president or by the tribunals on petitions for removal of persons from the list are entered onto the data entry forms by the operator.

The data entry operator copies the day's work on to a CD and labels it with the date, centre code and identification number of the kit. On the last day of the week the operator makes three backups of the week's data. The president keeps one copy of the backup CD and the remaining two are given to the technical supervisor who sends them to the liaison office. The CD is handed over to the centre president and it is filed together with the registration forms for the day.

The data entry operator prints a daily list of registered voters, which is given to the centre president to be displayed the following morning. The data entry operator undertakes the daily maintenance of the kit, which includes recharging the batteries, cleaning the fingerprint scanner and servicing the printer. The president of the centre ensures that the day's activity forms are duly completed, and with the assistance of the other staff sees to the proper storage of documents, materials and equipment as well as neatening the registration centre.

Data transfer to the National Processing Centre

Transfer of data from the registration centres to the CNT is done weekly; a copy of the week's backup CDs is sent from the liaison office to the CNT in Kinshasa.

Data centre operation

Data centre operation takes places at the CNT where registration data collected during the field operation is converted into final products – that is, the voters' register and related reports. The following steps describe key activities at the data centre:

- *Data retrieval:* Data is retrieved by copying the contents of the CDs on to the CNT computers.
- *Consolidation and cleaning:* Data belonging to individual registration centres is edited and merged according to registration centres.
- *De-duplication:* This involves identifying and removing multiple records (details) of the same voter. The process, commonly referred to as matching, is performed by special computers known as 'matching servers' and uses automated fingerprint identification system (AFIS) software. The matching process is the key functionality of the biometric system of identification. The CNT has no matching servers of its own. De-duplication of the 2005 voter registration data was outsourced to a foreign country service provider. The materials and time needed to complete this process effectively makes it the

most important and yet very expensive component of the biometric identification system.

- *Register production*: The cleaned and de-duplicated data is used to produce the provisional voters' register according to CEI policy. For the 2005 elections the final voters' register had all the relevant details except the photograph of the voter. The CEI intends to add voters' photographs to the register in the future.

DECISION-MAKING PROCESS FOR SELECTION OF THE VOTER REGISTRATION SYSTEM

Requirements and expectations influencing the choice of the current voter registration system

After 32 years of dictatorship and seven years of armed conflict, the DRC was a fragmented nation with no basic infrastructure or functioning judicial and administrative systems. Various peace summits held to bring peace and stability to the DCR all recommended that democratic elections should be preceded by voter registration in the shortest possible time.

Given an estimated population of about 60 million, 28 million people were expected to be registered as voters at the close to 9,100 registration centres. To undertake these electoral processes the country had to find solutions to numerous issues, including:

- the absence of a reliable electoral list or civil register and the absence of a documented methodology for voter registration;
- the lack of demographic data, with projections based only on the 1984 census figures (which were over 20 years old);
- the lack of trust by political actors due to the post-conflict situation;
- insecure borders and an influx of refugees escaping conflicts in neighbouring countries;
- large numbers of internally displaced persons;
- growing insecurity in some areas of the country; and
- the lack of basic infrastructure and access roads.

In this context, the voter registration method had to be:

- *inclusive* – to cover all eligible citizens living throughout the DRC;
- *exclusive* – to prevent the entry of ineligible persons on the voters' list;
- *timely* – to be able to deliver the electoral list and voter cards without derailing the electoral calendar;

- *reliable and versatile* – to deliver quality outputs and results notwithstanding the prevailing circumstances in the country;
- *accurate* – to capture accurately the details of voters and to assure the unique identification of each voter; and
- *transparent* – to have processes and procedures that could be understood and accepted by the major stakeholders.

Role of the EMB

Following provisions in both the transitional constitution (article 154) and the Organic Law of 5 June 2004 (No 04/009), the CEI is responsible for organising and implementing voter registration. By extension, the CEI is therefore responsible for selection of the voter registration system but with input from the Electoral Assistance Division of MONUC and APEC, which were set up to provide the CEI with technical advice and assistance on a daily basis. This advice and assistance is coordinated by a Technical Committee on Elections, on which members of MONUC, APEC and the CEI serve.

Criteria for selection of the system used

The criteria used for selecting the system were that it had to:

- have the capacity to register approximately 30 million prospective voters within four calendar months (June to October 2005);
- be capable of providing direct data capture and progressive compilation of the electoral file;
- be able to detect multiple registrations at both registration centre level and national level;
- be able to facilitate settlement of disputes at registration centre level;
- be capable of instantaneous issuance of voter cards; and
- be able to produce a list of registered voters at registration centre level.

Role of the international community and donors

After prolonged armed conflict in the DRC, the new political situation attracted substantial support for the holding of democratic elections. International support was coordinated through two principal contemporary forums, namely: the Technical Committee on Elections chaired jointly by MONUC and the CEI; and a Steering Committee for the CEI, made up of donors to the 'electoral basket fund'.

The Steering Committee was mandated to provide strategic guidance and to validate all major disbursement decisions taken on the electoral process. The international community and donors by their participation in the Steering Committee played an important role in the decisions taken by the CEI.

Role of technical assistance

Two technical assistance offices of the UN (MONUC and APEC) were set up permanently at the CEI premises, with technical assistants of varying expertise working at two levels of the CEI's operational structure, namely: consultation and implementation. At the consultation level, joint technical assistance teams (MONUC-APEC) worked on sub-committees for: registration of voters and candidates; legal affairs; distribution of ballots and collection of results; operational logistics; civic and electoral education; communications and public relations; and electoral training.

At the implementation level, joint assistance teams worked with the various departments and units under the National Office for Operations at the CEI headquarters.

Vendors

Almost all the goods and services used for the 2005/2006 electoral process in the DRC were obtained through vigorous bidding processes that involved national and international vendors. The participation of vendors in the bidding process was crucial to ensure transparency in the selection process.

The major players were Sagem and Zetes, which contested in the bid to supply the biometric data capture equipment. Zetes won the bid to supply 10,000 registration kits, to provide training on the equipment and to give technical assistance throughout the registration period. Sagem won the bid to remove duplicates (de-duplication) from the registration database at its AFIS installation in France.

According to sources close to the CEI, the CEI and its technical advisers chose to outsource de-duplication as opposed to purchasing its own central AFIS system owing to time and cost constraints. The cost of a central AFIS system with enough capacity to handle the DRC voters' data was estimated at around 25 million euros, excluding operating costs. The decision to outsource the work (which involved the handling of sensitive data on DRC citizens) did not go down well with some stakeholders in the political arena.

Funding and procurement of goods and services

In June 2004, donors approved an estimated budget of some US$285 million to support the electoral process in the DRC. The UNDP established a special project to help mobilise resources and manage donor contributions. The DRC government's initial contribution of US$20 million constituted about 7% of the estimated budget. By the end of the entire electoral process a staggering US$546 million had been contributed. A breakdown of the figure is illustrated in Table 2. All goods and services were procured by the Danish-based Inter-Agency Procurement Services (IAPSO), a division of the UNDP. Procurement was done through a bidding process that was supervised and coordinated by IAPSO.

Table 2: A breakdown of contributions by activity

	US$ million
Support for the Electoral Process in Congo (APEC)	283
Logistics	100
Security (electoral)	58,6
Contribution of government (2003 to November 2006)	48,5
Other interventions	53,7
Electoral disputes	1,2
Gender and elections	1,2
Total	**546,2**

Acquisition costs

The materials acquired for the entire voter registration exercise included both field operation equipment and data centre operation equipment. The costs associated here are detailed below.

- *Field operation equipment:* The cost of acquisition of 10,000 registration kits and their transportation by air from Brussels to Kinshasa was US$40,16 million. Each kit comprised:
    - a laptop computer;
    - 50 blank CDs;
    - a webcam;
    - a colour printer (with ink cartridges to print 4,000 voter cards);
    - 4,000 blank cards for printing voter cards;
    - a fingerprint scanner;
    - power packs;
    - portable generators (capable of charging power packs fully in six hours);
    - a carrying case (capable of containing all materials except the generator); and
    - integrated data capture software for:
        - data entry of biometric and administrative data;
        - automatic generation of polling stations;
        - printing of electoral lists and voter cards;
        - processing of challenges;
        - printing of various statistical reports;

  ❍ transferring data on to CD; and
  ❍ detection of duplicates at registration centre level.

- *Data centre equipment:* The CNT could provide no definite figure indicating the costs of materials and equipment. The only indication was an amount stated for the production of the national voters' register at a total cost of US$3 million. Since all the processes (post field registration) that led to the production of the national voters' register were undertaken at the data centre, the US$3 million can be attributed to the acquisition of equipment installed at the data centre which included:
  - a local area network with six servers (connecting all equipment in CEI offices and the CNT);
  - 150 PC workstations;
  - data servers; and
  - a document printing unit (with six high-speed laser printers).

Operation costs

A total cost of US$58,068,057 was spent on operations. See Table 3 for details.

Table 3: Breakdown of operation costs for voter registration

Cost item	US$
Registration personnel	28,756,000
Training, electoral education	9,262,210
Transportation of materials and staff	10,242,560
Storage of materials	605,100
Incidental expenditure	9,202,187
Total	**58,068,057**

Maintenance and upgrading costs

Information on maintenance and upgrading costs could not be sourced from the CEI or MONUC. For the purpose of this study an attempt will therefore be made to use standard maintenance practices and upgrading methods to get some cost estimates.

Maintenance costs

In order to avoid the use of complex accounting formulas, most institutions base

their maintenance contracts for information and communication technology (ICT) equipment on either the 'on-call' method or the 'comprehensive' method. The former uses fixed charges while the latter is based on percentages of the initial cost of the equipment per annum. For the purpose of estimation we will adopt the comprehensive maintenance approach because it is easier to compute than on-call maintenance (which takes into account variables such as the cost of spare parts, man hours, etc.).

Comprehensive maintenance percentages range between 5% and 15% depending on the class of equipment (class A or class B). The service is applied quarterly.

Class 'A' equipment (referred to as 'mission critical equipment') usually attracts maintenance rates between 10% and 15%. Examples of class 'A' equipment are: database servers and network servers; and (AFIS) matching servers, image servers and other application-specific servers.

Class 'B' equipment (known as 'office or desktop equipment') attracts rates between 5% and 10% and includes equipment such as: biometric registration kits; desktop computers and laptops; desktop printers and UPSs; and other desktop computer-related accessories.

Using the lower rates in both classes, the maintenance costs for data centre equipment and field operation equipment (registration equipment) would be as follows:

- Data centre equipment (class A) 10% of US$3 million which equals US$300,000 per annum.
- Registration equipment (class B) 5% of US$40,160,000, which equals US$2,008,000 per annum.

From the above computation, the maintenance costs for the registration equipment is expensive using the comprehensive method. In such situations, the on-call maintenance method is preferred because the registration kits, unlike the data centre equipment, are not in constant use but are packed and stored immediately after an exercise until the next registration exercise (four years in the case of the DRC). In such a situation, the kits could be serviced once, re-packed and properly stored immediately after the exercise and then serviced again just before usage. This method obviously would be less costly than comprehensive maintenance.

Upgrading costs

Upgrading methods are generally contained in the ICT policy of an organisation. In exceptional cases, upgrading is based on the advice of the vendor or service provider organisation. For the two sets of equipment operated by the CEI, a likely upgrading method would be:

- *Progressive upgrading:* Progressive upgrading would be suitable for the data centre equipment in which the system capacity (hardware and software licenses) is upgraded with the growth of the databases or after the addition of new applications or the release of new versions of system software. This type of upgrading is not expensive and a yearly or two yearly budget of US$150,000-250,000 would be a likely upgrading cost.
- *Upgrading by replacement:* Losses due to damage or pilferage are not uncommon in a massive exercise such as voter registration. In order to keep a good quantity of the registration kits in working order a replacement type of upgrade policy is expected. By this, lost or damaged kits and accessories are replaced periodically. Since the registration kits only need to capture data and transfer this on to CD, the requirement to upgrade software or increase the internal storage capacity of the kits may not be frequent or even necessary – unless there were problems with the kits during their first usage which had to be fixed. A replacement factor of 2.5% of equipment population (2.5% x 10,000 = 250 kits) bi-annually is a likely method of replacement.

SYSTEM IN PRACTICE

An overview of the system in practice

The system used for the 2005 voter registration exercise in the DRC was based on the fixed centre (location) form of registration, whereby applicants present themselves at a registration centre to be registered as opposed to door-to-door registration. The former is the preferred method in most jurisdictions because it facilitates identification and easy access to voters when the same location is used as a polling station for elections. There have been no new registrations since the 2005 mass registration exercise, except in 2009 ostensibly in preparation for the local level elections scheduled before the general elections in 2011. If this proves successful, the current voters' register could form the basis of a permanent voters' register system with periodic updating schemes.

Transparency of the process

Registration centres were situated at schools and common public places, making the registration process accessible and conspicuous to the wider public. In addition, party representatives, observers and journalists who were accredited by the CEI were present during registration, contributing to the openness of the process. According to a cross-section of voters and international community observers interviewed by the researchers at a registration centre for the revision of the voters' register in August 2009: 'Posting the daily list of registered voters

(which has the photographs and details of voters) contributes a great deal to the transparency of the processes.'[8]

Understanding, acceptance and trust in the system

The registration exercise was rejected by one of the main opposition political parties, which encouraged its supporters to boycott the exercise on the grounds that insufficient consultation had been undertaken in the selection of the methodology employed. The party and others that shared the same sentiments believed that since the DRC has no reliable population statistics (the last population census was done in 1984), there was no basis on which the registration exercise could have been properly organised and no means by which the outcome could be validated. They called for holding a population census before voter registration. The CEI and its donor partners – who were keeping strictly to the tenets of the transitional arrangement – believed that 'a combination of census and voter registration would throw the already tight electoral timetable out of gear and would require a budget that the current funding portfolio would not be able to contain'.[9]

Civil society groups that were able to observe the registration exercise in most parts of the country believed that the system was able to regulate multiple registrations but doubted whether the registration exercise really captured the exact number of qualified voters. They argued that the number of registration kits bought was too small in relation to the land size and population of the DRC. They believed that cheaper systems were available which could do the job just as well, but failed to give concrete examples of the systems they were referring to.

A Catholic parish official who was involved in the CEI public awareness programmes with a civil society group explained how a blend of the new computerised system and an indigenous parish manual registration system (the new system for urban and the parish system for peri-urban and rural areas) could have improved the effectiveness of the exercise. Some party officials we met with doubted whether the registration kits were new machines because the breakdown rate was so high.

Accessibility and provisions for voters with special needs

In general, access to the registration centres was problematic. It was difficult for a country as large as the DRC and with such a degraded road infrastructure to distribute 9,000 registration locations evenly and centrally to all population areas. In most cases prospective voters had to travel more than the universally accepted distance of three to five kilometres, while in areas designated as remote or 'difficult', applicants had to travel more than 20 kilometres to the nearest registration centre.

Locations and structures selected as registration centres could largely be described as accessible for persons with special needs. For example, only the

ground floor of schools was used for registration so that people with physical disabilities did not have to navigate stairs. For a large country with a population of over 60 million, it was not difficult to find 9,000 locations that could meet the needs of physically challenged persons.

Publication and review of the voters' roll

The procedure adopted for publication and review of the voters' roll was based on the criteria used in the selection of the system, which required that the system had to produce a daily list of registered voters at each registration centre. The president of the registration centre displayed the list at the centre for seven days for review by the general public. During this period the president received challenges and requests for amendments vis-à-vis the displayed lists. Amendments that were approved by the president (for corrections, insertions or deletions) were recorded on the appropriate data entry form and captured into the system by the data entry operator. In the case of challenges, decisions were made by the registration centre president or peace tribunal. The national voters' lists produced centrally at the CNT were not displayed.

Problems encountered and solutions found

Voter registration in the DRC obviously faced several anomalies and difficulties given the magnitude of the operation and the sophisticated equipment involved. The challenges noted by the research team can be categorised, among others, as system, procedural, and logistics or operational challenges.

System challenges

- *Inadequate technical skills:* Use of the registration kits required high-tech skills and these were not easily available in most parts of the country. Personnel mainly from the big cities were therefore required to work in different parts of the country, which had cost and logistical implications.
- *Software design:* The design of the software was such that the type and number of an identification document were captured when entering voters' details into the system. Applicants without any acceptable identification documents therefore had to apply for such (*piece d'identite*) from the local government offices before they were registered. This problem was common across all registration process zones and created crowding and long delays in the delivery of services.
- *New, unique national ID number:* The system was designed to generate a new, unique national ID number that was mandatory before entry of a voter's details. Because the system was not interconnected and some kits were reused without being properly reinitialised, some new

national ID numbers were not unique while others were incorrectly generated. Another issue was the length of the ID number: the software had difficulty handling the numbers after 6,300 registrations. As a result the software had to be modified to accept long national ID numbers and this delayed the registration process.

- *Data recording:* CD-ROMs – a relatively low-tech and durable medium – were used for the transmission of data. Occasionally, however, the process resulted in defective copies or logistical problems as some CDs never made it to their destinations. This necessitated the creation of several backups of the same data, which was redundant and slowed down the system.

- *Inadequate system capacity:* Due to the absence of centralised fingerprint matching machines at the CNT, voters' data was not analysed for duplicates in-house. As discussed earlier, a central AFIS system was not acquired for the exercise, which meant that the activity had to be undertaken abroad.

Procedural challenges

Procedural challenges were noted mainly in the registration procedures. Officials had to redo tasks that were faulty and in some cases non-performing officials were replaced. Some of the challenges were in the following areas:

- *System initialisation:* The registration kits had to be initialised before re-use in another area. Registration was delayed in cases where this step was omitted since the problem had to be fixed.

- *Voter authentication:* There were cases where the identification official did not check an applicant's finger for the presence of indelible ink before processing him/her. There were also cases where the voter was incorrectly marked with indelible ink by the last official.

- *Multiple filling out of registration forms:* There were cases where the identification official filled out more than one registration form for one voter.

- *Incorrect fingerprint capture:* There were cases where the data entry operator fingerprinted the incorrect fingers.

- *ID card details:* There were cases where the president of the registration centre did not check the details on the voter card against the relevant registration form before signing the card.

- *Daily list:* There were cases where the daily list of registered voters was not displayed. And where these were displayed, voters often failed to check their contents.

Logistical and operational challenges
- *Transportation plan:* There were challenges when it came to transporting the heavy kits around the country. The CEI-MONUC plan was limited to drop zones that were not close to the registration centres. This delayed the start of operations in certain areas and meant that some equipment was mishandled. Emergency management was faced with procedural constraints by the MONUC-APEC project.
- *Control and supervision:* Technical controllers and supervisors did not do the necessary verifications and spot checks. They also could not control the movement of applicants who wanted to get their voter cards immediately and therefore followed the registration teams.
- *Administrative:* Registration centres were not proportionately distributed. There were no existing demarcation boundaries so some groupings (villages, localities) which should have had registration centres did not have any.

Solutions
- For problems associated with software design, modifications were made as and when the problems were discovered.
- Although the cascading method adopted for the voter registration exercise delayed the process, it facilitated the resolution of most of the procedural, logistical and operational problems listed. The cascading method of registration made it possible to analyse and solve problems encountered in one registration zone, and if these reoccurred in another zone they could be handled better.

Voter registration personnel

Voter registration personnel comprised two categories: registration centre personnel; and technical support personnel.

Registration centre personnel

Four registration officials were responsible for the registration activity, namely:

- *the president* of the registration centre who oversaw the centre;
- *two identification officials:* The first official interviewed applicants and completed their application forms, while the second official laminated the voter cards and marked the applicants' fingers; and
- *the registration official* (data entry operator) who operated the registration kit and printed the voter cards and voters' lists for the centre.

Technical personnel

The technical controllers were responsible for supporting the activities of the registration centres and were categorised depending on their level of operation as: technical controllers; technical supervisors; and provincial technical supervisors.

- *Technical controllers* supported the day to day activities of six or seven registration centres.
- *Technical supervisors* were responsible for the activities of five to seven technical controllers.
- *Provincial technical supervisors* operated at the provincial level and reported to the chief of operations at the provincial office.

Local and external experts

The CEI made use of some local experts in such areas as communications and education. Most local staff employed permanently as heads of units and departments at the national office are professionals in their disciplines and therefore have adequate expertise for the jobs they were assigned to.

The use and role of external experts changed after the elections. Before and during the elections, two offices of the UN (MONUC and APEC) were set up at the CEI premises and expatriate technical experts worked at the consultation and implementation levels of the CEI's operational structure.

At the consultation level, technical experts from MONUC-APEC served on sub-committees for: registration of voters and candidates; legal affairs; distribution of ballots and collection of results; operational logistics; civic and electoral education; communications and public relations; and electoral training.

At the implementation level, MONUC-APEC technical experts were attached to the following departments and units at the National Office for Operations: Coordination of Field Operations (Registration); Logistics; Education; Technical Training; Legal; Receipt and Processing of Candidates; and Communication.

A team of six external experts worked with local counterparts at the CNT in various ICT disciplines including: hardware and software support; application software development and maintenance; computer training and user support.

With elections over (four years at the time of this publication) the CEI has done away with most local and external experts, or their responsibilities. Some technical experts are, however, still involved with the CNT.

Training of registration personnel for fieldwork

A cascade method was used for training registration personnel. Training was organised at four levels:

- *National level:* National trainers were trained by the national technical supervisors who, in collaboration with the equipment suppliers, developed a manual for registration officials.
- *Provincial level:* Training here was executed by national trainers with assistance from the suppliers' technical trainers. They trained the provincial technical supervisors.
- *Liaison office level:* Training was executed by the provincial technical supervisors and they trained the technical supervisors and the technical controllers.
- *Grassroots level:* This training was organised at locations (at sector or community level) for registration officials from five to seven registration centres. The training was facilitated by the technical controllers and supervised by the technical supervisors.

Supervision and control structures

Control and supervision are tasks and mechanisms put in place to ensure proper execution of voter registration activities and interactions between the different operational structures. The goal of control and supervision is to see to it that field personnel observe and apply strictly the instructions contained in the operational guide for voter registration.

Structures

Control and supervision were applied:

- in the registration centres at sector and community level;
- in the liaison offices at territory and town level;
- in the provincial offices; and
- at the National Office for Operations and the Special Commission on Voter and Candidate Registration.

Functionaries

Control and supervision were implemented through:

- the president of a registration centre in a sector or community who supervised the work of the registration officers and data entry operator;
- the territorial technical controller based at the headquarters of a sector or community who supervised the work of the registration centre presidents under his/her authority;
- the provincial technical controller based at the territory or town level who supervised the work of territorial technical controllers under his/her authority;

- the national technical controller based at the provincial headquarters who provided technical support at the Provincial Office for Operations and supervised the provincial technical controllers under his/her authority;
- the technical coordinator of field operations as well as the technical unit coordinators based at the National Office for Operations. They supervised the work of all the national technical controllers according to the responsibilities of each unit;
- the director of the National Office for Operations based at the CEI headquarters. S/he supervised the work of the technical coordinator of field operations and the technical unit coordinators; and
- the CEI special commissions based at the CEI headquarters. According to their responsibilities they supervised the work of the director of the National Office for Operations and reported to the CEI Bureau.

Role of information and communication technology

ICT plays a significant role in the CEI's operations and administration, and in particular voter registration due to the sheer volume of the data involved.

From the registration of voters in the field to the final production of the voters' register, ICT was employed in different applications in the DRC exercise to achieve efficiency and effectiveness in the delivery of services and results. In the day-to-day administration of the CEI, all offices were equipped with ICT equipment to facilitate desktop tasks, monitor field activities and support intra-organisational communication.

The CNT is the ICT hub of the CEI. The CNT operates under the National Office for Operations and is charged principally with the processing and storage of election-related files on voters, candidates, registration centres, polling stations, election results, electoral staff and other data.

The CNT's activities include:

- creation and management of the national electoral database;
- production and updating of the voters' register;
- computerised registration and processing of candidates for different elections;
- generation of polling stations;
- management of election results;
- production of replacement voter cards; and
- maintenance of the CEI's ICT equipment and the provision of user support.

Material resources at the CNT include: a local-area network with six fileservers that link all equipment at the CNT and offices at the CEI; 150 networked computers; several storage units with a total capacity of 30 terabytes; and a printing facility with six high-speed printers.

CNT personnel comprise: a directorate (2 members); operations (1); application developers (6); database administrators (3); network administrators (2); technical support (6); logistics (1); administration and secretariat (3); and data entry pool (100 data entry clerks and supervisors).

Data collection

Data collection was fully computerised using a high-tech, biometric data capture system. Personnel needed extra skills (in addition to keyboarding knowledge) to operate the different pieces of equipment, which were combined to:

- capture a voter's biographic data (from the registration form) using a laptop computer;
- photograph a voter using a webcam (a type of digital camera); and
- capture fingerprints (of two fingers) using a fingerprint scanner.

The data was then written on to CD for transportation to the CNT in Kinshasa. The use of inexpensive CDs (as opposed to using flash drives and external portable drives) as an external data transfer medium could be a cost-effective approach to the retrieval of data from the kits; however, the high rate of defective outcomes required the creation of several backup discs, which slowed down the process.

Transmission of data

Transmission of data from the field to the CNT for processing was done manually and not by use of ICT. A system of physical transmission was put in place whereby the daily and weekly CDs were physically moved by technical controllers to the liaison offices. The CDs were then transported from the liaison offices through regional offices to the CNT on a weekly basis. Once at the CNT, CDs were subjected to administrative processes before they were finally copied to the voter register database. The use of CDs to transmit data occasionally resulted in logistical problems: some CDs never made it to their decentralised collection points or to the final destination.

Review and verification of data

Review of voter registration data is generally done through the production of voters' lists, which are then displayed for verification by the general public. After verification, requests for changes are applied to the data. A common practice internationally is to produce a provisional national voters' list after registration is closed and the data has been cleaned and consolidated centrally.

The CEI adopted a different approach for the 2005 voter registration: daily lists were produced on the spot and displayed for seven days at each registration centre. During the display period, voters and the general public could verify and make claims for changes to the data at the centres.

Role of civic and voter education in the registration process

Civic and voter education is essential for creating an environment conducive to the holding of free, fair and credible elections. Article 7 of the CEI Organic Law states that 'the commission is responsible for implementing and coordinating voter information programmes and civic education campaigns'.

In November 2004, the CEI signed a partnership agreement with national and international CSOs for the design and implementation of civic and electoral education programmes. NGOs and faith-based organisations, trade unions, youth and women's groups, as well as human rights associations were involved in the process. During a meeting with the chairperson of the Peace and Justice Commission at the Catholic Inter-Diocesan Centre in Kinshasa, the researchers received a good account of how the centre had provided both human and material resources for the civic and voter education programmes covering voter registration, the referendum and the elections.

Message and its effectiveness

Samples of the educational material used for the 2005 registration and newer ones for the 2009 revision exercise were available at the Education ('Awareness') Unit – a technical arm of the CEI Special Commission on Civic and Voter Education. A flier used in the awareness programmes featured over 15 questions and answers on the registration exercise dealing with such issues as: the registration law and the objective of the exercise; places where registration would take place; days and hours when centres were opened or closed; which documents to bring in order to register; and the do's and don'ts for officials and applicants.

Role of different stakeholders in the registration process

A number of CSOs and NGOs were heavily involved in the CEI's activities and the electoral process in general. Their main areas of operation were in providing support for CEI programmes, public education and awareness programmes and as observers at registration centres.

CSOs and NGOs

The researchers met with the following local CSOs: *Ligue National pour les Elections Libres et Transparentes* (Linelit); *Réseau National d'Observation des Elections* (Renosec); the Southern African Development Community Youth Movement; *Réseau des Associations Congolaises des Jeunes Contre le SIDA* (Racoj); and the Peace and Justice Commission of the Catholic Inter-Diocesan Centre.

Political parties

In a multiparty context, political parties are responsible for making the electorate and party supporters in particular aware of the issues at stake, as well as to secure the support of the citizens for their policies and programmes – and the starting point for this is voter registration. Two opposition party representatives interviewed acknowledged that the civic education programme run prior to and during the registration process was not much of a success, and that the parties could not play their role well due to lack of financial resources. Some of the activities they took part in included:

- placing representatives (party observers) at registration centres;
- taking part in discussions concerning the registration process; and
- working on special committees set up by the CEI.

The researchers met with the Congolese Assembly for National Democracy (*Rassemblement Congolais pour la Démocratie Nationale* – RCDN) and the Union for Democracy and Social Progress (*Union pour la Démocratie et la Progrès Social* – UDPS).

Media

The media were involved in different roles including:

- public awareness outreach programmes;
- publicity (print and electronic) for the registration process;
- discussion points on the electronic media; and
- the dissemination of important notices from the CEI to the public.

A watchdog organisation, the Media High Authority, was formed to regulate and monitor the activities of the media.

Post-election use

System updates

The law provides for the voter registration data to be handed to the government after the elections. A proposed plan to expand the use of the centralised database at the CEI after the elections is being considered. The proposed plan would involve:

- upgrading the capacity of the CNT to a national data centre for use by: the CEI to produce electoral registers and voters' lists; and the Ministry of Interior to produce a national registry;
- updating of system software and the development of new

applications for the national registry to be used for: producing national identity cards; issuing passports; and implementing social security; and

- allowing the national register data to be used by other clients such as the Ministry of Finance, Ministry of Justice, police and banks.

Updating of the data
Article 38 of Law No 04/028 of 24 December 2004 covering the identification and registration of voters stipulates that periodically (at specific times determined by the CEI), the electoral list should be updated in order to:

- register a citizen who has reached voting age;
- reinstall a citizen who has regained his/her electoral rights which were lost due to disqualification by the registration laws;
- accommodate a registered citizen who has moved, has transferred his/her vote or was sick during the last registration; and
- remove from the list a registered citizen who is now deceased.

2009 voter register update
Around the period of this study in July 2009, the CEI was updating the register to include citizens who had reached voting age since the last registration in 2005 and may be qualified to vote in the upcoming local level elections. The spectacle of events that the research team witnessed in Kinshasa challenges the sustainability of the registration system currently in use. Some observations are outlined below.

- The number of registration centres was reduced drastically, perhaps in proportion to the expected number of voters to be registered in a revision exercise. This resulted in prospective voters having to travel even farther to access a registration team or centre than in the main registration exercise.
- Some laptop computers had been lost or stolen during the previous registration exercise. These had not been replaced and contributed to the shortage of registration kits for the exercise.
- At one registration centre where four registration teams and kits were located in a large room, two teams' kits had broken down and they were waiting for a local technician to come and fix the problem. Presumably (and as one registration supervisor attempted to justify) the registration teams had been paired so that they could act as a backup for each other. This was quite an expensive procedure which, while giving comfort to the operators, meant that applicants had to travel to a single centre no matter the distance from their homes.

- There were quite large crowds almost everywhere in the capital city, which brought into question whether the previous exercise achieved the expected coverage in those areas. If that was not the case then this indicated that most applicants were already registered in the last exercise but were applying for new registration for other reasons.
- The researcher was not able to verify how the de-duplication was going to be done for the exercise, but the possible multiple registrations that the above situation portended needed a centralised AFIS at the CNT.
- The exercise was postponed on several occasions due to unresolved logistics and support issues.
- The original software on the kits was apparently designed to capture data for a one-off registration and therefore had to be modified, at some cost, to be used for the second exercise.

Transferability of data to other voter registration systems

The CEI voter data is transferable across voter registration systems because it was built on multi-platform architectures. Both the front-end (data capture) and back-end (database) systems at the CNT were developed to run on Oracle, which has an open system architecture.

Capacity building and technological knowledge transfer to the EMB

For a short period after the 2006 elections, the CEI still had some aspects of its technical assistance structures in place. According to CEI president Abbe Apollinaire Muholongu Malu Malu: 'The role of the technical assistants engaged with the CEI has changed from electoral process support to electoral capacity building'.[10] To give substance to the programme the technical assistance office at the CEI originally referred to as APEC (Support for the Electoral Process in the DRC) was changed after the elections to PACE (Project to Support Electoral Capacity). The objective of that programme is primarily capacity building and technological knowledge transfer.

The CNT (the ICT hub of the CEI) has benefited from having expatriate ICT professionals at the data centre. One local ICT staff member who gained substantial on-the-job skills has been employed and seconded out of the country by one of the foreign companies. This underscores the level of knowledge transfer to the local ICT staff at the CEI.

In the area of voter registration, however, it is doubtful whether the skills and capacity gained could free the CEI of future dependency on external technical support. The job was enormous using predominantly materials whose parts could not be produced locally.

Voter registry and civil registry

Possible synergy effects

As indicated earlier, one of the CEI's planned post-election uses of the voter registration system is to upgrade the facility to cater for a national registry (to produce a civil register). This is possible since the difference between the two registries is the population size to be registered: the civil registry covers all age groups while the voter registry is limited to citizens of voting age. The possibility of using the same facility for the voter register and the civil register would result in cost savings for the DRC.

Possible constraints for integration of both systems

Issues likely to come up when integrating the two systems include the following:

- *Ownership:* Who owns the integrated system (which organisation controls it)?
- *System integrity:* Who is responsible for the accuracy of the voters' data and ensuring it remains current?
- *Executive influence:* Who approves the budget to support the facility?
- *Personnel impartiality:* How can personnel impartiality be assured?
- *Party participation:* Will political parties have a say in the activities of the facility?
- *Possible legal violations:* The situation of asking the EMB to cede or share part of its authority or responsibility with another institution in the discharge of its electoral duties.

ANALYSIS, EVALUATION AND RECOMMENDATIONS

Effectiveness of the system

The direct data entry (DDE) procedure used was expected to ensure that both the entry and editing of data were localised in order to enhance the speed and accuracy of data capture and the correction of errors. The success of this expectation is difficult to evaluate given the many operational and logistical problems encountered during the exercise which might have eroded these gains.

The use of biometric identification was meant to control or check illegal registrations, mostly multiple registrations.

Factors affecting the effectiveness of voter registration systems

Table 4 analyses the effectiveness and costs of various computerised voter registration systems according to a set of factors. The following are some of the common computerised systems used for mass voter registration in the sub-region:

- *Manual data entry:* Data is collected on forms and keyed in at a central site.
- *DDE:* Data is collected on forms and keyed in simultaneously on site.
- *Scanning data entry:* Data is collected on forms and scanned at a central site.
- *DDE with AFIS:* Data, photographs and fingerprints are collected and entered into the system on site.
- *Scanning data entry with AFIS:* Data, photographs and fingerprints are collected on forms and entered at a central site.

Table 4: Effectiveness and costs of various computerised voter registration systems

Factor	Manual data entry	Scanning data entry	Scanning with AFIS	Direct data entry	Direct data entry with AFIS
Initial costs	Very low	Low	High	High	Very high
Recurrent costs	Nil	Medium	High	High	Very high
Accuracy level	Low	Very high	Very high	Medium	Medium
De-duplication	Nil	Nil	High	Nil	High
Accessibility to voter registration	Very high	Very high	Very high	Very low	Very low
Comprehensiveness	Very high	Very High	High	Low	Very low
Speed of data collection	Very high	Very high	High	Low	Very low
Speed of data entry	Very low	Very high	Very high	High	High
Sustainability	Very high	Medium	Medium	Low	Very low
Suitability to the environment	Very high	High	Medium	Medium	Medium
Admin. feasibility	High	High	High	Low	Very low

Table 4 shows that DDE with AFIS – the system adopted for voter registration in the DRC – scores the worst in all categories except de-duplication, accuracy and speed of data entry, while scanning proved to be the best all round system for voter registration. The grading for DDE with AFIS is explained as follows:

- The system rated the highest in initial costs of acquisition and deployment.

- The system rated the highest also in terms of maintenance and equipment replacement costs.
- Accuracy is not impressive because the system is too human dependent and susceptible to omissions, data transfer and transmission errors usually caused by the operatives.
- De-duplication, which is the main reason for using biometrics, did not score much following an under 1% duplicate detection rate in the DRC voter registration exercise. De-duplication was not regarded as a key threat to the exercise.
- Accessibility to voter registration was very low because voters had to travel long distances to be registered. There were not enough kits to reach everyone due to cost implications.
- Comprehensiveness was very low because the number of kits was low and their very nature (bulky but fragile) prevented penetration to remote and difficult areas.
- Speed of data entry, although rated high, did not influence the exercise because of other militating factors such as error due to extreme fatigue of the travelling operatives.
- Sustainability rated very low due to the high rate of recurring costs.
- Suitability to the environment was not impressive since it involved moving bulky and fragile material across all manner of environmental conditions, which can affect the performance of the equipment.
- Administrative feasibility was low because coping with the management and control of equipment and operators, as well as other logistical needs including storage after usage, may prove daunting and unaffordable to many EMBs.

Quality of data

One way that quality was assured by the CEI system was the on-the-spot display of the voters' list whereby people were able to request that corrections be made a day or two after they had registered. It was not certain whether all possible errors were eliminated by the use of on-the-spot display of the voters' list. This is because after consolidation and cleaning of the registration data at the CNT, there was no national display of the list due to time limitations, among other constraints.

The CEI claimed that about 292,353 duplicate registrations were detected by the biometric system but that this figure was low considering that over 28 million voters were registered, noting that the process was constantly flooded with irregularities including multiple registrations.

The data that was finally transmitted to the CNT on CDs was well protected by data encryption, making hacking of the data very difficult.

Expectations versus outcome

The initial figure of 25,712,552 million registered voters was 92% of the targeted 28 million. The number decreased to 25,420,199 after the data was cleaned of duplicates and errors, giving a final rating of 91%. If these statistics are anything to go by, it could be concluded that some expectations were met.

Although the aim of using voter registration before the December 2005 referendum and the June 2006 elections was achieved, a number of lapses and irregularities were overlooked. For example, at the time of the referendum two provinces had not been covered by the registration exercise.

Due to the tight schedule for the elections, the choice of using a daily display of the registered voters' list as opposed to a national display of the register proved helpful, although the decision was unpopular with some stakeholders and election observers.

Lessons learned

Several lessons can be learned with regard to the application of the DDE with AFIS voter registration methodology in a country as vast as the DRC. These include the following:

❑ Use of a biometric system for voter registration is capital intensive, even for countries with smaller populations.

❑ If implementation is successful it has positive effects on the accuracy and integrity of the register produced.

❑ It engenders low population coverage because the registration kits are heavy but fragile and are not easily transportable to remote and inaccessible areas.

❑ System maintenance is expensive.

❑ The ability to produce on-the-spot voters' lists is innovative and can be applied to the instant issuing of voting cards or voter ID cards.

❑ If multiple registration is not an issue that needs to be dealt with in a voter registration exercise, then the use of combined biometrics and DDE for voter registration is overkill and a waste of resources.

❑ Where there is a need to use biometrics, other forms of capturing biometric data – such as collecting fingerprints on registration forms (using non-smearing ink) and then scanning the forms at a number of central locations – could be used.

❏ The use of high-tech equipment like laptop computers and digital cameras is susceptible to abuse and pilferage. Even where this situation is not prevalent, the prescribed storage capacity and optimal conditions to store high-tech equipment may not be easily available or affordable.

❏ If the total number of duplicates detected at the last registration through the use of the biometric system was a mere 293,000 out of 28 million registrations (under 1%), then the expensive method may not have contributed much to the registration process.

❏ If the reasons for the choice of the system were speed and accuracy, as indicated in the criteria used for system selection, then a tenth of the budget used for equipment and deployment could have secured an optical scanning system that would have achieved better results in terms of simplicity, speed and accuracy.

❏ The use of a high-tech system for mass registration with or without biometrics is expensive, ineffective in terms of coverage and unsustainable for future exercises.

Cost-benefit analysis of voter registration

The total cost of voter registration, cleaning the data and producing voter cards and voters' lists was a staggering US$101,224,057. The following analysis looks at whether other benefits accrued aside from the main objectives of the exercise.

• The voter cards that were issued free of charge to registered voters unofficially double as a national identity card for those who do not possess any official identification documents, such as a driver's licence, passport or citizen identity card.

• The voter registry could serve as a civil registry of half the population for statistical and other references.

• The technology-related choices made meant that much of the money used for the voter registration exercise went to foreign companies. The skills required to operate the high-tech systems were not available in rural areas of the DRC. This meant that city folk were hired for most of the employment opportunities arising from the registration exercise.

• Simpler solutions might have allowed a larger share of the funds to go to poorer, local election staff including women.

Stakeholder satisfaction

Some of the political parties that took part in the 2006 general elections were unhappy that the voter registration exercise was not preceded by a population census. They also believed that the registration exercise was not comprehensive and inclusive because everyone did not have the opportunity to register. Their only consolation perhaps is that at the end of the day the DRC has a voters' register that took it through an election, despite the fact that the method of voter registration used was more complicated and involved than anticipated.

The voters, for their part, received free voter cards which can be used as an authentic national identity card if needed.

Donors and international partners who contributed to the electoral process were satisfied with the outcome but not with the methodology employed. Those who canvassed for the system that was used might learn some lessons from the DRC's experience.

Influence of external stakeholders on the process

External stakeholder influence on the process was very high. This was clearly manifested in the following activities:

- The tender process was handled by IAPSO Copenhagen.
- The number of foreign technical assistants used was high, turning the process into a veritable international affair.
- The decision on the choice of the system used was not mooted by the CEI alone. There were reports that some of the major donors at the time (like the European Commission) had clear preferences when it came to technological choices.

Sustainability of the system

- The system may be difficult to use in future registration exercises when donor participation in the electoral process is likely to dwindle.
- There would be unexpected expenditures from the loss or pilferage of laptop computers and accessories, the loss or pilferage of generators and the rapid deterioration of the kits due to poor storage and maintenance.
- The heart of biometric identification is the de-duplicating process, which the CEI currently has no capacity to undertake locally. If money could not be raised to support the purchase of de-duplicating processors during the last exercise when donor assistance was easily available, it is unlikely that the CEI would find it worthwhile buying these machines when it has no donor support.

- The scale of logistics infrastructure and support to haul heavy but fragile equipment across rivers and bad roads to communities that have no electricity would be difficult to come by.
- The number of registration centres will dwindle as equipment is lost or damaged and this will limit the expansion of voter registration.
- Where the lost equipment can be replaced, newer models from the same supplier may be more advanced than the old ones, in which case care must be taken to ensure compatibility. If pressured to procure from another vendor, the CEI could also be faced with the difficulty of mixing and matching hardware and software from different biometric technology vendors.

Future developments

The CEI has come to understand some things it did not know before selecting a very expensive high-tech system instead of a medium- or low-tech solution for voter registration. Despite its acclaimed virtues, the system has evidently given the CEI a lot to worry about; but the CEI can be proud that most of the key transition objectives were met.

One of the CEI's main concerns is perhaps continued use of the current system in the face of the many obstacles that must be overcome, including sustainability. But also available to the CEI are feasible options on how the system can be put to use elsewhere to offset capital outlays that are likely to incur in the life of the system. Possible cost-saving ventures for the CEI and the country to consider are the option of combining the work of the civil registry with that of the voter registry, or leasing out the registration kits to other EMBs in the sub-region (as was done in the case of Togo).

While the CEI may not be able to revert to a low-tech system that is less costly and less complicated to operate, other EMBs in the region could learn some useful lessons from the DRC's experience. Interestingly, some other African countries like the Republic of Guinea, Rwanda and Togo have adopted top-of-the-line biometric technology for voter registration. Rwanda and Togo have refined the procedures and strategies to lessen the harsh requirements of biometric technology. Instead of investing directly in purchasing the kits, Togo chose to lease them from the DRC to cut down on costs. Rwanda adopted a two-phase project by collecting text-based data in a two-day countrywide population census before proceeding in a cascading manner with the capture of biometric data.

Emergence of biometrics in voter registration

One wonders why some poor African countries are obsessed with biometric

voter registration. The objective, many would say, is to achieve integrity, accuracy and security of the register by preventing multiple registrations. But it is arguable to what degree the biometric system has improved the quality and credibility of voter registration in some applications and how it has actually diminished returns on the inclusiveness, comprehensiveness, accuracy, accessibility and cost-effectiveness of the process.

Cost implications

These days, some EMBs (like the CEI in the DRC) call the activity 'voter identification and registration' instead of simply voter registration, presumably to emphasise identification as a separate core task of the electoral process. In an activity-based costing of an electoral process, identification could compete strongly against (or even exceed both) registration and elections in terms of material and operating costs.

Impact on the voter registration process

Inadvertently, the use of high-level technology in voter registration has brought to the fore the need to move fragile and complex electronic equipment across treacherous terrain, sometimes resulting in the loss or corruption of the very information that is being sought after. These days it has become difficult to register voters close to their homes (polling station level) resulting in confusion when it comes to locating the proper voting stations on polling day. The once good precept 'where you register is where you vote' has been lost to technology.

It is sometimes unthinkable to imagine that so much money is spent on something that looks so basic (compiling a register). What would happen in the unlikely event that after spending so much money the register is rejected by the key stakeholders – the political parties – as happened recently in Côte d'Ivoire?

The way forward

There is still a school of thought that prefers the use of appropriate technology in the electoral process – technology that is user-friendly and can be operated by people with a basic education. In the late 1990s when most EMBs in East and West Africa adopted the scanning (optical mark recognition) technology for the compilation of the voters' register, there was no need for special skills (keyboarding or ICT) to use the system. The same local registration officials (mainly teachers) used in the old system were utilised after a one-day orientation on how to complete a scannable form. Even when the technology was upgraded with the inclusion of a photograph, it was possible to find suitable personnel in rural areas as opposed to transporting workers from the cities across the country to operate the gadgets, as is the case with the present high-tech systems.

If biometric identification cannot be dispensed with entirely in voter registration then efforts should be made to employ medium- or low-tech solutions

to provide the service. There is, for example, new low cost, low power, small and keyboard-less equipment (about the size of a home video camera) that can be used to capture and store the photograph and fingerprint of a person by simply pressing small buttons and assigning these image clips a unique number. If these new instruments can be coupled with the use of scannable forms – which will bring down the costs and remove the drudgery of high-tech in voter registration – then we can continue to talk about biometric identification in voter registration until that is done *quo vadis*.

Notes

1 Maintenance budget: From tentative calculation due to unavailable data from the CEI.
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6 Law No 004/028 of 24 December 2004, Article 22.
7 Law No 004/028 of 24 December 2004, Article 23.
8 During visit by donor representatives and UN officials to a registration centre at Archidiocese de Kinshasa College, Mama Wa Boboto.
9 EISA, 'The 2005 Constitutional Referendum in the DRC, 18-19 December 2005'. EISA Observer Mission Report No 21. Johannesburg: EISA, 2006, pp 19-25.
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GHANA

Ole Holtved

EXECUTIVE SUMMARY

Ghana has a highly independent and well-respected electoral commission that has maintained a voters' register through decades of election cycles. Voter registration is done periodically at registration centres where eligible persons must appear in person to have a paper form completed and their photograph taken. Voters receive a voter ID card. The card is a counterfoil of the paper registration form, which is cold laminated and contains a black and white photograph of the voter.

The registration forms are scanned and the data is captured using a combination of optical mark recognition (OMR), optical character recognition (OCR) and intelligent character recognition (ICR) technologies.

Double or multiple voting is prevented primarily by the application of indelible ink on a voter's finger once s/he has voted on election day. However, the voters' register does not use biometrics and does not have other reliable means of avoiding multiple registrations.

The voters' register suffers from three main problems, namely:

- the inclusion of foreign nationals (people from neighbouring countries);
- the inclusion of underage voters; and
- impersonation and multiple registrations in relation to by-elections and supplementary elections.

The electoral commission, encouraged by the political parties, plans to introduce biometrics before the 2012 elections in order to mitigate multiple registrations. The National Identification Authority (NIA) has registered people using biometrics in four out of ten regions; however, this process has come to a halt and no civil ID cards have been issued yet.

The civil ID card has the potential to solve the issues of nationality, age and duplications that plague the electoral commission. Possession of a legitimate and secure civil ID card, which states that a person is a citizen of Ghana and of voting age, would be sufficient evidence for the commission to include that person on a voters' list, and could be made a prerequisite for voter registration.

The cost of voter registration has been as low as US$1.20 per voter in 2004. However, the high cost per voter in 2008 at US$10.79 was partly due to massive increases in both the price of fuel and temporary staff wages.

With the introduction of a civil ID card in Ghana, the current methodology and technology used for voter registration can continue to be effective and cost efficient. Resource utilisation could also be improved by employing appropriate adjustments and planning – including combining revision and replacement periods – and by staggering registration across the country's various regions.

COUNTRY CONTEXT

Political history

Ghana stands out as an African country that has seen a smooth transition of power between the ruling party and opposition party. As a result, Ghana has avoided some of the turbulence and violence that other countries in the region have suffered.

Ghana gained independence from Britain on 6 March 1957, making it the first sub-Saharan country to gain independence from colonial rule. The country endured decades of coups until 1981 when Flight Lieutenant Jerry Rawlings took power and banned political parties.

In 1992 a new constitution restored multiparty democracy. Rawlings subsequently won presidential elections in 1992 and 1996. The 1992 constitution did not allow Rawlings to run for a third term, and his party – the National Democratic Congress (NDC) – therefore chose then vice president John Atta Mills as the presidential candidate for the 2000 election. However, the NDC lost the 2000 presidential election to John Kufour of the New Patriotic Party (NPP), who was re-elected in 2004. In 2008 John Atta Mills won the presidential election, returning the NDC to power.

The transitions of power from the NDC to the NPP after the 2000 elections and back to the NDC after the 2008 elections were both peaceful.

Political system

The president of Ghana is directly elected and is both head of state and head of government. The president's term of office is four years and no person can hold the Office of President for more than two terms.

Parliament comprises 140 members elected in single-seat constituencies using the first-past-the-post electoral system. Parliament stands for election every four years. Legislative power rests with parliament; laws must be passed by parliament and assented to by the president. The judiciary is independent of the executive. It is divided into lower courts/tribunals and superior courts comprising the Supreme Court, the Court of Appeal, the High Court and regional tribunals.

Socio-economic profile of the country

Ghana has a population of 24 million with a growth rate of two percent a year. The literacy rate of around 60% is higher for men than for women. According to the 2000 census the main religion practiced in Ghana is Christianity (69%), followed by Islam (16%) and traditional religions (8.5%). There are 16 registered political parties in Ghana. Parties are not allowed to have a regional or religious platform and they must have a nationwide presence.

THE ELECTORAL STRUCTURE

Legal framework

The legislative framework for Ghana relating to electoral issues is divided into a number of separate laws on: the establishment of the electoral commission; presidential and parliamentary elections; local government elections; election laws for other organisations; voter registration; demarcation; and political parties.

Recent elections and electoral history

Presidential and parliamentary elections are held every four years, with the latest rounds held in 2000, 2004 and 2008. In 2008 eight candidates stood for presidential election on 7 December with a run-off election on 28 December.

The 2004 elections had 10.4 million registered voters and a turnout of 85.1%, while the 2008 elections had 12.5 million registered voters and a turnout of 69.5%.

By-elections are held regularly as required. Local government elections are held every four years, midway between the presidential and parliamentary elections. The next scheduled elections are local government elections in 2010 and presidential and parliamentary elections in 2012.

The election management body

The Electoral Commission of Ghana is provided for under the 1992 constitution and established through the Electoral Commission Act of 1993. The independence of the commission is assured under the constitution.

The commission comprises a full-time chairman, two deputy chairmen and four part-time members. The commissioners are appointed by the president of Ghana on the advice of the Council of State. They serve until the age of retirement.

The commission is responsible for all public elections and referenda, voter registration and constituency boundary delimitation. The commission, through the constitution, is granted powers to issue regulations on registration, elections, referenda and the issuance of identity cards. The electoral commission's power

extends to making provisions for fines and imprisonment for non-compliance with regulations issued by the commission.

The secretariat, or implementing arm, of the commission is divided into two divisions: Operations; and Finance and Administration. Each division is under the oversight of one of the two deputy chairmen. Originally the secretariat was to be headed by a chief director with two directors for Operations and Finance and Administration, respectively, but these positions are not filled and the roles are de facto performed by the chairman and deputy chairmen.

The deputy chairman of Operations oversees three departments, namely: Research, Monitoring and Evaluation; Elections; and Training. The deputy chairman of Finance and Administration oversees three other departments, namely: Human Resource and General Services; Finance; and Information Technology (IT). Each department is headed by a director. A seventh director of Public Affairs reports directly to the chairman.

Voter registration specifically is the joint responsibility of several departments of the election management body (EMB) with emphasis on two, namely:

- the Director of Elections (under Operations) deals with the logistics, operational planning and human resource (e.g. recruitment) aspects of voter registration; and
- the Director IT (under Administration) is responsible for all technical aspects of voter registration, including data collection, processing, management and the production of voters' lists.

The electoral commission has permanent representation in the field through ten regional and 110 district offices.

With few exceptions the approximately 1,500 permanent electoral commission staff are recruited straight after university and the mandatory one year's service in a public institution. There is little exchange in and out of the commission; most staff stay with the commission until retirement. Staff must complete two statutory courses at the Ghana Institute for Management and Public Administration. Staff members are not allowed to be members of a political party while employed by the electoral commission.

The electoral commission recruits temporary staff during voter registration and polling periods. The commission operates 21,000 polling centres in about 5,000 electoral areas.

VOTER REGISTRATION

Legal framework, rules and regulations

The legal framework regarding voter registration in Ghana is integrated with legislation on the electoral framework in general. The legislation establishes the

right and responsibility of the Electoral Commission of Ghana to register voters, and defines eligibility. Registration is established as a right but is not mandatory. According to the law, registration must be done in person at registration centres and a provisional register must be exhibited, but the modalities for registration and display are left to the electoral commission to determine.

The eligibility criteria for voter registration are that an applicant:

- must be a Ghanaian citizen;
- must be 18 years of age or older;
- must be of sound mind;
- should be resident or ordinarily resident in the electoral area where s/he wishes to register; and
- must not be prohibited by any law in force from registering as a voter.

The electoral commission must revise the voters' register annually and renew it completely every ten years. Out-of-country voting is permitted but not yet implemented.

Current voter registration method

The voters' register as it exists today has evolved over decades. Voters' lists have been used in Ghana since 1925 (where the eligibility criterion was land ownership). The voters' register has been computerised since 1988, although no voter ID cards were issued at that time. The first voter ID cards were issued in 1995. Table 1 illustrates voter registration in Ghana in recent years.

Table 1: Voter registration in Ghana, 2002-2008

Year	Type of registration	Number of voters registered
2002	Revision	480,000
2004	Full registration	10,355,000
2006	Revision	632,000
2008	Revision	1,835,000

Voter registration is undertaken at centres which are established for that purpose. Voters must appear in person at the registration centre closest to where they live. The original idea was to open all polling stations as registration centres, but now only one registration centre is opened in each electoral area. With 5,000 electoral areas and some 21,000 polling stations, this means that each registration centre covers an average of about four polling stations. At registration the voter is

assigned to a polling station that is covered by the relevant registration centre. There is no indication that this system has caused significant problems on election day. The distance to an electoral area registration centre is seldom more than five kilometres, and in the sparsely populated northern areas registration teams move around to get closer to the voters.

The process at the registration centre is as follows: a registration officer questions the applicant and writes his/her details on a registration form. A shading officer fills in OMR bubbles for the name of the applicant. The applicant has a finger dipped in indelible ink with a 20-25% silver nitrate content to lower the likelihood of him/her being able to register again. The applicant is then given a slip of paper from the bottom of the form, which features the voter's ID number and the date on which the voter card will be issued.

The applicant must have his/her photograph taken; however, the electoral commission does not have enough cameras to supply each registration centre. Up until 2006 registration centres used Polaroid film and cameras (3,000 cameras were available). But since Polaroid film is no longer produced, the commission invested in digital cameras and printers for the 2008 registration exercise. The commission bought 2,500 camera kits – half as many as there are registration centres. As a result, half the applicants are unable to have their photographs taken when their registration forms are being completed.

Once a photographer is available, which may be immediately, the applicant is photographed. One copy of the photo is applied to the registration form and another copy is applied to the voter ID card at the bottom of the form. The voter ID card is detached from the form, put in a cold lamination pouch by a lamination officer and handed over to the applicant.

Applicants at registration centres that are not in possession of digital cameras are given a designated time to return to the centre to have their photographs taken. If they miss this opportunity they can go to the district office at a later date to have their photograph taken and their voter card issued.

Outdated technology: Polaroid cameras produced black and white photographs that were attached to the voter cards and the registration forms.

New technology: Data from the digital camera is transferred to the printer via a cable, and the colour printer produces up to eight pictures on the spot.

Each applicant's details are also entered into a 'poll book' at the time of registration. This book is kept at the relevant polling station and can be used as a reference in case the registration form is lost. In addition, an ID checklist is used to keep track of the issuance of voter cards. This is particularly relevant where voter cards are not issued at the time of registration due to the unavailability of a camera. This list notes the date when the applicant collected his/her voter ID card.

Voter cards issued by the Electoral Commission of Ghana feature the registered voter's details and photograph. The system has been upgraded in recent years to produce colour photographs.

A registration can be challenged at the time of registration. If a voter appeals a challenge then a district registration review committee comprising local party representatives and neutral representatives adjudicates the challenge.

In March 2008 the electoral commission opened registration centres for ten days for a replacement period. This was intended specifically to enable those who had lost their voter cards to get replacement cards. The replacement period had a very low turnout partly because it was not publicised and explained well enough.

The actual revision period for 2008 should have happened shortly after the replacement period, but because the new printers to go with the digital cameras were not in stock and had to be manufactured, the revision period only took place from 31 July to 12 August 2008. It was planned for ten days but was extended by two days as double the anticipated number of voters turned out to register. The provisional voters' list was displayed during October 2008 at the 5,000 electoral area centres. Centres were open for five days in November for a transfer period, which enabled people to transfer their place of voting shortly before the December 2008 elections.

Proxy voting is allowed for persons on duty outside the country. These voters must register in advance and must indicate who they designate to vote on their behalf.

The electoral commission is currently planning for the future. This may mean changing the technology and methodology used up until now. Considerations include moving away from periodic revision to continuous registration and the inclusion of biometrics, which would mean a shift towards the use of computers at the point of registration.

Requirements and expectations influencing the choice of the current voter registration method

The current registration method has its roots in the 1990s. The requirements and expectations may have been to establish a voters' register using available technologies to minimise fraudulent voting, but the deliberations are lost in history. Importantly, the Ghanaian voter registration system has grown organically based on the empirical experiences collected by the electoral commission over several iterations of election cycles.

DECISION-MAKING PROCESS FOR SELECTION OF THE VOTER REGISTRATION SYSTEM

Role of the EMB

The voter register in Ghana has evolved over decades. This is in stark contrast to voter registration in many developing countries, failed states and post-conflict societies where registration is often established from scratch or through a huge

leap in technology. In former Soviet Union countries, for example, voter registers were kept manually in ledgers are now being replaced with high-tech centralised electronic registers that use biometrics.

The evolutionary character of voter registration in Ghana has been a result of internal progression within the electoral commission. The commission has gradually introduced new technology when it believed this was warranted, such as the introduction of digital cameras to replace the obsolete Polaroid cameras.

The commission is currently discussing registration methodologies and technology for the future. It aims to include biometrics in a future registration effort and to move away from the use of paper forms. The decision-making process for future systems is still in the early stages and is driven by the commission itself, not by external stakeholders.

The electoral commission meets regularly with political parties at inter-party advisory committee meetings that are held both nationally and locally. The main political parties are advocating that the voters' register be enhanced with biometrics and are adamant that a separate voters' register must be kept from the civil register. Some stakeholders seem to be under the misconception that biometrics can help in eliminating foreigners and underage applicants as well as multiple registrations.

Criteria for selection of the system used

A significant reason for the selection of OMR as the foundation for the voter registration system as it is today was that the electoral commission wanted to use a technology that was already familiar to and had the wide trust of Ghanaians. OMR had been in use for more than ten years by the West African Exams Council and was widely accepted, and almost all registration staff were teachers who already had experience with filling in OMR forms.

The electoral commission has stressed its independence and ability to implement and operate the system itself without relying on external agents. The fact that the system has been maintained for some time can be attributed to its reliability as well as the public's understanding of and trust in the system.

A main criterion for a future registration system would be its ability to remove and avoid duplicates. This seems to weigh stronger than financial constraints or the challenges inherent to introducing a new system both in terms of capacity development and public information.

Role of the international community and donors

The international community and donors (development partners) have supported Ghana's voter registration efforts financially but have not played an active role in the choice of the system or methodology, nor are they actively involved in deciding on the future system. The development partners have a standing working group on elections and meet regularly. They have a good relationship with the

electoral commission but do not try to influence the commission's decision-making process.

The development partners in relation to elections include a broad range of stakeholders including the United Nations Development Programme, the European Union, the Canadian International Development Agency (CIDA), the United Kingdom's Department for International Development, and the governments of Denmark and the Netherlands.

The electoral commission believes that securing funding for voter registration and elections is the Ghanaian government's responsibility. Once the electoral commission's budget has been approved, the government may choose to seek donor funding for parts of it. In recent registration exercises funding has been divided as follows:

- 2000: 40% government, 60% donors
- 2004: 60% government, 40% donors
- 2008: 100% government.

It should be noted that 20-30% of the overall government budget is funded by the international community through direct monetary budget support. Individual international partners have played a role in supporting the electoral environment outside of the electoral commission. CIDA, for example, funded the training of party agents in 2008. A large number of international observer missions have been present in Ghana, but more for elections than for registration.

Role of technical assistance

The electoral commission has made use of international consultants in the specification of registration technology. A consultant from the International Foundation of Electoral Systems (IFES), for example, apparently played a significant role a few years back. It seems though that consultants were active once the general principles of the registration concept were already decided by the commission, i.e. that the consultants helped the electoral commission to implement the decision to use scannable paper forms.

Vendors

Vendors are sometimes invited to demonstrate their solutions to the electoral commission and have played a role in the commission's final choice of forms and machinery. The commission has chosen to procure all key components from a single vendor. The single vendor principle was decided on due to earlier problems when it came to scanning forms printed by one subcontractor on scanners provided by another subcontractor. As a result the commission now purchases forms and scanners from the same source. Single source procurement (as opposed to open tender) is also allegedly due to a well-established relationship of trust and performance on the part of the vendor.

Funding and procurement of voter registration equipment, materials and services

As mentioned above, funding of the registration process is the responsibility of the Ghanaian government. The electoral commission draws up budgets for everyday operations, development and elections, and submits these to the government. The government may then seek external funding as required.

Cost of acquisition

No figure is available for the overall acquisition of the voter registration system as a whole since acquisition of the components of the system has been gradual. Table 2, however, illustrates the overall cost of registration in recent years. The costs cover all direct expenses in relation to registration in the year in question, including acquisitions, printing, consumables and registration staff.

Table 2: Voter registration costs, 2002-2008

Year	Type of registration	Cost in US$	Number of applicants	Cost per applicant in US$
2002	Revision	918,000	480,000	1.91
2004	Full registration	12,437,000	10,355,000	1.20
2006	Revision	2,430,000	632,000	3.85
2008	Revision	19,792,000	1,835,000	10.79

The significant variation in cost per applicant from a low of US$1.20 in 2004 to a high of US$10.79 in 2008 is due to a number of reasons. Factors affecting the 2008 voter registration budget include the following:

- The wages paid to temporary registration staff doubled. This process was initiated when the 2004 census fieldworkers (who are largely also employed by the electoral commission) received a much higher wage than before.
- Fuel prices tripled for both vehicles and generators.
- The Polaroid cameras became obsolete as the film is no longer produced, and the commission had to invest in 2,500 digital cameras and printers – each set costing approximately US$1,300.

- The commission bought 30 pickup trucks.
- The year included a period for issuing replacement voter cards.
- The revision period had to be extended by two days.

Cost of operation, maintenance and upgrading

The electoral commission owns the software and servers used for registration, which are relatively durable. It also owns the scanners, but these have to be replaced every four to six years due to wear and tear.

The largest costs in relation to registration are recurring expenses such as wages and consumables, including printing of the OMR/OCR forms, which has to be done to a very high standard at a specialised print house. The operating costs therefore outweigh the cost of acquisition.

SYSTEM IN PRACTICE

An overview of the system in practice

Transparency of the process

The registration process is highly transparent; domestic observers and political party agents are active during the entire process. Display of the voters' roll is mandated by law, and political parties have access to copies of the rolls for scrutiny.

Understanding and acceptance by voters

The voter registration system has been in place for several election cycles and is known and understood by the majority of voters. The main complaint about the system relates to the issue that not enough cameras are available for all voters to have their photographs taken when they register.

The fact that not all polling stations are used as registration centres does not seem to cause problems, and there are no indications of large numbers of people being excluded from the voters' lists on election day due to their being registered elsewhere or their registration being otherwise lost.

Accessibility and provisions for voters with special needs

Voters with special needs defined broadly include groups such as the physically disabled and voters who for one reason or another cannot vote in their regular polling station on election day. There are no significant provisions for registration for the physically disabled. Whether the physical disability relates to mobility, sight or hearing, voters must appear in person and register as everyone else. Consideration is usually given to the disabled, elderly and pregnant in terms of bypassing queues, but this is at the discretion of registration centre staff. The provisions or lack thereof are the same as for voting. One can therefore argue

that there is no point in providing special registration provisions if the same degree of access is not established for voting.

Citizens abroad do not have access to registration or voting. There are legal provisions for this, but they are not yet implemented.

Voters who will not be able to attend their regular polling station on election day can apply for early voting. This feature is used mostly by those on official duty on election day such as the police, security forces and poll workers. Early voting takes place one week before the regular election day at one polling station in each constituency. Early voters must apply with their returning officer for inclusion on the special voters' list and must go to their home constituency to vote on the early voting day. The early voting ballot box is opened on election day and included in the count. In remote areas the registration team may move around rather than being located in one fixed place.

Publication and review of the voters' roll

The voters' roll is made available for public scrutiny during a display period. During this time political parties are given a copy of the voters' roll. Elimination of ineligible voters (e.g. fraudulent or deceased) relies heavily on the scrutiny of these lists, but the display period is poorly attended by the public.

Problems encountered and solutions found

The voters' register has met with some criticism over the years. A recurring theme is double or multiple registrations. Although this can and does happen, all indications are that this is primarily due to people moving rather than large-scale, organised fraud. Double voting as a result of double registration is minimised through the application of indelible ink (finger dipping) when voting, and through the sheer logistical challenge of voting at several polling stations on the same day.

There is, however, significant potential for impersonation at by-elections and supplementary elections. People who are not eligible to vote in a particular constituency can use the voter cards of absent or deceased voters in order to vote fraudulently. There are indications that fake voter cards have been manufactured in bulk for this purpose. While there is currently no good measure in place to counter this, the commission will no longer supply political parties or other stakeholders with voters' lists containing photographs as these could be used to produce fake voter cards. (Bear in mind that the photographs are black and white and that the voter card is a laminated paper slip with virtually no security features.)

Since there is no requirement for voters to prove their age, applicants under the required age of eligibility are frequently registered and there is subsequently no means of stopping them from voting. While birth certificates do exist in Ghana there was a period when they were not issued. People can get birth certificates retrospectively based on their word only, effectively making the certificates

unreliable. As it stands, the only way to avoid underage registration is by other people challenging the applicant.

A huge problem is registration by non-citizens. The borders of Ghana were drawn arbitrarily by colonial powers, cutting through clans that now find themselves split between countries. At the last elections the border with Togo was closed to cut down on voting by foreigners.

There is also no effective removal process for deceased voters: the process relies on people indicating who is deceased during the voters' roll display period, but there are no firm requirements or responsibilities associated with it.

A voter's data may get lost, for example, because a registration form is lost or damaged. If a voter shows up on election day and cannot be found on the voters' list, polling station staff can refer to the poll book and ID checklist which were filled in at the time of registration to check if the voter is indeed legitimate.

The photographs used are black and white, and an unacceptably large number of photographs are of insufficient quality to avoid impersonation. Some stakeholders argue that due to bad photo quality people can use fake IDs to vote. The electoral commission believes, however, that the use of indelible ink (finger dipping) on voting day prevents people from voting more than once.

Completed OMR form, featuring the voter's personal details, photograph, signature and fingerprint.

An example of the voters' list featuring black and white photographs of the registered voters.

Voter registration personnel

Local and external experts
Registration is an integral function of the electoral commission, involving all staff at all levels. The commission has internal experts dedicated to the maintenance of the voters' list database and data capture. The use of external experts is limited.

Selection and training of registration personnel for fieldwork
Registration personnel are temporary staff recruited at district level, and are typically teachers. No record is kept of past employment or performance. Training is done using a cascade process, starting with an (informal) meeting at electoral commission headquarters between headquarters staff and the regional directors and their deputies. They in turn pass on the training to the district officers and returning officers, who finally train the registration workers.

Training is done in one day, a significant portion of which is often used for determining who goes to which registration centre. A manual and trainer's notes have been created for training purposes. Staff are trained using the specimen registration forms and other forms contained in the training manual – there are no blank forms to practise on. The registration officer, shader and laminator are trained together and can replace each other. Camera operators are trained separately.

The overall impression is that the training provided is poor and lacks quality; however, since most registration personnel have been used before, they are familiar with the process.

Supervision and control structures
The commissioners and directors supervise the regional training and visit as many district training sessions as they can.

Role of information and communication technology

Collection
Information and communication technology (ICT) plays no role in the collection of data at the source – that is, at the registration centres. The replacement of Polaroid cameras with digital cameras and printers has not made the process more 'technical'; the photos are simply printed out and glued to the paper forms, as were the Polaroid photos before. The digital photos are not stored.

The paper forms do, however, have to conform to some standards dictated by IT: they must be kept intact and smooth so as not to create problems when fed through a scanner; and filling in the forms must be done using appropriate pens and in conformance with what the scanners can read in terms of OMR shading and using characters that are recognisable by ICR.

OMR forms have to be filled in with special care. The data is handwritten and later 'bubbled' in the field. Both the handwritten information and the bubbles are scanned and recorded into a database.

Despite the fact that vendors quote a higher rate, the practical experience of Ghana is that the scanners can process about 1,000 forms an hour in real working conditions.

Transmission of data

Transmission of data from the field to the data entry centre in Accra is by hardcopy.

Review and verification of data

Data capture is automated; the registration forms are scanned. As the voter has had an opportunity to review the data on the form before completion, data accuracy remains high as long as the recognition software is capable of correctly interpreting the form's contents.

The form's unique identifier – that is, the voter ID number – is pre-printed on the form both as numbers and as a barcode. The software reads both to ensure accuracy. The voter's name is captured using both ICR on the text representation of the name and as OMR of the bubbles filled in by the shader. If there is a discrepancy between the two – for example, if a character is unrecognisable or a bubble is missing or misplaced – then the form will be displayed on a screen for a human operator to make a determination. According to the commission the accuracy rate using this methodology is very high.

Role of civic and voter education in the registration process

The electoral commission uses various methods to inform the public about registration activities, including fliers, posters and public announcement systems mounted on the commission's own pickup trucks. Radio and television is used extensively. The electoral commission produces one- to two-minute jingles and pays to have them broadcasted on the some 100 FM radio stations in Ghana. Messages are translated into the local language or dialect where appropriate. Newspapers have limited circulation and, although used, are not considered an effective tool for the broad dissemination of voter information. Traditional approaches such as town criers are used in villages. The message content covers mainly when, where and who qualifies to register.

Poster used to inform voters about the benefits, process and details of voter registration.

The commission also disseminates information through third parties such as civil society organisations (CSOs), trade unions and artists' associations.

Role of different stakeholders in the registration process

CSOs and NGOs

Civil society is actively involved in observing the registration process and display period in Ghana. For example, the Coalition of Domestic Election Observers in 2008 fielded 60 permanent observers throughout the pre-election phase, including registration.

Political parties

Political parties interact with the electoral commission through inter-party

advisory committees at national, regional and district level. Four party agents (two from the ruling party and two from opposition parties) are allowed to observe registration at each registration centre. Party agents are trained together with registration officials.

Political parties are also active in scrutinising the voters' list. The parties receive copies of the entire voters' list with photographs.

Media

The electoral commission uses the media to disseminate voter information and education.

The media seem to be more active in this regard around election time than during the voter registration period. On election day in 2008 Joy FM radio station fielded 500 monitors around the country who reported via mobile phone directly to the radio station.

The commission has worked with the Ghana Journalists' Association on producing training courses and a booklet with guidelines for electoral coverage reporting.

Post-election use

System updates

The system has been updated between elections and registration periods as required, most notably replacing Polaroid cameras with digital cameras and printers.

Updating of the data

Registration is periodic and updates of data are therefore not conducted between registration events.

Transferability of data to other systems

The voter register is centralised and confined to the electoral commission. No interchange with other registers is required. There is, however, a commercial system in place for banks to verify a person's identity against the voters' register. This is done on a dedicated server hosted at the electoral commission's premises.

Capacity building and technological knowledge transfer to the EMB

The electoral commission has a very low turnover of permanent staff and largely re-employs temporary registration and polling staff too. This – combined with a registration system that has remained largely unchanged for a long period of time – means that the commission has accumulated significant experience.

While the low turnover of permanent staff is commendable, it has precluded the commission from establishing formal processes for retaining institutional knowledge. When it comes to the very specific technological aspects of registration, the commission is reliant on a small number of key people who possess knowledge of the systems. This is a potential vulnerability.

The commission encourages staff members to seek international experience during non-election years, for example as United Nations volunteers. This brings new perspectives into the commission.

Voter registry and civil registry

The government of Ghana began discussing the introduction of a national ID card system in around 2001; prior to that the electoral commission had the only mandate in Ghana to issue a (national) ID card system. The National Identification Authority (NIA) is now responsible for civil registration. From July 2008 (when registration began) to June 2009 the NIA had registered 5.7 million people aged six and older in four of Ghana's ten regions. The estimated number of eligible voters is 7.3 million, meaning that the NIA has captured around 78% of eligible voters in those regions. Registration in the remaining six regions has not begun due to funding issues. For the same reason, no ID cards have been issued yet.

Civil registration is done using mobile registration workstations comprising a laptop, a printer, camera, fingerprint scanner and signature pad. The NIA has bought 1,510 kits and 450 generators. Registration is done by first writing the person's details on a paper form. The data is then typed into the computer, the person's photograph is taken and four fingers are scanned for prints (left and right index fingers and thumbs). A slip is printed out, which the person must bring when later collecting his/her ID card. Upon registering, a person is given a lifetime personal ID number.
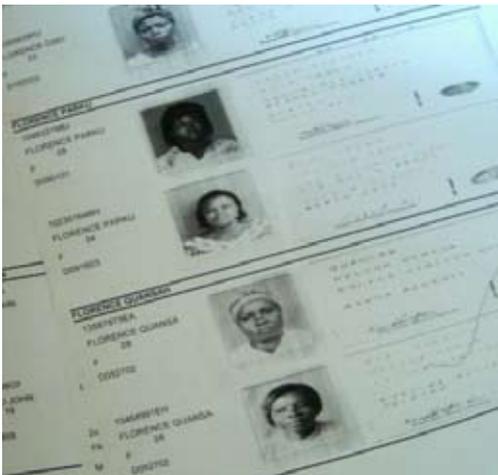
Using matching techniques, the computer produces lists of voters with the same or similar names. Double registration can be detected by comparing photographs, signatures or even the fingerprints of the registered voters.

Data is transferred from the field to the NIA by means of CD. At the NIA the data is meant to be processed to detect duplicates using an automated fingerprint identification system (AFIS), but this has not yet started. The system is capable of using facial recognition in the future.

The ID card is a plastic card that includes a two-dimensional barcode which contains the alphanumeric data of the applicant and fingerprint or prints. Civil registration is free of charge, but there will be a fee for replacing a lost ID card.

The registration kits as well as the backend (database, servers and ID card production) have been procured from French-based company, Sagem. The mass registration budget for an anticipated 21 million records was US$100 million: it has not been possible to ascertain whether the halt in operations is because this amount has already been exhausted. The source of funding is the Government of Ghana, apparently with some degree of support (it is unclear if this is direct or in the form of guarantees) from the French government.

The NIA estimated that registration could be completed by May 2010 if funding was secured, and ID cards could be produced three months after that.

In addition to the NIA's civil ID registration, separate registries exist for the issuance of driver's licences and passports. Both these additional registries have or intend to establish their own biometric databases.

Possible synergy effects

In principle, and from a technical perspective, the civil and voter registries could be merged, vastly decreasing the overall investment Ghana needs to make for registration. But political considerations dictate otherwise. Significant positive effects can, however, still be achieved without merging the two registries. The electoral commission is willing to accept a civil ID card as a prerequisite for voter registration, albeit only once the civil ID card system is available to all citizens. In this instance the electoral commission would not have to collect biometric data. It would also eliminate the electoral commission having to deal with issues of underage voters and non-nationals as these parameters would be determined by the civil ID.

Given the requirement for a new voters' register before the 2012 elections and the unfortunate halt to civil registration, there is a distinct risk that the civil ID card system will not be sufficiently broadly implemented in time for the electoral commission to benefit from it for 2012. This could result in a vast and unnecessary investment in parallel biometric registration of the entire adult population.

Possible constraints for integration of both systems

The political parties do not want an integration of the civil and voter registries;

the climate is clearly in favour of separate registers kept by separate institutions. This does not, however, preclude the electoral commission from using the (future) civil register as the authoritative source for identity and nationality.

ANALYSIS, EVALUATION AND RECOMMENDATIONS

Effectiveness of the system

As a general observation, the voter registration system in Ghana has done its job. Ghana has held several peaceful elections with outcomes that have been respected by the public as well as political parties.

While the last full registration in 2004 came in at a reasonable cost of US$1.20 per voter, the much higher rate of US$10.79 per voter in 2008 challenges the effectiveness of the system. Bearing in mind the increases in wages and fuel, there must still be significant room for improving the effectiveness and efficacy of the system. One measure to do so, already envisioned by the electoral commission, would be to combine the revision and replacement periods – as long as this is done intelligently and with optimal use of the manpower and materiel engaged in the process.

Registration has been limited to one set period of time across the country, apparently due to political parties' fears that staggered registration would make the system vulnerable to multiple registrations. While a single, countrywide voter registration period simplifies voter education it has put undue strain on resources. This is seen most clearly vis-à-vis the cameras, with the consequence that many applicants have had to appear twice: first to get their registration form completed and later to have their photograph taken and to get their voter ID card issued. This system is obviously not effective. Fears of multiple registrations can easily be alleviated if biometrics is included in future registration systems. However, there seems to be no legal impediment to staggered registration, and there is historical precedence as staggered registration occurred several times prior to 2000.

Quality of data

It is not possible to determine accurately the quality of registration data without statistical sampling, and no scientific studies have been done on the quality of the voters' register in Ghana. Evidence on the quality can, however, be derived anecdotally and can be inferred from reactions to the register as a whole. Internal statistics from data processing can also give an indication of quality levels.

Based on the above, the quality of the current dataset collectively is problematic. It is known that the dataset contains numerous duplicates, underage voters and foreigners. The quality of the individual records is, however, high. The commission has achieved a very low data capture error rate through the simple but brilliant matching of OMR and ICR data. A registrant's name is written on the registration form in capital letters and thereafter shaded in OMR bubbles.

The scanners read both and compare the two results, flagging any discrepancy for human determination and displaying an image of the original form fields. This parallels the accuracy achieved through double-blind data entry. Similarly the voter ID number is read both as the barcode and using OCR on the number pre-printed in Arabic numerals. Another indication of the high quality of individual records is that few people seem to be disenfranchised from voting due to lack of inclusion in the voters' list.

Expectations versus outcome

The voter registration system has largely lived up to expectation. While there have been complaints about foreigners and underage voters and fears of double voting, the voters' register is largely trusted and eligible voters are able to vote on election day – mostly, they are on the voters' list at the relevant and expected polling station.

Lessons learned

The electoral commission has learned a number of important lessons, including the following:

❑ In relation to scanning forms, the commission has learned that forms must be printed by the same company that supplies the scanners. An earlier attempt to use forms printed in one country on scanners produced in another country – although both supplied by the same company – resulted in a high rejection rate. The intention for future use of OMR/ICR forms is to rent scanners from the company that prints the forms.

❑ The commission experimented with scanning the fingerprints that appear on the registration forms, but the results were negative. The quality of ink fingerprints is not sufficient for AFIS to eliminate duplicate registrations.

❑ Data capture accuracy is increased by comparing OMR and ICR interpretations of the same information, i.e. the name of the applicant.

❑ In terms of productivity, it took the commission three months to scan the ten million forms collected during the 2004 full registration exercise using six scanners running three six-hour shifts per day, seven days a week. That equals an average of 1,000 forms per scanner per active hour.

❑ People will use the revision period for replacement of lost voter cards and the services should therefore be offered simultaneously. It must be as easy to replace a lost card or register a change of address as it is to make

a new registration, or else people will double register. During the 2010 registration the commission plans to have separate desks at registration centres for revision and voter card replacement.

Cost-benefit analysis of voter registration

Discussing the costs and benefits of voter registration in Ghana is moot. There is currently no alternative means of creating a voters' list since the civil registry is not yet functioning. Some elections, under very particular circumstances, can be held without a voters' register. For example, at a presidential election the entire country is one constituency; indelible ink (finger dipping) can be used to avoid multiple voting and the borders can be closed on election day. Ghana, however, has significant cross-border traffic and it needs to be able to hold reliable parliamentary elections, local elections and by-elections. A reliable voters' list is therefore required.

Looking forward, it is clearly wasteful and inefficient for a country like Ghana to have four parallel biometric registration activities going on, namely – civil, voter, passport and driver's licence. These institutions should be made to cooperate and coordinate efforts to achieve synergy. This does not necessarily mean that they must merge their registers, but it does mean, for example, that civil registration should be given priority to complete its task in time for the voters' register to benefit from it for the 2012 elections.

Stakeholder satisfaction

Stakeholders in general – political parties, CSOs and international partners – are reasonably satisfied with the current voters' register, notwithstanding the caveats mentioned (namely, the issues with foreigners, underage voters and fraudulent votes at by-elections). These issues have not caused significant challenges to the outcome of past elections but there is a broad desire to improve the voters' register with the inclusion of biometrics.

The overall idea and method of voter registration in Ghana is widely accepted. There has been some criticism, but this relates mainly to timing and resources. For example, the 2008 revision period was delayed until August and ended up running short of materials because double the number of people than expected turned out to register.

The voter ID card is de facto the most reliable and accessible form of identification in Ghana at present. A testament to the trust and acceptance of the voter card is that 25 banks in Ghana have signed up for online access to verify voter ID numbers on a dedicated server hosted at the electoral commission. The service is provided through a commercial enterprise that pays the electoral commission for access to its information, and the income received is passed on to the government.

Influence of external stakeholders on the process

The electoral commission is highly independent and exercises significant control of both its decision-making process and implementation. The commission entertains a constructive dialogue with all relevant stakeholders, including ruling and opposition parties, CSOs, the media and international development partners. It invites vendors to demonstrate their products and employs external consultants where warranted. The electoral commission is therefore influenced by appropriate interaction with relevant stakeholders but there is no apparent undue influence.

Sustainability of the system

The methodology of using OMR/ICR paper forms, cameras and centralised scanners works quite well. The main problem with this, and the primary argument for moving towards computerised registration kits, would be the requirement for capture of biometrics.

Biometrics is used for two purposes, namely to identify and eliminate duplicate registrations. The electoral commission would not need to capture biometrics if the civil register was capable of eliminating multiple (civil) registrations and if it could issue reliable civil ID cards featuring photographs for identification purposes. If this were the case, the current technology – OMR/ICR paper forms – would arguable be sufficient for future registration too.

The scanners, due to their mechanical nature and the large volume of forms processed on them, will have to be replaced. When the time comes, the cost of replacing scanners should be compared to the cost of procuring computer kits, as the cost of the latter is constantly falling. From a conceptual point of view, however, there is nothing wrong with a paper registration methodology.

Another aspect to consider is the principle of periodic versus continuous voter registration. There is no exact answer to this. Continuous registration can be argued to be cheaper if done in existing field offices, but that argument falls short if people do not register (or inform change of address) evenly throughout the year. Since people only really have an incentive to register right before an election, the field offices are at risk of being overburdened at election time.

Periodic registration and revision is legitimate and can work well if it is properly planned, informed and resourced. The system in Ghana where only 5,000 electoral area registration centres have been opened to cover the 21,000 polling stations has seemingly worked well without any confusion about allocation to polling stations.

It is, however, not productive to make registration a two-step process: photographs must be taken at the time of registration. This could easily be achieved by staggering registration across the country in three or more zones, thereby decreasing the need for more camera kits.

Future developments

The electoral commission is under legal obligation to create a new voters' register from scratch, and it is under pressure to eliminate multiple registrations by using biometrics. The commission therefore faces a significant exercise one way or another – and very soon since the new register must be in place no later than 2012.

How this can and must be achieved is closely tied to the success of the civil register. If the civil register is capable of registering the majority of eligible voters and issuing them with a civil ID card within the next year or two, then the electoral commission can make the civil ID card a necessary and sufficient (if of voting age) prerequisite for voter registration – additionally solving the foreign national and underage voting dilemmas.

If the civil ID card system does not come through, the electoral commission will quite likely embark on a full registration exercise using computer kits, biometrics and AFIS. This will require significant investment, the development of new capacities within the commission and intensive voter education and staff training associated with a completely new paradigm.

3

LIBERIA

Alioune Cisse and Astrid Evrensel

EXECUTIVE SUMMARY

Liberia's 2003 Comprehensive Peace Agreement (CPA) was the result of a conference held under the auspices of the Economic Community of West African States (Ecowas) and supported by the international community to end the Liberian civil war and to reinstall democracy in the country. It also installed the independent National Electoral Commission (NEC), which is mandated to administer elections and referenda in Liberia. The establishment of the voters' register therefore lies within the NEC's responsibilities.

Liberia's first presidential and legislative election after the civil war was held in October 2005. Voter registration for this election was conducted between April and May 2005. Registration to vote is a voluntary act for Liberian citizens; eligibility criteria include age (18 years or older) and proof of identity. About 1.35 million voters (around 90% of the estimated eligible population) were registered during the one-month registration exercise.

Since the NEC was newly established and lacked skills and capacity, the United Nations Mission in Liberia (UNMIL)[1] provided much support to the NEC in terms of planning and running the 2005 elections. Support has decreased since then and the NEC has conducted nine successful by-elections between 2005 and 2010 with little assistance. The next presidential and legislative elections are scheduled for 2011.

When the opportunity arises to decide on a new voter registration system in a country, there is often political desire to include additional requirements and security features in order to prevent multiple registrations. These requirements are generally associated with significantly more sophisticated data collection and processing systems, such as automated fingerprint identification and facial recognition systems. However, the NEC carefully evaluated the trade-offs associated with such an approach and considered the optimal use of limited resources. The voter registration system was designed in close cooperation with UNMIL advisors and worked satisfactorily at the time.

One reason why the system worked so well was because the NEC, UNMIL and other partners made a conscious decision to manage the risk through

extensive investments in staff training and in developing quality control and data management systems.

The registration exercise was designed to establish a credible voters' roll and played a key role in the creation of the electoral districts and the determination of voting stations. Voters were provided with a voting card which served as proof of identify on election day.

Paper-based technology was used for the field data collection. Special pre-printed optical mark recognition (OMR) forms were completed in the field and then scanned and processed at the NEC headquarters. The use of OMR technology did not reduce the overall workload. Instead, it shifted the work of data capturing to field staff without burdening them with sensitive technical equipment.

Some 50 staff members at the NEC headquarters 'cleaned' the forms and checked the data manually before finalisation of the voters' roll.

The 2005 voters' roll contained voters' personal information and black and white photographs. It was not updated for the following nine by-elections held between 2005 and 2010. This situation was accepted by all political parties and civil society in Liberia.

A voter card with a picture was produced on the spot at registration and handed to the registered voter. As there is no other national identification card in Liberia, the voter card has become a sought after and accepted form of identity in the country. This is an added-value outcome of the registration exercise even if it was not the NEC's objective to create a national ID card.

Owing to legal provisions, the voters' register for the 2011 election has to be created from scratch. The system used in 2005 met all legal and other requirements and was politically accepted. This is the main reason why the NEC has decided to use the same system (with minor modifications in the field equipment) for the next registration drive in 2011.

The 2005 voter registration exercise was largely implemented and managed by international staff owing to the short timelines, limited local information technology (IT)-skilled staff and the complex computerisation involved. Since 2005 there has been very little IT capacity building within the NEC, and the commission will again have to rely heavily on external advice to plan and administer the upcoming voter registration exercise.

The budget for the 2011 voter registration exercise is calculated at some US$7 million to register about two million voters. This translates into an average direct cost of US$3.5 per registered voter. If one includes indirect costs (such as logistics provided by other government departments, voter education and costs for international advisors) the average cost per registered voter increases to about US$4.5.

COUNTRY CONTEXT

Political history

The Portuguese established first contact with Liberia in 1461 and named the area Pepper Coast because of its abundance of 'grains of paradise', which referred to the melegueta pepper which was a rare spice in high demand throughout continental Europe. Other than some British trading posts there was no European settlement along this coast until the arrival of freed slaves in the early 1800s.

The history of Liberia is unique among African nations because of its relationship with the United States (US) and because it is one of only two countries (the other being Ethiopia) without roots in the European scramble for Africa. Liberia, 'land of the free', was founded and colonised on 6 February 1820 by a group of 86 freed US slaves with the help of a private organisation, the American Colonization Society. On 26 July 1847 the Republic of Liberia became the first independent country in Africa.

Liberia was a one-party state for 133 years: the Americo-Liberian True Whig Party, which dominated all sectors of the country, was in power from independence until 1980 when Sergeant Samuel K. Doe seized power in a coup d'état. The government controlled political and military life in Liberia. After Doe's National Democratic Party of Liberia 'won' the 1985 elections, human rights abuses, corruption and ethnic tension increased while the standard of living deteriorated.

On 24 December 1989, Charles Taylor (Doe's former procurement chief) and his National Patriotic Front rebels invaded Liberia and rapidly gained the support of many Liberians. The consequence was a civil war that lasted for eight years until 1996. The war is considered one of the bloodiest in Africa: more than 200,000 Liberians died and about a million people were displaced into refugee camps within Liberia and in neighbouring countries.

On 18 August 2003 leaders from the Liberian government, the rebels, political parties and civil society signed a comprehensive peace agreement in Accra that laid the framework for constructing the two-year National Transitional Government of Liberia. Under the terms of the agreement Liberians United for Reconciliation and Democracy, the Movement for Democracy in Liberia and the Government of Liberia each selected 12 members of the 76-member Legislative Assembly. This agreement paved the way for the 2005 elections.

The 11 October 2005 presidential and legislative elections and the subsequent 8 November 2005 presidential run-off were the most free, fair and peaceful elections in Liberia's history. The outcome was the first elected female head of state in Africa, Ellen Johnson Sirleaf. The Government of Liberia has made good progress towards achieving its aims of political stability, economic recovery and fighting corruption. The public has more confidence in Sirleaf's administration than in any of her recent predecessors. However, the country is still battling with

issues of major rehabilitation and reconstruction. The Government of Liberia and its development partners continue to focus on creating jobs, attracting investment and providing education and other essential services to Liberia's communities.

Political system

Liberia has a dual legal system of statutory law whereby Anglo-American common law applies for the modern sector and customary law based on unwritten tribal practices applies for the indigenous sector. Liberia accepts compulsory jurisdiction of the International Court of Justice only with reservations.

The chief of state and head of government since 16 January 2006 is President Ellen Johnson Sirleaf. The cabinet is appointed by the president and confirmed by the Senate. The president is elected for a six-year term and is eligible to be elected for a second term only. The bicameral National Assembly consists of the Senate with 30 seats and the House of Representatives with 64 seats. Members are elected by universal suffrage.

Socio-economic profile of the country

Liberia is situated on the northwest coast of Africa and is bordered by Sierra Leone (northwest), Guinea (north) and Côte d'Ivoire (east). The latest 2008 census data reports a total population of 3,489,072[2] with a population density of 93 persons per square mile (Liberia's total surface area is 111,369 km²).[3] The country's population density has increased 66% from the 1984 census figure of 56 persons per square mile. About three-quarters of the population work in the agricultural sector, which grows mainly export produce. Coffee, cocoa, rice, cassava, palm oil, sugarcane, yam and okra are widely grown, while rice, which is the staple food, is only cultivated for domestic consumption. Liberia's industry is located mostly around the capital Monrovia, and is based on the production of iron ore, food and rubber processing and the manufacture of construction materials. A lack of skilled and technical labour has slowed the growth of the manufacturing sector.

Liberia fronts the Atlantic Ocean for some 560 km. Low fees and the absence of control over shipping operations has led the country to be the second-largest maritime licenser in the world with more than 1,800 vessels registered under its flag, including 35% of the world's tanker fleet.

Liberia's indigenous population is made up of 16 ethnic groups,[4] none of which has an outstanding majority or dominance. The biggest groups are the Kpellé (17% of the population), the Bassa (14.4%) and the Krou (7.6%). Minorities are the Sapo (1.3%) and the Fante and Grebo (1.1% each). American Liberians comprise 2.5% of the population. There also are sizeable numbers of Lebanese, Indians and other West African nationals who comprise part of Liberia's business community. The Liberian constitution restricts citizenship to people of Negro descent, and land ownership is restricted to citizens. Sixty percent of the population live in urban areas.

About 40% of Liberians are Christian, 20% are Muslim and the rest follow indigenous beliefs.[5] Life expectancy is quite low at around 42 years and is slightly higher for females than for males. According to the Liberian Institute of Statistics, the estimated AIDS prevalence rate for the 15-45 year old age group is 1.7%, while Imago Mundi sources and Unicef put the rate at around 5.9%. The country's average literacy rate is 57.5%, but there is a huge discrepancy between males (73.3%) and females (41.6%). As a consequence, radio is the primary means of mass communication and there are several private and public radio stations operating in Monrovia. The unemployment rate is estimated at around 85%.

Liberia has suffered enormously from years of civil war. Public utilities such as electricity, sewers and running water are provided to only a small portion of the citizens in Monrovia. Roads in and around Monrovia are in poor condition, roads to the hinterland are impassable during the rainy season, and parts of Liberia are still unreachable by vehicle. Foreign investment has left the country due to high levels of corruption in the state administration.

Despite natural resources, fertile land and favourable weather conditions with plenty of rainfall, Liberia is one of the poorest countries in the world. As a member of Ecowas, Liberia relies heavily on international assistance as well as on bilateral cooperation, particularly with the US, European Union (EU), Japan, Britain, France, Italy, Germany and China.

ELECTORAL STRUCTURE

Legal framework

Liberia's first constitution of 26 July 1847 declared a 'free, sovereign and independent state by the name and style of the Republic of Liberia' and set a historic precedent, making Liberia the first independent country on African soil. Liberia's constitution is based on the ideals of democratic government as reflected in the original American constitution, and embodies such fundamental principles as:

- centralism (authority inherent in national governments);
- popular sovereignty (government by the will and consent of the governed);
- limited government (powers of government specified in the constitution);
- government of general powers (acts unspecified in the constitution but necessary for good government);
- separation of powers (legislative, executive, judicial); and
- the supremacy of the judiciary (inherent power of judicial review).

The Constitution of Liberia as amended in May 1955 specifically contains a preamble and five articles including the bill of rights (Article I), legislative powers (Article II), executive powers (Article III), judicial powers (Article IV) and miscellaneous provisions (Article V).[6]

The legal framework for Liberia's elections process is based on the Constitution of 1986,[7] the New Elections Law Act, 1986[8] and the Electoral Reform Law Act, 2004.[9] This framework determines who is eligible to register and to vote, and underscores the need for a transparent and accurate voter registration process.

Electoral law and suffrage rights

Election to the office of president and vice president is based on absolute majority, which means that a successful candidate must receive 50% plus one of all valid votes. If no candidate obtains an absolute majority, a second round of voting (run-off election) between the two candidates who received the highest number of votes is held no later than two weeks after publication of the official results of the first round.

Liberia has a bicameral National Assembly consisting of a Senate and a House of Representatives that feature 30 and 64 seats respectively. Two senators from each of Liberia's 15 counties comprise the 30-member Senate. Senators are elected for varying numbers of years depending on the number of votes they receive: senatorial candidates receiving the highest number of votes in each of the 15 counties are termed senior senators and can serve nine-year terms, while senatorial candidates receiving the next highest number of votes in each of the 15 counties are termed junior senators and can serve only six-year terms.

The seats for the House of Representatives were distributed in 2005 (in accordance with NEC regulations) among the 15 counties on the basis of the total number of registered voters provided that no county received less than two seats. The 1986 Constitution of Liberia requires that, following a national census, a population threshold is set for establishing the number of electoral constituencies in the House of Representatives. The 2003 Accra CPA suspended this provision of the constitution to enable the conduct of the 2005 elections. The 2011 elections, however, will be conducted fully in accordance with the constitution and the electoral laws of Liberia.

Preliminary results of the 2008 census were published on 8 May 2009, enabling a threshold to be set for a delimitation process according to the requirements of the electoral law. The NEC must consider two constitutional provisions for this process: first, the population distribution for each constituency (which should be approximately equal); and second, the number of constituencies must not exceed 100. The threshold bill is necessary for the NEC to delimit legislative constituencies. This is a major requirement for the voter registration exercise as Liberian voters have to be registered within the set boundaries of established constituencies.

The second issue concerns the constitutional amendment to include a simple majority requirement instead of the current absolute majority in the legislative elections. If the current legal framework is not amended, it could result in over 100 run-off elections. But any constitutional change would require a national referendum, which shall not be held sooner than a year after the decision of the legislature; and a possible referendum in 2011 would influence the electoral timetable for Liberia as well as the period for the new voter registration drive. At the time of this report (July 2010), the necessary bills have not passed the legislature, which puts additional operational challenges on the NEC.

Recent elections and electoral history

Liberia held a number of elections before 2005 but none of them could be considered free or fair. Demonstrations and coup d'états were not uncommon in the aftermath of elections in the country. The 1985 elections, for example, were organised to legitimise Doe's regime. All international observer groups agreed that the Liberia Action Party led by Jackson Doe had won the election, but Samuel Doe did not accept the results. He fired the count officials and replaced them with his own Special Election Committee, which announced that Samuel Doe's ruling National Democratic Party of Liberia had won with 50.9% of the vote. The 1997 election which resulted in Charles Taylor being elected president was also considered fraudulent and marred by irregularities. No elections were held in Liberia until 2005 due to the second civil war (1999-2003).

The 2005 elections in Liberia took place in the framework of the CPA signed in August 2003. Under the CPA, the National Transitional Government of Liberia took office in October 2003 under the chairmanship of Gyude Bryant. It was mandated to prepare internationally supervised presidential and parliamentary elections to be held no later than October 2005, and to return the country to a normal state of functioning.

Under a resolution adopted by the UN Security Council in September 2003, UNMIL was deployed to Liberia with a stabilisation force of 15,000 peacekeepers.[10] The mission played a critical role in conducting credible, transparent, free and fair national elections by offering logistical support to the NEC. The first round of elections was held on 11 October 2005. Twenty-two registered political parties, two alliances and one coalition put forward some 205 Senate and 513 House of Representative candidates, while there were 22 presidential candidates with their running mates. Of the 762 candidates, 110 were female (14%). Voter turnout was 74.9%, representing just over one million voters.

As no presidential candidate received the required 50% plus one vote, a run-off election was held. Ellen Johnson Sirleaf won 59.4% of the valid votes in the second round election, becoming the first elected female head of state on the African continent. The 23rd president of the Republic of Liberia, along with the leadership of the National Legislature, was inaugurated on 16 January 2006.

For the 2005 elections the NEC accredited 369 international electoral observers, some 35,000 representatives of Liberian political parties and independent candidates, and 3,829 representatives of 53 Liberian civil society organisations (CSOs). The observers characterised the elections as being peaceful, orderly, free, fair, transparent and well administered.

After 2005, UNMIL handed over complete responsibility for the conduct of elections to the NEC. Support from UNMIL has decreased gradually since then. The NEC was in charge of organising nine by-elections in several counties in Liberia.

Liberia's next general presidential and legislative elections are scheduled for October 2011. Most of the provisions of the electoral law used during 2005 remain in effect for the next elections, but a number of issues are still uncertain and await legislative decision at the time of this report.

The election management body

The NEC was created by Article XVIII of the CPA as successor to the autonomous public Elections Commission established by article 89 of the 1986 Constitution. The NEC, which is mandated to administer elections and referenda, comprises a Board of Commissioners (BOC) and an administrative division.

The BOC is in charge of the overall supervision and control of the electoral process. It is responsible for the preparation, organisation and adoption of all necessary measures to ensure that elections are free and fair. The seven commissioners are appointed by the Liberian president after consultation with leaders of all the registered political parties in the country and following approval by parliament.

A chairperson heads the NEC and acts as its spokesperson while a co-chairperson is the principal assistant to the chairperson. Each of the five areas of competence – Finance, Political Affairs, Logistics, International Affairs, and Training and Staffing – is headed by a commissioner who is also responsible for supervising the electoral activities in defined counties of Liberia.

The administrative division, or the NEC secretariat, is headed by an executive director who is responsible for all activities related to the preparation and conduct of the electoral process. The activities include receiving and dealing with electoral complaints, challenges and disputes, as well as making an overall assessment of the electoral process.

The departments of Administration, Operations and External Relations make up the administrative division. Each department is headed by a deputy executive director who reports to the executive director. The NEC has established 19 electoral or magisterial offices at county level (15 counties, four have split offices on lower and upper areas) each responsible for the planning and administration of the process at its respective branch at county level. A magistrate of elections,

who reports directly to the executive director, heads each county electoral office. Other staff include an assistant magistrate, a county coordinator and support staff.

VOTER REGISTRATION

Legal framework, rules and regulations

The 2005 elections were held in a specific post-conflict context, which presented some challenges. Among the challenges were the massive population movement caused by the civil war, the lack of reliable census data, people's lack of identification documents, the fact that thousands of people still lived in internally displaced person (IDP) camps, the creation of new settlements and that much of the country's infrastructure had been destroyed.

Under these circumstances it was not possible to comply with the legal provisions for elections. The Electoral Reform Law Act of 2004 was therefore created to suspend certain provisions of the Liberian constitution as well as to amend specific sections of the New Elections Law Act of 1986 in order to allow for the 2005 elections to be held. The latter act empowered the independent NEC to organise elections in cooperation with international partners, mainly UNMIL. The act also allowed changes to the pre-election voter registration drive and stipulated that it was not necessary for voters to register within set constituency boundaries and provided special regulations for IDPs.

Additionally a number of guidelines, regulations and procedures with force of the law were issued by the NEC to structure and organise the elections. These were the:

- Voter Registration Regulations, 12 April 2005;
- Guidelines Relating to the Registration of Political Parties and Independent Candidates, 17 January 2005;
- Guidelines Relating to Coalitions and Alliances, 4 February 2005;
- Guidelines and Code of Conduct for Observers, 13 April 2005;
- Guidelines for Representatives of Political Parties, Accredited Coalitions and Alliances, and Independent Candidates, 15 July 2005;
- Guidelines on the Determination of Objections and Appeals against Rejection, 8 July 2005;
- Campaign Finance Regulations, 8 July 2005;
- Candidate Nomination Procedures;
- Directives to the Magistrate of Elections, 5 August 2005;
- Regulation on Complaints and Appeals, 20 July 2005;
- Instructions to the Magistrates of Elections for Addressing and Processing Complaints;

- Directives to the Magistrates of Elections for the Second Ballot for Presidential Elections;
- Amendments to Regulations on Complaints and Appeals, 22 September 2005;
- Polling Procedures for the Election of the President, the Senate and Members of the House of Representatives of the Republic of Liberia, 11 October 2005;
- Counting Procedures for Election of the President, the Senate and Members of the House of Representatives of the Republic of Liberia, 11 October 2005;
- Tally Procedures for the Election of the President, the Senate and Members of the House of Representatives of the Republic of Liberia, 11 October 2005;
- Tally Exception Procedures for the Election of the President, the Senate and Members of the House of Representatives of the Republic of Liberia, 11 October 2005; and
- Guidelines on the Establishment of Electoral Districts in Liberia, 16 May 2005.

The NEC issued the Voter Registration Regulations,[11] which are the legal basis for the registration process, on 12 April 2005. The right to vote is given to all Liberian citizens who are at least 18 years old on the last day of the registration exercise and are not deceased, sentenced for criminal offences or declared incompetent or of unsound mind and whose names do not appear on the lists produced by Ministry of Health, Ministry of Justice and Liberian courts respectively.

In order to register, a person must appear voluntarily at a voter registration centre based in her/his area of residence. To prove eligibility for registration, s/he must present any of the following documents:

- a valid Liberian passport;
- a certification of naturalisation;
- a Liberian birth certificate;
- a certificate of renunciation of citizenship of another country;
- the sworn testimony of two other registered voters who shall appear in person before the registrar and confirm the applicant's eligibility to register;[12] or
- confirmation by a Liberian traditional leader who shall appear in person before the registrar and confirm the applicant's eligibility to register.

Special regulations were established for IDPs for the 2005 elections. According to the NEC voter registration regulations,[13] IDPs living in camps and qualified

to vote could register at voter registration centres in the camps or in their county of origin. The voter, however, had to vote in the place s/he registered – that is, either in the camp or the county of origin. Provisional voter registration rolls for IDPs were displayed at both registration centre sites (IDP camp and county of origin). This issue does not apply for the 2011 elections as there are no longer any IDPs to be registered in Liberia.

The NEC conducted nine by-elections in different counties between 2005 and 2010. There has been no additional registration drive since 2005 and the same voters' roll and voter cards are still in use. This has disenfranchised all those who turned 18 after 2005 or those who have returned to Liberia in the past five years. A new registration drive is, however, planned for the 2011 elections.

Current voter registration and future planning

For the 2005 presidential and legislative elections the NEC, in accordance with its mandate and with the support of the international community, decided to rescind the former voters' register and create a new Liberian voters' register. The aim was to:

- determine the delimitation of the electoral districts;
- create registration centres that would later serve as polling stations;
- register all eligible Liberian voters wishing to participate in the elections;
- provide all eligible citizens with a standard and legitimate voter identification card that featured a voter's photograph and had a unique voter ID number; and
- produce a roll of all eligible voters.

Only those persons on the voters' roll and who presented a voter card would be able to vote in the election.

As there was no national identification card in Liberia in 2005 it was considered necessary to provide Liberians with a voter card bearing the name, age, photograph and unique ID number of each registered voter.

It was neither the purpose nor the task of the NEC to create a national ID card; however, because there is no other widespread ID document in place the voter cards became an accepted form of legitimate identification for election and civilian uses. While a national ID card is still in the planning stage, the voter card is widely accepted for official and commercial activities.

One of the many challenges in 2005 was that there was no census data on which to base logistical planning for the voter registration centres. In order to register each voter in a place close to his/her residence, the registration exercise was organised at the most local level, which in Liberia are the 'amalgamated

towns' in rural areas and 'wards' in urban areas. Based on the estimated voter population using data supplied by the Liberia Institute of Statistics and Geo-Information Services (LISGIS) and the NEC boundary delimitation report, 1,533 voter registration centres were established throughout the country to register 1,352,730 eligible Liberians, half of which were women (676,390). Voters had to vote at the centre where they had registered.

A photo register was produced and displayed for public scrutiny for a three-day period. Only about 0.6% of all registered voters' data had errors, and these were all corrected. The voters' register was not contested by political parties at the 2005 elections and neither at the following nine by-elections.

Four thousand Liberians were hired and trained to work in the field for the voter registration process. Data was collected in the field on pre-printed optical mark recognition (OMR) forms, and voter cards featuring a black and white photograph of the voter were produced using Polaroid cameras.

The process of converting the information on the OMR forms into a database takes several manual steps and requires the use of high-speed scanners. More than 50 staff members handled the high-level manual work to process the OMR forms. The voters' roll contained the personal details and photograph of each registered voter.

The latest population and housing census was conducted in Liberia by LISGIS in 2008 and puts the country's population at 3,476,608. [14] According to international standards about 60% of the population of a country is of voting age, which means that an estimated two million people should be registered to vote in the upcoming 2011 elections.

In order to cater for this new number of voters, some 4,200 voting centres in 1,780 precincts are required. This is based on a maximum of 500 voters for each voting centre and a maximum of 2,000 voters for each voting precinct. In Liberia voters must register at the centre where they will vote. This means that 1,780 equipped and trained registration teams will be deployed for the next registration drive in 2011. The final number of voter registration centres will be set once the boundary delimitation process is finalised.

DECISION-MAKING PROCESS FOR THE SELECTION OF THE VOTER REGISTRATION SYSTEM

Criteria for selection of the system used

The selection of the new voter registration system in 2005 was based on the following requirements:

- A completely new system had to be established.
- A new voter register had to be established.
- Geographical population data had to be collected, which served as

a planning tool for the conduct of the elections.
- Voters had to be provided with a voter card that featured a black and white photograph of the voter.

Role of the international community, donors and technical assistance

In 2005, the NEC provided legal and operational oversight to the elections; however, UNMIL took over a major part of the operational responsibility. International advisors brought experience and knowledge to the design and conceptualisation of the voter registration system. For the decision-making process, the voter registration process and technology used in Ghana served as a good example for the design of the 2005 registration methodology for Liberia. Stakeholders interviewed for this study confirmed that the choice of the system was influenced by only a few experts. One was the chairperson of the Ghana Electoral Commission and others were electoral experts of the UN.

Funding and procurement of voter registration equipment, materials and services

A budget of US$4,961,872 for voter registration represented 26.31% of the total 2005 election budget, which was close to US$19 million and included the presidential run-off election. This budget, however, did not include some costs. The costs of logistics and transportation, for example, were covered by UNMIL.

It was not possible for the research team to calculate the exact total cost of the 2005 registration exercise in Liberia; the average registration cost per voter can therefore only be roughly estimated. If one divides the total cost of the voter registration exercise by the total number of voters, the cost per each registered voter is around US$3.67. However, as so many factors were not considered in the calculation, it is more likely that the real cost per registered voter was US$4.5 to US$5.

According to NEC the 2005 voter registration budget comprised ten main items (see Table 1).

Currently, US$38 million has been budgeted for the 2011 election period in Liberia, which runs from June 2010 to December 2011. About US$7 million of that is budgeted for the voter registration exercise.

The Liberian government will contribute US$12 million towards the election exercise; at least US$25 million is expected to be financed by international donors, mainly the European Union and the governments of Sweden, Spain and Germany. Financial support given to the 2011 elections, including the registration process, will be managed through a United Nations Development Programme (UNDP)-managed basket fund.

Table 1: Breakdown of the 2005 voter registration budget

Items	US$
Registration forms and signs	373,690
Registration materials	1,292,888
Registration logistics	72,500
Computerising and printing of provisional voters' roll	1,070,000
Materials for registration training	87,794
Materials for exhibition training	11,395
Registration personal (temp)	1,691,490
Exhibition personal (temp)	314,415
Exhibition materials	25,200
Exhibition logistics	22,500
Total	**4,961,872**

Source: NEC, 2005 Elections Report

The United States Agency for International Development (USAID), which traditionally does not participate in this basket fund, will provide extra earmarked funding and technical support.

SYSTEM IN PRACTICE

An overview of the system in practice

No accurate population data was available for the 2005 voter registration exercise in Liberia. The NEC therefore estimated the size of the population based on a joint UN-World Bank assessment done in February 2004, which put the Liberian population at some 2.9 million with 50% of that of voting age.

The October 2005 presidential and legislative elections voter registration drive was held over a six-week period at 1,533 voter registration centres. Voter registration ended on 4 June 2005. At the cut-off date a total of 1.35 million people had been registered, which constituted around 90% of the estimated people qualified to vote. There was no significant delay in the process. All planned actions were held on time, but the rainy season affected some of the equipment and materials; for example, ORM forms were sometimes not readable by the scanners.

The use of Polaroid cameras and film worked well in the 2005 registration drive, but as they are no longer produced the NEC intends using digital cameras for the 2011 registration exercise.

Field implementation was difficult owing to the poor road conditions but the NEC was able to stick to the action plan because of the substantial support received from UNMIL whose helicopters and trunks helped in reaching remote areas.

The extensive and costly staff training programme run by the NEC, UNMIL and partners was key to the overall success of the collection and processing of data. It is important to note, however, that a substantial amount of manual correction was required once the forms arrived in from the field. A system was developed by IT experts and a team of staff to review the forms and data before and after they were scanned. The data needed to be checked manually and corrections were made before inclusion in the voters' roll. OMR is dependent on error-prone bubbling – even if staff are well trained.

Transparency of the process

Representatives of registered political parties and domestic and international observers were welcome to monitor data collection at the registration centres. A list of all registration centres was published, and the provisional voters' roll was displayed at each registration centre and in each magistrate's office for inspection, verification and amendment by voters.

According to the voter regulation guidelines, the BOC must certify that the voters' roll and a copy of the certificated roll are open for public scrutiny at each magistrate's office. The commission must also make electronic copies of the certified voters' roll available on request. The double exhibition of the voters' roll for IDPs both at camps and at the voter registration centre in their county of origin increased the transparency of the process. All the above mentioned procedures helped to build trust in the registration exercise. CSOs and electoral stakeholders were satisfied with the transparency of the process and with the quality of the final voters' roll.

Understanding and acceptance by voters

The fact that Liberia has no national ID card system probably contributed to the high number (90%) of registrations. The voter registration card, which features an individual's photograph, has become the main form of identification in Liberia and is accepted as a legitimate ID by banks and other financial institutions in the country. This goes a long way in improving Liberians' daily lives and activities. Although it was not the NEC's objective or task to produce national ID cards, this can be considered as a positive spin-off of the high-quality voter registration card.

So far, political parties, observers and voters have a high level of confidence

in and acceptance of the voters' roll such that there have been no significant complaints made by political parties or voters.

Accessibility and provisions for voters with special needs

Following constitutional requirements and NEC guidelines vis-à-vis distribution, 1,533 voter registration centres were used in 2005 to register some 1.35 million persons, representing about 90% of all eligible voters in Liberia.

NEC regulations stipulate that voter registration centres should be established in areas that are free of threat and are politically neutral and accessible to all, particularly people with disabilities. Section 32 of the 1986 Election Law was amended and two subsections were added[15] dealing respectively with giving preference to persons with disabilities at registration centres and locating and arranging centres to render them accessible to voters with special needs. The topic was elaborated on during registration centre staff training sessions.

System products and uses

In order to meet the various electoral process requirements, the 2005 voter registration exercise produced the following outputs:

- *The voter card* issued to registered voters has several functions: it is proof of successful voter registration and is the document presented as identification to vote at an election.
- *Provisional voters' rolls* which were displayed at each registration centre for inspection, verification and amendment by voters.
- *The final voters' register* for each polling stations used on election day to verify eligibility to vote on election day and to verify candidate nomination.
- *The certificated roll* at each magistrate's office which was open for public scrutiny and for distribution to political parties.
- The *list of voter registration centre locations*, which then also served as polling locations on election day.

As an added benefit, the voter card became a widely accepted ID document in Liberia.

Quality assurance mechanisms

Every stage of the process – from field registration to data processing – was supervised and under strict quality control. A registrar ensured internal control of the registration process in the field. As team manager, s/he had to ensure that forms were shaded properly, that the photographer was issuing photographs according to procedure, and that the registration clerk was filling in the forms correctly. The completeness of forms was checked and corrected when necessary.

The second level of quality was assured by voter registration supervisors. One supervisor was in charge of up to five registration centres. S/he had to visit the centres at least twice a week to ensure that all procedural and/or logistics assistance required by centres was available and that procedures were being followed correctly.

The third level of quality assurance occurred at the computer centre where forms were subject to a final manual check before going to data processing. Several quality assurance steps were in place at the data processing centre, particularly after the forms were scanned as the quality of information coming off the forms was not good (one should bear in mind the workload and the conditions at registration centres in connection with the inherently error-prone 'bubbling' process).

It is an important lesson and crucial to understand that the scanning of OMR forms is really only one of several steps involved in the whole process. There were at least two to three steps prior to scanning and at least two to three steps after scanning the forms at the data centre. More than 50 people were engaged to correct the forms manually and verify the data before and after the scanning process. The use of high-speed scanners reduced the time for one of these steps. The aim, however, would be to shift the workload to field staff rather than processing the data at the data centre. There is probably no overall efficiency gain from scanning, just a shifting of work from the data centre to the registration teams.

The final level of quality assurance was the public inspection of the provisional voters' registers. Only about 8,000 corrections were processed after the public inspection, which revealed that the data capturing and processing were done relatively accurately and that the quality assurance mechanisms at all levels performed well.

Voter registration personnel

Local and external experts

In 2005, the NEC had been reconstituted to provide legal and operational oversight to the elections while UNMIL took operational responsibility for a broad range of areas including security, communications, procurement, and materials distribution and retrieval. UNMIL directly planned, coordinated and conducted election support operations, albeit based on NEC timelines and with some local NEC staff participation. Liberia's challenging physical environment and lack of material assets made UNMIL participation critical to the NEC's ability to claim credible and successful elections.

UN advisers played a major role in the decision-making process concerning registration methodology, while UN volunteer staff worked as advisors to the electoral process and provided technical assistance to each NEC county electoral office. UNMIL's Public Information Unit provided voter information

on registration and voting to the Liberian electorate. The provision of technical assistance and training for NEC staff helped to build up the commission's technical expertise. After the 2005 elections, UNMIL handed over all responsibility to conduct any by-elections, general elections or referenda to the NEC.

UNMIL provided four international staff members (one advisor, two developers and one systems administrator) dedicated to the data centre during the 2005 voter registration exercise. Additional international UNMIL staff supported the data centre periodically, especially in the areas of facility management and operations supervision. The International Foundation for Electoral Systems (IFES) also provided short-term consultants who helped with the initial planning and maintenance of the scanners.

UNMIL operations gradually decreased following the 2005 elections and there is no longer any direct support given to the NEC. The documents transferred from UNMIL to the NEC, including logistical planning, tenders for materials and equipments, etc., were considered limited. However, the NEC was able to conduct nine successful by-elections from 2005 to 2010, with little UNDP or UNMIL support.

For the upcoming 2011 elections, the NEC will for the first time be fully in charge of voter registration and the conduct of a general election. The UNDP, EU, IFES and other international organisations will provide technical and financial support to the NEC for the election. IFES has established a technical assistance team covering certain aspects of voter registration, while the UN will provide advice, assistance and capacity building in all key areas of the electoral operation.

The NEC will establish a voter registration task force comprising NEC staff and international advisors to coordinate the international assistance provided for the 2011 voter registration exercise. In July and August 2010 the UNDP was recruiting and deploying advisors to support the NEC in its preparations for the 2011 elections. Some stakeholders mentioned, however, that this necessary support for the NEC was coming very late (if not too late) especially for the registration planning process.

Selection and training of registration personnel for fieldwork
Voter registration staff were selected partly from permanent NEC personal and partly on the basis of application forms and tests. Training was based on a cascade process and training sessions were held between three days and a week depending on the level of training required. According to the NEC 2005 election report, about 110 registration supervisors and 4,156 voter registrars were trained at the NEC headquarters, in the counties and at constituency level.

The first step was the training-of-trainers undertaken for permanent NEC staff and selected trainers. At the second level the county teams were trained. These teams comprised the county assistant magistrate and the UNMIL county

electoral adviser. Voter registration supervisors were then trained by the county training teams. Finally, the prospective voter registration staff, constituted on the basis of application forms and tests, received training in all aspects of the registration process to enable them to manage a registration process effectively. The county training teams monitored training of the voter registration supervisors and registration staff. Where necessary they also assisted the supervisors to train registration staff.

Supervision and control structures

One hundred and ten registration supervisors were recruited and trained by the joint staff recruitment taskforce (NEC and UNMIL) to supervise registration staff in the field.[16] The supervisors had to visit each assigned voter registration centre at least every two days. In addition to reporting and quality control, a supervisor's responsibility was to ensure that all the procedures were followed and that any logistics assistance needed was available at field level. The supervisor also collected material to take to the county NEC office for further processing.

Role of information and communication technology

Collection of data in the field

In order to cover all geographical areas of the country, the distribution of voter registration centres was done on the principle that each amalgamated town and ward must have at least one centre. One day prior to the commencement of registration each voter registration centre was supplied with one registration kit in a sealed trunk.

Each voter registration centre had four staff members, namely:

- one registrar in charge of the overall management of the centre and its activities;
- one registration clerk who assisted the registrar and was in charge in her/his absence;
- one photographer; and
- one 'shader' whose job was to bubble the OMR forms.

The process flow in the registration centres was as follows:

- The registration clerk wrote the name and particulars of each applicant on the OMR voter registration form. Each voter registration form bears a unique number which is specific to the voter. The applicant signed the application form with her/his signature or fingerprint. The registration clerk then directed the applicant to the photographer.

- The shader shaded the information recorded on the voter registration form.
- The registrar checked the information recorded and shaded on the voter registration form and signed it.
- The applicant was meanwhile photographed by the photographer, given two photographs and then directed to the registrar.
- The applicant handed over the two photographs to the registrar, who attached one photograph to the voter registration form and the other to the voter's card which was then laminated.
- Valid voter registration forms, together with the spoiled forms, were submitted by the electoral support officer/electoral supervisor team to the magistrate at county level.
- Valid voter registration forms, together with the spoiled forms, in each county were transported to the NEC headquarters in Monrovia to be scanned.
- The NEC created a computerised voters' roll, and printed and distributed the provisional voters' rolls.
- Each provisional voters' roll was displayed at each registration centre to give the electorate an opportunity to make sure that only eligible voters were registered and that all details were correct (this exercise is called an 'exhibition').
- All incorrect entries on the provisional voters' roll were corrected and omissions added at the NEC headquarters.
- The final voters' rolls were printed and sent to the relevant polling centres.

The voter's card is pre-printed and is part of the application form. After the voter's details have been filled in by hand, the voter's photograph is attached and the card is laminated before it is handed to the registered voter.

Transmission and processing of data

After having undergone all necessary controls, each voter's registration data (as part A of the OMR form containing the voter's photograph, fingerprint and all necessary information for an applicant's registration) was packed into tamper-evident bags at the counties. These bags were collected by the NEC voter registration supervisor and physically transported to the NEC computer centre. This was done on a regular basis to ensure the timely processing of forms.

At headquarters the forms were manually counted, visually controlled and then sent to the scanners for scanning. If there was no difficulty during scanning, the data and images were processed and sent to the voter registration database and image database respectively. While the data was validated before creation of the voters' roll, there was only limited attempt to identify multiple registrations by comparing voters' personal data. All OMR forms were archived at the end of the process.

Six scanners were available for processing the OMR forms in 2005. These high-speed scanners (DRS PhotoScribe 900), each with an actual scanning speed of about 80 forms per minute, were installed at the computer centre. Manufacturers often quote higher scanning rates, but real operational speed is often lower when dealing with forms from the field exercises.

Forms that were rejected at the first scan were sent to the data entry clerks for manual correction. This was done by improving the quality of data on the form, or ironing the form to reduce wrinkles or the level of humidity in the paper. It is important to point out, however, that very few forms were rejected outright.

An example of an OMR form used in 2005 to capture data in the field. The voter's black and white photograph was taken with a Polaroid camera and ink was used to produce the fingerprint.

The scanner uses combined OMR and image recognition technology. It can detect and record – in real time – a variety of items on a form including the barcode and photograph.

The data centre met all critical deadlines and produced a voters' roll and results' reports which were widely regarded as being accurate, credible and of high quality. Owing to short timelines and limited local IT-skilled staff, the complex computerised system selected by the NEC was largely implemented and managed by international staff. During peak operational periods in 2005 the data centre employed approximately 50 short-term staff members, including data entry operators, supervisors and other operations support staff.

The data processing centre currently (2010) has two HP Proliant ML 370 servers, each with a 1.2 terabyte capacity. One server is dedicated to hosting the complete voters' roll data and the other hosts the images. They work together for data processing by operating different controls or to crosscheck each other.

Review and verification of data

A preliminary voters' roll was produced at the end of the scanning process for exhibition at all voter registration centres and magistrate's offices across the country. The NEC developed exhibition procedures and a procedures' manual which detailed all aspects of the process, including the role of different stakeholders and the proper handling of review processes and documentation.

The provisional voters' register was displayed for review and verification for three days only, from 30 June-2 July 2005. Despite this short time period, more than 550,000 voters (representing 40.74% of registered voters) used the

opportunity to check that their details were correctly recorded. Around 8,000 amendments to the voters' roll were required, representing data corrections for only 1.45% of registered voters. Some 900 Liberians holding valid voter registration cards were missing from the provisional voters' list, but were added to the final roll.

Role of civic and voter education in the registration process

Civic and voter education is generally seen as a critical part of the democratic process in any country. Liberia's 2005 public information and civic and voter education campaigns were carried out at national and local level by the NEC Information and Education Department in all amalgamated towns and wards. The NEC and its UNMIL advisers developed a civic and voter education programme which was launched on 31 January 2005. Donors, funding agencies, CSOs and the media supported this initiative.

NEC Information and Education played a crucial role in the voter registration operation in providing neutral and correct information to the population. Such information included the location of voter registration centres, operating hours, eligibility criteria and the documents required for registration.

The voter and civic education campaign aimed to cast its net wide and reach the remotest parts of the country. The diversity of the Liberian population in terms of ethnicity, language, religion, customs, traditions and resources were carefully considered in the development and production of the materials and messages for dissemination. Education and information activities were defined differently according to the group targeted for coverage, but all activities pursued the same objective of bringing out a large number of qualified voters to register and to vote.

Numerous and varied materials were distributed to the county electoral offices for the public information campaign. Special emphasis was given to radio broadcasts because of the high levels of illiteracy in Liberia and the wide coverage of radio. The education materials, media and methodology used in 2005 included banners, posters, flyers, flip charts, radio and television talk shows, dramas, interviews, spot announcements, CDs and cassettes, jingles, parades, workshops, educational and training booklets, face-to-face education, on-the-spot information sharing, newspapers advertisements, street theatre, community mobilisation and press conferences.

All the materials and media emphasised:

- the need and purpose of the registration process;
- eligibility criteria and conditions for registration;
- the location of registration centres;
- the dates and times for registration;
- the documents that must be presented by an applicant;

- the purpose of the exhibition process;
- the locations of exhibition centres and their operating hours; and
- the purpose, locations and timing of the inquiry process.

According to the 2005 NEC Election Report, civic and voter education cost around US$2,615,954 and was financed entirely by the UNDP basket fund. More than 121 NEC-accredited CSOs were involved in the process. International organisations supported the programme by providing technical assistance and funding activities.

Advertisement to encourage registered voters to replace lost or damaged registration cards.

It is difficult to assess the impact of short-term voter information at elections, especially as the 2005 elections were held under very difficult (post war) conditions. However, stakeholders confirmed the importance and positive impact of the voter information campaign. An estimated 90% of eligible voters registered and about 67% of registered voters turned out to vote. This is a strong sign that the NEC and UNMIL's voter education campaign was reasonably successful.

No civic and voter education plans are available yet for the upcoming 2011 elections, but the NEC confirmed it would build on the experience and success of the 2005 campaign.

Role of different stakeholders in registration process

CSOs and NGOs
With the aim to make the electoral process transparent, the NEC External Relations Office implemented a code of conduct, managed the accreditation process and provided information on a regular basis to political parties and observer groups.

Domestic and international CSOs and non-governmental organisations (NGOs) were involved in the process and played essential roles at different stages of the electoral process. They were mostly involved in civic and voter education activities as well as monitoring voter registration. Involved stakeholders provided critical assistance to assess the quality of the voters' roll and prove the eligibility of registered voters, and worked on strategies to exclude those who were not qualified to vote. This process was important to increase transparency and trust in the system as well as to prevent fraud.

CSOs and NGOs received accreditation by the NEC and had to act in accordance with a code of conduct. The code of conduct was developed to ensure that the participation of CSOs and NGOs would not disrupt or undermine the registration process. A total of some 50 domestic organisations and 24 international organisations provided over 3,700 observers to cover the entire electoral process.

Political parties

Inter-party consultative committees led by the NEC provided a platform for political parties, CSO representatives and the media to exchange information and stay up to date on the electoral process. This was vital for maintaining transparency and trust in the voter registration system and process. Most of the political parties showed willingness to cooperate in building an environment for free and fair elections.

Of the 30 political parties registered in Liberia, 21 of them and coalitions along with independent candidates contested the 2005 elections. All contesting parties signed either the code of conduct or a memorandum of understanding to abide by the code of conduct.

Political parties were engaged in the voter registration exercise either as monitors of the process and/or as activists. Candidates and party agents encouraged their sympathisers to register and later to verify that they were correctly enrolled on the provisional voters' list. The political parties mostly used NEC-produced voter education materials to animate their debates, meetings and information campaigns.

Owing to the high level of illiteracy in Liberia, political parties used community radio stations for broadcasting their messages, with the intention of reaching out to a large segment of the population and those in the remotest areas of the country.

Donors

The UNDP managed the basket fund for financial support to the 2005 Liberian elections in accordance with its procurement rules. Total contributions amounted to some US$18.9 million, and included the cost of the presidential run-off election.[17] Table 2 lists the financial contributions to the 2005 elections.

Table 2: **Financial contributions to the UNDP-managed basket fund for the 2005 elections**

Contributor	US$
Government of Liberia	3,918,791
UNMIL	8,587,632
IFES	2,430,000
European Commission	3,454,666
UNDP	579,819
Total	**18,970,908**

The Government of Liberia financed only one-fifth of the total election costs for the 2005 general elections, whereas UNMIL was by far the biggest financial contributor. However, the nine by-elections held between 2005 and 2010 were mostly financed by the Government of Liberia with very limited to no support from the international community.

The NEC national draft budget for the period June 2010-December 2011 is US$38 million. This period will include a new voter registration drive, civic and voter education, a possible referendum, elections and run-off elections. The biggest single item in the election budget is the voter registration drive at a little over US$7 million, followed by logistical costs at US$6.4 million. Donors have already committed to support the electoral process in Liberia and will again carry most of the costs.

Sustainability of the system

System updates

The NEC has decided to continue using the 2005 voter registration system in coming years. This drastically reduces any risks inherent in a new system, is cost effective and reduces the burden for voter information. NEC staff and voters are also now familiar with the procedure.

The field equipment for upcoming elections remains basically the same. Changes and additions, however, include the replacement of Polaroid cameras with new digital cameras, the inclusion of a power system (most likely solar power) and a printing system comprising a thermal ribbon printer with photo or sticky media. The data centre will use the same scanners as in 2005, only the number will increase from four to six.

Updating of the data

The voters' register has not been updated since the 2005 voter registration exercise, and that register has been used by the NEC for the nine by-elections held between 2005 and 2010. The replacement of lost voter cards was offered prior to polling day in these instances.

The accuracy and completeness of the voters' register has therefore deteriorated significantly since 2005. Results from the 2008 census suggest that 470,000 citizens who were too young to register in 2005 will be at least 18 years old by 2011.[18] Based on the census data, approximately two million Liberians should be eligible to vote in 2011, which is a 35% difference with the existing voters' roll.

Owing to the required delimitation of boundaries, the voters' register must be redone from scratch for the 2011 elections. The NEC will need to decide in future how to keep the voters' roll accurate between general elections.

Transferability of data to other systems

There were no plans to use the data captured in the 2005 voter registration drive for any other state administration purposes. The data was, of course, used internally for electoral purposes such as logistical preparations. The NEC stressed that voters' private data is protected by the Electoral Law Act, which also restricts the use of voters' roll data provided to political parties for electoral purposes only.

Capacity building and technological knowledge transfer to the NEC

The success of an electoral process depends on the skills and expertise of the electoral staff involved. In 2005 UNMIL practically took over the planning and organisation of the elections. Capacity building, knowledge transfer and training were not a high priority at the time of the conduct of the elections.

Some training programmes for NEC staff in 2005 included a two-month interactive training programme conducted by UNMIL to improve the knowledge and capacity of NEC staff in the logistics department,[19] and IFES sponsored computer training for 15 NEC filing clerks and office attendants.

After the 2005 elections, UNMIL handed over complete responsibility for the conduct of future elections to the NEC. But there were no capacity building or systematic training programmes for NEC staff even following the 2005 elections.

IFES and the UNDP did, however, sponsor a team of 24 NEC staff members to observe the 2008 Ghanaian elections and to familiarise themselves with the voter registration system employed in Ghana, including the use of OMR forms. IFES and the UNDP will provide technical assistance to support the NEC with the planning and preparations for the upcoming 2011 elections.

Voter registry and civil registry

As there is no civil registration system in Liberia, there is no standard form of nationwide identification or ID card. Only a very small number of Liberians possess passports (5%) or driver's licences (10%). The existence of a generally accepted national ID document can ease the burden on EMBs to identify voters and verify citizenship, and some EMBs even draw voters' personal data from the national database. This is currently not the case in Liberia.

Plans are afoot within the Ministry of Interior to set up a civil register in Liberia using sophisticated biometric data capture, and the ministry and the NEC are currently working on a future project to combine the two registers. However, there is no deadline for completion of the national civil registry and it will undoubtedly not be in place for the 2011 voter registration drive, which means that the NEC must continue with its own independent registration system.

ANALYSIS, EVALUATION AND RECOMMANDATIONS

Effectiveness of the system

The 2005 voter registration process was observed by a number of domestic and international organisations. All report that the registration process went well, with only a few small incidents that were not severe enough to interfere with the registration exercise.

There were no significant reports of voters being disenfranchised. Less than 1,000 voters claimed they had been omitted from the provisional registration roll and around 8,000 applied for corrections to their personal data. These errors and omissions were essentially due to human error, and proper and timely corrective action was taken.

The 2005 voter registration exercise was comprehensive and worked well: countrywide registration teams at polling station level registration centres collected applicants' data on OMR forms and centralised OMR processing was used to create the voters' database.

Use on the ground of OMR forms and rudimentary equipment (Polaroid cameras/film and cold laminating voter cards) was efficient. The simple field equipment proved durable even under harsh environmental conditions. The system itself has proven its capacity to be operated in very difficult conditions and with low infrastructure availability. In addition, the system is relatively economical, working out at a cost of some US$3.67 per registered voter.

Quality of the data

At the end of data processing, provisional registration rolls were exhibited for a three-day period. This exercise allowed voters to check the list, verify their personal data and request any corrections. About 550,000 registered voters checked their records. As mentioned, only 8,000 voters applied for corrections

to their personal data and some 1,000 registered voters had been omitted from the provisional roll. Most of these errors were corrected and the omitted voters were added to the list.

These errors together affected an average of only 0.63% of registered voters. This low percentage of errors and the acceptance of the voters' roll by all political parties and CSOs indicate that the system, as designed, worked properly.

Expectations versus outcome

When the NEC received the mandate to supervise the first post-war elections in 2005, the expectations of the voter registration system were that it would:

- provide an accurate and comprehensive register of eligible Liberian voters;
- prepare the Liberian voters' register in a transparent and speedy manner;
- produce a voters' register that would be accepted unanimously by all election stakeholders;
- produce resilient, legitimate and secure voter cards;
- be accessible and user-friendly, especially for staff working in the field;
- ensure that the rights and interests of all Liberians were guaranteed; and
- certify that the elections were organised in a manner acceptable to all.

At the same time, Liberians were expecting that the process would help:

- to end the protracted civil and political conflicts;
- to reinstall the values and principles of democracy and democratic process in national governance; and
- Liberian citizens to participate freely, whatever their status (refugee or not), in the democratic process.

The voter registration system used in 2005 did indeed live up to the expectations of all those involved in the process; there is confidence in the authenticity of the voters' register and it has the unanimous support of the domestic and international community. The 2005 voter registration exercise produced:

- a voters' register that was used without any modifications to organise nine by-elections. All political parties accepted the outcome of those elections, based on the 2005 voters' roll, which can be seen as an implicit recognition of the quality of the voters' roll. Stakeholders

have stated that the voters' register produced from the 2005 exercise was authentic, reliable and exhaustive; and
• secure and durable voter cards which are now used more generally in Liberia as official proof of identity in the absence a national ID card system in the country.

Lessons learned

A number of lessons can be drawn from the 2005 Liberian voter registration exercise, which was supervised by the NEC and conducted together with the international community. Some of the lessons are specific to Liberia while others are common to voter registration in general.

❑ It is easy for voters to understand the 'vote where you registered' concept and reduces voter education costs. Using the same centres for voter registration and polling is therefore encouraged.

❑ In a country with limited trained professional IT staff and lacking regional infrastructure, the use of low-tech field equipment for data collection and central data processing at headquarters worked well.

❑ It is important to bear in mind seasonal weather conditions when planning a voter registration exercise. Rainy seasons, for example, can be troublesome in terms of transportation, affecting both registration staff and registration turnout. Rain can also damage registration equipment in the field (cameras) and/or registration documents (OMR forms).

❑ Political parties widely accepted the voters' roll due to, among others, its public accessibility and the fact that data was corrected upon request. If political parties trust the system in place, there is no need to change it.

❑ The NEC was newly formed for the 2005 elections and had no previous experience in the conduct of elections. In the context of both limited time and national capacity, external experts needed to take on a larger role in planning and conducting the elections. This becomes even more important the more complex the adopted registration system is. However, if external experts must focus on ensuring that the immediate process is successful, the result is often limited time and opportunity for knowledge transfer to local EMB staff (which is also made more difficult based on the complexity of the system adopted and the time available for knowledge transfer).

❑ In post-conflict situations where international experts implement a voter registration system, it is essential that EMBs are supported with long-term training and capacity building. This will decrease EMBs' dependence on international assistance and increase sustainability of the system.

Cost-benefit analysis of voter registration

Total direct expenditure for the 2005 voter registration exercise in Liberia was US$4,961,871 – or US$3.67 per registered voter. However, when the contributions from other international partners and UNMIL are taken into account, the registration of about 1.35 million voters added up to a considerably higher amount, bringing the cost per registered voter to more than US$4.50.

The fact that political parties accepted the voters' roll and that it did not require updating helps the NEC to justify the original cost of its establishment. Compared to other countries, this amount is low considering the benefits obtained, which include:

- a computerised voters' register that is trusted and accepted by the electoral stakeholders and which allowed qualified voters to participate in the elections;
- an impressive registration rate (90% of 1.5 million eligible voters were registered);
- a provisional registration roll that allowed voters to check their records and make any necessary amendments, which later helped contribute to a well-organised election;
- a final voters' list and other documents used for polling purposes; and
- as an additional and unintended benefit, a voter card that is widely accepted in Liberia as legitimate proof of identity in the absence of a national identification card in the country.

Stakeholder satisfaction

The 2005 voter registration exercise in Liberia was fair, free and commendable. It was conducted peacefully and led to a successful post-war election that had low levels of complaints and disenfranchisement of eligible voters. An overwhelming majority of the stakeholders were satisfied with the exercise.

Influence of external stakeholders on the process

Since the NEC lacked practical experience and logistics means, an electoral taskforce was created to manage the joint exercise of voter registration and the conduct of the 2005 elections in Liberia. The voter registration process benefited at all stages from the presence of international experts. The international

community through the UNDP, UNMIL and UN Volunteers, together with NGOs, were fully and actively involved in the entire process. The UNDP and IFES funded technical advisors who, being at the forefront of the process implementation, strongly influenced NEC policies when it came to voter registration.

Sustainability of the system

In terms of choosing a system for the next registration exercise, there are significant advantages to continue using a similar methodology to that employed in 2005. These advantages include:

- the increased opportunity for the NEC to take ownership of and build capacity in a process that it is already familiar;
- the easier engagement of stakeholders and voters in a commonly understood and familiar process; and
- minimising costs by using existing systems wherever possible and minimising implementation risks.

When a country must decide on a new voter registration system there is often a political desire to include additional requirements and functionality to prevent multiple registrations. This usually involves introducing sophisticated data collection and processing systems, such as automated fingerprint identification or facial recognition systems. Upon careful evaluation of the trade-offs involved in following such an approach and based on ensuring optimal use of limited resources, the NEC has decided to maintain the current system with some minor modifications.

The 2005 voter registration system – Polaroid photo capture and completion of OMR forms in the field, with scanning of the forms done at the NEC computer centre – worked well. The system itself is quite simple, as shown above; however, its sustainability depends more on the way it is managed than on its methodological complexity.

In 2005 the NEC relied on the expertise and involvement of the international community. No training was conducted and there was no systematic capacity building within the IT department. This is a missed opportunity for the NEC as it will have to rely on external technical support for the upcoming voter registration exercise and elections.

Politically, the system proved its sustainability as the voters' roll was trusted for the 2005 elections, and the electoral stakeholders accept use of the voters' roll for a further five years even without an update.

Future developments

The voter registration methodology designed for the 2005 general elections will be used again in 2011 and probably beyond. Future challenges will be to find a

registration system that allows for continuous updating of the data to keep it current in terms of population growth and population movements.

The issue of biometric data capturing, which is considered an important tool to detect double registrations, was brought up again for the 2011 voter registration exercise. However, the NEC and other election stakeholders agreed that the methodology used in 2005 was sufficient, efficient and effective in creating an accepted and trusted voters' roll. Liberia's limited infrastructure, the low level of technological expertise on the ground and limited financial resources, among others, were taken into account in deciding to use the same voter registration methodology as that used in 2005.

Currently there are plans to implement a national ID card system in Liberia based on biometric technology. If implemented, the national ID card could provide another legal, valid document for voter registration. Discussions to link the voter registry with a civil registry are under way, but no concrete plans have been made.

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15   3.2(b) and 3.2(c)

16   Monrovia: NEC, 2005 Election Report.

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MALAWI

Alan Wall

EXECUTIVE SUMMARY

Country context

The Malawi Electoral Commission (MEC) constructed a completely new voters' register for the May 2009 parliamentary and presidential elections, based on an optical mark recognition (OMR) computerised system. This followed an unsuccessful attempt to implement an OMR-based system for the 2004 elections, and the use of manual voters' registers for the 1994 and 1999 elections. Independent observers had questioned the fairness of previous elections and the administrative capacity of the election management body (EMB). The 2009 elections were held in an atmosphere of political tension and intense dispute over whether MEC members had been appointed in accordance with the law.

The independent MEC is wholly responsible for voter registration. For this task it engaged 870 five-person temporary registration centre teams, which serviced 3,897 registration centres generally at voting station locations. Some weaknesses in MEC management and its planning and technical capacities hampered the effectiveness of voter registration: these were partially the result of delays in the appointment of MEC members and staff.

Registration to vote is voluntary and is available to all Malawi citizens 18 years or older who, on producing proof of identity, may register where they reside, where they were born or where they conduct their business. Registration is conducted over a 14-day period that ends at least 21 days before election day. There is no civil registry in Malawi, though draft plans for such a registry have been in existence since the mid 1990s.

Voter registration data for the 2009 election was collected using OMR forms. The system was chosen independently by the MEC due to its high processing capacity and because it was familiar. Equipment and form costs were shared between donors and the Government of Malawi, with donors providing some two-thirds of the funding. The equipment was purchased late and using Government of Malawi procedures, following an aborted attempt to purchase it through the United Nations Development Programme (UNDP). Five companies were successful in tendering for one or more of the eight components comprising the system. Voter registration data was collected using a three-part form: Part A was the voter's application for registration; Part B was the OMR form on to which

the data from Part A was transferred ('bubbled') and a photo and thumbprint attached by field registration centre staff; and Part C contained a voter identity card. Each registration centre had an equipment pack comprising a solar re-chargeable battery-powered digital camera, a printer and a fingerprint pad. Voter ID cards were produced and given to voters at the time of registration. Registration was staggered across the country since available funding could only purchase 870 equipment packs to service the 3,897 registration centres.

Forms were returned for central batch processing at the MEC's headquarters using high-speed scanners. Form images were kept in an SQL (structured query language) database and processed using Teleform software through two banks of OMR readers, with errors flagged for manual examination and correction. AFIS fingerprint matching software was used to detect duplicate registrations.

System in practice

Data collection did not start until August 2008 due to delays in MEC appointments and in the purchasing of equipment. Equipment problems and other management issues saw the planned 3.5-month period for data collection extended to end-January 2009. Provisional registers for public inspection were not available until end-March 2009, allowing insufficient time for error correction. Almost 5.9 million Malawians – around 94% of the estimated eligible population – registered to vote.

Field implementation proceeded peacefully. Turnout for the field registration process was heightened by the issuing of a voter ID card that rapidly became accepted by institutions such as banks as a de facto national ID card. The issuing of these cards at field registration centres appears to have proceeded accurately and smoothly. However, some 60% of field equipment packs became unserviceable likely due to inadequacy of training, poor care of equipment and field conditions. The OMR-coded forms had substantial errors and omissions leading to further delays in the registration process. While registration centres were open to observation by political parties and civil society organisations (CSOs) during the data collection and register inspection periods, the lengthy staggered data collection period made organising observation difficult. There was also a fairly widespread belief among stakeholders that the MEC was insufficiently active and transparent in providing information on voter registration progress.

The data collected was used to produce the voter ID cards, the provisional and final official voters' registers for each voting station and a CD of the national voters' register for political parties. These high-integrity products contained colour photographs and barcoded ID numbers for each voter. A 'reference list' in voter ID number order was also produced for each voting station.

Quality control mechanisms were planned for each stage of the registration process. In practice, however, the controls were at times insufficient or not

implemented. The provisional voters' register was put on public display on 30 March 2009 and the display period was extended twice, to late April. After the discovery of large numbers of errors and omissions during this inspection, a manual check commenced of all handwritten application forms against the electronically recorded data. Around 40% of records could be checked before the final voters' registers for the election were printed.

Between 2006 and the 2009 election the UNDP provided the MEC, for varying periods, with two senior advisors for elections and information and communication technology (ICT), and three other advisors whose responsibilities included voter registration issues. The management structure of the UNDP's technical assistance did not, however, provide for any harmonisation of their advice to the MEC.

The MEC centrally recruited supervisors and camera operators for each field registration team, and the three remaining members of each team were recruited locally by the team supervisor. The large number of teams stressed the MEC's ability to manage logistics and quality assurance. Two-day training sessions for field staff were conducted in a three-level cascade. Training groups were large, with equipment only available in the ratio of 1:10 participants.

The MEC conducted a civic and voter education campaign for voter registration using mainly radio and printed materials. Briefings for stakeholders were also held. Voter education funding for CSOs was provided through the UNDP basket fund and was coordinated with accredited CSOs through the Malawi Election Support Network (MESN). UNDP voter education funding was not available to CSOs until voter registration data collection had been completed. CSOs did attempt to mobilise voters to inspect the provisional registers during the inspection and verification period. Political parties attempted to mobilise their supporters to register and to check their registrations. The major parties had sufficient resources to provide observers at registration centres. Some parties and outside observers described liaison between the MEC and parties as poor for most of the pre-election period.

Major donor assistance for voter registration-related activities was through the UNDP-managed basket fund. The Elections Task Force was the main consultative mechanism between donors and the MEC. Although it met regularly, it had no mechanism for ensuring that agreements were followed through or that difficult issues were addressed. The lack of capacity building in MEC staff was a critical shortfall in the assistance programme to the MEC for the 2009 elections.

There are currently no plans for updating the voter registration system. The data is not transferred to any other systems, though the scanning equipment is also used for candidate nomination processing. Future pre-election data updates are planned in accordance with the law. The register will be updated between September 2009 and February 2010 for the 2010 local government elections. Several procedural improvements will be introduced for this update, including

reducing the number of field teams to 300 and centralising bubbling of the OMR forms.

Analysis, evaluation and recommendations

There were very few reports of voters being disenfranchised on voting day or of election-related violence due to problems with the voter data used at voting stations. Unlike the 1999 and 2004 elections, the 2009 election day did not have to be postponed due to deficiencies in voter registration. In these respects voter registration for the 2009 election could be regarded as effective. However, this was achieved only because the MEC implemented last-minute emergency measures in response to widespread inaccuracies and omissions in voter registration data found during the public inspection of the registers.

The cumulative impact of delays at each stage of the registration process was not recognised until too late: there was insufficient shared information or flexibility to ensure that plans could be effectively amended to meet changed circumstances. System problems were exacerbated by flaws in the management of basic administrative tasks such as warehousing and training.

Data quality issues were a significant problem. The scale of the errors revealed during the inspection of provisional registers led to a recheck of all applications for registration: around 40% of the data could be checked before the final voters' registers were printed. No identified duplicates were removed from the register as there was no process in place for their removal. However, some progress was made towards meeting the expectations of a registration system. The system produced a high-integrity voter ID card that has become a de facto general ID card for Malawians. Also, once the data is fully cleaned of errors, the voters' register will be updatable for future elections.

Many of the lessons that can be drawn from this experience are not inherently related to the voter registration system but are instead management issues that need to be considered in undertaking any electoral activity. They include the following:

- Maintain a holistic management view when considering the implementation of a voter registration system or any computerised electoral support system.
- Ensure donor assistance is provided in a timely fashion and is linked to the electoral cycle.
- Implement effective coordination mechanisms for technical assistance delivery.
- Make appointments to electoral management positions transparently.
- Regularly review voter registration plans to ensure they are still realistic.

- Develop systems and a corporate ethos to assure financial probity in all activities.
- Devise realistic and integrated tender specifications and assessments.
- Provide appropriately organised training for all staff involved in the voter registration system.
- Ensure data quality and integrity controls are sufficient, transparent and fully implemented.
- Promote regular communication between the EMB and stakeholders on voter registration progress and problems.

While significant problems were encountered, the benefits of computerisation appear to outweigh the costs – estimated for the 2009 elections at around US$3.06 per registered voter. Substantial benefits included a very high registration rate (94% of the eligible population), the production of a widely accepted de facto national ID card, and an election free of substantial allegations of disenfranchisement. There was general satisfaction that the MEC had finally implemented a computerised voters' register. However, stakeholders were critical of the quality of staff training and of the number of errors in voters' register data.

In general, the MEC ran an independent election management process that was not subject to external influence from stakeholders. A substantial exception to this was the large hands-on role played by the UNDP's technical advisors in developing and implementing the MEC's policies and practices. Some stakeholders were critical that the MEC did not listen more to external opinions.

Issues for sustainability of the voter registration system are as much related to the development of effective, accountable and transparent management within the MEC as to technical difficulties with the technology. There is a critical need for the MEC to develop financial, logistics and operational skills, as well as ICT skills. External technical assistance is likely to be required at least through to the 2014 national elections, no matter what systems are implemented. Funding may need to be found for replacing field equipment packs.

The large investment in the current voter registration system's equipment makes it unlikely that there will be any substantial change in the immediate future vis-à-vis the computerised voters' register. However, the lower volume of transactions expected from updating the register in future means that there is opportunity to revise some processes to make them more effective. Potential changes, some of which are already being considered or agreed to by the MEC, include:

- more controllable central key entry of data, or at least centralised OMR coding of forms;
- reducing voter registration teams to a more manageable number of better qualified staff;

- considering a more continuous update model for voter registration; and
- reviewing whether a lower cost register format combined with a voter ID or national ID card is sufficient basis for determining voter eligibility.

COUNTRY CONTEXT

Political history

From independence in 1964, Malawi was ruled by a one-party system under the Malawi Congress Party (MCP) of Hastings Banda. However, following a referendum in 1993, a new constitution was adopted in May 1994 that defined a multiparty system of governance. Four national elections have been held under this system, in 1994, 1999, 2004 and 2009. In the first multiparty elections of 1994 the United Democratic Front (UDF) won the largest number of seats in the National Assembly and its presidential candidate, Bakili Muluzi, won the presidency. The same result was achieved at the 1999 elections. At the 2004 elections, Muluzi's anointed successor as UDF presidential candidate, Bingu wa Mutharika, won the presidency, while the MCP won the largest number of seats in a heavily divided parliament. The UDF won the second largest number of seats.

In 2005 Mutharika formed a breakaway party, the Democratic Progressive Party (DPP), following policy disputes within the UDF particularly over anti-corruption issues. The DPP attracted parliamentary representatives from all major political forces and attempted to govern with a minority government. At the 19 May 2009 elections, Mutharika won the presidency as the DPP's candidate, and his DPP won almost 60% of the seats in parliament – the first time that a single party has won a majority of parliamentary seats since Malawi adopted a multiparty system.

The 1994 constitution provides for national elections to be held every five years to elect concurrently the president and a (currently) 193-member National Assembly. Both elections are held on a multiparty basis using a first-past-the-post electoral system, unchanged since the current constitution was enacted in 1994. Local government elections are scheduled every five years in the year following national elections. These have been held in 2000 and are scheduled again for 2010.

Political environment

The political environment for the 2009 elections was difficult. The defection in 2005 of President Bingu wa Mutharika from the UDF party, on whose ticket he was elected in 2004, to form the DPP and the subsequent luring to the DPP of a significant number of elected parliamentarians from the UDF, the MCP and

independents to form a minority government, created political acrimony. Attempts by the UDF and MCP to have the seats of these members of parliament declared vacant and by-elections held, as required by legal prohibitions on floor crossing, were blocked. There were impeachment attempts, refusals by the president to convene parliament and attempts by the UDF and MCP to block budgets and presidential appointments. For four years parliament did little legislative or other work.

Exacerbating these tensions were the poor relations between President Mutharika and his UDF predecessor as president, Bakili Muluzi. In May 2008 Muluzi and several alleged accomplices were accused of plotting a coup. Tensions rose in early 2009 as Muluzi insisted he was eligible to and would stand for the presidency at the 2009 elections – a view the government strongly disagreed with, citing the term and tenure limit provisions of the constitution. In late February 2009 Muluzi was arrested on corruption charges. His attempt to register as a candidate for the 2009 presidential election was rejected by the MEC – a decision upheld by the Constitutional Court three days before election day.

In April 2009, the two main opposition parties – the UDF and MCP – announced that they had formed a power-sharing alliance to contest the 19 May elections.

It was in this highly fractious and destabilising environment that the current MEC was, firstly, appointed, and then had to organise voter registration in time for the 2009 elections.

Socio-economic profile of the country

Landlocked in East Africa with a population of around 14.3 million, 85% of whom live in rural areas, Malawi is one of the most densely populated and least developed countries in Africa.[1] While a majority of the population is Chichewa speaking, there are six other significant language groups. Recent (2003) estimates are of 37% illiteracy. Population growth and health issues are of significant concern. Birth rates are relatively high, as are infant mortality and overall death rates, while life expectancy is relatively low at just under 44 years. The estimated AIDS prevalence rate (2007) is 11.9% of the population. Population growth and density is putting pressure on arable land: deforestation, land degradation and pollution of waterways (the 580 km long Lake Malawi spans much of Malawi's eastern border) are serious issues.

Corruption – regarded as rampant under previous regimes – has been targeted in the anti-corruption policies of current President Mutharika. Over one-third of Malawi's gross domestic product is from agricultural production and the agriculture sector is responsible for over 90% of Malawi's exports, of which around half is tobacco. Malawians are predominantly Christian (80%) though there is a significant Islamic population (14%). Around 53% of the population is estimated to live below the poverty line.

THE ELECTORAL STRUCTURE

Legal framework

The Constitution of the Republic of Malawi Chapter VII, Clauses 75-77 sets out the basis for electoral management and the electoral franchise. The legal framework for election implementation in Malawi is defined in the Parliamentary and Presidential Elections Act 1993. The Electoral Commission Act 1998 defines the appointment process, duties, functions and administrative framework of the MEC. The MEC may recommend subsidiary regulations to the minister of justice for issue by the minister.

Recent elections and electoral history

Observers noted the peaceful conduct of the May 2009 elections and that while there were problems with some aspects of the organisation of the election – notably regarding voter registration and the campaign environment – the election process overall was credible.[2] This was some improvement on previous elections. In reporting on Malawi elections between 1994 and 2004, the Chr Michelsen Institute noted that the quality of elections had not improved significantly,[3] and also noted that '… the chaos surrounding registration in 1999 was repeated in 2004, suggesting that a learning process has not taken place'.[4]

The election management body

The MEC consists of a chair, who must be a judge, and seven members serving four-year terms. While members do not have individual areas of policy responsibility, each serves on committees dealing with policy for various aspects of the MEC's operations. The commissioners are supported by a secretariat, headed by a chief elections officer (CEO). The CEO is assisted by two deputy CEOs – for Operations and for Finance and Administration – each of which heads one of the two branches of the secretariat. Operations comprises the departments of Election Services, Civic and Voter Education, Media and Public Relations; Finance and Administration comprises the departments of Finance, Procurement, Information and Communications Technology and Administration and Human Resources. Internal capacities of the MEC have been augmented by externally funded technical assistance provided through the UNDP.

As well as the head office in Blantyre, the MEC maintains three permanently staffed regional offices, one for each of the Northern, Central and Southern regions. These offices are supported by a district election commissioner in each of Malawi's 28 administrative districts. Unlike MEC staff at head office and regional level who are employees of an independent institution, the district election commissioner positions are currently filled by the government's district commissioner in each district.

Some 870 temporary field data collection teams were employed for the 2008

voter registration exercise. Each of these comprised a supervisor and camera operator who were used throughout the field data collection period, and three locally employed clerks who were engaged at each registration centre.

Operational and administrative weaknesses in MEC capacity hampered the MEC's management of the voter registration process. Skills levels in some critical areas were low, internal coordination, work integration and information-sharing mechanisms needed to be developed, and there were weaknesses in financial management policies and systems. Controversy over the appointment of MEC members delayed the appointment of key senior personnel, and there were continuing vacancies in critical areas such as internal audit, election operations and logistics.

Management weaknesses had been recognised by donors before the 2004 election, and capacity building was a key part of the assistance planned for the 2009 election. By the time the plan was implemented, however, election events had passed the capacity building stage and required intervention.

VOTER REGISTRATION

Legal framework, rules and regulations

The Constitution of the Republic of Malawi Chapter VII, Clauses 75-77 sets out the basis for the independence and functions of electoral management and the electoral franchise. In relation to voter registration it defines that:

- the franchise is open to all Malawian citizens 18 years of age or older, except the mentally incompetent, those under sentence of death and those convicted of an electoral offence; and
- eligible persons have a single registration to vote, which may be in respect of where they are ordinarily resident, where they were born, or where they are employed or conduct a business.

The Electoral Commission Act 1998 further defines the appointment process, duties and functions of the MEC. This act restates the independence of the MEC and requires that the MEC's members, other than the chair,[5] are appointed by the president after consultation with the leaders of the parties represented in parliament. Article 8 gives the MEC direct responsibility for the registration of voters, the establishment and production of voters' registers and the promotion of public awareness regarding electoral matters.

The legal framework for voter registration in Malawi is further elaborated in the Parliamentary and Presidential Elections Act 1993: Part III Registration of Voters, Clauses 15-30.

Voter registration is open for a period of no more than 14 days, finishing at least 21 days before election day. It is conducted by trained registration officers

at registration centres set up in each constituency. On election day there must be at least one voting station for every voter registration centre. An officially designated representative for each party contesting the election may be present at each registration centre. These representatives and any registered voter or person eligible to register may submit a complaint or appeal to the MEC about voter registration. The MEC must try to resolve all such issues before polling day.

Applicants for registration prove their eligibility by producing an authentic proof of identity document such as a driver's licence. If the applicant has no such document s/he can be vouched for by the village chief or headman of the area, another registered voter or a registration supervisor. Once registered, the voter is placed on the voters' register and given a registration certificate/card. If a voter loses the card it may be replaced. Voters' registers are open for inspection by voters, political parties and international observers during an unspecified inspection period. To prove eligibility to vote, a voter must show her/his voter card, which is then checked against the voters' register.
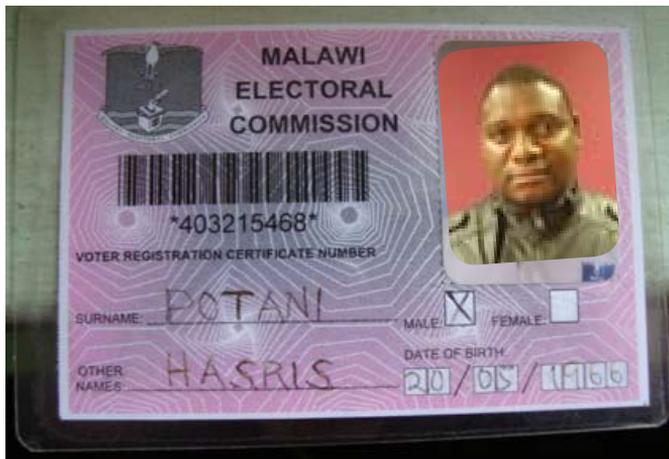
Voter cards in Malawi are part of the OMR form, printed in colour. A colour photograph is attached and the voter's personal details (name, gender and date of birth) are filled in by hand. In order to protect against damage or tampering, the card is cold laminated before it is handed over to the registered voter.

The current legal framework for voter registration is silent about some issues that could be clarified in legislation. Important issues in this regard include the following:

- The periods, locations and processes for inspection and verification of the voters' register.
- The rights of domestic observers to observe the voter registration process.

- A framework for challenges and complaints on voter registration, including a clear process by which the MEC may de-register persons believed to be ineligible for registration – for example, apparent duplicate registrations and persons believed to have died.

Also, the current laws do not clearly define the mechanism for appointment of members of the MEC. Disputes over the selection process for the current commissioners resulted in a challenge to their appointment being lodged in the courts. This delayed the appointment of commissioners (which delayed all MEC activities, including voter registration) and raised questions among some stakeholders about the impartiality of the appointments. The current law is from an era when the voters' register was maintained manually. As such, it contains requirements for many detailed actions which may have been appropriate for a manually maintained register but are not appropriate for a computerised register. Amendments to these provisions would provide a clearer basis for voter registration.

History of voter registration

In the four elections held under multiparty democracy in Malawi a fully manual voters' register was used for the 1994 and 1999 elections, though data was collected on OMR readable forms from 1998 onwards. Computerisation of the voters' register commenced in 2001, and computerised registers were used for the 2004 and 2009 elections.

For the 1994 election and prior to the establishment of the MEC in 1998, voters' registers for national elections were maintained manually by the EMB, which was a department of the National Assembly (parliament). Prior to 1996, separate voters' registers were maintained by local councils for local government elections.

In 1998 the MEC decided to introduce a computerised register but had no time to set it up before the 1999 election. An optical mark recognition (OMR) system was chosen for data capture and processing: the successful contractor was United Kingdom-based Data and Research Services (DRS). The reasons for choosing OMR methodology are not clear. Registrations for the 1999 elections were captured on OMR forms, and Polaroid equipment was used to take each registrant's photograph, copies of which were attached to the registration card given to the registered voter and to the registration form. However the voters' registers were still produced manually. There was public outcry over significant omissions from the voters' registers; the voter registration period had to be extended and parliament was recalled to postpone the election date.

In April/May 2000, scanners and computers were acquired by the MEC and computerisation of existing records commenced. Significant difficulties were encountered: the OMR forms had not been stored optimally and many had dust, termite and water damage that affected the accuracy of the scanning. The MEC

attempted to reconcile the OMR forms to the manual registration books used for the 1999 elections. Despite these problems, the MEC determined to use this register as the basis for registration for the 2004 elections.

Registration for the May 2004 elections used the same DRS system of OMR forms and Polaroid cameras. The registration period for the 2004 elections was initially scheduled to commence in June 2003, but was postponed due to problems with MEC readiness and the late procurement of materials. It eventually took place from 5-18 January 2004, and had to be extended to 25 January. Not all registrations could be processed in time for the April 2004 verification period.

The MEC had estimated that some 300,000 new voters would register. However, it announced in April 2004 a total of 6.5 million registered voters: this was around 2.5 million higher than the total at the 1999 election. This figure was much higher than census estimates of the 18-year-old and over population. As there were no checks on duplicate registrations or on transfers of registration it was suspected that many of these were multiple registrations. The final registers published on 9 May 2004 showed around one million fewer voters than the MEC had previously advised.

High Court petitions against the MEC's conduct of the registration and verification process were lodged by political parties and non-governmental organisations (NGOs). The election day was subsequently postponed for two days, to 20 May 2004. As an emergency measure, persons who were not found on the 2004 voters' register were allowed to vote if they could be identified from the 1999 voters' register or had a voter registration card.

Current or latest voter registration method

Malawi's current voters' register is maintained as a permanent register with a pre-election update. Voter registration for the 2009 elections used an OMR methodology for data capture that was seen as a continuation of a familiar method used for the 2004 elections.

Field data collection

Since the MEC could not afford to equip all 3,897 voter registration centres with data collection equipment, voter registration for the 2009 election was 'staggered' and held consecutively in different geographic regions. Data was collected in the field by five-person teams comprising a team supervisor and a camera operator who were centrally recruited and trained and who worked at various registration centres for the entire registration period, and three clerks recruited locally at each registration centre. Registration centres were generally located at local schools.

Field equipment

Field equipment and materials recorded each qualified applicant's details for processing to the voters' register, as well as the applicant's fingerprints and a

digital photograph, and issued the applicant a voter identification card: 870 sets of field equipment were acquired. Each cased equipment set comprised:

- a solar panel;
- a transformer connecting the panel to the main battery for charging;
- a main battery;
- an ac/dc inverter connecting the battery to the printer;
- an ink pad for thumbprints;
- a colour printer;
- a digital camera connected by USB cable to a printer; and
- 'sticky' paper for photo printing and cold laminating pouches for laminating voter ID cards.

The applicant's details were recorded on a three-part, double-sided OMR form which has a unique barcoded reference number printed on each of its three parts. Part A is a handwritten declaration of the applicant's details. Part B is an OMR coding form on which are coded the date, registration centre code, registration centre name, applicant's name, gender, date of birth, citizenship status, disability status, village name and code, residential address status, ID document type and serial number. Part C contains a tear off voter ID card and an information slip on voting retained by the voter.

Once an applicant's eligibility to register was confirmed, the handwritten registration application (Part A of the OMR registration form) was completed by registration staff and signed (if literate) by the applicant. The applicant's photo was taken and three copies were printed on 'sticky media' paper: one to be affixed to Part A of the form; one to Part B – the OMR data entry form; and the third to the voter ID card (Part C). An inked thumbprint from the applicant was placed on Part A and Part B of the form in the boxes provided.

Part C of the form was detached, the voter's details were handwritten on the voter ID card with the photo attached, and the card was signed by the voter and the registration officer. The card was then laminated and handed to the voter with an information slip on voting.

Part B of the form was later completed by registration centre staff (supposedly on the same day) by referring to the information on the handwritten Part A and registration centre identification data, and bubbling this in OMR readable format in the relevant boxes on the form. At the end of each day, completed Part A and Part B forms were required to be sealed in an envelope, with a completed matching batch header form included, and despatched to the MEC.

Amendments to existing data (for transfers, deaths, correction of errors) could usually be initiated by voters only during the provisional register inspection

period. Amendments were OMR coded on an amendment form which does not have a unique, pre-printed barcode: unique barcode stickers were placed on each form. In 2009, amendments were accepted until one week before voting day.

Data processing

Data processing was done centrally at the MEC headquarters in Blantyre. Part B forms received from registration centres were processed in batches through high-speed duplex scanners that take an image of the form. The scanners can handle 100,000-150,000 forms a day. After scanning, the form images were stored in an SQL database at the election management centre where they were processed one batch at a time through the OMR servers, containing two banks each of 18 readers. Images were processed through Teleform software, with individual fields – photo, thumbprint, signature, etc. – clipped out as necessary. Front and back images of Part B registration forms were compressed and sent to the readers, with a batch header file.

Processed images were imported into the error correction database. System-flagged errors were sent to the error correction queue. Three rooms, each comprising 20 terminals, were used for error correction, with a total of 180 staff working in three shifts per day. Flagged errors were checked on-screen against Part A forms. Pre-election this was a check against the physical Part A form: in mid-2009 Part A forms were being imaged for archiving and checking. If an error could be resolved by referencing the Part A form, the correction was flagged in the database. If not, it was referred to a supervisor check queue for supervisor investigation.

Duplicate checking was done using automatic fingerprint identification system (AFIS) off-the-shelf fingerprint matching software, matching each new thumbprint processed against all other thumbprints in the database – potentially a 1 to 5.9 million match – using a bank of 60 computers.

Data back-ups are held at the National Bank of Malawi. All equipment is UPS supported, with sufficient capacity to run all servers for three hours in the event of a power failure. Voters' register print formatting was done by the 36 election management centre readers. Official voters' registers and reference registers were printed in-house at the MEC's print room. Registers for all voting stations could be printed in 24 hours. Separate servers, in a separate server room, are used for the MEC's general business applications.

Data processing equipment

In 2008 the MEC purchased new equipment for voters' register data processing. To read the OMR forms, three Scan Max M06 duplex scanners were initially purchased, with a further two being acquired later to speed up processing. Each was supported by a scanner PC. A server supported by 20 PC workstations and database server and four application servers, supported by 26 PC workstations

and associated networking and backup equipment were acquired for matching and verifying raw data. Two servers plus 60 AFIS matching servers were acquired to support the AFIS fingerprint matching software. Three workstations and laser printers and 12 barcode readers were acquired for the warehousing system for voter registration forms. Eight high-speed A3 colour laser printers were acquired for voters' register printing.

*One of the high-tech modem
server units.*

DECISION-MAKING PROCESS FOR SELECTION OF THE VOTER REGISTRATION SYSTEM

Criteria for selection of the system used

Following the failure of the voter registration system at the 2004 elections, a review of the system determined that it would be more effective to scrap the existing data and equipment and to start a new voters' register from scratch. Initial suggestions were to move away from an OMR-based system given the problems of 2004, and to move to electronic data capture in the field. However, equipment demonstrated by potential suppliers was insufficiently reliable. A

basic consideration was to keep equipment in the field to an absolute minimum: even the move to digital cameras and field printers was forced on the MEC by Polaroid's exit from the film-making business.[6]

A major reason for the MEC's decision to stay with OMR processing appears to be that it was familiar. It was also seen as potentially the most effective method of processing a large number of data forms quickly.[7] The decision to use an OMR system for 2009 was made independently by the MEC. While there were early consultations with donors and the MEC's technical advisors played a major role in the decision-making process, there appears to have been no pressure from donors for the MEC to adopt a particular methodology.

In fact some donors doubted the MEC's capacity to implement a complex OMR voter registration system, or even the appropriateness of an electronic register. However, at the time when the voter registration system was being planned there was a large MEC capacity-building component in donor assistance to cover this. Delays in the acquisition of voter registration system equipment and in the implementation of voter registration meant that this planned capacity building did not occur.

Funding and procurement of voter registration equipment, materials and services

Election consolidated accounts show that the official cost of voter registration and voters' rolls for the 2009 election was US$25,047,147.[8] Of this amount, US$15,701,867 was contributed by the Government of Malawi and US$9,352,280 by donors through the UNDP basket fund. The donor contributions were used almost exclusively for the purchase of ICT equipment and supplies (US$9,268,317) with the remainder being used for voters' roll printing.[9] These costs exclude any civic and voter education costs and UNDP-supplied technical assistance costs,[10] and include the cost of equipment which is likely to be used for more than one election.

Acquisition process and costs

A request for proposal for the acquisition of 'Field Data Capture and Election Management Systems' was issued in October 2007, initiated by the UNDP under its tendering rules. This single request for proposal covered all aspects of the voter registration system – namely, field data capture, tracking, processing, matching and product. After evaluating responses to the proposals it was determined that the UNDP's required minimum of three technically qualified responsive bidders could not be met, and the process was aborted in late November 2007.

The request for proposal was then recast into ten separate modules in December 2007.[11] After discussions between the UNDP and MEC, it was agreed that to recommence the process using UNDP procedures would result in an unacceptable delay that would jeopardise election preparations. The

MEC undertook the procurement itself, using Government of Malawi rules in a restricted tender process, with the approval of the Malawian Office of the Director of Public Procurement.

Sufficient technically qualified bids were received for each module. Following evaluation of the bids in January 2008, contracts for eight system modules[12] were split between five different suppliers. While splitting the tender into the above modules resulted in a successful tender process, the nature of the split affected the implementation of scanning processing. In particular the split between Digital Scanner and Raw Data Capture and Validation modules awarded to one company and OMR Form Design and Capture modules awarded to another company, appeared to affect the integration of the front and back ends of OMR processing. The contracting of a system integrator as part of the tender process may have averted this.

SYSTEM IN PRACTICE

An overview of the system in practice

When planning voter registration for the 2009 elections in 2007, the MEC expected a target population of 7.5 million. This was revised down after the 2008 census reported that there were around 6.2 million Malawians aged 18 years or older. The actual registration achieved was 5,870,819 – or 94.4% of the target eligible population of 6,214,432.[13]

Plans had been drawn up that would give sufficient time for each phase of the registration process commencing in September 2007, with inspection of the provisional voters' registers in December 2008 and final voters' registers available in January 2009. However, there were significant delays in the commencement of the process. Reasons for the delays included:

- political and legal challenges to appointments to the MEC, which in turn delayed appointments to key policy decision-making positions in the MEC's secretariat;
- delays in the assurance of donor funds to fund equipment for the registration system; and
- delays in the tender process for acquiring voter registration equipment and materials.

Once the timetable for equipment acquisition was assured, plans were revised to implement a series of six geographically-based registration phases over a period of 3.5 months, commencing on 18 August 2008 and ending on 29 November 2008, using 3,897 registration centres. However, due to equipment problems and slow starts to register in some areas, this timetable had to be extended to

eight phases. The last phase of data collection was not concluded until the end of January 2009, increasing the registration data collection period to 5.5 months. This increased pressure on data processing and significantly reduced the time available to fix any errors found during final data cleaning and public inspection of the provisional register.

The staggering of voter registration created some problems for the registration process: there was some voter confusion; the transport of delicate equipment in harsh environments contributed to breakdown rates; and it made monitoring by political parties and CSOs more difficult.

There does not appear to have been any significant trial of the voter registration system prior to it going 'live' – for either data collection or data processing. Thus the first phase of implementation became a live test run. The problems encountered during the first phase, including equipment failure, resulted in supervisors and camera operators being recalled for further training.

Transport for field teams was provided by the army and other government departments. There were no evident security issues with the process and it was conducted peacefully. Field conditions at times were harsh and often very dusty. Some materials were in short supply – such as the sticky paper on which photographs were printed – or supplied late, but this did not have a major impact on the process.

Field implementation was characterised by two problems: equipment damage; and errors and omissions in data collection on the Part B OMR form. The extensive equipment failure, especially the digital cameras, caused significant problems and resulted in the registration period having to be extended, thus affecting the MEC's ability to produce an accurate register in time for the election. Currently a little over 40% of the field equipment packs are fully functional. Training adequacy, equipment care standards and field conditions are all likely to have played some part in the failure rate. Inaccurate bubbling of the complex Part B forms used for data processing resulted in a high number of errors in the voters' register. Insufficient training and work pressure are both likely to have contributed to these errors.

Transparency of the process

Political party and NGO observers were welcome to observe the registration centres during data collection and verification and inspection of the provisional voters' register. The extended registration period due to staggered registration made organising observers more difficult. CSOs in particular found lack of funding a barrier to observing registration centres over a 5.5-month period. At a central level, some parties and CSOs found it difficult to obtain regular information from the MEC on the overall progress of voter registration.

There were no procedures for ensuring transparency in data processing. The code used – much of which is proprietary, such as that used for the thumbprint

matching de-duplication routines – was not available for public scrutiny. While political parties did receive a CD of the national voters' register, it was received too late for them to be able to use its contents effectively.

Understanding and acceptance by voters

The issuing of a photo voter ID card to registered voters promoted turnout for the registration process. There was increasing incentive for people to register to vote as more institutions began accepting this card as a de facto national ID card.

The breaking up of data collection into phases instead of the nationwide process used previously for voter registration created some uncertainty for voters as well as suspicion in the minds of politicians, and may have increased the number of duplicate registrations. The late availability of donor funding for voter information through civil society – no funds were available during the voter registration period – limited local information activities that could have reduced any confusion.

Accessibility and provisions for voters with special needs

The apparently high percentage of the eligible population that registered indicates general accessibility to the process. The 3,897 voter registration centres were set up in voting stations. These were in most cases local schools that had been used at previous voter registration periods. There were no evident significant complaints about the geographic accessibility of locations. While there were no specific programmes in place to assist voters with special needs to register, an applicant could be assisted to register by a person of her/his choice or a registration official.

System products and uses

The system's products and equipment are used solely for election-related purposes. The critical outputs from the voter registration system are:

- the voter ID card: this is used by a voter to identify him/herself when voting. The card is also widely accepted as an official form of identification;
- the provisional register for each voter registration centre produced for inspection and verification by the voters. This contains each registered voter's colour photograph and barcoded ID number;
- the official voters' register for each voting station used at voting stations on voting day, in the same format as the provisional register; and
- the national voters' register supplied to political parties on CD for verification and campaigning purposes.

The voters' roll contains each registered voter's first name, last name, birth date,
gender, colour photograph and registration number in both digit and barcode format.

The MEC also provided each voting station with a 'reference register' list sorted by voter ID number in order to assist voting station staff to identify voters whose name details had been wrongly recorded on the voters' register.

Quality assurance mechanisms

At the field data collection stage, quality assurance involved team supervisors checking OMR bubbled forms, the sealing of each day's forms in an envelope with a correctly coded batch header, and investigating any discrepancies between forms despatched to each registration centre and those being returned. At the data processing stage, completeness was checked by each batch of forms being preceded by a matching-coded batch header with batch information. These mechanisms were not sufficiently robust and were often not followed or were sidelined. Errors in machine reading were thrown to an error queue for investigation and correction. At the data cleaning stage, thumbprints were matched to detect duplicate registrations; however, the duplicates identified by this check were not removed from the register.

The final planned major quality assurance mechanism was the public inspection of the provisional voters' registers. After the inspection of provisional registers there was a matching of transfers and removal of deaths advised during the inspection period.

As very large numbers of errors and omissions were found during the inspection period, the MEC decided to retrieve all Part A registration application forms for checking against register entries. This was only partially completed when the final voters' registers were printed. Since the May 2009 election, checking of Part A forms against register data has continued and a further quality control measure has been introduced. Part A forms are now being scanned and imaged to use as reference when there are queries about the data on the Part B (bubbled) forms.

There is no quality assurance mechanism for the removal of deceased voters from the register: the MEC relies solely on voluntary advice from voters or other local sources.

Voter registration personnel

Local and external experts
The UNDP supplied a large number of international experts to the MEC to provide technical advice for the 2009 elections. The UNDP senior elections advisor, senior IT advisor, database administrator, logistics advisor and voter registration consultant were directly involved in providing assistance to the voter registration process. The senior IT advisor was engaged between October 2006 and the 2009 elections. The senior election advisor post was permanently filled in October 2007, and the logistics advisor arrived in May 2008. The total cost (all donor funded) of these technical advisors to end June 2009 was US$525,851.[14]

There was no clear hierarchy among the UNDP advisors and no chief technical advisor through whom spheres of influence and advice were coordinated and advice to the MEC harmonised. The technical advisors all worked independently of the relevant MEC secretariat department head.

Selection and training of registration personnel for fieldwork
After considering and rejecting using police as voter registration centre staff, an open market recruitment process was conducted to select registration team supervisors and camera operators. Many of those recruited were civil servants. The remuneration offered to registration staff was contentious. Some staff initially recruited refused to attend training when their remuneration was not increased and had to be replaced, thereby delaying training sessions.[15]

Development of the training programme for registration centre staff was totally in the hands of UNDP advisors, as the MEC secretariat had no dedicated training capacity at the time.[16] Training was handled in a cascade fashion, with advisors conducting the initial cascade level training-of-trainers for 15 trainers.

These trainers then conducted a two-day training session in July 2008 for groups of 100 team supervisors. The first day concentrated on completion of the registration form (parts A, B and C). On the second day the supervisors

were teamed with their camera operators, and the group of 200 split into five subgroups of 40, each facilitated by three trainers. One camera was available for every ten participants. In total, 900 supervisor and camera operator teams were trained over nine sessions. Team supervisors then trained the three local staff who were to join each team.

After phase one of registration had been completed and problems in field staff performance had become apparent, supervisors and camera operators were retrained. At this time feedback had not yet been received regarding the accuracy problems vis-à-vis bubbling of the OMR forms.

Supervision and control structures

The large number of data collection teams in the field stressed the MEC's ability to manage the logistics and quality assurance of their work. A barcoded staff ID system had been devised as part of the fieldwork process management controls; however, it was not operational until one week before data collection was completed. There was therefore no control to ensure that the staff members who were recruited and trained were actually those doing the work.

The role of information and communication technology

Collection of data

The role of ICT-ready materials in data collection was critical: the filling in (bubbling) of data on OMR forms at each registration centre, and the affixing of the correct voter photograph and thumbprint on each OMR form was the basis for the processing of voter information.

OMR technology and high-speed scanners were used for automated data processing in Malawi.

Transmission of data

Voter registration data was not transmitted electronically from data collection to data processing locations. Part A (application for registration) and Part B (completed OMR processing) forms and completed batch header forms were physically transported from field registration centres to the MEC headquarters for processing and warehousing. At the MEC warehouse, returned forms were to be indexed and boxed by registration centre, with materials' movement tracked using a barcode system. Insufficient controls on the return of these forms and their warehousing meant that it was difficult to locate original documents for cross-checking errors and omissions found during the inspection of provisional voters' registers.

Processing of data

Data was processed progressively as it was returned from registration centres. Processing of data was subject to delays, particularly in the initial period while dealing with issues of OMR form recognition and alignment. But the major issue was the quality of the data being processed. OMR may have provided relatively fast processing, but with the lack of human intervention at the processing stage it relied completely on the accuracy of coding done at the field locations. This reliance proved a significant flaw in the system's operations.

Review and verification of data

The provisional voters' register was placed on display for review and verification between 30 March and 3 April 2009. This was initially extended to 10 April due to little initial public interest in checking, and then extended further as the public became aware of the extent of the errors. A description of errors found and further action taken is discussed below. Transfers and other amendments were advised by voters during the verification period, and were being accepted for processing up to a week before voting day.

There was insufficient time to clean data internally before the provisional register was issued for inspection, and then insufficient time before voting day to remedy all the errors found. At this point the cumulative effect of the delays at each stage on the voter registration process – in terms of funding, contracting, staffing, fieldwork and processing – was felt.

Role of civic and voter education in the registration process

The MEC secretariat's Civic and Voter Education department and Media and Public Relations department were heavily involved in producing and disseminating education and information programmes for voter registration. From April 2008 to January 2009 a monthly briefing was held for the media on registration progress. This frequency increased to as many as three per week when voting day was imminent. Regular press releases were issued, and information kits on election

processes, including voter registration, were issued. Workshops on election processes were also held for the media.

The MEC had access to research conducted by the National Initiative for Civic Education (NICE) on voter apathy at the 2004 elections,[17] and relied on NICE for further research on the effectiveness of its voter education programmes. The MEC developed specific messages for target groups of women, youth, lower literacy voters and voters with disabilities, and constructed materials for the general public. Messages were pre-tested in meetings with stakeholders and external experts. There was a large concentration on radio spots on state broadcasters and one private station; youth radio programmes/stations were specifically used. A number of different posters were produced: these concentrated on visual rather than verbal messages and had high visual impact, although some contained negative messages. Community structures – meetings, rallies and theatre performances – were also used, as were banners around registration centres and trucks with loud hailers.

The voter registration messages focused on:

- the importance of voting;
- the new register – earlier registrations were no longer valid for voting;
- explaining staggered registration and when registration would be occurring;
- where to go to register – nearest primary school;
- who is qualified to register; and
- the identification documents required to register.

Providing information on staggered registration proved a difficult, highly localised task that was only partially successful.

The bulk of voter education funding for CSOs was provided through the UNDP basket fund. A grants assessment committee had been set up with MEC participation to assess proposals for funding from accredited CSOs, pending the appointment by the UNDP of an organisation to manage voter education grants. After an eight-month selection process, the International Foundation for Electoral Systems was appointed in early 2009 to manage these grants.

Due to delays in appointing a management mechanism for civic and voter education funding, and in CSOs' difficulties in developing proposals of an acceptable standard, UNDP basket funding was not available for voter education activities until all voter registration data collection phases had been completed. Some organisations that were not reliant on UNDP basket funds, such as NICE (see below), were active in education campaigns for voter registration.

Civic and voter education funding from the UNDP basket fund was available to CSOs from March 2009, and thus was available to promote the voters' register

inspection process. The MEC assumed that CSOs would do this, but was disappointed with the extent and impact of the programmes. For the register inspection period the MEC relied heavily on radio to mobilise people to check the register. The MEC had to work hard to overcome negative word-of-mouth and credibility problems caused by the extent of errors in the registers. More intensive media campaigns were instituted during this period, and regular meetings were finally held with stakeholders.

Official expenditure on voter and civic education for the 2009 elections totalled US$3,333,649, of which US$2,409,438 was contributed by donors through the UNDP basket fund, and US$925,311 was contributed by the Government of Malawi.[18] This excluded any education funding provided outside of these two mechanisms. Election financial accounts do not give any breakdown of the costs of voter registration-specific programmes.

Role of different stakeholders in the registration process

CSOs and NGOs

CSOs and NGOs played a limited role in the voter registration process. CSO activities were coordinated through the MESN, comprising 75 CSOs and NGOs: 34 were successful in their proposals for voter education funding. However, as noted above, this funding was not available before the completion of voter registration data collection.

MESN member organisations did attempt to mobilise voters to check registrations during the verification period. However, as this coincided with the political campaign period and delivery of education programmes for voting day, 'people's minds were elsewhere'.[19]

NICE, a joint Government of Malawi/European Union funded initiative founded in 1999, was not reliant on any UNDP basket funding for its activities. It actively promoted pragmatic messages on when, where and why to register to vote. It developed its own MEC-approved materials in coordination with the MEC and MESN (to ensure standardised messages) and distributed MEC voter registration information materials. However, the MEC's ad hoc changes to the timing of voter registration phases made it difficult for NICE to implement its education campaign effectively.

While the MESN had argued that money from the UNDP basket fund should also be available for CSO election monitoring activities, this was rejected. NICE was able to monitor registration centres fairly comprehensively. MESN staff observed first-phase registration in a very small number (25) of registration centres in limited locations and reported on their findings to the MEC and then to the media. This was a critical report that had an impact on future MEC-MESN relations. The general view from the MESN was that the MEC was not proactive enough in providing it with information.

Political parties

Major political parties mobilised their voters to register and to verify that their registration was correctly recorded on the provisional voters' register. Some parties printed their own voter education materials urging voters to register and held intensive community meetings: others distributed MEC materials given to them through the MEC's district administrative offices. Major parties also had monitors at all registration centres.

At the beginning of the registration period the MEC tended to communicate mainly by press release, though meetings were held with the parties to explain the new voter registration system. Party representatives were also invited to training sessions for registration staff. Some parties claimed that it was difficult to obtain information from the MEC on the status of voter registration. The MEC commenced regular meetings and communications with the political parties in the final months before voting day. Only when the MEC finally acknowledged the extent of the problems with the register in the few weeks before election day were intensive attempts made by the MEC to: join political parties to the process and to inform them fully of the status; enlist their support to mobilise voters to check the register; and advise of the emergency measures to be taken on voting day.

Donors

While there was some direct bilateral assistance given to election-related activities, the major assistance for voter registration-related activities was managed through the UNDP-managed basket fund. Donors to the fund were the UNDP, European Commission and the governments of Canada, Germany, Ireland, Japan, Norway, the United Kingdom (UK) and the United States (US). The UK government through the Department for International Development (DFID) was the biggest contributor to the fund. Voter registration was by far the major MEC activity supported by donors.

The main consultative mechanism between the donors and the MEC was the Elections Task Force, which met regularly to coordinate and monitor support and allowed the MEC to update donors on progress. However, there appeared to be no mechanism for ensuring that agreements at these meetings were followed through, no compulsion that difficult issues (such as problems with the voters' register) were advised and discussed in a timely manner, and little proactive oversight by the donors. One donor noted:

> As in 2004, some felt that a common understanding of the role of UNDP was not shared by all. Some donors felt that UNDP could have played a stronger oversight function, particularly in terms of budgetary issues. Others felt that UNDP could have played more of an 'honest broker' role between donors and the MEC, again particularly in relation to discussions around the revised budget.[20]

Post-election use

System updates
As of July 2009 there were no plans for updating the system: however, control of any future system updates should be relatively easy as all processing is done centrally. Some improvements to the durability of field equipment have been implemented or are planned based on experiences during data collection in 2008 and 2009.

Updating of the data
As of end July 2009, work was continuing on cleaning the existing data by checking the OMR-derived computer records against the original handwritten Part A applications for registration. Future register updates are planned to be periodic prior to each election, as required by the current law.

The next major challenge for the system is the updating of voter records for the 2010 local government elections. For this update, the MEC secretariat has proposed simplifying the management of data collection and processing. Some of the key changes include:[21]

- reducing the number of data collection teams to a more manageable 300, and the number of staff in each team to three using the most proficient staff from 2008;
- collecting data in 14, seven-day phases between September 2009 and February 2010, while allowing time between each phase to review performance and equipment;
- filling in (bubbling) the OMR data processing forms centrally at MEC headquarters using a small team of specially trained staff; and
- collecting data in one district at a time, thereby simplifying transport and other logistics needs.

One issue that would need to be carefully monitored in maintaining accurate updated data is the capture of information on deceased registered voters. Currently there is no requirement in the law for deaths to be reported to the MEC. The MEC relies on voluntary advice of death, supported by a death certificate issued by a doctor or statement from a local chief. Compulsory reporting of deaths would enable the MEC to maintain a cleaner voters' register.

Transferability of data to other systems
Voter register data is currently not transferred to other systems, nor are there any plans to do so. Once current data is cleaned to the point where it is sound enough to be useful for its initial purpose, it would be appropriate to determine how it may be usefully employed for other election management or logistics systems.

Voter registration scanning equipment has been used for processing candidate nominations. There may also be potential links between the voter registry data and future demarcations of constituency boundaries.

Capacity building and technological knowledge transfer to the MEC

The UNDP's voter registration consultant noted in the pre-election review of the voter registration system conducted in April 2009 that:

> A final notable area of weakness observed is in the area of capacity building, wherein there is little evidence of specific national staff members being trained specifically to take over responsibilities currently performed by some of the international consultants. In this respect, changes such as nominating direct counterparts and sharing office space should be considered for introduction as soon as possible after this election.[22]

The lack of capacity building in the MEC was a critical shortfall in the MEC assistance programme prior to the 2009 election: however, there were factors beyond the control and influence of the external technical advisors that contributed strongly to this. The MEC has identified these factors to be:

- delays in the appointment of the MEC and MEC secretariat counterparts;
- resistance to change on the part of some MEC staff; and
- staff levels of expertise too low to expect skills to be passed on quickly.

The late appointment of some technical advisors meant that by the time of their appointment, the election process was at the stage where crisis-averting action was needed in the remaining compressed timeframes: there was no time to train counterparts to the necessary skills level.

Voter registry and civil registry

There is currently no civil registry in Malawi, nor any national ID card system. This was identified by many interlocutors during interviews as a problem for the voter registration system: the lack of a national population register meant that the simplest means of proving identity and eligibility, and controlling duplicate registrations, was not available.

Legislation proposing a civil registry system was drafted some years ago: however, like many other issues under consideration it disappeared in the wake of the post-2005 political disputes. There is hope it may be revived under the new government.

In the absence of an official national ID card, the voter ID card issued by the MEC during the 2008/2009 voter registration process has de facto become a widely accepted primary form of identification in Malawi. This is testament to the high regard within Malawi for the integrity of the voter registration system, despite quality control problems in the processing of data to the final voters' register. The issuing of voter cards also provided significant incentive for Malawians to register, perhaps explaining the very high percentage of the eligible population that registered to vote in 2008/2009.

ANALYSIS, EVALUATION AND RECOMMENDATIONS

Effectiveness of the system

There were very few reports of voters being disenfranchised on voting day or of election-related violence due to problems with the voter data used at voting stations. Unlike the 1999 and 2004 elections, the 2009 election day did not have to be postponed due to deficiencies in voter registration. In these respects, voter registration for the 2009 elections could be regarded as effective. However, this success was achieved only by the MEC implementing last minute emergency measures in response to widespread inaccuracies and omissions in voter register data found during the verification period for the register.

In developing a new voter registration system for the 2009 elections, confidence was placed in a system methodology that was very similar to that which had clearly failed in 2004, namely OMR-based data collection, field completion of OMR forms and centralised OMR processing. The appropriateness of retaining some management features of the 2004 system, for example field-based OMR form coding, could be questioned.

Problems encountered in implementing voter registration for the 2009 Malawi elections were in many cases identical or similar to those encountered at the 2004 elections. Critical to the near failure of the voter registration system in 2009 were again the issues of late provision of funding, late decisions on system implementation and poor quality data processing. Planning processes were not sufficient to deal with these issues. The impact of delays at each stage of the process and the resulting time pressures did not appear to be fully recognised until very late, when emergency fixes had to be applied immediately prior to voting day.

If handled with the care that one would normally handle any electronic equipment, the equipment used appears to be sufficiently robust for the conditions encountered. That only around 360 of the initial 870 equipment packs are now serviceable can be attributed to a combination of deficiencies in training, some confusion in management and control of the process, a lack of commitment by some field staff to maintaining the equipment properly and some unauthorised use by untrained field staff.

System problems were exacerbated by flaws in the management of basic administrative tasks. Control of data forms to and from field data collection points, and of returned materials in the MEC's central warehouse facility, was not always effective. This contributed significantly to problems in correcting errors in the voters' register.

Quality of data

Data quality issues were a significant problem for the voter registration system. The data errors found included missing forms and batch headers, misplaced photographs, duplicate entries and errors in coding voter and registration centre information. No identified duplicates were removed from the register as there was no process in place for their removal.

After the inspection of the provisional register, the MEC checked all errors found and also checked Part A source documents against the voters' register. The task was made more difficult as forms had not been properly sorted and indexed when being warehoused. A little over 40% of the forms could be checked before the register had to be printed for voting day. Available estimates of the error rates in the forms vary and work from different bases: Commonwealth Secretariat observers quote an error rate pre-correction of 24% and after correction of 14% of forms – which means that around 800,000 voters were affected.[23]
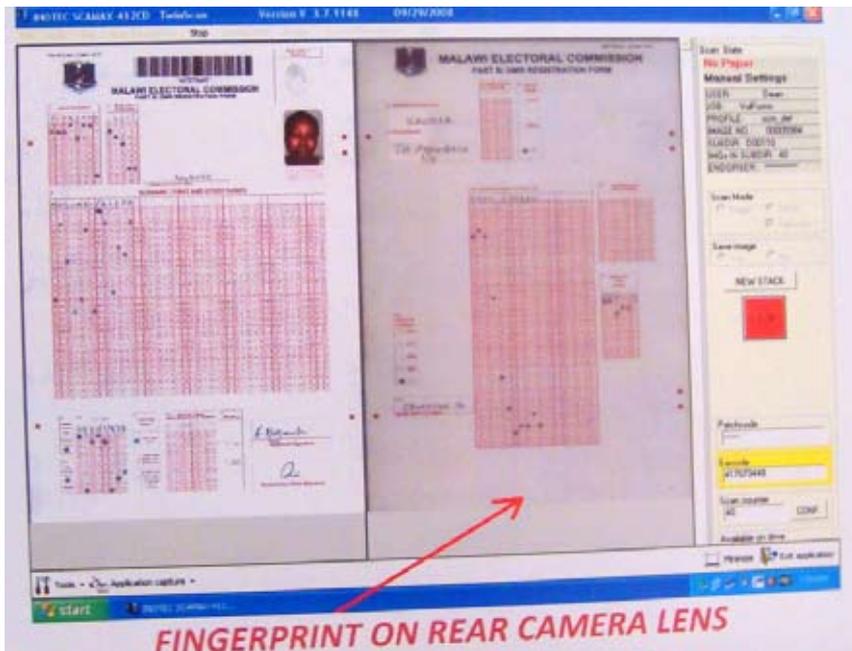
Computer programmes automatically prompt warning messages if the data seems to be incorrect.

As a large number of errors remained in the final voters' register, the MEC, after consultation with stakeholders, varied the criteria for determining the eligibility of persons to vote at a voting station:

- A 'reference list' in numeric voter ID number order was printed and distributed to voting stations so that staff could find voters whose names had been misspelled or inverted.
- A voter who produced a voter card with an ID number that was in the range of voter ID numbers for a particular voting station, but whose name was not on the voters' register at that voting station, could vote at the voting station. The names and ID numbers of these voters were handwritten at the bottom of the voting station's voters' register.

These were practical and sensible solutions to ensure a peaceful polling day, even if not fully in accordance with the electoral law. The measures were comparable to those taken at the 2004 election to deal with a similar failure in voters' register accuracy.

Expectations versus outcome

The expectations of the voter registration system were that it would, using a familiar methodology, provide a cost effective, fast, reliable, accurate, updatable computerised voters' register with an associated high-integrity voter ID card. It was expected that this would re-instil confidence in the MEC and the voters' register, which had suffered at the 2004 elections. It was also expected to provide a range of data to the MEC to analyse and use in future planning.

Some of these outcomes have been substantially achieved: the registration process produced a voter ID card that has become a widely accepted general form of identification for Malawians. Also, once the data is fully cleaned of errors, the voters' register will be updatable for future elections.

Some points on the other expectations include the following:

- OMR systems were not familiar enough to voter registration staff to prevent an unacceptably large number of errors in the OMR coding of forms.
- While field equipment was kept simple and to a minimum, it still suffered a high degree of breakdown.
- The costs of producing the 2009 voters' register using OMR processing, including past and continuing efforts to correct errors, are likely to exceed the costs of producing the register by more easily controllable methods such as verified data keying.
- The number of errors in voters' register data was such that the

MEC again had to announce supplementary voter eligibility checks to guard against disenfranchisement of voters.

- In terms of register integrity, the digital fingerprint matching software did identify duplicates, but no further action was taken to remove duplicate entries.
- The lack of transparency by the MEC about the difficulties encountered with the voters' register compounded public concern regarding the level of errors and contributed to a continuing lack of confidence in the MEC's abilities.
- Data for analysis has not yet been produced.

Lessons learned

Many lessons can be drawn from the 2008/2009 implementation of the voter registration system in Malawi. Many of the issues noted below are not inherently voter registration system-related: they are management issues that need to be considered in undertaking any electoral activity.

❑ *Maintain a clear, holistic view when considering the implementation of a voter registration system or any computerised electoral support system.* The effects of potential weak links in the management of any registration system need to be fully considered, rather than concentrating mainly on technical issues of particular computerised systems. Available capacity is needed to manage resulting staffing, finance, logistics, voter information and record management issues. Particular care needs to be taken in deciding whether it is effective to decentralise complex tasks to multiple field locations.

❑ *Ensure donor assistance is provided in a timely fashion, linked to the electoral cycle.* Both the funding mechanisms and implementing management mechanisms adopted by donors need to be fully responsive to the reality that funding for some critical electoral functions – such as voter registration and associated civic and voter education – is required early in the electoral cycle.

❑ *Implement effective coordination mechanisms for technical assistance delivery.* Uncoordinated technical assistance to an EMB can lead to confusion through the provision of contradictory advice to the EMB and the exacerbation of disagreements among EMB staff. Building an integrated, more hierarchical team-based approach to technical assistance can have more effective impact.

❑ *Make appointments to electoral management positions transparently.* The

perceived lack of consultation in the appointment of MEC members created political dispute, suspicion and delays in finalising MEC appointments, staff recruitment and election activities.

❑ *Review voter registration plans and timeframes regularly to ensure they are still realistic.* Continuous review of plans against changes in timeframes, and a more regular and transparent internal and external communication of problems encountered with voter registration may result in earlier and less crisis-driven solutions. Progress of registration processing requires continuous monitoring, with plans and/or methodologies being amended as necessary to ensure that cleaned preliminary registers can be produced sufficiently before voting day to allow for their verification and correction prior to the election.

❑ *Implement systems and develop a corporate ethos to ensure financial probity in all activities.* If an EMB is to attain public, government and donor confidence in its procurement activities, it requires: appropriate numbers of financially qualified staff; a secure and robust financial management system; an intensive internal audit programme that is not under secretariat control; and the development of a corporate ethos of shared probity. Defences are also necessary to prevent governments from having excuses for interfering in the management of electoral funding.

❑ *Devise realistic and integrated tender specifications and assessments.* Sufficient prior investigation of market capacities is required to ensure that delays are not caused by the failure of tender processes for voter registration system equipment and services. Assessment of responses to tenders for separate parts of an integrated system need to ensure that the solutions proposed for each part will integrate effectively.

❑ *Provide appropriately organised training for all staff involved in the voter registration system.* Training session planning needs to allow sufficient time for instruction and testing of participants' knowledge. Training group sizes must also be small enough to allow for effective learning and hands-on experience with all equipment and materials to be used. Staffing management controls need to ensure that only trained staff operate electoral systems. Training plans also need to consider the continuous skills development needs of EMB secretariat staff, especially in technical areas such as ICT, before implementation of any new systems.

❑ *Undertake rigorous pilot testing of voter registration and other electoral systems prior to full implementation.*

❑ *Ensure data quality and integrity controls are sufficient, transparent and fully implemented.* Data quality and integrity controls need to be comprehensive, multi-level and implemented sufficiently early to allow for the correction of omissions and errors before the final voters' register is produced for an election. Legal and procedural bases for voter registration also need to be sufficient to ensure that duplicate and other ineligible registrations may be removed from the register.

❑ *Promote regular communication on voter registration progress and problems between the EMB and stakeholders.* A highly proactive approach to informing stakeholders regularly about voter registration progress and issues builds an EMB's credibility and may assist it in obtaining support for solving registration problems. Even where stakeholders are seen as fractious, oppositional or divisive, it is essential for the EMB to provide regular and honest information-sharing opportunities to engender public trust.

Cost-benefit analysis of voter registration

Based on currently published figures, direct expenditure for the 2008/2009 voter registration exercise in Malawi was some US$4.27 per registered voter. Of this, US$1.58 per voter can be attributable to equipment costs for equipment that would be serviceable for at least two further local government elections and one, or possibly two, further national elections. Straight line allocating equipment costs over a further three elections would give an estimated voter registration cost for the 2009 elections of some US$3.08 per registered voter.

In return, the following was gained:

- An election in which a combination of products (voter ID cards, official voters' register and reference registers) from the voter registration system, used in ways both initially intended and unintended, allowed all voters who wanted to vote to do so with little risk of disenfranchisement.
- Very high coverage – over 94% of the eligible population was registered to vote.
- A high-integrity voter ID card that has been accepted widely as a generic national identity card.
- An electronic database, though still imperfect, which can be updated in future to produce a permanent voters' register.

- Sufficiently specified processing equipment with the capacity to cope with at least another three elections.
- For the first time since 1994, voter registration problems did not force postponement of a national election.

Despite the shortfalls examined herein regarding areas where the process could have been implemented more efficiently or more effectively and where it could be improved in future, it is important to bear in mind the benefits achieved. One important benefit was providing Malawians 18 years and older with a de facto national ID card, which has made a huge difference to many people's daily social and commercial lives, outside of any direct electoral benefit. While the process was by no means perfect or well implemented, the benefits are – and will continue to be – substantial.

Stakeholder satisfaction

Stakeholders had mixed views on the overall voter registration process and on its various components. While it was acknowledged that the MEC, after three attempts, had finally succeeded in implementing an electronic voters' register, stakeholders in general were not satisfied with the MEC's liaison when it came to voter registration issues. The training of voter registration staff was widely regarded as inadequate and was a significant contributor to the large number of errors in voter registration data.

Political parties were understandably critical of the decision to stagger registration as it increased the period for which they had to organise monitors from two weeks to 5.5 months. In addition, political parties did not receive a copy of the voters' register sufficiently before voting day. Opposition parties also voiced doubts about the validity of many voter registrations, particularly in areas where the number of voters registered was close to or more than census figures for those 18 years or older.

Influence of external stakeholders on the process

The general impression is that the MEC was careful to keep stakeholders distanced from the voter registration process. If anything, the MEC's tendency was not to engage with stakeholders.

The Elections Task Force was an avenue through which donors could influence MEC policies on voter registration, but according to some donors it was an opportunity not taken. The influence of the UNDP was unusual: UNDP-funded technical advisors had a profound influence on MEC policies for voter registration, often being in the forefront of writing and implementing such policies. However, due to the lack of a coordinated structure in the technical assistance mission, this influence was as likely to be personal as following any UNDP corporate agenda for driving change in the MEC.

The MEC did coordinate with CSOs on the voter education programme but it is not clear how much influence CSOs had on its content. The major complaint of opposition political parties was that they had no influence on the MEC's activities as they had not had the opportunity to nominate candidates for its membership. The MEC did take note of political parties' advice at some stages of the registration process – for example, on some rescheduling of planned registration phases.

System sustainability

The current voter registration system in Malawi is based on relatively old technology – digital photo capture and completion of OMR scannable forms – partially decentralised into what can be harsh field environments. The issues for sustainability are less about the complexity of the technology used and more about the development of effective, accountable and transparent management of voter registration processes.

The critical problems that occurred with the voter registration methodology used in Malawi in 2008/2009 were general management control issues, such as funding and contracting delays, planning inadequacies, lack of implementation of quality controls, poor control of decentralised staff activities and inadequacy of training capacities. These issues would have arisen under other computerised or manual voter registration methodologies.

Equipment replacement costs are an issue for sustainability. With around 60% of field registration equipment units unserviceable, less than 10% of registration centres could now be opened at any one time. Any future re-registration drive would require significant further investment in field equipment. If treated properly the terminals, scanners, servers, printers and associated computing equipment would last at least through to the next national election and perhaps another national election after that. There is currently no planning for the replacement of this equipment from internal MEC funds.

For the 2008/2009 voter registration process, the MEC relied heavily on expertise from international technical advisors supplied by the UNDP. Owing to late appointments and changes in secretariat staffing, for much of the voter registration period the advisors had difficulty building relationships with MEC counterparts that would be necessary for effective information transfer. As much of the process was in crisis management mode, these advisors also tended to be more implementers than mentors. MEC technical capacities remain relatively inexperienced and thin in a number of critical areas including logistics, training and ICT. A serious commitment to technical capacity building through the local government elections in 2010 and to the 2014 national elections may see the MEC able to implement the voter registration system unaided in 2014. However, it is more likely that technical assistance would be required to operate the system in 2014.

Political sustainability of the voter registration system would require much higher data accuracy and timeliness in future than was achieved in 2009.

MEC members have identified the following practical needs as being essential for maintaining a sustainable and cost-effective voter registration system:[24]

- Acceptance by government of the need for cyclical funding.
- Developing a continuous staff training programme.
- Maintaining a database of and contact with trained temporary staff.
- Raising public awareness of the need to maintain accurate voter registration.
- Investigating cost-sharing uses of voter registration equipment.

Future developments

There are several potential constraints on future development. The large investment in the current system's equipment makes it difficult to justify scrapping it and starting afresh on a different technological track. However, the time taken to OMR code and process forms, plus the many hours spent checking data in an attempt to correct large error rates in the information recorded, suggests that the supposed advantages of OMR processing have not been achieved in the past two elections.

While it may not be possible to reassess the technology used prior to the 2010 local government elections, once these elections are over it would be prudent to undertake a reassessment of the continued practicality of using OMR methodology. Double keying of registration data at a central location could be a more manageable solution for updating the current database since it takes less time and is capable of being better supervised and controlled.

This may necessitate a rethink of the capture of photographs and fingerprints for use on the voters' register: fingerprint matching so far has not been of practical use and the printing of photographs on the voters' register has not provided greater integrity. The political acceptability of any changes in a still fractious environment and the effect these may have on trust in the MEC would need to be carefully considered. If photographs are retained on the voters' register, a more efficient method of capturing them could be investigated. Capturing a digital image of each voter, printing it, sticking it to the registration application/OMR forms and then scanning it to appear on the voters' register leads to significant degradation in quality and is duplication of effort.

A different process for updating the register could be considered as future data processing volumes for updates would be much smaller than in 2008/2009. This could entail:

- using significantly fewer field data collection teams;
- considering a continuous or more frequent update model for voter

registration using a smaller number of teams located in constituency centres. This would likely require changes to the electoral law. It would also require careful consideration of voter accessibility issues; and

• using central key data entry of handwritten voter data instead of bubbled OMR forms.

Continuing to issue voter ID cards would appear to be necessary in the immediate future given that a significant proportion of the population has no other high-integrity identity document. Camera and printer equipment packs will therefore still be required for field deployment. The issuing of voter ID cards should be reconsidered, however, if the long-planned national ID card system is implemented or other forms of recognised identity documents become more widespread.

While decentralising operations is a fashionable concept, current and foreseeable levels of technical skills and management capacities in the MEC do not indicate that decentralising the processing of voters' register data would be a viable concept. In fact the opposite would seem to be preferable in the near future – that is, concentrating data collection, and preparing and processing the data more centrally until sufficient skills have been developed in a core group of staff.

NOTES

1   Socio-economic data sourced from CIA Factbook – Malawi page. Available at
    https://www.cia.gov/library/publications/the-world-factbook/geos/mi.html [accessed 14
    July 2009].

2   Commonwealth Secretariat, 'Malawi Parliamentary and Presidential Elections – 19 May 2009',
    Report of the Commonwealth Observer Group. London: Commonwealth Secretariat, 2009, p
    29. Available at http://www.thecommonwealth.org/document/181889/34293/35144/152078
    /211206/2009_malawi_elections___final_report.htm [accessed 20 August 2009].

3   Rikne L & Svasand L, *Maybe Free But Not Fair: Electoral Administration in Malawi 1994-2004*.
    Norway: Chr Michelsen Institute, 2005, p 16.

4   Ibid.

5   Constitutionally, the chair must be a judge nominated by the Judicial Services Commission.

6   Interview with Muhadi Chisi, Manager ICT, MEC, 27 July 2009.

7   Interview with Justice Nsosa, MEC chair and commissioners Mzumara, Chikoko and
    Nankwenya, 27 July 2009.

8   Around US$12 million of these costs are system acquisition costs, with the remaining
    approximately US$13 million the cost of operating the voter registration system for the 2009
    elections.

9   Malawi Electoral Commission and United Nations Development Programme, '2009
    Parliamentary and Presidential Elections (PPE) Detailed Consolidated Financial Report',
    MEC and UNDP, pp 48-49, 76.

10 UNDP technical assistance costs of around US$525,000 could be attributed at least partially
    to voter registration assistance.

11 MEC, 'Field Data Capture and Elections Management System, Hardware, Software and
    Suppliers Requirements Specification'. Lilongwe: MEC, December 2007.

12 Separate modules for voter ID card production were abandoned as a cost-saving measure.

13 Figures as presented in Makupe CM & Namangale JJ, 'Statistical Figures and Facts, the Results
    of Malawi's 2009 Presidential and Parliamentary Elections'. Draft paper, Election Evaluation
    Conference, June 2009, p 5.

14 The UNDP also supplied the MEC with the following other technical advisors for the 2009
    election: media advisor, human resources advisor, finance management specialist, procurement
    specialist, website developer, network administrator and a web application developer. The total
    cost of technical advisors to the MEC to end June 2009 was US$1,160,337.

15 Interview with A Nthenda, Chairperson, MESN, 30 July 2009.

16 The MEC has since appointed one training officer to the secretariat, in the Electoral Services
    Department.

17 Netherlands Institute for Multi-Party Democracy, 'Study Into the Reasons for Non-voting
    during the 2004 Presidential and Parliamentary Elections in Malawi'. The Hague: NIMD,
    2008. Available at http://www.nimd.org/document/372/study-into-the-reasons-for-non-
    voting-during-the-2004-presidential-and-parliamentary-elections-in-malawi [accessed 15 July
    2009].

18 MEC and UNDP, op cit, p 61.

19 Interview with A Nthenda, Chairperson, MESN, 30 July 2009.

20 Duncan C, 'The Technical and Financial Support of Development Partners, DFID'. Paper for
    the Election Evaluation Conference, June 2009, p 7.

21 Information from MEC, 'LGE Update of Voters' Register Proposal', Electoral Service
    Department, June 2009.

22 Arran J, 'MEC Voter Registration: A Pre-Election Assessment of the Voter Registration
    Process used by the Malawi Electoral Commission to Support the 2009 Parliamentary and
    Presidential Elections', April 2009, p 3.

23 Commonwealth Secretariat, op cit, p13.

24 Interview with Justice Msosa, Chairperson, MEC and members Chikoko, Mzumara and
    Nankwenya, 27 July 2009.

5

MOZAMBIQUE

Alan Wall

EXECUTIVE SUMMARY

Country context

Mozambique gained independence from Portugal in 1975. A one-party state was instituted by the liberation movement Frelimo (*Frente de Libertação de Moçambique* – Liberation Front of Mozambique*)*, but opposition to this resulted in a ten-year civil war between Frelimo and the Rhodesian- and later South African-backed movement Renamo (*Resistência Nacional Moçambicana* – Mozambican National Resistance*)*. During this period Mozambique verged on economic collapse. A peace agreement was signed in 1992 and after a short period under United Nations (UN) administration, the first multiparty elections were held in 1994 with Renamo transforming into a political party.

The 1994 election results, although close, were widely accepted. Subsequently national elections have been held in 1999, 2004 and 2009, and local government elections have been held in 1998, 2003 and 2008. Frelimo has been the increasingly dominant party, with its share of the vote growing from a little over half in 1994 to over three-quarters in 2009. Elections since 1994 have been characterised by widespread allegations of fraud from the opposition and declining voter turnout. At the 1999 elections when the validation of election results led to violence and a parliamentary boycott by the opposition, and again in 2004, there were deficiencies in voter registration, logistics and results tabulation.

The political environment has been characterised by intense distrust between opposition parties led by Renamo and Frelimo, driven by Renamo's belief that Frelimo uses fraud and all available levers of the state apparatus to maintain its hold on power. The opposition has become less cohesive since 2008, with the dissolution of opposition coalition arrangements and a split in Renamo resulting in the formation of the Mozambique Democratic Movement (MDM). However, the MDM's progress was restricted by the National Elections Commission's (CNE – *Comissão Nacional de Eleições*) rejection of its candidates in a number of provinces at the 2009 elections.

The principles of political and electoral participation and oversight are defined in the Constitution of Mozambique. The independence of the CNE is not constitutionally guaranteed. National and provincial assemblies are elected for five-year terms under a d'Hondt system of proportional representation and

presidential elections use an absolute majority system. Laws governing electoral processes have been revised following each national election; the current laws date from 2007 with amendments in 2009. These regular changes have proved to be a challenge to electoral management.

The performance of the election management body (EMB), which consists of the policy making and supervisory CNE and its implementing arm, the Technical Secretariat for Elections (STAE), has been the focus of much political dispute. Until 2007 the CNE was a partisan body with all members directly appointed by their parties in accordance with parliamentary strengths, and parties making political appointments to senior levels of the STAE. The reform of the CNE membership in 2007 to have a majority of members from civil society has, in Renamo's eyes, not prevented Frelimo from controlling CNE appointments in its own interests or government influence on career bureaucrats in the STAE. There are still widespread complaints about voter registration fraud as well as ballot abuses and rejections of candidacy: the CNE/STAE is widely regarded as lacking transparency. Renamo strongly supports reverting to direct political party appointments to the CNE.

The law provides that voter registration in Mozambique is voluntary, and all Mozambican citizens 18 years or older are eligible to register for their usual place of residence on proof of identity. The voter register is created anew for each whole cycle of national, provincial and local elections, and is updated during a period defined by the CNE in the year of each election. Registration centres are usually located at voting stations, though there are mobile registration teams in rural areas. Voters are recorded in manual and computerised registration books for each registration centre, and receive a photo voter card as proof of registration. Following the registration period, registration books are displayed for verification. Details of deceased voters and voters ineligible to remain on the register owing to criminal conviction or mental incapacity are required to be advised monthly by the relevant authorities to the STAE.

The CNE/STAE has sole responsibility for voter registration. Voters' registers were compiled manually for the 1994 and 1998 elections, but following external pressure the CNE/STAE commenced collecting parallel data for a computerised voters' register using donor-funded optical mark recognition (OMR) technology prior to the 1999 elections. It took five years to produce a computerised register, and its output was fragmented and riddled with errors when presented for use at the 2004 elections. A new methodology and computer system based on the keying in of data at field registration centres was introduced for the 2008 local government elections. The new system was funded directly from Mozambique government funds at a cost of around US$15 million, with overall costs of constructing the new register in 2007/2008 at around US$41 million.

Data is collected and voter cards are printed at over 5,000 registration centres using battery powered portable briefcase-housed units containing a keyboard/

PDA screen or mini-notebook computer, a printer, webcam, electronic fingerprint reader and laminator: 4,000 of these units were purchased. Data is transferred regularly from each registration centre, using USB flash drives, to provincial STAE offices for cleaning and amalgamation. The voters' register created in 2007/2008 was updated in mid 2009, using the same methodology and system, to produce voters' registers for use at the 28 October 2009 presidential, national and provincial assembly elections.

System in practice

Data for the new voters' register for the 2008 local government elections was collected in three periods: the initial 24 September-24 December 2007 period was augmented by another period in 2008 (15 January-15 March) due to delays and difficulties in operations at registration centres. A further 31-day period in July-August 2008 was later provided, mainly for newly eligible voters to register. Around nine million voters – 88% of the estimated eligible population – registered. For the update of the register between 15 June and 29 July 2009 for the 2009 national elections, around 90% of total estimated unregistered eligible voters registered to vote. However, in some rural and Renamo-supporting areas this figure was as low as 61%.

The initial registration for the 2008 elections was marked by significant problems: the bulk of the equipment was not delivered until after registration had commenced, affecting the ability to test systems and train staff; training was insufficient for unskilled field staff; the equipment was not sufficiently robust for operation in many rural areas and suffered frequent breakdowns; and there were cases of insufficient STAE staff and an absence of supplies. While performance improved during the additional registration periods in 2008, there were widespread flaws in the voters' registers used for the 2008 local government elections, including missing and incorrect data, and registration books that were missing or delivered to the wrong voting station. However, the voter register database, with its imperfections, was the most accurate and comprehensive identity database in Mozambique at the time.

For the 2009 register update, the main source of information was through the CNE/STAE's use of media campaigns, particularly radio and television in urban areas, and the deployment of 1,500 trained voter education agents throughout the country. Civil society organisations (CSOs) made a relatively minor contribution to this education effort. The update used 5,625 registration centres serviced by 3,263 voter registration teams. Over 15,000 registration staff, who received one day's training, were used. This ran more smoothly than the initial data collection in 2007/2008. However, there have been continuing problems with the storage, readiness and reliability of field equipment, the allocation of and support for registration centres, and the skills levels of staff. Amalgamation of data was implemented as planned at provincial level. After the end of the registration period

the registration books were displayed at district STAE offices, which may not be accessible to or welcoming of voters: few voters took this opportunity.

While voter registration processes are widely understood, acceptance of the system is related to political alignment. Opposition parties and supporters have been concerned about the level of resources allocated to and the failure of equipment in areas with strong Renamo support, errors in the computerised register and lack of transparency in computerised registration processes. The opposition sees these issues as evidence of Frelimo-influenced manipulation by the CNE/STAE. The opposition has no confidence in the current CNE/STAE's management of voter registration and proposes using a new manually compiled register for each election. The CNE/STAE's lack of transparency has also been widely commented on by independent observers. Observer reports on the October 2009 voting day note some missing and wrongly delivered register books, but mention few errors in register data.

Quality of the register data is provided through: procedures at data collection and processing levels that should result in the removal of duplicates through name and fingerprint matching; the supposed regular removal of deceased and ineligible voters advised by relevant institutions; and providing a period when voters can verify their data.

Products of the voter registration system – the voter card, manual voters' registers and computerised voters' registers – are used primarily for voting day purposes. The voter card has become a widely accepted general ID card due to the poor coverage and service of the civil registry. Data from the voters' register is used for determining the number of seats to be contested in each electoral district. Lower registration levels in some Renamo support areas may have introduced some bias into this. Voters' register data is only updated during the specified times for pre-election updates and is not shared with other institutions or used for non-electoral purposes. The CNE/STAE manages the voter registration system itself and had benefited from knowledge transfer from past international assistance programmes to develop its training, logistics and procedural development skills for voter registration. However, it has in the past refused international technical assistance for its computerised systems, including voter registration. The CNE/STAE is still reliant on local contractors for voter registration system development and maintenance: in 2009 it did not have the internal capacity to implement processes for removing duplicate entries, which remained on the register used for the elections.

CSOs – which have had a mixed relationship with the CNE/STAE especially when they have publicly criticised CNE/STAE actions – in 2009 played a greater role in voter registration observation than in education. Coordination groups were prominent, such as the Electoral Observatory, which covered the whole registration and verification periods using over 700 observers and conducted limited sample audits of register data. Of the political parties, only Frelimo

and Renamo have had the resources to undertake widespread monitoring of registration centres and to mobilise voters to register. Mobilisation uses low-key personal contact methods to avoid being regarded as campaigning. Renamo has mounted a sustained campaign against the computerised voters' register and the CNE/STAE's management of it, publicising large numbers of alleged irregularities. Donors – which played a large support role in election processes in general and particularly in financial and technical support for the first attempt to computerise the voters' register between 1999 and 2004 – gave little direct support to the administration of the 2008 and 2009 elections, though they maintain high levels of general budget support for the Mozambique government.

There have been recent preliminary discussions between the civil registry and national ID card authorities and the CNE/STAE to explore potential links between the civil and voter registries. Civil registry data is not computerised or comprehensive in terms of the registration of both births and deaths, and national ID card issue services are poor with limited population coverage. Rather than basing the voter registry on the current poor quality civil register, the voter registration methodology is seen as holding lessons for the redevelopment of the civil registry.

Analysis, evaluation and recommendations

The current voters' register has achieved a high level of comprehensiveness – well over 90% of estimated eligible voters are registered. However, on a regional basis there are wide discrepancies: the coincidence of areas with low registration rates and areas of support for opposition parties has prompted distrust in the electoral process. The effectiveness of voter registration has been limited by the unreliability of the data collection equipment in harsh field conditions and slowly developing staff skills, which have necessitated longer registration periods and may have been a disincentive to people, particularly in rural areas, to register to vote. Where the registration system has been least effective is in data quality control: measures to ensure that ineligible entries are stripped from the register have been either ineffective or not implemented. Computerising the registration system has provided broader benefits of accelerating understanding of computers among people in many areas of the country and is now providing computing resources for general CNE/STAE use.

The lower registration coverage and less reliable data collection equipment performance in rural areas – particularly those areas more likely to support opposition parties – have provided opportunities for regular allegations of manipulation of the voters' register. There have been problems with the accuracy and availability of the registers produced for voting day, though these problems seem to have decreased in 2009. The STAE's inability to remove duplicate entries from the register, to process monthly updates of deceased and ineligible voters, and the lack of comprehensiveness of data available on deaths cast doubt on

the overall quality of the data held in the voter registry. It is likely that 400,000 or more ineligible entries remained on the register for the 2009 elections.

If it were hoped that the new voter registration system would promote confidence across the political spectrum in the integrity of voter registration, the system has failed this. Opposition parties have no trust in the system, as much because of distrust of any system implemented by the current CNE/STAE as in the technical capacities of the current system. The CNE/STAE's lack of transparency – for example in declining to provide details of the computer processes used in voter registration and refusing to release data necessary to identify the number of voters registered at each voting station – has fuelled this distrust, which threatens the political sustainability of the current registration system.

Another side of this insularity is that the CNE/STAE determined the new voter registration system with little external influence, in comparison to the influence from donors and others during the initial computerisation decisions made in 1998/1999. CSOs have had a sometimes fractious relationship with the CNE/STAE and have been generally critical of the planning of, equipment used and training for voter registration. At a cost of over US$4 per registered voter to implement the re-registration exercise of 2007/2008, it is questionable whether the benefits outweigh the costs. The high equipment breakdown rate is an additional financial burden for the STAE. Under the current law the data collection equipment will not be used again until 2013: it may not survive storage conditions until then and there is an assumption that government funds will have to be found to replace the equipment since the CNE/STAE does not have a long-term strategy for equipment replacement.

The problems encountered in introducing the new registration system in 2007 and the continued lack of acceptance of a computerised voters' register by opposition political parties provide some lessons for future developments. Some are political or attitudinal in nature, others are operational:

- Confidence in the voters' register is dependent on confidence in the impartiality and independent decision making of the EMB.
- Transparency in voter registration operations is essential for building trust in the integrity of the electoral process.
- Inclusiveness in the planning and evaluation of voter registration processes is needed to maximise system performance.
- Lead times for equipment purchase need to factor in potential delays in supply.
- Equipment purchased needs to be suitable for the particular field conditions and staff capacities likely to be encountered and must be fully supported with materials.
- All computer equipment requires a realistic storage and maintenance plan.

- Voter register integrity controls have to be appropriate for the EMB's capacities and for external information availability, and where appropriate should be easily publicly accessible.
- Voter registration methods, processes and management structures may be an appropriate basis for the development of a civil registry.
- Training for a new computer-based system has to be completed before the system is implemented and must fully account for participants' existing skills levels.
- The use of mobile voter registration teams, with appropriate briefings for parties and information for voters on their activities, can enable better coverage of rural areas.
- Developing sufficient in-house technical skills to maintain a voter registration system is essential to sustain its reliability and integrity.

Opposition party demands to revert to a manual periodic voters' register are unlikely to be accepted. There have been discussions with civil registry bodies about potential future linkages between the voter and civil registries, and the CNE sees advantages in moving to a continuously updated permanent register methodology. Much future development of the system is based on doing what is already done, but better – for example: replacing PDA-based with notebook-based data capture equipment; better field staff training; more civic education; increasing political parties' understanding of registration methodology; better transport and storage facilities; improving the competence of provincial and local CNE members and STAE staff; and cost reduction.

COUNTRY CONTEXT

Political history

For over 1,600 years Bantu-speaking peoples have occupied much of what is now Mozambique. In the early 16th century the Portuguese established forts and trading posts along the coast to support their newly opened trade routes to the east; but as Portuguese power declined, so did investment and government interest in Mozambique. From the late 19th century to the mid 1940s, much of the country was administered by a British-funded private company. After the Second World War the government of Portugal renewed its interest in its colonial heritage and made Mozambique a province of Portugal, stimulating Portuguese immigration to the colony.

The Mozambican Liberation Front (Frelimo) founded in 1962 drew together a number of existing anti-colonial groups, and in 1964 commenced a ten-year war for independence culminating in its negotiation of independence from Portugal in 1975. Samora Michel, leader of Frelimo, became president of a proclaimed one-party state. The large Portuguese settler population mostly left the country,

leading to economic collapse. Frelimo's post-independence attempts to modernise society through the strict implementation of Marxist-Leninist policies, often by coercion, led to internal revolt. This revolt was formalised in 1976 through the creation of the Mozambican National Resistance (Renamo) movement. Renamo was supported by the security services of Rhodesia, whose government saw in destabilising Mozambique a counter for Mozambican government support for guerrillas fighting for black majority rule in Rhodesia and South Africa.

Following Rhodesia's transformation into a majority-ruled Zimbabwe in 1980, South Africa's white regime became Renamo's sponsor. Through to the mid 1980s Frelimo and Renamo became locked in a cycle of increasing retributory violence marked by military stalemate and economic collapse, during which Renamo extended its sphere of influence. The death of President Machel in an airplane crash in 1986 brought the more pragmatic Frelimo leader Joaquin Chissano to the presidency. Marxism-Leninism was renounced as the basis of the state in 1989 and a new constitution in 1990 provided the basis for a multiparty state.

As South African support for Renamo waned with the former focusing on its own internal transition, peace negotiations in Mozambique (with Catholic Church mediation) gathered momentum from 1988. After the signing of a Frelimo-Renamo peace agreement in 1992, Mozambique was under the supervision of the United Nations (UN) Mission to Mozambique until the first multiparty elections were held in 1994. During this period Renamo was disarmed. Some of its fighters were integrated into the Mozambican army, while Renamo was transformed into a political party.

At the first multiparty election of 1994, President Chissano of Frelimo won the presidency and Frelimo won a bare majority of seats in the National Assembly – 129 out of 250. There was a high turnout at these elections (85%), and despite pre-election tension and threats of a Renamo boycott the results were widely accepted. Frelimo used its majority to ensure its power was maintained in government and in the bureaucracy. Frelimo has retained the presidency and majorities in the National Assembly in subsequent elections in 1999, 2004 and 2009, with its majority increasing at each election amidst opposition accusations of fraud. President Chissano voluntarily handed Frelimo's presidential candidacy to Armando Guebuza for the 2004 election: Guebeza was re-elected in 2009. Renamo has gradually declined as a political force. By 2008 Renamo had split, with many of its younger and urban cadres forming the Mozambique Democratic Movement (MDM).

Political environment

The political environment is one of intense distrust between the opposition parties led by Renamo and the ruling Frelimo. While this has roots in the protracted civil war conflict and the active role still played in politics by some protagonists from that era, it is driven by a deeply held belief among the opposition that Frelimo

uses fraud and all available levers of the state apparatus to ensure it remains in power. Elections have been characterised by threats of opposition boycotts and court challenges, and there have been parliamentary walkouts and brawls.

Among educated elites, at least, there is the sense that freedoms apparent under the President Chissano regime are now gradually being eroded as Frelimo continues to consolidate its hold on elected institutions. In contrast to Frelimo, opposition parties lack funding and robust countrywide organisation. The opposition has become less cohesive since 2008, with the dissolution of opposition coalition arrangements and internal disputes over candidacy resulting in a split in Renamo and the formation of the MDM. However, the MDM's challenge at the 2009 legislative election was affected by its inability to successfully nominate candidates in many areas – the MDM's organisational weaknesses and non-transparent decisions by the CNE were evident here.

At the centre of much political dispute has been the performance of the EMB. While two recent attempts have been made to reform its structure and composition, its operations lack transparency and it is still regarded by the opposition, with some justification, as being subject to the Frelimo penetration of all bureaucratic organs in Mozambique. Voter registration fraud as well as ballot abuses and rejections of candidacy have been the subject of constant opposition complaint. No Renamo challenges to election results have been upheld.

Socio-economic profile of the country

Mozambique is a country of around 21.7 million people[1] on the south-east coast of Africa. During five centuries of Portuguese colonial rule to 1975, little was done to develop the resources or human potential of the country. Two decades of civil war following independence stifled economic development. But following the abandonment of Marxism by the ruling Frelimo party in 1989 and the UN-sponsored peace agreement resulting in multiparty elections in 1994, post-conflict reconstruction has assisted strong economic growth.

Gross domestic product growth has averaged around 8% per year since the end of the civil war, though the spread has been geographically uneven with the four northern provinces of the country lagging in development. While economic liberalisation and reform of tax regimes have improved government revenues, the state budget is still heavily dependent on donor support. Subsistence agriculture still occupies the vast majority of the workforce. Growth has been driven by large investments in a few major projects in such industries as aluminium and gas. While the exchange rate has been stable, Mozambique has continually run large current account deficits. Recent debt rescheduling and debt forgiveness schemes have significantly reduced Mozambique's foreign debt from previous unmanageable levels.

In 2008 an estimated 63% of the population lived in rural areas: 81% of the workforce is engaged in agriculture. Around 70% of the population is

estimated to live below the poverty line. Literacy among those 15 years or older is 48%, with men almost twice as likely as women to be literate. The two major languages are Emakhuwa and Portuguese, each spoken by a little over a quarter of the population:[2] there are a large number of local languages each spoken by less than 5% of the population. Life expectancy is 41 years for men and 42 years for women. An adult AIDS prevalence rate of 12.5% ranks Mozambique within the ten most affected countries in the world. There is a fairly even split of the population among religious faiths and non-faiths: at the 1997 census 24% identified themselves as Catholic, 18% as Muslim, 18% as Zionist Christian and 23% professed no religion.

THE ELECTORAL STRUCTURE

Legal framework

The principles of political and electoral participation and oversight are defined in the Constitution of Mozambique, 1990 (as amended in 1994 and 2004), specifically in Part 1 Chapter III on Participation in the Political Life of the State, Part II on Rights, Duties and Freedoms, and Part III Chapter VIII on the Constitutional Council. The independence of the CNE is not constitutionally guaranteed.

Laws governing electoral processes have been revised following each election. These regular changes have proved to be a challenge to electoral management. The current electoral legal framework comprises: Law 7/2007 on the Election of the President and National Assembly; Law 8/2007 on the Electoral Management Body; Law 9/2007 on Voter Registration; Law 10/2007 on the Election of Provincial Assemblies; Law 18/2007 on Local Government Elections; and Law 15/2009, which harmonises some inconsistencies in the 2007 laws and provides for simultaneous presidential, National Assembly and provincial assembly elections. The CNE has powers under Article 7 of Law 8/2007 to issue regulations on specific issues such as the electoral census and the organisation of the STAE.

Recent elections and electoral history

Despite the successful first multiparty elections of 1994, when local government elections were finally held in 1998 Renamo was alleging that elections were being openly manipulated by a ruling party-dominated EMB. Renamo and other opposition parties boycotted these elections: voter turnout was under 15%. The elections were marked by problems in electoral administration, including the determination of vote totals. For the 1999 national elections, new electoral legislation changed the structure and composition of the EMB and revised critical processes such as voter registration. Constant allegations of widespread fraud were made by Renamo in the lead-up to these elections, which saw President Chissano re-elected by a narrow margin over Renamo candidate Afonso Dhlakama, while

Frelimo increased its majority in the National Assembly. Numerous Renamo complaints of irregularities were dismissed by the courts, resulting in post-election violence and opposition boycotts of parliament.

A similar cycle of legislative change followed by Renamo allegations of fraud marked the local government elections of 2003 and the third National Assembly and presidential elections of 2004. A new EMB installed before the 2003 local government elections managed both these elections. Technical problems especially with voter registration, logistics and result calculations were as, if not more, prevalent than at the 1999 elections. There were strong opposition protests about the results.

At the 2004 presidential and National Assembly elections Frelimo increased its grip on power, with Armando Guebeza winning a little under two-thirds of the vote for the presidency and Frelimo winning around two-thirds of the seats in the National Assembly. Voter turnout, perhaps reflecting a decline in public confidence in the electoral and political process, was reduced to an estimated 40% compared to 68% in 1999.[3]

Municipal elections, again won by Frelimo, were held in 2008 under another new set of electoral laws passed in 2007, which once again changed the composition of the EMB and provided for a new system of voter registration. Provincial elections scheduled for 2008 were postponed to be concurrent with the presidential and National Assembly elections of 2009. There were further amendments to electoral legislation in early 2009. The 2009 elections saw a new opposition party, the MDM, contesting legislative elections in areas where it was able to nominate candidates. There was intense argument about the rejection of MDM candidates by the CNE in a process lacking transparency. Frelimo won its most dominant victory to date.[4] Turnout was again low, estimated at around 45%.

Electoral system

National and provincial assemblies are elected for five-year terms under a d'Hondt system of proportional representation. Of the 250 seats in the National Assembly, 248 are allocated to the 11 provinces as electoral districts, in accordance with their proportion of registered voters. The remaining two seats are allocated to the very small number of voters registered to vote externally – one seat to those in Africa and one for the rest of the world. Presidential elections use an absolute majority system. A president may serve a maximum of two consecutive terms.

The election management body

Electoral management in Mozambique is undertaken by a policy- and decision-making body, the CNE, supported by the STAE, which is a public service-staffed permanent secretariat that implements all electoral responsibilities. Since 1998 this national structure has been replicated at provincial, district and local levels.

The history of electoral management structures, lack of transparency and poor performance has created a large degree of opposition party distrust in the management of elections.

For elections held between 1994 and the 2004 national elections, the EMB was largely structured on a multipartisan basis with members of the CNE mostly nominated by political parties according to their respective strengths in the National Assembly. The CNE chair was appointed by the president from a list of candidates nominated by civil society, and the appointment was confirmed by consensus or majority vote of CNE members. This structure was widely seen as having failed: there were difficulties and delays in reaching decisions, and party representatives invariably voted on issues as opposed blocs rather than reaching consensus. As government representatives were in the majority, this led to decreasing opposition party and general public confidence in the CNE as an impartial, independent body.

The STAE was also seen as being subject to political influence. Between elections it reported to the Ministry of State Administration, which was under the control of the ruling party. Frelimo and Renamo could nominate party representatives at all levels of the STAE during election and voter registration periods: this tended to exacerbate discord and promote stalemate in decision making. Political interference in the STAE had a destabilising effect on confidence in electoral administration, as did the dominance of party appointees in the election commissions at all levels.

Law 8/2007 reduced the direct political party representatives in the CNE to a minority. The 13 members of the CNE comprise five political party representatives (three from the ruling Frelimo party and two from the opposition Renamo party) and eight members nominated from a list of candidates proposed by civil society being subsequently selected. In practice, for the current CNE the three Frelimo members voted as a majority bloc to choose the civil society representatives. The chair is chosen separately by the members of the CNE from proposals by civil society. A government-appointed representative and the STAE director general are non-voting members of the CNE. The STAE is still the implementing arm of the EMB. Its director general is appointed by the prime minister, but political party representatives are no longer appointed to senior management positions. The STAE now reports solely to the CNE.

These changes were initially widely supported by CSOs and members of the political opposition. However, opposition parties have lost confidence in the new structure and would now prefer to go back to a system in which parties directly nominate all members of the CNE. They believe that the independence of the CNE has been compromised by Frelimo members of the CNE voting as a bloc to install sympathisers with little previous knowledge of elections as the civil society representatives on the CNE, and that the opposition have lost the opportunity to influence and be aware of decisions within an STAE that comprises public

servants who are reliant on the government for their positions. In addition to the opposition's allegations of pro-government bias in the CNE/STAE, public confidence in its operations has been diminished by the lack of transparency in much of its decision making and operations.

Members of the CNE are appointed for a five-year term,[5] with appointments being made within 60 days of the National Assembly taking office after an election. Holders of political appointments, political party offices or government administrative offices are in general prohibited from being members of the CNE. Each member of the CNE oversees operations in one province.

The Constitutional Council, which is empowered by the constitution to have jurisdiction over constitutional matters, provides oversight of aspects of the electoral process. As well as verifying that presidential candidates meet the criteria established in law, validating final election results and determining the legality of referenda, the Constitutional Council also hears appeals against decisions made by the CNE on electoral disputes, including on voter registration matters. The Constitutional Council comprises seven judges: the chair, appointed by the president and ratified by the National Assembly; five members appointed in proportion to party strength in the National Assembly; and a final member selected by the existing members of the Constitutional Council.

VOTER REGISTRATION

Legal framework, rules and regulations

The Constitution of Mozambique provides that all citizens 18 years or older are entitled to vote and be elected unless legally deprived of these rights.[6] Methods of and responsibilities for voter registration are defined in law. Law 8/2007 gives the CNE responsibilities for guaranteeing the transparency and integrity of voter registration, approving materials used in voter registration, and determining the electoral calendar and locations used for voter registration.[7] The STAE is responsible for implementing voter registration, including the timely provision of materials.[8]

Law 7/2007 details voting rights and eligibilities: voters both within and outside Mozambique are eligible to vote if they are on the voters' register for that voting station, have a voter card to prove their identity and are not barred through criminal conviction or officially declared of mental incapacity. If a voter's card has been lost or stolen, the voter may still vote where s/he is registered if s/he can produce an accepted photographic identity document. Police, voting officials and journalists on duty may vote at the voting station at which they are assigned even if they are not on the voters' register for that voting station.

The method of implementing voter registration is detailed extensively in Law 9/2007. Registration is voluntary. A voters' register is valid for one full cycle of national, provincial and local elections and is updated by an electoral

census held in the year of each election, within a period proposed by the CNE. Registration is a duty of all Mozambican citizens 18 years or older, and as long as they are not legally disqualified from registering. Voters register for their address of usual residence and must provide proof of identity in the form of a recognised identity document containing the applicant's current photograph and signature or fingerprint (such as a national ID card or a driver's licence) or birth certificate. In the absence of these documents the application may be verified by a voter registration official or by two voters registered to vote at the same registration centre. Voter registration is conducted at registration centres operated by the STAE. As proof of registration, voters receive a card containing their voter number, name, date and place of birth, signature, fingerprint and area of registration. Eligible voters residing abroad may register at a Mozambican embassy or consulate.

The voter registration book for each registration centre must be computerised where possible and must contain the name and registration number of each voter registered for the centre, which must correspond with each voter's application form and voter card. The registration books must be publicly displayed at city and district STAE offices, but not at registration centres, between the fourth and 13th days after the closing of registration. Voters or parties then have five days to lodge complaints regarding omissions or errors. Following the closing of the period for complaints, the number of voters registered must be amalgamated progressively through the levels of STAE administration and officially published within 30 days of their receipt by the CNE.

Voters may be deleted from the voters' register for a registration centre due to death, transfer to another registration centre, change of nationality or loss of electoral rights up to 60 days before an election. Transfers are notified during the register update period by voters applying with their current voter card at the registration centre in their new area of residence. Deaths must be advised to the STAE monthly by the civil registry, as must relevant convictions by the courts. Lists of deletions are published at least 55 days before the election and are displayed for ten days. Deletions are appellable. The voters' register may not be altered in the 15 days before an election.

Political parties and accredited independent observer organisations may appoint representatives to observe the work at registration centres and also the correction of any errors in registration.

History of voter registration

Voter registration books were compiled manually at registration centres for the first multiparty elections of 1994. This was the first voters' register compiled in post-independence Mozambique. Registration was to be permanent, for life, and no clear method for adding new voters to the register was specified. Owing to physical access problems, continuing violence in some areas of the country and

lack of confidence that the peace agreement would last, many did not register to vote. As well as having their name, voter ID number and signature recorded in the registration book, each voter was issued with a laminated voter ID card featuring a black and white photograph of the voter. An update was conducted in 1997 prior to the 1998 municipal elections, but by that time the registration books were in a poor state.

New legislation introduced for the 1999 national elections required a new voters' register to be compiled. This was also to be a permanent register: the law now clarified processes for adding new registrations, transfers of registration and the removal of ineligible (such as deceased) voters. Continuing with manual registration or scanning the existing manual forms from 1994 and 1997 were both considered. A manual registration update commenced but was discontinued following pressure from Renamo to conduct a complete re-registration.

Computerisation of the voters' register commenced in 1998 when the CNE, under some external pressure, introduced an OMR form to be completed at the same time as the handwritten registration application form. Observers noted shortages of equipment and logistical problems in this registration process. While some overall judgements were that it was implemented satisfactorily there were large numbers of errors found in the manually compiled voter registration books used on voting day.[9] The OMR forms were to be later scanned centrally – a task that was meant to take a few months but which took close to five years. There appeared to be reluctance on the part of the CNE and STAE to implement a computerised process,[10] which potentially could increase accountability and fraud controls.

Post-1999 election processing of the OMR forms was flawed; the planned scanning of the manual forms at provincial level as a check against the central OMR form-derived database was not implemented. Limitations in the database platform and structure meant that a separate database was maintained for each electoral district, complicating the processing of transfers of voters. The processing of data from the 1999 re-registration was not yet complete for the 2003 local elections.

For the December 2004 national elections there was an 18-day period between 28 June and 15 July 2004 for new voters to register, for registered voters to update their details and for deceased voters to be removed from the register. Mozambicans living overseas could now also register to vote at diplomatic missions. The objective was to computerise and consolidate all 1999, 2003 and 2004 registration data into one clean, consolidated register. This was not achieved.

There were shortages of registration materials, which opposition parties claimed prevented their supporters from registering, though this claim was not supported by some observers.[11] On voting day observers noted: duplicate registration books; that in many instances the registers had not been cleaned

and contained many deceased voters and duplicate registrations of voters who had registered at both the 2003 and 2004 register updates; and that updating of information had not been completed.[12] There were significant doubts about the credibility of the computerised voter registration books, though some believed that implementation in the field of the update process was relatively fair and successful.[13]

The use of multiple registration books working from different bases for the same voting area made it almost impossible to determine the total number of eligible voters for the election, and CNE and STAE officials announced conflicting data on this: the STAE initially announced 9.1 million voters, later revising this to 7.6 million, while the CNE announced 8 million. The use of three different registration books – from the 1999 re-registration, the 2003 election update or the 2004 election update – potentially disenfranchised large numbers of voters and caused confusion, as did the significant number of missing or wrongly delivered registration books and the level of errors in the registration book data.

The voter registration books used for the 2004 elections were widely regarded as worse than those used in earlier elections. The European Union observation mission noted that significant investments had been made in a voter registration system that was not satisfactory, that it was no longer enough to rely on last minute ad hoc solutions to voter registration deficiencies, and that the system used did not 'seem to be able to produce an accurate voters' list'.[14]

It was decided after the 2004 election to introduce a new voter registration system and to compile a completely new voters' register. The methodology of compilation was to change: instead of a permanent voters' register, a new register would be prepared for each cycle of elections for all legislative and executive institutions with updates before each later election in the cycle.

Current or latest voter registration method

Field data collection

Voters must register in person at the registration centre in the area of their residence. Registration centres are set up wherever possible at the same location as voting stations, though there are mobile registration centres operating in rural areas whose locations are not mirrored by voting stations. Registration is processed by a team (*brigade*) comprising four people. Information from applicants is recorded in registration books both electronically and manually.

The field data collection process is as follows:

- The team supervisor ensures that the applicant is eligible to register (s/he must produce an accepted ID document or be vouched for by persons as required by the law) and asks whether the applicant

is registering for the first time, is transferring registration or wanting to replace a voter ID card.

• For new and transfer registrations, a team member then completes a registration form containing details of the registration centre and the full personal and address details of the applicant.

• The form is then handed to the second team member who enters the applicant's details into a portable computer, takes the applicant's photograph using a webcam and records the applicant's fingerprint on an electronic pad. The computer determines a unique voter ID number and merges the text, photograph and fingerprint data to a voter record. A voter card is printed containing the applicant's name details, photograph and fingerprint, voter registration number and registration centre/voting station ID number, which is then signed by the registration team supervisor and the applicant and then cold laminated.

• While the card is being issued, the registration form is passed to the third team member who writes on it the computer-issued registration number and handwrites the applicant's name and registration number into the manual registration book, in order of application. The process takes on average around 10-12 minutes.

A field registration team in Mozambique with the registration equipment, which comprises a fingerprint scanner, digital camera, computer and printer.

*Voter cards featuring the voter's colour photograph, fingerprint and
signature are printed on the spot, laminated and handed to the voter.*

Registration centres are under police guard during the registration period. Party
monitors and independent observers may observe the process. During the
registration period, data from each registration centre is sent regularly on USB flash
drives to the relevant provincial STAE office, where it is cleaned, amalgamated
and checked for validity and duplicates.

Field equipment
Data collection is based on a portable, 'briefcase'-housed equipment kit with
biometric data capture using Innovatrics IDKit Mobile D SDK, supplied by
South African-based Face Technologies.[15] The equipment kit includes:

- a battery with an eight-hour life that is housed in the briefcase's
  lid. As solar recharging is not provided for, the battery relies on
  mains electricity or a generator (and availability of generator fuel)
  for recharging. Around 14% of Mozambique is serviced by mains
  electricity;
- a printer attached to the base of the briefcase;
- a keyboard and screen for data capture. The initial purchase of 4,000
  units employed a mini-keyboard in the base of the briefcase with a
  PDA-size screen in the lid. Replacement equipment purchased in 2009

replaces these with a seven-inch screen mini-notebook computer, which can be removed and used at other times in STAE offices;

- a webcam and digital fingerprint recorder that fit on top of the lid of the briefcase when opened; and
- USB flash drives for despatch of data to provincial STAE offices.

A cold laminator was also provided for laminating voter ID cards. The number of kits purchased was around 20% in excess of requirements to allow for breakdowns. A service centre was set up in each of the three regions of Mozambique for repairs and distribution of replacement kits.

Data processing

As with many other technical details of the current voter registration system, the STAE declined to provide technical details of the data processing equipment and processes used to compile the voters' register. Some brief information on data processing in practice is given later.

DECISION-MAKING PROCESS FOR SELECTION OF THE VOTER REGISTRATION SYSTEM

Criteria for selection of the system used

The CNE/STAE was under significant pressure after the 2004 elections to devise a new voter registration system for subsequent elections following the poor performance of the OMR-based system used in 2004, especially the lack of a unified data source, and widespread inaccuracies and data inconsistencies. There were other practical considerations: a new system of recording voter photographs had to be found as film was no longer available for the Polaroid cameras previously used; and the OMR data capture attempt had proved to be unwieldy.

Following the installation of a new CNE in 2007, the STAE proposed to the CNE that a parallel manual and computerised system be introduced with data being collected electronically at field registration centres. Electronic collection of data at field registration centres with amalgamation processing at provincial level was proposed for reasons of relative simplicity and due to the poor experience with more centralised processing of field-completed OMR forms.

The new CNE saw significant benefits in properly computerising voter registration, particularly in combating fraud, cleaning the register of duplicates and deceased voters, and in obtaining better estimates of potential voters. With a delayed new law requiring a total re-registration at the start of each election cycle, the CNE believed that unless it computerised at the start of this new cycle, computerisation would not be feasible until 2013. It accepted the STAE's computerisation proposal and the field data input model, even though it recognised that it did not have existing appropriate infrastructure and it would

be relying on field staff with no experience in computer use to operate the equipment. The CNE examined the computerised systems used in South Africa and the Democratic Republic of Congo.

Funding and procurement of voter registration equipment, materials and services

Acquisition process and costs

The procurement process for voter registration equipment and support services commenced with the issue of tender documents in June 2007. The tender covered supply of field equipment and processing equipment and software, and was awarded on 25 July 2007. The STAE noted that the time available for evaluating the equipment proposed in the bids was not sufficient to ensure that the equipment chosen was suitable for all conditions in Mozambique.

The contract was awarded to the cheapest proposal from a consortium comprising Eletc, a Mozambican company controlled by the Insitec group, and Face Technologies, a South African company. Insitec founder Celso Correia has been described as a '[Mozambican President Armando] Guebuza protégé' and Insitec as being at 'the centre of the network of companies around Guebuza'.[16] The close relationship between the supplier of voter registration equipment and systems and the ruling party has been referred to in opposition party claims of alleged malpractice and voter registration manipulation.

The winning bid was disclosed as being less than one-third the cost of the next cheapest bid. The contract stipulated all equipment was to be supplied within 60 days, in time for the commencement of voter registration on 24 September 2007.

Equipment and materials used for the compilation of the voters' register for the 2008 municipal elections is estimated to have cost around US$15 million,[17] while the whole process for compiling a new voters' register in 2007/2008 is estimated to have cost US$41 million.[18] The STAE did not provide details of its equipment, software and operational costs or of the cost of the 2009 register update.

SYSTEM IN PRACTICE

An overview of the system in practice

Registration for the current voters' register commenced on 24 September 2007 to construct a register for the November 2008 local government elections and provincial elections (later postponed to be held simultaneously with the 2009 presidential and parliamentary elections). The current law provides that this register will cease to be valid after the October 2009 presidential, National Assembly and provincial assembly elections.

Planning was developed centrally at the national STAE. For the first time ever a list of the 5,000 registration centre locations was published by the STAE. The initial registration period closed on 24 December 2007. During this period around 7.6 million Mozambicans registered to vote.

Only 400 of the 3,242 registration teams (*brigades*) had received their equipment when registration commenced. The CNE blamed this on supply problems from the South African supplier, while some media noted delays in payment for the equipment.[19] The bulk of registration staff had not been trained to use the equipment before registration commenced, leading to widespread errors in data capture and incorrect use of the equipment.

Due to the delays and operational difficulties at the registration centres, a second phase of registration was conducted at the same centres between 15 January and 15 March 2008, during which an additional 1.3 million voters registered. A third phase of registration was conducted between 6 July and 4 August 2008, primarily for voters newly turning 18 years old but also for those who had lost their voter card or who had changed address: fewer than 100,000 new voters registered during this phase. The final registered voter total of around 9 million was 88% of the estimated voting age population of 10.2 million.[20]

There were complaints from opposition parties of fewer registration teams in the two provinces where the opposition is strongest, and that their supporters had not been registered. Observers noted that in these provinces the average number of voters per registration centre was over 3,000, whereas in other provinces it was under 2,000.[21] There were instances observed where Frelimo members were given priority to register and Renamo members were prevented from registering. Observers also noted that the STAE did not adequately support all registration *brigades*: some were at times without supplies of ink, registration books or generator fuel.

The collection of data in the initial period in 2007 was plagued with problems. Late delivery of equipment and forms meant that no field testing was undertaken, so the first few weeks of 'live' running were the field test. With no prior experience of the system being used, everyone – from STAE senior management down to registration team members – was learning on the job. Problems with software and equipment only became apparent after registration had commenced. Training was insufficient for field staff, who in many cases had never previously used a computer or any electronic device for that matter. The problems with powering the equipment in rural areas had been underestimated by the STAE, with generators at times not available locally, not operable or incorrectly operated resulting in damage to data collection equipment batteries. The equipment chosen suffered frequent breakdowns, and questions were raised as to whether it was sufficiently robust for transport over poor roads – especially for mobile registration teams – or operation in very dusty environments and poor weather conditions. Field data collection performance did improve during the additional registration periods in 2008.

The computerised registration books produced from this data had many flaws remaining on election day. Where the field data capture kits were not working, voters were manually issued with provisional voter cards which were not always accepted on election day. Significant numbers of persons who had been issued voter cards were missing from the computerised registers, and there were differences in data on some voter cards and the computerised register. Regulations allowing the use in these circumstances of the voter card as full proof of eligibility to vote were issued immediately prior to voting day, but were reportedly not applied uniformly.

Despite these problems, registration had been extended to areas which had not been reached by manual registration methods. The STAE now had the means to purge duplicate registrations and to deal with other required deletions from the register. The resulting database, with its imperfections, was the most accurate and comprehensive identity database in Mozambique. The computerised registration system was also important in raising general levels of computer familiarity and literacy throughout the country.

During the 2009 update of the voters' register implemented between 15 June and 29 July 2009, 89.6% of estimated unregistered eligible voters were registered, giving a new total of 9,815,589 voters registered within Mozambique for the October 2009 national and provincial elections. During the update, 514,977 new voters were registered, 498,399 replacement voter ID cards were issued and 218,698 voters were transferred to a new voting station.[22]

There were wide variations, however, in the percentages of estimated eligible new voters registered in the various provinces: this ranged from 159% and 128% of estimates in the Frelimo stronghold provinces of Gaza and Maputo respectively, to 66% and 61% in Nampula and Zambezia provinces respectively where Renamo is strong. The variation in registration rates would have contributed to the reduction of seats in the National Assembly allocated to the latter two provinces.[23]

The 2009 voters' register update using 5,625 registration centres serviced by 3,263 voter registration *brigades* ran more smoothly than the initial data collection in 2007/2008. As a comparatively small number of voters needed to be registered, there was less pressure on equipment and field staff who were now more familiar with the processes. However, there were continuing problems with the readiness of field equipment and many of the issues from the 2007 full registration exercise remained.

Planning for the update commenced relatively late. Observers noted that in a majority of the provinces less than half (and as little as a quarter) of the registration centres that were meant to be open at the start of the registration period were in fact open,[24] that registration *brigades* had been sent into the field without equipment to open registration centres, and that there were again shortages of materials at registration centres leading to people leaving and not returning to register.[25]

Much field equipment had been handled roughly and stored since 2008 in unsuitable environments, subject to heat and dust. Many batteries in the field equipment packs were no longer working: they had not been charged for over a year. New and replacement equipment containing more robust 7-inch notebook computers instead of the earlier PDA-based model was appearing in urban areas rather than in rural areas where hardier equipment was essential. At the commencement of the registration update period, observers claimed that of the 3,457 available field data collection kits only around one-third were in working order.

The 45 days allocated for the registration update provided sufficient time for these issues to be fixed in most instances, and despite the problems almost 90% of estimated eligible new voters were registered.

The areas reported by observers as most badly affected by equipment problems during the 2009 update were former Renamo strongholds such as the provinces of Zambezia and Nampula: the percentage of eligible new voters registering in these provinces was comparatively low.[26] Renamo and the new opposition party (MDM) seized on this to allege that a Frelimo-aligned STAE intentionally sent equipment that did not work to opposition-supporting areas. These provinces are, however, mainly rural and are the most difficult to service. Road networks are poor, as are storage and maintenance facilities, and there is a higher proportion of mobile registration centres – all of which would tend to have a negative influence on the performance of the data collection kits. Even so, respected observation group, the Electoral Observatory, noted that it appeared that at local level many registration problems were not accidental and that the good voter registration equipment appeared to be going to Frelimo-supporting areas.[27]

Following concerns raised by the opposition regarding fake voting cards, the CNE instructed that voters with voter ID cards who were not recorded in the registration book could not vote at the 2009 elections – a reversal of policy for the 2004 elections. Publicity had also been given to cases where voter ID cards had no photograph: the CNE announced that voters with these cards could vote if they produced another acceptable ID document, and that minor errors on the voter ID card were no barrier to voting. On election day itself observers noted instances at polling stations where there were no registration books so voters could not vote, and where registration books had been sent to the incorrect polling station.[28]

Transparency of the process

Both past and current actions of the STAE and CNE have provided very limited transparency of the voter registration process. For example, the CNE and STAE refuse to provide code numbers of the registration books allocated to each voting centre or station, and thus access to the number of voters registered at each

voting station. The STAE, citing security concerns, does not release information essential to understanding its processing of voter registration data. It is difficult for members of the public, especially those outside urban areas, to access the registration books in order to check their content, and there is no access for observers to monitor the computer processing of voter registration data.

This lack of transparency has contributed to a low level of trust in the CNE and STAE, particularly among opposition parties and CSOs, to the point that any problem with voter registration is immediately seen as manipulation rather than the possibility being considered of equipment failure or administrative error. This creates difficulties for the political sustainability of the current voter registration methodology.

Observers have noted that for the 2009 elections in general, the CNE 'did not show the levels of transparency that could have improved trust in the process'.[29] Preliminary reports of observer missions from EISA, the Commonwealth Secretariat, the European Union and the Southern African Development Community all criticised in general the lack of transparency in electoral management in Mozambique.

Understanding and acceptance by voters

There is widespread understanding of the voter registration procedure, as indicated by the high percentage of the Mozambican population that voluntarily register to vote. There is, however, significantly less widespread understanding of the opportunity to verify the accuracy of registration records.

The voter's photograph and electronic fingerprint are recorded. The voter's personal data is keyed into the computer so that the voter can check immediately if the data is correct.

Acceptance of the voter registration system seems linked to political affiliation: those supporting Frelimo tend to accept its outcome but can be critical of aspects of its implementation; and those supporting the opposition tend to see the registration system as being manipulated by the government.

Accessibility and provisions for voters with special needs

Registration centres are located in public buildings at multiple locations in each district, generally at the same location as voting stations. Mobile registration centres are also deployed in rural areas with the objective that voters should be no more than 10 km away from a registration point, though this standard is not always met and some voters may have to travel 30-40 km to register.

While mobile teams provide better access to registration, this may cause some confusion as it may break the link between registration and voting location. Opposition parties have also seized on differences between the number of registration centres open at any time and the total number of registration points as 'evidence' of alleged malpractice. No special registration provisions are made for voters with disabilities.

Access to voter registration books for verification of data is in practice limited: in rural areas particularly the verification points at STAE district offices may not be easily accessible due to proximity and there may be attitudinal barriers to the verification process.[30]

System products and uses

There are three main products from the voter registration exercise: the voter card; the handwritten registration book for each registration centre; and the computerised registration book for each registration centre.

The voter card is required to be presented when voting to establish identity but has also become a de facto general ID card due to the lack of penetration of the national ID card system in Mozambique. However, this additional, constant use of the voter ID card was not envisaged when it was being designed: the paper and lamination used was not intended to withstand frequent use. This is likely to lead to requirements for replacement of damaged and lost ID cards exceeding initial expectations.

The computerised registration book for each voting station – compiled in alphabetical order and containing the name, registration number and photograph of each registered voter – is used on voting day as the primary validation of eligibility to vote. Printing of the registration books from the computerised records is decentralised.

The manual registration books – compiled in sequential order of registration at each registration centre – is meant to be available at each voting station for use as backup verification when a voter has a voter card for a particular voting station but is not included in the computerised registration book for that voting

station. Observers of the 2008 local government elections reported, however, that the handwritten books were not available at many voting stations.

The law now allows registration books to be split for a registration centre, with the objective of providing better service on voting day by using smaller polling units. However, the STAE declined to do this for the 2009 national election on cost grounds and has maintained a 1,000 voters per registration book/voting station standard.

The number of registered voters in each electoral district is used as the basis for allocating the number of National Assembly seats that are to be contested. Preliminary seat allocation figures are released by the CNE before commencement of a registration update and are revised after its completion.

The use of registered voter data rather than census data as the basis for allocating seats has resulted in intense political dispute. Opposition parties are convinced that voter registration efforts in areas where they have relatively strong support are hindered through, for example, weaker voter education efforts, the allocation of less reliable equipment and discouragement of registration by government officials so that the number of seats likely to be won by the opposition can be reduced.

Since the introduction of the computerised register the opposition has noted a reduction in the number of National Assembly seats in provinces where it is strong, such as Sofala, Zambezia and Nampula. However, there is a counter claim that the computerised re-registration process eliminated many duplicate and deceased entries from the registration books in these areas.[31] Roughly pro-rating Frelimo and opposition (Renamo-Electoral Union) support from the 1999 and 2004 National Assembly elections against the 2009 seat allocations indicates a slight bias towards Frelimo in the revision of seat allocations since 1999 in the order of around four seats (including the two new overseas constituencies both held by Frelimo) of the 250 in total being contested.[32]

Quality assurance mechanisms

The field data collection kits contain simple name-matching software to flag potential duplicate registrations at the registration centre. When processed at provincial level, ID card numbers should be matched to detect potential duplicates. Further duplicate matching is done using Innovatrics automated fingerprint identification system (AFIS) fingerprint matching technology.

For the 2008 local government elections, more than 2% of registration files sent for processing were found to be duplicates; however, this system does not appear to be functioning effectively.

The STAE stated that it did not have the capacity to remove what it estimates were the 160,000 duplicate entries on the registers for the 2009 elections.[33] Further details of data processing quality controls could not be provided by the STAE.

Fingerprints are recorded electronically with a scanner and stored in the database, together with the registered voter's photograph and personal data. Electronic fingerprints allow for the use of AFIS software to check for duplicate registrations.

The verification period provides minor quality control. This is because limited use is made of it by voters and the computerised register is not available for checking during this period. Voters may lodge appeals against STAE decisions on their registration, which are appellable up to the Constitutional Council; however, this is rarely used. Apart from other accessibility issues, a high degree of literacy is required of an appellant to prepare the necessary documentation.

The total re-registration process in 2007/2008 eliminated the large number of deceased voters that were present on the registers used for the 2004 elections. The STAE is meant to receive monthly details of deaths from the civil registry, and hospital authorities and the court system are meant to provide details of those ineligible to be on the register for mental health and conviction of an offence reason respectively. The STAE's difficulty in obtaining and processing comprehensive information on deaths (see below) means that there is an accumulation of ineligible voters on the register for presidential and National Assembly elections that may not be removed until the register is started afresh at the beginning of a new election cycle prior to the next local government election. The STAE admitted that it had not removed deceased voters or other ineligible voters from the register for the 2009 elections.[34]

Voter registration personnel

Local and external experts

The current voter registration system is fully managed by the STAE within its internal resources. An external contractor is engaged to provide technical support for the field and provincial office voter registration equipment, as well

as for the distribution and implementation of software updates. Observers have noted that in practice few technicians are available to service the equipment – around one per province.[35] The STAE depends on a single external contractor for the maintenance of its system, including software updates and installation and system repairs.

Selection and training of registration personnel for fieldwork

Staff recruitment

For the 2009 voter registration update, 15,000 *brigadistas* (voter registration centre staff) and 1,500 civic education agents for voter registration were recruited by the STAE training department from applications received from the public. A significant proportion of those employed for the 2009 update had had earlier experience as *brigadistas*. Most registration brigade staff have two to three years' secondary education.

Staff training

A three-stage cascade system was used for training: national trainers trained provincial level trainers who then trained all *brigadistas* at a one-day training session. For the 2009 registration update, all *brigadistas* were trained over a ten-day period. Each registration centre received a copy of the electoral registration manual, which provides comprehensive instructions on all manual and computerised tasks.

Training was more effective in 2009 compared to 2007 when many of the *brigadistas* employed had never before used a computer, and most of the registration *brigades* had not received their computer equipment before commencement of the registration period. However, the general opinion of the CNE/STAE and CSOs is that *brigadistas* did not receive sufficient training in the use of the voter registration equipment and associated software. Problems with operating field equipment properly were still noted by CSOs and opposition parties as causing delays and errors in the 2009 voter registration update.

Supervision and control structures

Voter registration *brigade* staff are under the direct control of district STAE staff. Limited observation of registration *brigades* indicated that district STAE staff exercised close supervision of their work.

Role of information and communication technology

Collection of data

While parallel manual and computerised systems for recording voter registration are maintained at voter registration centres, information and communication technology (ICT) plays a major role in the production of voter cards and in the

collection of data that allows record checking for duplications as well as the aggregation of voters' register data using the equipment described above (see 'Field data collection'). The robustness and reliability of the field equipment used in relation to the storage, power supply and transport conditions encountered in much of Mozambique remain an issue, as does the skills level of the staff who operate the equipment.

Transmission of data

Voters' data collected at the voter registration centres is encrypted and downloaded to a flash drive for weekly physical transmission to the relevant STAE provincial office for processing. The STAE declined to provide further information on data transmission routines. Some *brigadistas* interviewed noted that they would only send flash drives containing voter registration data to the provincial STAE office at the end of the registration period. If this were the case, the potential for data loss in the field would have been substantially increased.

Processing of data

The data is processed by servers in each of the 11 provincial capitals. Apart from advising that the database structure had been amended for the 2009 update – which created some compatibility issues with data collected in 2007 and 2008 that needed to be resolved – the STAE declined to provide details of voter registration data processing systems and routines.

Review and verification of data

Since the introduction of a post-registration verification period prior to the 2004 elections, few voters have checked their registration details. For the 2009 registration update, the registration books were displayed publicly at district STAE headquarters during the period from the fourth to the 13th day after registration closed.

Updated data was available only on the handwritten registration books as the computerised register had not been updated by the time the display period commenced, and the registration application forms were not available to the public. Independent verification is made more difficult as the address of each registered voter is recorded only on the application form and is not shown on either the handwritten or computer printed registration books. In rural areas particularly, voters may have had to travel relatively long distances to the district STAE office, and this may have limited accessibility of the verification process.

During focus group discussions some voters indicated that they would feel uncomfortable if they went to check their registration data during the verification period, as this would imply that they did not trust their local officials to do their work properly. This may be reinforced by the attitudes of some local STAE officials. The Electoral Observatory reported in 2008 that voters and observers

attempting to check the register were in some areas met with distrust, treated as opponents of the STAE's work and in some cases were refused access.[36]

Role of civic and voter education in the registration process

The STAE uses both direct personal communication methods and mass media to inform voters about voter registration. For the 2009 voters' register update, the STAE trained 1,500 voter education agents using a cascade methodology. Training commenced in early June 2009 and was backed up by a detailed voter education manual.

The agents were stationed throughout the various provinces to distribute posters and leaflets and to conduct local-level information campaigns through meetings and other events held until the end of the registration update period. There has been criticism at past elections of an uneven distribution of agents among the provinces.

The agents, together with traditional leaders and the use of local language promotions on community radio, have been the main focus of voter education in rural areas. In urban areas the focus has been on using mass media, mainly radio and television but also the press and posters. The STAE's major education focus with the introduction of the new voters' register in 2007 was to emphasise that all voters had to register again in order to be able to vote and that past registrations were no longer valid.

The STAE in 2008 researched the impact of past voter education campaigns and piloted new material in four cities. The results of the research are reflected in the voter education material used for the 2009 voter registration update, some of which was more targeted at specific age groups and categories of voters.

Voter information poster in Maputo reminding voters of the 15 June to 29 July 2009 voter registration drive.

A single CNE/STAE television spot was aired that highlighted the notion of choice; however, some opposition parties complained that the colours predominantly used are associated with the ruling party.

There is no requirement for state-owned or other mass media to provide free or discounted airtime or space for official voter education messages. Significant elements of the campaign focused on who should update their registration, and when and where this could be done.

CSOs currently make relatively minor contributions to voter registration education (see 'CSOs and NGOs' below). The bulk of civic education funding for the 2009 voters' register update was provided by the Government of Mozambique through the CNE/STAE budget.

Role of different stakeholders in the registration process

CSOs and NGOs

CSO participation in voter registration is partially coordinated through the Electoral Observatory, which is an umbrella group covering eight faith-based and secular organisations. The Electoral Observatory selected and trained 780 observers who covered the whole 45-day period of the 2009 voter registration update. [37] These observers were mobile: while an attempt was made to conduct at least some observation in all areas, priority was given to areas with a history of interparty conflict or close election results, while trying to maintain a geographic spread of observation.

Besides monitoring voter registration centres the Electoral Observatory also monitored the verification period at district STAE offices, encouraged people to check their registration and conducted some basic audit checks of the voters' register (checking eligible voters' national ID numbers and names against voters' register entries). This was a more widespread effort than that made for the initial registration drive in 2007/2008 when it fielded 281 observers and 44 provincial coordinators, and covered 70% of the districts. The Centre for Public Integrity also undertook limited monitoring of voter registration centres. It deployed 25 monitors for the 2009 update.

CSOs currently play a more limited role in voter education for voter registration. The Electoral Observatory produced a few radio and television spots using leaders of religious faiths for broadcast during the 2009 registration update period.

Relationships in general between CSOs and the electoral management in Mozambique are described as 'improving' by the Electoral Observatory. This follows a period during the new CNE's first year in office when public criticism of its actions by CSOs led to deterioration of the relationship, and CSOs had difficulties obtaining accreditation to observe the initial registration processes. The CNE and CSOs now meet every three months.

Political parties

The ruling Frelimo party and major opposition party, Renamo, both have the capacity to organise widespread monitoring of voter registration centres and did so for the 2009 registration update and earlier voter registration periods. Other parties do not have the organisational capacity to undertake significant monitoring of registration processes. Similarly it is only the two major parties that have attempted to motivate potential supporters to register to vote. This is done mainly through community meetings and word of mouth: the use of mass media and public displays (such as posters) run the risk of being regarded as political campaigning.

Opposition parties, particularly Renamo, have actively and continually publicly campaigned against the computerisation of the voters' register. They maintain that the computerised compilation of register data is not sufficiently transparent and uses unreliable equipment and inadequately trained staff. They further maintain that the culture of Mozambique, particularly in rural areas characterised by high illiteracy rates, poor transport and minimal access to electricity, is not appropriate for the introduction of a computerised voter registration system.

Donors

Direct donor contributions to electoral administration assistance in general in Mozambique are currently extremely limited. For the 2009 elections around US$0.8 million was provided through the United Nations Development Programme (UNDP).[38] Of this, US$100,000 was earmarked for voter education for the electoral cycle, some of which was relevant to voter registration. Voter registration modules have been included in externally funded training programmes for STAE staff. Substantial donor funding to Mozambican institutions of government has been increasingly oriented toward general support for the Government of Mozambique's budget. It is not possible to say how this may affect funding of any specific electoral activity or electoral activities in general.

There was substantial direct donor assistance to the electoral administration process for all earlier national elections, resulting in direct funding totalling around US$150 million between 1994 and 2004.[39] While there was large dependence on direct foreign technical and financial support for electoral administration for the initial multiparty elections of 1994, funding has gradually decreased over the years. Financial support has gone from US$59.1 million for the 1994 elections (90% of total cost) down to US$17.7 million for the 1998 local government elections and US$30 million for the 1999 national elections (around 65% of total cost), including at least US$10 million support for computerising the voter registration system. Up until that stage funding included large CNE/STAE technical assistance components.

A package of around US$19 million in direct electoral administration assistance was provided by donors for the 2003 local government and 2004

national elections. Not much of this funding was for technical assistance. Unlike other areas such as logistics and training where the STAE had accepted technical assistance programmes offered by donors, the STAE rejected donor-funded technical assistance for voter registration and for results' tabulation. As one commentator noted in relation to donor funding for the computerised voter registration system used for the 2003/2004 elections: 'The end result has been of appallingly low quality, because the project was implemented without any realistic strategy, technical rigour or quality control.'[40]

Media

The media in Mozambique is dominated by state-owned radio (RM), which covers most of the country. Rural areas are also well covered by community radio stations. Television, while still relatively an urban luxury, is dominated by state television (TVM), which reaches around 30% of the population, while newspapers have an insignificant penetration and tend to have minor impact. State radio and television and community radio are used by the STAE for fully paid voter education messages on voter registration. State media also make some effort to have themes relating to motivating people to register to vote included in general programming and give prominent news coverage to voter registration events.

Post-election use

System updates

In the absence of an online link between the Maputo STAE headquarters and its 11 provincial offices, the STAE relies on its technical support contractor to provide staff to assist with software updates at each site.

Updating of the data

During a single electoral cycle of the voters' register, pre-election data updates are scheduled for a period proposed by the CNE in the year of each election. During these periods newly eligible voters – mainly those who have turned 18 or who have neglected to register previously – register to vote, lost or damaged voter cards can be reissued and those who have moved to a new residential address may transfer their registration.

During each electoral cycle the voters' register is meant to be updated regularly for deaths and other ineligible voters, supposedly advised monthly by the civil registry, the court system and hospitals. However, these regular updates have not been implemented by the STAE.[41]

Transferability of data to other systems

Data derived from voter registration is used for other CNE/STAE election management and logistics systems, but the voter registration system is not

integrated with these. Foremost is the use of voter registration data to calculate how many seats are allocated to each electoral district. At present there is no data transfer from the voter registry to external organisations, though there have been some preliminary discussions regarding a link between the voter registry and the civil registry.

Capacity building and technological knowledge transfer to the CNE/STAE

Technological knowledge transfer to the CNE/STAE as a result of computerising the voter registration system has been limited. The former CNE/STAE's rejection of international technical assistance for its major computerised systems – the voter registry and vote tabulation systems – meant that there was no international assistance programme for developing voter registry system maintenance and development skills to accompany the assistance with equipment purchases for earlier voter registration systems. However, technical assistance for managing voter registration processes has had an impact on building STAE skills in training, logistics and procedural development, though it has been noted that 'the effects of this assistance remain fragile because the capacity rests with individuals rather than structures, and the technicians concerned display a tendency to use systems and tools in a repetitive rather than a creative way'.[42]

The STAE is heavily dependent on its equipment and software suppliers for voter registration system maintenance and development. At the field level, however, there has been substantial knowledge transfer to registration *brigade* staff who have become increasingly proficient at the basic tasks of computerised data entry.

Voter registry and civil registry

The functions of a civil registry in Mozambique are split between two government departments. The Ministry of Justice is responsible for registering births and deaths, while the Ministry of Interior issues national ID cards following applications made through the police and supported by a birth certificate. This separation was made in the mid-1980s during the civil war period to enhance control of ID card issue. Both functions interact with, but are not integrated into, the voter registration system: national ID cards are one form of identification that may be used to register as a voter; and deaths should be notified regularly by the Ministry of Justice to the STAE for removal from the register.

There have been recent discussions between the CNE, the Ministry of Justice and the Ministry of Interior on greater integration of the civil and voter registries. The CNE believes it has the capacity to conduct civil registration, and the Ministry of Justice has expressed interest in taking advantage of the successes achieved in the voter registration process. This would of course increase the demands made on the CNE/STAE and should not be undertaken lightly. It would, at the

least, require moving from a periodic exercise for voters to a continuous exercise covering the whole population. The CNE/STAE voters' register database is now the most accurate and comprehensive identity database available in Mozambique. But the current major flaws in civil registration processes and data would prevent voter registration from being based solely on civil registration, or relying fully on the civil register for any data unless a new, fully resourced process for civil registration was introduced.

There are major flaws in the civil registry in terms of both birth and death registrations and ID card issue which preclude its use as the basis for voter registration even if it were otherwise a suitable methodology. The 20 million records held at the Births and Deaths Registry are currently not computerised: while moves are being made toward computerisation, registry sources believe this will take years.[43] Persons registered at the Births and Deaths Registry do not have a unique identifier number – each of its 138 district offices uses the same number series. And totally different number series are used for the national ID card and for the voter ID card systems.

International assistance is being provided to increase the number of births being registered; however, this is still a problem especially in rural areas. Registry sources also estimate that up to 70% of deaths in rural areas are not reported to the civil registry.[44] Currently it is estimated that only around five million of the over 21 million population of Mozambique have a national ID card. A birth certificate from the Ministry of Justice – which many do not have – is necessary to obtain a national ID card; and it can take months or even years after lodging an application for a national ID card to be issued.

ANALYSIS, EVALUATION AND RECOMMENDATIONS

Effectiveness of the system

The 9,871,949 people registered to vote at the 2009 national elections represent around 96% of those eligible to register[45] – an impressive achievement for a voluntary voter registration system; however, on a regional basis there is a wide discrepancy in comprehensiveness. Some rural areas have a much lower registration rate – and some of these coincide with areas of support for opposition parties, promoting distrust in the registration system.

The CNE has acknowledged that the evaluation process for purchasing equipment did not give sufficient weight to the harsh field conditions likely to be encountered. There has been a high breakdown rate of the field data collection units, partially due to inadequate maintenance and storage between uses, exacerbated by susceptibility to dust and poor road conditions. The use of generator-supplied power to recharge batteries has not been reliable. These performance problems have necessitated longer registration periods and may have been a disincentive to people, particularly in rural areas, to register to vote.

The competence of field registration staff has improved from uncertain beginnings in 2007 when equipment was not delivered sufficiently early to allow for the training of field staff before registration commenced. Computerising the registration system has widely accelerated computer knowledge among people in many areas of the country. The purchase of some replacement field equipment kits containing mini-notebook computers will provide district and provincial STAE offices with additional computing resources between elections. However, these more robust units do not necessarily go to rural areas where they are most required.

The registration system has been least effective in data quality control: data quality measures have not produced a voters' register that has been cleaned to the standard that could reasonably be expected from a computerised voter registration system.

In some respects the available control measures have not been implemented by the STAE. For example, it has not had the capacity to remove duplicate entries from the register despite the digital recording of voters' fingerprints and the purchase of sophisticated fingerprint matching de-duplication software. With no effective mechanism for official reporting of all deaths, the quality of data received from the civil registry on deaths is poor. The lack of effective motivation campaigns coupled with often poor accessibility has resulted in limited public interest in the verification period for registration data.

Quality of data

The lower registration coverage and less reliable data collection equipment performance in rural areas – particularly those areas more likely to support opposition parties – have provided opportunities for regular allegations of manipulation of the voters' register.

Products from the new voter registration system were used for the first time at the local government elections in November 2008. There were reports of the names of many voters with voter cards missing from the computerised registration book for their relevant voting station.[46] The CNE issued confusing announcements, clarified only the day before voting day, to allow voters with a valid voter card to vote at the voting station for which they were registered to vote, though this was not always implemented.

At the 2008 elections, there were claims (backed by some evidence) that in some municipalities registration books were delivered to the incorrect voting stations. There were also claims that at some voting stations there were more names in the computerised registration book than in the handwritten book, which the opposition alleged was due to names being illegally added to the register after registration. Another possible explanation could be miscoding of names to the incorrect voting station – indicating poor quality controls rather than malpractice.

Observation of the 2009 national elections noted that the overall quality and distribution of voter cards was 'quite good',[47] resulting in few reported complaints on voting day. Some instances of missing or wrongly delivered registration books and discrepancies between manual and computerised registers were noted,[48] but there were no reports of significance resulting in disenfranchisement.

The STAE's inability prior to the 2009 election to remove duplicate entries from the register, process monthly removals of deceased and ineligible voters, and the lack of comprehensiveness of data available on deaths created problems in terms of the quality of the voters' register. If estimates are correct that up to 70% of deaths in rural areas are unreported, there is the potential (on a very rough estimation) that around 170,000 or more voters who have died since the new registers were compiled in 2007 have not been notified to the STAE. The number of deceased voters remaining on the registers could be as many as 240,000 if deceased voters advised to the population registry have not been removed. If one adds to this the 160,000 duplicates not removed in 2009, the number of invalid register entries increases to as many as 400,000. But to put this in perspective, this is only around 4% of the total register entries.

Expectations versus outcome

Some key expectations were that the new computerised voters' register introduced in 2007 would: assist in eliminating fraud by providing higher integrity voter registry data; provide more accurate amalgamated data on registered voters to use for such purposes as election logistics and voter turnout calculations; and promote a more comprehensive voter registration process.

The voter registration process using the new system has overall been very comprehensive, and through the use of mobile registration teams has managed to penetrate deep into rural areas: however, there is significant variation in coverage between the provinces.

The new voter registration system has, however, failed to promote confidence in the integrity of the voters' register across the political spectrum. Opposition parties have no trust in the system, as much because of distrust of any system implemented by the current CNE/STAE as in the technical capacities of the current system. The new system may have gathered more accurate voting station level data on registered voters, but this is difficult to ascertain as the CNE/STAE refuses to release the data pre-election.

The overall integrity of the voters' register used for presidential, National Assembly and provincial assembly elections, and the use of this data for statistical purposes has been compromised by the STAE's inability to implement system processes to remove duplicate entries, and to obtain and process information on deceased voters. While the register is now more reliable than that used at the 2004 elections, the CNE/STAE has not been able to manage the new system to provide high-integrity voter registry data.

Lessons learned

The voters' registers produced by the new registration system for the 2008 local government and 2009 national elections appear to have shown some improvement on those used at the 2004 national elections. The problems encountered in introducing the new registration system in 2007 and the continued lack of acceptance of a computerised voters' register by opposition political parties provide some lessons for future developments.

Some issues are subjective or political in nature and could therefore not be resolved simply by amending or replacing the voter registration system. These include the following:

❑ *Confidence in the voters' register is dependent on confidence in the impartiality and independent decision-making of the EMB.* While voter registration is a technical issue, its methods and outcomes will be subject to dispute in the absence of widespread political confidence in the method of appointment and independence of action of the EMB. If the EMB does not have the confidence of opposition parties, all its voter registration activities will be addressed by the opposition and their supporters through this filter.

❑ *Transparency in voter registration operations is essential for building trust in the integrity of the electoral process.* A consistent refusal to provide details of the voter registration system and of disaggregated data on registered voters only feeds suspicions of manipulation of the voters' register. As a result, all shortcomings in voter registration – including those due to issues of administrative competence or equipment suitability or reliability – are seen by those opposed to the current government as politically motivated.

❑ *Inclusiveness in the planning and evaluation of voter registration processes is needed to maximise system performance.* Planning for and evaluation of the voter registration system needs to be inclusive, encompassing all implementing levels of the EMB and actively seeking and considering critical external input from stakeholders. Planning and evaluation need to begin sufficiently before the commencement of any voter registration period and should be integrated into the objectives and strategies defined by the EMB.

On the operational management side:

❑ *Lead times for equipment purchasing need to factor in potential delays in supply.*

❑ *Equipment purchased needs to be suitable for the field conditions and staff capacities likely to be encountered and should be fully supported with materials.* Pre-purchase testing of equipment is required to establish that it is robust enough for the conditions to be encountered, including heat, dust, impact and water tests in addition to system performance tests. For rural areas, the use of solar-powered data collection units rather than relying on mains or generator power may be more reliable given appropriate staff training, and is no more expensive over the whole life of the system. Distribution planning needs to include an emergency resupply capacity through a decentralised field supply process. Software used for data collection, data transfer and processing and integrity controls should be appropriate for the skills levels that can be realistically expected, after available training, of the relevant EMB staff.

❑ *All computer equipment requires a realistic storage and maintenance plan.* Appropriate storage facilities and careful handling of computer-based voter registration equipment is necessary to ensure its reliability. Similarly, all computer equipment should be subject to regular maintenance under an official plan that includes a full pre-field deployment check and regular checks of all components, particularly degradable components such as batteries. Local storage should be used where feasible and where transport routes are of poor quality. Training in the storage and maintenance of voter registration equipment between uses is as important as training in its use for data collection.

❑ *Voters' register integrity controls have to be appropriate for the EMB's capacities and for external information availability, and where appropriate should be easily publicly accessible.* The purchase of high-tech duplicate detecting systems such as fingerprint matching software is only useful if there is the capacity to implement it. Comprehensive and timely information on deaths is required for a voters' register to have longer-term integrity: if this is not already available from other civil authorities the EMB needs proactively to develop its own information sources at the local level. Verification periods are of limited usefulness if locations are not easily accessible to voters. In addition, EMB staff need to see this period as a necessary control and not as a challenge to their authority.[49]

❑ *Voter registration methods, processes and management structures could be examined for their appropriateness as a basis for redevelopment of the civil*

registry. Where civil registers are non-existent or of poor quality it may be appropriate to use the more proactive and focused processes, management structures and data from a comprehensive voter registration system as the basis for developing or improving the civil register. This is the opposite of what has been the common relationship between civil and voter registers.

❑ *Training for new computer-based systems has to be completed before the system is implemented and should fully consider participants' existing skills levels.* Contingency training plans are needed to deal with disruptions to the planned training schedule, such as delays in equipment delivery, so that staff receive at least some training before voter registration commences.

❑ *The use of mobile voter registration teams can enable better coverage of rural areas.* Political parties must, however, be briefed appropriately on their activities and voters need to be provided with relevant information.

❑ *Developing sufficient in-house technical skills to maintain a voter registration system is essential to sustain its reliability and integrity.* Reliance on limited external contract resources for system maintenance and for sophisticated integrity control processes can jeopardise the availability and reliability of equipment as well as the implementation of quality controls.

Cost-benefit analysis of voter registration

The cost of compiling the 2007/2008 voters' register in Mozambique using the current voter registration system is estimated at around US$41 million for the registration of around nine million voters: this is a cost per registered voter of around US$4.50. While this is relatively expensive for a single election, one must bear in mind that this register was prepared for the 2008 local government elections, and after the 2009 update was also used for the October 2009 national elections. As the cost of the 2009 update has not been made available by the STAE, an overall cost per registered voter for the whole of the current electoral cycle is not known.

The new register is regarded by the CNE/STAE as much more complete than any earlier register, and is the most accurate and comprehensive identity database in Mozambique. The new methodology of creating a fresh register for every electoral cycle has eliminated the confusion caused by the use of multiple base and update voters' registers that occurred at the 2004 elections. But the benefits have not all been directly linked to voter registration. The use of direct

key entry at field locations has raised basic computer awareness and skills among the 15,000 registration staff members, many of whom had never previously used a computer. The newer model data collection packs contain mini-notebook computers that can be used outside voter registration periods for other tasks in CNE/STAE provincial and local offices.

However, the new voter registration system has not been able to bring full reliability to the data capture process, nor has it ensured that ineligible entries are removed from the voters' register. It has also not promoted broad political acceptance of the voters' register. In addition, it has not resulted in the CNE/STAE being any more open and informative about their operations and decisions, and may even have resulted in voter registration processes being less transparent. It can be questioned whether the benefits have outweighed the costs at a political level; and at an operational level whether registration has performed to the level that could reasonably be expected from the costs.

Stakeholder satisfaction

The most significant issue for stakeholder satisfaction is opposition political parties' lack of trust in the integrity of the voter registration books produced by the CNE/STAE, fuelled by perceptions of political control of the CNE/STAE and a lack of transparency in the management of the register by the CNE/STAE. No matter what voter registration system was implemented, under the current election management structure and practices it is unlikely that opposition parties would be satisfied – unless they won the election. Reliability of data collection equipment in difficult field conditions has been widely recognised as poor, and opposition parties are quick to seize on any fault in the registration process or data as alleged evidence of a government-sponsored conspiracy against the opposition.

Opposition parties are strongly opposed to computerisation of the voters' register on the grounds of lack of transparency and unsuitability for rural environments in Mozambique, and are also not satisfied with the semi-permanent basis of the voters' register. Given that comprehensive information on deceased voters is not available and that the STAE has had problems in maintaining data integrity in the voters' register, opposition parties strongly argue that a new voters' register should be prepared for each election.

CSOs have had an at times fractious relationship with the CNE/STAE over its lack of transparency in voter registration and other election activities. They have also been generally critical of the STAE's planning and training for and implementation of the voter registration process. While recognising that the 2009 voters' register update was better implemented than the 2007/2008 complete registration, this is attributed to the much lower volumes of work involved. And while the overall percentage of eligible persons registering to vote is high, diminishing voter turnout and lack of interest in checking voters' register data – in

spite of widespread errors in the past – may indicate an increasing disengagement of voters from electoral processes in general. It has been suggested that high registration coverage is the result of pressure from local traditional leaders and government officials, whereas the public do not feel any sense of ownership of the process.[50]

Influence of external stakeholders on the process

There is general agreement that the current voter registration system was chosen by the CNE, following a proposal by the STAE, with little or no external influence. Despite Renamo allegations of favouritism in the purchase, international advisors have noted that the purchasing decision appeared to have been made using an acceptable process. Opposition political parties, led by Renamo, have attempted (with no success) to have the manual system of voter registration restored, and their complaints of voter registration irregularities have not been upheld. However, pressure from Renamo may have contributed to the decision to scrap the existing voters' register and to start afresh in 2007 – as well as the change from a permanent to a limited-life register.

Donors were actively pushing a reluctant CNE/STAE into computerising the voters' register in the late 1990s, and funded the acquisition of the system that was finally able to produce the unsatisfactory voters' register for the 2004 elections; however, they were not involved in the decision on the new system introduced in 2007. Donors have attempted, with no success, to influence the CNE to become more transparent in the operation of the current voter registration system. While CSOs have issued reports critical of the operations of the voter registration system and the transparency of the voter registration process, they feel that their recommendations are not seriously considered by the CNE/STAE and that at times their critical evaluation, especially if publicised, has not been welcomed by the CNE/STAE.[51]

Sustainability of the system

There are threats to the political sustainability of the voter registration system as currently implemented. Continued opposition party allegations of fraudulent management of voter registration by a CNE/STAE under ruling party influence, and campaigning for computerised registration to be scrapped, will inevitably affect public perceptions of the register's legitimacy – as will the CNE/STAE's lack of transparency.

The financial sustainability of the system is likely, but not assured. The high breakdown rate of data collection equipment creates a continuing financial burden: given the 2008-2009 attrition rate, it is arguable how much of the equipment will be operable in 2013 when a new voters' register is scheduled to be compiled. The CNE/STAE does not hold financial reserves for equipment replacement and does not have a long-term strategy for equipment replacement, except to

assume that the government will have no option but to provide voter registration equipment funds when they are needed. Though donor contributions to general Mozambican government revenue may affect the volume of funds available for electoral purposes, the cessation of direct donor funding of voter registration systems after the 2004 elections is a positive move toward sustainability.

The CNE/STAE currently relies on contractor staff for system maintenance. At the 2009 elections, the CNE/STAE did not have the capacity to implement critical processes to remove duplicate entries from the register, and at the very least a large proportion of deceased voters were not removed from the register. This raises doubt as to whether there is internal capacity to sustain a voters' register of acceptable integrity using the current methodology, information sources and technical specifications.

Future developments

While there is pressure from opposition political parties to reform the voter registration system completely and to revert to manual registration, their relatively poor showing at the 2009 national elections makes this unlikely. The CNE/STAE is reasonably happy with the technical basis of the current voter registration system but sees a number of methodological and operational improvements for the future. There does not appear to be a strategy to reverse opposition distrust in the voters' register and to reduce political disputes concerning the conduct of voter registration.

The CNE believes that a continuous voter registration process would have some significant benefits, including removing the stress of the current periodic update methodology, allowing more time for equipment to work and for errors to be corrected, and that it would professionalise registration *brigade* staff. But reverting to a permanent register of any form would make it even more critical that current integrity problems concerning deceased and duplicate voters are dealt with. While discussions between the CNE/STAE, Ministry of Justice and Ministry of Interior exploring the possibility of integrating civil and voter registry data have not progressed far, the CNE believes that the voter registry could provide a template for a redeveloped civil registration process.

Operationally, the CNE intends to continue replacing the older style PDA-based data collection kits with ones using mini-notebooks. Targets for improvement in operations include increasing civic education activities especially those that inform political parties, longer and better training for registration *brigade* staff, improving the administrative competence and impartiality of CNE members and STAE staff at provincial and district levels, improving transport and storage of voter registration equipment, and examining ways of reducing costs by decreasing the number of registration locations and staff without significantly adversely affecting accessibility.

CSOs have suggested that in future the STAE should implement sample-

based audits of the voters' register to determine its accuracy and should distribute copies of the register to all political parties, but these suggestions have not met with a positive response.

NOTES

1   Except where otherwise noted, data in this section is based on 2009 estimates contained in the CIA Factbook, Mozambique page. Available at https://www.cia.gov/library/publications/the-world-factbook/geos/mz.html [accessed 11 July 2009].

2   1997 census data.

3   Turnout figures for 2004 and 2009 are estimates based on calculations by the Centre for Public Integrity. There is dispute over the accuracy and validity of total registered voter figures published by the CNE/STAE.

4   As at 2 November 2009, the unofficial rapid ballot count showed Frelimo presidential candidate Armando Guebeza winning 76% of the vote, and Frelimo winning 78% of the seats in the National Assembly.

5   Prior to 2003 the CNE was a temporary body whose members held office for each election period and its associated voter registration period.

6   Constitution of Mozambique 1990 Article 73(2). Available at http://confinder.richmond.edu/admin/docs/moz.pdf.

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19 All Africa.com, op cit.

20 Data from *Mozambique Political Process Bulletin*, No 36, op cit.

21 *Mozambique Political Process Bulletin*, No 35, 1 October 2007, p 2, AWEPA/CIP, Maputo. Available at http://www.open.ac.uk/technology/mozambique/pics/d84259.pdf accessed [15 September 2009].

22 European Union, 'EU Election Observation Mission – Mozambique 2009, Preliminary Statement', Maputo, 2009, p 4. Available at http://www.eueom-mozambique.eu/EN/Preliminary.html [accessed 1 November 2009].

23 For further discussion of the use of voter registration data for seat allocation see section 'System products and uses'.

24 Interview with Sheik Abdul Carimo, Electoral Observatory, 23 July 2009.

25 Interview with Adriano Nuvunga, CIP, 24 July 2009.

26 On the other hand, in the Renamo stronghold of Sofala province over 100% of estimated eligible new voters were registered.

27 Interview with Sheik Abdul Carimo, Electoral Observatory, 23 July 2009.

28 *Mozambique Political Process Bulletin*, No 23, 28 October 2009, p 2, AWEPA/CIP, Maputo. Available at http://www.cip.org.mz/election2009/ndoc2009/244_2009_Elections_Bulletin_21--28Oct--1700.pdf [accessed 29 October 2009].

29 'EU Election Observation Mission – Mozambique 2009, Preliminary Statement', op cit, p 4.

30 Further discussion of these issues is at section 'Review and verification of data'.

31 Interview with Adriano Nuvunga, CIP, 24 July 2009.

32 African Elections Database, 'Mozambique Detailed Election Results'. Available at http://africanelections.tripod.com/mz_detail.html [accessed 10 October 2009] and EISA, 'Mozambique: 2009 Voter Registration and Assembly of the Republic Seat Allocation'. Johannesburg: EISA. Available at http://www.eisa.org.za/WEP/moz2009registration.htm [accessed 10 October 2009].

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35 Interview with Adriano Nuvunga, CIP, 24 July 2009.

36 *Mozambique Political Process Bulletin*, No 36, op cit.

37 Information on Electoral Observatory activities is from an interview with Sheik Abdul Carimo, Coordinator, Electoral Observatory, 23 July 2009.

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39 Financial data in this paragraph is from de Tollenaere M, 'Democracy Assistance to Post Conflict Mozambique: Intentions and Outcomes'. Working Paper 37, Democratic Transition in Post Conflict Societies Project, p 8, Netherlands Institute of International Relations 'Clingendael' Conflict Research Unit, May 2006. Available at http://www.clingendael.nl/publications/2006/20060500_cru_working_paper_37_en.pdf [accessed 4 September 2009].

40 Ibid, p 9.

41 'EU Election Observation Mission – Mozambique 2009, Preliminary Statement', op cit, p 4.

42 Ibid, p 9.

43 Interview with Dr Manuel Malunga, Director Civil Registry, Ministry of Justice, 22 July 2009.

44 Ibid.

45 UNDP Factsheet, op cit.

46 *Mozambique Political Process Bulletin*, No 37a, 15 December 2008, pp 4-5, AWEPA/CIP, Maputo. Available at http://www.open.ac.uk/technology/mozambique/pics/d112545.pdf [accessed 15 September 2009].

47 Commonwealth Secretariat, 'Report of the Commonwealth Observer Group, Mozambique National and Provincial Elections, 28 October 2009, Final Report'. London: Commonwealth Secretariat, 2009, p 22. Available at http://www.thecommonwealth.org/files/217881/FileNam e/2009MozambiqueCOGReport.pdf [accessed 1 February 2010].

48 Ibid, p 34.

49 In Mozambique the effects of currently relatively ineffective integrity controls will be somewhat limited as long as the law requires that a new voters' register must be prepared for each electoral cycle. But this still means that the register will be at its cleanest for local government, not national, elections.

50 Interview with Lazaro Mabunda, senior journalist, *O Pais*, 23 July 2009.

51 Interview with Sheik Abdul Karimo, Director, Electoral Observatory, 23 July 2009.

6

RWANDA

Hubert Akumiah

EXECUTIVE SUMMARY

The 2008 elections were the second legislative elections to be held in post-genocide Rwanda after the adoption of the constitution in 2003. These elections marked the beginning of a new 'electoral cycle', with presidential elections due in 2010 and local and senatorial elections to be held in 2011.

Rwanda's National Electoral Commission (NEC) operates a permanent voter registration system, which is based on the national identification database. The NEC establishes the voters' register by extracting the records of all citizens who are eligible to vote from the civil register database, which is held by the National Identification Department (NID).

The system was set up in 2007 by the NID with the participation of the NEC in a joint exercise to conduct a general census and civil registration. The exercise was divided into several phases: during the first phase the personal details and residential information of all 9.2 million Rwandan citizens were collected and compiled in a textual database. In the second phase, biometric data (photographs, fingerprints and signatures) were collected on a rolling basis at village level using 160 registration kits. The contents of the two databases were then consolidated into the civil registry database. Data from this database is retrieved to establish the voters' register. Copies of the voters' roll are sent periodically to village level to ensure the inclusion of new voters, the removal of deceased people and to allow for amendments of personal data. The NEC produces voter cards, which are compulsory for the voting process as the Rwandan national ID card is not a legal document for voting.

The choice of this system was influenced by a national policy which requires all public service departments and units (including the NEC) to source basic data on citizens from the civil registration system. The general aim was to set up a one-stop system of identifying and registering the population, as well as to increase people's access to technology.

The main limitations of the combined civil and voter registration systems include the failure of the NID to provide timely information on all eligible voters, the requirement by law for the NEC to conduct periodic nationwide voters' register updates and the difficulties associated with the synchronisation of data collected from the voter registration and civil registration processes.

A good national ID card system serves multiple uses and motivates citizens to register; however, as in the case of Rwanda, unless a national ID system is merged with dynamic, relevant statistics it does not necessarily provide the NEC with accurate and reliable data.

COUNTRY CONTEXT

Political history[1]

Pre-colonial period

Centuries before colonial rule Rwanda was ruled by a monarchy which controlled large areas of the country. Political power was held by the king. The monarchy exercised delegated authority through the king's direct deputies, the head of the army, land chiefs and cattle chiefs. Rwandans lived in harmony and were united by clans and culture, a sense of belonging and a common administration based on religion or habitat.

Colonial period (1894-1962)

Between 1894 and 1915, Rwanda was a German Protectorate characterised by powerful leadership, strong unity and patriotism among its peoples similar to that which prevailed during the pre-colonial era. Following Germany's defeat in the First World War, Rwanda came under Belgian trusteeship and colonisation (1916-1962) during which the monarchy was abolished (1959) and the First Republic was established (1962). This era saw divisions and discrimination along tribal lines – Bahutu, Batwa and Batutsi.

Demands for self-government and independence throughout Africa in the 1950s pressured the Belgians to open up the political system, permitting Rwandans to participate in non-partisan local elections and to organise political parties in 1959. Although reflecting a certain measure of democratisation, these developments exacerbated ethnic divisions, rivalries and conflict. Civil society organisations (CSOs) became highly politicised and provided a broad organisational foundation for ethnically based political parties.

Two of the main political parties *Mouvement démocratique republicain Parmehutu* (MDR-Parmehutu) and *Association Pour la Promotion Sociale de la Masse* (Association for the Social Betterment of the Masses – Hutu) allied with the colonial adminis-tration to set up a certain sectarian ideology. They portrayed themselves as revolutionaries seeking to abolish the kingdom and all it represented. A series of massacres took place in late 1959, which provoked the flight of tens of thousands of Batutsi.

Post-independence period (1962-1994)

Rwanda gained independence in 1962 with MDR-Parmehutu leader Gregoire

Kayinbanda as head of state. An attempted invasion by exiled Rwandans failed in 1963 and was followed by more massacres of Batsutsi who had remained in the country. Kayinbanda, who favoured the Bahutu elites, established a highly repressive one-party state that did little to develop civil society.

In 1973, a military coup led by Juvenal Habyarimana overthrew the Kayibanda regime and established a one-party regime dominated by the *Mouvement Revolutionaire Nationale pour le Developpement* (MRND). This government promised to liberate the people from bad politics. Rwandans were obliged to adhere to the precepts of the MRND but the ideology of ethnic and regional exclusion remained. The regime favoured people from the North in setting up a regional and quota system that restricted Batutsi's and southern Bahutu's access to higher education, government posts and employment in the private sector. Under pressure from the Rwandan Patriotic Front (RPF) movement and within the country, Habyarimana took steps towards political liberalisation (1990-1994) by allowing the return of political parties and the formation of the first human rights organisations.

The RPF invaded Rwanda in October 1990. This hardened the MRND regime's attitude towards the Batutsi population and some people in the North. By 1992, extremists had organised the Bahutu militia or *Interahamwe* and had begun to intensify hate campaigns against Batutsi and moderate Bahutu who were accused of being traitors. Peace negotiations between the government and the RPF led to the August 1992 Arusha Agreement in which both parties agreed to end hostilies and to establish a national unity coalition government. However, Habyarimana moved slowly to implement the agreement.

The genocide period

The shooting down in Kigali of a plane carrying Habyarimana and the president of Burundi from the Arusha peace talks in April 1994 was followed by a carefully planned and executed massacre of the Batutsi population, moderate Bahutu, and a small number of religious and human rights activists who spoke out against the genocide. The 1994 genocide was the culmination of a long period of politics that focused on ethnic categorisation.

Post-genocide politics

The rapid military defeat of the extremist Bahutu regime by the RPF in 1994 was followed by a government of national unity set up to advance peace and reconciliation. From 1998 the Government of National Unity continued to enjoy significant success in rehabilitating infrastructure destroyed during the war, resettling the returning populations and pursuing socio-economic development.

A constitutional referendum was conducted at the conclusion of a three-year constitution-making process in which citizens both within the country and in the

diaspora contributed ideas. A draft constitution was put to a direct vote on 26 May 2003 and was promulgated on 4 June 2003. In accordance with Article 180 of the Constitution of 4 June 2003,[2] the NEC conducted the 25 August 2003 presidential elections. The 2003 parliamentary elections were won by the RPF in a coalition with four smaller parties. The RPF also holds the presidency. Two other parties were represented in the outgoing parliament: the Social Democratic Party (PSD) and the Liberal Party (PL).[3] The outgoing parliament – the first elected legislature in the post-genocide era – was officially dissolved on 14 August 2008.

Multipartyism, the constitutionally enshrined form of governance in Rwanda, is built on two principles – power sharing and consensus – themselves explained by the specific Rwandan response to the genocide, which aims to avoid all forms of division within the population. This aim is evident in all spheres of public life. Constitutionally, no party obtaining a majority of seats in the Chamber of Deputies shall have majority representation in the cabinet, and both chambers of parliament are subject to rules on representation that, for instance, reserve seats for different geographic regions (the Senate) and women (both chambers).

The constitution requires all registered political parties to join a political party forum – the Consultative Forum of Political Organisations in Rwanda. The forum aims to facilitate dialogue among political actors based on the principles of the supremacy of national interest and the rule of law. The forum works to avoid factionalism and political antagonism, and acts as mediator in cases of inter-party conflict.

Political environment

Branches of government
Rwanda has three main branches of government: the legislature; the executive; and the judiciary. The three branches perform different functions and none should interfere in the work of another.

The legislature
According to the 2003 Constitution and its amendments, legislative power in Rwanda is held by parliament, which comprises two chambers: the Chamber of Deputies; and the Chamber of Senators.

The Chamber of Deputies is made up of 80 elected members from different categories. The 80 members are distributed as follows:

- 53 seats are for elected deputies (from political parties or independent candidates);
- 24 seats are reserved for women representatives;
- two seats are reserved for youth representatives; and
- one seat is reserved for the Association of Disabled Persons.

The Chamber of Senators is composed of 26 senators in addition to former heads of state (30% of senators must be women). The chamber comprises:

- 12 senators representing the provinces;
- eight senators representing marginalised communities;
- four senators from the Consultative Forum of Political Organisations;
- one senator representing public universities; and
- one senator representing private universities and institutions.

The executive
Executive authority is exercised by the president of the Republic of Rwanda and the cabinet. The cabinet comprises the prime minister, ministers, ministers of state and other members.

The judiciary
Judicial authority in Rwanda is exercised by the Supreme Court and other courts established by the constitution. The Supreme Court is the highest court of the republic. There are lower courts in the provinces and districts as well as special courts such as the Gacaca and military courts.

Checks and balances principle
The three branches of government operate independently of each other in order to ensure fairness in the running of government but can consult when the need arises. The functions of each branch of government are defined in the Rwandan constitution, which also sets the limits of power of each branch to ensure that none dominates the other.

Local government
The Rwandan constitution in Article 167 provides for the decentralisation of government authority to local government. Local government therefore exercises power devolved from the national government. The functions and authority of local government are defined in the constitution and legislation passed by parliament. The main responsibility of local government in Rwanda is to promote greater participation of citizens in decision making and planning according to their own needs and priorities, executing development programmes, and electing leaders and holding them accountable.

Local administration
Rwanda is a well-organised country compared to many other African societies. To understand how the ruling party can rule relatively efficiently, the four administrative levels through which its policies flow are outlined below.[4]

- *Provincial level:* Rwanda is divided into five provinces, including the city of Kigali. Each is headed by a prefect and administered by an executive secretary. Six directors are responsible respectively for political affairs, infrastructure, youth, education and social affairs, health, gender and finance. All eight leaders are politically appointed.
- *District level:* Each of Rwanda's 30 districts is governed by a council. The council is headed by a mayor and comprises one member of each of the district's sectors, as well as representatives of the youth (five) and women. The youth and women's groups each represent at least one-third of council members. All members, including the mayor, are elected on a non-party basis.
- *Sector level:* Rwanda's 418 sectors are each run by a ten-member sector committee headed by a sector coordinator. All committee members are elected on a non-party basis.
- *Cell level:* At cell level, the lowest administrative unit, all inhabitants over 18 years old comprise the assembly, which in turn elects the executive body – a ten-member cell committee.

Socio-economic profile of the country[5]

Rwanda is a landlocked country with a surface area of 26,338 km^2 situated in central eastern Africa. Rwanda has a population of 10.7 million, making it the most densely populated country in Africa with over 400 inhabitants per square kilometre.[6]

Rwanda's economy is small and predominantly agricultural, with agriculture accounting for 39.4% of gross domestic product (GDP) in 2006. The country registered 5.8% real GDP growth in 2006 with annual average inflation at 8.9%. The poverty rate has dropped from 60.2% of the population in 2001 to 56.9% in 2006. In absolute figures, however, there were 600,000 more poor people due to population growth.

Rwanda currently ranks 161 out of 177 countries on the Human Development Index. Positive developments can, however, be seen for example in the country's ambition to reconstruct state structures and in the strong organisational capacity of the state. Rwanda has continued to pursue a series of highly ambitious economic reforms, outlined in the core document of 'Vision 2020'[7] and the Economic Development and Poverty Reduction Strategy 2008-2012. These and related initiatives have been cited as signs of a successful turnaround. Rwanda's official entry into the East African Community in July 2007 is seen as another important development for both Rwanda and the Great Lakes region.

Since 1959 Rwanda experienced periodic ethnic violence against parts of the population, which culminated in the 1994 genocide. After independence there

were still no democratic elections in the country. There was one presidential candidate who was elected by 'voters' saying 'yes' or 'no' to the candidate; most other positions were by appointment, which were far from fair. With almost no support from the international community, Rwandans were able to turn their situation around after the genocide and install a transitional government, the Government of National Unity, which governed the country from 1994 to 2003. The holding of a referendum on the constitution as well as successful legislative and presidential elections have contributed strongly to the democratisation of Rwanda.

THE ELECTORAL STRUCTURE

Legal framework

The electoral framework of Rwanda is governed by the provisions of the constitution and various organic laws that specifically cover a particular election. Currently, there is no single electoral law which constitutes a reference for all elections in Rwanda.

Election of the president

The constitution provides that the election of the president of the Republic of Rwanda shall be by universal suffrage through a direct and secret ballot with the winner garnering a simple majority of the votes cast. If there is no clear winner there is provision for a run-off election to be held within a month of the initial election between the two candidates with the highest number of votes. The constitution provides that the president shall serve a seven-year term, renewable only once.

The electoral law provides for the nomination of presidential candidates by a political party, a coalition of political parties or independent candidate nominations. Political parties choose their candidates according to the party's internal regulations. The nominated candidates submit their candidacy to the NEC, which vets the candidates according to the requirements of the law (such as citizenship, age, proof that at least one parent is Rwandan by origin).

Elections to parliament

The constitution states that members of the Chamber of Deputies shall be elected for a five-year term by universal suffrage through secret ballot using a closed-list proportional representation electoral system. Candidates for parliamentary seats may be nominated by a political party or may stand independently. However, a political party that fails to attain at least 5% of the votes cast at national level during the legislative election cannot be represented in the Chamber of Deputies. Of the 80 deputies elected in the 2008 legislative elections, 53 were by direct vote and 27 through indirect elections.

In cases where two candidates receive equal votes in a parliamentary election, the general rule is for the ballots to be recounted. If after recounting there is still a draw, voting is repeated for the two candidates in question. If there is still no winner after the second ballot, the winner is chosen by drawing lots.

Currently 56.3% of parliamentarians in Rwanda are female, which is one of the highest rates in the world.

Recent elections and electoral history

Legislative election 15–18 September 2008
The 2008 election for the Chamber of Deputies was the second legislative election since the adoption of the 2003 Constitution of Rwanda, which officially marked the end of the immediate post-genocide transition phase. Eighty deputies were elected – 53 by direct universal suffrage – over the period 15-18 September 2008. The election was contested by the RPF (in a coalition with six smaller parties), the PSD, the PL and one independent candidate. The elections were an important step in Rwanda's efforts to further institutionalise the democratic process with rule-based governance and to ensure the participation of all Rwandans in the decision-making processes of their country.

Background
The legacy of the 1994 genocide continues to structure social and political life in Rwanda. In this respect the 2008 elections took place in a context marked by continuing emphasis on national unity and reconciliation, as stated in the constitution. The elections were seen as an important step in the ongoing process to further institutionalise democracy in Rwanda.

Expansion of party activity at local level
In a notable effort to increase the space for political parties, an amendment of the Organic Law governing Political Organisations and Politicians in 2007 allowed parties to open offices at sub-national level. According to the European Union Election Observation Mission (EUEOM) report[8] there was an uneven presence of PSD and PL offices at district level. The small RPF coalition partners were almost completely absent beyond the capital.

Key political actors
Nine parties are registered in Rwanda, seven of which were represented in the lower chamber of parliament subsequent to the 2003 elections. The RPF led a coalition that included four small parties and had 40 seats in the outgoing parliament. The PSD and the PL had seven and six seats respectively. There are no large ideological differences between the various registered political parties in Rwanda primarily due to the common political pursuit of national unity.

The Rwandan Patriotic Front and its coalition partners

Rwandan political life is dominated by the RPF, which has far greater human and financial resources as well as organisational capacity than any of the other parties. President Paul Kagame, chairman of the RPF, continues to be the central figure in Rwandan politics. In the pre-campaign and campaign period, the party extended its membership base further.

As in 2003, the RPF contested the 2008 elections in coalition. The coalition included two new members, namely the Concord Progressive Party and the Party for Solidarity and Progress (PSP).

The small coalition members have diverse profiles featuring Muslim community representation (Ideal Democratic Party), socialist ideas (Rwandan Socialist Party), an affinity with the humanist values of European Christian Democracy (Centrist Democratic Party), an emphasis on 'solidarity across differences' (PSP) and the educated youth (Democratic Popular Union). Their reasons for remaining within or joining the coalition are due to their ideological affinity (to varying degrees) with the RPF as well as for pragmatic considerations (the 5% threshold for parliamentary representation).

Social Democratic Party

The PSD was created in 1991 as an opposition party under the Second Republic, with a concentration of intellectuals centred on Butare and the Southern Province. Almost its entire leadership was killed in the first period of the genocide. Following the genocide, the PSD participated in the transitional government. The party is led by Vincent Biruta, president of the Senate. At the time of the legislative elections the ministers of Public Service and Labour and the Minister of Health belonged to the PSD. The party aligns itself with the tradition of European Social Democracy.

Liberal Party

Similar to the PSD, the PL was created in the reform period of the early 1990s. The party professes allegiance to liberal economic precepts and is led by Minister of Youth Protais Mitali (formerly Minister of Commerce) and vice president Odette Nyarimimilo, a member of the East African Legislative Assembly. The PL is still recovering from a bitter leadership struggle that contributed to the complete replacement of PL deputies in the Chamber of Deputies during the last parliamentary term.

Electoral system

The Rwandan electoral system for the Chamber of Deputies combines elements of direct and indirect voting. Of the 80 members of the Chamber of Deputies, 53 are elected directly and 27 (24 women, two youth and one disabled person) are elected indirectly by representatives of special groups.

The elections were held on four consecutive days, starting with the direct elections of the 53 deputies on 15 September 2008. The directly elected members of parliament are elected by a proportional representation system with closed lists in a single nationwide constituency. Only parties or independent candidates passing a 5% threshold can be represented in parliament. (See Table 1 for an overview of the Chamber of Deputies elections).

Table 1: Elections to the Chamber of Deputies – September 2008

Chamber of Deputies – 80 seats	Election date	Electoral college	Number of candidates
53 deputies – directly elected	15 September	All Rwandan citizens over 18 years old and in possession of political rights	Three party lists, one independent candidate
24 women representatives	16 September	5,244 representatives of the National Council of Women and of Rwandan territorial entities (districts)	113 women
2 youth representatives	17 September	264 representatives of the National Youth Council (248) and 16 representatives from secondary schools and universities	21 candidates
1 representative of the disabled	18 September	783 representatives of the Association of Disabled Persons	13 candidates

Election day (direct elections, 15 September 2008)

The elections took place in a peaceful atmosphere but there were a number of fundamental shortcomings regarding international and regional standards for democratic elections. During election day, problems were noted regarding essential safeguards, including:

- the non-rigorous verification of voters on the voters' list marked as

having received a ballot against the number of ballots found in the ballot box;
- the liberal use of additional voters' lists;
- the omission to check for ink on voters' fingers to prevent multiple voting;
- the non-reconciliation of ballots; and
- the omission at polling station opening to seal, or limited sealing, of ballot boxes.

After counting the votes at the polling stations, successive consolidation of the results according to NEC procedures took place at polling centres, sectors, districts, provinces and at the national NEC centre in Kigali. However, according to EUEOM reports, in most cases consolidations were often done by telephone without using the consolidation forms provided by the NEC.[9] There was also no provision for publishing polling station results per polling station or at later stages of the consolidation process.

The problems observed on election day were partly due to legal and procedural provisions not being in place or not detailed enough. In other cases, provisions were in place but were not applied consistently by electoral staff. While voters turned out in large numbers to participate in the elections, the officially reported turnout of 98.31% is unusually high.

Tabulation and announcement of results

According to NEC procedures, the consolidation of results is done at polling centres, districts, provinces and city of Kigali level before transmission to the central NEC office in Kigali. Initially the NEC had planned to perform computerised consolidation at district level, from where results would have been sent to the NEC headquarters in Kigali. However, in mid-August 2008 the NEC announced that computerised consolidation would not take place for technical reasons, notably insufficient training of NEC personnel and lack of time to run a full test. The NEC confirmed that manual consolidation would thus occur at polling centres, districts, provinces and Kigali City. A final national consolidation would produce preliminary results for the country. Importantly, and in the interests of openness and transparency, the NEC produced forms to be filled out with the aggregated results for each step of the consolidation process, which were meant to be delivered to the next highest level. Forms for each of these steps were annexed to the NEC procedures.

Consolidation

The first step of consolidation of polling station results at polling centre level was not well organised and observers reported disorder in 22.9% of the cases. NEC consolidation procedures were not followed in 41.9% of the observations.

In 68.6% of the cases observed, polling station results forms were not secured inside envelopes, and envelopes were not sealed and marked with the polling station name as required by NEC procedures. Furthermore, in 58.8% of the cases observed the results being transferred from the polling station results form to the consolidation form were not always visible to those present.[10]

Publication of results

Preliminary results, excluding out-of-country voting and results for the direct elections, were announced on 16 September 2008. There was an additional announcement of results on 22 September, this time including the indirect elections and out-of-country voting, subsequently published on the NEC website as provisional results. Final results were announced in compliance with the law at a press conference on 25 September 2008, but were not published immediately. The NEC said this was because corrections were being made due to some small mistakes in the numbers. The final results appeared on the NEC website on 29 September 2008 (see Table 2).

Table 2: Official Chamber of Deputies election results, 29 September 2008

Province	RPF-led coalition	PSD	PL	Ind.	Valid votes	RPF-led coalition %	PSD %	PL %	Ind. %
Kigali City	420,952	69,390	39,651	5,569	535,562	78.60	12.95	7.40	1.03
Southern	824,556	203,872	116,496	5,567	1,150,491	71.67	17.72	10.12	0.48
Western	945,563	101,770	58,154	5,568	1,111,055	85.40	9.15	5.23	0.50
Northern	623,565	123,475	70,565	5,584	823,189	75.75	14.99	8.57	0.67
Eastern	841,320	110,820	63,320	5,560	1,021,020	82.40	10.85	6.20	0.54
Total	**3,655,956**	**609,327**	**348,186**	**27,848**	**4,641,317**	**78.76**	**13.13**	**7.50**	**0.60**

Source: National Election Commission. Available at http://www.comelena.gov.rw/.

The election management body

According to Article 2 of Law No 31/2005 of 24 December 2005, the NEC is the body responsible for preparing and organising local government elections,

parliamentary and presidential elections, referenda and any other elections as may be mandated by the law (for example, Gacaca jurisdictions, conciliators' *Abunzi*, youth and women councils). The NEC is also mandated to:

- establish electoral areas (constituencies);
- create provincial, district and municipal commission branches;
- prepare and conduct civic and voter education programmes;
- announce and publish election results;
- ensure that elections are free and fair; and
- carry out any other electoral activities as provided by law.

Composition and functions

The composition and functions of the NEC are governed by articles 6 and 5 respectively of Law No 31/2005 of 24 December 2005.

The NEC is composed of the: Council of Commissioners; Bureau of the Commission; and Executive Secretariat. Commissioners have a three-year mandate which is renewable only once. The Council of Commissioners comprises seven members of which at least two are required to be lawyers, and at least 30% of the members must be women. The members are nominated through the government's presentation of details of the seven members to the Senate for approval.

The NEC has two structured components:[11]

- A college of seven commissioners including the chairperson and the vice-chairperson. The seven commissioners from different political parties and CSOs are elected by the Senate for a renewable three-year term. During election periods the commissioners work permanently for one month before the election and until the publication of results.
- A permanent Executive Secretariat, which is made up of the executive secretary and three departments headed by the directors of Administration and Finance, Electoral Operation, and Information and Communication Technology (ICT) respectively. The members of the Executive Secretariat are technicians who manage the daily affairs of the NEC and the technical aspects of running the electoral process. Provincial and district commission branches are established during the election period.

The NEC is structured at the following levels: national (Kigali) (fully staffed head office); province (one staff member); district (no permanent staff); sector (no permanent staff); cell (no permanent staff); and village (no permanent staff). During election periods the NEC employs temporary staff at levels where it has no permanent presence (office or staff).

VOTER REGISTRATION

Legal framework, rules and regulations

The responsibility for organising and implementing voter registration is vested in the NEC. Provisions mandating this responsibility are contained in the following laws: Organic Law No 42/2000 of 15 December 2000; Electoral Law No 02/2006 of 25 January 2006 amending Law No 42/2000; Organic Law No 17/2003 of 7 July 2003; and Electoral Law No 31/2008 of 25 July 2008 amending Law No 17/2003.[12]

The right to vote

The right to vote is established in articles 8 and 9 of Law No 02/2006 of 25 January 2006. In order to vote, a person is required to be:

- Rwandan;
- at least 18 years old; and
- registered on the electoral list of his/her electoral zone.

Persons not allowed to register on the electoral list are:

- those who have been deprived of their right to vote and to be elected by competent courts of law and have not been rehabilitated or granted amnesty in accordance with the law;
- those who have been convicted of the crime of genocide or crimes against humanity who are in categories one and two;
- those who have confessed, pleaded guilty or entered a guilty plea for the crime of genocide or crimes against humanity placed in categories one and two;
- those who have been convicted of murder and manslaughter, child rape and adult rape;
- refugees; and
- prisoners.

Current or latest voter registration method

The NEC currently operates a permanent voters' register which is updated before each election. Since the introduction of the national ID card database in 2007, the update is conducted from this civil register. The ID card database is, by law, held by the National Identification Department (NID). During updates, the NEC extracts and uploads records of all citizens entitled to vote from the civil register database into the NEC's voter register database. This is done by networking the two institutions' ICT facilities. Voters' lists are then produced and displayed at village (lowest administrative unit in the district) or cells (next

highest administrative unit after village) level, depending on the NEC's decision, for additions and corrections.

Initial setup of the voters' register

The NEC used low-level voter registration systems for the 2001 and 2003 elections. A new voters' register therefore had to be compiled for the 2008 elections. In pursuing its national development plan the Rwandan government initiated a national census and civil registration exercise in 2007. The objective was to establish and operate a national identification and ID card system with a civil registry database which state institutions, including the NEC, would source. A joint operation for the registration exercise was undertaken by the NID, the Ministry of Local Government and the NEC.[13] The operation was conducted in three phases.

Phase One: Collection of textual data

- A three-day (1-3 September 2007) mass registration and census exercise was conducted throughout the country as well as for Rwandan nationals living abroad. Registration officials (volunteers in all villages) collected personal details and residential information of all citizens in all age groups. After registration, the completed forms were transported for data entry to the NID head office in Kigali.
- At the data processing facility, 350 networked PCs were used to capture the field data into a textual database (that is, a database containing only biographic and demographic data items). The data capture took 48 days to complete using 650 temporary data entry operators and supervisors. A total of 9.2 million citizens were registered in that exercise.

Phase Two: Collection of biometric data

- Between February and August 2008, biometric data (photograph, fingerprint and signature) collection took place on a rolling basis (district by district) only for persons registered during Phase One. Some 192 operators using 160 biometric registration kits took photographs and fingerprints of citizens at local level (cell and village) in each district. After seven days the teams moved on to the next district. Before a new district was tackled, the kits were sent to the NID data centre in Kigali where the biometric data was downloaded into an image database. The kits were then cleaned for the next district.

- At the end of the phase one and two operations, the contents of the two databases (textual and image) were consolidated into the civil database from which the NID produced identification products such as the national ID card and the national driver's licence. In addition to these outputs, institutions mandated to source data from the NID gained access according to existing protocols.

Phase Three: Creation of the voters' register

- To compile the voters' register, a copy of the civil register with data covering only textual details, photographs and signatures of citizens 17 years old or older was transmitted through a network connection from the NID's to the NEC's facilities. This became the permanent voters' register from which all voter register products (provisional and final voters' lists and voter cards) were produced.

Updating the voters' register

The NEC updates the permanent voters' register periodically by sending copies of the voters' register to the village level. There have been three voter registration updates since September 2007 – in February, May and August 2008. On 31 August 2008 the NEC published the final number of registered voters as 4,769,228.

Before the 2008 legislative elections the public were invited to inspect the voters' register and update their information. Updated information received from the public included the:

- addition of new voters (those who had turned 18 or those who missed the initial registration);
- modification of voters' details (change of name, address, etc.); or
- removal of deceased persons or those disqualified under the registration law.

These requests were recorded on special forms. At the end of the display period all completed forms were sent to the NEC's data centre in Kigali where the data was captured and used to update the voter registry.

Production of final register and voter cards

The NID was responsible for producing national ID cards for all Rwandan citizens. To date about 92% of those registered in the 2007 national exercise have been issued with their cards. The NEC, for its part, is mandated to produce voter cards for citizens who are qualified to vote under the registration laws. Regardless of whether a person holds a national ID card, s/he must have a voter card because the national ID card is not a legal document for voting. For the 2008 legislative

elections, the updated voter registry was used to produce the final voters' register and voter cards. The delivery of voter cards continued until election day.

Requirements and expectations influencing the choice of the current voter registration method

The choice of the current voter registration method (tied to the country's civil registration system) was influenced by a national policy by which all public service departments and units (including the NEC) were required to source basic data on citizens from the NID, which is custodian of the civil register.

The national identification project and the NID were set up to realise the objectives of Vision 2020 – the Rwandan government's strategic development plan. The general expectation was to have a one-stop system of identifying and registering the population instead of a proliferation of individual registries offering the same service. The benefits accrued from the system would then cut across individual organisations and institutions. Among the benefits to be derived from the project are:

- a computerised and accurate national population registry;
- basic data to increase the efficiency of public service delivery; and
- data to enhance national security.

By this arrangement, the NEC's budget for operating a permanent voters' register would be partly borne by the NID. NEC president Professor Chrysologue Karangwa added that the total cost of voter registration would generally be 'cheaper than previous exercises in 2001 and 2003'.

DECISION-MAKING PROCESS FOR SELECTION OF THE VOTER REGISTRATION SYSTEM

Role of the election management body

Selecting a permanent voter registration system

In the larger context of the civil register system from which the permanent voters' register data is sourced, the decision to choose or select the system did not lie in the hands of the NEC alone. That responsibility was shared by a consortium of selected stakeholder institutions – the National Registration Steering Committee – which included the NEC.

Selecting a voter registration updating system

By law the NEC has sole responsibility to choose the system for periodic updating of the voters' register. In 2004 when the NEC decided to change the system for maintaining the voters' register, it decided between:

- maintaining the manual paper-based system exclusively to gather and record voter information at the time of registration, but capturing the data into computer storage at provincial or district offices other than in Kigali, the capital; or
- introducing handheld computers (personal data assistants – PDAs) to collect, validate and transmit voter information directly from the field to desktop computers located at provincial NEC offices with a central database updated in Kigali.

A pilot voter registration process (the Rwandan National Electoral Commission Voter Registration and Verification Project) was undertaken in 2005 using PDAs, which found the PDAs to be not suitable for the process.[14] The handheld equipment had limited capacity and it was difficult to read from the tiny screen in the bright African daylight. The project was abandoned and the manual paper-based route was followed.

Role of the international community and donors

It was evident that in addition to funding certain voter registration projects, the international community and donors may have contributed indirectly to decisions regarding the choice of system for voter registration. A typical example was the PDA project which came out of a national programme dubbed the United States Agency for International Development (USAID)-Rwanda Mission or the dot-ORG-Rwanda project.[15] The underlying objectives of this project were to use ICT to increase people's access to technologies and information in rural and under-served areas, as well as to improve the way the Rwandan government managed its election process.

The NEC was responsible for the second objective, which was implemented by the Academy for Educational Development as the implementing agency for dot-ORG. The academy had gained extensive experience implementing similar USAID ICT–For-Development projects. It therefore proposed applying lessons learned from those projects to the specific Rwandan context. The initial project tasks included: strengthening the ICT capacity and effectiveness of the NEC through the supply of various ICT equipment and training; and a pilot activity using PDAs to collect, validate and update voter registration data. However, the project suffered several setbacks and was eventually discarded.

Role of technical assistance and international experts

The NEC did not receive much support by way of technical assistance or international experts in the voter registration process or in the decision-making process for selecting a voter registration system. There are, however, special areas such as finance and civic education where technical assistance has been utilised by the NEC as far back as 2003. Also in ICT, the dot-ORG resource partner

Geekcorps provided a volunteer to the NEC for several months for technical assistance and training.

Vendors

Vendor participation in the selection of the voter registration system was prominent. A number of local and external suppliers took part in many competitive tendering processes to determine and acquire the right materials and services for the voter registration system. Companies also provided technical support and training for the products they supplied. One local company, Access Data, designed and supplied pre-printed voter cards and impact printers (for printing voter cards) to the NEC. The NEC's ICT department currently has the capacity to produce the pre-printed cards using its commercial printing facility.

Funding and procurement of goods and services

The main funding for the electoral process was done through the basket fund managed by the United Nations Development Programme (UNDP) and a Basket Fund Steering Committee. The NEC prepared a budget and submitted it to the UNDP; funds were then transferred to the NEC. There is, however, often a problem of funds being transferred too late for some electoral processes to be implemented.

The joint basket fund members included the United Kingdom's (UK's) Department for International Development, the Swedish International Development Cooperation Agency (SIDA), the Netherlands, the European Commission, the UNDP and Belgium.

Some donors have bilateral relations with the NEC and do not put their funds in the basket fund but give it directly to the NEC. For example, a number of ICT materials and services used by the NEC were funded by USAID exclusively through the USAID-Rwanda Mission. These included:

- hardware and software to help NEC staff maintain the national voters' database;
- providing NEC staff with a mix of training opportunities to enhance their skills at developing and managing advanced databases;
- completing the cabling for the NEC's local area network; and
- helping the NEC to print high-quality voter registration cards through the procurement of a high-speed commercial impact printer.

Costs of acquisition

The NID and NEC seemed reticent to provide details of the actual costs of acquisition of materials and services for the civil and voter registration processes respectively. At a meeting with the NEC ICT director we agreed that a costing of the materials was possible using prevailing market prices of ICT materials based

on the configuration of the equipment acquired for the exercise. The materials and services costs provided here would thus be approximate.

Cost of NEC data centre equipment
The NEC hinted that the cost of the data centre equipment was about US$250,000. Table 3 indicates how this amount would probably be distributed given the configuration of equipment at the centre.

Table 3: Estimated cost of NEC data centre equipment

Items	US$
Local area network with one server connecting equipment in the data centre and the NEC building	108,000
50 PC workstations	60,000
2 data servers	24,000
6 high-speed laser printers	18,000
System software, database software and application development software	40,000
Total	**250,000**

Cost of civil registration project
The cost of the civil registration and national ID card project was borne by the Government of Rwanda from internal funds. Costs therefore cannot be attributed to any single institution. An amount of US$18 million was quoted as the total cost of the project awarded to the UK-based De La Rue company[16] to capture biometric data, process the data and issue secure ID cards to 10 million Rwandans.[17] Equipment and materials listed under this project included:

- 350 PCs, a local area network and a server to capture text data;
- 160 data capture kits to capture biometric data, with each kit comprising a:
  - laptop computer;
  - webcam;
  - fingerprint scanner;
  - digital signature pad; and
  - carrying case;
- 160 portable generators;
- set of data servers;
- fingerprint matching servers; and
- ID card printing facility.

Cost of operation

The cost of operation was not separated out from the US$18 million spent on the entire project. According to sources, the operational teams were paid daily wages of 10,000 RWF (approximately US$17) and 18,000 RWF (US$32) for operators and supervisors respectively, or an average of 14,000 RWF (US$23.8) for all categories of workers except biometric data capture operators who received the highest rates.

In order to get an idea of the operational cost component we must bear in mind that:

- about 15,000 registration staff worked for three days collecting textual data at village centres;
- 650 operators worked for 48 days entering textual data; and
- 192 operators worked for seven months (210 days) capturing biometric data.

This comes to a total cost of US$3.1 million for wages (see Table 4).

Table 4: Total cost of wages for the civil registration operation

Staff category	Wage calculation	Million RWF	US$ million
Data collectors	15,000 x 3 x 14,000 RWF	630	1,1
Data entry operator	650 x 48 x 14,000 RWF	436.8	0,766
MRW operators	192 x 210 x 18,000 RWF	748.4	1,2

Cost of system maintenance and upgrading

The cost of maintaining and upgrading NID equipment could not be sourced, but the following figures were given for maintenance and upgrading at the NEC data centre:

- The maintenance cost of NEC data centre equipment was US$12,000 a year.
- The cost of upgrading NEC data centre equipment between 2005 and 2008 was US$95,000.

SYSTEM IN PRACTICE

An overview of the system in practice

The civil registry, which contains the details of all citizens, uses a continuous registration and updating process. Qualified citizens who were not registered

during the census and mass registration exercise can present themselves on any working day at NID/local government sector offices to have their details captured. The data is sent to the NID head office in Kigali where it is added to the civil registry database. The NEC then builds its voter registry by extracting and uploading data of people of voting age from the NID civil registry into its database.

Transparency of the process

Data collection for updating the voters' register is done at village level, normally in schools and at public places. During these exercises political party and CSO representatives observe the process. There are village committees (a community-based voluntary setup without partisan divisions) in each village whose members work as volunteers during the display of the voters' register. The presence of these groups ensured openness of the process. Some CSOs and political parties interviewed attested to the transparency of the voter registration process.

Understanding, acceptance and trust in the system

An extraordinary characteristic of the Rwandan people is the effort made by most to rebuild and reunite the country after the 1994 genocide; they have supported every national exercise. The government's development efforts in almost all spheres of life also seem to be accepted by the people.

During the course of the study it was difficult to find any voter or political party who had reservations about the voter registration system. Rwandans seem to trust the system and have an understanding of how the new system eliminates the difficulties and high costs experienced with the old system. According to those we interviewed there is usually a good turnout during the voters' register display period. Voters in Rwanda generally take pride in the number of times they have exercised their franchise by brandishing their voter cards, which are marked to indicate that one voted in an election. Voter registration exercises are therefore taken seriously.

Accessibility and provisions for voters with special needs

The mass registration and census was executed on a door-to-door basis, which ensured that all persons resident throughout Rwanda at the time were captured. Subsequent updates to the voters' register were done at village level (a village is structured around 500 inhabitants), in schools and at other public places making it accessible by all in the village community.

Publication and review of the voters' roll

Publication and review of the voters' roll is conducted by the NEC through the process of exhibition or display of the voters' register. During the display period the NEC collects fresh data on registered voters. Members of the public can also

verify the accuracy of their information on the register and request corrections if necessary. Similarly, details of other persons can be verified for legitimacy and if it is found that those persons are unqualified to be on the list, objections can be raised for their removal from the list.

These processes require the presence of political party representatives and CSOs to ensure transparency. The following steps are involved vis-à-vis review of the voters' roll:

- Data for persons who have turned 18 years old as well as those who are older but not on the existing voters' roll is extracted from the NID system and loaded into the voter register database at the NEC. The provisional voters' roll is then produced for the display exercise.
- The provisional voters' roll is displayed at the village centres for review by the general public. During the review period people can request inclusions, changes and deletions to the voters' roll. The requests are recorded and sent to the NEC ICT unit in Kigali for data capture.
- After data capture the voters' register database is updated with the new information. The final voters' roll and voter cards are then produced for the upcoming election.

Problems encountered and solutions found

The NEC reportedly encountered problems with the voter registration process in the following areas: voter transfers; the timely capture of display data; and synchronisation of the voter registry and civil registry.

Voter transfers

The problem with voter transfers is common to most election management bodies (EMBs) and involves people wanting to vote at polling stations other than where they registered. However, if voters do not take advantage of the exhibition exercise to change their voting details, they turn out on voting day at a polling station that does not have their names on the voters' roll and they therefore cannot vote. This group of displaced voters included largely students who should have changed their voting location after having left school. The solution proposed is to intensify voter education on the subject, targeting students in particular.[18]

Timely capture of exhibition data

Election timetables are usually rigid with timelines fixed for every activity; any activity that exceeds its deadline could derail the electoral calendar. It is usually difficult to forecast the turnout at exhibitions or to determine accurately the volume of transactions that would come out of the display period. Much

pressure is therefore brought to bear on the EMB (if the exhibition transaction turnout is large) to capture the exhibition data quickly enough in order to get the final voters' roll ready for an election. The NEC normally sends all exhibition transactions to the ICT centre in Kigali for central data capture, but due to the issue of timeliness the NEC recently tried to capture exhibition data directly in the field using PDAs; however, the system did not work. The latest proposal is to decentralise data capture by installing PCs at the sector level and linking these by network to the ICT centre in Kigali.

Synchronising voter and civil registries

The NID collects data for updates at the sector level, whiles the NEC collects data at the village level. But most citizens do not update their data promptly owing to the usually long distances between the villages and NID/local government sector offices. People often delay updating their records until the NEC is displaying the voters' roll and collecting exhibition data at village level. This brings about imbalance in the update level of the two registries. As a solution, the NEC and NID decided to carry out a joint data collection exercise at village level for two weeks in September 2009 in order to bring the two registries in line with each other.

Voter registration personnel

Voter registration personnel are recruited at the village level. Supervisory personnel are recruited at the cell, sector and district levels.

Local and external experts

The NEC presently does not have external experts assisting with the voter registration process; the entire process is carried out by Rwandans. However, on-going technical support is provided by a local consultant and service provider to the NEC. These support providers can be classified as local experts since they are Rwandans. The consultant is an application developer attached to the NEC ICT department, and the service provider (Access Data) provides maintenance and training support on ICT-related materials.

Training of registration personnel for fieldwork

Training of registration personnel is the responsibility of the Directorate of Electoral Operations. The department prepares training manuals and plans and coordinates training. Training is usually cascaded from the national to the local level. At the provincial level, trainers from the sectors are trained, and these trainers then train local (village) registration personnel.

Supervision and control structures

The Directorate of Electoral Operations supervises and controls the voter

registration processes through its structures in the provinces. The NEC's four provincial offices in turn delegate supervision and control to temporary personnel at the district, sector and cell levels.

During joint registration exercises with the NID and local government, permanent staff of the Ministry of Local Administration, Information and Social Affairs (Minaloc) at the district, sector and cell levels are involved with supervising and controlling the registration exercise.

Role of information and communication technology

ICT plays a significant role in the NEC's operations. After the massive use of mobile data capture workstations in a joint operation with the NID to capture biometric data in the field, the NEC has moved to a more moderate use of technology in its operations. The NEC chairperson indicated to us that the commission would apply technology to its processes progressively and appropriately. The dot-ORG-Rwandan project was such an initiative.

Collection

The NEC currently collects registration data manually at village centres and transports the data to the ICT centre in Kigali where it is captured. Following the failed attempt to mechanise data collection in the field using PDAs, the NEC has considered decentralising data capture to the provincial and district offices.

Transmission of data

Updating of the voters' register is accomplished in two modes: first, by extracting details of 18-year-olds from the NID civil registry and uploading the information to the NEC voters' register database; and second, by physically collecting updated voter data at village level and inputting the data into the voters' register database.

The first mode can be described as transmission of data since the process is performed by means of ICT connectivity. The second mode is purely manual transmission of data. A pilot project was conducted in one district to capture voter registration data and transmit it via satellite to the NEC ICT centre in Kigali.[19] The project was described to the research team as a successful exercise. In addition, there is an on-going national project to wire the entire country with fibre optic, which when completed would greatly facilitate the electronic transmission of voter registration data from the provinces and districts directly into the voters' register database in Kigali.

Review and verification of data

Review and verification of data is undertaken during the display of the provisional voters' register at village centres. The process (described in 'Publication and review of the voters' roll') is purely manual and not ICT driven.

Role of civic and voter education in the registration process

Article 5 of Law No 31/2005 of 24 December 2005, as amended, entrusts the NEC with the mandate to ensure civic education on elections, and by extension on voter registration. In addition, according to the National Civic Education Policy, all civic education activities are coordinated by Minaloc and assisted by a steering committee and the NEC.[20] At the NEC, voter education is executed by the Directorate of Electoral Operations' civic education unit. CSOs, non-governmental organisations (NGOs) and development partners contribute to civic and voter education for the registration process.

Role of voter education in the registration process

Voter education plays a very important role in the registration process. Among other things, it:

- empowers the voting public to participate effectively in the registration process;
- enhances the public's knowledge on their rights and responsibilities in the process;
- educates the voting public on the critical regulations (do's and don'ts) of the process; and
- effectively targets the disadvantaged.

Message and its effectiveness

According to national policy, and to ensure that information is transmitted effectively to all Rwandans, all official exercises are performed in three languages – namely, French, English and Kinya-rwanda. In order to ensure efficacy, the official language policy is adhered to strictly when it comes to voter education messages.[21] The civic education unit:

- develops manuals to be used for training;
- develops training programmes for the different categories to be trained;
- develops materials (posters, flyers, songs, documentary films and docudrama plays); and
- organises training with the assistance of the Directorate of Electoral Operations' training unit.

Role of different stakeholders in the registration process

CSOs and NGOs

CSOs and NGOs were involved in voter education, training, monitoring and observation of the voter registration process. The groups we met with expressed confidence in the NEC and its activities but were critical regarding some NEC

enactments which came too late in the process and confused the electorate. Local groups said they were constrained in the full participation of their activities due to lack of adequate financial support. The groups we met with were: the Organisation of Marginalised People, the Forum for Political Parties and the Rwandan Civil Society Platform.

Political parties

Political parties play an integral role in the registration process because they sponsor candidates for election; and candidates can only secure votes if their supporters are registered as voters. Political parties are therefore very involved in the voter registration process, including:

- monitoring the process;
- installing their representatives as witnesses during registration periods; and
- assisting with voter education and training.

Media

In terms of voter registration, the media were involved in:

- public awareness outreach programmes;
- publicity (print and electronic) for the registration process; and
- the dissemination of important NEC notices to the public.

Post-election use

The voters' register in Rwanda is only used for the purpose of elections and referenda. Generally, however, it is possible to generate useful statistics out of the voters' register – data which the NEC and other organisations can use for planning and research purposes.

System updates

Programmes for updating and strengthening the voter registration system were proposed in the NEC 2009 Action Plan.[22] The programmes involved upgrading the quality of the voters' register and upgrading (or updating) the NEC's ICT set up.

In order to achieve better quality of the voters' register, the NEC intends to:

- expand its activities to capture all Rwandans who are eligible to vote;
- ensure that all requests for transfers are effected in the registers; and
- include voters' photographs in the electoral register.

As part of upgrading the ICT setup, the NEC plans to:

- establish ICT units (five computers and accessories) at the district offices;
- establish linkages (via the NEC's own network or the government's fibre-optic programme) between the ICT centre in Kigali and the district offices;
- train two staff members at each district office to use the equipment; and
- train more users at the ICT headquarters.

Updating of the data

The NEC must by law update the voters' register data periodically. The process takes a number of days, with field personnel collecting information at village centres. The NEC plans to establish permanent registries at each village for keeping records of persons who must be removed from or added to the voters' register. This will provide for some degree of continuous updating, thereby expanding the registration process.

Transferability of data to other systems

Data from the voter registration system can be transferred to other voter registration systems depending on the ICT platforms that would be involved in the transfer. Present day technologies have no boundaries in sharing data due to the availability of common platforms and open systems for the interconnectivity of ICT systems.

As much as the technique provides solutions it is the quality of the data capturing and data entry which constitute the challenges of the system. In the case of Rwanda, data capture in the field at different times, the later consolidation of the data, and updating drives cause a broad field of possible errors and mismatches in terms of the voters' register.

Capacity building and technological knowledge transfer to the NEC

As part of its 2009 Action Plan[23] the NEC has programmed ICT training for its ICT personnel and for general computer users at the commission. The training will be geared towards building capacity and technological knowledge in ICT.

Voter registry and civil registry

Since 2005 the NEC and NID in Rwanda have operated a joint voter registry and civil registry. This has resulted in various synergies and constraints.

Possible synergy effects

Some benefits from linking the voter and civil registries are that it has:

- reduced costs in the generation (capturing and processing) of initial data for both registries;
- reduced running costs for updating the registries;
- reduced costs in terms of technical support of material;
- reduced costs in terms of equipment acquisition and maintenance;
- provided a unique standard of identification for all Rwandans; and
- resulted in mutual support of the two registries.

Possible constraints

One problem when it comes to the effective integration of civil and voter registration is the duplication of roles and conflicting mandates. In Rwanda, for example, the mandatory legal requirement for the EMB to conduct nationwide voter updates in the period immediately prior to an election results in parallel processes, increased costs and unsynchronised databases. The cost saving of a combined system will be minimal as long as there is a need for the NEC to continue with parallel registration processes.

Some other areas of concern have to be improved in order to provide a more sustainable, accurate and reliable voters' roll. These include:

- synchronisation of the two registries;
- the effect of the different review and update methods used by the two systems in terms of the periods and locations that the reviews take place;
- the use of NID identity documents as proof of citizenship before the issuance of voter cards. Problems arise when the NID falls behind in its programme to issue identity documents, impacting negatively on those who are qualified and ready to exercise their franchise;
- political parties' interest and role in policing the collection of data used for producing the registers; and
- the NEC's independence versus the NID's dependency.

ANALYSIS, EVALUATION AND RECOMMENDATIONS

In analysing and evaluating the system we refer back to the main criteria used initially to choose the system. In this respect, the system had to:

- have a computerised and accurate national population registry that would effect the integration of national institutions (to share common data on the population);
- minimise forgery; and
- increase the efficiency of public service delivery.

Effectiveness of the system

Choice of technology

The fully computerised system with mobile and desktop computers was able to capture textual and biometric data of the population and store it effectively in a central repository. The biometric aspects of the system also ensured that the repositories had no multiple registrations – one of the key requirements of the registration process.

Coverage

The door-to-door method of capturing text data increased people's chances of being recorded and is a good lesson when it comes to maximising the franchise. This system was also effective because Rwanda is a relatively small, densely populated country.

The biometric data capture was done on a rolling basis by district and was relatively quick and easy since it required capturing biometric data only. This method of data capture was acceptable in the Rwandan context. For large and sparsely populated African countries, however, this type of system would put additional strain on the registration exercise.[24]

Quality of data

An accurate voters' register should: include the correct details of all eligible voters who apply to be registered; correctly place the voter at the voting location at which s/he applied to vote from; and record each voter only once.[25] There are indications, however, that the voters' register in Rwanda is not absolutely accurate. These include the fact that the NEC found errors during the update exercise, and that the NEC is planning to upgrade the quality of the voters' register by expanding its activities to capture all Rwandans who are eligible to vote and to ensure all transfers are effective.

Expectations versus outcome

The voter registration exercise in Rwanda was successful. The failed attempt to use PDAs to capture data for updating the register and the fact that some percentage (about 5%) of the registered population are yet to receive their national ID cards, do not take away from the fact that a comprehensive and unchallenged voters' register was produced and used for the 2008 legislative elections.

Lessons learned

A number of lessons can be learned from the Rwandan case when it comes to using high-tech methods such as biometric systems in voter registration. These include the following:

- ❑ The basic components (data capture materials) are expensive and require special skills to operate.

- ❑ The backend component of de-duplication to remove multiple registration entries is the most expensive part of the setup and can delay the project if not handled professionally.

- ❑ Depending on the field operation method used, the project can take more than 12 calendar months to complete.

- ❑ The pros and cons have to be carefully evaluated against the additional operational burden and resources needed. Biometric data capture should be considered only if it is a political imperative to ensure that no double registration takes place.

- ❑ The two-phase method of rolling out the biometric system of registration seems to be a better approach than the one-phase method.

- ❑ Owing to the high purchase cost it may be an option to rent out the system to other EMBs. One could look at setting up a consortium or installation where these materials could be shared among EMBs.

- ❑ One could look at whether it is possible to capture biometrics effectively other than having to haul heavy apparatus across the country.

Cost-benefit analysis of voter registration

Voter registration is generally most cost effective if done as a one-stop process where both text and biometric data is collected at the same time. In the case of Rwanda, applicants had to be visited twice – once for the text capture and a second time for the collection of biometric data, implying additional costs for recruitment and training, as well as for the transportation of staff and registration materials. Nonetheless, the mobile registration approach that collected biometric data in one village and then moved on to another village after some days appears to have been cost effective as the same equipment could be used and staff gained experience and proficiency at their work. Moving from village to village is also a signal to applicants that they may lose the registration opportunity if they do

not apply within the allotted period, and this increases population participation. A similar effect was noticed in Afghanistan.[26]

Stakeholder satisfaction

Stakeholder satisfaction was evident in reports we received at our meetings with stakeholders, and this could be attributed to the fact that they have confidence in the technologies used for the process. Also, the process yielded some population census figures which they could use to verify the voters' register. Finally, all key stakeholders were involved in the process.

Influence of external stakeholders on the process

Stakeholder influence on the decision-making process was considered to be minimal. The NEC was, within the legal framework, independent in most of its decisions taken on the process. In fact the whole process was run with minimal international technical assistance and donor support. The fact that people work for minimal remuneration in a country that is still struggling to overcome economic hurdles, and Rwanda's abandonment of unusable technologies (like PDAs) as a result of piloting, are good cases to support the argument that the voter registration system in Rwanda is sustainable.

It was interesting to note – and contrary to what we expected – that Rwandans are using the post-conflict period positively and to their advantage to preach peace and to unite the people for successful electoral processes, including voter registration.

Sustainability of the system

Some elements of the Rwandan voter registration system that point to its sustainability are:

- splitting the capture of text and biometric data to speed up the process of data entry;
- using door-to-door registration in small and low population density areas to increase coverage; and
- using volunteers to reduce registration costs.

The fact that the NEC and other governmental institutions receive data and services from the civil registration system without duplicating the setup (especially the biometric registry) makes the system, in theory at least, economical and financially sustainable by the state. However, there is no hard evidence that a combined process would be cost effective for Rwanda in the long run, as the NEC must continue to conduct periodic updates to meet its legal mandate and to provide a timely and accurate register.

Future developments

The NEC will have to find innovative ways of improving the review process and the quality of the register. One way is by applying modern technology in solving the two issues so that data collected during the display period can be transmitted directly from grassroots level to the NEC establishment in Kigali.

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7

SENEGAL

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EXECUTIVE SUMMARY

In 2006/07 a voters' register and database for a new national identity card (NIC) system was established in Senegal using biometric technology to link each Senegalese citizen to the NIC-Election database.

Before that, Senegal used a two-step system to establish the voters' roll: the first step was to establish a voters' roll based on all voters who had voted in the last election. Then, at a yearly update exercise new voters could register and existing voters could change their residential address data. This system allowed the election management body (EMB) to establish an updated voters' rolls without the administrative burden of conducting a nationwide comprehensive registration exercise.

However, owing to problems with the system a decision was taken in 2004 to revamp the voter registry. All prior voters' lists and NICs became invalid and new registrations for both an NIC and for the voters' list took place between 2005 and 2007. Eligible voters had to present themselves before administrative commissions with either a birth certificate or an old NIC in order to be registered in the new system. Administrative commissions recorded each registrant's name and generated a new unique 13-digit national identification number (NIN) in the field. This data was recorded, together with the registrant's digital fingerprint and photograph. The data was transferred to the EMB headquarters for processing and cleaning to eliminate multiple registrations using the fingerprint data. Voter cards and NICs were then produced and sent back to the local administrative commissions for distribution.

The system is not a combination of civil and voter registration in the classic sense as the civil registry remains the responsibility of the Ministry of Justice, while responsibility for the NIC-Election database – including the production of NICs and voter cards – is handled by the Ministry of Interior. Election-related issues such as generation of the voters' roll and voter cards are under the supervision of the Independent National Election Commission (CENA).

Following the comprehensive voter registration exercise, yearly updates of the voters' roll are recorded on paper-based application forms. Digital data is no longer collected in the field as possession of an NIC is a prerequisite for voter registration. Data is keyed in centrally and only after positive identification by

the NIC-Election database is a voter card produced and distributed to the voter. The voters' list is extracted from the NIC-Election database.

Stakeholders confirmed that the 2005-2007 voter registration exercise was in general conducted in an efficient, transparent, secure and cost-effective manner. However, a number of bottlenecks and deficiencies were apparent: the cleaning process was fully computerised and only very few people could assess the quality of the data, thereby reducing the transparency of data processing. The distribution of voter cards was problematic due to administrative deficiencies (and for alleged political reasons). The most crucial point, however, is the dependency of voter registration on the accuracy and integrity of the NIC database. This dependency became obvious in 2010 when the voter registry update exercise was completely paralysed because the authorities failed to issue NICs for an eight-month period.

COUNTRY CONTEXT

Political history

The French colonies of Senegal and the French Sudan were merged in 1959 and granted independence as the Mali Federation in 1960; however, the union broke up after only a few months. Senegal joined with The Gambia to form the nominal confederation of Senegambia in 1982. However, the envisaged integration of the two countries was never carried out and the union was dissolved in 1989.

The Movement of Democratic Forces in the Casamance has led a low-level separatist insurgency in southern Senegal since the 1980s, and several peace deals have failed to resolve the conflict. However, Senegal has never seen a coup d'état and is considered to be one of the most stable democracies in Africa.[1]

Political environment

Senegal adopted a new constitution based on a presidential regime on 7 March 1963. From 1963 to 2000 Senegal's politics were based on socialist principles and can be divided into three periods. During the first period (1960-1974) Senegal was ruled by one party, the Senegalese Progressive Union (*l'Union Progressiste Sénégalaise*), which later became the Socialist Party (*Parti Socialist*) headed by Leopold Sedar Senghor.

The second period (1974-1980) was characterised by a limited multiparty landscape with the Socialist Party remaining in power. Three additional parties – the Senegalese Democratic Party (PDS), the African Party for Democracy and Socialism, and the Movement for Democracy and Unity – were accepted by a new constitutional law.[2]

President Senghor resigned in December 1980 and handed over power to Abdou Diouf. After this, the political space in Senegal opened up to allow for the free registration of political parties.

The 2001 Constitution of Senegal laid the foundation for a semi-presidential system whereby executive power is held by the Senegalese president and his prime minister. Since May 2007 legislative power is exercised by a bicameral parliament comprising a 150-member National Assembly and a 100-member Senate.

Juridical power is executed by the Constitutional Council, Council of State, Final Court of Appeal, Court of Auditors and other courts. Administratively, the country is divided into 14 regions each headed by a governor who is nominated by the president.

Socio-economic profile of the country

Senegal is located in West Africa and covers a total surface area of 196,722 km^2, with a 531 km-long coastline.[3] Senegal is delimited to the north by the Senegal River, which constitutes a natural border with Mauritania. The country also shares borders with Mali, Guinea and Guinea-Bissau. The enclave of The Gambia separates the southern part of Senegal from the rest of the country. Senegal's population of some 14 million people[4] is composed of several ethnic groups, the most prominent being the Wolofs and Lebous (43%), Pular (24%) and Sérères (15%). Islam is the predominant religion and is practiced by 94% of the country's population. While the official language is French, other languages spoken in Senegal include Wolof, Pulaar, Jola and Mandinka. The country's literacy rate is only 39.3%, with males having a much higher rate (51.1%) than females (29.2%).[5]

Good infrastructure, electricity and running water is limited to urban areas. About 86% of Senegal's industry is located around the capital, Dakar. Roughly three-quarters of the population work in the agricultural sector producing mainly rice, cotton, peanuts and sugarcane. Other areas of income are the fishing and tourism industries.

Senegal is a member of the Economic Community of West African States and belongs to a number of international organisations. As a developing country, Senegal relies heavily on international assistance and on bilateral cooperation with France, the United States (US) and China in particular.

THE ELECTORAL STRUCTURE

Legal framework

Elections in Senegal are based on the democratic principle enshrined in the 2001 Constitution of Senegal, which stipulates that democracy is government of the people, by the people and for the people.

The legal framework for elections includes:

- the Constitution of Senegal;[6]
- Electoral Law No 92-16 of 7 February 1992 (legislative part – amended);

- Decree No 92-267of 15 February 1992 (regulation part – amended); and
- various ordinances issued by the ministries involved in the election process, administrative authorities or Senegalese ambassadors when an election is organised in the territories over which Senegal exercises power.

The Senegalese constitution describes the framework for elections, while the Electoral Law and decrees lay out details and regulations for the conduct of elections and referenda. The constitution also defines clearly the separation of powers among the independent branches of government, namely the judiciary, the executive and the legislature.

Recent elections and electoral history

Senegal has a long history of elections starting in 1835 when the population was divided into the indigenous group and 'citizens'. French citizenship and the right to vote for town council and general council were granted in 1879 to the inhabitants of four communities, namely Dakar, Rufisque, Gorée and Saint-Louis. The rest of the population was considered indigenous and had restricted civil rights.

Elections in Senegal have been held regularly since 1983. A number of elections have been held in recent years, including:

- presidential elections in 2000 and 2007;
- legislative elections in 2001 and 2007;
- local elections in 2009;
- a referendum in 2001; and
- senatorial elections (conducted by an electing body comprising members of parliament, regional advisors and rural and municipal councillors).

Electoral system

The president of Senegal is elected as head of state by direct and universal suffrage and serves a seven-year term. The prime minister, who is head of government, is nominated by the president. Senegal has a bicameral parliament comprising the National Assembly and the Senate.

The National Assembly consists of 150 members who are elected using a mixed-member proportional system: 90 members are elected using a first-past-the-post electoral system at department level (which is a regional administrative unit) and 60 members are elected using a national proportional representation electoral system. Additional regulations include that each of the country's departments shall have at least one representative and the number of seats granted to one single department shall not exceed seven.

The Senate comprises 100 members: 35 members are elected at department level using a first-past-the-post voting method and 65 members are nominated by the head of state. Among the nominees are four senators who represent those Senegalese living abroad.

Municipal and rural elections are also held to elect municipal and rural councillors who serve five-year terms.

Since 1993 Senegalese residing outside the country can register and participate in national presidential and legislative elections. Equally and under the same conditions, military and paramilitary personnel whose right to vote was revoked after independence were allowed to participate in the 2007 elections following a presidential decree.

History of voter registration

The contemporary history of voter registration in Senegal dates back to 1977 when the government for the first time decided to cancel all prior voters' lists, which were manually established, and to compile a new computer-based voters' register for the 1978 presidential and legislative elections. Following that comprehensive voter registration exercise, the registers were updated yearly and/or partially scratched. Updates were done either through an ordinary review, which lasted three months or, in an election year, through an exceptional review conducted over a six-month period.

In 2000, the process of establishing a voters' roll followed two steps: first, the data of all those who had cast their vote (and/or had cancelled their voter card) during the last election was compiled in a list called the 'hard core list'. Second, new voters were registered and existing voters could update their data during a countrywide registration drive. For the 2001 legislative elections a second partial refashioning of the voters' register was conducted following the same principle.[7] The 2001 voters' register contained 1,926,241 voters.

In 2002 problems with civil registration and the NIC became obvious. Political parties did not trust the system, which was based on an unreliable birth registry maintained by the Ministry of Justice. Problems included a badly managed process, the employment of unqualified personnel, corruption, and inefficient computer equipment and systems.

In theory, citizens should be registered based on a unique national identification number (NIN) generated by using personal details on birth certificates. However, the civil registration system did not prevent multiple registrations. Senegalese ended up having more than one ID card in their possession and even non-Senegalese citizens had access to ID cards.

As the NIC was the basic document for voter registration, the integrity of the voters' roll was jeopardised. Even the Ministry of Interior admitted to these problems, and political parties threatened to boycott the 2007 elections if the quality of the voters' roll did not improve.

The election management body

Since 1983 Senegal has faced election-related protests and violent clashes at election time. In 1997 the president created a new commission, the National Observatory of Elections (ONEL) headed by Kéba Mbaye, to improve the situation. However, complaints about electoral mismanagement and fraud continued and ONEL was eventually replaced in 2005 by an independent body, CENA.

CENA is in charge of the overall control and supervision of elections and referenda, while the Ministry of Interior is responsible for the material organisation of these activities. Different responsibilities are delegated to various directorates within the Ministry of Interior. The Ministry of Foreign Affairs is in charge when it comes to organising voting for Senegalese residing outside the country.

The Directorate General of Elections (DGE), a department within the Ministry of Interior, is responsible for supporting elections in two areas: the Directorate of Electoral Operations (DOP) is in charge of the material organisation of elections; and the Directorate of Training and Communication (DFC) is in charge of training, voter education and communication.

The Directorate of General Affairs and Territorial Administration (DAGAT), also within the Ministry of Interior, is responsible for implementing the process on the ground, while the Directorate of the Automation of Files (DAF) is responsible for data processing.

CENA, the only independent body for elections in Senegal, controls and supervises the entire process. Law Act 2005-07 of 11 May 2005 laid the foundation for CENA, which is based in Dakar. CENA has a permanent structure and its own juridical personality and is financially autonomous. It has to report to the president annually and after each election.[8] The CENA commission is headed by a chairperson and comprises 12 members who are nominated by presidential decree (after consultation with civil society and academia). Commissioners serve terms ranging between three and six years. CENA has branches in each of the 14 regions and 43 departments of Senegal.

VOTER REGISTRATION

Legal framework, rules and regulation

The voters' register is established and maintained in accordance with:

- Law Act No 92-16 of 7 February 1992 (modified);
- Law Act No 2004-32 of 25 August 2004, which directed the cancellation of all existing voters' lists and prescribed a comprehensive voter registration process for the establishment of a new voters' register based exclusively on NICs that employ biometric technology;

- Law Act No 2004-1616, which gives administrative commissions in charge of voter registration national competence to register eligible voters;
- Decree No 92-267 of 15 February 1992 (modified); and
- Decree 2005-787 of 6 September 2006, which regulates NIC issues.

All previous voters' lists were cancelled in 2004[9] and a new voters' register, based exclusively on data established by a countrywide registration drive in 2005/06 was established. For the first time in Senegal, registration for a new national ID card and voter registration would be done in a combined exercise and the data would be processed in one database, called the NIC-Election database. The biometric technology used was based on a set of four fingerprints (thumb and forefinger of each hand), which would provide the basis on which to eliminate multiple registrations.

The comprehensive combined NIC and voter registration exercise was conducted for a year from September 2005 to September 2006. Out-of-country voter registration was conducted in 25 African and seven European countries, as well as in the US, Canada and South Arabia. At the closure of registration 4,917,160 registered voters were on the list.

Current or latest voter registration method

This case study focuses on the period 2005 to 2007 when the voter registry and NIC database were established.

At the registration process in 2005/06, some data (NIN, first name and last name) for both the NIC and voter registry was keyed in by field staff at the administrative commissions; the remaining data was keyed in at central level. The data was transmitted to headquarters for central processing, cleaning and production of the NICs and voter cards. Once the cards were produced, they were sent to the relevant administrative commissions for distribution to their owners.

The methodology for yearly updates has changed completely since the initial establishment. Immediately following the comprehensive voter registration exercise, the new NIC became a precondition for voter registration since applicants' biometric and personal data must already be stored in the NIC-Election database. Voters who want to update their information can do so at administrative commissions and must present either their voter card or NIC. The fieldwork is paper based; forms are filled in by staff at the administrative commissions and these are then transported to Dakar, the capital city. Only after an applicant is positively identified is s/he added to the voters' register and a voter card is issued.

DECISION-MAKING PROCESS FOR SELECTION OF THE VOTER REGISTRATION SYSTEM

Criteria for selection of the system used

In the late 1990s Senegal witnessed regular contestations of elections by political parties. Despite their right to be present at all stages of the electoral process, political parties had no faith in the electoral process and particularly distrusted the voters' roll.

Despite an attempt by the Minister of Interior General Niang to include political parties in the decision-making process,[10] no consensus was reached. General Niang was later replaced by PDS member Me Ousmane Ngom who proposed the use of biometric technology. The Senegalese president decided in 2004 to scratch the old voters' roll, introduce biometric-based NICs and to conduct a comprehensive voter registration exercise. Biometric technology was chosen because of its ability to eliminate multiple registrations and consequently electoral fraud by multiple voting, thereby restoring electoral stakeholders' trust in the process.

The initial plan was to conduct the exercise over three months in a two-step process: first to register for an NIC; and at the second step, when the card was delivered to the citizen, s/he could register for the voters' list. However, this plan proved unfeasible and it was decided to run registration for both the NIC and voter card simultaneously.

The decision about which methodology to use was taken by the head of state President Abdoulaye Wade, while implementation responsibility rested with the Ministry of Interior and its different departments. The international community, donors and externally financed technical assistance played no role in the decision-making process.

Funding and procurement of voter registration equipment, materials and services

The project was funded entirely by the Government of Senegal following national procurement procedures. About 4.9 million people were registered and each eligible person received two cards: an NIC and a voter card. A total of ten million cards were produced, costing approximately US$50 million, or some US$5 per issued card.

During the 2007 registration exercise citizens received both cards free of charge. Since then, however, a person must pay about US$2 for a new NIC and about US$12 for a replacement card due to loss or damage. Voter cards continue to be issued free of charge.

SYSTEM IN PRACTICE

An overview of the system in practice

A new voter registration exercise was determined by Law Act 2004-32 of 25 August 2004. In terms of the act all previous voters' registers and NICs were cancelled and a comprehensive new database for both the voter registry and NICs, based on NIC integrating biometric data, was installed.

Finally, Ministerial Order No 3 147 issued on 27 June 2005 fixed a six-month period to reconstitute the voters' list through the establishment of 500 fixed administrative commissions and 200 mobile administrative units.

The start of the registration exercise in 2005 was postponed owing to field equipment procurement and delivery problems. This forced the implementing bodies (DAF and DGE) to change their original plan and to launch registration in a staggered process, at different times in different areas of the country depending on equipment availability.

The first commissions started work in Dakar, while the rest of the country waited. Political parties feared that those in rural areas and outside the country would be disadvantaged, but registration was extended for another six months to ensure countrywide coverage.

All Senegalese 18 years and older could voluntarily apply for an NIC and at the same time register to be included in the voters' roll. One could register at any administrative commission in the country regardless of one's place of residence or polling station. Citizens had to present themselves in person in front of administrative commission staff for both NIC and voter registration.

The exercise started on 6 September 2005 and finished (after four extensions) on 15 September 2006. Some 460 administrative commissions were established, of which 193 were fixed and 267 were mobile. Of these, 67 fixed and 48 mobile commissions were set up in Dakar with the remaining commissions covering the rest of the country.

Total enrolment at cut-off date for the registration was 4,917,160, of which 137,338 constituted Senegalese voters living outside the country and 23,479 were members of the military and paramilitary. With an estimated population in 2007 at around 12 million citizens and about 6 million eligible voters, the registration exercise therefore captured 82% of all eligible voters in Senegal.

This high registration number was surely influenced by two facts: first, the old registration and voter cards lost their validity; and second, the new NIC and voter card would be free of charge during the 2007 registration exercise only.

Voters' lists were produced and sent to the field for display and verification. After a one-month display period at governance, prefecture and sub-prefecture level, the final voters' lists were created.

However, the distribution of cards by the administrative commissions became a bottleneck in the process. This meant that although people were registered on

the voters' roll and political parties were satisfied with the numbers on the lists, in practice people were denied the right to vote as both the voter card and NIC had to be presented before voters received a ballot. Allegations were made that administrative shortcomings were not the only reason for the lack of delivery of voter cards but that this was an intentional move to disenfranchise certain groups, such as teachers or people living in particular areas.[11]

Transparency of the process

Political parties were allowed to observe the entire registration process. After the registers were finalised, lists and statistics were distributed and shared among CENA, the DGE, DAF and political parties to standardise figures for organisational purposes. This helped to eliminate internal conflict among the different electoral stakeholders and increased transparency of the process.

Understanding and acceptance by voters

A commercial marketing company was hired to undertake voter education and information for the registration drive. Messages were professionally disseminated using current and traditional communication means such as sketches, theatre, radio spots and flyers. A registration rate of about 82% of all eligible persons shows the high acceptance and participation of the population in the process.

Accessibility and provisions for voters with special needs

There is no provision in the electoral law concerning voters with special needs; however, the voter registration guidelines issued to commission members prior to the registration exercise emphasise the requirement to help disabled eligible voters to exercise their right to register.

System products and uses

Outputs from the NIC-Election database include:

- a national list of citizens, including their residential addresses and voting stations;
- a list of registered voters;
- provisional voter registration rolls for display;
- a final voters' list for each polling station, with details of each voter including a photograph;
- soft and hard copies of the voters' register available for political parties and CENA;
- a list of administrative commissions and their locations;
- NICs issued to prove registration;
- voter cards issued to prove registration on the voters' roll;
- a list of persons who had allegedly double registered (for control purposes);

- statistics on citizens and voters' data which were shared among the various stakeholders (CENA, DGE, DAF and political parties) to standardise figures for organisational purposes.

It is also envisioned that the NIC-Election database can contribute to improve (or restore) the Senegalese civil registry. Owing to the quality of the NIC database and the use of a 13-digit national identification code, which works as a security feature, the authorities are now in the position to 'reconstruct' the Senegalese birth register if the need arises.

Quality assurance mechanisms

CENA was in charge of controlling and supervising the entire registration process to ensure that the data collected was of high quality. This was done by including members of different structures in the administrative commissions that collected both the civil and voter registration data.

Strict quality control was also embedded in the various procedures. The president of each administrative commission controlled the work and documents to ensure that commission staff members performed their tasks in a professional and independent manner. The data key entry operators in particular were highly supervised to ensure accuracy.

The second level of quality control was done by the data collection teams, which checked the accuracy and completeness of forms as they were collected. All forms were again checked manually upon arrival at the computer centre.

Provisional voters' rolls were displayed in each governance, prefecture and sub-prefecture office for inspection, verification and amendment.

Voter registration personnel

Local and external experts

Four commercial companies designed and implemented the computer system for the NIC-Election database based on the technical specifications supplied by DAF's internal experts. However, there was no capacity building or knowledge transfer from the external experts to the DAF technicians. Even staff at the ministry in charge of the database considered the entire IT component of the data processing system as a 'black box', with no real possibility to supervise or effectively audit the process. It is understandably not in the interest of the commercial companies to share their knowledge about the system; however, this leaves the Ministry of Interior in a weak and dependent position for years to come.

Selection and training of registration personnel for fieldwork

The administrative commissions comprised permanent and temporary staff. Permanent staff were civil servants from the DAF, DGE and DAGAT. Temporary

registration staff were selected after testing (matching job descriptions) and taking into consideration relevant experience. Preferred candidates were retired personnel from the police or army, computer scientists and experienced key entry operators. In total 5,335 persons worked for the registration exercise: 3,812 worked in the field collecting data and the remainder worked at headquarters. The field data collection members comprised 586 administrative commission presidents, 586 administrative commission secretaries, 889 NIC instructors, 1,212 data capture operators, 499 operator assistants and 40 assistants to the moderators.

Some 1,500 staff members were employed at central level. There were 112 warehouse workers, 193 quality controllers, 253 form checkers, 112 data capture operators, 512 data key entry operators, 152 production workers, three archivists, 60 archivists' assistants, 15 supervisors, 35 drivers and 62 telephone operators.

Training sessions were carried out at both central and regional level and lasted between one to five days. This training was presumably adequate as field data collection and data processing were conducted successfully.

Supervision and control structures

CENA supervised the entire registration process in the field as well as the establishment of the voters' lists and the production of voter cards. CENA was represented at local level in the administrative commissions and at central level by a computer scientist. Two of its members liaised regularly with the Ministry of Interior.

Role of information and communication technology

Collection of data

Registration in the field was conducted by either fixed or mobile administrative commissions. Each commission comprised:

- one president nominated by the administrative authority;
- one secretary nominated by the administrative authority;
- either the mayor or her/his representative or the president of the rural community or her/his representative;
- one representative of CENA;
- two staff members of the Ministry of Interior in charge of the biometric NIC;
- two data key entry operators; and
- representatives of legally constituted political parties.

The commissions used the same field equipment to collect applicants' personal data and biometric features, generate a new, unique NIN and store the data for further processing. The technical equipment included:

- a computer fitted with data scrambler transfer software for the data processing centre (DAF) and working stations to key in the data;
- a generator;
- a digital camera;
- a signature capture pad; and
- a fingerprint reader-encoder.

Some of the challenges in using the field equipment were the high energy consumption of the equipment and the need to permanently store the fingerprint equipment in a specific air-conditioned environment.

The field operation also used a three-part form for NIC and voter registration applications. The forms allowed for the correct recording of a voter's residential address and place of voting.

Different application forms were used depending on the eligible voter's status: one form was for Senegalese civilians; another for Senegalese military and paramilitary personnel; and a third form was for Senegalese voters living abroad. In addition, there were four specific forms for: registration as a new elector; removal of deceased persons from the register; modification of personal details; and change of status of civilian or military personnel.

All forms were designed in three parts: one part was used for further processing at the computer centre; another part was used by CENA for control purposes; and a third part was for the applicant's proof of registration.

The registration process can be described as follows: The eligible voter had to present her/himself in person at an administrative commission. Valid documents requested for registration were either the old NIC (issued from 1992 onwards) or a birth certificate. A certificate of nationality was requested only if there were doubts about a person's nationality. Only people eligible to register as voters were allowed to apply for an NIC. Aiming to streamline the combined registration process in 2006, persons under 18 years old were not allowed to register for an NIC and were requested to wait until the end of the process to apply for an NIC. After the official register was established in 2007, citizens of all ages could apply for an NIC at any time at certain police stations or sub-prefectures, but it is compulsory for every citizen over 15 years old to register. The minimum age for inclusion in the voter registry is still 18.

An agent completed a registration form for each applicant, filling in her/his personal information and generating a unique NIN based on information on the applicant's birth certificate and personal data such as gender, parents' names, address, date and place of birth, profession and place of registration.

The president (or secretary) of the administrative commission then processed the application and specified the applicant's electoral district. The electoral district is either a village or urban district following the principle 'where you live is where you vote'.

An operator keyed in the applicant's 13-digit NIN and her/his first and last name, and then electronically captured the applicant's photograph, fingerprints (thumb and index finger of each hand) and signature.

Transmission of data

After registration was completed the electronic data and paper-based forms were transferred to the CENA data centre. The transmission of the electronic data (photographs, signatures, fingerprints and personal data) was performed through a Ministry of Interior computer network. Commissions with fixed work stations and which had a direct connection with the processing centre transferred their data daily.

The mobile work stations brought their data to the nearest fixed work station to be sent on to the DAF. The frequency of transmission was not fixed and depended on the volume of data collected: at the start of the registration exercise there was a low turnout and less frequent transmissions, but at the end of the period there was a rush of voters and a higher transmission rate.

The paper-based forms were physically transported to the computer centre by members of the data collection teams. These missions, organised by the DGE, supervised the work of the commissions on the ground, conducted preliminary checks and provided advice if necessary.

Processing of data

Once forms arrived at headquarters, DGE staff performed validity and quality control checks before they were sent to the DAF for data processing. Processing of the electronic data can be divided into four areas: transfer and downloading of data to the central database; database management; biometric control; and card production.

Downloading data sub-system

Data was transferred from the administrative commissions to the DAF over a network that is owned by the Ministry of Interior and which was installed by Senegalese telecommunications company Sonatel. At the DAF, one data downloading server (installed by United Kingdom [UK]-based company De La Rue) and several work stations supported this process.

Database management sub-system

NIC-Elections is an Oracle database implemented by Senegalese company Synapsys. The database allows for the:

- keying in of data collected by administrative commissions;
- transfer of data from the former NIC database to the new Oracle database;

- update of the new database; and
- production of voter cards and NICs.

Biometric control sub-system

The biometric control sub-system is a network of 120 computers supplied by US-based company East Shore. When a new fingerprint is added to the database, the system compares it to all other existing entries in the database, based on 85 characteristic points.

Card production sub-system

The card production sub-system was also supplied by De La Rue. A special, secure material called Teslin[12] was used to manufacture the cards, according to security parameters set by the Ministry of Interior. The system can produce 80,000 cards a day by using one data server, ten laser colour printing stations, two laminators, automatic card cutters and four stations for quality control.

Process flow

The processing of data at central level (DAF) followed these steps:

- Receipt of data transmitted across the Ministry of Interior network.
- Checking of application forms and quality control.
- Double-blind entry of data recorded on forms, including NIN, first and last name, place and date of birth, address, profession, parents' names and voting place.
- Conversion of digital fingerprints into a barcode.
- Update of the NIC-Election database.
- Printing of NICs, voter cards and corresponding documents.
- Cards sorted, checked manually and sent to administrative commissions.
- Distribution of cards and notification of rejected applications.

Review and verification of data

The legal framework[13] standardises the exhibition procedure and mechanism for exhibition, the stakeholders' tasks and the necessary regulations for the settlement of disputes.

The provisional registration rolls were displayed for public scrutiny at governance, prefecture, and sub-prefecture level. Copies were transmitted to the relevant regional council secretary, town council secretary, city council, district council and sub-prefecture for a rural community.

The exhibition was open for one month from 23 November to 23 December 2006 to allow voters to check their inclusion on the list and to verify that their

details had been recorded correctly. The DAF then changed and amended the voters' lists accordingly and the Ministry of Interior through the DAF declared the final voters' lists.

In addition to the public exhibition period, voters could review and verify their registration data on the internet (www.elections.sn), using mobile phones equipped with a wireless application protocol (WAP) service, via SMS or by calling a toll-free or call centre number.

Voter card distribution

Administrative commissions in the field received cards for distribution to eligible voters. There were, however, many problems when it came to the distribution of voter cards: stakeholders claimed that many people had to wait more than six months to receive their voter card, and in fact 15 days before the 2007 election almost 42% of registered voters had not received their cards. Voters had to visit the commissions repeatedly to check if their cards had been delivered and a considerable number of cards have never been collected and are held by the administrative authorities. While administrative and logistical shortcomings have been blamed for the breakdown of the system, some stakeholders allege that this was done deliberately to disenfranchise certain voters (such as teachers) for political reasons.

Cards that are not collected are counted, sealed and returned to the administrative authorities. The number of returned cards has increased each year since 2007.

Several options to remedy the situation have been discussed over the years but the status quo remains. A number of solutions included creating additional administrative commissions for the distribution of cards only and separating that function from the registration function. Door-to-door distribution during the voters' list exhibition period was proposed but never implemented.

Role of civic and voter education in the registration process

The DGE hired the services of a commercial company, OFBD Marketing Communication, in August 2005 to run the civic and voter education programme for the 2005/06 voter registration drive.

A comprehensive nationwide campaign used press releases, trailers, banners, posters, flyers, dramas, interviews, radio and television spots, announcements, face-to-face education, on-the-spot information sharing, newspaper advertisements, street theatre, community mobilisation, press conferences, radio and television talks shows and more. Use of this broad range of media guaranteed wide information dissemination at national, regional and grassroots level and addressed all population sectors in terms of ethnicity, language, religion, customs and traditions. The high rate of registration (82%) is testimony to the effectiveness of the outreach campaign.

Role of different stakeholders in the registration process

CSOs and NGOs

National and local civil society organisations and non-governmental organisations were heavily involved in the registration process and played an essential role in civic and voter education activities. They used their grassroots structures to provide information and to motivate eligible voters to register.

Political parties

Political party representatives were members of administrative commissions and had the legal right to control and supervise the voter registration process.[14] However, only ten out of over 100 legally constituted political parties used the opportunity to take part in this process.

Political parties also played a role in motivating their members to register and to verify that their information had been recorded correctly during the provisional registration roll display period.

Donors

The Konrad-Adenauer-Stiftung financed a public information campaign in 2005/06. Seminars were organised for 172 participants for public outreach to the remotest parts of the country through opinion leaders (religious leaders, celebrities and community leaders). Other than this initiative, there was no financial contribution from donors.

Post-election use

Sustainability of the system

The four commercial companies that set up the complex IT system – Synapsys, De La Rue, Sygma Technology and East Shore – are in charge of system maintenance and updates.

On the one hand, an advantage of using external commercial computer companies is that one can be fairly certain that the IT experts are highly trained and up to date on developments in the IT sector. On the other hand, however, is the risk involved in placing the NIC and voter registration database completely in the hands of external companies.

System updates

Hardware and software updates can be installed whenever the need arises as professional companies are in charge of the system's technical features.

Updating of the data

After the establishment of the voters' roll in 2007, yearly updates work on paper-based data collection in the field. Application forms are filled in in the

field and these are forwarded to headquarters. At the central data processing centre, data is keyed in using a double-blind data entry system. The data is then compared against the NIC-Election database. Only if an applicant is positively identified by the database is s/he added to the voters' list, and a voter card for that person is produced and distributed to the relevant administrative commission for collection.

The presidential decree fixing the duration of the 2010 ordinary review of the voters' roll stipulated that the annual update would last six months, from February to July 2010 instead of the normal three months. One reason for this was because the registration process had been interrupted owing to the Senegalese government's failure to pay the companies involved in the process. As a result, no NICs were produced prior to the period dedicated to the ordinary review of voters' lists.

A possible reason for Senegalese citizens' lack of reaction to the breakdown of the voter registration system could be because two more registration updates are scheduled to take place before the 2012 elections. However, this incident shows that vulnerabilities exist in the system.

Transferability of data to other systems

The NIC-Election database produces provisional and final voters' lists, and is a great source for statistical data. The data can be used for planning, organisational or statistical purposes by other state institutions so long as individual liberties and rights are preserved. The civil registry is under the responsibility of the Ministry of Justice and the Ministry of Decentralisation, and is not connected to the NIC-Election database.

Ideally, there should be an exchange of information between the NIC-Election database and the Senegalese biometric passport system. This is, however, not happening because the current NIC-Election system does not store fingerprint images; instead they are converted via an interface into barcodes.

Capacity building and technological knowledge transfer to CENA

Owing to the use of private IT companies to set up and maintain the voter registration system in Senegal, DAF technicians have not been trained and have not participated in capacity-building programmes.

Without technological knowledge transfer from these companies to DAF IT staff, the system remains 'locked away' and dependent on commercial companies. The companies are exploiting their monopoly status, and if one of them were to withdraw from the process the system would undoubtedly face serious trouble.

Voter registry and civil registry

Senegal started issuing NICs based on one national identification number (NIN) already in 1977. The aim is to issue each Senegalese with a unique identification

number that can be used for all official documents – such as one's passport, driver's licence, social security card and voter card.

The NIN originally comprised 11 digits as following:

- One position indicated gender (1 for male, 2 for female).
- Three positions stood for the civil registry centre number that recorded the birth or the birth judgment (each has a unique number).
- Two positions indicated the year of birth or the year of the birth judgment.
- Five positions indicated the sequence number of the birth certificate in the birth register.

The 11-digit NINs were annulled and two more digits were added to the new NIN during implementation of the comprehensive voter registration system in 2006, bringing the total number of digits constituting the NIN to 13.

Most Senegalese citizens are not aware of the importance of civil registration. Owing to tradition and lack of incentive many births, marriages and deaths go unreported. The civil registry is therefore incomplete and inaccurate. In addition the civil registry department has faced issues of corruption, unsuitable personnel and missing computer equipment. The NIN was not considered secure and people could get hold of multiple birth certificates and consequently multiple ID cards. This opened the field for possible electoral fraud based on multiple voting. A new national civil registry centre is, however, being set up and is being fitted with modern equipment.

Before 2006, multiple registrations were detected by computer comparison of the applicant's name and her/his parents' names, and listings were manually edited and checked. The introduction of the NIC-Election database in 2007 has improved the situation greatly: once someone is identified and registered in the database, that personal data cannot be changed. The problem described above, however, affects those not (yet) registered in the NIC-Election database.

In an optimal system, the civil registry should be compatible with the NIC-Election database for the benefit of both. The civil registry could benefit from having access to the secure biometric data captured in the new NIC-Election database, and important information in the civil registry, such as reports of deceased persons, would be helpful in keeping the NIC-Election database up to date.

ANALYSIS, EVALUATION AND RECOMMENDATIONS

Effectiveness of the system

The system as a whole functioned well and achieved its main objectives. The combined effort in 2006/07 enabled the utilisation of synergy effects and due

to good coordination between different divisions in the Ministry of Interior and CENA, the procedure to collect data and establish the voters' roll was fairly efficient and cost effective.

However, the system showed several weaknesses, including dependence on the performance of other state divisions (eg. card production) and a breakdown in the distribution of voter cards.

Quality of data

The use of biometric features (digital photographs and fingerprints) in the database was deemed necessary to restore citizens' trust in the voters' roll. The 2007 voter registration exercise was done to establish a high-quality, accurate and comprehensive register. It increased trust that multiple registrations – and consequently electoral fraud based on multiple votes – could be prevented.

However, about 9,000 Senegalese applicants from rural areas and the diaspora were falsely rejected by the computer processing system. An even bigger problem, as stated in the 2005-2007 CENA Report, was that the voters' list received from the Ministry of Interior (DAF) comprised only 3,400,000 voters, while the final voters' list comprised over 4.9 million voters.

Political parties queried the integrity of the voters' list before the 2007 elections and even threatened to boycott the elections. In response, the government ordered an audit of the voters' list. After a two-day audit conducted by Front Siggil Senegal at DAF's premises, the attorneys refused to comment on the quality of the list preferring to refer to their principal first. The head of DAF meanwhile announced that no significant discovery was made at the audit. The political parties eventually decided to participate in the 2007 elections, closing the debate on the quality of the voters' roll. In preparation for the next presidential and legislatives election in 2012, President Wade has called for an international audit of the voters' list.

Expectations versus outcome

When the head of state decided in 2004 to scrap all existing voters' lists, to invalidate existing NICs and to implement a new voters' register based on a biometric NIC, expectations of the new system were that it would:

- provide a comprehensive and accurate register of only eligible Senegalese voters;
- ensure the right to register and the right to vote;
- ensure that no eligible voter is disenfranchised or marginalised;
- reinforce the values and principles of democracy;
- restore the population's political interest and trust;
- prepare the voters' register in a transparent manner, thereby gaining the confidence and support of all electoral stakeholders;

- introduce a system whereby everyone has to register in person (previously people could register by proxy);
- issue a secure voter card and restore trust in the national document;
- bring an end to the ongoing and critical problem of voter card distribution;
- eliminate multiple registrations and consequently possible electoral fraud;
- increase transparency in the system; and
- provide data for the easier planning and organisation of elections.

The new voter registration system has largely lived up to the expectations of all actors involved in the process. The 2005-2006 voter registration exercise was a comprehensive programme financed entirely by the country's resources, which allowed all eligible Senegalese citizens to register and to receive both a voter card and an NIC. An 82% registration rate shows the high level of participation and acceptance among the population.

Some areas that fell short of expectations include the following:

- Political parties are still sceptical about the quality of the voters' list despite the fact that they were part of the commissions in the field.
- Despite the intention to distribute voter cards, major shortcomings in this regard still exist.
- The data processing component was planned and conducted by external commercial IT specialists: even IT specialists within the ministry are not fully aware of the processes used, especially the crucial fingerprint matching application which occurs completely in a 'black box'.
- The use of biometrics to ensure reliable control of the process remains questioned by political parties.
- While audits of the voters' roll were conducted, no official results have ever been published.
- The experience in 2010 shows that a breakdown in one part of the system can damage the remaining parts.

Lessons learned

❑ The original plan was to conduct the registration process simultaneously throughout the country, but owing to equipment procurement and delivery problems, the exercise ended up using a staggered approach. A staggered process, however, seems to work

well as it is relatively easy to equip, train and supervise a smaller number of registration teams. Additionally, the teams gain experience during the course of the exercise and function more professionally as they continue their work.

❑ The management and supervision of field staff is crucial for achieving good quality work.

❑ While there was fairly good cooperation between the different organisations involved in the registration exercise (the Ministry of Interior is in charge of the material organisation of elections while CENA is the controlling and supervising organ), having a single (and truly independent) authority in charge could mainstream the process.

❑ Voter registration is legally time bound and political parties rely on it to produce a high-quality voters' list. In Senegal the voters' list is extracted from the NIC-Election database; however, in order to be added to the voters' roll one must be registered, in possession of an NIC and positively identified by the database system. This makes the voter registry dependent on the performance of NIC registration. Efficiency gains can be utilised if both systems work perfectly. But, as seen in 2010, failure on the NIC side jeopardised the voter registration exercise.

❑ The system functioned well for the collection of data, data processing and production at central level. To ensure that only eligible voters receive their cards, the process is designed to deliver the voter card at a second stage after data processing. But this design has shown weaknesses as the badly managed distribution of cards has led to the serious disenfranchisement of voters.

❑ An online system to instantaneously compare fingerprints against the database would allow for the production and issuing of cards on the spot. But such a system is dependent on stable and fast internet connections, and high-speed computers. Even developed countries do not use this system.

❑ Electoral manipulation is possible as there are two cards issued in Senegal: the NIC and the voter card. The NIC is the standard identification document for any administrative or commercial transactions in Senegal. The only purpose of the voters' card is

to show proof of registration on election day. However, as the possession of both cards is a precondition for voting this opens up the possibility for manipulation of the electoral outcome. It is possible to get hold of voter cards on a large scale by unlawful means so that citizens are denied the right to vote.

❑ Field equipment was not tested enough and African field conditions were not taken into account before procurement. Although many of the problems were overcome, the experience shows the importance of testing equipment in real conditions before rolling it out countrywide.

❑ The recruitment of staff based on job descriptions and testing helped to reduce the training times needed for field staff.

❑ Lack of autonomy and insufficient power to reinforce regulations was the main cause of ONEL's failure in 2004. An EMB must have a permanent status and must be financially and politically independent if it is to be effective.

❑ Non-committal audit reports feed into criticism about the integrity of the voters' roll. Trust in a system is not necessarily achieved by using complicated biometric technology; rather, the involvement of all stakeholders at all stages of the registration process is required.

❑ Data centre IT equipment and systems were developed and installed by private companies. As such, capacity to maintain the systems has not been built up within the responsible ministry and state institutions are highly dependent on the service of these commercial companies. While this guarantees system maintenance by professional IT experts, it leaves the ministry vulnerable and dependent on external companies.

Cost-benefit analysis of voter registration

According to former Minister of Interior Ousmane Ngom who initiated the biometric process, the estimated cost per card was about US$5. Since all registered persons received two cards, the total cost was some US$50 million for five million voters. The system was financed entirely by the Senegalese state budget.

The benefits received include:

• that stakeholder trust in the voter registration system was at least partly re-established;

- registration in 2006/07 of over 80% of all eligible voters;
- yearly updates of the voters' roll;
- the distribution of voter cards with 10-year validity;[15]
- a reduction in the number of double registrations;
- a reduction in the possibilities for electoral fraud through multiple voting;
- more professional elections owing to more reliable data;
- issuing registered persons with a secure, unique 13-digit NIN that is used for numerous other official documents;
- the storing of voters' biometric data in an electronic database for further referencing; and
- a support system that can be used either to repair the defective civil registry or to set up a completely new civil registry system.

Stakeholder satisfaction

Following ongoing election-related trouble, the 2005-2007 voter registration exercise was comparatively fair and free, and peacefully conducted. It produced fewer complaints and a relatively low level of disenfranchised eligible voters. However, the trust of political parties in the system was still not restored, resulting in threats to boycott the 2007 legislative election. Opposition parties continue to request audits of the voters' register, and criticism regarding the distribution of voter cards remains.

Influence of external stakeholders on the process

While specifications for the computer system were designed by experts within the Ministry of Interior, the system setup was undertaken by four commercial companies. Senegal still remains dependent on companies for system maintenance and development.

Sustainability of the system

The voter registration system in Senegal is financially sustainable as the computer centre and equipment valued at some US$38 million is fully operational and financed by the Senegalese state budget. The system is also technologically current and based on the latest technologies, including biometrics.

Future developments

Senegalese president Abdoulaye Wade and the government are currently looking at strategies to restore confidence and trust in the electoral institutions before the next elections in 2012. The European Union delegation in Senegal and the US embassy have supported this move by facilitating political dialogue and encouraging discussions regarding possible improvements to the electoral process.

An audit of the voters' list using the Standards of Control Objectives for Information and Related Technology, which is a set of best practices for IT management created by the Information Systems Audit and Control Association, is planned for August 2010. The audit will cover three main areas, namely organisational issues, the human dimension and technical aspects of the voters' roll. Political parties will be part of the auditing teams and future developments hinge on the results of that audit.

NOTES

1   CIA, *The World Factbook*, Africa: Senegal. Available at https://www.cia.gov/library/publications/the-world-factbook/geos/sg.html [accessed July 2010].
2   Constitution of Senegal, Act 76-01 of 19 March 1973 and Constitutional Law No 78-68 of 28 December 1978.
3   CIA, *The World Factbook*, op cit.
4   Ibid.
5   Ibid.
6   Constitution of Senegal. Available at http://www.gouv.sn/spip.php?rubrique17 [accessed September 2010].
7   Electoral Law Act, 2001-25.
8   Electoral Law Act, 2005-07 art. L 20 para 1.
9   Electoral Law Act, 2004-32.
10 General Niang sent a letter to political parties giving them two options, namely: continuation of the methodology used; or a new voter registry with biometric features. Most of the parties voted for the former – the partial refashioning of the voters' register used at the time.
11 During a focus group discussion in Dakar, students alleged that voter cards were not distributed to certain groups (especially teachers) and that cards were not distributed in certain geographical areas.
12 Teslin is a synthetic printing medium manufactured by PPG Industries. See <http://www.ppg.com/specialty/teslin/pages/default.aspx> [accessed September 2010].
13 Electoral Law Act, art. L 39, R32.
14 Electoral Law Act, art. L 46.
15 Electoral Law Act, art. 51 indent 2.

8

SOUTH AFRICA

Alan Wall

EXECUTIVE SUMMARY

Country context

For the 22 April 2009 national and provincial elections, the Independent Electoral Commission of South Africa (IEC) continued the system of continuous voter registration for the common national voters' roll that has been in place since just before the 1999 national elections in that country. While this system encountered some problems at the 1999 elections mainly due to the short time frame available for its implementation, it attracted little criticism at the 2004 national and provincial elections and at local government elections held in 2006.

There was a heightened air of political contest in the lead-up to the 2009 elections owing to the challenge represented by the recent formation of a new party, the Congress of the People (COPE). COPE had been set up by disaffected members of the ruling African National Congress (ANC) party, which had won over 60% of the vote at all elections since the introduction of universal suffrage in South Africa in 1994.

The IEC is widely perceived as an independent and impartial body of high integrity and is wholly responsible for voter registration. It comprises five commissioners (who select the chair from among themselves) appointed for seven-year terms. The IEC is serviced by a secretariat and is headed by a chief electoral officer (CEO). The commission has branches in each of South Africa's nine provinces (provincial electoral offices – PEOs) and 237 municipalities (municipal electoral offices – MEOs). While the system for voter registration is continuous, prior to each election the IEC holds 'registration drives' over a number of weekends at which time applications for new registrations and amendments to existing registrations are accepted. Two registration drives were held before the 2009 elections, for which the IEC engaged over 59,000 temporary registration staff who serviced over 19,000 voter registration centres at voting station locations. Other targeted registration campaigns are conducted at educational institutions and new settlements.

Registration to vote is voluntary and is available to all South African citizens 16 years of age or older who have a green barcoded national identity document (ID). These IDs have been issued by the Department of Home Affairs since 1986

and are issued from the National Population Register, which is also managed by the Department of Home Affairs. All applications for voter registration are computer matched against identity data held by this register to establish eligibility to register. Voters register for the voting district in which they are ordinarily resident. Registered voters are not eligible to vote until they turn 18 years old.

For the 2009 elections, as with all elections from 1999 onwards, voter registration data was collected in the field using battery-powered portable 'zip-zip' barcode reading machines. These machines read the barcode on the ID document: the data is then collated through the MEOs and sent by wide-area network (WAN) to the IEC's headquarters, where it is matched to the National Population Register to verify identity and compiled into a voters' roll for each voting district. Duplicates can be avoided and transfers matched as each unique national ID number can have only one active entry on the voters' roll.

Rolls for the relevant voting districts are permanently on display at MEOs for verification, new registrations and amendments to registrations. Any person may lodge an objection at the IEC headquarters to any voter's inclusion on the voters' roll for a voting district. Data from the National Population Register is also used to remove deceased voters from the voters' roll. New and amended voters' address data gathered from the registration drives is not shown on the voters' rolls used for elections and is not completely entered into the voters' roll database until some months after the election.

The registration system based on the zip-zip equipment was developed independently by the IEC and local contractors. The barcode-based technology was chosen due to its compatibility with the ID documents issued through the National Population Register, its relative simplicity and accuracy, its ability to process large volumes of data quickly and its integrity controls. Funding of the equipment was wholly from IEC funds provided from the Government of South Africa budget. South African company Lefatshe Technologies supplied the equipment, which is South African designed and can be fully serviced in South Africa.

The zip-zip machines purchased in 1998 were expected to have a five-year life span but lasted ten years. They were replaced in 2008 by 30,000 new zip-zip machines, built to tougher specifications informed by their use in four nationwide elections and at a cost of R160 million (some US$21.4 million). The new zip-zip machines can hold the whole national voters' roll, and for the 2009 elections were also used to screen voters at voting stations on voting day.

System in practice

Registration drives for the 2009 election were held over two weekends in November 2008 and February 2009, at 16,729 registration centres. Over eight million voters attended to submit new or to amend existing registrations. Total registration at the cut-off date for the voters' roll was 23,181,997 – estimated at

around 77-80% of persons qualified to vote. The public relies heavily on these registration drive periods even though the IEC runs a continuous registration process at its MEOs. Continuous service points are now less numerous and accessible following the reduction in municipalities from 873 to 237, and the subsequent reduction in the number of MEOs.

There were no significant reports from independent observers of problems with the 2008/2009 voter registration process, and registration is seen as a relatively easy and quick process by a large proportion of South Africans. The problems reported were more often related to staff training or voter knowledge than to system malfunctions.

Political parties and civil society organisations (CSOs) were able to monitor the collection of data in field offices for voter registration. Provisional voters' rolls were on public display continuously at IEC offices and during registration drive periods. Delays in processing address data to the rolls and the omission of address data from the rolls used on voting day somewhat hindered the transparency of the process, while protecting privacy. Following the relative confusion at the 1999 elections, the improved operational effectiveness of the zip-zip machines has resulted in broad public acceptance.

Accessibility is promoted through having registration continuously available at IEC offices in each municipality, and for specified weekend voter registration drives at all voting station locations. Home visits could also be arranged, particularly for disabled voters. The low use of the continuous registration facilities may indicate a lack of awareness by voters of its availability, its relative inaccessibility or the lack of proactive measures taken by the IEC to market continuous registration opportunities.

The voter registration system produces provisional voters' rolls for permanent inspection, voters' rolls for use at voting stations and voters' rolls (without voters' addresses) for general distribution and (with voters' addresses) for sale to political parties only. There are strict controls on the use of voters' roll data for electoral purposes only.

Internal quality control mechanisms regulate that all data captured is processed to the voters' roll and printed to the correct voting station roll, each of which has a unique number and barcode. The requirement for in-person registration limits opportunities for fraud. The major external quality assurance mechanism is the check of voter registration applications against National Population Register data to ensure that those who register are eligible to do so. Transfers and duplicates are controlled by ensuring that there is only a single, latest record for any ID number in the 'active' voters' roll. Each month the voters' roll is compared to the list of deaths reported to the Department of Home Affairs, and voters advised by the department as dead are automatically de-registered. There is no quality or integrity control on the validity of voters' claimed residential addresses.

Voter registration is currently managed within the personnel resources of the IEC. The IEC selected over 59,000 people to staff the registration centres for the November 2008 and February 2009 registration drives. The IEC must employ a minimum of 25% of its temporary voting station and registration centre staff from the ranks of the unemployed: for the 2009 elections this percentage was 69%. This has, however, created some reliability, learning and diligence issues.

A single five-hour training session was held for all staff using a cascade process. Up to 50 staff members were trained at each session – a high number, particularly considering that only one zip-zip machine was available for every ten staff members. All participants were given a registration guide and registration diary (a task checklist to be completed each registration day). At the end of training all trainees had to successfully complete a series of tests before they were accepted for employment. Observers at registration centres and voting stations for the 2009 elections noted that some staff did not appear to have retained knowledge from their one-off and at times late training session.

Information and communication technology (ICT)-dependent systems are critical for the timely collection, transmission and processing of registration data in the field. The use of zip-zip machines has become a widely accepted part of the electoral process. The new zip-zip machines purchased in 2008 have more robust specifications and proved reliable during registration and voting for the 2009 elections.

Initial verification of eligibility of an applicant to register as a voter has been by automated checking against the National Population Register database. Provisional voters' rolls have been available for checking at registration centres during registration drives, and are continuously available for inspection at all IEC provincial and municipal offices. Voters may also verify their registration details by texting their ID number from their cell phone, entering their ID number into a form on the IEC website or telephoning the IEC information service.

While voter education is a duty assigned to the IEC it is seen as a collaborative effort undertaken by the IEC, civil society, the South African Broadcasting Corporation (SABC) and government departments. The IEC generally favours mass campaigns over geographically targeted campaigns, as targeted campaigns can lead to fears of bias on the part of political parties.

A mass campaign was implemented during the four weeks prior to each registration drive, using mainly multilingual television and radio spots. The IEC employs a large, contracted workforce to assist with voter education activities at the local level for voter registration and voting in the six to nine months before an election – over 2,500 people were employed for the 2009 elections. Fifty CSOs were also used by the IEC to assist with civic and voter education. They were usually used to distribute IEC materials, although some did develop their own material. Publicly visible education activities for voter registration tend to

be concentrated in the pre-election period: perhaps a contributing factor to the relative lack of activity generated by continuous registration.

As noted above, CSOs provide a significant contribution to the information aspects of voter registration in South Africa; they also provide observers at the voter registration centres. Political parties have generally played an active role in monitoring the registration process and in mobilising their supporters to register to vote and check that their registrations are recorded correctly. This has been done using both mass and finely targeted campaigns, depending on their perceived support base. The formal liaison mechanism between the IEC and the parties – the multi-party liaison committees (MPLCs) at all administrative levels – has generally been regarded as one of the success stories of South African electoral administration, assisting in information sharing and coordination as well as in dispute resolution.

The IEC met with potential donors in November 2008 to identify and explain its assistance needs for the 22 April 2009 elections. Donors played no role in funding IEC activities and gave no direct assistance to the IEC specifically for the voter registration process for these elections. Some funding was, however, provided for general civic and voter education materials, which included messages explaining the concept of voter registration and the voters' roll.

System updates for the voter registration system are distributed to IEC offices at provincial and municipal level using CDs and plug-and-play mechanisms. As the IEC runs a continuous voter registration system, voter data can be updated at any time during the electoral cycle before the cut-off date for the voters' roll for an election. One major updating process is the keying in of address data into the voters' roll database. Since this data is not required to be published on the voters' roll used for elections, its processing is not accorded high priority: all address data for the April 2009 election voters' roll is not expected to be entered into the voter registration system until October 2009.

While there are strong links between the population registry managed by the Department of Home Affairs and the voters' roll managed by the IEC, both are run as two completely separate sets of data and there are no plans to merge the two operations. There are philosophical reasons for this, as well as deficiencies in the address data held in the National Population Register which deem it of little use as the basis for a voters' roll.

Analysis, evaluation and recommendations

While the public and political parties were initially sceptical of the change to the barcode-based registration system – a scepticism reinforced by problems with its initial use at the 1999 elections – the system has since proven its reliability and accuracy. There is no current dispute about the generally high accuracy of system records, and most political parties regard the system as being free of political interference. However, relatively few voters seem to take advantage

of the continuous registration opportunities. For the 2009 elections, 34.8% of registered voters used the registration drive periods to effect or amend their registrations. Completeness of the voters' roll has remained relatively static since 1999, with approximations of the coverage of estimated eligible voters remaining at around 80%.

The voter registration data captured for the 2009 election appears to have been of good overall quality. The system now seems to be running relatively smoothly, ensuring that information provided by applicants is translated accurately to a voters' roll entry for the voting district for which the applicant/existing voter is registering. Some stakeholders were less than positive about the total probity and efficiency of National Population Register operations and the IEC's total reliance on these for integrity checks for voter registration applications. The voter registration system is required to register voters for the address at which they are ordinarily resident. No proof of residential address is required for this, nor is there any further check of an applicant's claim to be residing at a certain address or in a certain voting district. The IEC relies on persons to lodge objections to identify any registrations for invalid or incorrect addresses. With address data from the 2009 election registration drives not available for pre-election checking – around one-third of the entries on the register were affected – this was a less than effective method for identifying invalid or incorrect addresses.

The IEC takes very seriously protection of the franchise and management of the voters' roll. Part of the IEC's success in managing the voters' roll is due to the ethos developed within the IEC of professionalism and integrity. This builds public trust and respect for the institution in general. The following are some lessons that can be taken from the IEC's experiences:

- Ensure sufficient time for registration system implementation before the next election.
- Look for a domestic solution that fits local circumstances.
- Do not only review but also implement lessons learned.
- Public perceptions of integrity in election management are essential.
- Secure and maintain equipment carefully.
- Maintain election management body (EMB) control of registration but build external partnerships to leverage resources.
- Ensure that the system is technically, financially and politically sustainable.
- One-off training, especially of lower skilled recruits, may not be sufficient.
- Continuous registration may be regarded internationally as cost effective, but this does not just happen: it needs to be energetically promoted and adapted to each environment.

The current voter registration system is fully sustainable within the resources of the IEC. Stakeholders' views of the voter registration process are generally positive. A small minority were critical of the IEC's attitude toward stakeholders. They felt that voter registration would be improved if the IEC considered a more continuous training regime for staff and continuous voter education. The stakeholders were also concerned about potential lapses in voters' roll integrity related to the treatment of deceased voters. There is a strong feeling among some stakeholders that the IEC is too ready to rely on legalistic argument rather than being innovative, and that this is used as an excuse not to increase its workload or provide additional services. Some believe that the IEC relies on doing what it must do rather than on what it could do.

While the current system is regarded as generally effective, a number of improvements have been suggested. Some are procedural while others would require legislative change. Apart from improvements to training and voter education, these include the following:

- Relaxing the requirement that all amendments to registration, and possibly also applications for registration, be made in person.
- Networking zip-zip machines to provide efficiencies in controlling voter eligibility to vote on voting day, as well as determining eligibility to register at IEC offices or registration centres.
- The IEC could embrace continuous registration more proactively through investigating potential methods such as: integrating provision of data for voters' registration with other service transactions; agency arrangements for voter register data collection; acquiring data for voter registration follow-up from other agencies; and developing further registration data links. However, continuous registration activities are much harder for political parties and CSOs to observe: heavy reliance on continuous registration requires a high degree of trust in the integrity of electoral administration.

COUNTRY CONTEXT

Political history

The Union of South Africa was formed in 1910 as a union of four British colonies in Southern Africa. Political participation and powers were exclusively for whites; the ANC was formed in 1912 to protest the exclusion of blacks. Following a period of rising Afrikaner nationalism and increasingly discriminatory legislation favouring whites, the National Party was elected to government and later instituted a system of 'apartheid' or separate development of the races. In 1961 whites voted to declare South Africa a republic. Even more stringent laws on racial purity and segregation were introduced, resulting in the forced removal of millions of people.

As repression grew, so did resistance. The leading anti-apartheid groups – the ANC and Pan African Congress – turned to armed resistance, which grew to continuous revolt from the mid 1970s. The white National Party government gradually relaxed controls during the 1980s following increasing, sustained pressure both internally and from the imposition of international boycotts and sanctions. In 1990 the government removed bans on liberation movements, released political prisoners and commenced the repeal of key elements of apartheid legislation. Negotiations between the National Party government and the ANC, initially within the context of the Convention for a Democratic South Africa and later within the Multi-Party Negotiating Forum, finally produced agreement in June 1993 for the framework for elections in 1994 and subsequent power sharing, and in November 1993 on an interim constitution.

Nineteen parties contested the 1994 national elections, with the KwaZulu-Natal-based Inkatha Freedom Party (IFP) deciding to participate at the last minute. The ANC won an overwhelming majority (62.6%) of the vote, followed by the National Party (20.4%) and the IFP (10.5%). A coalition Government of National Unity was formed following the first post-apartheid elections, with ANC leader Nelson Mandela as president and National Party leader FW De Klerk initially serving as vice president.

South Africa's most recent elections were held on 22 April 2009. Thirty of the over 100 parties registered in South Africa contested the 2009 National Assembly election, of which 13 won seats. The ANC again won a majority of the seats in the National Assembly, capturing 264 of the 400 seats with 65.9% of the vote. The Democratic Alliance (DA) won 67 seats (16.7% of the vote) and is the major opposition party, as in 2004. The new party, COPE, is the third largest party in parliament with 7.4% of the vote (30 seats). COPE did not cut into the ANC's proportion of the vote to the extent some had expected. The ANC fell short of the two-thirds majority required to change the constitution.

The ANC has dominated all post-apartheid elections since 1994. In 2004 with Thabo Mbeki as leader, the ANC won 69.7% of the vote, followed by the DA with 12.4% and the IFP with 7%. None of the other 18 parties contesting the national election won more than 2.3% of the vote. In both 1994 and 1999 the ANC won around two-thirds of the vote.

The political landscape in the post-apartheid period has changed significantly with the continuing dominance of the ANC. The DA – successor to the white 'liberal' party of the apartheid era – has become the major opposition party. The remnants of the old National Party have been absorbed into the ANC. Various political parties representing white conservative views have come and gone with little post-1994 success. Formerly regionally powerful parties such as the IFP have suffered declines in support. The ouster of President Mbeki and the subsequent formation of COPE by disaffected ANC members may provide a challenge to the ANC's role as guardian of the reformist values of 1994.

Political environment

The political environment in the lead-up to the 22 April 2009 South African elections had elements of contestation that were missing from previous elections. The newly formed COPE party provided the first real challenge to the ANC's status as custodian of South Africa's liberation. COPE represented a split from the ANC by members who disapproved of President Thabo Mbeki's recall. Mbeki was recalled based on accusations that he was influencing the laying of corruption charges against ANC rival and presidential hopeful Jacob Zuma. A revamped opposition party in the DA had aspirations to be an alternative government. A number of organisations and leading personalities threatened to boycott the elections, some in protest at the split in the ANC and others due to the failure of all political parties to address the needs of South Africa. The youth in particular were more politically energised than they had been for recent past elections.

While there was intensity to political debate prior to the elections, it did not in general touch the IEC due to its reputation for integrity and independence. Some allegations of political interference were made vis-à-vis voter registration (by the IFP) and the national ID document issue (by the United Democratic Movement – UDM). A feature of the South African electoral and political environment is the existence of MPLCs at all election administration levels, chaired by the IEC and with representatives of the contesting parties. MPLCs act as information-sharing, consultative and dispute-management forums.

Socio-economic profile of the country

South Africa is regarded as an economic powerhouse and aspires to be a major influence in Southern Africa. With a population estimated in mid 2009 to be a little over 49 million, it has 11 official languages, of which Zulu, Xhosa, Afrikaans and English are the most widely spoken. The literacy rate is estimated at 86%, and is similar for men and women. South Africa is reported to have the highest number of deaths from HIV/AIDS in the world and its AIDS infection rate, estimated at 18.1%, is the fourth highest in the world. In recent years there has been a high influx of migrants from Zimbabwe and Botswana, leading to increased tension in some urban areas. Very high incidences of violent crime, in general, are a significant problem particularly in urban areas.

Gold and diamond discoveries in the late 19th century set the foundation for the South African economy. The country has a modern transport and communications framework and a developed services sector. Lack of investment in infrastructure, particularly electricity generation, has constrained recent development. The major industries are mining, heavy manufacturing and foods, while minerals and machinery/equipment are major exports. From 1948 until the first multiracial elections of 1994, the non-white vast majority were economically and politically subjugated under the white National Party government's apartheid system of 'separate development' of races. Legacies of this period include poverty,

lack of economic empowerment, poor housing and high unemployment (25.5% in mid 2009).[1]

THE ELECTORAL STRUCTURE

Legal framework

The first post-apartheid national elections in 1994 and local government elections in 1995 were held under the Interim Constitution of 1993 and subsidiary regulations. Since then the basis of electoral management and the electoral franchise has been defined in the Constitution of the Republic of South Africa, 1996, specifically in Chapter 2 (Bill of Rights), Chapter 4 (Parliament), Chapter 7 (Local Government) and Chapter 9 (State Institutions Supporting Constitutional Democracy). The Electoral Commission Act, Act 51 of 1996, further defines the appointment process, powers, duties, functions, terms of office, conduct and administrative framework of the IEC, and the registration of political parties. It also defines the composition, powers, duties and functions of the Electoral Court.

The legal framework for election implementation in South Africa is defined in the Electoral Act, Act 73 of 1998. The Municipal Electoral Act, Act 27 of 2000 defines the framework for local government elections.

The IEC has both specific and broad powers to make regulations to achieve the objectives of the Electoral Commission Act (as defined in section 23). The IEC has powers to make regulations on issues that must be prescribed under the Electoral Act and 'after consultation with the party national liaison committee' to make regulations on matters that may be prescribed under or are necessary to achieve the objectives of this act (as defined in section 100).

Recent elections and electoral history

Recent elections

National and provincial elections in the post-apartheid era have been held in 1994, 1999, 2004 and 2009, and local government elections have been held in 1995, 2000 and 2006. The 1999 and subsequent elections have been managed by the current IEC. The 1999 national election was managed by a new IEC and with a new system of legally required voter registration. Observers noted a number of flaws in the IEC's administration, including the quality of the voters' register, the late issuing of regulations, logistical problems on voting day, an over reliance on hi-tech systems, insufficient voter education and poor controls on political party income and expenditure.[2]

However, administration of the national and provincial elections in 2004 and 2009 drew general approval from observer groups, with only minor problems noted.[3]

South African electoral system

The 1996 Constitution requires that the electoral system results 'in general, in proportional representation'.[4] The constitutional provisions specified the electoral system only through to the 1999 elections (using the transitional provisions of Schedule 6 of the Constitution); for future elections further legislation was required. An Electoral Task Team was appointed in 2002 to formulate draft legislation for the electoral system for the next national elections. The task team noted the severe time constraints on introducing any new system for the 2004 elections, and for that reason regarded as 'too impractical for consideration'[5] any system that would require extensive demarcation of new electoral boundaries.

The task team could not agree on a recommended electoral system. The majority recommended that 300 members be elected by closed list proportional representation from multi-member constituencies returning between three and seven representatives, geographically based on some combination of district/municipal/metro council boundaries (suggesting that on then current data there would be around 69 constituencies); the remaining 100 members would be elected by closed list proportional representation from a national compensatory list. The minority recommendation was to retain the system used for the 1994 and 1999 elections. Parliament agreed with the minority recommendation.

The National Assembly of 400 members, who serve a five-year term, is elected using a closed list system of proportional representation. Two hundred members are elected from national lists in proportion to the percentage of the national vote each party receives: the remaining 200 are elected from candidate lists in each of the nine provinces, according to the percentage of the vote each party receives in the province. Parties may elect not to nominate a national candidate list, in which case any 'national list' seats won would be reallocated to the regional constituencies and their candidate lists.

The state president is elected for a five-year term, after every parliamentary election, by the members of the National Assembly.

The second chamber of parliament, the National Council of Provinces, is indirectly elected by the provincial legislatures in each of the nine provinces. Ten representatives are elected from each province, split between the parties in proportion to the number of seats each holds in each provincial legislature.

Elections for the nine provincial legislatures are held on the same day as the National Assembly elections, also using a closed list proportional representation system. Elections for local government are held at five-year intervals, not synchronised with national and provincial elections, and use a compensatory mixed-member electoral system.

While the consociational affects of the proportional representation system used in South Africa have been widely recognised, there has been continuing disquiet about a perceived lack of representatives' accountability to voters. This has been particularly evident in debates about both the legality and impact on

governance of 'floor crossing' – namely, representatives elected from one party's candidate list switching their support mid-term to another party. The effects on the administration of voter registration would be one issue to be considered in any future considerations of change to the electoral system.

The election management body

The IEC is one of six 'Chapter 9' institutions in South Africa. These are independent and impartial institutions established under Chapter 9 of the 1996 Constitution to support constitutional democracy.[6]

The IEC that managed the first post-apartheid elections in 1994 emanated from the political settlements underpinning the Interim Constitution of 1993. It comprised 16 persons: 11 eminent South Africans and five international electoral experts. Following adoption of the Constitution of 1996, the current structure of the permanent IEC was defined in the Electoral Commission Act of 1996. The IEC comprises five commissioners, including a chair elected by and from among the commissioners. One commissioner must be a judge. The commissioners are appointed by the president following a recommendation of candidates by majority resolution of the National Assembly. The five persons recommended to the president are selected by a committee of the Assembly, comprised proportionately of all parties in the Assembly, from a list of at least eight persons proposed by a selection committee chaired by the president of the Constitutional Court, and including as members the public protector and a representative of the South African Human Rights Commission and the Commission for Gender Equality. This selection committee must be transparent in its activities.

Commissioners are appointed for seven years; their terms may be extended by the president on recommendation of the National Assembly. To be eligible, a person must be a South African citizen. Commissioners cannot be appointed to any political office, show any support for or opposition to any politically contentious issues or any candidate or party, or serve as an elected legislative or local government representative while, and for 18 months after, being a commissioner of the IEC. Appointments to the commission need to consider the race and gender composition of South Africa.

The IEC is supported by a secretariat headed by a chief electoral officer. As well as functional departments in the IEC head office, there is a PEO in each province and an MEO in each of the 237 municipalities. The IEC holds two voter registration drives before each election. In 2008/2009 it opened over 19,000 voter registration centres, employing more than 59,000 temporary staff at voting station locations.

The IEC is widely respected in South Africa for the level of professionalism it has achieved and its perceived integrity. Human Sciences Research Council (HSRC) data from its September/October 2008 survey showed that 72% of South Africans were satisfied with the IEC's work at the 2004 elections[7] and

that 68% trusted the IEC. In little more than a decade the IEC has successfully developed internal management and technical capacities in the key areas of election management and in many respects is regarded as a leader among EMBs in Africa. IEC management takes a very protective view of the franchise rights of all South Africans.

VOTER REGISTRATION

Legal framework, rules and regulations

The Constitution of the Republic of South Africa 1996 sets out the basis for electoral rights, the electoral franchise and electoral management. Relevant constitutional provisions can be summarised as follows:

- Every citizen has the right to free, fair and regular elections for, and every adult citizen the right to vote for, any constitutionally established legislative body (section 19).
- A National Assembly of between 350 and 400 members is elected under an electoral system that is prescribed by national legislation, based on the national common voters' roll, has a minimum voting age of 18 years and provides, in general, for proportional representation (section 46).
- A person may vote in an election for a municipal council if s/he is on that municipality's segment of the national common voters' roll (section 157).
- The IEC is independent and impartial and accountable to the National Assembly (section 181).
- The president appoints members of the IEC on the recommendation of the National Assembly (section 193).

The Electoral Commission Act, Act 51 of 1996 further defines the appointment process, duties and functions of the IEC. Relevant provisions for voter registration are that the IEC has the function, among others, to:

- compile and maintain voters' rolls by means of a system of registering eligible voters by utilising data available from government sources and information furnished by voters (section 5(1)(e)); and
- promote voter education (section 5(1)(k)).

The IEC may also make regulations specifically in relation to the compiling and maintaining of voters' rolls (section 23(b)).

The legal framework for voter registration in South Africa is further elaborated in the Electoral Act, Act 93 of 1998, Chapter 2, Registration of Voters

and Voters' Roll, and Chapter 3, Proclamation of and Preparations for Elections, Part 2, and Voters' Roll. To summarise:

- There is a national common voters' roll.
- Any South African citizen 16 years old or older who has an identity document issued under the Identity Act 1986, or a certificate of receipt of application for an identity document from the Department of Home Affairs may apply for registration as a voter.
- A registered voter's name is only placed on the voters' roll when s/he attains 18 years of age.
- A person registers only for the voting district in which s/he is ordinarily resident.
- Persons of unsound mind are ineligible to register to vote.
- A voter must apply to have a change of name or address recorded in the voters' roll.
- A voter must be notified of a decision to refuse registration/change registration details, or to deregister the voter. Voters can appeal against such decisions.
- The IEC must conduct general registration of voters and may prescribe a cut-off date for registration and voters' roll compilation.
- Any person may lodge an objection with the IEC to any inclusion on, exclusion from or voter details shown on the voters' roll.
- The voters' roll or relevant segment of the roll must be available for inspection at IEC offices.
- The voters' roll used for an election is the roll as it is on the day the election is proclaimed.
- Certified copies or extracts from voters' roll segments are available. Certified copies of voters' roll segments showing voters' addresses are made available to political parties and can be used only for election purposes. Prescribed fees are payable for these copies.
- On voting day, a voter who applied for registration before the cut-off date may apply, by declaration, at a voting station outside the voting district for which s/he applied for registration, to vote at that voting station.
- Prisoners who are registered as voters vote for the voting district containing the prison in which they are incarcerated.

Out of country registration is available only to staff of South African embassies. Other South African nationals who will be overseas on voting day must register to vote before they leave South Africa, and advise where they will be on voting day using their ID number as a verification key. Receipt of this application is posted on the IEC website.

While most of the impetus for electoral legal reform in South Africa has been directed towards the issues of floor crossing and the electoral system, there has been some agitation by opposition parties in particular for changes to the voter registration framework. The two most prominent issues have been the:

- restriction of valid identification for registration to the green national ID document; and
- requirement to attend in person to register or to advise any changes to registration details.

History of voter registration

Prior to the demise of the apartheid regime in South Africa, registration of voters on a racially restricted franchise was administered by the Department of Home Affairs. There was no voter registration system in place for the historic post-apartheid elections in 1994 – the first elections in which the vast majority of South Africans were able to vote. Voters proved eligibility to vote by showing one of a number of specified types of identification documents or cards. Voters were not allocated to any specific voting station. The resulting logistical difficulties, huge queues for voting and possibilities for fraud (many non-South Africans held identity documents that entitled them to vote) were of little consequence in the euphoria of the country's first free election held under universal suffrage.

For the second election held in the post-apartheid era (for new local government councils in 1995), voters' rolls were created in each municipality under a common franchise but with each local council responsible for its own compilation method – more than 30 different software systems were used.[8] Problems of coverage and accuracy, compounded by multiple extensions of the period for registration, led to many voting stations using three different and separate voters' rolls for this election.

The 1996 Constitution required that future elections be held on the basis of a national common voters' roll. Given the compatibility and accuracy problems with the 1995 data, the new electoral commission in 1997 determined to start afresh to compile a new voters' roll, even though time was relatively short. Unlike the last two elections, and in order to prevent election fraud, the IEC determined that only a single identity document – the barcoded green ID book issued by the Department of Home Affairs since 1986 – could be used to support an application for voter registration. After evaluating several different mechanisms a barcode reading, hand-held machine called a zip-zip was chosen to capture voter registration application data by reading the barcode on the national ID document and providing a receipt to the applicant. Three special registration weekends were held over a three-month period in more than 14,000 voting district registration centres, and MEOs were open for continuous registration with the rolls closing in mid-March 1999. Eligibility to register would be determined at a national level

by comparing each application to the National Population Register database maintained by the Department of Home Affairs. With some adjustments, this is basically the system used in 2009.

The IEC's budget was severely squeezed for the 1999 elections, leading to allegations of interference and the resignation of the then IEC chair. There were also significant problems with the use of the zip-zip machines at the 1999 elections as many operators did not know how to use them or claimed that the machines were not working in order not to have to use them. Voter education activities were slashed due to budget issues and voter registration officers were mainly South African Defence Force personnel and volunteers who had received little training in the use of the zip-zip machine. Manual registration was often used, and in some case these manual records were not keyed into the database; voters were incorrectly rejected and in some cases directed to incorrect centres to register. Many voters were not aware of their registration centre's location. The IEC decreed an additional period for inspection of the rolls at registration centres. Problems with the use of the zip-zip machines were such that the Commonwealth Observer Group recommended: 'The use of the electronic scanner machine – the "zip-zip" – should be reviewed.'[9]

Not all persons had yet received their green national ID book. It was a major task for the IEC to inform people of the new requirements for voter registration – including the need for the identity document. Opposition (mainly white-supported) parties strongly opposed the requirement to use the green ID book, arguing that it would disenfranchise up to four million people[10] many of whom were their supporters, especially the youth and rural residents. A legal challenge was mounted, with a final decision by the Constitutional Court on 14 April 1999 ruling in favour of the IEC's position.

The same methodology was used for the 2000 local government elections, the 2004 national and provincial elections and the 2006 local government elections, though registration drive weekends were cut to two. For the 2004 elections, observer reports noted no major problems with the voter registration process. Skills at using the zip-zip machines improved, staff were more experienced, voter information activities were more extensive and registration drives were better timed. By 2004 the number of voting districts and registration centres had grown to 16,821 and voter registration was no longer a major source of dispute.

During this time the number of persons registered to vote grew from 18,172,751 in 1999 to 21,054,957 in 2006, but maintained a fairly steady relationship at around 80% of the estimated eligible population.[11]

Current or latest voter registration method

Field data collection

Voters must register in person at an IEC municipal electoral office or voter

registration centre. Eligible voters may register to vote if they can show their valid green barcoded ID document issued by the Department of Home Affairs, or a valid temporary identification certificate issued by that department. No other form of proof of identity is accepted. The voter must register for the voting district for which s/he is ordinarily resident. Voters can register, change registration details or check their registration details at any time at their local MEO. However, new applications or amendments received after the closure of rolls for an election can only be processed after that election. During pre-election registration drives – normally held over two weekends around six and three months before voting day – voters can register, amend details or check the register at the registration centre within the voting district in which they are ordinarily resident, which is located at the voting station for that district.

The barcode and unique national ID number is the link between civil registration and voter registration.

The zip-zip machine produces a sticker featuring the registered voter's ID number and registration data.
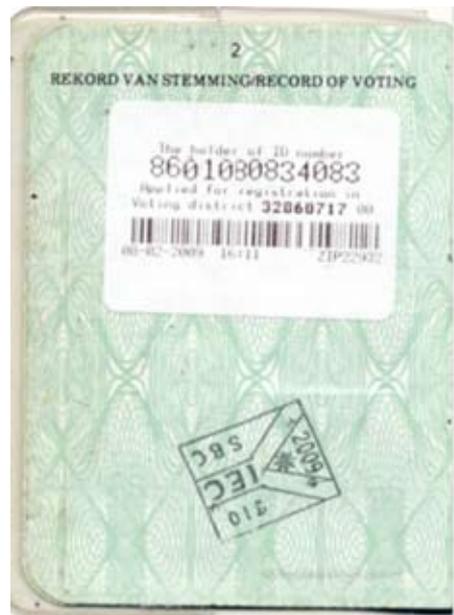
The applicant's address is checked against a hard copy map of the voting district to ensure that the voter is registering for the correct voting district. The applicant completes an application for registration form with full name and address details, which the applicant signs or marks and the registration officer signs. The applicant's details are recorded electronically using a zip-zip machine. If the applicant has a green barcoded ID document, the barcode is scanned. If the applicant has a temporary ID certificate, her/his ID number is manually typed into the zip-zip machine. Two barcode stickers containing data on the voter's ID number, voting district and date of application are then printed from the zip-zip machine: one is a receipt for the application and is pasted in the applicant's ID document; the other is pasted on to the applicant's application form.

At this stage the applicant has only applied to register to vote: registration is not confirmed until the IEC head office verifies the applicant's details against the National Population Register maintained by the Department of Home Affairs. The IEC must inform an applicant whose application to register is rejected.

Registration officers keep a diary of each day's registration activity. At the start and end of each day a 'parameter report' is printed from the zip-zip machine as an audit check on the number of registrations, and this is checked against the physical application forms on hand.

Every registered party may have one agent observing the registration process at each place used for voter registration.

As part of the continuous registration process, the IEC also conducts targeted registration campaigns in voting districts with proportionately low registration figures, and particularly in educational institutions for 16-year-old and older students. The latter campaigns are conducted in conjunction with the Department of Home Affairs' national population registration processes.

Once initially registered, voters only have to attend an MEO or registration centre to change their registration details if their residential address changes, if they are informed by the IEC that their voting district has changed or if they have a new ID number.

Field equipment

The zip-zip machine – a hand-held portable barcode scanner and data storage device – is South African-designed and assembled, purpose-built field equipment used for capturing voter registration application data. The machines were first used for voter registration for the 1999 elections and were completely replaced for registration for the 2009 elections. The new machines include improvements based on operational experience: they are lighter, more compact, easier to use, more dust resistant and shock proof, have a longer battery life and have a more accessible internal clock battery. They are no harder to operate than a mobile phone.

VOTER REGISTERS

MEO | Voting Station

UPLOADING
At MEO office:
1. Zip-Zip data upload
2. Manual data capture
3. Address capture

MEO OFFICE

WAN TRANSFER
Voter information sent to IEC national office

NATIONAL OFFICE

Verification of voter details at Home Affairs

NATIONAL POPULATION REGISTER

Provisional voters' roll produced

Municipal segment sent to MEO

Option

MEO rectifies error locally

Voter finds administrative error

Option

Objector serves objection on objectee (voter) and Commission

Voter lodges objection

Supporting documents needed:
- fingerprints
- certificate of naturalisation or
- affidavit

Option

Appellant lodges appeal with Commission

Voter lodges appeal

PROVISIONAL PUBLIC INSPECTION

COMMISSION INVESTIGATION

Objectee (voter) given chance to respond. If not found objection dismissed

Appeals compared to National Population Register

Final Commission Decision

CEO, MEO, appellants and objectors informed of decisions

Voters' roll certified

Voter registration process illustrated in diagram form and featured in an IEC staff training manual.

The zip-zip machine is powered by a replaceable, rechargeable battery (four-hour recharge cycle). The machine features a laser barcode scanner, mobile phone-style keyboard and display screen, internal printer for mini heat-sensitive paper rolls, a USB/serial interface to an external processor and a USB interface for a secure digital (SD) card.

The new machine features a smart card socket in anticipation of a future smart card format for the national ID card.

*Some 30,000 zip-zip machines are used in South Africa for
voter registration purposes.*

The zip-zip machines are also used at voting stations on voting day. A full copy of the national voters' roll is loaded on to each machine. Registered voters' barcode receipts are read by the zip-zip machine: if the voter is at the correct voting station, the machine prints out a slip which the voter takes to the voters' roll checking officer to be marked off on a hard copy of the voters' roll; if not, the voter is directed to another voting station. The zip-zip machine stores voter turnout data – that is, a breakdown of voter flow, age, gender, etc. for later analysis by the IEC.

The IEC has developed a separate tracking system to control the zip-zip machines' movements and storage since there are numerous machines and they are small and portable. The machines are stored in warehouses in each of the nine provinces and centrally. They are maintained locally, as far as possible. Since the machines are used regularly for local government by-elections, generic problems can be fairly rapidly identified. Few machines have been lost – they are purpose built with limited external use.

Data processing
Information on zip-zip machines from all voter registration centres within a municipality is loaded via USB connection on to a PC at the MEO and transferred

by wide-area network to a central database at the IEC headquarters. As the IEC's client-server architecture is web based, field offices need only a PC with a web browser and communication capacity. Application forms are indexed and stored securely at the MEO for later key data entry of address details.

Data is matched against existing ID numbers on the voters' roll database. Only the most recent voting district and other details are maintained on the active voters' roll. An audit trail of the history of all changes in detail for any ID number is maintained.

Eligibility to register is confirmed by centrally matching the ID numbers of new applications against the National Population Register database maintained by the Department of Home Affairs.

A person's proof of eligibility to register to vote relies wholly on the integrity and accuracy of the identity documents issued by, and the National Population Register maintained by, the Department of Home Affairs.

DECISION-MAKING PROCESS FOR SELECTION OF THE VOTER REGISTRATION SYSTEM

Criteria for selection of the system used

Specifications for the initial 1998 common voters' roll system included that it must:

- be able to process voter registration data for a completely new voters' roll in the limited time available;
- use computerised data capture as far as possible;
- make use of equipment that is easy to train people to use, small and portable, capable of withstanding the conditions encountered across South Africa;
- create a sustainable registration system for the longer term;
- include strong fraud controls and an audit trail of all transactions;
- promote stakeholder confidence by being transparent in its operations; and
- be able to be fully supported technically within South Africa.

It was decided to base voter registration on reading the barcode in the green national ID documents issued by the Department of Home Affairs, since this method was fast and of high accuracy and integrity. The IEC therefore did not pursue any high-cost biometric identifiers within its own voter registration system.

The IEC examined a number of alternative methodologies and systems before determining to use the zip-zip barcode reading system. These alternatives included the following:

- Amalgamating the existing municipal-based voters' rolls that had been used for the 1995 local government elections. This was rejected due to the time and effort needed to amalgamate and verify data on hundreds of different rolls maintained in multiple, different formats.
- Basing the voters' roll on the National Population Register: however, once a citizen obtains an ID document at age 16, no details are changed or amended unless the document needs to be replaced due to loss or if for some reason the ID number has to be changed. This was not suitable for a voters' roll that was required to record and allocate each voter to a voting district based on her/his current residential address.
- Key entry of data for a new voters' roll. This was rejected as there was insufficient time available for this method.
- Using optical mark recognition (OMR) scannable forms. This was rejected due to concerns about coding accuracy, complexity of the data collection system and whether its transparency was sufficient for public acceptance.

The methodology chosen was based on registration for electoral districts – the smallest electoral administrative area, each feeding one voting station. Basing eligibility checking on the green barcoded national ID document removed much of the uncertainty and fraud potential previously present when multiple types of IDs could be presented to support eligibility for registration or voting. The IEC decided not to issue any separate form of voter ID card, instead placing a barcode registration sticker in the national ID document. It was believed that a separate voter ID could cause confusion and be subject to being swapped or sold to support fraud.

Funding and procurement of voter registration equipment, materials and services

Voter registration equipment and materials have been purchased using the IEC's budgetary allocations from the Government of South Africa.

Acquisition process and costs

A tender was issued in 1998 for 25,000 zip-zip machines to be used for voter registration for South Africa's first national common voters' roll for the 1999 elections. These were purchased at a cost of R90 million (approximately US$12 million) from Lefatshe Technologies – a South African, black-owned technology company that fitted the IEC's realisation of the government's broad-based black economic empowerment codes of good practice. The machines had a guaranteed lifespan of five years, but in fact lasted ten years (for two national and provincial

elections, two local government elections and multiple by-elections) due to a good maintenance regime. By 2007 the risks of failure were becoming unacceptable and problems with the machines were widespread. Even so, for the 2009 elections 18,000 of the original 25,000 machines were still in good condition and available as back-ups. As the new zip-zip machines purchased in 2008 have proved reliable, the old models (which have been written down to R1 in value) are to be disposed of in the near future in accordance with government equipment disposal rules.

It was decided in 2007 to purchase new equipment – 30,000 zip-zip machines – for voter registration for the 2009 elections. The process for specification and tendering for the equipment took four months, commencing in October 2007. The process was relatively fast as the internally developed specifications were based on the 1998 tender process. Some specifications were added or modified, including:

- an upgraded memory capacity;
- a smart card socket;
- better data encryption; and
- upgraded durability requirements (such as water, dust and corrosion proofing, less temperature sensitive, and capable of surviving a 1.5 metre drop test).

The process for selecting the successful tender contained a number of checks to ensure that the most appropriate, cost-effective equipment was purchased and to guard against conflict of interest and corruption. Declarations of interest were required from all involved in the selection process and were audited. These were rechecked at a pre-contract due diligence audit. Background checks were done on bidders' management and the contract process was externally audited.

Significant elements of the tender process are summarised as follows:

- The tender specifications were advertised nationally in line with government guidelines and had a 21-day response period.
- The IEC formed:
  - an oversight committee comprising representatives of the Internal Audit, Procurement, Legal and Electoral Matters departments;
  - a tender evaluation committee to do an administrative review of the bids' statutory compliance: 100% administrative compliance was required for the bidder to be considered further; and
  - a technical evaluation committee for the bids: a score of at least 75% on technical functionality tests was required.
- Test machines from each bidder were given to the University of Pretoria for testing of operational compliance against tender

> specifications. All aspects – hardware, software, database compati-
> bility, functionality, etc. – were tested and a report was drafted on
> each bidder's machine.
> • A Technical Evaluation Committee considered these reports and
>   scored an overall evaluation for each bidder in compliance with
>   the Preferential Procurement Purchasing Act. The IEC requested
>   and received from the Treasury Department an exemption to the
>   normal weighting of 80:20 for price and functionality, due to the
>   critical need for election equipment to be reliable.
> • The Technical Evaluation Committee made a recommendation to
>   the IEC Executive Committee of a preferred supplier, who endorsed
>   this for the CEO's approval.
> • After a preferred bidder was approved by the CEO, the IEC con-
>   ducted a due diligence audit prior to issuing a contract. This included
>   visits to the bidder's premises to check such issues as production
>   capacities, sourcing arrangements for components, and maintenance
>   and guarantee fulfilment capacities.

A number of respondents submitted machine designs that could do the task, but
the IEC was concerned to ensure that the new machine acquired could withstand
all likely operating conditions, was simple to use and was totally self-contained
with no externally attached parts. The machine chosen was the highest rated in
the technical evaluation, but was not the cheapest.

The tender was again awarded to Lefatshe Technologies. The initial contract
cost of R143 million (approximately US$19.1 million) was increased to over
R160 million (approximately US$21.4 million) due to exchange rate movements
on the purchase of imported components and requirements for additional
software development. There have been issues raised in the media about alleged
government links of some directors of this company.[12] Some opposition parties
have also raised the issue.

The supplier delivered all machines to a very tight supply timetable: an
additional 1,500 spare zip-zip machines were provided at no cost.

No data is available yet for the overall cost of the continuous voter registration
process for the 2009 elections. It would be difficult to obtain a precise figure for
overall costs as many components for processing voter registration are also used
for multiple other electoral management tasks.

SYSTEM IN PRACTICE

An overview of the system in practice
The IEC set a target of 22 million registered voters for the 2009 election at a
budgeted cost of R200 million (approximately US$26.7 million). Registration

drives were held in a peaceful atmosphere over two weekends (8-9 November 2008 and 7-8 February 2009) at 19,726 voter registration stations.[13] The voters' roll was closed on 12 February 2009 – the proclamation date of the election. Total registrations at the cut-off date for the roll were 23,181,997 – estimated at around 77-80% of estimated persons qualified to vote,[14] and an increase of 12% from the 20,674,926 million registered voters for the 2004 election.

Although the IEC runs a continuous registration process at its MEOs the public relies heavily on registration drives to lodge applications for registration or to update their registration details – particularly changes of address and/or electoral district. With the reduction in municipalities from 873 to 237, and hence a reduction in MEOs, continuous service points are now less numerous and accessible. Some of those in IEC management believe that continuous registration does not work since few voters use it and it ties up valuable resources.

The higher than expected turnout at the registration drives, particularly the large number of young people registering, has been attributed to political conditions at the time, notably: the formation of a new party (COPE); discontent at the lack of service delivery by the government; increased effort by the IEC to motivate students; and an 'Obama effect'.

Table 1: Voter use of registration drives for the 2009 elections

	New applications	Address amendments – new voting district	Address amendments – same voting district	Total
November 2008 drive	1,648,189	752,596	293,871	3,694,656
February 2009 drive	1,508,642	1,653,216	217,111	3,378,969
Continuous registration[15]	N/A	N/A	N/A	N/A
Total	**3,156,831**	**2,405,812**	**510,982**	**8,073,625[16]**

According to Table 1, 34.8% of registered voters for the 2009 elections used the registration drive periods to effect or amend their registrations. HSRC survey data from September/October 2008 indicates that 12% of eligible voters changed address in the past 18 months:[17] during the two registration drives 12.5% of voters changed address details. There has historically been more female than male registered voters in South Africa, and 2009 was no exception with women at 54.9% and men at 45.1%.

In addition to the two voter registration drives and continuous registration through MEOs, the IEC targeted youth registration with visits to schools, colleges and universities. The IEC also conducted door-to-door visits when it became aware, on the advice of IEC local staff or MPLCs, of new settlements and population surges in specific areas. These visits served both voter registration and review of voting district purposes. Local government by-elections were also an opportunity for local updates of voters' rolls.

There were no readily evident significant reports from independent observers of problems with the 2008/2009 voter registration process. Problems were reported vis-à-vis incorrect voting station codes being used by some zip-zip machines and the abilities of some staff; however, registration was generally regarded as being faster than at earlier elections, and there were significant improvements compared to when zip-zip machines were first used in 1999. There were some complaints from opposition parties. For example: the IFP alleged that its supporters were being removed from the roll in areas of KwaZulu-Natal; and the UDM alleged that the Department of Home Affairs was withholding identity documents to deny its supporters the ability to register while giving identity documents to illegal immigrants. Evidence to support these allegations was not produced.

A large percentage of South Africans see registration as a relatively easy and quick process. HSRC data from its September/October 2008 survey (that is, soon before the first 2009 election registration drive) shows that 97% found it easy to register. For 45% of South Africans, registration took 10 minutes or less; however, for 16% it took longer than 30 minutes.[18] At this time 73% of respondents said they were registered to vote, and 89% of those registered were registered in the district in which they reside, while 12% had moved residence from another district in the past 18 months. The registration drives are obviously critical for picking up transfers of voters from one electoral district to another.

Use of zip-zip machines on voting day

Zip-zip machines were loaded with the national voters' roll and were used to scan the barcode stickers in voters' ID documents before voters entered voting stations, in order to assist in establishing a voter's eligibility to vote at a particular voting station. The printed advice from the zip-zip machine was not the legally required 'proof' of voting: voters still had to be marked off on the hard copy voters' roll.

While some problems were reported with the use of zip-zip machines on voting day, these were attributed more to poor staff capabilities than to malfunctions with the machines. There were reports of delays when manual eligibility checking had to be instituted due to voters' roll data being incorrectly loaded to the machines, when barcode readers did not work or when the zip-zip machine batteries failed. Quicker access to back-up machines may have averted

some delays. There were no readily evident reports of lack of ballot access or disenfranchisement due to the failure of zip-zip machines.

Two management or procedural issues that have drawn comment are the:

- apparent double handling – that is, voters have their IDs read by a zip-zip machine and are handed a receipt, but are directed to another staff member who marks them off on a hard copy register; and
- stand-alone nature of the zip-zip machines in each voting station. Some stakeholders have suggested linking the machines to a central database to protect against multiple voting. No data on suspected multiple voting levels has been offered in support of what would be a huge networking exercise (and there are much easier ways to influence election results and to protect against multiple voting).

Transparency of the process

Parties and CSOs were able to monitor the collection of data at field offices for voter registration. Provisional voters' rolls are continuously on public display at IEC offices and during registration drive periods (generally two weekends in the pre-election period) at voter registration centres. There are transparent procedures for appealing against omission from the voters' roll and for objecting to the inclusion of a person on the voters' roll.

The delays in processing address data to the roll and the omission of address data from the rolls used on voting day somewhat hinder the transparency of the process, while protecting privacy. MEOs are convenient but not necessarily the most public or well known of places to display the rolls. Objection procedures are seen by some, including political parties, as cumbersome; however, they are grounded in the IEC's philosophy of ensuring fullest protection of the right to vote.

Source code for the applications that collect, update and generate product for voters' roll data has not been made generally available for public scrutiny. The IEC advised that there had been no requests for access to this code. However, all IEC activities are subject to general annual audit and all intelligent character recognition applications are thoroughly vetted by a security audit. The IEC has made its results system code available for scrutiny by political parties but none have taken advantage of this to examine the code. Some opposition political parties are critical of the awarding of a tender for the supply of zip-zip machines and of the overall transparency of software used for electoral management. They are calling for direct party involvement in IEC equipment and system selection processes. While this is a cure worse than the perceived problem, it does indicate that the IEC should implement more proactive explanation and demonstration of the voters' roll data capturing and processing routines rather than waiting for parties to come to the IEC.

Understanding and acceptance by voters

Following the relative confusion at the 1999 elections, the improved operational effectiveness of the zip-zip machines has resulted in broad public acceptance. There are still pockets of opposition to the use of the green national ID document as the sole basis for voter registration.

Low use of the continuous registration facilities at MEOs may indicate a lack of awareness by voters of their availability, that municipal offices are relatively inaccessible to voters or a lack of motivation on the part of voters to register or change registration details until an election is imminent – often a more expensive manner of processing registrations. While the IEC has commissioned relatively regular research on many aspects of registration and voting processes, issues relevant to continuous registration have not yet been included.

CSO stakeholders reported cases of 16- and 17-year-olds who had registered to vote having turned up to vote, not understanding that they were not yet eligible. They believed this misunderstanding would act as a disincentive to these young voters participating in future elections.

Accessibility and provisions for voters with special needs

Voter registration is available continuously at all MEOs, the number of which in recent years has reduced significantly parallel to the reduction in the number of municipalities. While promoting the integrity of registration, the requirement to attend in person to register to vote or to alter registration details tends to limit the accessibility of continuous registration. Continuous registration is augmented by voter registration drives before each election, which are accessibly located in each voting station. Home visits to effect registration may also be made.

People with disabilities may request that a registration officer visit them at home in order to register to vote, and may also have any changes to their registration details submitted to a registration office by any other person who has a national ID document.

System products and uses

The voters' roll for an electoral district is in two parts: a list of voters who have applied for registration and have been registered and are eligible to vote in that electoral district; and a list of rejected applications, plus a summary of rejected applications. The list of rejected applications contains the names, ID numbers and reasons for rejection, which could include that the voter is deceased, has been deleted from the population register, is not a South African citizen, has been given a new ID number or is under age – that is, those who registered at age 16 who are not yet 18 years old and therefore eligible to vote.

Products from the voter registration system include the following:

- The voters' roll for use in voting stations on voting day contains data

on the province, municipality, voting district code and voting station name. It lists the last name, given names and identity number of voters, one per line.

- Provisional voters' rolls for display at all IEC offices and registration centres, according to the area covered by the office or centre.
- Between elections, voters' rolls are supplied to political parties. This is provided free but contains only the names and ID codes of voters.
- Pre-election voters' rolls are provided to political parties. These contain the names, ID codes and addresses of voters, but have not been updated with new and amended data from the pre-election registration drives. There is a charge of R5,000 (approximately US$655) for the national roll.

The voter registration products are used to:

- verify voter registration data;
- verify supporters for new party registration applications;
- verify addresses for candidate nominations;
- develop logistics and materials plans for voting day;
- verify eligibility to vote on voting day; and
- collate data (from zip-zip machines) for voter analysis.

Under some circumstances voter registration data can be used for defined purposes by the IEC on behalf of other institutions (see 'Transferability of data to other systems' below).

Quality assurance mechanisms

Internal quality control mechanisms regulate that all data captured is processed to the voters' roll and printed to the correct voting station roll, each of which has a unique number and barcode. The requirement for in-person registration limits opportunities for fraud. The major external quality assurance mechanism is the check of voter registration applications against National Population Register data to ensure that those who register are eligible to do so. The use of the green national ID document with its unique barcode is regarded as vital by the IEC for maintaining voters' roll quality. Attempts to register using illegal identity documents would be picked up so long as the unique barcode has not been entered corruptly into the Department of Home Affairs' system. There are no reliable estimates of the number of fraudulent national ID documents.

Transfers and duplicates are controlled by ensuring that there is only a single record for any ID number in the 'active' voters' roll, and this holds only the latest voter registration transactions. Any earlier registration records for an ID number are held in an archive file and maintained as an audit trail.

Deaths must be reported to the Department of Home Affairs: the IEC is not aware of significant problems with unreported deaths. (The UDM reported to the research team that this was a problem in rural areas). A body cannot be moved without a death certificate. Each month the voters' roll is compared to the list of deaths reported to Home Affairs, and voters advised by the department as dead are automatically deregistered with no IEC investigation. Any errors in Home Affairs' advice must first be remedied with that department before the IEC will make a reinstatement to the voters' roll.

Additional control mechanisms are provided by having the provisional voters' rolls on display for checking by voters. This is done continuously at MEOs and during voter registration drives at voter registration centres. Appeals against rejection of registrations and objections against persons registered provide further quality assurance. There is some criticism that the objection process is not effective: that due to a fear of potentially disenfranchising any person, it can be difficult to deregister voters who have claimed registration for an address where they do not reside.

There is no quality control on the validity of claimed addresses. There is no address base for voters' roll records, though the IEC does manage a sophisticated geographic information system (GIS). There are clear issues to solve in assessing the validity of addresses or in developing an address base for registration, particularly in relation to informal settlements, itinerants and the homeless – but these are worst case scenarios. The IEC favours enfranchisement over rigorous checking of address validity.

The IEC sees an advantage in relying heavily on the activities of external stakeholders – particularly the Department of Home Affairs – to assure the quality of voters' register data: these can be contentious issues that the IEC appears to be happy to leave to another organisation. For an EMB managing a separate voter registration process, the IEC seems to take a relatively inactive role in this important aspect of voters' roll maintenance.

Voter registration personnel

Local and external experts
Voter registration is currently managed within the personnel resources of the IEC. External technical advisors had voter registration within their assistance duties for the 1994 and 1999 national and provincial elections as well as for the 1995 local government elections.

Selection and training of registration personnel for fieldwork

Staff recruitment
The IEC selected over 59,000 people to staff registration centres for the

November 2008 and February 2009 registration drives. Registration centre chiefs must have at least eight years' administration experience: there is a preference for employing teachers in these positions and this assists access to the over 70% of registration centres at schools. The IEC must, however, employ a minimum of 25% of its temporary voting station and registration centre staff from the ranks of the unemployed: for the 2009 election this percentage was 69%. While this is a socially responsible policy, it has meant that the most qualified potential staff are not always employed and this has created some reliability, learning and diligence issues.

Registration staff cannot have been politically active for the past five years. Staff applicants are checked against all past nominations for candidacy for political office. They may be union members (which has created some disagreement with opposition parties as many teachers are members of the teachers' union, which is affiliated to the ANC) but cannot be a union office bearer.

All proposed appointments to presiding and deputy presiding officer positions are advised to the local MPLC, which has two weeks to object to an appointment.

Staff training
Staff training for registration centre staff focuses on:

- how to operate a zip-zip machine;
- how to read a map and locate voters' addresses in the correct voting district; and
- how to complete the manual voter registration form.

A single five-hour training session is held for all staff. A cascade process is used for the training – that is, IEC staff train 150 lead trainers, who then train 500 provincial level trainers (70-80 per province), who in turn train the almost 60,000 registration staff. Reserve staff are trained. In theory there is a maximum of 30 staff per training session but in practice it could be as high as 50.

There is one zip-zip machine available for every ten participants: a rather low ratio for full hands-on participation given the length of the training session. A training video is available but was used infrequently as it was difficult to access projection equipment and to train trainers how to use this equipment and the video. All participants were given a registration guide and registration diary (a task checklist to be completed each registration day).

At the end of training all trainees had to successfully complete a series of tests before they were accepted for employment. They had to:

- score at least 80% on a multiple choice questionnaire;
- correctly fill in the registration diary and a manual registration form;

- produce a 'parameter report' from a zip-zip machine; and
- complete a dummy voter registration.

After the registration drives were completed all registration centre staff were evaluated using an assessment tool developed for registration supervisors.

Observers at registration centres and voting stations noted that some staff did not appear to have retained knowledge from their one-off and at times late training session. They noted that there would be benefits in creating a database of a pool of experienced staff with whom the IEC kept in contact and provided cyclical training. They also suggested that there were experienced CSO trainers who could assist the IEC in training its registration staff.

Supervision and control structures

Staff at voter registration centres are directly responsible to the MEO in which they are located. MEOs in turn are responsible to the PEOs in each province. No major failures in control structures have been reported. Some stakeholders reported tension at MEOs between less experienced IEC staff and municipal staff under their direction. In their view, this had an adverse effect on response times to problems encountered during registration drives.

Role of information and communication technology

Collection of data

ICT-dependent systems are critical for the timely collection of registration data in the field. The use of zip-zip machines has become a widely accepted part of the electoral process despite an unsteady beginning in 1999 due to compressed timelines for developing a new voters' roll. The new zip-zip machines purchased in 2008 have more robust specifications and have proved reliable during registration and voting for the 2009 elections, with the IEC advising a less than 1% breakdown rate. With increased memory capacity, the ability of the new zip-zip machines to store the whole national voters' roll allowed for improvements in directing voters on voting day. However, a remaining weakness in the data collection process is the effective training of large numbers of staff.

Transmission of data

Registration data collected on zip-zip machines is downloaded via USB connection to PCs at MEOs. The data is then transmitted over the IEC wide-area network to IEC head office. No significant issues that could affect voters' roll quality vis-à-vis timeliness or communications system operation were reported at the 2009 elections. The IEC has steadily worked to augment both server capacity and, in cooperation with Telkom, communication capacities to all municipal offices through landline and bandwidth availability.

Processing of data

Data collected in the field for voter registration for the 2009 elections was processed centrally and verified centrally against National Population Register data. Voters' roll data was also matched to death advices from the National Population Register on a monthly basis.

The IEC maintains a central database for voter registration data as this is easier and less costly for it to support, maintain, control and secure: all IEC systems are standardised on a centralised architecture. Data backups are also implemented and stored centrally.

Voters' rolls for national elections are formatted in-house and sent to central contract printers for printing and packing to voting district level for distribution. Voters' rolls for by-elections are printed locally. All electoral maps are printed in-house.

Review and verification of data

Initial verification of eligibility of an applicant to register as a voter has been by automated checking against the National Population Register database. Provisional voters' rolls are continuously available for inspection at all IEC provincial and municipal offices for the segment of the roll covered by that office. Provisional voters' rolls for a voting district are available for inspection at the voter registration centres during voter registration drives.

Voters may also verify their registration details by texting their ID number, entering it into a form on the IEC website or telephoning the IEC information service. The texting registration checking service has proven popular given the large penetration of mobile phones in South African households: 490,342 enquiries were made using this service for the 2006 local government elections – the last election for which data has as yet been published.

If a registered voter finds an administrative error in her/his details on the provisional voters' roll, s/he can apply to the relevant MEO to have these details amended by that office. Appeals against a refusal to register or a deregistration can be lodged and determined centrally by the IEC, after investigation and consideration against National Population Register data. A person may lodge an objection against any voter's registration on the voters' roll – either on grounds of eligibility to be registered or entitlement to be registered for the voting district for which they are registered. These objections are also lodged and determined centrally. Lodging an objection on entitlement to be registered for a voting district is somewhat restricted in the pre-election period as address details for those who have registered during the registration drives is not available from the IEC.

Role of civic and voter education in the registration process

While voter education is a duty assigned to the IEC, it is seen as a collaborative effort between the IEC, civil society, the SABC and government departments.

THE
REGISTRATION PROCESS
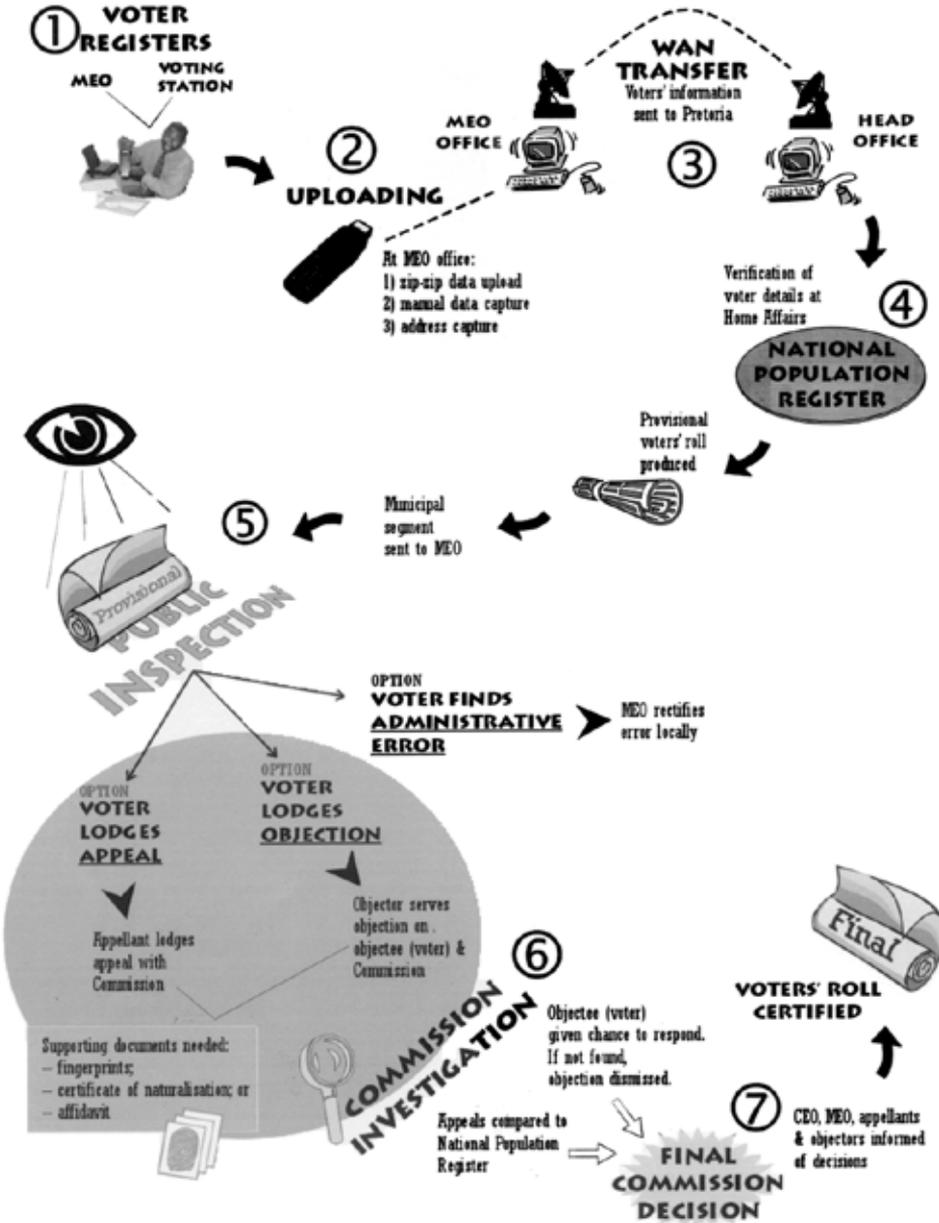
Public inspection and verification of data are an important part of the voter registration process.

The IEC's civic and voter education campaigns for voter registration for the 2009 election were focused on two objectives, namely to:

- raise general awareness of the voter registration process; and
- emphasise that no one can vote unless registered.

The IEC generally favours mass campaigns over geographically targeted campaigns, as the latter can lead to accusations of bias on the part of political parties. Targeted campaigns are, however, used particularly to motivate certain groups in society to register – for example, the youth and indigenous communities. An 'ID URSELF' campaign was implemented for the 2009 election, specifically targeting youth registration. This was a collaborative effort among the IEC, the departments of Education and Home Affairs, and the SABC. It targeted 16-year-old learners to have them apply for an ID document and to register to vote. A mass campaign was implemented in the four weeks before each registration drive.

Fifty CSOs were used by the IEC to assist with civic and voter education. This usually involved the distribution of IEC material, although some CSOs did develop their own material. While the IEC sees voter education as a collaborative process with its CSO partners, some CSOs tend to see the IEC as a very dominant partner, informing rather than consulting with them and often providing information late. There is also some disquiet among CSOs involved in election monitoring about accepting voter education funding through the IEC, whose work they may need to criticise.

The IEC employs a large contracted workforce to assist with voter education activities for voter registration and voting in the six to nine months before an election. For the 2009 election, 2,300 fieldworkers and 245 coordinators were trained to conduct workshops and distribute materials. The IEC intends building on what it sees as successful 2009 experiences for the 2010 local government elections in terms of both the campaign style and field delivery structure.

While much of the civic and voter education effort for voter registration is delivered through CSOs, the IEC also uses mass media. The SABC is required to undertake civic education activities: the IEC partners with it to produce television advertising and to include voter registration and other election themes in popular television dramas and sitcoms. The SABC's 'X for Democracy' website provides a wide range of voter education material and activities. SABC radio is used, as is community radio to a certain extent: however, the IEC acknowledges that more effective use could be made of this local information delivery opportunity. The IEC website contains significant information about the process of voter registration – although much of the website's content has not been updated since 2007, which may be a disincentive to browse for specific information. Both the website and texting service provide simple facilities for people to check their registration.

The IEC's emphasis on television and radio is supported by research showing that 57% of voters prefer to obtain information on the IEC through television, compared to 21% for radio and 8% for newspapers. Other means (posters or personal contact/meetings with IEC officials or CSOs) was preferred by some 5% of people. Actual information sources used were similarly skewed towards mass media: 65% of people usually receive information on IEC activities through television, 54% through radio and 47% from newspapers.[19] Voter education materials are produced in South Africa's major languages: the television shows are produced in six languages with subtitles; radio programming and information booklets are produced in the country's 11 official languages. Braille versions of some information materials are also produced.[20] However, website and texting access is in English only.

Publicly visible education activities for voter registration tend to be concentrated in the pre-election period: perhaps a contributing factor to the relative lack of activity generated by continuous registration. Survey data reinforces this perception. The (pre-voter registration drive) 2008 HSRC survey found that while 58% of South Africans are aware that the IEC conducts voter education, just 31% agreed that they had received information through IEC voter education campaigns.[21] Young people (18- to 24-year-olds) were both less likely to have received such information and less likely to be satisfied with it.

Donor funding is available for some voter education activities: for example, three million copies of a Government of Japan-funded general voter information booklet, including information on the voters' roll, were produced and distributed by the IEC after the voter registration cut-off date.

Role of different stakeholders in the registration process

CSOs and NGOs

CSOs provide a significant contribution to the information and monitoring aspects of voter registration in South Africa. HSRC 2008 survey data shows that less than 1% of people chose CSOs as their preferred channel for information about the IEC.[22]

The South African Civil Society Election Coalition – a national coalition of over 40 non-government and faith-based organisations coordinated by the South African Council of Churches – has operated since 1997 to implement voter education and election monitoring activities. It provided over 2,000 monitors for the voter registration drives in November 2008 and February 2009. The coalition recognises that a large gap in its voter education programming for voter registration is the lack of resources to conduct registration information activities between elections. While CSOs accepted funding through the IEC for voter education activities, some felt uneasy about balancing this against their role as potentially critical observers of the IEC's performance of its elections duties.

Political parties

Political parties have generally played an active role in monitoring the registration process and in mobilising their supporters to register to vote and to check that their registrations have been recorded correctly. Some mass registration awareness advertising is undertaken using posters, and local meetings are held through party structures at the electoral district level. Much of it targets in a sophisticated manner potential areas of party support through methods such as texting, telephoning and print media.

Some CSO representatives believe that the IEC is yet to tap the full potential of political parties in assisting it to raise electoral awareness. As the South African political party system has matured and the difference between information and campaigning activities has been established, there is more room for the IEC to coordinate with the parties as full partners in raising public awareness about important issues such as voter registration.

The formal liaison mechanism between the IEC and political parties – the MPLCs at all administrative levels – is generally regarded as a success in the history of South African electoral administration, assisting in information sharing, coordination and dispute resolution. However, some opposition parties feel strongly that communication through the MPLCs is too one directional (from the IEC) and that more notice should be taken of parties' input. These parties also tend to promote the concept of political nominees to and control of the EMB, which is now generally regarded as an inappropriate model for mature electoral management.

Donors

The IEC met with potential donors in November 2008 to identify and explain its assistance needs for the 2009 elections. Donors played no role in funding IEC activities and did not provide direct assistance to the IEC specifically for the voter registration process for the 22 April 2009 elections. Some funding was provided for general civic and voter education materials, which included messages explaining the concept of voter registration and the voters' roll. For example, the Government of Japan provided R3.3 million (around US$335,000) for coordinated development, production and distribution through the IEC of a pamphlet published in South Africa's 11 languages. However, the pamphlet had no impact on voter registration as it was not distributed until March 2008 – well after the 12 February 2009 cut-off date for voter registration for the election. Other small amounts of donor assistance were provided for radio broadcast voter education messages. Such arrangements were made bilaterally, with only informal coordination between the various donors.

Significantly more monetary and technical assistance was provided for earlier elections. Assistance to the IEC has dropped significantly from R24.2 million for the 1994 elections to R6.6 million for the 2004 elections.[23] This is because of

growing international confidence in the ability of the IEC to administer elections and in the stability of the South African political environment.

Post-election use

System updates
System updates for the voter registration system are distributed to IEC offices at provincial and municipal levels using CDs and plug-and-play mechanisms.

Updating of the data
As the IEC runs a continuous voter registration system, voter data can be updated at any time during the electoral cycle before the cut-off date for the voters' roll for an election. Registration campaigns are also held for local by-elections and local government elections in between national elections.

One major updating process is the keying in of address data into the voters' roll database. As this data is not required to be published on the voters' roll used for elections, its processing is not accorded high priority. All data on address and other details from persons who amended their registrations or completed a new registration during the registration drives prior to the April 2009 election is expected to be entered into the voter registration system by October 2009. While the IEC is not concerned by this delay – and some uneasiness with providing complete voter details on privacy grounds – the delay potentially affects the integrity of the voters' roll and inhibits the abilities and rights of political parties for campaigning.

Transferability of data to other systems
There is limited transferability of voter registration data to other systems. Internally it is used for election management system purposes, such as logistics and candidate nominations. The data captured by the zip-zip machines during registration and voting is useful and used by the IEC for research and outreach improvement.

Transferability of data to other organisations or government departments is strictly controlled on privacy grounds. Aggregate voter registration data goes to the Department of Local Government to determine the formulae for the number of local councils, then to the provinces to determine the number of local councillors, and then to demarcation boards for ward demarcation purposes.

Protection of voter privacy is an important principle for the IEC. There are strong penalties for the use of voters' roll data provided to political parties for anything other than election purposes. Organisations, including the police, wanting to update address records to which payments are to be mailed make requests to the IEC for data on specific voters. If granted, the IEC will do the research internally and advise the persons who are being sought of the contact

details of the organisation seeking them. A small administration fee is charged for this service.

Capacity building and technological knowledge transfer to the IEC

Through appropriate staff appointments and internal training policies, the IEC has developed the technical knowledge to operate and manage the development of its IT-based voter registration system.

However for earlier elections, particularly the 1994 and 1999 national and provincial elections and the 1995 local government elections, there was considerable reliance on external contractors and technical advisors to develop voter registration systems and procedures.

Voter registry and civil registry

While there are strong links between the population registry managed by the Department of Home Affairs and the voters' roll managed by the IEC, they are run as two totally separate sets of data. Applicants for registration must have the green barcoded national ID document issued by the Department of Home Affairs population registry. Possession of this document is also a prerequisite for sitting school matriculation exams. HSRC survey research conducted for the IEC in 2006 and published in 2008 showed that 96.3% of people stated they had this document. A higher proportion of 18- to 24-year-olds (10.6%) stated that they did not have the document. Over 90% of those who did not have the ID document said they would apply for one.[24]

The IEC depends on the population register authorities to validate the identity of each applicant for voter registration. The voters' roll takes data on applicants' full names and status from the National Population Register.

The IEC is notified of deaths by the population registry and these individuals are automatically deregistered. If a voter is mistakenly identified as deceased on the National Population Register and thus removed from the voters' roll, the voter must provide a set of fingerprints to the Department of Home Affairs and an affidavit attesting his/her status to the IEC. The voter must first convince the Department of Home Affairs to change its population registry records before the IEC will correct the details on the voters' roll. Similarly, if a voter is mistakenly removed from the roll as a non-South African citizen, the voter must first present the Department of Home Affairs with proof of citizenship and have details corrected on the National Population Register before s/he can be reinstated to the active voters' roll.

There are no plans to merge the two operations: the IEC jealously guards its independence in all electoral matters. There is a philosophical line drawn by some senior IEC officials between a civil register and a voters' register. Some IEC officials feel strongly that citizens have the right to choose whether or not they want to be registered to vote. There are also some compelling practical

considerations. The IEC is required to register voters in the district in which they are currently registered. The National Population Register, however, is concerned solely with identity: it does not have the intent or capacity to track changes of residential address. Also, whether by accident or design, false and duplicate identity documents do get issued, and these might be culled through a separate voter registration process. There have also been allegations of corruption in population registration from which the IEC would prefer to be distanced if it is to maintain its reputation for total integrity.

ANALYSIS, EVALUATION AND RECOMMENDATIONS

Effectiveness of the system

While the public and political parties were initially sceptical of the change to the barcode-based registration system – a scepticism reinforced by problems with its initial use at the 1999 elections – the system has, however, since proven its reliability and accuracy. There is no current dispute about the generally high accuracy of system records, and most political parties regard the system as being free of political interference – although there have been recent but unsubstantiated complaints on this issue in particular geographic areas.

The zip-zip system coupled to the National Population Register has:

- been relatively robust, with an effective equipment lifespan longer than anticipated;
- provided reliable data for election logistics;
- provided opportunities for continuous updating of the voters' roll;
- provided better than initially expected coverage of the electorate;
- provided a voter registration and voting eligibility and data collection mechanism in an easy to use, portable package;
- been specifically designed and assembled domestically for locally specified needs at a relatively low cost;
- provided a relatively low workload solution for the IEC for maintaining the voters' roll in relation to voter eligibility, transfers and removals of deceased voters; and
- provided research data on voting patterns.

There are some areas where the system could be more effective; for example, with regard to the training of registration staff. Completeness of the voters' roll has remained relatively static since 1999, with estimates of coverage of estimated eligible voters remaining around 80%. While this percentage is regarded as satisfactory, it is lower than in some other countries in the Southern African Development Community region.[25]

Although the IEC operates a continuous registration system, relatively few voters seem to take advantage of it. For the 2009 election, 34.8% of registered voters used the registration drive periods to effect or amend their registration.

While care should be taken in using international comparisons as no two election administrative systems or environments are the same, a rough comparison of continuous voter registration regimes could be made with the 'close of rolls' period in Australia. In this system, those who had not registered or updated their details had the opportunity to do so in a one-week period after the proclamation of the election (legislation was, however, changed prior to the 2007 election). At the 2004 Australian election, 3.3% of registered voters newly registered or amended their registration during this period.[26]

This very wide disparity could suggest that more effective use could be made of continuous registration. CSOs described MEOs as 'not prominent', and they also identified a need to increase the level of voter and civic education between elections. However, external factors certainly impacted on the higher than expected number of new voters registering during registration drives in 2008. These factors included recent changes in the South African political environment with the emergence of a new party (COPE) and the mobilisation of pro- and anti-Jacob Zuma forces in the ANC changing the dynamic of political contestation and interest in governance; many also believe that an 'Obama effect' motivated young people to register to vote.

One challenge to the effectiveness of voter registration noted often by stakeholders is not so much a challenge to voter registration but to logistics planning for voting processes. This is the issue of 'out of district' voting under S24a of the Electoral Act. Unexpected large numbers of out of district voters caused delays and in some cases ballot paper shortages at the 2009 election, and there have been calls for the removal of this facility. Many countries implement out of district voting facilities in order to promote accessibility for voting: but most of these countries have systems for predicting or controlling volume at voting stations and for maintaining election integrity. The IEC's administrative maturity is such that managing a relatively complex out of district voting process is well within its capacities – and it fits with the IEC's zealous protection of the franchise.

The IEC has had to deal with balancing the cost of technology against the cost of increasing the physical accessibility of registration points. There were reports of some voters having to walk long distances to register before the 2004 election. The number of registration points/voting stations for the 2009 election registration drives was therefore increased from 16,966 to 19,726.

Quality of data

The voter registration data captured for the 2009 election appears to have been of good overall quality. Some complaints were made about political bias in removals

from the voters' roll and of withholding national ID documents for political reasons, but no substantive evidence has been presented to support these claims. The system now appears to be running relatively smoothly to ensure that the information provided by applicants is translated accurately to a voters' roll entry for the voting district for which the applicant/existing voter is registering. The IEC regularly commissions survey work on voter registration issues, including whether respondents are registered and, if so, for their residential address.

A potential data quality weakness is in the system's total reliance on National Population Register data for validity checks. While this is a low workload, low-cost solution for the IEC, it abrogates some IEC responsibility for maintaining an accurate voters' roll. Some stakeholders were less than positive about the probity and efficiency of National Population Register operations. If identity documents have been issued illegally or deaths notified incorrectly, there is no independent check before the relevant names are added or removed from the voters' roll. There is also concern among some political parties and CSOs that deaths are not always notified or removed from the National Population Register. The actual impact of this weakness on the roll could not be quantified by those who identified it: guesses were in the 1% range.

The voter registration system is required to register voters for the address at which they are ordinarily resident so they can be allocated to the correct electoral district/voting station. While a voter's identity and eligibility to register are checked against the National Population Register, no proof of residential address is required nor is there any check of an applicant's claim to be residing at a certain address or in a certain voting district. The IEC relies on persons to lodge objections to identify any registrations for invalid or incorrect addresses. This is difficult to sustain as the objector not only has to show that a voter does not ordinarily reside at the address for which s/he is registered, but this voter also has to be located.

Data from an HSRC survey conducted for the IEC in September/October 2008, prior to the two registration drives for the 2009 elections, shows that 89% of registered voters stated that they were resident in the electoral district in which they were registered, with this percentage dropping as low as 76% in the Free State Province.[27] There may well be some reasons for this: first, the data is pre-registration drives, when many addresses would be updated; second, for ease of voting access some live-in staff may have registered at the home address at which they are employed rather than at their own home address – in itself a distortion of representation. Anecdotal evidence from interviews conducted for this case study pointed to individual cases where voters had moved to a different province years ago but maintained registration at their old address and returned there to vote in order to 'assist their party'.

While objection processes are available for a person to object to the registration of voters s/he believes are registered for addresses at which they are

not resident, these do not effectively target a large proportion of those voters on the roll. Since address data is not legally required to be shown on the voters' rolls used for an election, the IEC does not regard its data capture as a high priority. Data on addresses of those who newly register or change address details during the pre-election registration drives is therefore not fully processed until some months after election day. This new data is not included in the voters' rolls provided pre-election to political parties and no address data is shown on the voters' rolls for the election. Thus there is no practical opportunity for external checking of the geographic entitlement claims of new and electoral district change registrations until well after voting day: this group comprised 7,562,643 voters for the 2009 election – that is, 32.6% of the total voters registered for the election.

For national elections where the smallest electoral unit is a province, it is unlikely that voters registering for an address at which they do not reside would have a significant effect on election results. However, for local government elections in a compensatory system in part conducted on a ward basis and electing individual candidates from relatively small numbers of voters, there is the possibility that registering for an address other than that for which the voter is entitled to register may influence which candidates are elected, if not the overall party strengths. Whatever the current reality of the extent of voters registered deliberately in the wrong voting district, the lack of opportunity to test fully the integrity of address data on the voters' roll provides opportunity for political manipulation and dispute.

Since 1999 external observers and commentators have recognised this as an issue that affects the quality of the voters' roll.[28] It is an issue that requires further serious consideration and perhaps legal reform to require all voters' addresses to be processed to the voters' roll and available for public inspection well in advance of the closure of rolls for an election.

Expectations versus outcome

When the national common voters' roll was set up in 1998 using the first zip-zip machines to capture data, expectations were that the system would:

- be a fast and accurate way to process data captured in multiple field locations;
- use computerised data capture as far as possible;
- be a system that was easy for voters to use and easy to train large numbers of staff to operate;
- be widely acceptable and promote stakeholder confidence;
- be reliably effective in the range of conditions in South Africa;
- create a sustainable registration system for the longer term;
- produce a voters' roll of high integrity; and
- be able to be fully supported technically within South Africa.

There were problems with the initial use of the system for the 1999 elections: however, for the 2004 elections – and subsequently with the introduction of the second generation zip-zip machines for the 2009 elections – these expectations have been substantially met.

Lessons learned

Some major successes and lessons that can be derived from the introduction of the barcode-based system in South Africa have broad applicability for voter registration systems in general. Part of the success is due to the ethos developed within the IEC of professionalism and integrity that builds public trust and respect for the institution in general. This is something that can depend as much on leadership and a favourable political environment, as on learning. It is an ethos that has to be careful not to veer towards over-confidence based on past successes.

❑ *Ensure sufficient time for registration system implementation before the next election.* The implementation of the new registration methodology and system in 1999 was always going to be difficult given the time available and the magnitude of the task. When the system was renewed for the 2009 election, the IEC made sure that there was sufficient time – that is, 19 months from the initiation of the process.

❑ *Look for a domestic solution that fits local circumstances.* The IEC was careful to specify the development of a locally appropriate solution (for implementation and maintenance), rather than adopting a system that had been used in other environments. It was also careful to test the proposed systems rigorously before contracting any supplier. The adopted solution was a clever design concept of rugged, highly portable equipment that could be used both for voter registration and as a control and information system for voting.

❑ *Don't just review, implement lessons learned.* Following instances of poor implementation at the 1999 election there were widespread calls for the use of the zip-zip machines to be reviewed or abandoned. The IEC reviewed what had gone wrong, managed solutions to the major problems and persevered with the system it believed was the best option for South African conditions, rather than being pressured into going down a different track. When it came to replacing equipment, revised specifications dealt with problems that had been encountered.

❑ *Public perceptions of integrity in election management are essential.* The levels of public trust in the IEC and its efforts in communicating with major

stakeholders through formal structures such as the MPLCs and the Media Forum give it authority and general acceptance of its errors as errors, rather than manipulations.

❑ *Secure, store and maintain equipment carefully.* The zip-zip machines bought in 1998 were expected to last five years; they lasted ten, providing good value for the investment in the equipment.

❑ *Maintain EMB control of registration but build external partnerships to leverage resources.* The IEC, with government backing, has been able to forge successful partnerships with the Department of Home Affairs for voter registration validity checking, and with the SABC and CSO sector for voter education to support the voter registration programme.

❑ *Ensure that the system is sustainable.* In both internal technical and financial capacities, the IEC has developed sufficient self-reliance to ensure continued sustainability of the voter registration system.

❑ *Training, training, training.* The 2009 election is the fifth the IEC has run using zip-zip machines and associated procedures for registration data collection. It is the fifth election where there has been comment about registration staff being unsure of their tasks. While skills have improved, there is room to review current recruitment and training methodologies.

❑ *What to do with continuous registration?* Views in South Africa on the success and appropriateness of continuous registration are mixed, even though this form of registration has strong expert support as a relatively low-cost method. Some CSOs praise it for the access it provides; the IEC counts the resources it consumes for a relatively small outcome. The large turnout at voter registration drives indicates that continuous registration is not currently effective at picking up the bulk of new and amended registrations. But it is difficult to expect it to be effective unless the right mix of resources is put into it: continuous registration would require continuous motivation of the population through voter education and a substantial data-sharing component, and should be conducted in a noticeably prominent manner.

Cost-benefit analysis of voter registration

The specific voter registration budget allocation for the 2009 election was R200 million, though it is not clear how much of the full attributable costs of continuous registration this covered. Costs of the new zip-zip machines purchased for this

election were R160 million. These machines are likely to last as long as their predecessors – ten years and four national elections. Ignoring their use at by-elections, this gives a rough straight line cost of around R40 million per election. A voter registration operation plus equipment cost of R240 million for the 2009 election is equivalent to around R10.35 (US$1.35) per voter. This is a relatively low figure for a sophisticated operation, and would to an extent reflect the economies to the IEC from having biometric information capture and proof of eligibility to vote document production paid for through the civil registration system.

On combined longevity and registration data capture accuracy grounds alone, the zip-zip machines and their support system appear to have been a good investment – without considering added benefits such as the uses of zip-zip machines in the voting process.

Stakeholder satisfaction

Stakeholders' views of the voter registration process are in general positive. A small minority are critical of the IEC's attitude toward stakeholders (insufficiently consultative) and of the integrity of the voter registration system. The problems generally are not problems with the overall integrity of the system or its basic methodology, but are rather specific issues that are found to be annoying. Stakeholders in general feel that voter registration would be improved if the IEC considered a more continuous training regime for staff and continuous voter education. They are concerned about potential lapses in voters' roll integrity related to the treatment of deceased voters.

There is a strong feeling among some stakeholders that the IEC is too ready to rely on legalistic argument rather than be innovative: that is sticks to what it must do rather than to what it could do as an excuse not to increase its workload or provide additional services. While the IEC maintains strict adherence to the law, some believe it could assist innovation by supporting changes to laws. Some specific issues in this regard are the requirement for personal attendance for any voters' register transaction, and the unavailability of up-to-date address data on the voter registers distributed to political parties prior to an election.

Influence of external stakeholders on the process

The IEC has jealously guarded its independence, and its decisions regarding the voter registration process are no exception. The zip-zip machine concept was developed totally in-house and was fleshed out in 1997/98 with the assistance of local ICT consultants.

The MPLCs have provided a forum for political parties to communicate their views to the IEC on a range of issues including the voter registration system. But political party and CSO representatives interviewed did not believe they could have any significant influence on the registration process, and identified a number of issues they would want to see changed.

Sustainability of the system

The voter registration system has been developed so as to be sustainable within the resources of the IEC. IEC staff manage the system and control any local contractors required for specialist maintenance or development tasks. Operational procedure and training programmes are under the control of IEC staff. Financially, one replacement iteration for the zip-zip equipment has already been concluded from IEC budget funds. As with other South African government entities, the IEC is required to budget for asset acquisitions and disposals as part of its medium-term budget cycle: replacement equipment needs to be identified two years in advance. Depreciation reserves are also mandatory.

Future developments

While the current system is regarded as generally effective, a number of improvements have been suggested or could be considered: some are procedural and others would require legislative change.

Currently all applications for registration or amending registration details must be made by attending an IEC office in person. This is seen as a critical defence against fraud, but it does limit accessibility and the effectiveness of operating a continuous registration system. There is an argument that once initial registration is validated, later amendments need not be made in person. The IEC is considering the possibility of internet-based amendment transactions using a secure key issued to each voter. The IEC is also considering scanning all voter registration application forms using imaging software on scanners already available in MEOs, and linking these images through ID numbers to the voter registration system.

If all registration application forms were imaged, mailed or faxed amendments could be possible. Matches could be made on signatures (or fingerprints – though this would be a complex and expensive task): however, this would involve the IEC in data assessment issues, which it has so far largely left to the National Population Register. Even for initial registration, some countries manage high-integrity voter registration systems that do not require personal attendance for registration. Cost-benefit as well as integrity issues need to be considered: what proportion and what sectors of the population would be advantaged by extending registration methods to, say, internet, fax or mail?

There have been requests to allow identity documents other than the green barcoded national ID document as proof of eligibility to register. It is argued that other high-integrity identity documents could equally be used, such as driver's licences or passports. It is not clear how much practical difference this would make: HSRC survey research in 2008 showed that 98% of the eligible population had the barcoded national ID book.[29] Eligibility checking would be made significantly more complex for the IEC if one was to remove the requirement for a single barcoded source to support registration.

Information efficiencies could be made by networking the zip-zip machines on-line to the central voters' roll. If there is sufficient reliability and capacity, this could be used on voting day to automatically mark voters as having voted, thereby streamlining the voting process. Some stakeholders also see that this could identify and prevent attempts at multiple voting, though in practice it is not clear how this would give any additional protection as the 'eligible to vote' segment of the voters' roll only allows one registration per national ID number. It would ensure that only those on the 'eligible to vote' section of the voters' roll voted.

Linking registration centres could also provide benefits, especially if instantaneous checking to the National Population Register database could be achieved, thereby giving applicants immediate confirmation of their registration. At present the IEC sees bandwidth and communication problems in linking all 19,000 plus voting stations/registration centres, though with improvements in wireless technology it may be possible to link those in urban areas.

The zip-zip machines purchased in 2008 have a smart card reader port in anticipation of a future move by the Department of Home Affairs to a smart card identity document.

The IEC at present plays a relatively passive role in the continuous voter registration process, which has worked fairly smoothly. However a supposed key advantage of continuous registration is that it serves to reduce pre-election peaks in registration workloads. The IEC has not been so successful in this respect.

The IEC relies heavily on others: for example, it relies on the National Population Register crosschecks for validation of registration applications and on the objection process to identify ineligible persons on the voters' roll. It does not lodge objections itself. While it does actively pursue the registration of 16-year-olds and registrations in new settlements, it otherwise relies on people attending periodic pre-election registration drives to generate the bulk of roll transactions. Given the low volume of voters who make use of continuous registration, questions have been raised as to whether it is an effective use of IEC resources.

A more active role by the IEC may stimulate greater use of the continuous registration service and provide effective use of IEC field staff time. More continuous voter education campaigns and relaxing the requirement for personal attendance have already been noted. Some other measures that could be considered and potentially piloted are the following:

- Integrating provision of information for voter registration with other municipal (or government) service transactions.
- Entering into agency arrangements to increase the number of registration points (as was done in the Western Cape using libraries).
- More flexible and mobile staffing arrangements for MEOs. The zip-

zip machines eliminate any need for officials to be confined to an office.
- Acquiring information from other government or commercial entities that the IEC could follow up to verify voters' residential address details and identify potential new registrants.
- Developing further links between registration data and GIS data.

The financial, training, accountability and information privacy issues of such actions would need to be carefully considered. Additionally, continuous registration activities are much harder for political parties and CSOs to observe: to rely heavily on continuous registration requires a high degree of trust in the integrity of electoral administration.

No matter how proactive an EMB is in maintaining the accuracy of a permanent voters' roll, there will be a tendency for the overall accuracy of the information to degrade over time. This requires constant monitoring through comparison with population and land use data. The removal of all voters who are deceased and the identification of all voters who have moved to a different electoral district can be particular problems. In the longer term there may be a need for the IEC to consider targeted or nationwide roll cleaning exercises through 're-registration' drives. However, the potential political reactions to any registration or re-registration targeting – no matter how administratively effective – need to be carefully considered.

NOTES

1   Information for this section draws heavily on the CIA Factbook South Africa. Available at https://www.cia.gov/library/publications/the-world-factbook/geos/sf.html.
2   Commonwealth Secretariat, 'The National and Provincial Elections in South Africa, 2 June 1999'. Report of the Commonwealth Observer Group, pp 39-41.
3   For example, statements made by the EISA observer missions to the 2004 and 2009 elections.
4   Constitution of the Republic of South Africa, 1996, Section 46. Available at http://www.info.gov.za/documents/constitution/1996/96cons4.htm#46 [accessed 20 August 2009].
5   ETT, 'Report of the Electoral Task Team'. Cape Town: Government Printer, January 2003, p 5.
6   The other Chapter 9 institutions are: the Public Protector, the Human Rights Commission, the Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities, the Gender Equality Commission, the Auditor General and the Independent Authority to Regulate Broadcasting.
7   Davids YD, Kivilu JM, Ndletyana M, Sedumedi S, Diko MD, Sehume T, Mmotlane R & Winnaar L, *IEC Voter Participation Survey Report 2008*. (Commissioned by the Independent Electoral Commission). Pretoria: HSRC, March 2009, slide 51.
8   Gulati A, *The End of the Beginning: An Evaluation of the November 1995 South African Local Government Elections*, volume 2. Johannesburg: Community Elections Evaluation Group, 1996, p 58.
9   Commonwealth Secretariat, op cit, p 40.
10 Ibid, p16

11   Moepya M, 'Voter Registration Case Study'. Johannesburg: IEC, 2007.

12   'IEC to spend R25 million on poll scanners', *The Post*, 23 March 2009. Available at http://www.thepost.co.za/?fSectionId=&fArticleId=vn20090323062109647C419954.

13   Significantly more voter registration stations were used in 2009 than in 2004, when there were some media reports of voters having to walk long distances to register.

14   Comparisons to census data are not precise as census data includes non citizens.

17   David et al, op cit, March 2009, p 21.

18   Ibid. Note, however, that on this issue respondents were being asked to recall the time taken for an event that for most would have taken place close to four years previously.

19   Ibid, p 39.

20   The IEC believes that only around 3% of visually impaired South Africans read Braille.

21   Davids et al, op cit, pp 51-52.

22   Ibid, p 39.

23   Piper L (ed), *South Africa's 2004 Election, The Quest for Democratic Consolidation*. EISA Research Report No 12, 2005, p 91.

24   Kivilu JM & Langtry S, *Identity Documents and Registration to Vote*. (Prepared for the Independent Electoral Commission). Pretoria: HSRC, 2005, p 5. Sample size was 4,930, so sampling error for total aggregate data should be around 1.4%.

25   For example Malawi, with over 90%

26   Australian Electoral Commission, 'Behind the Scenes, 2004 Election Report'. Canberra: Australian Electoral Commission, 2004.

27   Davids et al, op cit, slide 10; Kivilu & Langtry, op cit.

28   For example, Commonwealth Secretariat, op cit, p 39.

29   Davids et al, op cit, p 19.

APPENDIX 1

Companies providing voter registration-related technological solutions and equipment

The following is a list of vendors mentioned in this publication as well as some other leading suppliers in the voter registration market. This is not a comprehensive list of all existing companies but serves rather as an overview for the reader.

Company name	Website address	Other information
Acuo	http://acuo.co.za	South African-based
Brand New Technologies	http://www.bntech.co.za	South African-based
DRS	http://www.drs.co.uk	UK-based, scanners were used for voter registration in Malawi, Ghana and Liberia
De La Rue	http://www.delarue.com	UK-based
East Shore Technologies	http://www.east-shore.com	US-based, AFIS search matching algorithmic software supplier and provider of fingerprint identification search/authentication systems
ICT Globe	http://www.ictglobe.com/ICTGlobe.swf	Nigeria: voters' roll using AFIS fingerprint verification
International Biometric Group	http://www.biometricgroup.com/a_bio1/vendor/cic.htm	IBG provides independent biometrics research and reports, technology and system design, deployment strategies, and testing services to government and corporate clients
Face Technology	http://www.face.co.za	South African-based
Fraunhofer IIS	http://www.fraunhofer.de/english/SEZAM	Germany, information on face and voice recognition
FutureCom		Sierra Leone based, IT consultants and suppliers, Liberia case study
Innovatrics	http://www.innovatrics.com	France
Sagem, renamed Morpho	http://www.morpho.com	South Africa, Senegal and DRC case studies
Synapsys	http://www.synapsys.co.za/index.html	South African-based
Sygma Technology		Senegal-based, in charge of the maintenance of De La Rue software programme
Verifinger SDK	http://www.neurotechnology.com/verifinger.html	Provides information about fingerprint recognition
Zetes	http://www.zetes.com	Pan European company, DRC case study

APPENDIX 2

Interviews conducted in the DRC, 20-24 July 2009

EMB	Title	Name
Independent Electoral Commission (CEI)	President	Rev. Fr Abbe Apollinaire Muholongu Malu Malu
	Director of Operations	Flavien Misoni Mbayahe
	National Coordinator of Field Technical Operations	Pasteur Crispin Kayembe Kunganga
	Communication Expert	Desire Molekela Ebene
National Processing Centre (CNT)	All ICT staff Local and external technical experts	
PACE	Operations Manager – Electoral Support	Ago Christian Kodia
Registration centres in Kinshasa	CEI staff, Representatives of internal missions and development partners	
CSOs/ NGOs / institutes		
Peace and Justice Commission	Chairperson	Sister Marie Bernadette
National Institute for Statistics	All heads of sections and departments	
Zetes	Representative	Poly Stephens
Linelit	President	Jerome Bonso
Renosec	National executives	
Racoj	National Coordinator	Tresor Kasia Kitom
Donor agencies		
Canadian Embassy	Representative	Simon Dinkala
Belgium Embassy	A representative of mission	
Political parties		
RCDN	Secretary General	Moise Moni Dela Idi
UDPS	Party executives	
PPRD	Executive Secretary	
Media		
Union Nationale De La Presse Du Congo	Presidente Du Comite Directeur	Chantal Kanyimbo

Interviews conducted in Ghana, 29 Aug-5 Sept 2009

EMB	Title	Name
Electoral Commission of Ghana	Chairman	Dr Kwado Afari-Gyan
	Deputy Chairman Finance and Administration	David Adeenze-Kangah
	Director of Information Technology	Hubert Akumiah
	Director of Research, Monitoring and Evaluation	Amadu Sulley
	Director of Training	Charles O Addei
	Director of Human Resources	Samuel Yorke Aidoo
	Director of Finance	Isaac K Boateng
	Acting Director of Publics Affairs	Christian Owusu-Parry
	Director of Elections	Albert Kofi Arhing
Government institutions		
NID	Information Officer	Bertha S.Y. Dzebele
International development partners		
UNDP Ghana	Deputy Resident Representative	Shigeki Komatsubara
	Governance Programme Analyst	Eric A Opoku
Delegation of the European Commission in Ghana	Governance and Civil Society	Daria Fané
	Programme Officer Governance and Decentralisation	Sara Piccoli
Royal Danish Embassy	Counsellor	Vibeke Gram Mortensen
CIDA	Senior Governance Advisor	Cheryl Gopaul
Political parties		
NPP	National Chairman	Peter Mac Manu
NDC	National Treasurer	Margaret Clarke Kwesie
CSOs / NGOs / institutes		
Coalition of Domestic Observers	Co-chair (former electoral commissioner and Supreme Court judge)	Professor VCRAC Crabbe
	Senior Programs Officer	John Larvie

National Association of the Disabled	National President	Joseph Adu-Boampong
	National Administrator	Godsend Sarpong
	National Financial Secretary	Akuamoah Kofi Elias
Commercial sector		
KAB Governance Consult	Chief Executive Officer	Kwasi Afriyie-Badu
Bsystems	Chief Financial Officer	Frank K. Poku
	Database Administrator	Aidan Sangber-Dery
Media		
Joy FM		Kojo Oppong Nkrumah
Graphic Communications Group Ltd	General Manager, Newspaper	Yaw Boadu-Ayeboafo

Interviews conducted in Liberia, June 2010

EMB	**Title**	**Name**
NEC	Chairman	James M Fromayan
	Co-Chairman	Elizabeth J Nelson
	Executive Director	John K Langley
	Commissioner, Logistics and Security	Ansumana J Kromah
	Director: Training & Procedures	James SB Wallace
	Director: Civic & Voter Education	Samuel B Cole
	Deputy Executive Director: Operations	Ernest Kruah
	IT Officer	Matthew Kollie
CSOs/ NGOs/ institutes		
Liberia Democratic Institute	Executive Director	Dan T Saryee
Swedish International Development Agency		Peter Svensson
Liberia Democracy Watch	Executive Director	George Wah Williams
NDI	Senior Programme Officer	Thomas DU
Liberia Democratic Institute		Dan Saryea

Donor agencies	Title	Name
EU	Officer in Charge	Jeremy Tunnacliffe
	Project Manager	Anna Havala
IFES	Acting Country Director	Jared Hays
	Senior Voter Registration Advisor	Shalva Kipshidze
	Logistics and Operations Specialist	Max A Campos
UNMIL	Senior Political Affairs Officer	Deborah Schein
UNDP	Assistant Resident Representative – Governance	Nessie Golakai
	Senior Special Advisor	Baffour Agyeman Duah
Media		
Sky Communication Inc./ SKY FM	President/CEO	Martin N Browne

Interviews conducted in Malawi, Blantyre (B) and Lilongwe (L), 27-31 July 2009

EMB	Title	Name
MEC (B)	Chairperson	Hon. Justice A S E Msosa
MEC (B)	Electoral Commissioner	Jane Nakwenya
MEC (B)	Electoral Commissioner	Dick Mzumara
MEC (B)	Electoral Commissioner	Georgina Chikoko
Secretariat (B)	Chief Elections Officer	David Bandawe
	Deputy CEO Operations	Harris Potani
	Deputy CEO Finance and Admin	Lellie Longwe
	Head of Department, Electoral Services	Hensley Munkhondya
	Head of Department, Civic and Voter Education	Thandie Nkovole
	Head of Department, Information and Communications Technology	Muhabi Chisi
	Head of Department, Procurement	G O Chitsonga
	Head of Department, Media and Public Relations	Fergus Lipenga

Governmental bodies	Title	Name
Malawi Research Group Population Studies Centre (B)	Research Director	Peter Flemming
CSOs / NGOs / institutes		
NICE (B)		Jeff Kabondo
ESN (B)	Chairperson	Aloisious A C Nthenda
UN organisations		
UNDP (B)	Senior Election Advisor Operations and Logistics Advisor	Frank Vassallo Max Campos
UN Evaluation Team (B)	Team Member	Miguel de Brito
Donor agencies		
DFID – Malawi (L)	Governance Advisor Team Leader	Charlotte Duncan Thokozile Chisala
Irish Aid (L)		Padraig Quingley
Political parties		
DPP (L)	National Campaign Manager	Wakunda Kmanga
MCP (L)	Director of Research	M Berekanyama
UDF (B)	Deputy Secretary General	Hophmally Makande

Interviews conducted in Mozambique, 20-24 July 2009

EMB	Title	Name
CNE	President	Prof João Leopoldo da Costa
	Commissionar	Paulo Cuinica
STAE	Director General	Felisberto Naife
	Director: Training and Civic Education	Claudio Langa
	Director: Finance and Administration	Carlos Manuel
	Director: Electoral Organisation and Operations	Mário Esnesto

	Director: Provincial, Maputo City	Paulo Dinis Chambal
Government institutions	**Title**	**Name**
Constitutional Council	Member	Dr João Nguenha
Ministry of Justice	Director: Civil Registry	Dr Manuel Malunga
CSOs / NGOs / institutes		
Electoral Observatory	Coordinator	Sheik Abdul Carimo
Centre for Public Integrity	Director	Adriano Nuvunga
Donor agencies		
EU	Attachee	Fotini Antonopolou
UNDP	Chief Technical Advisor – Elections	Abdoulaye Kourouma
	Governance Programme Manager	Jose Luis Macamo
Political parties		
MDM	Member of Parliament	João Colacao
	Member of Parliament	Lutero Simango
	Member of Parliament	Ismael Mussa
Renamo	Political Advisor to Party President	Fernando Mazanga
Media		
TVM	News Director	Armindo Chavana Junior
Mozambique News Agency (AIM)	Journalist	Paul Fauvet
O Pais (Newspaper)	Senior Journalist	Lazaro Mabunda

Interviews conducted in Rwanda, 27-31 July 2009

EMB	**Title**	**Name**
NEC	President	Prof. Dr. Chrysologue Karangwa
	Executive Secretary	Charles Munyaneza
	Director of Electoral Operations	Protais Rumanzi
	Director of ICT	Silver Kwatrirayo

CSOs/ NGOs / institutes	Title	Name
Minaloc	Permanent Secretary	Eugène Barikana
Communaute des Potiers du Rwanda (COPORWA)	Director	Gerard Nzungize
Rwanda Civil Society Platform	Spokesperson	Eugene Rwibasira
NID	Director of ICT	Innocent Mutarambirwa
	Coordinator	Pascal Nyamulinda
Consultative Forum for Political Organisations in Rwanda	Executive Secretary	Anicet Kayigema
Access Data	Managing Director	Emmanuel Ngaruko
Donor agencies		
UNDP	Country Representative	Anthony Ohemeng-Boamah
Political parties		
PSD	Permanent Secretary	Marie Brigitte

Interviews conducted in Senegal, 8-15 June 2010

EMB	Title	Name
CENA	Chairman	Doudou Ndir
	General Secretary	Didier Bampassy
	Member	Amsata Sall
International development partners		
Konrad-Adenauer-Stiftung	Deputy Resident Representative	Dr Ute Gierczynski Bocande
	Programme Leader	Fatoumata Sy Gueye
Civil society		
Gorée Institute	ACE Focal person	Ibrahima Amadou Niang
Government institutions		
DAGAT	Prefect	Alioune Badara Diop
DAF	Director	Abibe Fall
	Production	Joseph Faye

DGE	Director of Operations	Thiendella Fall
	Director of Training and Communication	Macoumba Coume
	Computer Scientist	Ibrahima Gaye
Students		
	Student	Fanta Diallo
	Student	Bassirou Niang
	Student	Seydou Ka
	Student	Geremy Kaly Bianquinch

Interviews conducted in South Africa, Johannesburg (J) and Pretoria (P), 3-12 Aug 2009

EMB	Title	Name
IEC (P)	Member	Fanie van de Merwe
IEC Secretariat (P)	Chief Elections Officer	Adv. Pansy Tlakula
	Senior Manager – Electoral Matters	Michael Hendrickse
	Chief Information Officer	Libisi Maphanga
	Manager – Procurement and Asset Management	Marius Steyn
	Deputy Manager Training	Mardi Naidoo
	Voter Education	Shameme Manjoo
	Voters' Roll and Registration	Roshnie Naidoo
CSOs/ NGOs / institutes		
EISA (J)	Operations Director	Ilona Tip
	Programmes Director	Khabele Matlosa
	Manager, Elections and Political Processes	Titi Pitso
	Programme Officer, Elections and Political Processes	Karen Ogle
International IDEA (P)	Programme Manager, Africa and Middle East	Joram Rukambe
	Programme Officer, Africa and Middle East	Margot Gould

SACC (J)	Director, Justice, Reconciliation and Healing	Rev Luke Pato
	Ecumenical Secretary	Rev Gift Moerane
	Programme Manager, Gauteng	Gosiame Choabe
Donor agencies	**Title**	**Name**
Embassy of Japan (P)	Second Secretary Economic	Yuka Hahanogi
	Second Secretary	Tatfumi Ryu
	Third Secretary	Sachiko Kitahara
Embassy of Sweden (P)	First Secretary	Jon Eklund
	Programme Officer	Marianne Milligan
Political parties		
DA (J)	Member, Gauteng Legislature, DA Representative on National MPLC	Mike Moriarty
UDM (P)	Secretary General	Humphrey Nobongoza
Media		
SABC (J)	Deputy Political Editor	Phetole Kubjane

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