Pro PALOP|TL

Projecto de Apoio aos Ciclos Eleitorais nos Países Africanos de Língua Oficial Portuguesa e Timor-Leste

Handbook on Technology and Electoral Registration

Experiences in Cape Verde, Guinea Bissau, Mozambique, Sao Tome and Principe and East Timor

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Project to Support Electoral Cycles in African Portuguese-Speaking Countries (PALOP) and East Timor - Pro PALOP/ET.

This is a transnational project and has as a strategy to support the activities of the election cycle in Angola, Cape Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe and East Timor. It is a project fully funded by the European Union.

With an expected operating length of 36 months (covering the 2010-2012 election cycles), starting with the signature of the financing agreement between the office of the United Nations Development Program (UNDP) and the delegation of the European Union (EU) in Guinea-Bissau in march 30, 2010.

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ACRONYMS

AEC	Australian Electoral Commission
AFIS	Automated Fingerprint Identification System
ANP	National Popular Assembly
ANS	Service Level Agreement
ANSI	American National Standards Institute
BCP	Business Continuity Planning
BDRE	Voter Registration Database
BGAN	Broadband Global Area Network
BRIDGE	Building Resources in Democracy, Governance and Elections
CD	Compact disc
CD-ROM	Compact disc read-only memory
CEN	National Elections Commission
CNE	National Electoral Commission
COBIT	Control Objectives for Information and related Technology
CPD	Data Processing Centre
CPLP	Community of Portuguese-Speaking Countries
CRE	Regional Elections Commission
DGAPE	Directorate-General for Support of the Electoral Process
EISA	Electoral Institute for the Sustainability of Democracy in Africa
EMB	Electoral Management Body
FAQ	Frequently Asked Questions
FRS	Facial Recognition System
FTP	File Transfer Protocol
GPECS	UNDP Global Programme for Electoral Cycle Support
GTAPE	Technical Bureau for Support of the Electoral Process

GTE	Technical Bureau for Elections
HDD	Hard disk drive
ID	Identification document
IDEA	International Institute for Democracy and Electoral Assistance
HDI	Human Development Index
IFES	International Foundation for Electoral Systems
IEC	International Electro technical Commission
INCITS	International Committee for Information Technology Standards
INE	National Institute for Statistics
IP	Internet Protocol
IPAD	Portuguese Institute for Development Assistance
ISACA	Information Systems Audit and Control Association
ISO	International Organization for Standardization
JTF	EC-UNDP Joint Task Force on Electoral Assistance
LAN	Local Area Network
MOE	European Union Elections Observation Mission
MS SQL	Microsoft Structured Query Language
PALOP	African Portuguese-Speaking Countries
PDA	Personal Digital Assistant
SLA	Service Level Agreement
SMS	Short Message Service
STAE	Technical Secretariat for Electoral Administration
IT	Information Technology
ICT	Information and Communication Technologies
EU	European Union
UNDP	United Nations Development Programme
UNEST	United Nations Electoral Support Team
UNMIT	United Nations Integrated Mission in Timor-Leste
UNTL	Timor Lorassa'e University
UNV	United Nations Volunteers
UPS	Uninterruptible Power Supply
USAID	United States Agency for International Development
VLAN	Virtual Area Network
VHF	Very High Frequency
VPN	Virtual Private Network
WAN	Wide Area Network

ABOUT THE AUTHOR

Paulo Siqueira is a consultant for the Pro PALOP-ET and he is an expert in international electoral assistance, with an emphasis on electoral census and on information and communication technology. He worked on projects of UNDP, UNOPS, UN-EAD, UNICEF, UN-ICTY, World Bank, IFES-USAID and UNIDO. With vast experience in countries with different political, cultural and social, Paulo worked in Somaliland, Nigeria, Malawi, UAE-Dubai, Pakistan, Holland, Palestine, Italy, Tonga, and in various countries of Latin America.

Recently he has been planning and executing projects and Electoral Systems of Information policy in transition and post-conflict countries.

During the year of 2011, and especially for this project, Paulo was in Guinea-Bissau, Mozambique, East Timor, Sao Tome and Principe and Cape Verde, where he participated actively in projects assessment, consulting and workshops.

With more than 30 years of experience in information technology as a programmer, systems analyst, database administrator and project management, including mobile technologies, Paul acquired technical knowledge in a variety of platforms, operating systems, and programming languages. He is an expert in the evaluation, implementation and acquisition of applied technology, mainly, in election administration.

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1. INTRODUCTORY NOTE

In general and at corporate level, UNDP promotes democratic governance due to its inherent value in the promotion of rights, principles and justice as well as to its impact in the promotion of the human being development. Solid and responsible institutions ought to be anchored to active and inclusive civic participation where the people have a significant contribution to the decisions affecting their lives. Similarly, transparent and inclusive elections should be hand to hand with efforts ensuring that everyone has the opportunity to participate in the political life of their own countries.

UNDP's mission is to provide political assistance, advocacy and technical support to the national processes to accelerate people´s development through poverty eradication, sustainable and balanced economic growth strengthening and capacity building. As mentioned in UNDP's 2008-2011 Strategic Plan the strategies and activity plans of the agency shall aim at a final result: real improvement in people's lives and in the choices and opportunities presented to them. During its 2008-2013 strategic plan implementation, UNDP worked aiming at strengthening inclusive participation through enhanced civic participation at national, regional and local levels. The mechanisms and opportunities towards this participation included: laws; electoral institutions and procedures; mobilization channels (such as political parties and civil society organizations); and communication channels (access to information networks, e-governance and independent Media). In the specific domain of electoral assistance, UNDP supported legal reforms, operational assistance to electoral processes and technical support to electoral institutions that contributed to an inclusive participation and professional electoral management.

With regards to its 2014-2017 strategic plan, UNDP continues promoting democratic governance system strengthening which are able to respond adequately to the citizens' expectations in terms of freedom of choice and expression, development, rule of law and accountability.

As with the precedent programmatic cycle (2008-2013), the new programme (2014-2017) foresees UNDP support in the domain of electoral assistance. Hence, this support aims at strengthening participation and representativeness based on pacific transitions and through capacity building and increased parliamentarian, assemblies and electoral management bodies' accountability.

In order to strengthen democratic governance, institutions and political processes must encourage economic and social policies favoring the poor; responding the people needs and expectations and that aim at poverty eradication and guaranty the same opportunity of choice to vulnerable groups as well as to future generations' needs. Fundamentally democratic governance is the process of creating and maintaining an environment of responsible and inclusive political processes. As the main mean of expressing preferences and choosing representatives, the elections are a powerful tool of expression, democratic governance responsibility and ultimately of human development. Despite the mentioned, the elections are not sufficient to sustain democratic governance and in the absence of a comprehensive democratic system, based on the institutions and processes mentioned above, they become a premise for "the winner takes it all". Consequently, significant social sectors have misleading expectations that may lead to violent conflicts or jeopardize the whole political system.

The trend in electoral assistance for the last decade has been the generalized adoption of the electoral cycle approach. This approach results from the perception that assistance was provided in isolated and one-time events every four to five years. Such isolated events didn't build capacity, sustainability and the national ownership needed to enable the targeted countries to conduct elections by itself with transparency and increasingly less international support. Despite the know-how and experience gained through electoral support initiatives, donors' collaboration was often guided by objectives correlated to specific short-term political contexts rather than by cooperation strategies towards comprehensive and long-term development. Focusing on electoral events hindered the integration of electoral assistance in the broader agenda of democratic governance.

UNDP has formally adopted the electoral cycle approach as its modus operandi following the November 2004 United Nations task force for elections meeting (the group includes members external to the UN). The task force members recommended the electoral cycle approach as an effective mean to attain UNDP's goals as a development organization. The cycle approach emphasizes the collaboration with a specific country throughout a longer period of time rather than one isolated election, entailing working with a variety of stakeholders including, but not limited to management electoral bodies. UNDP recognizes the importance of the electoral events and the need to support such events, but will provide the resources to do so in a more comprehensive framework of democratic governance and enhanced democracy.

Hence, electoral results are not considered sustainable if there are not enough and diverse institutions and processes that will allow equal protection and fair distribution of resources; and if economic, social and political powers are not accessed and shared by all through fair and equitable methods and rules. Democratic institutions such as public service based on merit; an inclusive parliament; independent human rights and anti-corruption institutions; an impartial legal system; and government decentralized structures, often require support initiatives so as to face profound social inequalities and to enable communities, usually excluded, to access political power and institutions that serve them. If the institutions and processes are not applied, the elections may become the only mean through which power is aimed and attained and resources accessed.

Electoral assistance is currently a UNDP's coherent area of intervention. The agency has significant knowledge and competencies in its headquarters and at regional and national level. Once combined they constitute a pragmatic community with around 100 professionals to whom providing electoral assistance represents the majority of their responsibilities both through a specific project at national level and counseling. This community is scaled up by a more comprehensive democratic governance community that also executes electoral support.

UNDP has been developing knowledge and good practices in terms of electoral assistance including themes such as elections and conflicts, political parties' involvement, women political participation and ICT

(Information and Communication Technologies) during elections. For instance, in 2011-2012, in collaboration with the Democratic National Institute, UNDP developed a «A guide of best practices for the promotion of women political participation by political parties» – considered as reference guidelines for the promotion of women political participation by political parties and throughout the electoral cycle. Within the UN and outside the organization, strong partnerships for electoral assistance have been developed with electoral assistance providers in the north and south and through global initiatives such as Electoral Knowledge Network – ACE and BRIDGE (Build Resources in Democracy, Governance and Elections).

The UNDP has also developed strong partnerships with bilateral and multilateral institutions, including the European Union (EU). With the latter UNDP developed operational guidelines to help the EU delegations and UNDP country offices to improve their joint efforts in the field. Serving as the manager/implementer of donors' funds for electoral assistance, the UNDP has been developing its capabilities of significant and complex common funds combining the fund management and partnership factor with a strong technical knowledge.

The EU and UNDP acquired vast experience in electoral assistance, being responsible for the majority of funding available in this domain and in the vanguard of the development and conception of effective electoral assistance strategies. Both institutions have also been ensuring the support to electoral processes in Portuguese-Speaking countries since the beginning of the 90's namely to, Brazil, Angola, Mozambique, Guinea-Bissau, East Timor and Cape Verde. The EU and the UNDP have been jointly working in electoral assistance for a few years and through a unique partnership due to its scope, achievements and ambitions. The partnership has proven added value for electoral assistance operations in the beneficiary countries because of its acquired know-how, particular attention to lessons learned in preceding projects and to the mutual understanding of the approaches, the countries and each partner's competencies. This partnership optimizes the interventions and creates, implements and evaluates the projects effectively and in a timely manner and aligned to the concepts of donors' coordination strengthening based on the Paris (March 2005) and Accra (2008) Declarations on Aid Efficiency.

In this context, the two institutions have decided to draw a project for the Support of Electoral Cycles in Portuguese-Speaking Countries and East Timor – Pro PALOP – ET . This project was managed by UNDP was financed by the EU with a total amount of 6.1 million Euros for 45 months (beginning in March 2012). The project had a multi-country scope and the strategy used aimed at supporting the set activities, particularly the phases and factors not directly linked to the electoral operations and events. Thus, to provide support in response to the PALOPs and East Timor Electoral Management Bodies' needs throughout the respective electoral cycles and not necessarily during the electoral events. On the other hand, the project strategy aimed at rendering a set of electoral know-how and tools more accessible and available in Portuguese as well as international resources adapted to the PALOPs and East Timor contexts. Finally, the strategy used tried to integrate the electoral assistance project activities in the broader democratic governance framework through legislation strengthening (parliaments and parliamentarians, particularly women); the promotion of efficient relationships between the Media/parliament/national civic and electoral observation. The project's general objective is to contribute to the democratic processes in the PALOPs and East Timor through the specific and focused support to electoral processes, elected parliamentarians, the parliament and the Media.

The PALOP and East Timor share a historical past as well as linguistic and cultural similarities. Despite the mentioned one cannot affirm that the PALOPs and East Timor are geographically homogeneous. Even though different in geographic and demographic terms ACP Portuguese-Speaking countries (PALOP and East Timor) share a strong identity based in history, culture and common institutional heritage. Consequently, one can find common characteristics concerning the following relevant political and social factors: organizational culture and structure of centralized public administration; law system and justice administration; public servants careers and qualifications; management and public finance practices. The similarities represent an opportunity to the project's implementation

and enhance the chosen strategy that is based in shared experiences among the PALOPs and East Timor as the main vehicle to attain the expected results.

The project stakeholders include a broad set of governance institutions (particularly electoral management bodies, parliaments and Judicial Power) and civil society organizations (such as domestic electoral observation groups, women groups and Media) involved in the electoral processes. The project final beneficiaries include all PALOPs and East Timor citizens that benefit from the democratic governance strengthening, accountability and the opportunity of civic participation on the electoral processes.

The stakeholders' institutional capacities are different among the PALOPs and East Timor but more importantly they can vary considerably inside of each of these countries for instance differences between the rural and urban context. Gender inequalities trends are also different from country to country namely in terms of institutional capacity; human resources are mainly located in the capitals and main urban centers with a low women representation at all levels.

It is hard to measure the difference, impact, sustainability and transformation in terms of capacity building that addresses change, impact and transformation. Changing practices, impacting people's lives, transforming institutions and systems. Despite the challenges, Pro PALOP-ET has definitely attained these goals and efficiently and sustainably built capacities .

The present Study it's another Pro PALOP-ET achievement that is expected to contribute critically to change and transformation with real impact in the systems, practices, institutions and people. The handbook: Technologies and Electoral Registration – The Cape Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe and East Timor experiences, the first in PALOP-ET context, aims at evaluating the impact of technology in the electoral registration systems and specifically characterize the different analyzed systems. The present study lightly introduces important themes identified during the field research: voter registration, data base updating, deaths deletion from the electoral data base and the electoral rolls, and finally, technology as a cross cutting issue in electoral management.

The voter registration is the most complex electoral process, where different approaches and methodologies are used: the combined process of civil and voter registration, periodical versus continuous registration and active versus passive registration. The costs incurred by such processes are correlated to the latter complexity particularly when the processes entail high-end technologies that imply biometric data collection (fingerprints, facial and eye recognition). Some countries created sustainable and efficient systems that fed various good practices recommendation while others provided valuable lessons learned from less successful registrations.

Voter registration is more than a plan's operational implementation it is a comprehensive process that includes political, administrative and operational components. The role of voter registration is particularly important for emergent democracies in the sense that it can have a disruptive impact in an election or on the contrary contribute to a pacific acceptance of electoral results. The quality of the process and its result, namely the electoral roll, can determine the electoral result and consequently the instability of the democratic institutions of the country. The trust in democracy is strengthen when the electoral registration is an open and transparent process and it allows the participations of all electoral stakeholders: political parties, organized civil society, Media, security forces, international community and all potential voters of a country.

There are various registration methodologies some with lower costs, simpler or more reliable than others. By principle, the chosen methodology ought to offer a transparent, effective, efficient and sustainable exercise. The electoral roll must be broadly accepted by political stakeholders and ought to be seen as fair, comprehensive and strict. The choice of a specific voter registration method depends of various factors including political requirements, legal framework, the capability of the institutions responsible for the electoral roll, financial resources, the level of experts on IT available in the country, environmental constraints, among others.

In this context, the Pro PALO-ET edits this excellent snapshot of the voter registration systems in the PALOPs and East Timor that aims at presenting a portrait of the voter registration in each one of these

countries. Taking into account the holistic characteristic of the voter registration and the different challenges faced by it, the present Study additionally includes important themes that were developed specifically for each country namely the electoral results transmission, data base auditing and electoral results auditing.

Gana Fofang
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2. EXECUTIVE SUMMARY

This book is the result of the technical work performed by the Project to Support the Electoral Cycles in Portuguese Speaking African Countries (PALOP) and East Timor. The countries visited were Cape Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe and East Timor. Angola was not part of this study. The Project has financial support from the European Union and is managed by the United Nations Development Program (UNDP).

The main topic is technology, with emphasis on their use in the process of electoral registration.

The first part of the book locates and compares the countries within certain parameters such as the Human Development Index of UNDP, Index of Democracy – "The Economist Intelligence Unit's Index of Democracy 2011", published by the Magazine "The Economist", population data, the number of registered voters and type of technology in use in the process of electoral registration.

Introduces, although more generally, some important themes that were identified during the research work: the electoral registration, the update of the database, the question of deaths and the list of voters, logistics for technology, protection and data privacy, and finally the technology as cross-cutting issue within the universe of the election administration.

The second part of the book is divided by countries and seeks to present a portrait of the electoral registration process in each one of them. In addition, important themes that were developed specifically for each country were included, such as the transmission of election results, audit of the database and audit of election results.

The conclusions of these research activities and study yielded information and knowledge that, because they are certainly useful to other countries, are important and should be shared. The mentioned information and knowledge was included in this book.

3.
INTRODUCTION

Guiné Bissau

In a mobile voter registration office in a small and distant village in Mozambique, the voter registration team struggled to be able to use the equipment. The kit for the registration of voters, composed of a laptop, a scanner to collect fingerprints and a camera, seemed to be working properly. Everything was tested, the equipment was connected but when the time of collecting biometric data came, these appeared in white, not only the picture but also the fingerprints collected. It was as if they had been photographing the image of a spirit or a ghost.

The equipment was broken. Tests and more tests were done; equipment cables were disconnected and connected more than once. The battery charge was checked and it was good. The equipment was connected correctly. Once more were collected data from the first person of the queue and, once again, nothing of biometric data. All was blank.

The queue of people wanting to be surveyed increased and they were getting impatient with the delay and with the incompetence of the brigade of registration takers. We understood it as a failure in the training. The technicians have consulted the manual and verified point by point. Everything was according to the instructions.

That was when the leader of the team of registration takers asked if someone had requested permission to religious Leader of the village for the procedure of the electoral registration. All looked at each other and the answer was negative. Therefore, they sought the Leader that, from afar, looked the scene. Respectfully, the brigadiers explained what they were doing there, the importance of the electoral register and the consequent participation in elections.

The Leader looked firm, looked slowly in the eyes of each one of the brigadiers assessing if whether what he heard was the truth and said calmly, "Now yes, now you can perform your work".

The brigade returned to the registration office installed beneath a leafy tree, in the center of the village and restarted its activities. Initially tense, the team, faithless, realized that something had changed. The information was collected without problem. The quality of pictures and fingerprints was perfect. The registration process has continued without problems until the end of the day, and in the days that followed.

The Project to Support the Electoral Cycles in Portuguese Speaking African Countries (PALOP) and East Timor is a transnational project and has as a strategy to support the activities of the election cycle in Angola, Cape Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe and East Timor. The Project is entirely funded by the European Union and is managed through the United Nations Development Program (UNDP).

In this context, this study has the objective of providing better understanding of management practices of electoral technology, with particular emphasis on the process of voter registration. It provides a reflection on the main challenges in using technology, and includes, apart from analyzes of initiatives in this area, examples, guidelines, recommendations and suggestions for improving the participation of the countries members of the project on the use of Information and Communication Technologies (ICT).

This study appeared in the context of the initiative of Pro PALOP/ET to share their experience and knowledge about elections and technology acquired during the execution of the project. Furthermore, it includes the professional experience of many years of work and knowledge accumulated by specialists who have worked on the project, especially with regard to the election administration and, more specifically, in the use of technology and its use in electoral registration.

Several related themes were identified during the preparation of this work and were considered as potentially important by the Electoral Management Bodies and thus, due to its relevance, were included in this book.

When an electoral body is preparing for a specific task, such as, voter registration or the elections, he faces a series of difficulties and limitations. Electoral Commissions face almost daily challenges such as limited budgets, training, human resources, logistics, technology, electoral calendar, legislation, planning, etc. Despite the different requirements and goals of each locality, these challenges are common and transverse to practically all areas of election administration.

It is also worth mentioning that themes such as auditing and transmission of election results are part of this study; they were mentioned throughout this document with the purpose of sharing information and knowledge that can be useful to actors that play on the wide and complex universe of election administration.

As lesson and apprenticeship from years and years of use in technology, here is the most important recommendation: simplicity. Simplicity in decisions, simplicity in planning, simplicity in processes, simplicity in the organization, simplicity in communication, simplicity in innovation and, mainly, simplicity in use of technology.

The electoral work is dynamic and the processes are changing continuously in function of the political moment and electoral calendar for each country. Thus, it is important to stress that the information and observation contained in this book are a result of the moment, in time line in which the research travel and the technical support work have been developed. It started in March 2011 in Guinea-Bissau and concluded in December of the same year, in Cape Verde.

3.1. Context

We adopted the Human Development Index (HDI) of UNDP to better contextualize the countries within common parameters.

UNDP Human Development Index - 2011[1]

	HDI	Raking	Life Expectancy (years)	Population (thousand)
Cape Verde	0.568	133	74.2	500.60
Guinea Bissau	0.353	176	48.1	1,547.10
Mozambique	0.322	184	50.2	23,929.70
São Tome and Principe	0.509	144	64.7	168.50
East Timor	0.495	147	62.5	1,153.80

Table 1
Extract from HDI
UNDP 2011

1] Human Development Index (HDI) – http://hdrstats.undp.org/en/countries/profiles

The HDI 2011 contemplates an analysis of 187 countries. The analysis argues that global challenges of sustainability and equity should be addressed together. It demonstrates that disadvantaged people are suffering the most from environmental degradation, including in their immediate private environment. Important topics in HDI are the human right to a healthy environment, the integration of social equality in environmental policies, and the importance of public participation.

Among the countries mentioned in this book, only Cape Verde, at position 133, is classified at HDI with Medium Human Development, while all others are classified as Low Human Development countries.

Another interesting index that serves to illustrate the relationship between democratic governance and development is the index of the news magazine "The Economist". "The Economist Intelligence Unit's Index of Democracy 2011" examines 165 countries, aiming to provide a qualitative assessment of the democratic development level, on a scale that ranges from zero to ten. The index takes into account the electoral processes, pluralism, civil liberties, functioning of government, participation and political culture. The following table presents the positioning of studied countries according to this index.

We can see that Cape Verde, as occurs in HDI, has a good classification. In its turn, Guinea-Bissau is situated almost at the end of the classification.

Democracy Index[2]

	Position
Cape Verde	26
Guinea-Bissau	157
Mozambique	100
Sao Tome and Principe	n/c
East Timor	42

Table 2
Democratic Index

2] The Economist Intelligence Unit's Index of Democracy 2011 – www.eiu.com/democracyindex2011

3.2. Voter Registration

The whole process of electoral registration has its own peculiarities. The differences between the models of the voter registration used by PALOP countries and East Timor, with the exception of Angola, which is not part of this study, are many. An important point that should be taken into consideration to identify the differences between the countries is the electoral law; another is the population of the country and the number of voters. Thus, each country uses the voter registration methodology that is more convenient, viable and adherent to the corresponding legislation.

There are no rigorous models and each country defines its own system, taking into account issues such as budgetary constraints, the electoral legislation, political moment, etc.

It is interesting to note that the countries that are part of this book have a very diverse population, going from 168,000 inhabitants in Sao Tome and Principe to almost 24,000,000 inhabitants in Mozambique.

With reference to the registration models interpretation, we adopted the constants definitions in the module about BRIDGE Electoral Registration[3] and in the introduction section of the publication "Voter Registration in Africa – A Comparative Analysis" edited by Astrid Evrensel[4] .

The different types of the registration can be classified as:

- Registration Active vs. Passive;
- Registration Continuous vs. Periodic;
- Combination of civil and electoral Registration.

3.2.1. Passive Registration

An electoral registration system is considered "passive", when the creation of the electoral roll does not requires the direct participation of the voters. The electoral roll is extracted from another database, such as, the civil registry, where all eligible citizens are automatically listed on the electoral roll.

3] BRIDGE – Re.4.2 Different Methodologies of Census – 2011

4] "Voter Registration in Africa – A comparative Analysis" edited by Astrid Evrensel, EISA, 2010, pp 22 – 28.

3.2.2. Active Registration

The active registration asset implies that the citizen must physically visit the center of registration and register as a voter.

3.2.3. Periodic Registration

Regular records are established by a single electoral event or sequence of elections that occur within a defined period of time. After this period, it is established a new registration and the previous electoral roll becomes invalid.

This registration is also known as root registration. One of the main reasons of its use derives from the difficulty of periodic maintenance and correct list of voters.

3.2.4. Continuous Registration

A continuous record is the one that is constantly updated. For this, the EMB must maintain the infrastructure of electoral registration throughout the year, with the purpose of receiving new subscriptions or allow changes to data from the registered voters. Some countries use this model, but with annual, biennials and punctual updates.

3.2.5. Civil and Electoral Registration

According to the BRIDGE, there are three possible scenarios with regard to electoral and civil registration:

1. The EMB organizes elections based on data provided by Civil Registration, taking into account the minimum requirements so that the citizen can exercise his right to vote, i.e. the minimum age for voting.
2. There are kept two records – a civil and an electoral registration – and an exchange of information occurs (synergy) between these two databases. The data is compared and analyzed by EMB with the goal of producing a more reliable electoral list.
3. The EMB raises the electoral register and there is no exchange of information with the registry office, if any.

3.2.6. Database Update

One of the biggest problems for ensuring the quality of a voter database is its update. Often the voters change place and do not alter their data, and eventually they register again, generating duplicity of data. Another matter of difficult solution is removal of deceased electors from database. Many countries have inefficient records of death and systems that are not integrated with the database of voters. This fact generates distortions in final number of eligible voters. The same problem can occur in calculations of abstentions during the elections, since the actual number of voters is smaller than the informed by database.

The table below shows the type of registration used in each country having as a basis the definitions presented by BRIDGE and the EISA book, edited by Astrid Evrensel, as already has been mentioned.

Table 3
Voter Registration Models

Voter Registration Models

	Type	Model
Cape Verde	Active	Continuous
Guinea-Bissau	Active	Root
Mozambique	Active	Root
Sao Tome and Principe	Active	Continuous
East Timor	Active	Continuous

The following table compares the technology used by each country for voter data capture. The information is for the year 2011:

Voter Registration Technology

	Type	Comments
Cape Verde	Biometric	Integrated system and online. Data between the registration offices are updated daily.
Guinea-Bissau	Manual	Manual data capture through forms. Data entry in the system uses double typing ("double blind").
Mozambique	Biometric	Decentralized system. Data consolidation is done regionally.
Sao Tome and Principe	Biometric	Decentralized. Data consolidation is centered.
East Timor	Biographical/Biometric	Decentralized. Consolidation of data is centralized. The system capture biometric data (photo and fingerprints) but the AFIS and FRS are not implemented.

Table 4
Registration Technology

3.2.7. Population versus Number of Voters

The following table shows the population of each country and the number of registered voters and the percentage result between these two parameters.

Interesting to note that in terms of percentage, there is a large difference between Guinea-Bissau, that has 38% of its population registered, and Cape Verde, which has 61% of the registered population. This difference may be a result of numerous factors, for instance: incorrect data about total number of the population or number of registered voters, duplicity of voters in the database, lack of deceased electors removal from the database and registration problems.

Population versus Number of voters

	Population UNDP/HDI 2011	Voters	%
Cape Verde	500,600	305,308*	61%
Guinea- Bissau	1,547,100	593,557**	38%
Mozambique	23,929,700	9,871,949***	41%
Sao Tome and Principe	166,728****	92,639****	56%
East Timor	1,153,800	616,415*****	53%

Table 5
Population per number of voters

*
DEGAP/CNE[5]
**
CNE – Guinea-Bissau
***
STAE – Mozambique
****
GTE/CEN – Sao Tome and Principe
*****
STAE – East Timor

3.3. Deaths versus List of voters

One of the most important aspects in the management of the list of voters, especially in countries where there is high mortality rates, is the removal of deceased electors.

In many countries, due to the absence of infrastructure and information management, the control of deaths is almost nonexistent. These deficiencies generate distortions, not only in the number of registered voters, but also in the calculation of abstentions during the electoral process.

Several actions that can be used to identify deceased registered voters and allow them to be removed from voter database:

- Validation of death, which is made by the family or the community. In these cases, after identified and listed, the voter database is updated.
- Queries to public official databases, more specifically in some cases, those whose families receive funeral aid. A routine must be established between the two institutions so that this process can be incorporated to EMBs activities. This routine could, for example, be monthly or bimonthly and, if possible, through consultations and automated exchange of electronic files between the database of the involved institutions.

5] http://www.presidenciais2011.cv/global.htm

- Consultation of health institutions and authorities, such as the Ministry of Health and hospitals, formalizing the process of collection, the transfer of information, and consequent updating of the electoral registers.

There is no simple solution. In many cases, the deaths occur in remote areas and the names are not informed to EMBs. Raising awareness campaigns to voters can help in the identification process. Some countries implement funeral aid programs, which also aims to identify and improve the statistics for public administration.

3.4. Technology for Logistics

One of the main issues relating to the increasingly intensive use of technology in electoral processes is logistics. The term logistics here is understood as management of resources, tools and supplies necessary for the implementation of the EMB activities. The main activities related to logistics are:

- Transport;
- Inventory management;
- Order processing;
- Storage;
- Material handling;
- Packaging;
- Purchases.

The acquisition of computer goods and services is a complex process and depends on detailed technical specifications and specialized support. With the increasingly intense use of information technologies, and with the employment of biometrics, the EMBs increasingly rely on a support structure to ensure the necessary resources for the success of their work.

In addition, the purchasing processes must be transparent and adherents not only to internal practices of each institution, but to government legislation and, in some cases, to international organizations rules, such as UNDP[6] or the World Bank. The rules for acquisition of goods and services depend on legal deadlines that must be precisely followed and, if not met, can generate immense impact on operations and electoral calendars.

Thus, logistics planning[7] becomes one of the critical points of success in electoral processes. What happens in some cases is that the process of acquisition of goods and services is driven by technology area, without coordination or knowledge of the logistics area. In some circumstances, the acquisition process is done independently from the rest of the Organization, and the IT managers are responsible for the process. Obviously, this leads to internal administrative problems, of coordination, and conflicts between areas that can seriously compromise operations.

The control of supplies for data-processing equipment is another key point for the success of the electoral operations. Some common problems that have great impact are such as:

- The lack of supplies for printing lists of voters and Electoral Cards in the voter registration centers;
- The lack of fuel for both electric generators and transport of the census , technical support and supervision teams;
- The IT area does not inform the need for supplies replacement in time for completion of purchases;
- Contracts for equipment maintenance and services are not provided or are made for short term.

6] In relation specifically to UNDP, it is recommended to read the document "Procurement Aspects of Introducing ICT Solutions in Electoral Processes. The Specific Case of Voter Registration ", Joint EC-UNDP Task Force on Electoral Assistance, 2010.

7] To the planning area we recommend reading the following books and documents: "Cost of Registration and Elections (CORE) Project, by Rafael López-Pintor Jeff Fischer, IFES, 2005"; "Strategic Planning for Effective Electoral Management: A Practical Guide for Electoral Management Bodies to Conduct Strategic Planning Exercise, Antonio Spinelli, 2011"; "Electoral Assistance Implementation Guide, UNDP Democratic Governance Group, 2007, Bureau for Development Policy".

These are some examples of issues that may induce in impairments registration teams, unnecessary cost, citizens dissatisfied, complaints from political parties and negative perception on media. Problems in electoral area are very sensitive and can lead to clashes or generalized conflicts, compromising the image and credibility of EMBs along the population and the international community.

We listed some topics in the area of technology, for reference, that must be analyzed during the planning of operations and electoral logistics:

- Data processing center;
- Temperature control system (air conditioning system);
- Smoke detection system and fire-extinguishing systems;
- Hardware;
- Software;
- Use licenses of software;
- Electrical power system;
- Uninterruptible power supply (UPS);
- Physical security – access control;
- Updating the basic software – antivirus, operating system;
- Equipment control using, for example, barcode;
- Supplies;
- Backup Systems;
- Service contracts and equipment maintenance;
- Consulting services;
- Generators;
- Fuel;
- Help-desk for technical support to computer and telecommunications equipment;
- Training and technical training;
- Supervision;
- Communication- radio, cell phone, satellite;
- Data transmission services – Internet, BGAN;
- Collection and storage of equipment.

3.5. Technology as a cross cutting issue

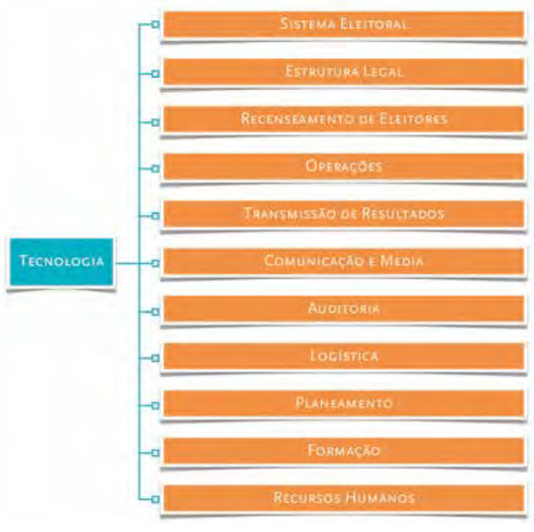


Figure 1
Technology as
a crosscutting issue

The organization of the elections is an extremely expensive and complex task that requires a diversity of factors, such as planning, training, logistics, structure, appropriate legislation, human and financial resources. The technology is present in practically all the activities of the election cycle and its use is transversal to all actions and operations. The technology is used, for example, in a text editing on electoral legislation, a simple calculation spreadsheet, access and availability of information via the Internet, as a communication tool, on electoral registration, in geographical delimitation, in data transmission and on the publication and dissemination of election results.

At all stages of the electoral process and in all its operations, the technology is always present, often invisibly to users. The information technology area suffers with the growing demand for solutions, lack of specialized human resources and limited financial resources. It is the greatest challenge faced by the electoral management Organizations leaders.

Several other problems associated with the use of technology can be mentioned, such as:

- Lack of specific technical knowledge on the use and implementation of new technologies from EMBs;
- Insufficient technician knowledge on the part of the donors and international community (“stakeholders”) that, many times, are supporting projects that do not have technical nor operational feasibility;
- Inadequate and inefficient technical consulting that recommends solutions that are not adhering to local realities;

- Project Managers who do not have adequate technical knowledge to support strategic decisions in the area of electoral technology;
- Pressure on the part of local and international suppliers for acquisition of equipment and electoral solutions;
- Local and international political interference;
- Limited financial resources;
- Inadequate management;
- Inadequate logistics;
- Urgency in implementing technological solutions;
- Lack of long-term planning;
- Training, qualification and retention of specialized human resources;
- Difficulty of updating hardware, software and staff resources due to the rapid advancement of technology;
- Lack, by agencies of the United Nations, in the definition, standardization and use of technological resources, such as, use and storage of biometric data and privacy of information;
- Lack of strategic and operational policy centered on the part of United Nations electoral assistance areas, to support the technical specification, development, qualification, use and implementation of technologies in Electoral Management Organizations.

3.6. Data Protection and Privacy[8]

An important theme that was common object of concern on the part of the OGMs managers was the protection and privacy of voters data collected during the electoral registration and maintained in the database.

The electoral systems store personal information of the population such as the name, affiliation, identification documents, place of residence, etc.

8] I tis recommended to read the "IOM Data Protection Manual, International Organization for Migration, 2010".

When the electoral management organizations precede to the processing of voters personal data, they must respect their right to privacy. Thus, all activities relating to the use of the database must be informed to voters. This is especially important to the following: collect record and store information, retrieve them for consultation and send them or make them available to third parties, and block, erase or destroy data.

This is an extensive topic, and each country has, or should have, a specific legislation for this matter. It is important that the EMBs have knowledge and understanding of the scope of what it means the protection and the privacy of election data and, if necessary, adapt their internal procedures to ensure the correct and legal use of electoral information (see also in this book the use of technology in Cape Verde, Database Audit).

3.7. General Assessment

All the countries visited are doing an excellent job in management and use of voting technology. Each country has its own political, technical, administrative, legislative and operational specificities. There is not a single model that can be generally applied to all countries.

For the EMBs, limitations and challenges are numerous and only day-to-day experience can lead to realistic dimensioning and assertion of facts and consequent definition of strategic decisions on usage of voting technology.

The important thing is to have clarity and transparency in decision-making processes, understanding that the technology exists as tool and support, and it is not the silver bullet that will solve all the electoral problems with a single shot.

The use of technology is evolutionary and heavily depends on technical training and investment in retention of professional resources. In the EMBs, the policies and actions of ICT must be supported within a broader context and inserted completely in the long term strategic planning.

Technology is only one component in the intricate process of building a representative, participative and democratic State.

4.
CAPE VERDE

Cape Verde

4.1. Geographical Information

The territory of the Republic of Cape Verde is composed of ten islands of dry tropical climate (Santo Antao, Sao Vicente, Santa Luzia, Sao Nicolau, Sal, Boa Vista, Maio, Santiago, Fogo and Brava). Cape Verde is situated 455 km from the African coast, it has an extension of 4,033 km2, and approximately 500,000 inhabitants[9]. Its population has an average life span perspective of 74 years.

The capital of Cape Verde is the city of Praia, situated on the Santiago Island, which together with the Mindelo, on the Sao Vicente Island, comprehend the two main cities of the Country. Cape Verde has 22 municipalities, distributed by the nine inhabited islands of the archipelago.

4.2. Electoral Support Structure

The electoral activities in Cape Verde are centered in two institutions, the National Elections Commission – CNE, which has supervisory and monitoring performance, and the General Direction in Support of the Electoral Process – DGAPE, which is part of the structure of Government, and has operational actions. In addition to these two institutions, the Commissions of Electoral Registration play an important part of the electoral process and the Operational Heart of the Information Society – NOSI, which provides the support and technological integration.

4.2.1. National Elections Commission – CNE

Among the powers[10] of the National Elections Commission in Cape Verde, we can enumerate the following:

9] UNDP/HDI 2011

10] Informed by CNE, through Dr. Elba Pires.

Picture 1
CNE headquarters in Praia[11]

- Ensure freedom and regularity of elections, equal opportunities and equal treatment of candidatures and respect for other fundamental principles of the electoral process, adopting all necessary measures;
- Ensure equal treatment of citizens and the fairness, impartiality and objectivity of all services and electoral administration agents in the performance of duties;
- Promote, organize and directly supervise operations of polling stations and election qualifying covered in the scope of its competence;
- Issue generic instructions to registration organs and to polling stations tables, on the interpretation and application of the law, without harming its functional independence and the possibility on appeal;
- Monitor and control the operations of registration and voting, adopting measures and promoting efforts to ensure their compliance with the law;
- Inform clearly to all citizens information about the electoral operations;
- Promote, support and certify the training, in electoral matters ,of its delegates, registration authorities and polling members;

11] Picture: ProPALOP/TL

- Resolve claims and complaints which are submitted in the context of the electoral process;
- Initiate, instruct and decide electoral processes by offense and apply the corresponding fines;
- Participate in the Public Prosecution of electoral crimes that are reported;
- Secure the regularity of electoral accounts;
- Proclaim the electoral results in accordance with the law;
- Draw up and publish the electoral calendar.

4.2.2. General Direction for the Electoral Process Support – DGAPE

The electoral registration system of Cape Verde is well advanced on the perspective of the use of technology. The management of the registration process is allocation of DGAPE – General Direction to Support the Electoral Process. DGAPE is the central service of the electoral administration responsible for the study and technical support, administrative and logistic support of the electoral process. The DGAPE is subordinated to the Ministry of Internal Administration.

Among its tasks are[12]:

- Organize, maintain and manage the computer system of the electoral registration (art. 67 of the Electoral Code);
- Receive the notebooks of the Electoral Registration Committees located abroad (art. 79 of the Electoral Code);
- Publish the maps with the overall results of the registration (art. 63 of the Electoral Code);
- Promote the composition and printing of the ballot papers (art. 156 of the Electoral Code);
- Arrange the sending to CNE Delegates, for distribution, of the essential material to the polling tables work (art. 159 of the Electoral Code);
- Publicize the constitution of polling stations, as well as the lists of citizens who will have to vote on each one of them (art. 129 of the Electoral Code);

12] http://www.dgape.cv/

- Study and propose improvements to the electoral system, as well as the electoral process (art 18, e) of Decree-Law 47/2003, of 10 November);
- Collect and treat information on electoral matters (Art. 18, e) of Decree-Law 47/2003, of 10 November);
- Carry out studies and analysis on electoral matters, namely electoral sociology (art 18, f) of Decree-Law 47/2003, of 10 November);
- Propose and organize actions of disclosure and appropriate clarifications to the effective participation of citizens in the registration and electoral acts (art. 19, g) of Decree-Law 47/2003, of 10 November).
- Propose and administer training to members of the Electoral Registration Committees and other locals executors of electoral process (art. 18, i) of Decree-Law 47/2003, of 10 November);
- Ensure the preparation of statistics from registration, from the electoral acts and other votes, publicizing their results (art 18, j) of Decree-Law 47/2003, of 10 November);
- Organize the records of elected citizens to organs of sovereignty and local authorities (art 18, l) of Decree-Law 47/2003, of 10 November).

4.2.3. Voter Registration Committees – CRE

The Electoral Registration Committees are part of the Electoral Administration who are responsible for the conduction of the electoral registration operations in each geographical unit (Districts and consular areas).

They are collective bodies, elected and with competences in the Electoral Registration scope. They are independent and have financial autonomy.

4.2.4. Operational Core of the Information Society – NOSI

The technology for the registration was developed by NOSI and ZETES and is now managed by NOSI[13] – Operating Core of the Information Society. During the voter registration process in Cape Verde, the agency has played a key role in processing and constitution of a base that allowed the development of electronic instruments for the electoral process.

Created in 2003, the NOSI is an agency of the State that has, as its main vocation, electronic communication implementation in Cape Verde and promoting the information society, taking all its activity concentrated on the development of electronic Governance mechanisms at central and local level, as well as the management of the integrated network of State for telecommunications.

The NOSI has developed the following systems: the Voter Registration System (KIT and KIOSK), the Central Information System and the Information System for the Diaspora.

4.3. Voter Registration

The electoral registration in Cape Verde is continuous and active, and occurs throughout the year. During the pre-election period, when the lists of electors are made public, the registration is suspended. This also occurs from 65 days before each election and during the period of the inalterability of the notebooks[14].

The registration is done by the citizens in the Registration Committee of their Municipality of residence. The Registration Committees work at the headquarters of the respective municipalities.

13] http://www.nosi.cv/

14] Information based on voter registration brochure published by and available at DGAPE http://www.dgape.cv/

Figure 2
Relationship between the citizen and the electoral management

The CREs preempts data of voters using a biometric kit. The database of each CRE is integrated with the central database located in "datacenter" NOSI. The databases are synchronized daily to update information and maintain the data consistency. The information is transmitted in a secure manner, via data transmission network.

Registration Stations[15] are composed of an autonomous mobile kit for data collection:

- Biographical Data: name, address, etc.;
- Biometric Data: fingerprint (two), scanned signature and photograph (taken by digital camera).

15] Information from Dr. Elba Helena Pires presentation – Permanent Member of the CNE of Cape Verde, at the workshop on voter registration of Guinea-Bissau – April 2011.

Picture 2
Briefcase containing the registration kit16

Picture 3
Registration mobile kit[17]

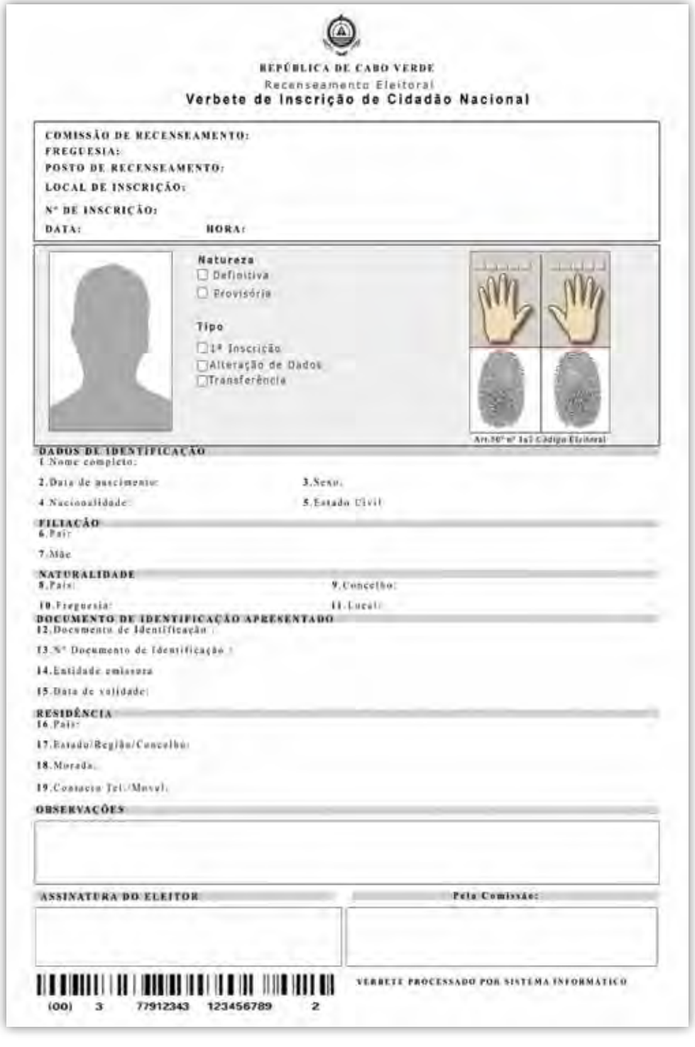
Databases of existing queries in kits:

- Identity card
- Births
- Electoral System
- Passport
- Foreign citizens

The technology infrastructure provided by NOSI also hosts servers for the Automated Identification System for Digital Printing ("AFIS – Automated Fingerprint Identification System"). This system is used to check for duplicate records.

The costs[18] of implementation of the system were approximately five million Euros, including acquisition of equipment.

16] Picture: CNE
17] Picture: CNE
18] Information from Dr. Elba Helena Pires presentation – Permanent Member of the CNE of Cape Verde, at the workshop on voter registration of Guinea-Bissau – April 2011.



REPÚBLICA DE CABO VERDE

Recenseamento Eleitoral

Verbete de Inscrição de Cidadão Nacional

COMISSÃO DE RECENSEAMENTO:
FREGUESIA:
POSTO DE RECENSEAMENTO:
LOCAL DE INSCRIÇÃO:
Nº DE INSCRIÇÃO:
DATA: HORA:

Natureza
☐ Definitiva
☐ Provisória

Tipo
☐ 1ª Inscrição
☐ Alteração de Dados
☐ Transferência

Art.50º nº 1a) Código Eleitoral

DADOS DE IDENTIFICAÇÃO
1. Nome completo:
2. Data de nascimento: 3. Sexo:
4. Nacionalidade: 5. Estado Civil:

FILIAÇÃO
6. Pai:
7. Mãe

NATURALIDADE
8. País: 9. Concelho:
10. Freguesia: 11. Local:

DOCUMENTO DE IDENTIFICAÇÃO APRESENTADO
12. Documento de Identificação :
13. Nº Documento de Identificação :
14. Entidade emissora
15. Data de validade:

RESIDÊNCIA
16. País:
17. Estado/Região/Concelho:
18. Morada:
19. Contacto Tel./Movel:

OBSERVAÇÕES

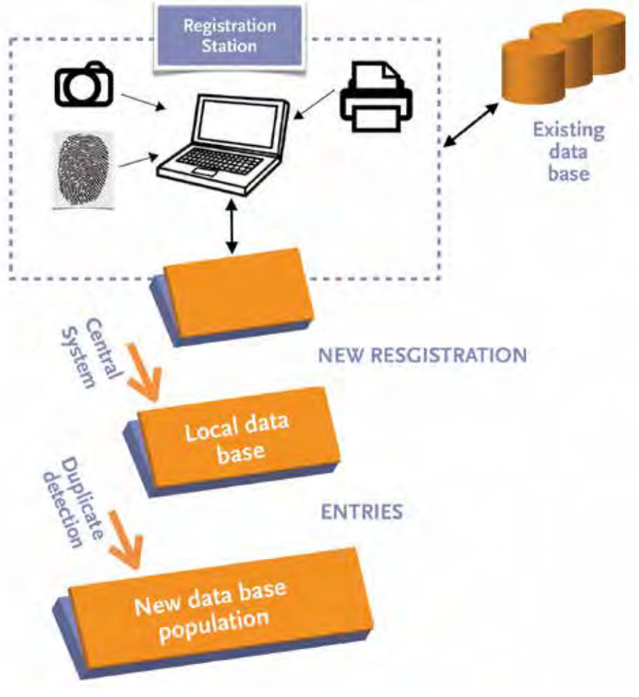
ASSINATURA DO ELEITOR | Pela Comissão:

(00) 3 77912343 123456789 2

VERBETE PROCESSADO POR SISTEMA INFORMÁTICO

Figure 3
Entry registration
of a national citizen

Figure 4
Capture process
and data update[19]



4.3.1. Who can be registered as a voter

- The Portuguese speaking citizens of both sexes, aged over 18 years, with legal and habitual residence in Cape Verde;
- Foreign citizens and stateless persons of both sexes, aged over 18 years, with legal and habitual residence in Cape Verde for more than three years;
- Cape Verdeans citizens , Portuguese speaking citizens, foreigners and stateless persons who complete 18 years up to the date of the next Municipal Elections.

19] Source: CNE

4.3.2. Documents necessary for voter registration

The national citizen must submit identity card or passport, even if expired. If the citizen does not present any document, the Registration Committee must accept the subscription, which shall be provisional. The citizen must submit, within 30 days, the identification document under penalty of being eliminated the provisional membership. The foreign citizen or stateless person must present a valid passport and a residence permit.

4.3.3. Roll disclosure during election year

Updated listings are exposed at the headquarters of the Registration Committee until 55 days before the date of the elections. Claims are submitted by interested parties before the Registration Committees until 50 days before the date of the elections.

Complaints must be made in writing. The polling can only accept as voting the voters in the electoral roll.

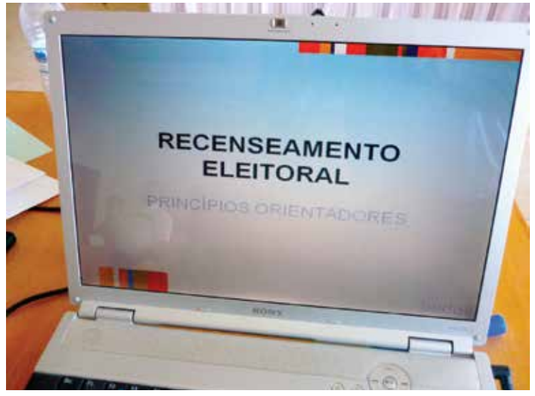
4.4. Voter Education

One of the key points to the success of the entire process of registration is the education of the citizen in relation to their rights and obligations as a voter. One of the recurring themes in Cape Verde, in the electoral area, is the participation of young people.

The poster below is part of a brochure produced by DGAPE encouraging the participation of young people, remembering their rights as a citizen and, especially, their right to register.

Figure 5
Voter Education[20]

20] DGAPE



Picture 4 BRIDGE module of Voter Registration

Picture 5 Active participation

4.5. Technical Training

In December 2011, the Pro Palop-ET project of Cape Verde promoted in the city of Praia: the seminar on Voter Registration that employed the BRIDGE methodology. Members of the CNE, DGAPE, CREs and civil authorities' representatives were present.

The seminar was productive, with excellent participation and the results were very interesting. The meeting served to exchange experiences and promoted the sharing knowledge among the people, allowing the discussion of problems and the lifting of doubts, answers and suggestions to improve the electoral registration process.

One of the participants, member of the CNE, mentioned that it was the first time that he talked in person with a representative of a CRE from another island. They were work partners and always spoke by phone, but this was the first opportunity they were able to meet in several years.

During a brainstorm exercise, some issues were raised about regional difficulties in the process of voter registration. The mentioned problems are similar to those of other countries.

The topics discussed can be classified into four major groups: technology, political participation, management and budget.

4.5.1. Technology

- Maintenance of computer equipment;
- Centralized technical assistance;
- Problems with electrical power;
- Lack of equipment;
- Failure in registration kits;
- Duplicate data;
- Elimination of deaths;
- Delay in printing of the electoral roll.

4.5.2. Political Participation

- Little participation of political parties;
- Uninformed voters;
- Weak awareness campaigns to the voter;
- Confusion between Registration vs. Election;
- High abstention;
- Low involvement of other State institutions.

4.5.3. Management

- Territorial Discontinuity;
- Dispersion of electoral areas;
- Distance;
- Lack of independent audit;
- Insufficient deadlines to perform some tasks.

4.5.4. Budget

- Budget management;
- Delay in transfers of funds;
- Insufficient allocation of funds;
- Budget cuts;
- Lack of financial resources.

Picture 6 – Joint work

Picture 7 – Brainstorm

Picture 8 – Unity and hard work

4.6. Audit and voter database

4.6.1. Introduction

One of the topics that the Pro PALOP-ET project developed in Cape Verde was regarding the importance of audit of the voter database.

Within this perspective, several suggestions have been put forward on the development of procedures for a *Plan to Audit the Database of the Electoral Registration*. The main goal of the plan was to specify and define the appropriate procedures for checking the quality of the voters' database, and of the electoral roll.

4.6.2. The audit plan of voters' database

Audits are an integral part of good electoral practices. The audits, when well prepared, complete and carried out in an efficient manner, can transmit confidence to actors that participate in the electoral process, thus ensuring greater transparency in the management of voter data.

The election audit collaborates in verification of electoral procedures, validation of internal processes and, mainly, certification that the electoral roll, or list of voters, are within the minimum standards of quality required within a process of registration. A voter corresponds to one vote.

Audits should be sufficiently transparent to promote the confidence, not only of the voters, but also of all actors involved, including the international community. The audit, when well prepared, provides the means to identify if the processes and electoral systems are functioning correctly. The audit of the database is an essential investment for growth of electoral systems, bringing reliability to public institutions and transparency in procedures used.

The procedures recommended here apply primarily to the analysis of the database, the validation of the data capture system, the process of information security, the privacy of voter data, and the management of the electoral roll.

The electoral management bodies (EMB), in general, need a tool that ensures the integrity of the voters' data. The audit is this tool, if well formulated and applied correctly.

In the course of the audit, the managers must be able to verify not only that the data has been entered correctly into the database, but also that they were properly stored and accounted for.

4.6.3. Internal audit vs. External Audit

When the Electoral Management Bodies have sufficient internal resources and rely on well-defined procedures and technical ability, a framework of internal auditors can be constituted. In many cases, this is not possible therefore; the hiring of an external audit should be considered and can be extremely effective and economical.

In any case, the procedures are similar, regardless of the fact that audit be conducted internally or through recruitment of specialized external resources.

4.6.4. What to audit?

The quality assurance of electoral registration system is an extremely complex task and requires specialized resources.

The electoral registration systems are, often, purchased from external suppliers, which involves a series of activities, including, for example, items such as defining the scope of the project, technical specification, procedures, documentation, adherence to international standards of data storage, validation tests, adherence to the electoral legislation, etc. With a certain frequency, these procedures are not properly followed, either by technician ignorance, either by urgency in the implementation of the system due to the electoral calendar.

A corrective and proactive way of adjusting and identification of problems is to proceed with an audit that contemplates several steps such as adherence to legislation and the development of risk analysis, identification of problems, data validation, equipment, processes and system.

The results obtained by the audit are important in the definition of future actions in the use of the new technologies, in the creation and maintenance of technological infrastructure plan and in monitoring the evolution of technology. It has direct impact on organizational strategic planning.

4.6.5. Confidentiality

Audit contracts presuppose that all the institutions involved in evaluation process sign specific clauses of confidentiality and professional secrecy.

The consultancy services providers must undertake to respect the procedures of security and confidentiality in accordance with the internal rules in force and applicable legislation. They must undertake to ensure that their employees maintain absolute secrecy, neutrality and discretion regarding the information and documents they are entrusted.

4.7. Audit – EMB

Normally, the EMB is the institution responsible for administering the computer system of the voter registration. Within its legal attributions, the EMB should perform periodic audits in the computer system as a way of ensuring the quality of the registration database and identify potential problems, acting proactively.

Because of the difficulties, complexities and costs involved in the procedures of an audit in the database of the voter registration, this process can and should be dismembered, constituting therefore about different modules and procedures that complement each other. The planned activities are listed below:

System Auditing and Database Auditing;

- Audit and Data Privacy;
- Audit of the Electoral roll;
- Risk Analysis;
- Civil Registration;
- Elimination of Records;
- Foreign Citizen;
- Electoral Registration Abroad;
- Undocumented Citizens Registration;
- Electoral roll – Exposure and Claims.

4.8. Audit system and database

With the introduction of new technologies in election administration, the procedures for checking the quality of data and information systems become extremely complex. It is at this time that an audit process collaborates with validation and adjustment of the electoral system.

The audit in the area of Information Technology (IT) should support the establishment, definition and implementation of responsibilities, including supervision and segregation of activities. Another important activity is the development, control and maintenance of IT policies.

The audit is an important factor in the support and evaluation of the activities of the quality control of services and changes in IT, in the control of applications and in the implementation of business control, ensuring that the systems are complete, authorized and auditable.

In an audit of system and data, the most important objectives are centered in the verification of the data, in the process of updating, in the constitution of the data banks, in applications, in the accesses, inputs and outputs flows, in verification controls, in privacy and in the quality and reliability of information.

The audit must be performed in order to check whether all procedures in use are in accordance with the legislation.

The following table includes a list of items that must be assessed in the audit of system and database:

Table 6
System and data audit

Area	Activity
System	Enty (capture) of Data: • Check if all the entries in the system, during the capture of data, have their matches (outputs) registered in the database and, consequently, on the Electoral roll. • Integrated Tests - submission of test parameters with actual data, without affecting normal routine system processing. • Check if the fields are normalized in terms of acceptance of special characters, elimination of double spaces and unnecessary characters. • Validation of dates in the format of the default location. • Validation of minimum dates (18 years) and maximum to register in the system. • Validation of spatial data, such as address, place of residence, island, municipality and constituency. • Validation of username and access password with date and time registration. • Check if the system records all modifications made, either at the entry or upon modification (system log). • Access procedures and system installation. • Documentation and operating manual. • Statistical reports. • Search tools and identification of the voter. • Identification of voters already registered (duplicate). • Identification of invalid records. • Procedures for change of address. • Procedures for capturing and archiving of fingerprints, which must comply with the international standards ANSI/INCITS 378 and ISO/IEC 19794. • Procedures for capturing and archiving of photography that must comply with the international standards ANSI/INCITS 385-2004. • Check the user profiles and their management. • Documented source code and version management.
Database	Check: • Logical and physical architecture of data. • Existence of diagrams and entity-relationship models. • Standardization of data (Codd). • Key and functional dependencies.

Table 6
System and data audit

Area	Activity
Database	Check: • Triggers, store procedures, indexes. • Complete documentation. • Access permissions. • Identification of duplicity of data: _ Comparison of alphanumeric fields _ Comparison via biometric data - fingerprinting and photography). _ If, in the case of multiple entries, whichever is more recent will be preserved, with the elimination of the previous. • Existence of invalid data. • Minimum and maximum age. • Existence of blank fields. • Tables for common use, for example, Country, Island, Registration Office, Constituency, municipality, parish, localities, etc. • Generation number of the voter in accordance with the legislation. • Biometric data in accordance with international standards for capture and storage.
AFIS	Check: • The existence and the module process to search for fingerprints - "Automated Fingerprint Identification System - AFIS", and if the same complies with international standards ANSI/INCITS 378 and ISO/IEC 19794.
FRS	Check: • The existence of a module to search by image (photo) - "Facial Recognition System - FRS", and if the same complies with international standards ANSI/INCITS 385-2004.
Software	Check: • Operating system, version and updates. • Upgrade security "patches". • Use of antivirus and update processes. • Backup system. • Database management system, version and upgrade processes. • Use of encryption and security protocols.
Hardware / network	Check: • Availability
Hardware / network	Check: • Environment • Workstations • Servers • Communication systems. • Network (Firewall, Network cabling, switches, routers, etc.). • VPNs / Vlans • Backup systems. • Electrical system, UPS, generators.
Security	Check: • Disaster recovery procedures. • Physical Security. • Fire, temperature and humidity protection. • Physical Access to the server rooms. • Confidentiality clauses
Documentation	Check: • Documentation of the entire system. • Network documentation - diagrams, network map, addressing IPs. • Manuals for use. • Training manuals. • Internal procedures.
Support	Check: • Support system to the end user. • Support system to the management information. • Response time for troubleshooting.
ANS/SLA	Check: • The existence of Service Level Agreement (SLA - Service Level Agreement) - check minimum levels of service that are expected by the customer for IT.
Reports	• Production of statistical data. • Production of electoral roll. • Reporting system "ad-hoc".

Table 6
System and data audit

4.9. Data Privacy

Computerized electoral systems are composed of personal data of the population. It retains information such as name, parentage, identification documents, place of residence, etc. These are sensitive data which, when collected by the electoral system, should be kept private. There are exceptions. Some countries disclose the data of voters, who are sent to party political parties on behalf of the electoral transparency.

The election data may become available when foreseen by Law, in case of amendment of existing legislation, by judicial order or by request of higher courts. Several countries have privacy laws and policies defined that restrict and protect access to personal information. If a person's privacy is violated by improper use of election data, there are legal consequences and, possibly, damage, both to the voter as for the EMBs that, in the final instance, are responsible for the custody of the data.

Thus, the built-in security to electoral systems should focus on the need to protect the privacy of personal data, preventing access to data by neither unauthorized persons nor systems.

The audit shall be in charge of analyzing the existing electoral systems with the objective of identifying unauthorized access to the database of voters suggesting measures to prevent unauthorized intrusion to voters' data.

It is important that the legislation define the field of the protection of fundamental rights, freedoms and guarantees of citizens, in particular the protection of personal data.

As an important part of the audit process is the issue of privacy of the data to be analyzed, with the preparation of specific report that should identify possible unauthorized use of data, including by internal institutions to the Government. In addition, the report must contemplate possible actions for improvement and protection of the electoral data privacy within computer system.

4.10. Electoral Roll

As it is nearly impossible and extremely expensive to do the manual verification of the data of all the voters who are on the electoral roll, there are statistical procedures that can be employed to make this check.

Thus, a random sample must be used having as characteristic, the fact that each element of the population has the same chance of belonging to the sample. It is considered, for this reason, that the elements of the population under study are distributed in a uniform manner. This sample must be extracted from the existing database and the information verified from the voters. This sample is employed to check "in loco" if the voter related on the electoral roll really exists and, at that time, the data is verified.

Another important factor that must be previously defined is the precision that is expected and the margin of error to be tolerated for the results obtained in the sample. In addition, as already mentioned, it is necessary that the selection of the elements of the sample is random, not to bring wrong results regarding the universe in question.

A report with the results obtained must be prepared and any discrepancies must be indicated. The report should contain all the considerations adopted in drawing up the same, such as margin of error and population division, in addition to the methodology used.

4.11. Risk Analysis

In the electoral context, the risk is related to the probability of an event and the possible impacts of this event in the electoral process as a whole.

Specifically, in electoral systems, the auditors shall submit a report of risk analysis with the results of the audit work.

The report should also point out possible solutions to identified risks, qualifying the intensity and the impact, for example: low, medium, high. The risk report is intended to estimate the time required for the solution of the problem.

The goal is, through the analysis of the risks identified in the report, making the safe management of risks, trying to anticipate the problems

and remedy the existing gaps. Once identified with the advance required, the EMBs can work to minimize the impacts resulting from and make the management of risks in an appropriate manner.

4.12. The Civil Registry

The auditing activities should include the preparation of comparative studies and statistical data between the Electoral Registration and the Civil Registry with the objective to identify any discrepancies between the information existing in the two database. With the comparison of the data will be possible to develop studies and planning actions aiming at improving the quality of the electoral roll.

The intersection of information must be done, first, using the number of the Identity Card.

4.13. Deletion of records

The audit process should contemplate, also, the verification of the procedures for the disposal of citizens of registration notebooks in the manner provided for in the Law.

The following procedures are required:

- The inscriptions of voters who have lost their electoral capacity.
- The inscriptions of citizens who have died, with death confirmed by the government office or registry delegation.
- The entries of citizens who lost their nationality, in accordance with the Law.

4.14. Foreign Citizen

As part of the audit process, it is necessary for the verification of management procedures, inclusion and validation of foreign citizens resident in the country, and if they are in accordance with current legislation.

4.15. Voter Registration Abroad

Voter Registration abroad should be included as part of the audit process specifically with regard to the computer system, notably in the processes of transmission, inclusion and maintenance of information contained in the database of the voter.

4.16. Voter registration of undocumented citizens

The audit must verify if the procedures of provisional inscriptions of national undocumented citizens are in accordance with the legal requirements, in addition to assessing the internal processes and implemented system, so that registration of provisional pass to final.

4.17. Electoral Roll – Disclosure and Complaints

Procedures for exposure and correction of information of voters listed on the electoral roll shall be in accordance with the Law. It is necessary that the audit includes, in its report, a legal analysis and technique of the computerized system for support to this activity.

4.18. References

The texts listed below were used as reference in the production of this document.

- ACE Electoral Knowledge Network (ACE) – http://aceproject.org/
- Tender Notice – External Audit the Electoral Registration – Ministry of Internal Administration, Praia, February 5, 2008.
- External Audit to General Electoral Registration, Final Report, June 25, 2008, Prime Consulting.
- Official Bulletin – Republic of Cape Verde – Series II, Number 2, January 22, 2001; Law 133 /V/2001, January 22.
- Official Bulletin – Republic of Cape Verde – Series I, Number 23, June 22, 2007.
- Official Bulletin – Republic of Cape Verde – Series II, Number 2, January 14, 2008.
- BRIDGE – Module of Electoral Registration – 2011.
- Specifications – External Audit the Electoral Registration, Terms of Reference, the Ministry of Internal Administration, Praia, January 29, 2008.
- COBIT 4.1 – The IT Governance Institute – 2007
- ISACA – http://www.isaca.org/
- Conceptual Model of Electoral Register, Praia, May 2006.
- Program of the Contest – External Audit to the Electoral Registration – Ministry of Internal Administration, Praia, January 29, 2008.

5.
GUINEA-BISSAU

5.1. Geographic Information

The Republic of Guinea-Bissau is a country of the west coast of Africa. It borders to the north with the Senegal, to the east and southeast with Guinea-Conakry and south and west with the Atlantic Ocean. In addition to the continental territory, it also incorporates about eighty islands that are part of the Bijagós Archipelago. Guinea-Bissau has an area of 36,126 km^2 and has approximately 1.547.100 inhabitants[21]. Its population has a perspective average life of 48.1 years. The capital is the city of Bissau, the most populous region of the country.

5.2. Geographic Electoral Division

Picture 9
CNE's headquarters in Bissau

For electoral purposes, there are eight regions in the country and an independent sector, Bissau. These regions are divided into 29 constituencies geographically defined. Of these, 27 constituencies are in national territory and two abroad that are intended to Diaspora (Africa and Europe). The constituencies are subdivided into sectors and these in electoral districts. The electoral districts, in their turn, are composed of a polling station, which may have one or more tables of polling station (MAV).

21] UNDP/HDI 2011

Structure:

- National Election Committee – CNE;
- 9 Regional Elections Committee – CREs;
- 29 Constituencies;
- Electoral Sectors ;
- 2,686 – Tables of Polling Station.

The Electoral Law for the President of the Republic and the Popular National Assembly defines as the minimum age for voting the 18 years.

The number of registered voters in Guinea-Bissau, according to the CNE, in 2010, it is 593.557.

5.3. Electoral Structure

Various institutions act in electoral area. The table below illustrates the process applied to the electoral registration of Guinea-Bissau

Figure 6
Voter Registration Process

5.3.1. National Elections Commission – CNE

Figure 7
CNE's Logo

The National Elections Commission is a permanent and independent body that works with the Popular National Assembly and has the superintendence function, organization and management of the electoral process and referendum campaign.

5.3.2. Technical Bureau for Support of the Electoral Process – GTAPE

The GTAPE is the Technical entity invested in competence to organize and run the voter registration. The GTAPE is a technical executive body integrated within the Ministry of Territorial Administration, Administrative Reform, Public Function and Work. GTAPE is administratively autonomous.

Due to lack of financial and technical resources, it delegates the implementation of the voter registration for the National Institute of Statistics (INE).

5.3.3. National Institute of Statistics – INE

The National Statistical Institute, per request of GTAPE, performs the voter registration and it has the technical structure, human and administrative resources to perform the task. INE then shares entire of the outcome proceedings with the CNE and the GTAPE.

A new voter registration is conducted every time that there are presidential and legislative elections. Thus, a new Voter's Card is issued, therefore, with the generation of a new number.

5.3.4. Regional Electoral Council – CRE

With the purpose of collecting information regarding to electoral qualifying processes, logistics, minutes and voter registration, several interviews were conducted with CREs presidents. Several points were raised and between the various reported difficulties, it is important to mention the following:

- Cartographic Review – The current cartography is not in agreement with the local reality of each region;
- Voter Registration – The database is not permanent and there is a need to increase the supervision, monitoring and support for INE registrations takers;
- Structure – The majority of CREs seats are not own and yes rented. The CREs has neither facilities nor permanent technicians. The President and support group are recruited in the period leading up the voter registration and elections, which may vary from one to six months;
- Whole electoral activity should not concur with the rainy season;
- Training – need to improve the training of the polling station agents.

5.4. Voter Registration

In Guinea-Bissau, the database of registered voters is not permanent. A new voter registration is accomplished by preceding the presidential and legislative elections. A new Voter Card is issued, therefore, with the generation of a new voter number.

The GTAPE, according to the Guinean electoral law, is the body responsible for making the voter registration. This, by lack of structure, technical and financial resources, delegates the implementation of the voter registration for the National Institute of Statistics (INE).

One of the most important actions that should be prioritized is the necessity of implementing a computerized registration and permanent voters, with achievement of annual updates as provided for in Law. The CNE should be, in fact, the manager of this process. While this does not occur, the CNE and the CREs should exert a more active role in monitoring and supporting the registration done by GTAPE and INE. The CNE should possess a minimal structure that permits the voters do change of address or require the issuance of duplicate the Voter Card.

During the processes of registration coordination problems occur, access and update of information between the various institutions. As the data is not immediately available to the CNE, when there is a need for verification of voter data, it is necessary to consult the CRE, CNE, GTAPE and INE.

The Bulletin of Voter Registration and the Voter Card does not have printed numbers that complicates the control of numbering, thus allowing that, due to an error in the completion of the Bulletin or Card, or in data entry, two or more voters can have the same number. To minimize this problem, the use of a numbering only, pre-printed, and the use of bar code would allow greater control and better quality of the process when the entry of data into the system.

5.4.1. Education of Voters

Several problems have been reported in the last elections, as stated in the interviews and mentioned in the EU report. It is necessary a more intense work in the technical training of the CNE and the CREs, including understanding of procedures, communication and public information campaigns.

5.4.2. Polling Station Agents

It was mentioned during the interviews that there is a need of reinforcement in training and selection criteria of the polling agents, mainly to fill the Clearance minutes.

5.4.3. Cartographic Review

A new cartographic division is being planned. The CREs call for more active participation in the process. This is a very important activity, with direct impact on the electoral process in Guinea-Bissau.

It is important to use GIS-Geographic Information System. The SIG [acronym I Portuguese] is a system of hardware, software, spatial information and computational procedures that enables and facilitates analysis, management or representation of space and of the phenomena that occur.

5.4.4. Itinerant Population

It is very common that people living on the Islands, notably the population of the Archipelago of Bolama/Bijagós, migrate from one place to another, a fact that generates issues with the election process. Despite being registered at a particular polling station table, during elections many voters end up voting in a different locality. Regulation is necessary.

5.4.5. Diaspora

According to the Electoral Law, the circle of Emigration is composed of two constituencies: constituency

1: Africa and constituency

2: Europe.

Each circle elects one Deputy. Due to lack of resources, the law is not being applied. It is necessary to implement effectively the process that is laid down in electoral legislation.

5.5. Information Technology

IT has been used on voter data capture during the registration, in issuing the lists of electors and the electoral results aggregation and clearances.

The Department of Informatics of the CNE is responsible for the management of technological processes and information systems during all the electoral cycle, including elections, processes, equipment and software (Excel spreadsheet) used for transmitting and accounting for results.

5.5.1. Electoral Audit

Electoral fraud can weaken the democratic systems, no matter the size of the country, the type of society, the economic or political system. It is a known fact that, often, the various power groups want their representatives to remain in power or to take over power, violating the ethical principles and the electoral laws.

If the electoral process is not properly followed and verified effectively and transparently, combating fraud becomes very difficult.

The main areas to be audited in the assessment of the electoral process are:

- Fidelity to electoral processes and the laws;
- Information technology systems;
- Physical access to data;
- Human resources;
- Results.

It is important to emphasize that technological process developed to provide support to a clearance has a monitoring system. The system should automatically warn the system operators and the Electoral Committee on possible deviations in the patterns of the data collected, when compared to the results of several places of establishment. As standard deviation, we can cite, for example, the case where all votes in a particular polling station table were given to a single candidate, or the attendance of 100% of the voters in a given polling station.

5.5.2. Database

Reportedly, the voter data is stored in a MS Excel spreadsheet, which is also used for the generation of Lists of Voters.

It is recommended the data migration to a more robust database, the development of a data management system and a reporting system.

5.5.3. Electoral Results

The aggregation and results statements are made in a decentralized manner, in CREs, with a generation of Ata Clearance. They are used a computer and a technician for each two constituencies. The data is calculated using a spreadsheet MS Excel and MS Word program that integrated generate the Clearance minutes. There is no double-checking of data.

An extremely positive aspect of the process is to employ the Security Code of Ata, which is generated automatically by the system and ensures that the worksheet does not suffer modifications, or if modified, accuses inconsistency in the generated code. The minutes and the computers containing the results are sent to the CNE for consolidation of the final results.

The consolidation is made from the receipt of the Excel files. The result is calculated automatically in a worksheet that uses macros to get the data from the different sheets of the CREs.

5.5.4. Capacity Building on CIT

It is recommended that the CNE and the CREs be supplied with better information technology infrastructure for hardware, software, and computer networks. Training is one of the most important and must include training in telecommunications, as well as topics such as information and data security, database management, programming, network administration and management, business continuity plan (“disaster recovery”) and physical access security. Today, there is only programmer with Excel spreadsheet knowledge at the office where the clearances are performed.

5.5.5. Barcode

The introduction of barcode use could facilitate immensely the logistical, security and process control of electoral material.

The barcode is a graphical representation of data. The reading of the data is performed by a barcode reader and may even be red by cell phone ("Smartphone"). The captured data on optical reading is converted into letters or numbers. The use of barcode avoids the error in data entry and accelerates the process of data capture, is an excellent tool to support the logistics.

5.5.6. Data Security

Set policy and procedures for Security Information, as for example. copying and storage of data from electoral rolls and history of results, installation and update of antivirus, database access, backups, physical access to computers, use of passwords, installing programs, etc.

5.5.7. Biometric Identification System

The introduction of new technologies for capture of biometric data, such as, Biometric Systems of Identification by Fingerprint ("AFIS – Automated Fingerprint Identification System") in the voter registration process may bring difficulties. It is important to ensure that all institutions involved in the process have resources, training and knowledge about the technology to be implemented.

Some important items that should be considered in the implementation of new technologies are:

- Modification and adherence to the electoral legislation, if necessary;
- Human Resources;
- Technical Training;
- Financial Resources;
- External Support;
- Infrastructure;
- Data security and integrity;
- Documentation of processes and systems;
- Telecommunications (Internet access);
- Electricity System.

5.5.8. Other Systems and Processes

According to information provided by the IT Department of the CNE, the systems that they use, basically, are spreadsheets in MS Excel format and documents in MS Word format. It is recommended the implementation of a System of Election Administration ("Election Management System – EMS"). It is important to detailed verification of the internal processes of the CNE, followed by the drafting of recommendations for implementation of new systems that meet the need of the CNE, as for example:

- Inventory
- Finance;
- Tax Registration of Parties and International Observers;
- Complaints and Objections (voter registration);
- Registration of Candidates.

5.6. Electoral Results Audit Procedures

With the support of the Pro Palop-ET project, Project to Support Electoral Cycles in Portuguese-Speaking African countries and East Timor, financed entirely by the EU – European Union, was effected a consultancy work for the drafting of a document on Audit Procedures of Election Results.

In April 2011, a seminar for the validation of the procedures was promoted by CNE, with the support of Pro PALOP, counted with the participation of members of CEN, GTAPE, INE and civil society entities.

Picture 10
Seminar on Election Results Audit Procedures Validation[22]

22] Picture: ProPALOP-TL

5.6.1. Procedures

The following text is the full version of the audit procedures that have been validated by the participants of the seminar and must be integrated with the internal processes of the CNE. The concept and the importance of the audit process was also mentioned and used in Cape Verde. In Cape Verde the theme was applied to the audit process from the database of registered voters, in Guinea-Bissau, the audit is used for verification of the election results.

5.6.1.1. Introduction

This document, about the auditing procedures of election results, has been prepared with the aim of identifying appropriate internal procedures for the verification of election results and related issues.

Post-election audits are an integral part of electoral practices. When audits complete and carried out efficiently, they can allow greater participation of the population, maximizing the effectiveness of the results, even if carried out with limited resources.

The electoral audit verification of electoral procedures collaborates on the validation of internal processes and, particularly, certificates if the votes were properly counted and accounted for.

Audits must be sufficiently transparent to promote the confidence, of not only the voters but also of all actors participating, including also the international community. The audit, when well performed, provides the means to identify whether the electoral processes are working correctly.

Post-election audits constitute an essential investment for growth electoral systems, bringing reliability to public institutions and transparency in processes used.

The procedures recommended here apply to voting systems of manual processes – paper ballot papers and not electronic ballot boxes.

5.6.1.2. Transparency

Transparency is a crucial criterion for which post-election audits are conducted successfully. Transparency implies that the public should have the opportunity to observe the audit, ensuring that all stages were carried out correctly. In the course of the audit, citizens must be able to verify not only that the votes were counted correctly, but that Ballot Papers were properly stored until the time of the audit, that an adequate random sample was established and that canceled Ballot Papers or blank votes were properly counted.

In addition, all who wish may be able to verify that the audit procedure itself is clear, complete and transparent. All actors involved in the electoral process must be able to understand what the objective of the audit was and the reason for doing it.

5.6.1.3. Audit

The Audit Team, through consultation with all interested parties, will select the areas to be audited, reflecting the level of confidence desired for each electoral process.

First, it is necessary to determine the minimum percentage of votes that must be examined in each election, totaling, according to the following example:

- Example A: 2% (two percent) of all Bulletins of Votes or,
- Example B: 1% (one percent) of Polling Tables.

Select-if so, randomly and by drawing, certain Polling Station Tables belonging to different Constituencies to compose the sampling to be audited.

Candidates may indicate Polling Table Stations and/or Circles that, eventually, will be audited, in addition to a random sample, but solely at the discretion of the National Election Committee.

If necessary, and at the discretion of the Auditors Team, expands the size of the sample, it can even proceed to recount total of Voting Bulletins.

The criteria for selection of Polling Station Tables that will be audited should be published and made available to the voters and, consequently, the results of audits.

The audit must comply with the following steps:

1. The beginning of the audit should happen immediately after the choice of Polling Station Tables that will be audited.
2. The audit shall be publicly observable, also including the verification of the Voting Bulletins.

3. The process of counting should be manual and conducted in places prepared specifically for this purpose, and which facilitate the public observation.
4. Access to the Voting Bulletins shall be prohibited between the end of the voting process, the random selections of Polling Station Tables and the end of manuals audits.

5.6.1.4. **Local tabulation of results**

Polling Station are responsible for checking:

a) The number of votes obtained by each candidate or party, of spoilt ballot papers, bulletins, not used and unused, bulletins originally existing at the Polling Station, and if there is, the number of ballot papers subject to protest or complaint;
b) The number of voters who voted according to the Electoral Roll for the given Polling Station.
c) The total number of votes for a particular Table of Polling Station.
d) The result calculated in the two items above must be equal.
e) In case of discrepancy in numbers, check if the procedures applied followed what stipulates the Electoral Law in ARTICLE 81 – Opening of the Polls.

5.6.1.5. **Constituency tabulation of results**

Check at the constituency level:

a) The total number of votes obtained by each candidate, Political Party or Coalition of Parties.
b) The number of voters who voted according to the Electoral roll for a particular Constituency.
c) The total number of Voting Bulletins for a particular Constituency.
d) The result calculated in the two items above must be equal.
e) In case of discrepancy in numbers, check if Electoral Law, ARTICLE 87 (1) procedures – Constituencies' general tabulation minutes, were effected correctly.

5.6.1.6. **Regional tabulation of results**

In CRE check:

a) The number of voters who voted according to the Electoral roll.
b) The total number of Voting Bulletins for the Constituencies.
c) The result calculated in the two items above must be equal.
d) If the Ata Operations is in accordance with the Electoral Law stipulates, ARTICLE 91- Minutes of the Regional Clearance.

5.6.1.7. **National tabulation of results**

In National Elections Committee, check if the procedures for counting were carried out in accordance with the Electoral Law stipulates, ARTICLE 93 – Elements of National Clearance.

a) Check the total number of registered voters, the voters who voted and their percentage in relation to the first;
b) Check the total of votes obtained by each candidate;
c) Check the distribution of mandates of Deputies in accordance with the laid down in the Law, according to each party or coalition of parties.

5.6.1.8. **Documentation**

Check if documentation is in accordance with the Electoral Law stipulates, ARTICLE 98 – Fate of documentation.

Check with the National Election Committee, the archiving of the Regional Committee Elections Minutes – CRE, the Electoral Roll and other documentation.

5.6.1.9. **Electoral auditors' team composition**

The Auditors Election Team should be composed of:

- A representative of the National Elections Commission (CNE) – Team Leader.
- A representative of the Supreme Court of Justice.
- A representative Ministry of Foreign Affairs.
- A representative of the National Popular Assembly.
- A representative of the Technical Bureau for Support of the Electoral Process – GTAPE.
- A representative of the National Institute of Statistics – INE (with the technical support function).

In addition to these representatives, put at the disposal of the Team of Auditors, the departments of the National Elections Commission (CNE) – for technical support.

5.6.1.10. **Audit Report**

The audit report must be composed by:

1. The results of the manual count of each Polling Station / Constituency Audited;
2. The comparison between the results of the audit and the official results;
3. The list of detected problems (for example, erasures on the Electoral Roll, problems in security seals, etc.).

Recommendations for items to be included in the audit process:

1. Check if the Electoral Roll has not changed after the end of the Electoral Register and until the end of the elections.
2. Check the authenticity of the Electoral Roll.
3. Check if there was a problem relating to administrative and electoral materials (Ata).
4. Check that the opening of the ballot boxes obeyed the timetables defined by the National Elections Commission – CNE.
5. Check if the numbers of Bulletins of blank Votes, invalid, protested and valid are in agreement with the total of Bulletins of Votes provided by National Elections Commission – CNE / Regional Committee of Elections – for determined Polling Station Table.
6. Check if the minutes are in accordance with the Electoral Law and duly signed by the members of the polling station and by delegates and/or candidates. Check if they comply with all the criteria defined according to the Electoral Law:

I. Article 84 – Operations minutes,
II. Article 87 – General Clearance of Circles minutes,
III. Article 91 – Regional Clearance minutes,
IV. Article 97 – National Clearance minutes.

7. Check if all the administrative material, including the electoral documents, was collected at the Regional Elections Committee – CREs / National Elections Commission – CNE.
8. Check if the destination of the ballot papers is in accordance with the Electoral Law, expressed in ARTICLE 83 – Fate of Ballot Papers.

5.6.1.11. **Final Report**

The final audit report must be signed by all members of the Team and forwarded to the President of the National Elections Committee (CNE), for dissemination and arrangements. The President of the CNE should make a copy public.

5.7. References

Documents consulted:

- Law No. 2/98 – Law of the Electoral Registration
- Law No. 3/98 – Electoral Law for the President of the Republic and ANP
- Law No. 4/94 – Law of International Electoral Observation
- Law No. 4/98 – Law of the National Electoral Committee
- UNDP – Rapport Narratif et Financier du Pace 2008-2010 en Guinea-Bissau , Bissau, le 27 Fevrier 2009
- Guinea-Bissau – Final Report – Early Presidential Elections June 28 – July 26, 2009 – European Union Election Observation Mission
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- UN-EAD – Workshop on Technology in Elections, PPT presentation, Bruxelles 2009
- ACE – Administration and Cost of Elections – Creating an Audit Trail and Ability to Subsequently Check Results Received, http://aceproject.org/ace-en/topics/vc/vcf/vcf07/vcf07b

6.
MOZAMBIQUE

6.1. Introduction

Among the Project to Support the Electoral Cycles in PALOP and East Timor responsibilities – to improve the capacity of electoral management of the Electoral Management Bodies – EMBs, technical support was given to the Technical Secretariat of Electoral Administration (STAE) advising on the topics “Transmission and Verification of Election Results” and “ Voter Registration “ in Mozambique.

6.2. Geographic Information

Mozambique is a country on the east coast of Southern Africa, bordered to the north by Zambia, Malawi and Tanzania; to the east by Mozambique Channel and the Indian Ocean; to the south and west by South Africa and Swaziland; and Zimbabwe over to the west. With a population of 21,669,278 Mozambique has its capital in Maputo, the most populous city. The country is divided into eleven provinces.

6.3. CNE e STAE[23]

Thirteen members, a chairperson and twelve members compose the National Elections Commission (CNE). The National Elections Commission of Mozambique may accept as members, citizens over twenty- five years of age and of recognized moral and professionalism, to perform their duties with competence, independence, objectivity, impartiality and zeal.

23] http://www.stae.org.mz/

The Technical Secretariat for Electoral Administration (STAE) is a public service body for electoral administration represented at provincial and district level or in the city. STAE organizes, executes and ensures technical administrative activities in terms of voter registration and electoral processes. It is headed by a Director-General who has a permanent seat in the plenary sessions of the National Elections Commission, with the right to speak but not to vote.

Figure 8
CNE and
STAE Logos

6.3.1. Electoral System

The President is elected on a two round system: a candidate must receive above 50 percent of valid votes. Otherwise, a second round of the presidential election is held within 30 days after the Constitutional Council disclosures the results of the first round. The top two candidates will be running for presidency during the second round. The President is limited to two consecutive terms, however, the Constitution allows for a third term after a minimum of five years from the last term.

There are thirteen constituencies in the country that correspond to the eleven administrative provinces, including Maputo City and two constituencies in the Diaspora; the constituencies elect 248 and 2 deputies to the National Assembly respectively. Concerning Provincial Assemblies election, 812 members are elected by the 10 provinces and 141 constituencies. Members of Parliament and members of provincial assemblies are elected using the proportional representation system based on the Hondt[24] formula. The latter distributes mandates with no minimum quantity required for representation. The two deputies elected by the diaspora are elected by simple majority.

For the municipal elections, there are 53 municipalities corresponding to cities and towns of Mozambique. Theses cities and towns represent municipal constituencies that elect 53 Municipal Council presidents and 1216 members of the Municipal Assemblies.

Picture 11
Technical Team
Mission to the districts

6.4. Field Missions

The technical work developed in Mozambique was supported by the STAE that conducted field missions to collect information. The fieldwork was developed in the following provinces:

- Maputo City
- Maputo Province
- Inhambane
- Sofala
- Zambézia

The trips occurred between July 12 and 23, 2011. Schools and public buildings used for voter registration and elections were part of the locations visited in the districts. Moamba, Buzi and Massinga were also visited.

24] The D'Hondt method, also known as ratios method or D'Hondt's higher average method is a method to allocate parliamentarian and other representatives elected in the composition of bodies of collegial nature. The method is named after the Belgian lawyer who invented the method, Victor D'Hondt.

6.5. Legislation

During the 2007-2009 electoral cycle the STAE organized and conducted the electoral process that elected the municipal bodies, in 2008; the President of the Republic and the Province and Republic Assemblies Members, in 2009.

The referred electoral process was conducted within a new legal-judicial framework namely, Law 7/2007 February 26 establishing the judicial framework for the President's and the Members of the Assembly of the Republic elections; Law 8/2007 February 26 establishing the Functions, Composition, Organization, Responsibilities and Functioning of the National Elections' Commission; Law 9/2007 February 26 institutionalizing Voter Registration; Law 10/2007 June establishing the judicial framework for the Province Assembly Members election; Law 18/2007 June 18, with regards to the Election of the Municipal Bodies; and Law 15/2009 April 9, providing the judicial regimen for the Presidential, legislative and the Provinces Assembly elections.

After elections, the Assembly of the Republic began a review of the electoral legislation that resulted with the approval, in December 2012, of a new electoral package promulgated by the President of the Republic of Mozambique in February 2013.

With regards to CNE's and STAE's responsibilities and competencies and in the context of voter registration and electoral management, the new approved legislation provides the following:

- Elections' are scheduled at least 18 months before the voting process and are conducted until the second half of October.
- Law 5/2013, February 22 establishes in number 2 that "voter registration is unofficially, and only mandatory for elections by universal suffrage, director equal, secret and personal and periodic."
- Article 19 from the above Law provides that the voter registration period ought to be held in the six months following the elections' date scheduling and the dates are set by decree by the Council of Ministers, under the National Elections' Commission proposal.
- As provided by the Law 5/2013, February 22, voter registration in Mozambique is valid for each electoral cycle.
- Law 8/2013, February 27, article 4 (Right to Suffrage), nº 2, establishes that voter registration is a fundamental condition for the realization of the right to vote.
- It is STAE's responsibility to organize and conduct the voter registration at National and International territory under CNE's supervision.
- STAE must be prepared and capable to conduct the voter registration process according to the electoral calendar.
- Voter Registration Law defines the timeframe for disclosure of the electoral rolls, between the second and fifth day after the registration process end.
- Law 6/2013, February 22, defines the National Elections' Commission (CNE) as the state entity, independent and impartial, responsible for the monitoring of the voter registration and election processes.
- The same Law defines the Technical Secretariat for the Electoral Administration (STAE) as the personalized public service for electoral administration, with offices at province, district and city level.
- STAE organizes, conducts and ensures the technical and administrative registration and electoral processes activities responding permanently to the National Elections' Commission.

6.6. Central STAE Structure

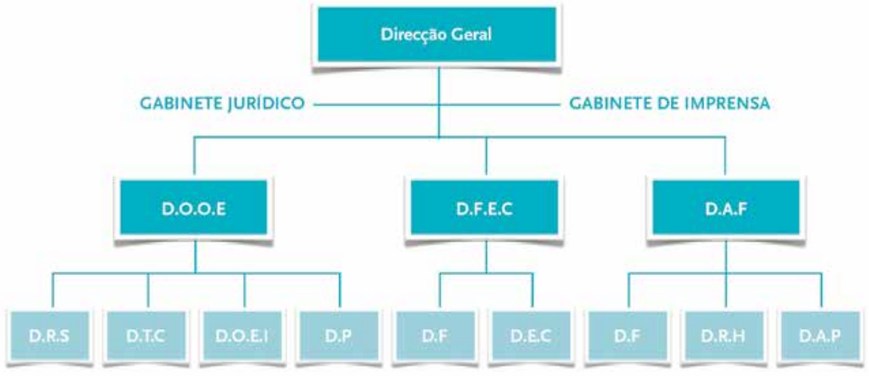


Figure 9
STAE Structure

DOOE Electoral Organization and Operation Direction
DRS Voters' Registration and Suffrage Department
DTC Transport, Communication, and Logistics Department
DDEI Statistics and IT Limitation Department
DP Protection Department
DFEC Civic Education and Training Direction
DF Training Department
DEC Civic Education Department
DAF Administration and Finance Direction
DF Finance Department
DRH Human Resources Department
DAP Provision and Patrimony Department.

6.7. Voter Registration

As established by the electoral legislation, STAE conducted the voter registration. The source voter registration was carried out in 2007 and updated in 2008 and 2009.

Picture 12[25]
2009 Voter Registration

The table below displays the total number of voters per constituencies by 2009.

Figure 10
Registered Voters per Constituency

Constituency	Registered Voters
Niassa	544,770
Cabo Delgado	888,197
Nampula	1,801,249
Zambezia	1,770,910
Tete	796,257
Manica	648,969
Sofala	772,630
Inhambane	641,387
Gaza	639,658
Maputo Province	616,208
Maputo City	695,354
Africa	55,206
Europa	1,154
Total	9,871,949

Source: CNE/STAE

25] Picture: http://www.stae.org.mz/

3,242 mobile and fixed brigades conducted voter registration proposed by provincial STAEs and CNE homologous.

- Fixed brigades: 1.999;
- Mobile brigades: 1.243.

The data was collected in the voter registrations' stations over the country. Each brigade is composed by four members.

6.7.1. Biometric System[26]

The brigades used the Biometric Identification System including a kit, a set of equipment with batteries, keyboard, PDA (later replaced by a mini-notebook, printer, and scanner for fingerprints collection, USB flash drives, SD cards and a laminator. 3,406 units were acquired, 164 of which were used as back- up.

A number of problems were identified in the first set used in 2007 (PDAs) that caused difficulties to provide support to hardware. In 2009, 1,140 PDAs were replaced by mini laptops.

The initiative resulted in the system improvement and fewer problems were identified.

25% of the equipment initially acquired was replaced, 1,100 PDAs for mini laptops.

Data and statistics on voter registration were, when possible, collected weekly by District Supervisors using USB flash drives. In some cases, due to the distance and the difficulty of access data collection was done only at the end of the registration.

Picture 13 PDA Pidion

Picture 14 Complete System with PDA

Picture 15 Complete system with mini-laptop

Figure 11
Voter Card

The data collected is sent to the provincial STAE and after validated sent to Central STAE through External Hard Drives.

The Biometric Identification System (software) used was developed by a South African Face Technologies, a company subcontracted by the Group Insitece -Elect. Various problems were identified and addressed during the registration process. Each software update (or new version) generated extra demand on support and logistics due to the large numbers of equipment in use and distributed throughout the country.

6.7.2. Relevant Issues

During the technical analysis process and interviews with technicians and system managers, important and critical points influencing the voter registration process and system operation and equipment were listed. These points should be taken into account in the internal processes revision besides the technical system specification.

It is important to mention that the issues referred may be easily identified in system from other countries since they are inherent to the use of technology in the electoral processes.

The points identified are the following:

- Algorithm to generate voters' number;
- Data and systems access security – (user and password management);
- Shared password by the system administrator and some brigade elements;
- Logistics for equipment distribution;
- Limited technical support;
- Communication issues between brigade elements and technicians led to delayed technical support;

26] Pictures of the equipment were provided by STAE.

- Brigade's training and capacity building;
- Hardships In the creation and definition of voters' card number;
- Register location was not pre-defined in the system;
- Different information on manual and digital electoral roll;
- Communication with the brigades;
- Delayed technical support and response;
- Terrestrial, maritime and fluvial transport issues;
- Burned equipment when powered by generators.

6.8. Information Technology

IT, among other activities must be used by STAE to collect voters' data during registration, issuing voters lists and assemble and tabulation of electoral results.

IT is critical since STAE main activities use information and communication technologies.

Special attention should be given to IT that requires specialized financial, technical and human resources.

Picture 16
IT technician in Server Room

6.8.1. AFIS

The introduction of new technologies for biometric data collection such as AFIS – Automated Fingerprint Identification System in voter registration entails certain hardships. It is important to assure that all institutions have the necessary resources, competences and expertise to implement such technologies.

Important points that must be taken into account when implementing new technologies:

- Internal change into electoral process at STAE level based on the introduction of new technological resources;
- Law alteration (if and when necessary);
- Human Resources;
- Technical training;
- Financial resources and compatible budget;
- External support;
- Infra-structure;
- Data integrity and security;
- Processes and system documentation;
- Telecommunication (access to the internet and radio systems, among others);
- Power.

In Mozambique, the AFIS was implemented and managed with the support of an external company. The system was not used to its full capacity. Therefore, an evaluation should be held by STAE immediately. Purchasing and introducing a new AFIS system may result in biometric data incompatibility between the two products and hardware inadequacy.

6.8.2. Capacity Building on Information and Communication Technologies

The technical analysis identified certain needs and recommended supplying Central, Provincial and District STAE with IT infrastructure, software and computing networks.

A team of capable technician will be needed to manage the infrastructures provided. Training is significantly important to have capable resources.

Capacity building should include the following areas:

- Telecommunications;
- Data Security;
- Database management;
- Programming;
- Network management and administration;
- Business continuity planning – disaster recovery;
- Physical access security.

To each provincial STAE an IT technician is allocated. Central STAE has seven technicians according to 2011 data:

- 1 (one) IT supervisor;
- 1 (one) programmer;
- 1 (one) database administration;
- 3 (three) net administrators;
- 2 (two) help-desk and support.

Reevaluation and restructure of the Central and Provincial STAE staff is recommended.

6.8.3. Database

As a Database Management System (SGBD), STAE has chosen Oracle 10g as a voters' data storage. The same system is used in the Provinces. The electoral roll creation is decentralized at Province level.

It is recommended that SGBD software is used in future systems. Special attention should be given to licenses and to the technical training.

6.8.4. Data Security

The policy and procedures for information security ought to be defined: electoral roll back up and storage; data history; antivirus set up and update; database access; backups; access to computers; access to user names and passwords; program set up; etc..

6.8.5. Integrated Data Network

The development of data networks must be set as a STAE goal for 2011-2012. Central and Provincial CPDs should be integrated by enabling access to the data network through the internet (VPN – Virtual Private Network

VPN is a private communication network based on the internet. Secure VPN access entails confidentiality, certification and integrity to ensure the required privacy and communication.

Figure 12
Private Virtual Net

6.8.6. Central CPDs STAE – Hardware and Software

Computers used in passed electoral cycles must have their operational systems updated.

With regards AFIS both equipment and software must be evaluated before future utilization. Previous systems will be used based on the new system requirements.

Power, air conditioning and fire systems need to be verified.

6.9. Provincial CPDs – Hardware and Software

Computers used in passed electoral cycles must have their operational systems updated.

New equipment ought to be purchased. The equipment configuration will depend of the new system technical requirements. The new systems will be developed and implemented for the new electoral cycles.

- **Equipment for tabulation of results**

After technical evaluation, the equipment should be distributed to other STAE areas. The equipment should be available to use in between electoral cycles after deletion of the data saved for security reasons.

- **High Capacity Printers**

Maintenance by a certified company ought to be provided. Usage conditions such as availability of supplies for electoral roll printing. Due to non-usage periods and the difficulty to acquire spare parts, the purchase of new printers is recommended.

6.9.1. Bar Code

The introduction of the barcode might improve significantly the logistic process, security and control of the electoral material.

A bar code is a graphic representation of data. The data is scanned by a barcode reading device, which may be a specific equipment or a smartphone. The data is then translated into numbers and letters. Using bar codes avoids typing errors and accelerates data collection. It is an excellent logistic support tool.

Necessary Equipment:

- Management software
- Printers
- Bar code reader – scanner

6.9.2. Voters' Registration Software Specificity

A critical point for voter registration is the choice of system to be used: Commercial System or Open Code System both present challenges, advantages and weaknesses in terms of scope, implementation, development, coding, technical training, maintenance and updates.

In case of commercial software, a contract providing updates, training, maintenance and support should be in place foreseeing its use for two electoral cycles. Therefore a good technical reference of the system should be drawn. Regarding the database, storage should comply with international standards and thus be compatible with the main international database suppliers.

In case of biometric storage systems for fingerprints, storage should comply with international standards, such as ANSI / INCITS 378 e ISO / IEC 19794-2. Data storage using international standards enables future data sharing, compatibility and data integration between different suppliers. The main registration system suppliers as already integrated such requirements into their systems.

Ideally, the software should be owned by EMBs, including source codes, enabling future alterations and independence from supplier. To do so the EMBs must be capable of modifying the programs, produce documents and manage new versions. Software engineering requires specialized knowledge; electoral systems may reach high levels of complexity. Using international standards recognized in the market may avoid future hardships.

The maintenance of information systems for database management is a constant challenge for electoral bodies, such systems being commercial or internally developed. Besides all the technical challenges other issues must be taken into account namely, sustainability, financial resources, human resources and system independence from suppliers.

6.9.3. Technical Activities

- Hardware and software specification – should details the programming language used, database, tools, platforms, libraries, standards, procedures and software quality.
- It is necessary to verify whether the system complies with the requirement initially set.

- Validation test:
  - Phase 1 – Laboratory and controlled environment.
  - Phase 2 – Field test including real simulation to validate software and hardware resources.
- Alignment of hardware and software and consequent compliance to technical specifications by the EMBs.
- EMBs should undergo a pilot phase for testing voter registration. This phase must be planned for the different districts and consequently in different locations in order to verify if the processes and system are compatible to the surrounding context.

6.9.4. Forms and Support Material Specification

STAE ought to revise the material used in the last registration.

The new material must be compatible with the new technological processes. Are part of the mentioned material the following:

- Minutes
- Various forms
- Reports
- Mobile brigades displacement plan
- Final, monthly, weekly and daily statistics.

6.9.5. Telecommunications

6.8.5.1. Radio System

VNF radios ought to be set up in registration and tabulation minutes collection supervisors' vehicles, particularly in areas with bad connection. Compatibility with the system used by the government should be verified as well as shared use of resources.

Objective: facilitate the monitoring and support to registration brigades

6.9.5.2. Mobile Phones

Mobile phones have access to data and are equipped with software for the transmission of registration statistic data and of provisional tabulation of results. The devices should be supplied to the following posts:

- District Supervisor (operations)
- District Director
- Provincial Director
- Provincial chief of operations

6.9.6. Internet / Intranet

6.9.6.1. Central STAE

It is necessary to undergo a revision of STAE portal as well as the development of new features.

Set up Intranet system that will allow shared access to information by the Central and Provincial STAE.

Objective: Provide real time information to STAE, including Provinces and Districts.

Possible use:

- Electoral Laws;
- Common use forms;
- Procedures;
- Minutes;
- Internal resolutions;
- Trips schedule;
- Training schedule;
- Training handbooks;
- Civic Education material;
- Telephone Directory;
- Help-Desk system;
- Knowledge Base – FAQ;
- Organizational structure;
- Voter registration results;
- Electoral results.

6.9.7. Logistics

A logistics monitoring system must be implemented with the utilization of bar codes. All sensitive material and IT equipment must be verified.

Central STAE must be able to access the system that should be integrated in the provinces.

The system, if implemented would allow an efficient control of collections and distribution of registration and electoral material. The system might also monitor electoral rolls.

6.9.8. Transport

A common point identified in all interviews was the hardships related to fluvial, maritime and terrestrial transport, aggravated during elections' period which available resources are insufficient to the necessary support to the brigades.

The review of the available resources is recommended in order to optimize the transport system, logistics and support to brigades, especially in remote areas and of difficult access.

6.9.9. Civic Education

Civic education is fundamental for the success of the electoral process, both in terms of voters' education on the registration process and on the act of voting. During the last election, the rate of abstentions nationwide was significantly high.

The STAE is implementing a series of initiatives close to community leaders raising awareness of the public on electoral processes.

Picture 17
Meeting with community leaders in Massinga, Inhambane

6.9.10. Encouraging Participation

During elections a lack of interest and low exercise of the right to vote can occur. In certain interviews, it was mentioned that the rate of abstention is higher in areas with higher access to Media. During voter registration, the voter receives a voter ID card. The voter ID card is factor that stimulates voters' participation.

6.9.11. Copies of Voters' Rolls Exhibition

The exhibition of the electoral roll is also crucial point of the process. After registration, the voter can verify whether the data included are correct or not. As concluded from the interviews voters' participation in such phase is minimal

Electoral education has a fundamental role on citizens' education registration wise and in terms of the voters' rights and duties.

6.9.12. Database Security

Database backup ought to be saved as a soft copy in banking institutions.

6.9.13. Data Auditing and Quality

I tis recommended that after the registration process auditing is held in order to verify the quality of the data collected. A comparative study between the data collected by STAE and the voter registration is also recommended aiming at validating the information and data gathered.

6.9.14. Business Continuity Planning

STAE must develop a BCP – Business Continuity Planning. As an example, in case of fire, flood or other disaster in Central STAE headquarters the STAE is able to use another location for instance a Provincial STAE, to execute its functions. STAE ought to ensure a backup of the main documents and data in both facilities.

6.9.15. Death and Civil Registry

STAE must cross their information with the civil registry data to validate voters' data.

Registration of deaths must also serve as a tool to eliminate diseased voters from the database. An option is to search through the

civil servants' database particularly search for those receiving death grants This process should be implemented a common procedure between both entities. The activity can be held monthly or biannually and automatized through consultation and sharing of files between the two entities' database.

6.10. Communication and Verification of Electoral Results

The STAE uses two systems for voting count:

- Provisional Counting.
- Final Counting.

6.10.1. Provisional Counting

This counting process has a significant importance in Mozambique where complied data is shared with the press.

Counting is initiated at the polling stations. District supervisors (usually the district chief of operations) visit the tabulation of results site and fill a provisional counting minute with information on the results. The results are sent to the District STAE, after consolidation they are sent to the Provincial STAE (process usually done by fax or telephone).

After gathered, the data is shared with the Press Provincial Centre.

The provincial data, after systematized and consolidated are sent to the Central STAE by fax, email or telephone.

The National STAE analyses the data that after validation are disseminated to the Media – press, radio and Media Centres.

6.10.2. Final Counting

The activities provided by Law and legal deadlines should be taken into account for the official data disclosure.

In the Provinces, the minutes with official results of each polling station are introduced in a system developed for this end by a team of up to five members. The information is therefore, consolidated in a server and sent to Central STAE in soft or hard copy.

6.10.3. Process Improvement

In order to optimize the transmission of electoral results, the information and communication technologies can serve as a reliable tool.

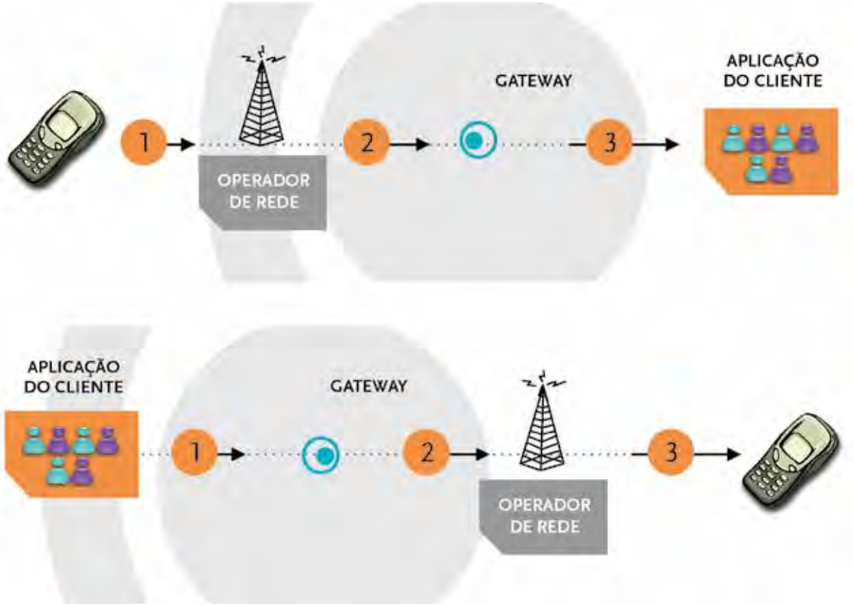
6.10.3.1. Provisional Counting

New applications ought to be developed aiming at a more direct and efficient data transmission. Smartphones or Tablets with access to data transmission can be used. This type of equipment is becoming cheaper and more accessible each day.

Cape Verde is an example of successful utilization of electoral technology including electoral results transmission and collection. The infrastructures available and the geographic dimension is obviously different but the results achieved can be prove of the system validity.

The following figure illustrates the information transmission through SMS.

Figure 13
SMS System



6.10.3.2. **Data gathering and communication**

Following, a systematic example of the SMS system:

1. The District supervisor collects information by using an application installed on the smartphone or tablet.
2. Once the supervisor has access to the data, he submits it through the application (SMS or 3G network) to a central server (Central STAE).
3. The data is inserted automatically in the database.
4. The District accesses data from the server and verifies the information by using a computer, smartphone or tablet with access to the internet. The information is then released by using the installed application.
5. The Province accesses the data from the server and verifies the information by using a computer, smartphone or tablet with access to the internet. The information is then released by using the installed application.
6. Central STAE verifies the information using a computer, smartphone or tablet with access to the internet. The information is then authorized and released via application.
7. Central STAE disclosures the information on the internet.

Reports, statistics and graphics can be developed in order to monitor the quality of the information for instance to control the polling stations that still need to send the corresponding data.

Contingency Plan – In case of problems in any phase of the elections, the process used in the last election period is recovered – Manual. The BGAN (satellite system) system can also be used if enough resources are available.

The application should be developed to allow collection, data consolidation, stability and data transmission. Cryptology can also be used to protect the data collected.

6.10.3.3. **Final Counting**

Regarding final counting the minutes of the tabulation ought to be processed in the same manner used currently. Once introduced in the system and released at Province level, the data and minutes are automatically available at Central STAE. There is only one database available at Central STAE.

The system verifies the information received and automatically compares it to provisional and definite counting indicating identified inconsistencies to be verified/ revised.

The process assumes a network connection between Provincial servers and Central STAE. Central STAE and Province database is replicated automatically.

6.11. **Recommendations**

A list of recommendation is hereby presented, including some already mentioned in this document. The main objective of the present document is to contribute with suggestions and recommendations that can contribute to improve electoral activities; not so much detail the processes and procedures of electoral activities.

Most of the recommendations resulted from interviews conducted at Central and Provincial STAE.

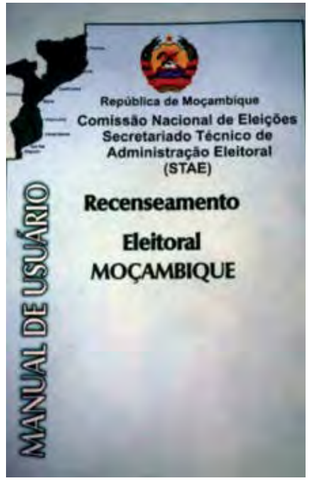
6.11.1. **Voter Registration**

- Development of an action plan for voter registration defining dates, responsibilities, logistics, number and location of registration stations, procedures for brigades recruitment, brigades displacement plan and training. Special attention should be given to the brigades' training on new equipment, access to support and procedure handbooks.
- Voter registration in phases, optimizing expenditures and resources:
  - Phase 1 – Local elections – registration is done only in the Districts going through elections.
  - Phase 2 – Update – general voter registration aiming at the following elections: Presidential, Parliament and Provincial Assembly.
- Biometric system updating.
- Hardware updating for biometric data collection.
- Duplicate register management using AFIS and alphanumerical comparison.
- Continuous voter register at the Provinces during electoral cycles.

- Voter Card – continuous electoral identification issuance. The voter must reconfirm the information at each electoral cycle. In case of duplicate registers, the most recent prevails.
- Develop procedures aiming at increasing the voters' participation in the process of electoral roll exhibition.
- Update the number of voters through the update of the registration data – Statistics Institute.

6.11.2. Information Technology

- Integration of National and Provincial CPDs through VPN. Restrict STAE network access to registered users – Provinces and District. Each District will receive 1-2 mini-laptops to access internet.
- PDA. Data saved into equipment should be deleted that occupy provincial STAEs equipment space and resources. STAE should evaluate the possibility of donating such equipment to research institutions or the government.
- Encourage the use of mini-laptops that can be used in other Provincial STAE administrative areas, District STAE and other government entities and schools.
- Rehabilitation of Provincial and Central STAEs computers room – verify power and air-conditioning system.
- Internet – revision and update of the STAE website.
- Intranet – implementation of a National Information System, integrating Central, Provincial and District STAE.
- Definition and monitoring of technical requirements for new computers' system.



Picture 18
Voters Registration Handbook

6.11.3. New Systems

- Implementation of a code bar system to monitor sensitive material and equipment – Central and Provincial STAE.
- SMS system for voters' information consultation.
- SMS system to connect with all District and Provincial supervisors. The cell phones are previously registered enabling sending information for one person or a group of people.
- Statistic information on the voter registration system – smartphones or tablets with an Android operational system to access the data network. This system should substitute the manual collection of statistic data.
- Registration system for provisory tabulation – smartphones with Android operational system, similar to the system used in Cape Verde. Analyze the possibilities of synergy and knowledge sharing.
- National and centralized Help-Desk system to support the brigades and members of the polling stations, unique calling number.
- National Call-Center system to support and raise the voters' awareness – unique calling number.

Picture 19
Polling Stations Handbook

6.11.4. Handbooks

- Revision of voter Registration Handbook for brigades – procedure and technical handbook.
- Registration system for provisory tabulation handbook utilization for supervisors using a mobile application.
- Statistic Information system handbook for supervisors using a mobile application.
- District capacity building and development of a handbook on the dynamics between the STAE and District CNE. Training and explanation on each actor role in the electoral process.

6.11.5. Training

- Bridge module for voter registration – Central, Provincial and District STAE.
- IT – STAE technicians and Provinces.
- Develop a more realistic training plan for the brigades and in accordance with the changes on the electoral legislation and with the introduction of new equipment and systems – depending on the new biometric system.

6.11.6. Other Activities

- FAQ – Develop a list of the most frequent questions that should be updated permanently.
- Media Center planning with access to direct information from the Central STAE and Provinces. Statistics, results, official releases, and other data is available in the Voter Registration systems and provisory and definite tabulation system.
- Information and Communication Technologies (ICT) consultant recruitment for the process of new biometric systems implementation and installation of a national data network (6 months – 1 year).

6.12. Final Remarks

Mozambique is an immense country with a wide geographic diversity. The country faces great infrastructure challenges. Access to remote locations is limited; there are communication difficulties, cultural training and political conflicts. Promote free, democratic and transparent elections require effort, dedication, commitment, trained human resources, access to technology and financial resources, the latter always limited.

Despite the adversities, STAE has been showing organizational and operational capabilities to surpass the challenges.

The present document focuses in two main activities: Electoral Results Transmission, Verification, and Voter Registration.

Voter registration is an extremely complex task but necessary for a transparent process enabling the population to express their right to vote and of choice.

The electoral results transmission and verification is a fundamental information process that has direct influence in the political stability and relationship between political parties.

This report shares suggestions and aims at contributing to an increased efficiency of internal processes. Due to the time available and the size of this task, it was not possible to detail all recommended actions and processes. Solutions depend on strategic decisions from STAE and CNE especially in terms of technology. Solutions also depend on technical specifications, possible suppliers and budget.

During the following years, STAE ought to focus on strategic planning, in the elaboration of an operational plan, in the development of new systems and computers network, update of equipment, staff training and in their offices rehabilitation. These efforts require effort and must begin immediately.

6.13. Situation in 2013

6.13.1. Voter register application upgrade

In 2007 STAE conducted the first digital registration and used new information and communication technologies to collect data from voters at the registration brigades level as well as at CDPs level.

STAE conducted a new voter registration between May 25 and July 23, 2013 in Mozambique's 53 Municipalities. The registration was digital but the application for voter register was improved taking into account lessons learned from the 200/2009 process:

1. All Province CPDs are interlinked through an intra network, supported by a rented circuit. The flux of data as well as the software (including anti-virus) updating and access to servers is facilitated. Central CPD technicians can access Province servers physically distant from each other.
2. To improve data consistency, the current application for voter registration collects the fingerprints from 6 fingers. The previous process would only collect the fingerprint from the right hand indicator. A double reader, collecting the information faster, replaced the simple fingerprint reader.

Picture 20 Leitor Duplo de Impressões Digitais

3. PDAs, mini laptops were replaced by laptops with higher storage capacity (500Gb) and higher processing velocity (1,8 Ghz and 4 Gb of memory).

Picture 21 Mobile Kit

Picture 22 – Mobile Kit

6.14. Documents Consulted

- Bulletin of the Republic – Law 7/2007 February 26.
- Bulletin of the Republic – Lei 8/2007 February 26.
- Bulletin of the Republic – Law 9/2007 February 26.
- Bulletin of the Republic – Law 15/2009 April 9.
- Bulletin of the Republic – Ruling No 30/CC/2009 December 27.
- STAE – Report on the Voter Registration situation, Maputo City, April 2008.
- STAE – Operational Plan for Voter Registration update, Maputo City, March de 2008.
- STAE – Report on the 5th week of Voter Registration, Moamba District, October 2007.
- STAE – Brigades displacement plan in Moamba District – 2007.
- STAE – Electoral Roll (partial) – Inhambane – 2009.
- STAE – Minute of the Provincial Electoral Operations – Election on the President of the Republic (partial) – Inhambane – 2007.
- STAE – Mabote District – Partial Tabulation Data Flowchart at district level – PR – 2009.
- STAE – Mabote District – Partial Tabulation Data flowchart at district level – AR – 2009.
- STAE – Mabote District – Partial Tabulation Data flowchart at district level – AP – 2009.
- STAE – User handbook – PDA – Voter registration – 2007.
- STAE – Polling stations members' handbook – 2009.
- Bulletin on the political process in Mozambique – No. 47 – October 27 2010 – Published by CIP and AWEPA.
- European Union – Electoral Observation Mission. Final Report, Presidential, General and Provincial Assemblies elections 2009.
- EISA Election – Observer Mission Report – Presidential, Parliamentary and Provincial Elections of Mozambique – 28 October 2009.

7.
SÃO TOMÉ AND PRÍNCIPE

7.1. Geographic Information

São Tomé and Príncipe is an Island state in the Gulf of Guinea, composed by two main islands (São Tomé and Príncipe Island) and various little islands spread in 964 km². The country has no terrestrial borders close to Gabon, Guinea, Cameroon and Nigeria coasts. The population sums up to 212,679 inhabitants, the capital in São Tome the most populous city. The country is composed by seven districts spread within two islands.

7.2. Electoral System

The National Assembly is the State supreme body. The assembly is constituted by 55 members elected by seven pluri-nominal constituencies, known as regional councils. The members are elected using proportional party list. Members have a mandate up to four years.

The executive power is composed by the President and the Prime.-Minister, chosen by the National Assembly and approved by the President. Under the Prime Minister's proposal, the President appoints the Council of Ministers. The President is elected by popular vote and the mandate lasts five years.

7.3. CEN and GTE

The National Electoral Commission (CEN) is the only entity in São Tome and Principe has jurisdiction to undergo the voter registration, referendums and elections. The Technical Bureau for Elections (GTE) is the technical entity that supports the Electoral Commission.

7.4. Voter Registration

The law of Right to Vote and of Voter Registration of Sao Tome and Principe foresees the annual voters' database update, undergone during the quarter of the year. The voter registration should be held in every geographic unit of the country, Districts and abroad where there are embassies.

Each year the National Electoral Commission and the Electoral Technical Office should be prepared to initiate activities.

Picture 23
CEN and GTE headquarters in São Tomé

One of the most important as steps is the computer system of registration support. The computers system must comply with the Electoral law basic requirements and adapted to the CEN technical needs.

The CEN has a system to collect voters' data. The system was updated for the Legislative and Local elections in 2010 and for the voter registration in 2011.

Following, pictures of the equipment used for data collection.

Picture 24 Voter Registration Kit

Picture 25 Equipment Details

Picture 26
GTE technician, Heráquio Teixeira

According to the technical report presented by CEN, several problems were identified in the registration system. These problems must be solved or future utilization will be jeopardized.

Therefore, and aiming at complying with the legislation, two possible short-term scenarios were identified for CEN: the development of a new voter registration system and updating the current system. The two scenarios have advantages, pros and cons.

São Tome and Principe situation is similar to that of various other countries needing improvement in the voter registration system.

7.4.1. New System

Pros:

- Developed according to CEN technical specifications, with the support of GTE and based on the technical management skills acquired in the last registration processes.
- Developed according to international techniques for collection and storage of biometric data with resources and expert assistance.
- Use of existing database as support and reference.
- Development of validation testes and system alignment.
- Implementation of pilot phase in the field assuring full functioning of technical specifications and correction of flaws if identified.
- Technical training efficiently conducted with enough time to enable full assimilation of processes.
- Full technical documentation and operation handbooks in Portuguese.
- Access to the system in network with a security level adequate to each specific function.
- Print of new voters' card more resistant and with increased security resources.
- Support and maintenance long-term contracts defining the levels of service and time to respond to problems.

Cons:

- High costs.
- Time for the services' recruitment and new equipment purchase.
- Longer time taken to develop a new system.
- Longer time is taken to undertake the validation tests.
- Longer time is taken to implement the pilot test and to provide technical training.

7.4.2. System Update

The following picture illustrates the registration system for voters' data collection.

Pros:

- The development is quicker since no significant changes are planned.
- Lower cost to update the software.
- Hardware and database compatibility ensured.
- GTE technicians know the system resulting in lower costs with training.
- No need to acquire hardware besides to substitute damaged equipment and provisions.
- The list of problems to be corrected were identified and analyzed by CEN as mentioned in the specific report.

Picture 27
System used in 2011

Cons:

- The same supply company developing the first system must to be hired since CEN does not possess the source codes preventing another supplier to update the system.
- It is not clear whether the system complies with the international standards for the collection and storage of biometric data.

- Lack of technical documentation and training handbooks both in Portuguese and in English.
- CEN detected various flaws in the system that must be corrected. The company supplying the software ought to assure the timely correction of the detected flaws.
- Lack of formal documentation on the procedures necessary for the update, substitution and purchase of new equipment for both the registration kits and server.
- Lack of formal documentation on the procedures needed to update the software installed in laptops and server, for example, MS SQL Express, OS Windows, antivirus, security updates, etc.

7.5. Remarks and Recommendations

Due to the time available, updating the existing system is the more adequate alternative.

The choice depends on the associated costs, in the capability of the supply company to correct identified flaws and its capability of adapting the system to the CEN/GTE needs.

Additionally it is necessary to align the system to international standards of biometric data collection and storage; update and develop new modules according to CEN specification – improvement of the identification and validation of duplicated registers module; enable network utilization of the module by multiple users with ID, log of activities and secure access to the server.

In case the update is not a viable option, it is necessary to search for alternatives offered by the market and develop the technical specification responding to CEN minimal requirements besides assuring the resources needed in all phases and by using the adequate procedures.

The process ought to be initiated as soon as possible.

The development of new systems must rigorously undertake different steps such as: technical specification; recruitment of suppliers; define the scope of the system; system development; equipment acquisition; validation test; ratification; capacity building; etc. ignore any of the mentioned phases may compromise the integrity and quality of the final product.

Independently of the choice made it is extremely important to follow the international standards for biometric data storage such as the ANSI/INCITS 378, ISO/IEC 19794-4 e ANSI/INCITS 385. These norms are applied to biometric identification systems using the collection of pictures and fingerprints – Automated Fingerprint Identification System – AFIS and Facial Recognition System – FRS.

Long-term contracts of support and maintenance between CEN and suppliers are recommended independently of the option made. These contracts will guaranty the needed technical support and eventual system updates applied correctly and with no added costs.

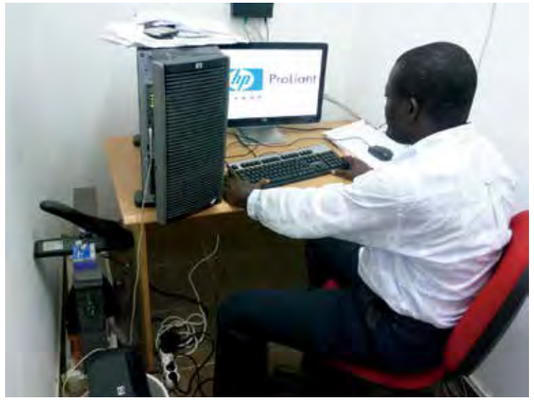
It is also important that suppliers commit to have a technician fluent in Portuguese in the field during the tests phase and the beginning of the voter registration. The objective is to accelerate and immediately solve unexpected problems.

If the supply company does not meet the minimal requirements for the current system, functioning the development of a new system must start immediately.

As complementary activities, the CEN should identify the needs in the IT department for the next voter registration period. Suggested activities:

- Evaluation and operational tests of all registration kits – laptop, printers, scanner, digital camera, cables, batteries, external memory, etc.
- Purchase of new server. The existing one should be kept as a backup device.
- Identification of needed material for support and provisions such as paper, forms and toners for printers.
- Training and operations' handbooks on the kits.
- Update of operational system and antivirus – kits and server.

Picture 28
Server Room



In long term, training to CEN/GTE technicians with Information Technologies is recommended – at least two technicians – namely on database administration and development, network and help-desk (users' support) administration. The training should be specific to Microsoft technologies, in use in GTE. There are various training modules available in the market, short-term duration modules with appropriate evaluation and certification exams.

Additionally to the technical training, it is important that CEN/GTE members receive specific training on Voter Registration Bridge Module, as preparation for the following voter registration.

7.6. System Modifications and Support

The identified problems are being solved with the support and advice of the procurement unit of UNDP (UNDP Procurement Support Office), also within the support component of the Project PALOPs Pro-TL.

In order to use the current system for voter registration correctly the following adjustments must be made:

	Adjustment	Comments
1	The system set up on the Kit doesn't allow data correction. When an alteration is needed a new register must be created resulting in duplicated registers.	Develop a module for the Kit's data alteration.
2	In case of alteration two duplicated registers are automatically deactivated by the system (see item 1).	The most recent register should be kept.
3	Identifying the source for INACTIVITY is difficult.	Server data base.
4	Include a TRANSFER and DISABILITY option in the main menu.	Server data base.
5	The system deactivates automatically a significant part of the registers for no apparent reason, occurring after the verification of duplicated registers during the "CLEANING" process.	A revision of the duplicate data verification process "CLEANING" is necessary.
6	After data entry on Kit, and during the data transfer process, some of the files are not transferred to the server.	Data can be identified in the laptop and pen-drive but don't show up in the server.
7	Delete test registers from data base that show up as ACTIVE.	
8	Failure generating voter's card number. Some voters have their card number corresponding to a specific location but appear on the electoral roll of other location.	Error on location table of the server is likely.
9	One user to access all kits.	Each kit should have its own use rand password, besides administrator's access to system maintenance.
10	Error identified in server during system logout.	
11	The system doesn't allow working in net hampering the maintenance and usage of the maintenance and printing modules.	The system must allow multiple accesses to server through its own interface, in module client-server.
12	Embody tools for data deleting.	Example: the system does not locate words when there are two blank spaces between words. The system must delete characters in blank in the beginning and end of the words.

	Adjustment	Comments
13	The search service of alphanumeric fields is very restrictive hampering register localization. The algorithm used for search should be improved.	The system should allow search by similarities. For example Joao and Joao, both fields should appear in the search.
14	Module for double register identification must be revised.	Criteria: a) The registers should be deactivated automatically by the system. b) Double registers should be validated and, if necessary, deactivated by human intervention after analysis from authorized operator.
15	System Log – Server and Kits	All system operations should be registered and saved on own log. Access to log must allow search. Should allow data saving categorized by date with an option to save and recover with an external disk.
16	Develop specific module for search by digital print - "Automated Fingerprint Identification System – AFIS".	Should obey to international standards ANSI/INCITS 378 e ISO/IEC 19794.
17	Develop specific module for image search (photography) - "Facial Recognition System - FRS".	Should obey international standards ANSI/INCITS 385-2004.
18	System documents, operation, and training system of all system modules.	Should be provided in Portuguese and English. Documents on how to add "screenshots," programming language used in development, database structure, with the tables and diagrams entity-relationship.
19	Procedure handbook for update and substitution of equipment – kits and server.	Develop
20	A copy of the software program set up for laptops and server, with a set up and procedure handbook in Portuguese and English, Should include the codes source of the system components allowing the final user full access to and system adaptation.	Special attention should be given to the procedures generating the voter card number since this number is generated along with the information of the machine number.
21	Module for the CEN President name and signature change printed into the voter card.	Develop module
22	Procedure and support Handbook for the operational system update, MS SQL, Antivirus and security "patch".	

	Adjustment	Comments
23	Any other failure during the system actualization process, when identified, should be corrected immediately.	
24	Reports – Kit	The system set up must generate day to day, weekly and monthly statistics' data. The system must generate a list of records for voters' verification. The lists should be categorized by date of register, name, etc.
25	The supplier must send an expert, fluent in Portuguese, to follow on the implementation of changes, support, training, tests phase and the beginning of voter registration.	
26	Server – Review, automation and simplification of backup process	Develop Module.

7.7. Documents Consulted

- Elections in São Tomé and Príncipe – 1990-2006 – Referendum, Presidential, Legislative, Local and Regional, Maia da Graça Miragaia Archer, Sónia Tavares, National Electoral Commission, 2006.
- Technical Reports of CEN and PNUD.
- Electoral Legislation.

8.

EAST TIMOR

8.1. Geographic Information

East Timor is located to the South of Asia and northeast of Australia, far east from the Indonesian archipelago. East Timor is composed by the eastern part the Island of Timor and by the Oecussi enclave located in northeast Timor.

East Timor lays its only terrestrial borders with Indonesia west of the main land and over to the east, south and west of Oecussi. East Timor adjoins over the sea with Australia through the Timor Sea to the south. East Timor capital in Dili is located in the North coast.

With an area of 15,007 km², East Timor has a tropical climate, hot and humid with dry and raining seasons.

East Timor has 1,153,800 inhabitants, according to UNDP's HDI[27] data, from November 2011.

Tétum and Portuguese are the two official languages, Indonesian and English are considered work languages by the East Timor constitution.

8.2. Electoral System

East Timor Chief of State is the President elected by popular vote for a five-year mandate. Even though the role of the President is mainly symbolic, the President has the power of veto for certain laws. After elections, the President assigns as Prime Minister the leader of the main party or colligation. The Prime Minister chairs the State or Government State.

27] Human Development Index (HDI) – http://hdrstats.undp.org/en/countries/profiles/TLS.html

The National Parliament is unicameral; the members are elected by popular vote for a five-year mandate. The number of parliamentarians varies between 52 and 65. The first mandate elected 88 members exceptionally.

East Timor has 13 administrative Districts each one of them with a capital. There are 65 sub-districts and 442 *sucos*. There are 2,225 towns spread by the country[28].

In UNDP's HDI East Timor ranks on 147 out of187 countries with an HDI of 0.495. The data corresponds to November 2011[29]. The region corresponding index is 0.671 hence East Timor index is below the region average.

8.3. Legislation

The present study was based on the East Timor Law for the electoral management, CNE and STAE published in the Republic Journal, the East Timor Democratic Republic official publication as listed below.

- Law No 6/2011, June 22 – First amendment to Law No 5/2006, December 28 (Electoral Administration Bodies).
- ANEXX – Republication of Law No 5/2006, December 28, (Electoral Administration Bodies).
- Law No 8/2011, June 22 – Second amendment to Law No 7/2006, December 28 (Electoral Law for the President of the Republic).
- ANEXX – Republication of Law No 7/2006, December 28 (Electoral Law for the President of the Republic).

28] Voter registration process – UNEST

29] United Nations Development Programme – UNDP – http://hdrstats.undp.org/en/countries/profiles/TLS.html

8.4. National Elections Commission – CNE

CNE is the entity responsible for the elections monitoring in terms of electoral law and regulation compliance.

The fifteen commissioners are assigned by the National Parliament, the President, the Government, the Civil Society and religious entities[30].

The CNE has a staff of 150. A headquarter is under construction in Dili, and in each thirteen Districts[31].

CNE identified needs and appointed suggestions according to which are essential and the base for the development of a civic education plan and for the implementation of a strategic and operational plan. An important point appointed was the need to share voters' database which technical management is STAE responsibility.

8.5. STAE

The Technical Secretariat for Electoral Administration (STAE) was created by Government Decree No. 2/2003 July 23, as part of Ministry of State Administration responsible for the organization and execution of electoral processes. According to Law 5/2006, December 28, the STAE is the electoral administration entity in East Timor based on Democracy, Impartiality, and Transparency[32].

Picture 29
CNE headquarter, in Dili

30] East Timor Electoral System Evolution – Tomás do Rosário Cabral – STAE.

31] According to information shared by the CNE President, Mr. Faustino Cardoso Gomes.

32] STAE – Technical Secretariat for Electoral Administration Strategic Plan – 2010 – 2013.

The STAE is a State Administration and Spatial Planning Ministry entity responsible for the organization and execution of the electoral processes. STAE's Director manages the entity services. The following departments compose STAE:

- Technical Department of Information and Voter database management;
- Department of Support and Management, Electoral Training and Education;
- Administration and Finance Department;
- Logistics Department.

STAE has offices in each thirteen districts of East Timor.

Picture 30
STAE headquarter, in Dili

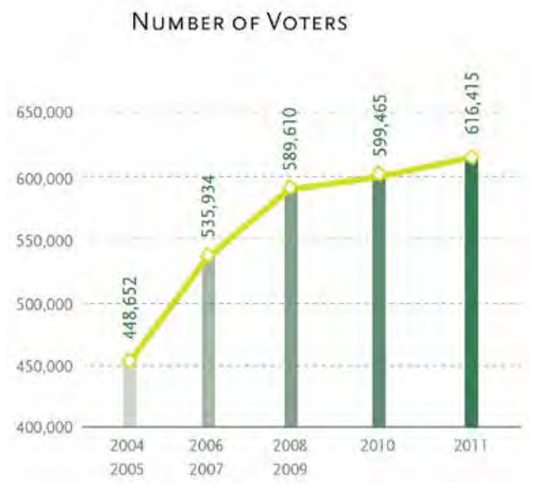
Picture 31
Minister of State, Ana Pessoa, Tomas Cabral – STAE Director, Xanana Gusmão – President of the Republic and Paulo Siqueira, consultant (2005)

8.6. Voter Registration

The voter registration started in 2004 and had the support of donor countries, the UN through UNDP and several international organizations such as the Australian Electoral Commission (AEC), USAID-IFES (International Foundation for Electoral Systems) and the Portuguese Institute for Development Assistance (IPAD).

The voters' database has been update continuously as determined by the electoral legislation. The objective is to allow Timorese citizens completing 17 years old by election period not yet registered to do so and receive a voter's card.

Picture 32
Voters Registration in Dili (2011)



Graphic 1
Number of registered voters in East Timor

The following graph shows the number of voters registered each year and the updates undergone since 2004. The information of 2011 are not official. The data were provided by STAE.

The first registration was held in 2004. Several brigades went to through the country to collect data. The latter were introduced manually in the electoral roll by the brigades. The voter would then receive a voter card and become able to vote.

Due to the lack of a National Identity Document, the voter card has been used as an official document, accepted by the banking system and other institutions as so.

After registration, a copy of the electoral roll is sent to Central STAE in Dili for introduction into the database. The Electoral roll were produced in Portugal and donated by the Portuguese Cooperation.

A team of 150 students from the Timor Lorossa'e National University (UNTL) that work alternate shifts at STAE entered the voters' information into the database for three months. During this period, the students received a scholarship financed by UNDP and a participation certificate.

Lists were then prepared for exhibition. Exhibition and potential changes period lasts for ten days based on the electoral legislation. After the needed changes and updates, the final lists are produced to be used by the Chief of *Suco, Suco* Council and the Chief of town.

The State of East Timor supplied a hundred computers for provisional use by Central STAE and districts for data entry. The United Nations' Mission (UNTAET) donated the computers.

Picture 33
UNTL students working on data entry (2004)

One of the main activities preceding the voter registration was the definition of number and names of the official *Sucos* and Towns. STAE and the State Administration Ministry jointly implemented the activity.

The following are some of the issues encountered during the data collection process[33]:

- Names of non-existing Towns or spelled differently from the Law;
- Forms lacking the voters' signature or digital print;
- Forms lacking name and/ or signature from the registration officer;
- Birth date in blank or for citizens with less than sixteen years old;
- Form filling date in blank;
- Name of a non-registered registration officer;
- District/Suco/Town data incomplete;
- Voters' address with incomplete data;
- Parents' name in blank;
- Forms not corresponding to the correct district;
- Voters' name in blank;
- Duplicate registration;

33] IFES – Activities' Report – 2004-2005 – Paulo Siqueira.

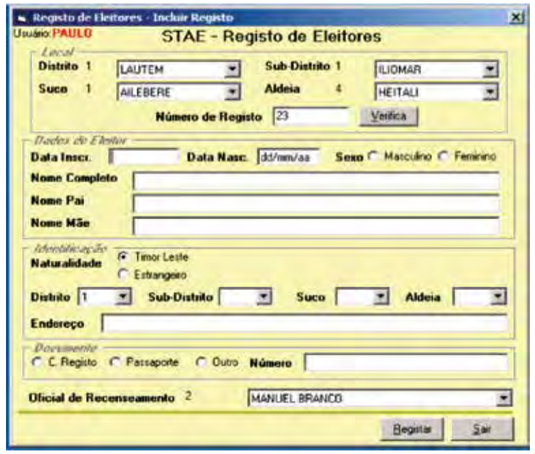


Figure 14
First version of the Data Entry System

- Incorrect data entry (number and information);
- It was not clear whether or not a form was canceled;
- Forms without the registration official stamp;
- All three forms' copies sent to STAE.

Despite the problems identified, the process was considered satisfactory and approved after auditing in 2005 by an IFES consultant. Voters' lists were updated during 2005 elections. The data has been updated continuously as stated by the electoral legislation.

Figure 15
Voter Card
2011

After 2005, a plan for the voter registration process update was developed aiming at improving the database quality and at distributing a new voter's card. The new voter's card has better quality as opposed to the previous one in paper not secure, easily counterfeited and low durability.

The current version of the voter registration system was developed during the pilot project in 2006 at STAE when the system in place was updated to introduce new information such as voters' signature, fingerprints and picture.

The voter registration kit is composed by a laptop, a camera, scanner for fingerprints, tablet, printer, ribbons, cleaning kits and voter cards.

The data updating process is cyclical as illustrated below:

Each laptop has an external disk where data is saved daily. The external disk is then sent to STAE in Dili where the data is transferred and consolidated in the server. A copy of the consolidated data is transferred to an external disk and forwarded to the districts where the information is updated in the laptops.

The information gathered close to the voter is the following:

- Birth Date;
- Full name;

Picture 34 Equipment for voter registration

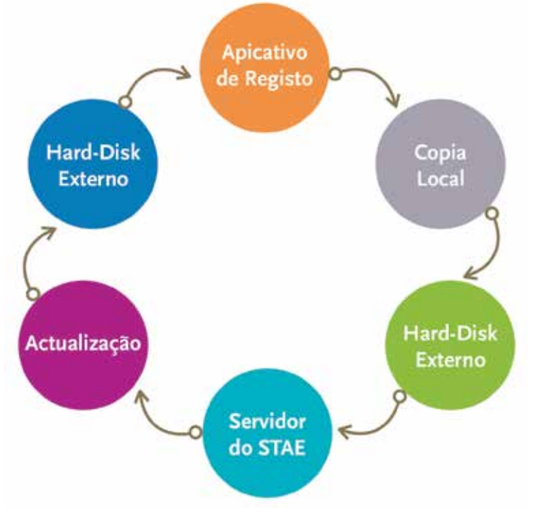


Figure 16 Data updating cycle

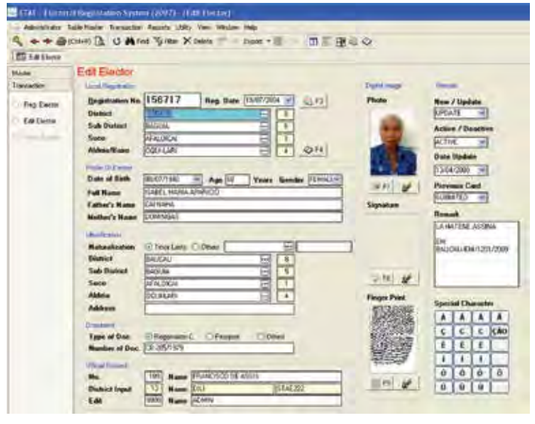


Figure 17 Voters' data gathering System

Picture 35
Voter Registration in
Sub-district of Nain Feto

- Gender;
- Filiation;
- Birth Location – district, sub-district, suco and town;
- Address;
- Passport or other ID number;
- Signature;
- Fingerprint – right thumb.

Since the first registration in 2004, four updates were made: the first in 2006-2007 and then in 2008-2009, 2010 and 2011, see graphic 1.

2011 voter registration began in July with the end planned to December of the same year.

The database update is done continuously through the 65 East Timor sub-districts all equipped to execute the necessary tasks.

In each sub-district, a team of two employees executes the task. The team counts with system operators and technical assistants with the following responsibilities[34]:

34] Electoral area development Durante Tinan Lima-Harií Futuru Democracy, Impartiality and Neutrality (2003-2008) – STAE – 2008.

- The system operator introduces data into the system, verifies documentation of citizenship, copies information to external disk and sends it to Central STAE.
- The technical assistance ought to support the system operator and the district coordinator and if necessary give technical assistance.

Picture 36
Sub-district operators, not working due to the lack of voters cards

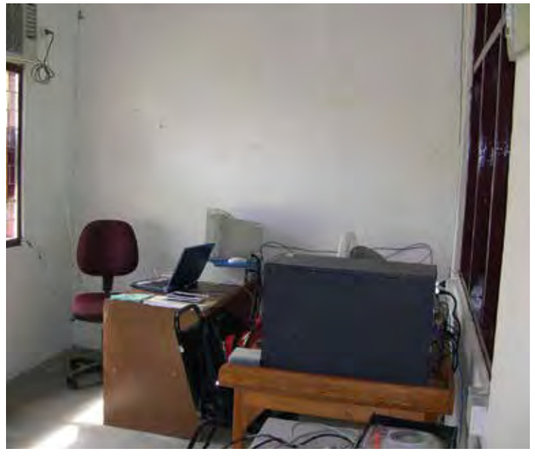
The following problems were faced by STAR during the process of registration[35] :

- Logistics – in terms of assistance to the registration teams due to the lack of ribbons, cleaning kits and forms, resulting in the almost full stoppage of the registration teams;
- Registration kits maintenance, especially printers.
- Power – one of the critical points of the support to the voter registration process requiring the use of generators and resulting in logistic problems and gas consumption;
- Human Resources – not all teams foreseen for the process were not operational as scheduled;
- 2006 political crises.

One of the problems mentioned in the interviews was related to the verification of duplicate register. Even though the system is able to capture voters' fingerprints and pictures the data does not comply with international standards for collection and storage of biometric data. The information is used to compare data and identify cases of duplicity.

The duplicity verification is made based on the comparison of alphanumeric data such as names, registry location, age, etc.

35] Idem.



Picture 37
STAE's server room (2003)

Another problem identified corresponds to the increased request for alteration of data from older voters. The Timorese Government established a programme to financially support the older share of the population. To access such support the citizens ought to use their voter cards as evidence of age. Consequently, the number of older registered voters increased as well as the number of voters asking to change their birth date to have access to the governmental benefit.

The mentioned results from the voters' database for other ends than the electoral process creating a hardship in the register process and in voters' data update.

8.7. Server Room

The equipment used initially was donated by USAID in 2003 and are in use to date. The equipment update is foreseen for the electoral process of 2012. The acquisition of new equipment will be financed by the State budget allocated to STAE.

The image below from 2003 corresponds to the server room before installation of the new equipment.

The following sequence of pictures illustrates the different stages of the server room set up, done in 2004 a few days preceding the date entry process.

Picture 38 Equipment set up – Server Room (2004)

Picture 39 Equipment Set up – Server Room (2004)

The picture that follows corresponds to the server room in November 2011 and shows the same equipment purchased and used in 2004 in place to date.

Since the registration system update in 2006 neither the operational system MS Windows 2000 nor the database management system – SGBD (Oracle,) were updated to date.

The technical capacity in terms of information technology still constitutes a challenge. It is necessary to invest in formal training especially in the areas of administration and network, database and development of applications.

STAE technicians are trained to administrate the system on a daily basis. It is still necessary to train these same technicians to manage equipment without external resources.

The development of an IT strategic plan aims to review and update of the overall system including the local net (LAN) and the district integration by using the national data network (WAN/VPN) is fundamental. The plan should include a feasibility study for the voter registration system update in order to use biometric data effectively and according to international standards.

Picture 40
Server Room
(Nov. 2011)

Picture 41
Electoral Roll Files
(2005)

Picture 42
Filling Electoral Roll (2005)

8.8. Electoral Roll

The electoral roll copies are filed by numerical order and by District and are saved in a STAE specific area. The original forms are saved at District level.

The electoral roll storage has not been a priority task. The STAE should take advantage of the periods in between elections to reorganize the files.

As can be seen in this picture from November 2011 there is still a lot of work to be done to organize the electoral roll.

Na IT consultant has been scanning the files but unfortunately due to the lack of resources the scan been used is of low velocity. An appropriate filling system should be developed with the needed professional resources to execute the task quickly and efficiently.

Picture 43
Electoral Roll Files
(November 2011)

8.9. Civic Education

Civic education is fundamental for the complete electoral process to raise awareness in terms of both voter registration and voters' participation during Election Day.

8.10. Voters' Registration and encouraging participation

During voter registration, the voter receives a voter card, which seems to be a critical factor for the voters' participation and an incentive to the process.

For voters' education billboards, bracelets, emblems, folders, etc. were used as promotion material. The campaign's focus was to clarify the citizens on the documents needed for registration, diffusion of the election's date, how to vote and documents needed to vote.

Figure 18 Voters' Education (2009)[36]

8.11. Electoral Roll Exhibition

The electoral roll exhibition the voter, after registration, has the opportunity to verify whether his name is on the list and if the information published is correct.

In East Timor besides the government, the UNMIT, UNEST and UNDP have an important role in the process in terms of capacity building and support in material for public awareness.

36] UNEST

Figure 19 Voters' Education – Display and Change (2009)[37]

Figure 20 Voters' Education – Voters' List (2009)[38]

The following billboards illustrate the work developed in 2009 during the awareness campaign targeting registered voters.

Civic education has a fundamental role in terms of voters' education both in terms of voter registration and of voters' rights and duties.

37] UNEST
38] UNEST

8.12. Death and Civil Registry

According to the legislation, STAE is responsible for the maintenance and storage of the voters' database. The civil registry is in the first phases of implementation and the establishment of technical processes of information validation between the two databases is not foreseen to date.

STAE possesses a list of deaths that after validation close to the family and the community is used to update the database.

8.13. UNVs

There are around ten volunteers from the UNV programme working now in the East Timor electoral project.

The UNV are allocated to the districts and Central STAE (two for each district and two at Central STAE). The volunteers provide support to logistics and voters' education and their role is fundamental for the assistance to the voter registration process.

UNEST

UNITED NATIONS ELECTORAL SUPPORT TEAM IN TIMOR-LESTE

ISSUE 22 • September 2011

Arrival of new Electoral UN Volunteers

Figure 21
UNEST Newsletter Cover, Edition No. 22, 2011

8.14. Communication and Tabulation of Results System[39]

8.14.1. Introduction

The following study requested by STAE in November 2011 illustrates the planning of the Electronic System for Electoral Results Transmission and Consolidation focused on 2012 elections. The system complies with the electoral legislation and took into account the financial, technical and schedule constraints.

The collection of information from operations and the communication of electoral data through media centers take part of this study.

8.14.2. Electoral Information and Communication

The External Relations and Public information department of STAE must have an infrastructure implemented that allows the quick, safe and efficient communication between the polling stations, the sub-districts, districts and Central STAE. Such an infrastructure will support the mentioned department activities. Additionally, the sub-districts/districts must develop a system of electoral data communication.

Hence, it is fundamental that the sub-districts/districts have a radio, a landline and mobile phone and access to the internet.

- Radio – provide VHF radios at sub-district/district level for the collection of tabulation minutes, particularly in areas with no available network.
- Cell phones – enabling statistic data communication; access to email for provisional tabulation results transmission.
- Electoral results disclosure – the sub-districts/districts are equipped with a set of laptops, a projector, and screens to communicate institutional messages and the results.

Necessary equipment (at least one per district and one per sub-district):

- Radio VHF;
- Laptop;
- Projector;
- Screen;
- Smartphone.

39] This study was developed between October and November 2011. By the time, it was not clear which were the specification requirements; no follow up was given to the system development or implementation. It is part of this document as an example for study and analysis purposes.

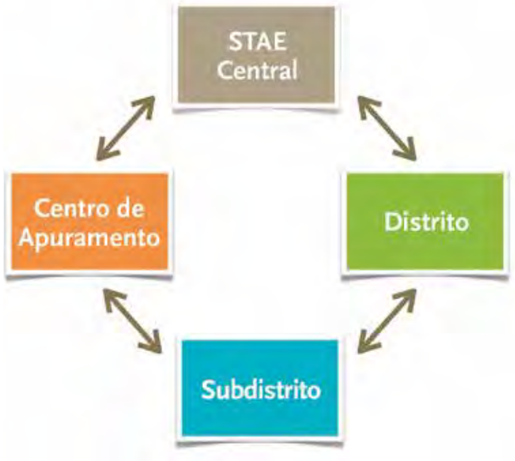


Figure 22
Communication Model

8.14.3. Data Communication

Figure 23
Data Transfer
Procedure

The data transmission process begins at the voting Centre where the operations manually executed. AT sub-district, district and Central STAE level STAR – Communication and Tabulation of Results system – is used. STAE's technicians developed STAR.

8.14.4. Tabulation Procedure at Voting Centre/District

1. Voting Centres/Voting stations – after the tabulation release at the voting centres, the Tabulation minutes are forward to the sub-district.

2. Sub-district

a. After tabulation at the voting centres, the sub-district begins the data consolidation introduced in the STAE's IT Tabulation system.
b. A copy of the data is sent to the District Tabulation Assembly.
c. The sub-district awaits for confirmation from the Central STAE.
d. The information is then disclosed by media rooms at sub-district level.
e. Public provisional data disclosure through media system (screen + projector + laptop).

Figure 24
Provisional
announcement
of election's results

3. District Tabulation Assembly

a. The data consolidation begins with the data sent by the sub-district that is introduced in the STAE's IT tabulation system.
b. By the end of the process, the system releases a District Tabulation minute.
c. A copy of the encrypted electronic data is sent to Central STAE.
d. The district must wait for a reception confirmation by the Central STAE.
e. Data harmonization follows.
f. The provisional data is then publicly disclosed through the media system (screen + projector + laptop).

Figure 25
Provisional
announcement
of election's results

8.14.5. **Central STAE Tabulation Procedures**

1. STAE receives each District Data through their IT system.
2. The data received go through a decryption process.
3. The STAE informs the District that the data was received.
4. With the decrypted data the STAE's technicians update and consolidate the national results database.
5. The provisional results, after consolidated and validated by the STAE, are publicly disclosure through the Media room.

Figure 26
Provisional announcement of election's results

8.14.6. **Activities**

The table below defines and gives examples of activities, correspondent responsible parties and date necessary for the development and implementation of the communication and tabulation of results system.

Table 7
Activities' Timeline

No	Activity	Responsible Party	Date
1	Definition of the necessary information for district data gathering.	Legal Office / Voters' Education	November/11
2	Definition of the necessary information to be included on public and internal data disclosure reports	Legal Office / Voters' Education	November/11
3	Equipment, laptops. Servers, projectors purchase	IT/Procurement/ ADN	November/ December/11
4	District data gathering system development in Excel format.	IT /ADN	December/11
5	Cryptography System Development.	IT / ADN	December/11
6	Full Distric internet coverage (512kbps), set up and validation.	IT / Timor Telecom	January/12
7	Pilot test and validation of Data Entry System.	IT / Legal Office	January/12
8	Pilot Test and validation of Report System	IT / Legal Office	January/12
9	STAR – finalized and ready to use.	IT / Legal Office	February/12
10	Equipment set up, STAR installation in laptops.	IT	February/12
11	Media Room ready to be used in the Districts and Central STAE. Test and Validation.	IT	February/12
12	District Technicians training on how to use STAR	IT	February/12
13	STAR – documents and User Handbook ready	IT	February/12
14	Equipment set up in the Districts and Central STAE	IT	February/12
15	Technical Help-Desk - Districts telephone/radio/ email IT support	IT	March/12

8.14.7. Cryptographic System – STAE

The STAE plans to use a cryptographic system to ensure the data confidentiality and integrity of the data transmitted between the Districts and the Central STAE.

8.14.7.1. Cryptographic Objectives

Cryptology has four main objectives:

- Message confidentiality: only an authorized recipient should be capable of access the encrypted message.
- Message integrity: the recipient must to be capable of recognizing if the message was modified during the transmission.
- Sender certification: the recipient should be capable of identifying the sender and confirming his identity.
- The sender must not be capable of rejecting the message authorship.

8.14.8. Electronic Data Communication

STAE wishes to render the data collection process more efficient and ensure the quality of the electoral results by transmitting the data electronically. To this end, it is fundamental to assure confidentiality and integrity of the data when transmitted over public data networks (internet).

Alternative means of transmission:

1. Internet – File Transfer Protocol – FTP or E-mail.
2. In case of internet failure, the encrypted data is copied in an external data storage device (pen drive or HDD) and sent physically to the Central STAE.
3. When the electronic transmission is not possible the District Tabulation Minute are sent to Central STAE in hard copy where it is introduced into STAR by authorized technicians.

8.15. Recommendations

A set of potential points of action follows:

- Integration and data cross-check with the Civil Registry aiming at validating the voters' information;
- Voters' card – should be used for electoral purposes only;
- Technical capacity building workshops development using BRIDGE methodology.
- UNVs participation in capacity building initiatives with BRIDGE methodology.
- Hardware and software updated in servers and computers used at Central STAE and District level;
- Central STAE and District computers network restructuring (LAN) and private data network (VPN) installation;
- Continuous IT training for STAE technicians.
- Logistics' processes review aiming at preventing problems due to lack of provisions during voter registration processes namely the Voters' cards.
- Maintenance of equipment from voter registration kits.
- Implementation of voter registration mobile units since the registration is held in Districts/sub-districts only. Without mobile units, the access to registration centers is limited and so it is the participation of voters.
- Development of a study to update the voter registration system with the introduction of biometric identification system: Automated Fingerprint Identification System – AFIS and Facial Recognition System – FRS. It is extremely important to comply with the specifications and international standards on the use and storage of biometric data, for example the ANSI/INCITS 378, ISO/IEC 19794-4 and ANSI/INCITS 385.
- Implementation of a documents management system (SGD) for storage and consultation of electoral roll in digital format.

8.16. Final Remarks

East Timor faces great infrastructural challenges. There are constraints in terms of access, communication, cultural background and political conflicts. Promote free, democratic, transparent elections requires effort, dedication, commitment, trained human resources, access to technology and financial resources.

Despite all constraints, STAE has shown a great organizational and operational capability to overcome the obstacles.

The present study focuses in two main activities: the first corresponding to the development of an electoral results transmission and verification plan requested by STAE Director.

The second activity entailed a study on the voter registration in East Timor. STAE did not officially support the mentioned activity.

8.17. Documents Consulted

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- UNEST Newsletter 2011 Issue No. 22 (English)

CONFERÊNCIA SOBRE O CONTENCIOSO, JUSTIÇA & CONFLITO ELEITORAL
NOS PAÍSES AFRICANOS DE LÍNGUA OFICIAL PORTUGUESA
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Formação em Liderança e
Gestão de Conflitos para
Administração Eleitoral

- ACE Project, The Electoral Knowledge Network – http://aceproject.org
- AEC – Australian Electoral Commission – http://www.aec.gov.au/
- BRIDGE – Building Resources in Democracy, Governance and Elections, http://bridge-project.org/
- EISA – Electoral Institute of Southern Africa – http://http://www.eisa.org.za/
- European Commission – http://europa.eu/
- EU Election observation missions – http://www.eueom.eu/
- GPECS – Global Programme for Electoral Cycle Support – http://www.beta.undp.org/undp/en/home/ourwork/democraticgovernance/global_programmes/global_programmeforelectoralcyclesupport.html
- IFES – International Foundation of Electoral Systems – http://www.ifes.org/
- International IDEA – http://www.idea.int/
- NDI – National Democratic Institute for International Affairs – http://www.ndi.org/
- NEEDS – The Network for Enhanced Electoral and Democratic Support – http://www.needsproject.eu/Publications.html
- OSCE – http://www.osce.org/what/elections
- Project for Support to Electoral Cycles in African Portuguese-Speaking Countries (PALOP) and East Timor – ProPALOP/TL – http://www.propalop-tl.org/
- The Word Fact Book – https://www.cia.gov/library/publications/the-world-factbook/
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