A map of the African continent is centered on the page. Several regions are highlighted with semi-transparent, irregular shapes in various colors: a large pink shape in the west, a light purple shape in the north, a yellow shape in the east, and a light brown shape in the south. The rest of the continent is a solid light orange color.

Implementing the World Summit on the Information Society Action Lines in Africa

Analysis of Country Reports

July 2009

ICTs and Science & Technology Division (ISTD)
United Nations Economic Commission for Africa



Economic Commission
for Africa



Government of Finland

Implementing the World Summit on the Information Society Action Lines in Africa

Analysis of Country Reports

July 2009

Contents

Page

Acknowledgements	iii
Background	1
I. National information and communication infrastructure and national e-strategies.....	3
II. Information and communication infrastructure	6
III. Access to information and knowledge.....	8
IV. Capacity-building	9
V. Building confidence and security in the use of ICTs.....	11
VI. Enabling environment	12
VII. Implementing ICT Applications	14
E-government	14
E-business	16
E-learning	18
E-health	19
E-employment	20
E-environment	20
E-agriculture	20
E-science	20
VIII. Ensuring cultural diversity and identity, linguistic diversity and local content	21
IX. Media	24
X. Ethical dimensions of the information society	25
XI. International and regional cooperation	25
XII. Conclusion	27
Annex I: Questionnaire	
Annex II: List of respondents.....	

Acknowledgements

This publication was prepared within the framework of the African Information Society Initiative (AISII) as part of the work programme of the United Nations Economic Commission for Africa in implementing the outcomes of the World Summit on the Information Society (WSIS) through its Information and Communications Technology and Science and Technology Division (ISTD). The report was prepared, under the overall guidance of Aida Opoku-Mensah, by Makane Faye and Abebe Chekol, with support from Sultan Mohammed and Gedion Workneh.

ECA is grateful to the questionnaire respondents, who are listed in annex II and requests all WSIS focal points to take part in future updates of the survey.

The report is an output of SCAN-ICT phase II, an ECA project supported by the Government of Finland to build capacity of African member States to collect, process and disseminate ICT statistics.

Background

1. On 21 December 2001, the United Nations General Assembly adopted resolution 56/183 endorsing the holding of the World Summit on the Information Society (WSIS). The World Summit provided a global platform where key players-governments, United Nations agencies, the private sector and civil society – came together to develop a common vision and a common understanding of the information society, and to adopt a declaration and a plan of action as well as an agenda for facilitating the effective growth of the information society and helping bridge the digital divide for a people-centred, inclusive, development-oriented information society.
2. The Summit was held in two phases, the first phase in Geneva from 10 to 12 December 2003, and the second phase in Tunis from 16 to 18 November 2005. The Geneva phase adopted the “WSIS Declaration of Principles” and the “WSIS Plan of Action”, while the Tunis phase adopted the “Tunis Commitment” and the “Tunis Agenda for the Information Society”. At both locations, leaders from Africa and around the globe recognized the significant role of information and communications technologies (ICTs) as a catalyst to help achieve the Millennium Development Goals, and agreed to a set of specific targets, including ICT connectivity and applications goals, to be achieved by 2015¹.
3. The WSIS Plan of Action adopted 11 action lines with objectives to be achieved by 2015. On the basis of these action lines, the United Nations Economic Commission for Africa (ECA) sent out a questionnaire (annex I) by fax and e-mail to all the national information and communication infrastructure and WSIS focal points in member States and the regional economic communities, to assess their commitment to the implementation of the Plan of Action.
4. The objectives of the survey were:
 - To measure the current level of implementation of the action lines in the African continent, including e-strategy development and implementation activities based on the national information and communications infrastructure development process (www.uneca.org/aisi/nici);
 - To use the results of the survey to establish a database and prepare publications on the state of information and communications technology (ICT) for development in African countries; and
 - To have readily available up-to-date indicators and information from authoritative sources on the African ICT for development landscape.
5. Of the member States that received the questionnaire, responses were received from the following: Benin, Burundi, the Congo, Côte d’Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, the Gambia, Ghana, Guinea Bissau, Kenya, Madagascar, Mali, Mozambique, the Niger, Nigeria, Senegal, the Sudan, Togo, Uganda and Zambia. The Common Market for Eastern and Southern Africa (COMESA) also responded to the questionnaire. Particulars and full details of respondents are in annex II. The responses were assembled and analysed by ECA over a period of six months, to form the basis for the graphical interpretation presented in this document. Except where indicated, the graphs and tables were developed using data from the survey.

¹ WSIS Geneva Plan of Action

6. The survey, which will be conducted every two years is published on paper and CD-ROM. The first edition of the survey was reviewed at the regional workshop entitled “WSIS Follow-up - Tunis + 3”, which ECA and the Africa Network of the Global Alliance on ICT and Development (GAID) organized prior to the first session of the ECA Committee on Development Information, Science and Technology (www.uneca.org/codist), which was held from 28 April to 1 May 2009 in Addis Ababa, Ethiopia.

7. In addition to this analysis, ECA has published a separate 100 page document entitled “Tunis +3: WSIS implementation – Africa country reports”, which is a presentation in alphabetical order of information and data provided by respondents.

8. The present report is divided into 11 main sections based on the following 11 action lines, numbered by the WSIS from C1 to C11:

- C1) - The role of governments and all stakeholders in the promotion of ICTs for development;
- C2) - Information and communications infrastructure: an essential foundation for the Information society;
- C3) - Access to information and knowledge;
- C4) - Capacity-building;
- C5) - Building confidence and security in the use of ICTs;
- C6) - Enabling environment;
- C7) - ICT applications: benefits in all aspects of life;
- C8) - Cultural diversity and identity, linguistic diversity and local content;
- C9) - Media;
- C10) - Ethical dimensions of the information society; and
- C11) - International and regional cooperation.

I. National information and communication infrastructure and national e-strategies

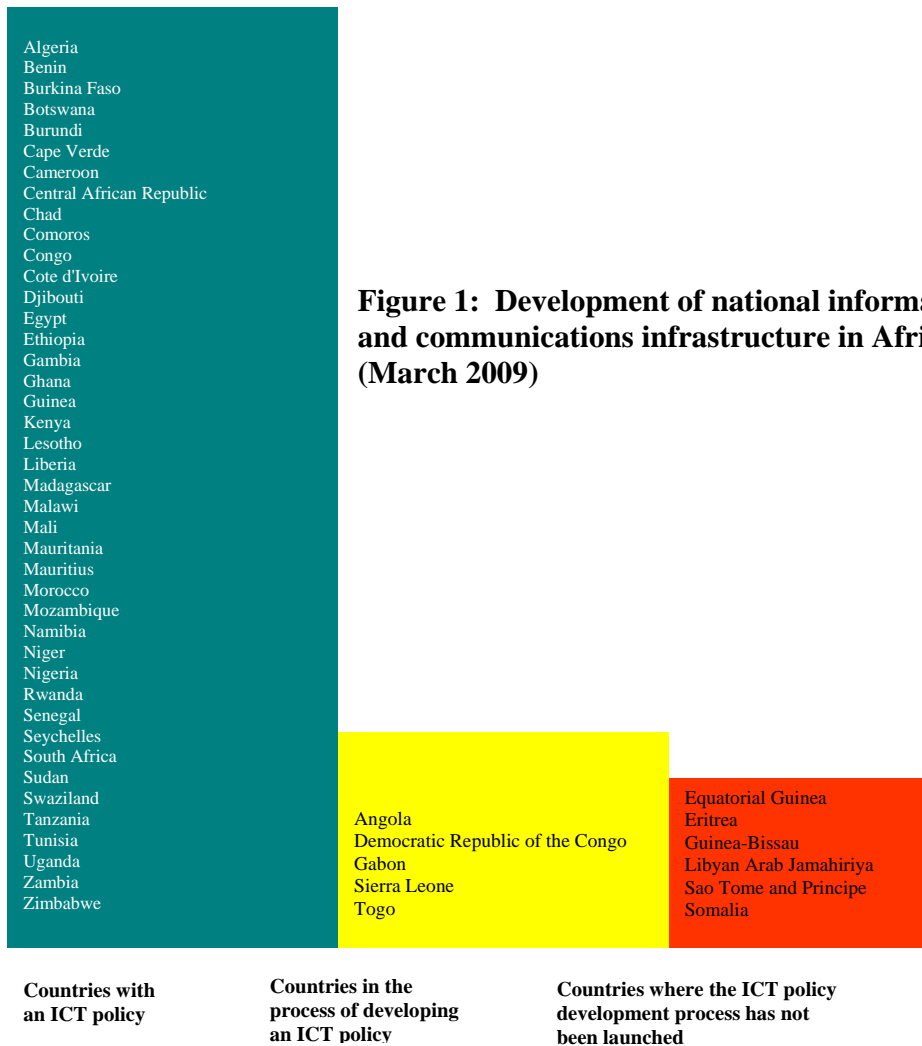
The role of governments and all stakeholders in the promotion of ICTs for development

9. According to the WSIS Plan of Action, “Specific targets for the information society will be established as appropriate, at the national level in the framework of national e-strategies and in accordance with national development policies, taking into account the different national circumstances. Such targets can serve as useful benchmarks for action and for the evaluation of the progress made towards the attainment of the overall objectives of the information society”. Furthermore, the document stresses that national e-strategies should be encouraged by all countries by 2005, based on national priorities.

10. In benchmarking the information society in Africa to achieve the objectives of the WSIS Plan of Action, the role of governments should be ascertained, including the extent to which they have adopted and are implementing national e-strategies.

11. Of all the countries which responded to the questionnaire, over 80 per cent strongly agreed that ICTs are their national priority, 10 per cent agreed, and 10 per cent strongly disagreed. Therefore, 90 per cent of the countries consider ICTs as their national priority. This is an encouraging result, which shows the increasing attention given to ICTs in national development programmes in Africa. National ICT policy development began long before the WSIS process, with the AISI events which were held in Uganda in 1998, in Benin and Egypt in 1999, in Burundi and Mozambique in 2000, in Côte d’Ivoire, Nigeria and Senegal in 2001, in Ethiopia, Madagascar and the Niger in 2002, and in the Congo, Mali and the Gambia in 2003, and in some other countries during and after the WSIS process, such as the Democratic Republic of the Congo and Togo in 2006; and the Sudan in 2007.

12. This shows that most countries comply with the WSIS Action Plan document, which states that national e-strategies should be encouraged by all countries by 2005. However, countries are at different stages of development. For example, the Democratic Republic of the Congo and Guinea-Bissau are at the stage of raising awareness among the different stakeholders, and Togo and Zambia are in the formulation process. On the other hand, Benin, Burundi, the Republic of the Congo, Côte d’Ivoire, Egypt, Ethiopia, the Gambia, Ghana, Kenya, Madagascar, Mali, Mozambique, the Niger, Nigeria, Senegal, the Sudan and Uganda have completed their policy formulation and have gone ahead with implementation. The survey found that 90 per cent of the countries have developed and approved their national e-strategies and have embarked on implementation. This is in conformity with the overall picture of the National information and communications infrastructure development process in Africa as a whole. According to the ECA 2008-2009 work programme, the current policy status in Africa is as follows: 42 countries have an ICT policy, 5 countries are in the process of developing an ICT policy; while only 6 have not initiated the ICT policy development process. The countries that have already developed or are in the process of developing their national e-strategies are shown in the figure 1.



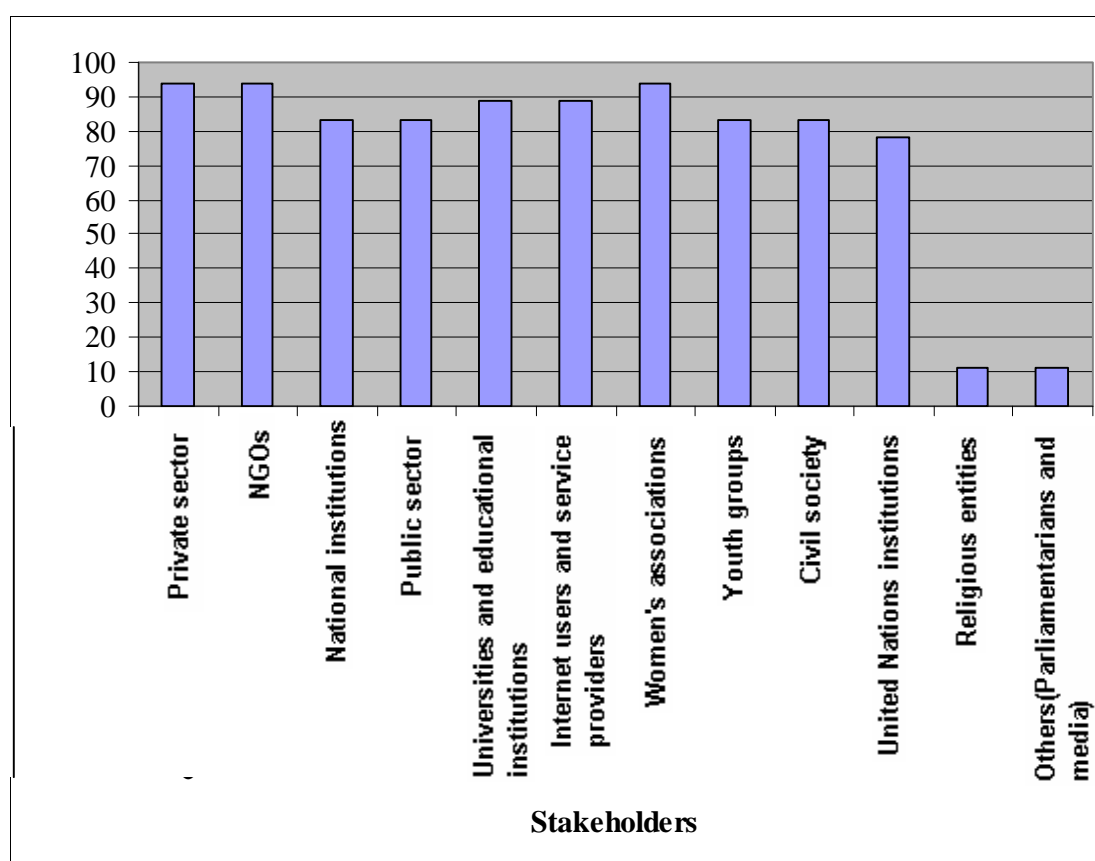
Copyright, UNECA, 2009

13. However, the challenge now is to secure the political commitment to advance the e-strategy implementation process within national development and socio-economic plans. This includes the allocation of public funds to ICT programmes. Overall, 75 per cent of the countries confirmed that public funds are being allocated for the implementation of their ICT policy, and 80 per cent of the countries confirmed that they have public-private partnership initiatives to implement such policies. Examples are: the partnership for Burundi's backbone system; the Congolese ICT week; the e-Nigeria initiative; the free Internet initiative, the computers-for-every-home initiative, the e-content initiative and the e-learning initiative in Egypt; and the electronic banking initiative in the Sudan. Funding partners are also involved in these initiatives, including, Economic Commission for Africa, United Nations Development Programme, International Telecommunication Union, World Bank, USAID, COMESA, ECOWAS and the Canadian and Swiss governments.

Role of stakeholders in national e-strategies

14. The WSIS Plan of Action states that countries need to “initiate at the national level a structured dialogue involving all relevant stakeholders, including through public-private partnerships, in devising e-strategies for the information society and for the exchange of best practices”. Figure 2 shows the percentage of countries that have involved the various stakeholders in the development and implementation of their national e-strategies.

Figure 2: Stakeholders involved in the e-strategy development process



Source: ECA, WSIS questionnaire (2008).

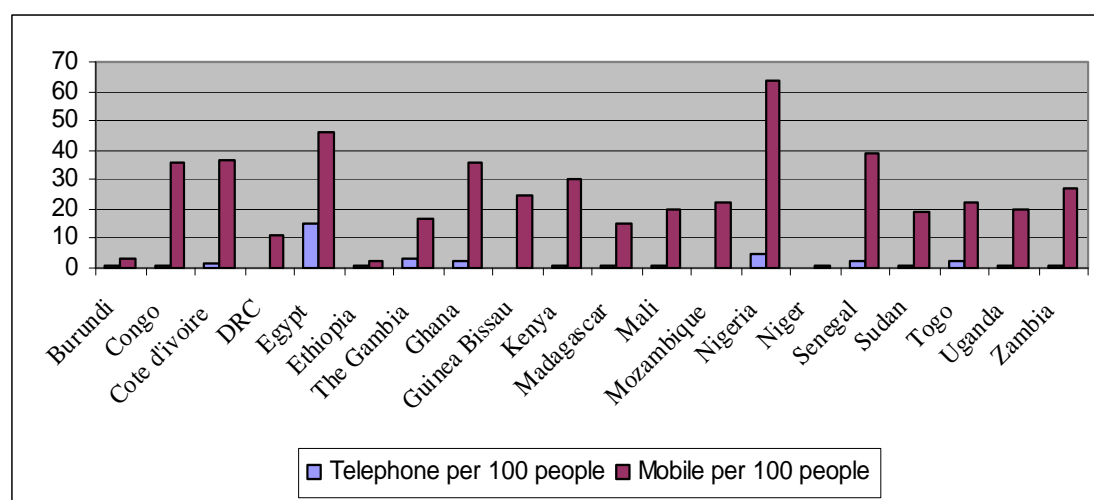
15. As a result of the multi-stakeholder participation in the e-strategy development process, the policies are integrated into existing development processes in over 90 per cent of the countries. Indeed, 65 per cent of the countries said they have integrated these policies into their Poverty Reduction Strategy Papers, while 40 per cent indicated that their e-strategies were integrated in the Millennium Development Goals implementation process. Over 80 per cent of the countries have consulted major stakeholders such as the private sector, NGOs, national institutions, the public sector, universities and educational institutions, Internet users and service providers, women associations, youth groups, civil society and United Nations agencies. However, only two countries indicated that they have consulted religious entities and others (mainly parliamentarians and the media). Perhaps the late involvement of

parliamentarians and the media in policy formulation might be the reason for the long delay between the formulation and the approval of the policy.

II. Information and communication infrastructure

16. According to the WSIS Plan of Action, “infrastructure is central in achieving the goal of digital inclusion, enabling universal, sustainable, ubiquitous and affordable access to ICTs by all, taking into account relevant solutions already in place in developing countries and countries with economies in transition, to provide sustainable connectivity and access to remote and marginalized areas at national and regional level”. Africa has one of the weakest ICT infrastructures in the world. Figure 3 on fixed telephone lines and mobile phone penetration shows that there is a boom in mobile access and low penetration of fixed telephone lines, which may be attributable to slow infrastructure growth.

Figure 3: Mainline telephone and mobile sets per 100 inhabitants

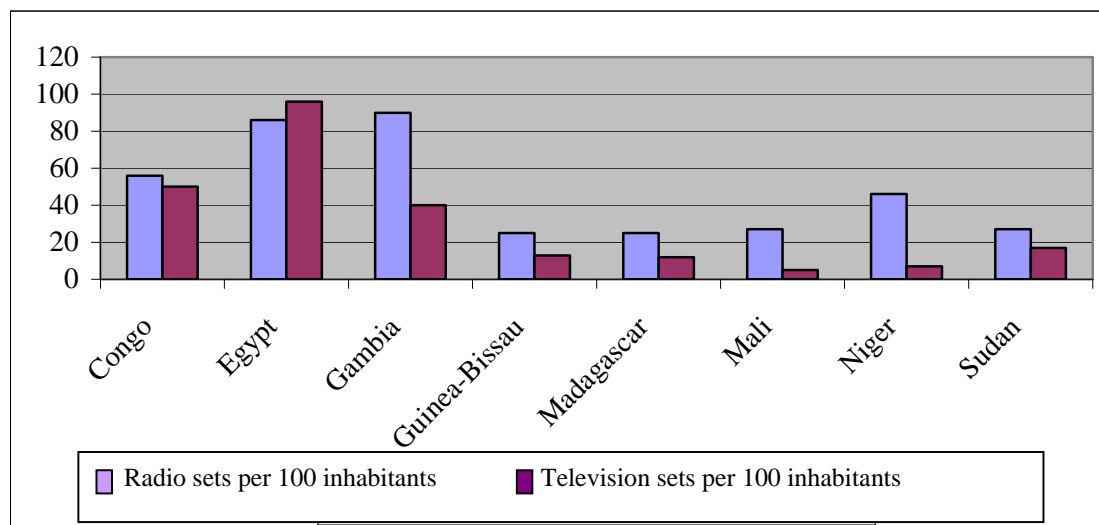


Source: ECA, WSIS questionnaire (2008).

17. These data once again confirm the fast growth of the mobile market against fixed lines, which need expanded infrastructure in order to reach a wider audience. Despite the poor growth of the infrastructure in Africa, the majority of the countries (85 per cent) confirmed that they have a conducive environment for investment in ICT infrastructure. This is corroborated by the fact that 80 per cent of the countries with the exception of the Congo, Côte d’Ivoire, the Democratic Republic of the Congo and Ethiopia, have established universal access strategies. Sixty per cent of the countries confirmed that, within the context of their e-strategies, they have taken appropriate educational, administrative and legislative measures to include women in the information society, as recommended in the WSIS Plan of Action.

18. Other traditional ICT facilities include radio and television, which are very important media for accessing and disseminating information, with figure 4 showing the number of television sets and radios per 100 inhabitants.

Figure 4: Radio and television sets per 100 inhabitants



Source: ECA, WSIS questionnaire (2008).

19. Radio and television have very good penetration in Egypt, with almost every citizen having a television set and a radio. The Gambia has a similar scenario with respect to radio, with 90 radio sets per 100 inhabitants, but only 40 television sets per 100 inhabitants. The Congo has 56 radios and 50 television sets per 100 inhabitants. The Niger has 46 radios per 100 inhabitants, while the rest of the countries have less than 30 sets per 100 inhabitants, showing that they have a long way to go and that incentives and other policy measures may be required.

Connectivity and regional backbones and Internet exchange points

20. ICT infrastructure in Africa has increased over the past years, in spite of the challenges of low population density, low income and large rural populations. Particularly noteworthy is the virtual explosion of mobile phones in African, where the number of subscribers exceeded 200 million in early 2007 and continues to grow at a higher rate than in any other region. This has been particularly beneficial for rural areas. It is estimated that there are about 400,000 localities in sub-Saharan Africa, of which 99 per cent are villages. Less than 3 per cent of these had a fixed-line telephone connection, while 7 per cent had a mobile service subscription in 2006.

21. In this regard, there are positive developments towards improving Africa's connectivity to the rest of the world. Examples include the SAT3 cable, which is already operational, the NEPAD Broadband Initiative and the TEAM and Eastern Africa Submarine System (EASSy) cable projects. These projects will establish fibre optic undersea cable systems connecting the region to the rest of the world. As international traffic is expected to grow substantially and satellite services are expected to become better, more reliable and less expensive with undersea systems, these projects will help address the limitations of traditional satellite communications.

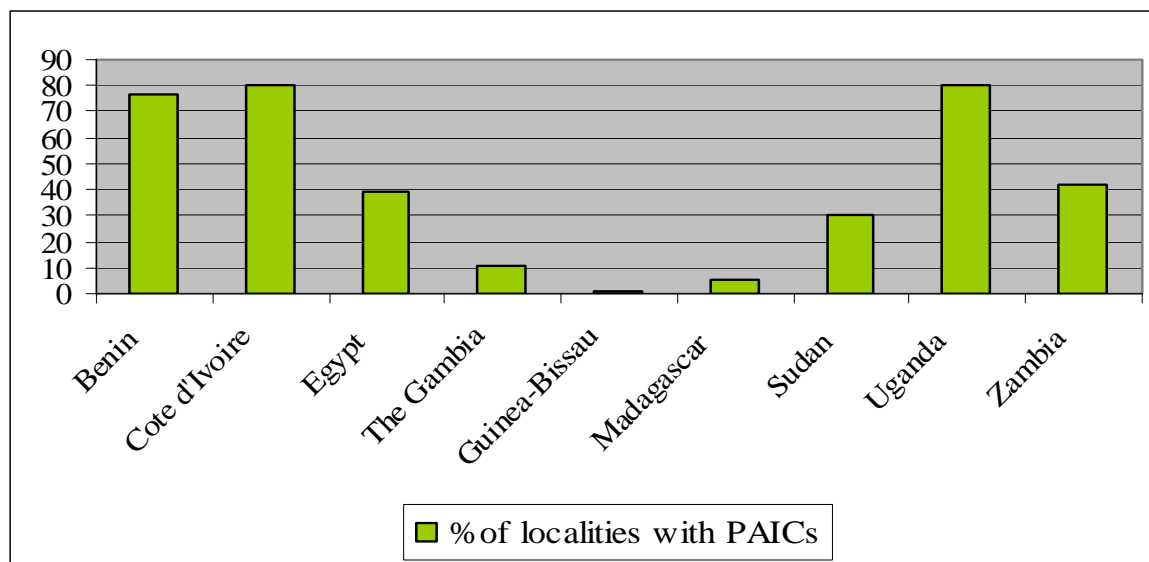
III. Access to information and knowledge

22. The WSIS Geneva Declaration of Principles states that “the ability for all to access and contribute information, ideas and knowledge is essential in an inclusive information society”. The sharing of and access to information and knowledge have become instantaneous due to rapid advances in ICTs. Information and knowledge can be shared by removing barriers to equitable access and by strengthening the public domain through public institutions such as libraries, documentation centres, museums, archives and other community-based access points. In addition, information on different software models (such as free and open-source software) can help users to develop solutions that best meet their local information and knowledge access needs.

23. In this regard, responses to the questionnaire indicated that 75 per cent of the countries have policies or guidelines for the development and promotion of public domain information to promote public access to such information. One way of generating information and knowledge is by promoting scientific and technological research and development. To this end, 66 per cent of the countries responded that they have strategies to foster innovation, science and technology and research. Also, 85 per cent confirmed that their Governments have in place a mechanism for respecting intellectual property rights, while encouraging the use of information and sharing of knowledge. Furthermore, 80 per cent of respondents indicated that there are initiatives under way or planned in their countries to promote awareness among all stakeholders of the possibilities offered by different software models, including proprietary, open-source and free software.

24. Support provided by international development partners has led to the creation of multi-purpose community telecentres and public access points in several African countries since the beginning of the 1990s. One way of ensuring a more structured and country-wide roll-out of such access points is to establish specific strategies to that end, as 85 per cent of the countries have done. Concerning the percentage of localities with public Internet access centres or multi-purpose community telecentres, figure 5 gives a good indication of the situation in eight countries. However, only the following eight countries provided information about the number of telecentres, public phones or community access centres per 1,000 inhabitants: Republic of the Congo less than (one telecentre), Egypt (two telecentres), Madagascar (one telecentre), Nigeria (eight telecentres), the Sudan (five public phones), the Gambia (48 public phones), Uganda (12 public phones) and Zambia (0.54 public phones).

Figure 5: Localities with public access centres



Source: ECA, WSIS questionnaire (2008).

25. With regard to content, 75 per cent of the countries confirmed that their Governments support the creation and development of content, including the development of a digital public library and archiving service, adapted to the information society. For example, the National Library in Nigeria is being digitized nationwide; Côte d'Ivoire is encouraging public and para-public departments to provide content through a government portal; and a project on the digitization of the documents managed by the National Archives of Senegal is being implemented.

IV. Capacity-building

26. The WSIS Plan of Action states that “everyone should have the necessary skills to benefit fully from the information society. Therefore, capacity-building and ICT literacy are essential. ICTs can contribute to achieving universal education worldwide, through delivery of education and training of teachers, and offering improved conditions for lifelong learning, encompassing people that are outside the formal education process, and improving professional skills”.

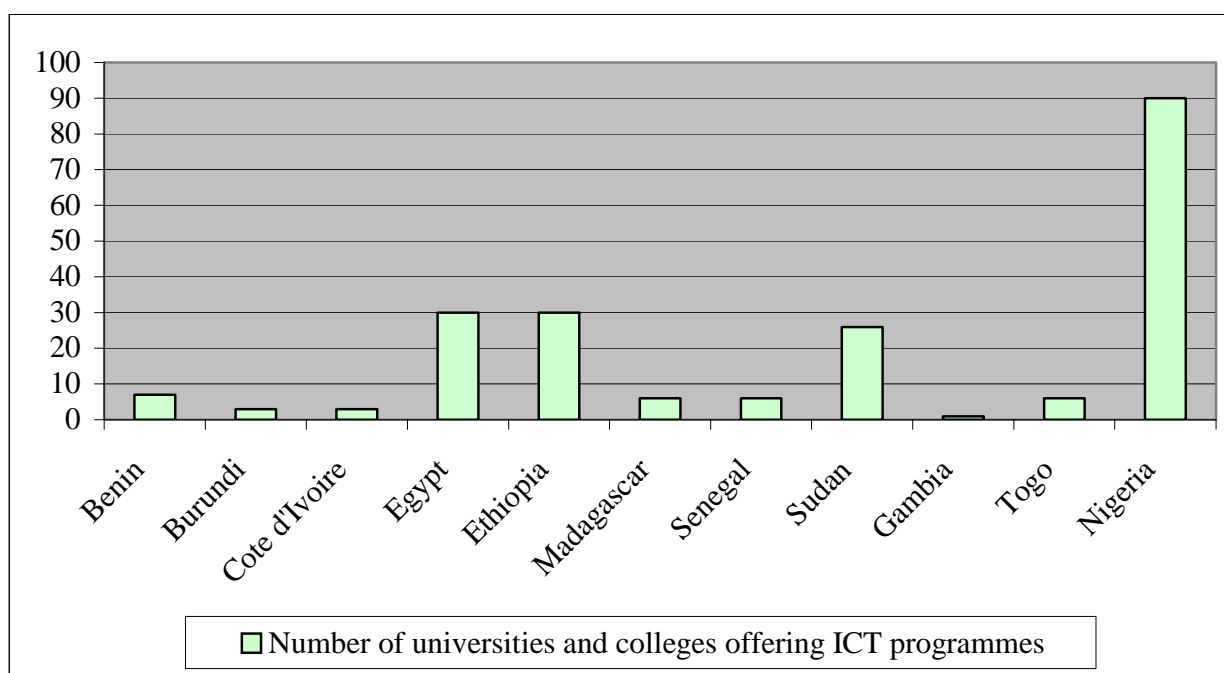
27. Within the context of the e-strategy formulation process, several countries attempted to identify their capacity-building requirements: 65 per cent of the respondents indicated that ICTs are integrated into the education system; 65 per cent confirmed that they have identified capacity-building requirements for the country to embark on knowledge economy activities, and that they have undertaken e-literacy promotion initiatives. Egypt promotes the supply of computers to all secondary school graduates. In Benin, the priority is to produce engineers, systems analysts and programmers as well as to strengthen the capacity of thousands of future ICT users. In Ethiopia, capacity-building is the cornerstone of the information society development process. Kenya has integrated ICTs into the curriculum and established educational networks for sharing educational resources. Madagascar has identified capacity-building in digitization and online local content development as a key area of

capacity development. Uganda has identified ICT regulation in the era of convergence as a key capacity-building need.

28. One of the recommendations of the WSIS Plan of Action is that countries need to put in place strategies to ensure that young people are equipped with the knowledge and skills to use ICTs. According to the United Nations Population Division, the median age in Africa is 19 years, the youngest of any continent. Africa’s youth population is more than four times its 1950 level and is projected to be eight times that level in 2050. This youthful age structure will be the driving force behind economic prosperity in future decades, but only if policies and programmes are in place to enhance the opportunities available to young people.

29. In line with the promotion of youth, 80 per cent of the respondents indicated the existence of strategies to ensure that young people are equipped with the skills to use ICTs. Furthermore, 75 per cent of the countries responded that they have taken initiatives to eliminate gender barriers to ICT education and training and to promote equal training opportunities in ICT-related fields for women and girls. There are other initiatives targeting young girls with the aim of increasing the number of girls in ICT careers. Institutional capacity is an important component of building human resource capacity to that end. Figure 6 shows the number of universities and colleges offering ICT programmes in 11 countries. In addition, the Niger and Uganda indicated that all their universities and higher colleges offer ICT programmes.

Figure 6: Number of colleges and universities offering ICT programmes



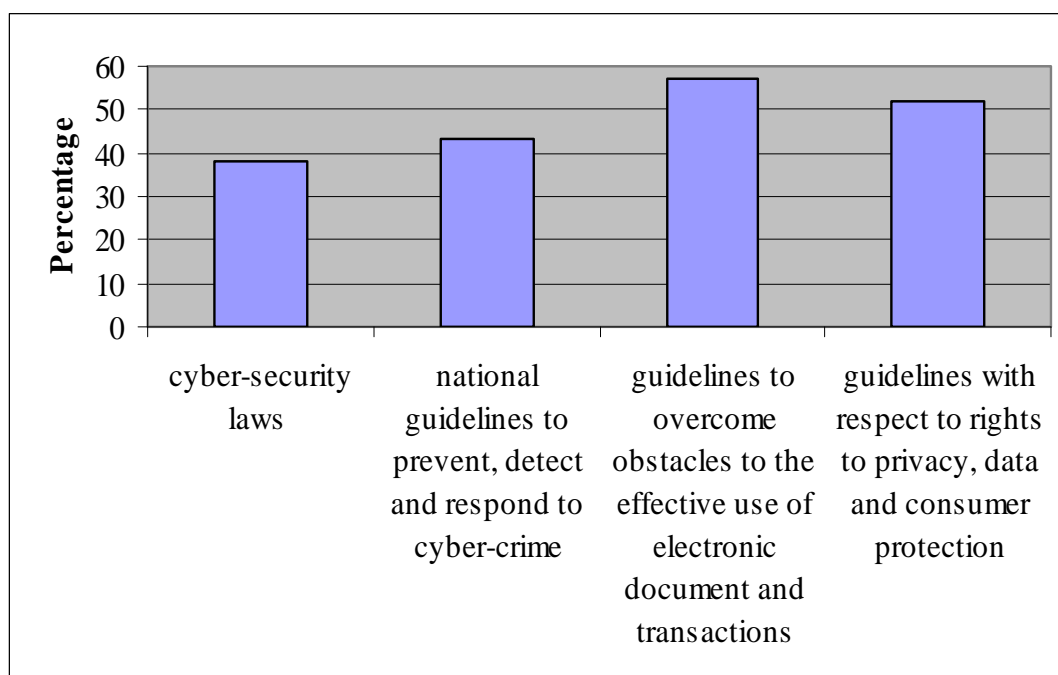
Source: ECA, WSIS questionnaire (2008).

30. Data on the number of universities compared to population and potential demand would give a clear picture of the institutional capacity requirements in each country. In addition, the number of scientists and engineers is a critical indicator of the progress made by countries in building their knowledge economies. To this end, a few countries were able to provide their number of scientists and engineers per 1,000 inhabitants: Benin (one), the Congo (less than 10) Nigeria (0.29) and the Sudan (20), while the percentages of women scientists and engineers are 2 per cent, 10 per cent, 10 per cent and 65 per cent respectively.

V. Building confidence and security in the use of ICTs

31. The WSIS Action Plan recommends “cooperation among the governments at the United Nations and with all stakeholders at other appropriate forums to enhance user confidence, build trust, and protect both data and network integrity; consider existing and potential threats to ICTs; and address other information security and network security issues”. In this regard, countries have put in place mechanisms for building confidence, trust and security through the e-strategy development process. However, even though very few countries have cybersecurity laws in place, most African countries have national guidelines and directives to deal with the issue, as shown in figure 7:

Figure 7: Percentage of countries with cybersecurity laws



Source: ECA, WSIS questionnaire (2008)

32. In the area of cybersecurity, 38 per cent of the respondents (Benin, Egypt, Ghana, the Niger, Nigeria, Senegal, Sudan and Zambia) indicated that they have cybersecurity laws. 43 per cent (Benin, Côte d’Ivoire, Egypt, the Gambia, Ghana, Mali, the Niger, Nigeria and Senegal) have national guidelines for preventing, detecting and responding to cybercrime; 57 per cent (the Congo, Egypt, Ethiopia, Ghana, Kenya, Madagascar, Mozambique, the Niger, Nigeria, Senegal, the Sudan and Uganda) have guidelines for overcoming obstacles to the effective use of electronic documents and

transactions, including electronic means of authentication; and 52 per cent (Egypt, Ethiopia, the Gambia, Ghana, Kenya, Madagascar, Mozambique, the Niger, Nigeria, Senegal and the Sudan) have guidelines on the right to privacy, data and consumer protection.

33. However, most countries rated the level of deployment of security systems in both the private and the public sectors to combat cybercrime as low. In terms of the legal environment, Senegal has specific laws on cybercrime and protection, as shown in box 1.

Box 1

Senegal enacted the following cybersecurity laws in 2008:

Act No. 2008-11 of 17 January 2008 on cybercrime

Act No. 2008-15 January 2008 on data protection

Act No. 2008-08 of 15 January 2008 on e-transactions

34. Most countries also rated the level of awareness of ICT-related security issues, with some of the relevant initiatives only just beginning, as shown in the example from Ethiopia and Zambia in box 2.

Box 2

The Government of Ethiopia initiated an “ICT Security Project” under the Ethiopian ICT Development Agency with the main focus on promoting awareness of ICT-related issues and developing-related guidelines. In this context, the Government has established the National Information Network Security Agency.

Zambia also adopted in 2001 the Computer Misuse Act which has not been revised since.

VI. Enabling environment

35. The WSIS Plan of Action states that “to maximize the social, economic and environmental benefits of the information society, governments need to create a trustworthy, transparent and non-discriminatory legal, regulatory and policy environment. ...”. Furthermore, “Governments should foster a supportive, transparent, pro-competitive and predictable policy, legal and regulatory framework which provides the appropriate incentives to investment and community development in the information society”.

36. All the respondents, with the exception of Guinea-Bissau and the Congo, indicated that they have a legislative and regulatory framework that is conducive to a supportive, transparent and pro-competitive ICT market in their countries. As proof, they cited special designated regulatory bodies

that have been set up, some of which are independent, as is the case in Kenya, Ghana, Nigeria and Uganda.

37. The impact of the legal and regulatory environment on the ICT industry is of paramount importance, as described by countries in box 3 below.

Box 3

In the Congo, the legal and regulatory framework controls the ICT sector and stimulates competition, while improving the quality of service.

Egypt believes that the legal and regulatory framework enhances the free market through regulated performance.

Ethiopia sees the regulatory environment as a means of establishing a harmonized ICT industry and minimizing waste.

In Ghana, the legal and regulatory provisions ensure clarity of government purposes, predictability of actions, transparency, security in the application of ICTs, confidence in the use of ICTs, and protection against arbitrariness.

For Kenya, growth of the ICT industry has been phenomenal since the establishment of a regulatory body.

In Madagascar, the legal and regulatory environment does not limit the ICT industry; rather, it enables mobility of technologies (from 3G to 4G, for example), introduction of digital signature, biometric identification, etc.

In Senegal, the regulatory arrangements have resulted in a positive competitive environment, reduction of telephone and Internet connection rates and increased availability of funds for universal ICT services.

Uganda believes that the regulatory environment has helped to attract significant foreign investment into the country's telecommunications market.

In Nigeria, the enabling environment has led to the influx of local and foreign direct investment in the sector; and with the popularization of ICTs, the country is now experiencing an increase in demand for Internet access. The country is also described as the fastest-growing telecommunications market in Africa. Furthermore, the ICT sector has created over 10,000 direct jobs and an estimated million indirect jobs.

IN Zambia, the present legal and regulatory environment was adopted in 1994 and as such is outdated and inadequate to foster the development of ICTs today. The inadequacies have led to uncertainty and legal disputes amongst operators and with the Regulator.

38. On e-commerce, 52 per cent of the countries indicated that they allow consumers to have a choice as to whether or not to use electronic communication; 66 per cent asserted that their ICT policy

fosters entrepreneurship, innovation and investment, with particular reference to the promotion of participation by women. Finally, 81 per cent of governments promote the development and use of open, interoperable, non-discriminatory and demand-driven ICT standards.

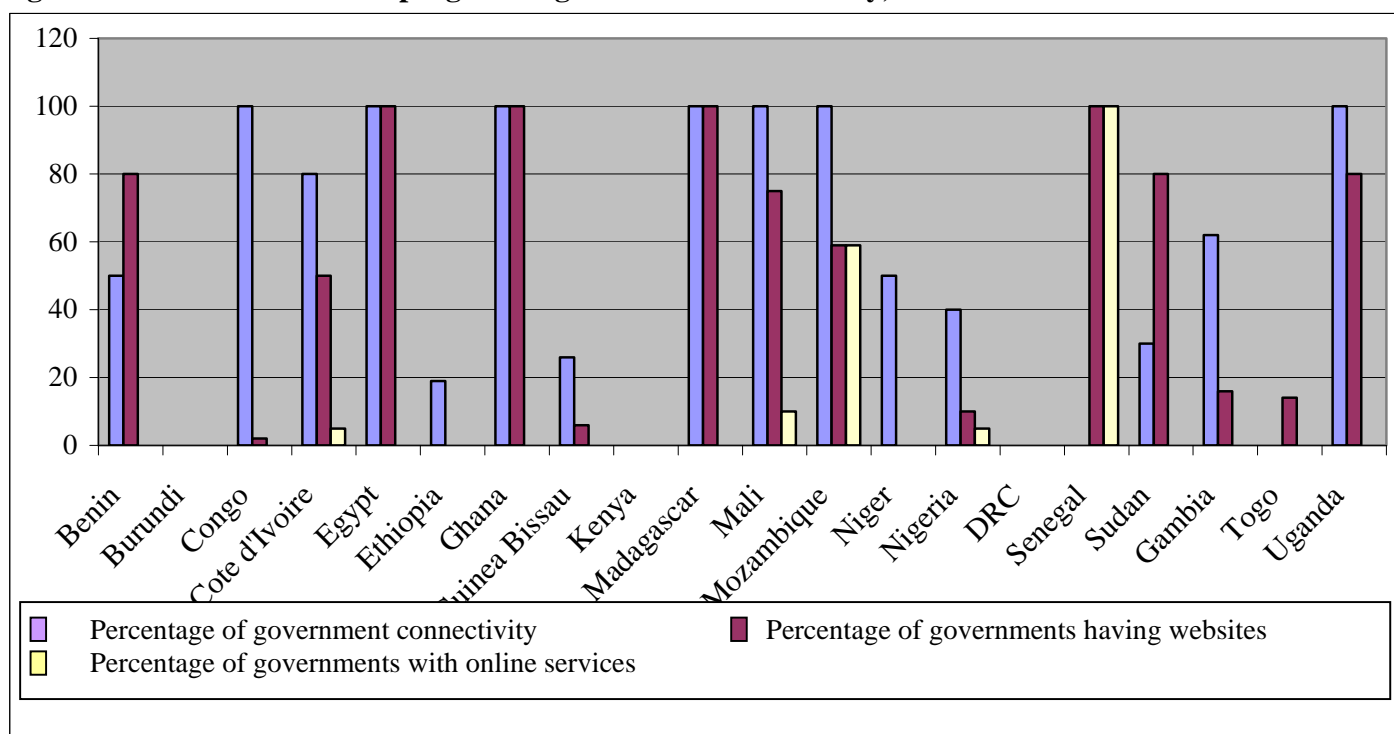
VII. Implementing ICT applications

E-government

39. According to the WSIS Plan of Action, governments need to “implement e-government strategies focusing on applications aimed at innovating and promoting transparency in public administrations and democratic processes, improving efficiency and strengthening relations with citizens”. In this regard, nearly 81 per cent of respondents (Benin, Côte d’Ivoire, the Democratic Republic of the Congo, Egypt, Ethiopia, the Gambia, Ghana, Kenya, Madagascar, Mali, Mozambique, Nigeria, the Niger, Senegal, Togo, Uganda and Zambia) indicated that they have e-government strategies in place. Burundi and the Congo are in the process of developing their e-government strategies, while Guinea-Bissau and Togo do not have e-government strategies. In addition 70 per cent of the respondents indicated that their countries participate in and support international cooperation initiatives in the field of e-government.

40. The other parameters that show e-government applications in government services are connectivity, web presence and provision of services online. The following figure shows the status and progress made by various Governments in this regard.

Figure 8 shows the status and progress in government connectivity, websites and online services

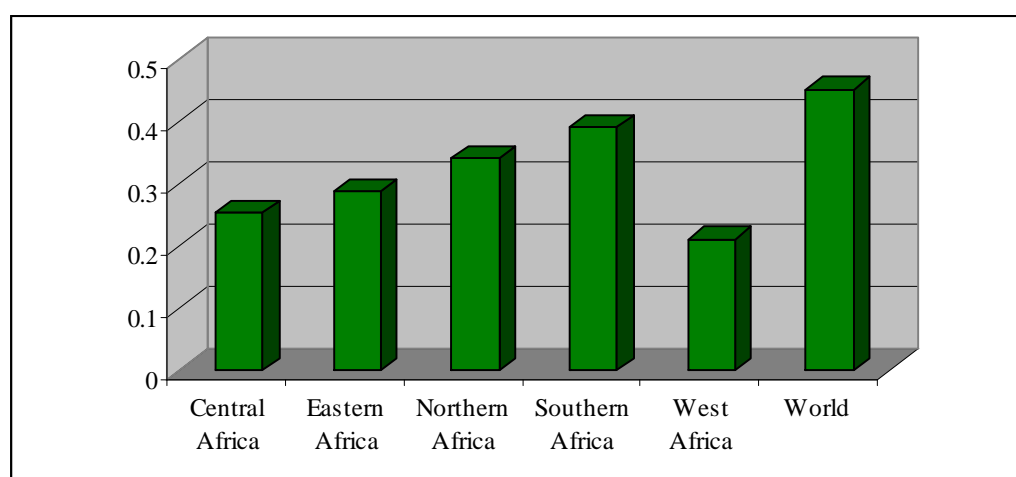


Source: ECA, WSIS questionnaire (2008).

41. Most countries indicated that there is widespread availability of Internet connectivity in Government ministries, agencies and departments, as well as a growing web presence. However, only Côte d'Ivoire, Mali, Mozambique, Nigeria and Senegal indicated that their governments are providing public services online.

42. The African E-Government Readiness Index as shown in figure 9 indicates that Africa is way below the world average.

Figure 9: E-government readiness of Africa



Source: United Nations Department of Economic and Social Affairs (2008).

43. The Southern Africa sub-region is approaching the world average, followed by Northern African sub-region. Table 1 below shows the e-government index for eighteen of the countries that responded to the questionnaire.

Table 1: E-government readiness in selected countries in Africa

	2008 Index	2005 Index	2008 Ranking	2005 Ranking
Benin	0.186	0.2309	171	151
Burundi	0.1788	0.1643	174	166
Congo	0.2737	0.2855	147	134
Côte d'Ivoire	0.1853	0.182	173	160
Democratic Republic of the Congo	0.2177...		162...	
Egypt	0.4767	0.37.93	79	99
Ethiopia	0.1857	0.136	172	170
Gambia	0.2253	0.1736	159	163
Ghana	0.2997	0.2866	138	133
Guinea Bissau	0.1521...		177...	
Kenya	0.3474	0.3298	122	122
Madagascar	0.3065	0.2641	135	141
Mali	0.1591	0.0925	175	173
Mozambique	0.2559	0.2448	152	146
Nigeria	0.3063	0.2758	136	139
Niger	0.1142	0.0661	181	174
Senegal	0.2531	0.2238	153	153

Sudan	0.2186	0.237	161	150
Togo	0.2191	0.2274	160	152
Uganda	0.3133	0.3081	133	125
Zambia	0.2266	158
Region	0.2879	0.2836		
World	0.4514	0.4267		

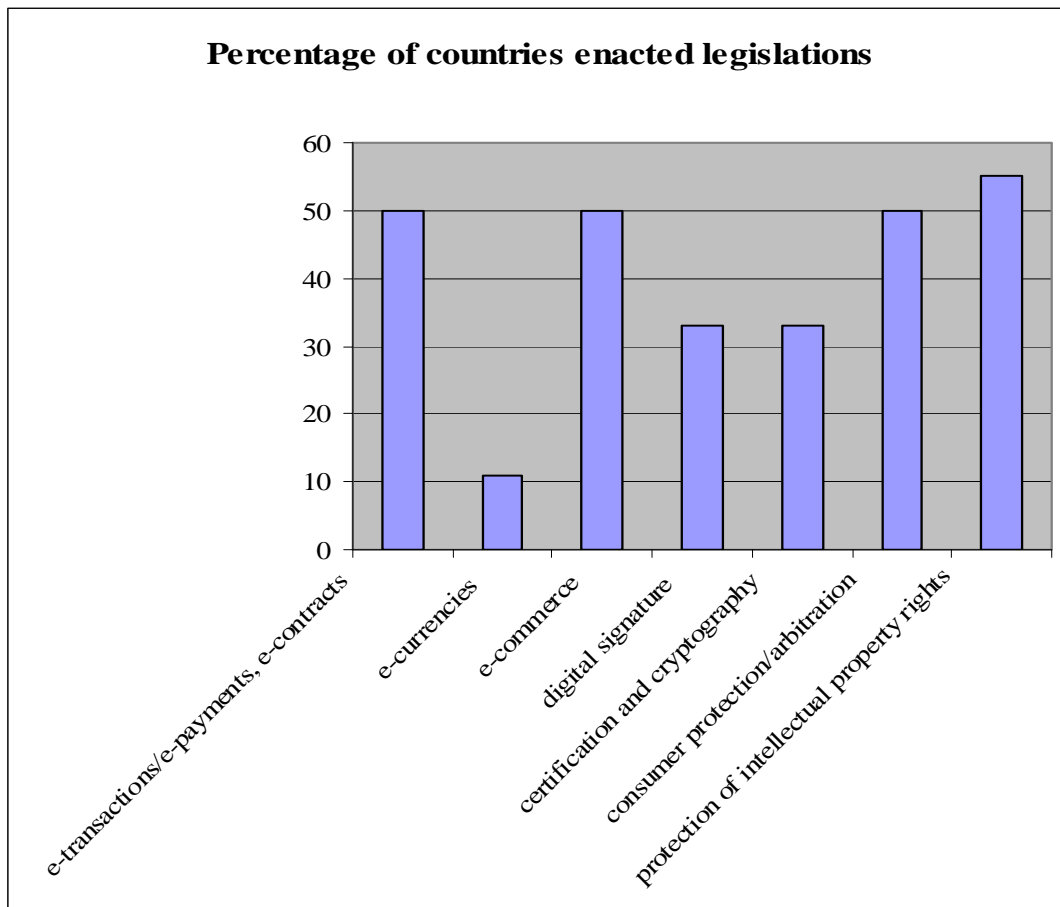
Source: United Nations Department of Economic and Social Affairs (2008).

44. Egypt, Ghana, Kenya, Madagascar, Nigeria and Uganda had a higher e-government index in 2008 than the average for the African region. The only country from this list whose e-government index is above the world's average is Egypt.

E-business

45. According to the WSIS Plan of Action, "Governments, international organizations and the private sector are encouraged to promote the benefits of international trade and the use of e-business, and promote the use of e-business models in developing countries and countries with economies in transition". Based on the responses, over 85 per cent of the countries, Benin, Burundi, the Congo, Côte d'Ivoire, Egypt, Ethiopia, the Gambia, Ghana, Kenya, Madagascar, Mali, Mozambique, the Niger, Nigeria, Senegal, the Sudan, Uganda and Zambia) are promoting e-business applications. Most governments (90 per cent of the respondents) stimulate private sector investment and foster new applications and public-private partnerships. In addition, the majority of the countries (80 per cent of the respondents) indicated that their policies favour small, micro and medium-sized enterprises the growth of in the ICT industry. Promotion of e-business applications in many of these countries has been supported by the establishment of regulatory frameworks by governments, as shown in the following figure.

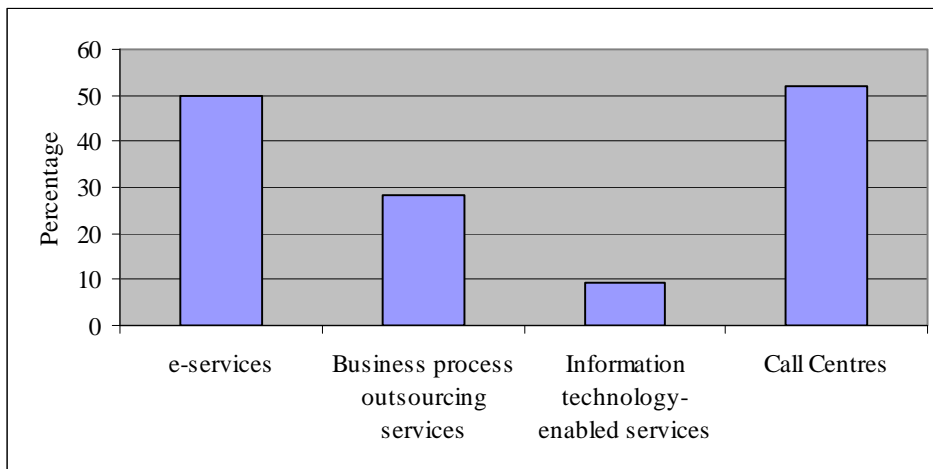
Figure 10: Legislation for e-business regulatory frameworks in African countries



Source: ECA, WSIS questionnaire (2008)

46. Egypt, Ghana, Nigeria, Senegal, Uganda and Zambia have a national certification agency. All countries, with the exception of Burundi, stated that their central and national banks play a key role in ensuring the introduction of e-transactions/e-payments, and nearly 50 per cent of the respondents indicated that their countries provide e-services. Among them, Egypt, the Gambia, Ghana, Kenya, Madagascar and Uganda provide business process outsourcing services (BPOs). Egypt and Ghana provide information technology-enabled services (ITES). Benin, Egypt, Ghana, Kenya, Madagascar, Mali, Mozambique, the Niger, Senegal, Uganda and Zambia provide call centre services.

Figure 11: Countries providing e-services

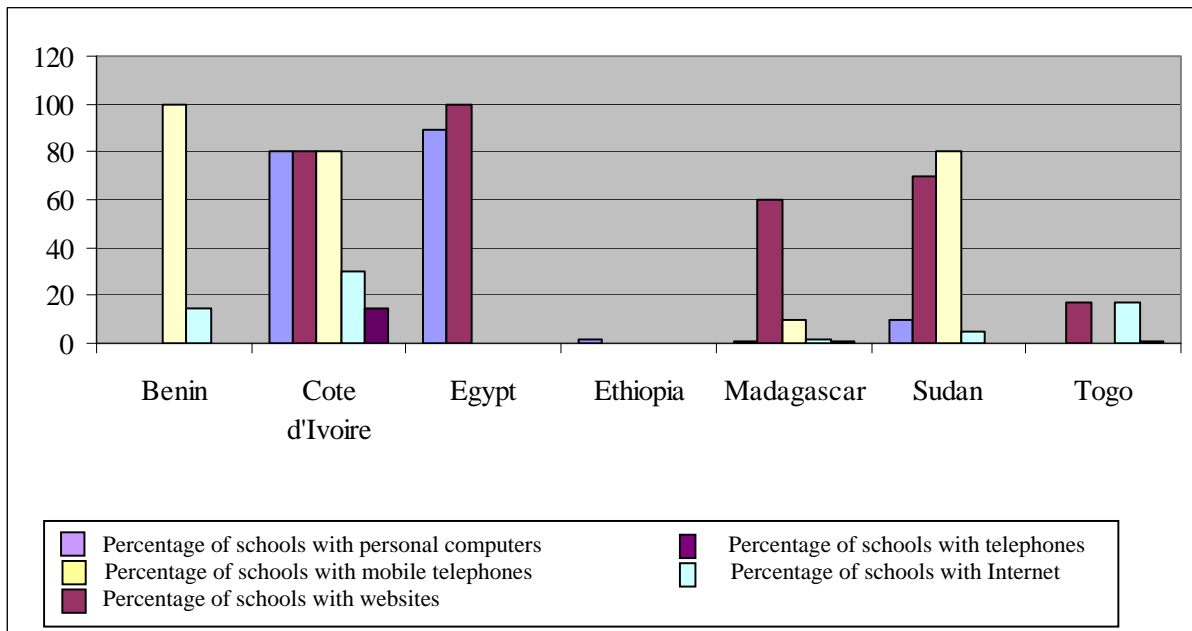


Source: ECA, WSIS questionnaire (2008).

E-learning

47. Only Egypt, Ghana, Kenya and Mali believe that they possess adequate digital literacy for supporting digital and knowledge economy activities. However, in many countries, including, Benin, Burundi, the Congo, Egypt, Ethiopia, the Gambia, Madagascar, Mali, Mozambique, the Niger, Nigeria, Senegal, Togo, Uganda and Zambia, there are content development activities under way to support e-learning. As shown in figure 12, Côte d'Ivoire, Egypt and the Sudan are making considerable progress in integrating ICTs in schools.

Figure 12: ICT facilities in schools in selected countries

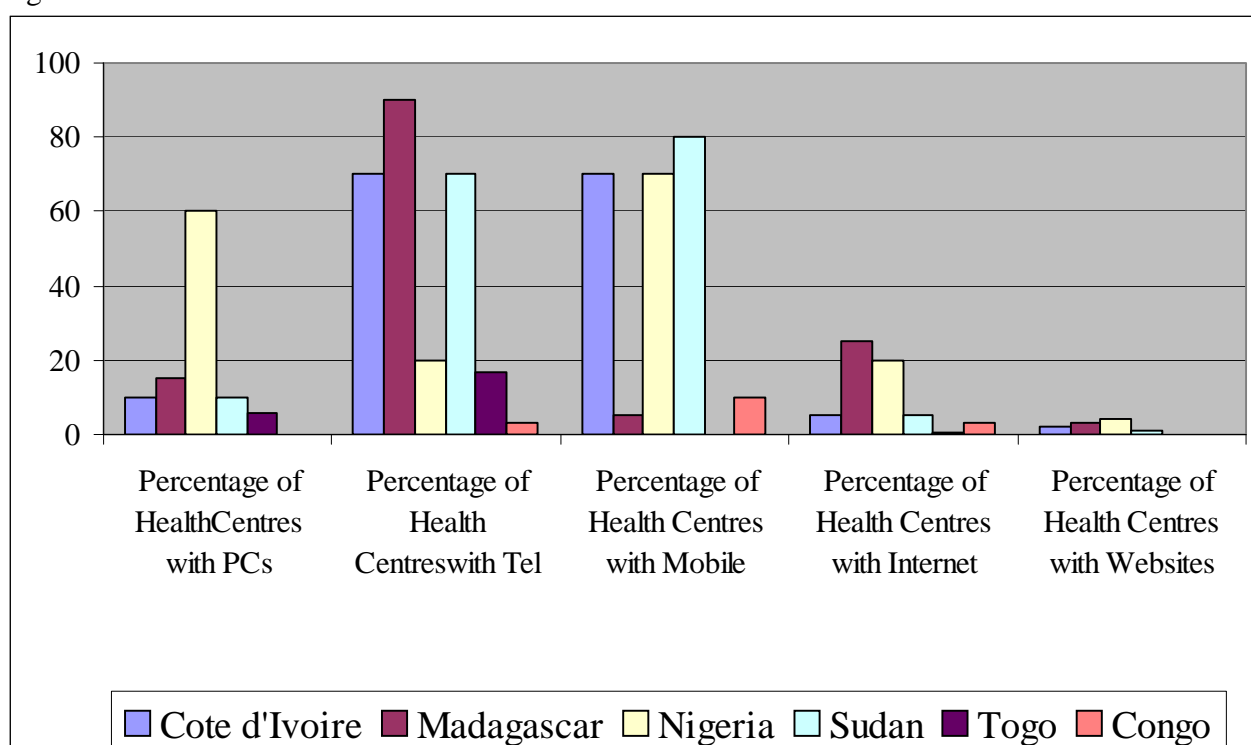


Source: ECA, WSIS questionnaire (2008).

E-health

48. Twelve countries (57 per cent of the respondents), namely the Congo, the DRC, Egypt, Ethiopia, the Gambia, Mali, Mozambique, Niger, Nigeria, Senegal, Sudan and Uganda indicated that they have programmes on building health information systems and promoting medical training, education and research through the use of ICTs, including telemedicine initiatives. Eight countries (38 per cent of the respondents), namely Egypt, Ethiopia, the Gambia, Mali, the Niger, Nigeria, Togo and Uganda, have a common information system that alerts, monitors and controls the spread of communicable diseases. Only seven countries (33 per cent of the respondents), namely, the Congo, Egypt, Ethiopia, Ghana, Mali, the Niger and Nigeria, have ICT-based initiatives for providing medical and humanitarian assistance in case of disaster and emergency. Figure 13 shows ICT use in health centres in the six countries that provided data.

Figure 13: ICT facilities in health centres



Source: ECA WSIS questionnaire (2008)

49. Data provided by the six countries clearly show that health centres are still not using computers for health records management, except in Nigeria, where 60 per cent of the health centres have computers. Telephone penetration in health centres in Côte d'Ivoire, Madagascar and the Sudan shows that over 60 per cent of the health centres have telephones while nearly 30 per cent of the health centres in Côte d'Ivoire and the Sudan, and about 10 per cent of the health centres in Madagascar are operating without telephones. Internet connection in health centres is much better in Madagascar (25 per cent of the health centres are connected) compared to Côte d'Ivoire and the Sudan, where only 5 per cent of the health centres have Internet connection, while 0.44 per cent of the health centres in Togo have Internet connection. Websites are not popular in health centres, as attested by penetration rates of 0 per cent in the Congo, 2 per cent in Côte d'Ivoire, 3 per cent in Madagascar, 1 per cent in Sudan and 0 per cent in Togo.

E-employment

50. E-employment is not a very popular application in Africa. Only Mali indicated the existence of best practices for e-workers and e-employers at the national level. However, several countries (43 per cent of the respondents), namely, the Congo, the Democratic Republic of the Congo, Ethiopia, the Gambia, Madagascar, Mali, Mozambique, Nigeria and Uganda, have initiatives that promote new ways of organizing work and business with the aim of raising productivity, growth and well-being through investment in ICTs and human resources. Two countries (nearly 10 per cent of the respondents), namely, Ethiopia and Nigeria, confirmed that they have best practices of teleworking with national and international clients. Ethiopia mentioned its WoredaNet videoconferencing facility (district-level very small aperture terminal-based network) as an example of facilitating teleworking in Ethiopia.

E-environment

51. The WSIS Plan of Action states that “governments, in cooperation with other stakeholders, are encouraged to use and promote ICTs as an instrument for environmental protection and the sustainable use of natural resources”. In this regard, 52 per cent of the countries (Benin, the Congo, Egypt, Ethiopia, Ghana, Madagascar, Mozambique, the Niger, Nigeria, the Sudan and Togo) indicated that their governments use and promote ICTs as an instrument for environmental protection and the sustainable use of natural resources. Seven countries (33 per cent of the respondents) - Egypt, Ethiopia, Ghana, Senegal, the Sudan, Togo and Uganda - stated that they have guidelines for the production, consumption and environmentally safe disposal and recycling of ICT hardware and other components. Seven countries (33 per cent of the respondents namely, Egypt, Ethiopia, Ghana, Mali, the Niger, Nigeria and Togo, indicated that they have a national monitoring system to forecast the impact of natural and man-made disasters.

E-agriculture

52. The WSIS Plan of Action calls for “the systematic dissemination of information using ICTs on agriculture, animal husbandry, fisheries, forestry and food, in order to provide ready access to comprehensive, up-to-date and detailed knowledge and information, particularly in rural areas”. In this connection, 47 per cent of the countries (the Congo, Ethiopia, Ghana, Mali, Mozambique, the Niger, Nigeria, the Gambia, Uganda and Zambia) indicated that their governments promote implementation of the WSIS Plan of Action. Six countries (28 per cent of the respondents), namely, Benin, Ethiopia, Ghana, Mozambique, Nigeria and Zambia, have public-private partnerships that seek to maximize the use of ICTs as an instrument to improve production. Finally, only Nigeria responded to the question on the percentage of ICT personnel in the agricultural sector among all staff in the sector (10 per cent).

E-science

53. In pursuit of scientific knowledge for development many developing and especially African countries, through their higher education institutions, will need to form part of the evolving global e-science community. According to the WSIS Plan of Action, this would require “affordable and reliable high-speed Internet connection for all universities and research institutions to support their critical role in information and knowledge production, education and training, and to support the establishment of partnerships, cooperation and networking between these institutions.” To this effect, 57 per cent of the respondents indicated that their governments promote affordable and reliable connectivity in higher

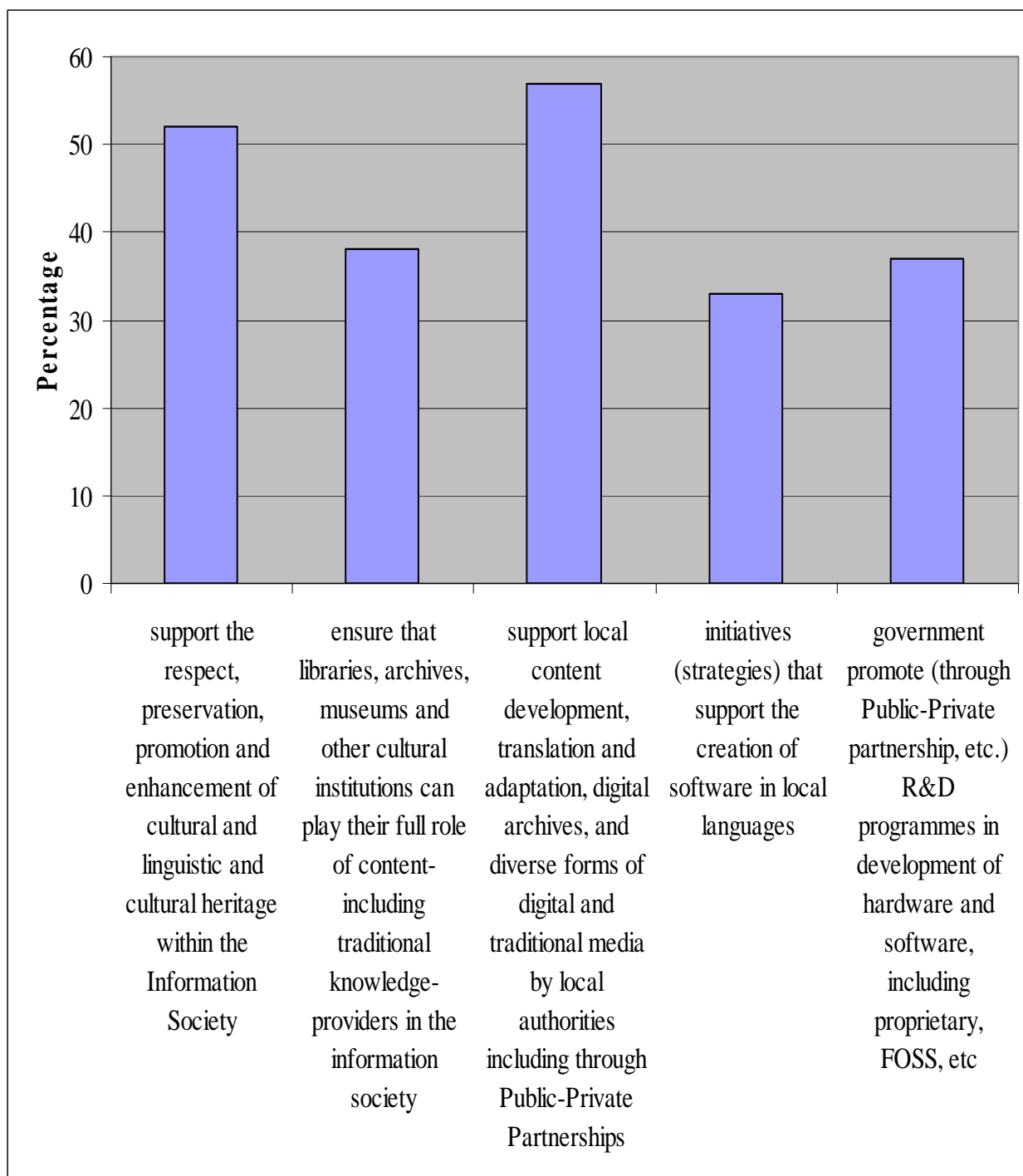
learning and research institutions; 24 per cent of the respondents (Egypt, Ethiopia, Ghana, Madagascar and Nigeria) have a strategy or guidelines for the promotion of long-term systematic and efficient collection, dissemination and preservation of essential scientific digital data. Six countries (28 per cent of the respondents) namely, Côte d'Ivoire, Egypt, Ethiopia, Madagascar, Mozambique and Nigeria have integrated geoinformation and national spatial data infrastructure issues into their e-strategy formulation process. However, only three countries (Egypt, Madagascar and the Niger), or 14 per cent of the respondents, confirmed the existence in their countries of a coordination mechanism between the national spatial data infrastructure and the e-strategy development and implementation process.

VIII. Ensuring cultural diversity and identity, linguistic diversity and local content

54. Cultural diversity, promotion and use of local languages as well as promotion of local content are advocated by the Geneva Plan of Action, which requests member States to “create policies that support the respect, preservation, promotion and enhancement of cultural and linguistic diversity and cultural heritage within the information society, ... This includes encouraging governments to design cultural policies to promote the production of cultural, educational and scientific content and the development of local cultural industries suited to the linguistic and cultural context of the users.” In Africa, national e-strategies are attempting to put greater emphasis on local content creation and examination of the political, economic and social dimensions to support African languages in the information society.

55. In this context, 52 per cent of the respondents indicated that they have ICT policy statements regarding the respect, preservation, promotion and enhancement of cultural and linguistic heritage within the information society, 38 per cent said they have policies and laws to ensure that libraries, archives, museums and other cultural institutions can play their full role as content providers, including traditional knowledge-content; 57 per cent indicated that they support local content development, translation and adaptation, digital archiving and diverse forms of digital and traditional media through the central government, local authorities and public-private partnerships. Only 33 per cent of the respondents have initiatives that support the creation of software in local languages, while 37 per cent confirmed that their governments promote (through public-private partnership, etc.) research and development programmes in hardware and software development, including proprietary, open-source software and free software, standard character sets, language codes, electronic dictionaries, terminology and thesauruses, multilingual search engines, machine translation tools, internationalized domain names, content referencing as well as general and application software.

Figure 14: Cultural diversity and content development



Source: ECA, WSIS questionnaire (2008).

Statements from countries on respect, preservation, promotion and enhancement of linguistic and cultural heritage

Benin

The ICT policy promotes the respect, preservation and promotion of cultural and linguistic heritage by supporting the production of multimedia information on the culture of Benin; developing virtual museums; promoting online reservation of tourist sites and hotels; and using ICTs to provide information on national libraries.

Ethiopia

The ICT policy specifies the need to promote cultural and linguist heritages, specifically the need to develop content for preserving the value, wisdom and acquired knowledge of traditional communities and culture.

Uganda

One of the ICT policy objectives is to capture, preserve and promote indigenous culture, knowledge and heritage as a strategy for promoting of multilingualism.

Achievements on local content development

Ethiopia

A localization project on the preparation of glossaries of ICT terminology for 3 local languages has been completed and another is ongoing for two additional local languages. A keyboard standard for the Ethiopian alphabet has also been developed.

Madagascar

There is a vast project to adapt ICTs to the context of Madagascar.

Mali

A project on digitalization of the ancient manuscripts of Timbuktu is under way.

Support for the creation of software in local languages

Ethiopia

As mentioned in the box above, a software and standards have been developed for Ethiopian character sets.

Madagascar

The software used in community development is localized.

Mali

A software programme in the Bambara language was developed in the framework of the multilingual dictionary (DIDADI) being promoted by a Malian university lecturer.

Senegal

Microsoft has started translating Windows Vista and Office 2007 in Wolof. A French-English-Wolof computer dictionary is being prepared in the framework of a project called ANAFA.

Nigeria

There are initiatives to create software in three main local languages (Hausa, Yoruba and Ibo). There are also public-private partnerships with Microsoft, civil society, local private organizations and research institutions to support research and development programmes in the development of hardware and software.

IX. Media

56. As stated in the WSIS Declaration of Principles, the media should have “freedom to seek, receive, impart and use information for the creation, accumulation and dissemination of knowledge which are important to the information society”. Indeed, the media play a significant role in promoting the information society, especially in developing countries. However, journalists need an appropriate enabling environment in order to operate efficiently, especially in relation to the promotion of ICT-for-development issues. This is reiterated in the WSIS Plan of Action which urges member States to promote “the development of domestic legislation that guarantees the independence and plurality of the media”.

57. In this regard, 85 per cent of the respondents indicated that the media play an important role in creating the information society in their respective countries; 90 per cent stated that their governments guarantee independence and plurality of the media; while 85 per cent indicated that the media promote balanced and diverse portrayals of women and men in their countries. However, only 50 per cent of the respondents stated that there are initiatives in their respective countries to encourage traditional media to bridge the knowledge divide and to facilitate the flow of cultural content, particularly in rural areas. Some of the countries stated that this is done through community radio stations, such as in the Gambia and the Niger.

X. Ethical dimensions of the information society

58. The WSIS Plan of Action states that “the information society should be subject to universally held values and promote the common good and prevent abusive uses of ICTs.” As a result, countries

are urged to uphold the moral dimension of the information society where information rights and obligations, such as intellectual property rights and privacy are respected. It is also widely recognized that ethical issues are intertwined with social and political issues. In this context, the WSIS Plan of Action indicates that “all actors in the information society should promote the common good, protect privacy and personal data and take appropriate actions and preventive measures, as determined by law, against abusive uses of ICTs such as illegal and other acts motivated by racism, racial discrimination, xenophobia, and related intolerance, hatred, violence, all forms of child abuse, including pedophilia and child pornography, and trafficking in, and exploitation of, human beings”.

59. In this regard, 38 per cent of the respondents (Benin, Egypt, Ethiopia, Ghana, the Niger, Nigeria, Uganda and Zambia) confirmed that their ICT policies promote awareness of the ethical dimension of the use of ICTs or that they have established other mechanisms to that end. However, only 33 per cent of the respondents (Congo, Egypt, Ghana, Mali, Niger, the Nigeria and Uganda), asserted that the academic community is engaged in research on the ethical dimensions of ICTs.

XI. International and regional cooperation

60. The WSIS Plan of Action states that “international cooperation among all stakeholders is vital in implementation of the Plan of Action and needs to be strengthened with a view to promoting universal access and bridging the digital divide, inter alia, by provision of means of implementation”. In this regard, one of the main WSIS follow-up programmes was the launching of the Connect Africa initiative in October 2007 in Kigali, Rwanda. Connect Africa is an example of a multi-stakeholder partnership at the international level to mobilize human, financial and technical resources in order to bridge major gaps in ICT infrastructure across Africa.

61. The following Connect Africa goals are currently being implemented with support from international and regional African organizations and the international private sector:

- Interconnect all African capitals and major cities with ICT broadband infrastructure and strengthen connectivity to the rest of the world by 2012;
- Connect African villages with broadband ICT services by 2015 and implement shared access initiatives such as community telecentres and village phones;
- Adopt key regulatory measures that promote affordable, widespread access to a full range of broadband ICT services, including technology- and service-neutral licensing and authorization practices, spectrum allocation for multiple, competitive broadband wireless service providers, creation of national Internet exchange points and introduction of competition in the provision of international Internet connectivity;
- Support the development of a critical mass of ICT skills required by the knowledge economy, notably through the establishment of a network of ICT centres of excellence in each subregion of Africa and ICT capacity-building and training centres in each country, with the aim of establishing a broad network of inter-linked physical and virtual centres, while ensuring coordination between academia and industry by 2015; and
- Adopt a national e-strategy, including a cyber security framework, and deploy at least one flagship e-government service as well as e-education, e-commerce and e-health services

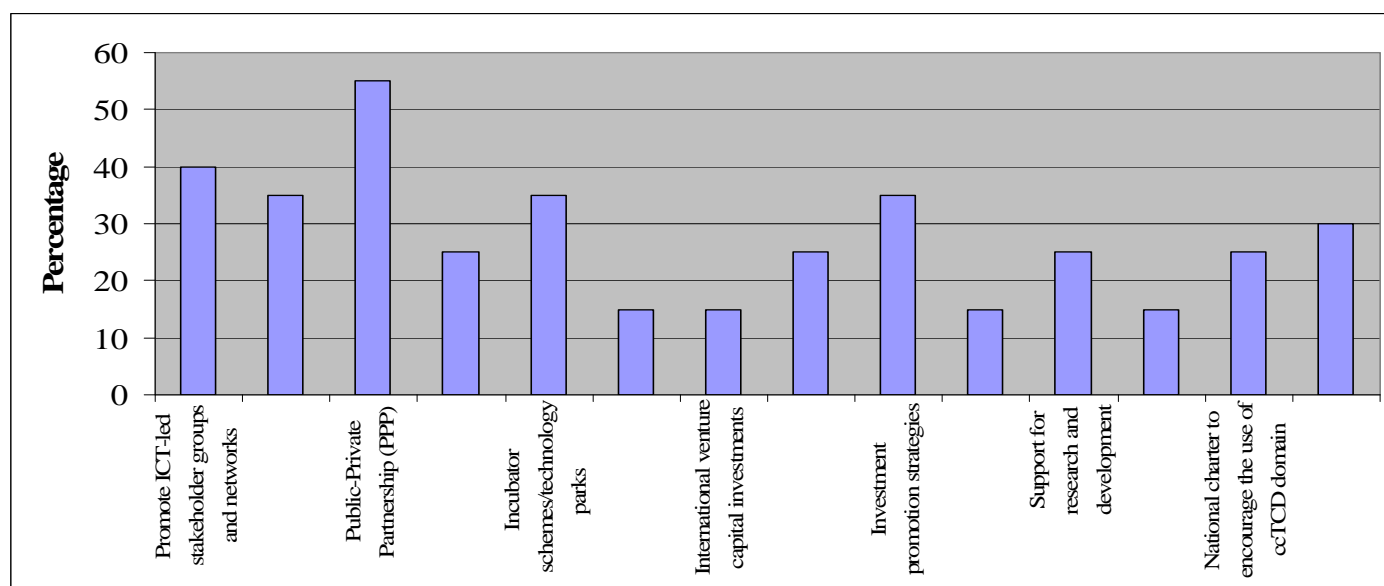
using accessible technologies in each country in Africa by 2012, with the aim of making multiple e-government and other e-services widely available by 2015.

62. In order to coordinate internal and external initiatives and international and regional cooperation, there is a need to establish and designate a body in each country to lead its ICT initiatives. In this context, 57 per cent of the respondents (Benin, Burundi, the Congo, Ethiopia, the Gambia, Ghana, Madagascar, Mozambique, the Niger, Nigeria, Sudan and Zambia) have an officially designated institution to manage and monitor implementation of their national e-strategy and the WSIS outcomes. Also, 66 per cent of the respondents confirmed that their countries have put in place a coordination mechanism between the various ICT actors in order to implement the national e-strategy (Example, e-brain Forum in Zambia), .

63. In addition, there should be continuous follow-up and evaluation of the impact of ICTs on the overall national development process. In this regard, only 33 per cent of the respondents (Burundi, Ethiopia, the Gambia, Ghana, Mali, Madagascar and Nigeria) have in place an institution to assess and measure the impact of information and knowledge economy activities in general and the various plans of their e-strategy in particular. Some of the tools used to benchmark, assess and measure the impact of e-strategies include International Telecommunication Union indicators, the Digital Access Index, WSIS indicators, SCAN-ICT, and, in the case of Ghana, the eGhana indicators.

64. Figure 15 below shows the mechanisms used in various countries to strengthen stakeholder partnerships and effective implementation of national information and communication infrastructure policies and WSIS outcomes. The public-private partnership is the most popular mechanism and it is used by 57 per cent of respondents. The less popular mechanisms (used by only 15 per cent of the countries) include national venture capital investments; international venture capital investments; software export activities (trade counseling); and support for software parks. However, 65 per cent of the respondents indicated that they have ICT projects supported by international cooperation and assistance partners.

Figure 15: Stakeholder partnership in WSIS and national information and communication infrastructure implementation



Source: ECA, WSIS questionnaire (2008)

XII. Conclusion

65. The survey shows that there are impressive successes in the national e-strategy development process in the continent, with 42 countries among the 53 member States having ICT policies. An additional five countries are in the process of developing their ICT strategies. Only six countries have not yet initiated the ICT policy development process. Some of the countries have also started developing various sectoral strategies in the areas of e-government, e-business, etc. However, the low level of growth in e-business applications can be attributed to the absence of cybersecurity laws, policies and guidelines in the countries. In addition, some key sectors such as health and agriculture are still at their developmental infancy.

66. In the area of infrastructure, the low level of development of the existing terrestrial and fiber optic infrastructure is hampering access to information and knowledge. However, growth and use of mobile technology have been phenomenal.

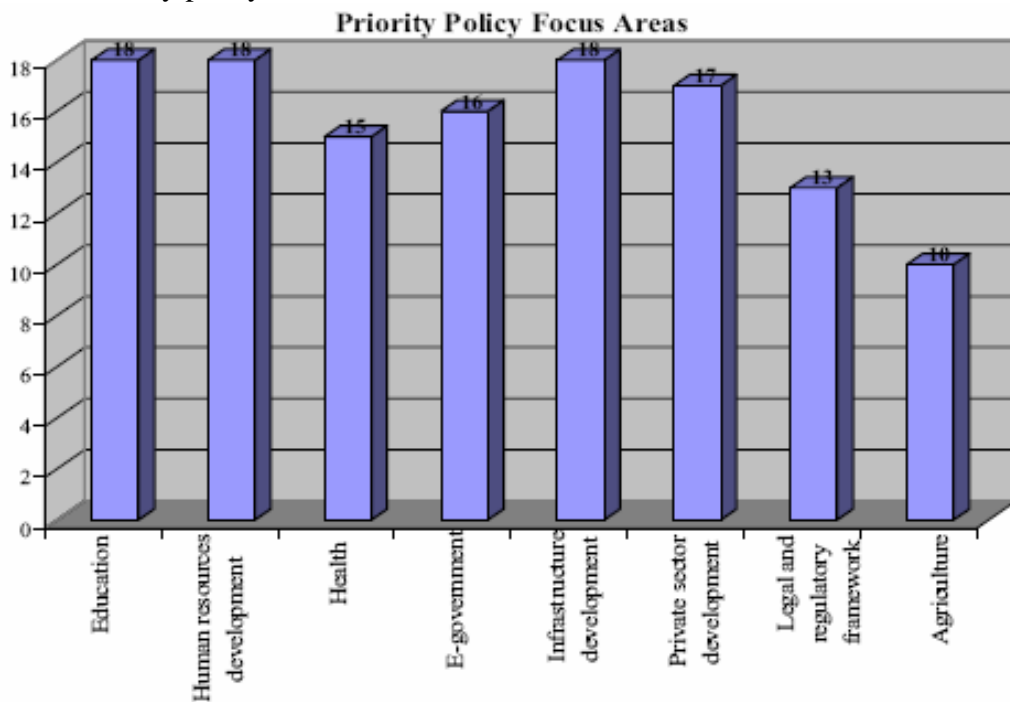
67. In terms of capacity-building, most countries have identified their requirements and some have already prioritized capacity-building as the main pillar of their policy. As gathered from earlier ECA studies of 33 African countries, and as shown in figure 16 below, human resource development is the priority policy focus for most countries.

68. On the enabling environment for investment in the ICT sector, most countries have created a favourable environment through various policies and liberalization of the telecommunications market. This has a positive impact on investments, especially in relation to the mobile telephone market. Also,

universal access strategies are being implemented to facilitate access for rural areas and disenfranchised groups.

69. With the strong commitment of governments in the countries surveyed and increasing multi-stakeholder partnerships, it is expected that the e-strategy implementation process, including development of the corresponding sectoral strategies, would bear fruit in the near future with support from ECA and other partners. There are clear indications that countries would achieve most of the outcomes of the WSIS Plan of Action by 2015.

Figure 16: Priority policy focus areas



Source: ECA



UNITED NATIONS

ECONOMIC COMMISSION FOR AFRICA

Annex I

Questionnaire on the status of WSIS and national information and communication infrastructure implementation

This survey is conducted to determine the status of implementation of the outcomes of the World Summit on the Information Society (WSIS), including the national information and communication infrastructure policies and plans (national e-strategies) developed by the United Nations Economic Commission for Africa and other partners.

The questionnaire is divided into the following six sections structured according to the WSIS action lines:

General information

- I. The role of government in the promotion of ICTS for development
- II. Status of ICTs, access to information, and the enabling environment
- III. Status of implementation - action plans and priority areas
- IV. Country's capacity to implement its e-strategy - management, monitoring and evaluation
- V. Investments for e-strategy implementation – financing and resource mobilization

ECA is kindly requesting you to complete the questionnaire and to return it by 15 October 2008 to:

Mr. Abebe Chekol
Project Officer, ICT and Science and Technology Division (ISTD)
E-mail: achekol@uneca.org
Fax: +251 11 5510512
Tel: + 251 11 5443248

A copy should also be sent to Mr. Makane Faye at (mfaye@uneca.org).

A regional follow-up conference on the WSIS (Tunis + 3) will be organized early next year to discuss among other issues the results of this survey.

Thank you for your cooperation.

0 General information

0.1 Focal point details

Country:-----

Ministry/institution (responsible for national ICT policy):

Physical address:

Name(s) of contact person(s):

Title:

Telephone:

Fax:

E-mail:

City:

Date:

I. The role of government in the promotion of ICTs for development

1.1. Do you think information and communications technologies (ICTs) are an overall priority for your government?

1.1.1 (Please specify: 1= strongly disagree 7= strongly agree)

1.2 What is the current status of the e-strategy development process in your country?

- Formulation
- Awareness
- Approval of policy/plans
- Completion
- Implementation

1.3 When did the e-strategy development process start? -----

1.4 When was the baseline study conducted? -----

1.4.1 How long did it take to complete the baseline study?

- 1 year 2 years other, please specify

1.4.2 Who undertook the study?

1.4.3 What are the elements of the study?

1.4.4 Which agency/ministry has been leading the policy formulation process?-----

1.4.5 What are the main pillars of the ICT policy? Please rank them according to the priorities of the government-----

1.4.6 When was the ICT policy approved? Please provide dates and copies of bills, decrees, circulars or any tool marking its official approval-----

1.5 Was it approved by (tick one)

- Cabinet
- Parliament
- Other (please specify)-----

1.6 Are public funds being allocated to the e-strategy implementation process? If so, please specify how-----

1.7 Are there funding partners involved?

- Economic Commission for Africa United Nations Development Programme
- International Telecommunications Union
- Other (please specify)-----

1.8 Which stakeholder groups were consulted in the formulation of the e-strategy from the policy framework document to the implementation plan?

- Private sector Civil society Public sector
- NGOs UN Institutions
- National institutions
- Universities and educational institutions
- Internet users and providers Religious Entities
- Women's associations
- Youth groups
- Other (please specify)-----

1.9 Please indicate if there are any functioning public-private partnership initiative(s) in relation to the e-strategy -----

1.10 Has the e-strategy been integrated into other existing processes such as:

- Poverty Reduction Strategy Papers
- Millennium Development Goals
- Other (please specify)

Please describe how -----

II. Status of ICTs access to information and the enabling environment

2.1 **Information and communication infrastructure**

2.1.1 Please provide us with statistical data (gender-disaggregated data if available) on the following questions with regard to ICT infrastructure development in your country:

2.1.1.1 The number of telephone landlines per 100 inhabitants-----

2.1.1.2 The number of mobile subscribers per 100 inhabitants-----

2.1.1.3 The number of Internet subscribers per 100 inhabitants-----

2.1.1.4 The number of broadband subscribers per 100 inhabitants-----

2.1.1.5 The International Internet bandwidth per inhabitants-----

2.1.1.6 The number of personal computers per 100 inhabitants-----

2.1.1.7 The number of mobile subscribers as a percentage of all telephone subscribers

2.1.1.8 The number of radios sets per 100 inhabitants-----

2.1.1.9 The number of television sets per 100 inhabitants-----

2.1.2 Does the country have the following conditions in place to implement the e-strategy?

2.1.2.1 Conducive environment for the necessary investment in ICT infrastructure
(Please describe)-----

2.1.2.2 Universal access policy and strategy and means of implementation (Please
specify)-----

2.1.2.3 Connectivity to schools, universities, health institutions, libraries, post offices,
community centres, museums and other institutions accessible to the public, in
line with the indicative targets (Please specify) -----

2.1.2.3.1 Number of telephone access facilities per 1,000 inhabitants within
5 kms or within walking distance (Please specify) -----

2.1.2.4 Access and connectivity to the international broadband network (Please
specify)-----

2.1.2.5 Access to connectivity and regional backbones and Internet exchange points
(Please specify)-----

2.1.2.6 Appropriate educational, administrative and legislative measures to ensure the
full inclusion of women in the information society (Please specify)-----

2.2 ***Access to information and knowledge***

2.2.1 Is there a policy or guidelines for the development and promotion of public domain
information to promote public access to information? (Please describe) -----

2.2.2 Are strategies in place to undertake innovation, science and technology and research?
(Please specify)-----

2.2.3 Has the government put in place a mechanism for respecting intellectual property rights,
while encouraging the use of information and sharing of knowledge? (Please specify)

2.2.4 Are there any activities and initiatives under way or planned to promote awareness
among all stakeholders of the possibilities offered by different software models, and the
means of their creation, including proprietary, open-source and free software? (Please
specify) -----

2.2.5 Are strategies in place to establish and promote multi-purpose community public access
points? (Please describe status)-----

2.2.5.1 Please provide a percentage of localities with public Internet access centres or multi-purpose community telecentres by number of inhabitants (rural versus urban)

2.2.5.2 Please provide the number of telecentres or community ICT access centres per 1,000 inhabitants-----

2.2.5.2.1 Please indicate how many of the telecentres are managed by women and how many by men -----

2.2.5.3 Please provide the number of public telephones per 1,000 inhabitants (rural versus urban)-----

2.2.6 Does the government support the creation and development of content and digital public library and archiving services adapted to the information society? (Please specify)-----

2.3 **Capacity-building**

2.3.1 Is there an identified capacity-building requirement for the country to embark on knowledge economy activities? If so please specify:-----

2.3.2 Please describe the level of ICT integration in education and training at all levels, including in the curriculum-----

2.3.3 Are there any initiatives or programmes that promote e-literacy skills? (Please describe) -----

2.3.4 Are there initiatives or strategies in place to ensure that young people are equipped with knowledge and skills to use ICTs?-----

2.3.5 Are there initiatives or strategies in place to remove the gender barrier to ICT education and training and to promote equal opportunities in ICT-related fields for women and girls, including targeting young girls with the aim of increasing the number of girls in ICT careers?-----

2.3.6 Please provide some statistical data on the total supply and demand of ICT skills (number of programmers/software/system developers/analysts, computer scientists, telecommunications/network engineers/technicians, etc.)-----

2.3.7 Please specify the number of universities and colleges offering ICT programmes-----

2.3.8 Please state the number of scientists and engineers per 1,000 inhabitants -----

2.3.8.1 What is the percentage of women scientists and engineers in your country? -----

2.4 ***Ensuring confidence and security in the use of ICTs***

2.4.1 Does your country have cybersecurity laws in place?

- Yes
- No

If so, please specify when they were adopted and whether they have been revised since their adoption, and indicate the date of revision-----

2.4.2 Are there national guidelines for preventing, detecting and responding to cybercrime?

- Yes
- No

If so, please specify -----

2.4.3 Are there guidelines for overcoming obstacles to the effective use of electronic documents and transactions, including electronic means of authentication? (If so, please specify) -----

2.4.4 Are there guidelines with respect to the right to privacy and data and consumer protection? (If so, please specify) -----

2.4.5 Please describe the level of deployment of security systems in the public and private sectors to combat cybercrime-----

2.4.6 Please describe the level of awareness in the country of ICT-related security issues-----

2.5 ***Enabling environment***

2.5.1 Is there a conducive legislative and regulatory framework that fosters a supportive, transparent, pro-competitive ICT market? What has been done? -----

2.5.1.1 Please specify the number, types and list of legal and regulatory institutions relevant to the ICT-for-development process and activities -----

2.5.1.2 Please describe the impact of the legal and regulatory environment on the ICT industry-----

2.5.2 Does e-commerce give consumers a choice as to whether or not to use electronic communication?-----

2.5.3 Does your country's ICT policy foster entrepreneurship, innovation and investment, with particular reference to the promotion of participation by women? Please describe-----

2.5.4 Does the government promote the development and use of open, interoperable, non-discriminatory and demand-driven ICT standards?-----

III. Status of implementation - action plans and priority areas

3.1 Implementing ICT applications

3.1.1 e-government

3.1.1.1 Does your country have an e-government strategy in place? If so, please describe any existing initiatives or services - -----

3.1.1.2 Does your country participate in or support international cooperation initiatives in the field of e-government? If so, please describe-----

3.1.1.3 Please specify the number and percentage of government ministries, departments and agencies with Internet connection-----

3.1.1.4 Please specify the number and percentage of government ministries, departments and agencies with websites -----

3.1.1.5 Please specify the number and percentage of government ministries, departments and agencies providing services online-----

3.1.2 ***E-business***

3.1.2.1 Does the government encourage and promote international trade and the use of e-business?

- Yes
- No

3.1.2.2 Does the government stimulate private sector investment, foster new applications and public-private partnerships?

- Yes
- No

3.1.2.3 Does the government policy favour or assist the growth of small, micro and medium-sized enterprises, in the ICT industry?

- Yes
- No

If so, please specify how-----

3.1.2.4 Are the following activities under way or completed?

3.1.2.4.1 Enactment of legislation for regulatory frameworks on:

- e-transactions, e-payments, e-contracts
- e-currencies
- e-commerce
- digital signature
- certification and cryptography
- consumer protection and arbitration
- protection of intellectual property rights

3.1.2.4.2 Does your country have a national certification agency?

- Yes
- No

If yes, give the name and full address -----

3.1.2.4.3 Does an electronic form of currency exist in your country?

- Yes
- No

3.1.2.4.4 Are central and national banks playing a role in ensuring the introduction of e-transactions and e-payments? If so, please specify. -----

3.1.2.4.5 Does your country provide e-services? If so in what areas?

- Business process outsourcing
- Information technology-enabled services
- Call centres

3.1.3 E-learning

3.1.3.1 Is there sufficient digital literacy for supporting digital and knowledge economy activities?

- Yes
- No

3.1.3.2 Are there any content development activities under way or completed in support of e-learning? If so, please describe-----

3.1.3.3 Please specify number and percentage of schools with

- 3.1.3.3.1 Personal computers-----
- 3.1.3.3.2 Telephone (fixed) -----
- 3.1.3.3.3 Mobile phone-----
- 3.1.3.3.4 Internet connectivity-----
- 3.1.3.3.5 Website-----

3.1.4 E-health

3.1.4.1 Are there any programmes in your country on building health information systems and medical training, education and research through the use of ICTs, including telemedicine initiatives? If so, please describe-----

3.1.4.2 Are there any common information systems in your country that alert, monitor and control the spread of communicable diseases? If so, please specify-----

3.1.4.3 Is there any ICT-based initiative you know of for providing medical and humanitarian assistance in disasters and emergencies? If so, please specify-----

3.1.4.4 Please specify the number and percentage of health centres with

- 3.1.4.4.1 Personal computers-----

- 3.1.4.4.2 Telephone (fixed)-----
- 3.1.4.4.3 Mobile phone -----
- 3.1.4.4.4 Internet connectivity -----
- 3.1.4.4.5 Website -----

3.1.5 E-employment

- 3.1.5.1 Is there any best practice for e-workers and e-employers at national level?-----

- 3.1.5.2 Are there initiatives that promote new ways of organizing work and business with the aim of raising productivity, growth and well-being through investment in ICTs and human resources?-----

- 3.1.5.3 Are there any best practices of teleworking with national and international clients?-----

- 3.1.5.4 Are there supportive mechanisms that target young girls to increase the number of women in ICT careers?-----

3.1.6 E-environment

- 3.1.6.1 Does the government use and promote ICTs as an instrument for environmental protection and the sustainable use of natural resources? Is so, please specify-----

- 3.1.6.2 Are there any guidelines for the production, consumption and the environmentally safe disposal and recycling of hardware and other components used in ICTs? -----

- 3.1.6.3 Is there a national monitoring system using ICTs to forecast and manage the impact of natural and man-made disasters? Give examples -----

3.1.7 E-agriculture

3.1.7.1 Does the government promote the systematic dissemination of information using ICTs on agriculture, animal husbandry, fisheries, forestry and food? Please give examples -----

3.1.7.2 Are there any public-private partnerships that seek to maximize the use of ICTs as an instrument for improving production? If so, please specify-----

3.1.7.3 Please specify the percentage of ICT personnel in the agricultural sector in relation to the total number of staff in the sector -----

3.1.8 E-science

3.1.8.1 Does the government promote affordable and reliable high-speed Internet connection for all universities and research institutions to support their critical role in information and knowledge production, education and training? If so, please specify-----

3.1.8.2 Does the country have a strategy (guidelines) for the promotion of long-term systematic and efficient collection, dissemination and preservation of essential scientific digital data? If so, please specify -----

3.1.8.3 Were geoinformation and national spatial data infrastructure issues integrated into the e-strategy formulation process of the country? If yes, please indicate how

3.1.8.4 Are there any existing coordination mechanisms between national spatial data infrastructure and the e-strategy development and implementation process in the country? If so, please specify -----

3.2 Ensuring cultural diversity and identity, linguistic diversity and local content

3.2.1 Does the country's ICT policy support the respect, preservation, promotion and enhancement of cultural and linguistic diversity in the information society? If yes, please specify -----

3.2.2 Does the country have policies and laws to ensure that libraries, archives, museums and other cultural institutions can play their full role as content providers, including of traditional knowledge, in the information society? If so, please specify-----

3.2.3 Does the government support local content development, translation and adaptation, digital archives and other forms of digital and traditional media by local authorities, including through public-private partnerships? If so, please specify-----

3.2.4 Are there any initiatives (strategies) that support the creation of software in local languages? If so, please specify-----

3.2.5 Does the government promote (through public-private partnerships, etc.) research and development programmes in development of hardware and software, including proprietary, open-source software and free software, standard character sets, language codes, electronic dictionaries, terminology databases and thesauruses multilingual search engines, machine translation tools, internationalized domain names, content referencing as well as general and application software? (Please specify)-----

3.3 Media

3.3.1 Does the media play an important role in creating the information society in your country? If so, please specify how-----

3.3.2 Does the government guarantees the independence and plurality of the media? If so, please specify-----

3.3.3 Does the media promote balanced and diverse portrayals of women and men? -----

Is there any initiative (strategy) to encourage the traditional media to bridge the knowledge divide and to facilitate the flow of cultural content, particularly in rural areas? If so, please specify-----

3.4 Ethical dimensions of the information society

3.4.1 Does the ICT policy promote awareness of the ethical dimension of the use of ICTs or are there other mechanisms to that end? Please specify -----

3.4.2 Is the academic community involved in research on the ethical dimensions of ICTs in your country? If so, please specify-----

IV. Country’s capacity to implement its e-strategy - management, monitoring and evaluation

4.1 Institutional mechanisms

4.1.1 Is there a designated body to manage and monitor the implementation of the national e-strategy and/or WSIS outcomes? If so, please specify-----

4.1.2 Are there any existing coordination mechanisms between the various ICT sector actors in implementing the national e-strategy process in the country? Please describe-----

4.2 Impact evaluation

4.2.1 Is there a designated body to assess and measure the impact of information and knowledge economy activities in general and the various plans of your e-strategy in particular? If so, please specify -----

4.2.2 What evaluation tools do you use to benchmark, assess and measure the impact of e-strategies (for example the ECA - SCAN-ICT toolkit)? Please specify-----

4.2.3 What are the mechanisms in place for data collection based on the indicators of the tools used? Please indicate relevant institutions (national statistical office, telecommunications regulatory agency, line ministries, research centres, etc). Describe data collection intervals, availabilities and measures undertaken -----

4.3 Stakeholders' participation

What are the mechanisms applied in your country for strengthening stakeholders' participation and involvement in the implementation of ICT policies and WSIS outcome?

- Promotion of ICT-led stakeholder groups and networks
- Enhancement of the capacities of parliamentarians and parliamentary staff to support the e-strategy development process
- Public-private partnerships
- Multi-sector partnerships
- Incubator schemes and technology parks
- National venture capital investments
- International venture capital investments
- Government investment funds (including microfinance for small , micro and medium-sized enterprises
- Investment promotion strategies
- Software export support activities (trade counselling)
- Support for research and development networks
- Support for software parks
- National charter to encourage the use of ccTCD domain names
- Adaptation of ICT infrastructure, tools and applications that facilitate accessibility of ICTs to all, and to disadvantaged groups in particular

Annex II

List of respondents

1. Benin

Ms. Gilletta Méa Dilecta Gbanhoun
General Manager
Agence pour La Gestion des Nouvelles Technologies de l'Information et de la
Communication (AGeNTIC)
Lot N° 110 Immeuble ex-Air Afrique
Zone Commerciale Ganhi (2eme etage)
08 BP 939
Cotonou, Benin
Tel: +229 95 95 27 48 / 90 92 12 92
Fax: +229 21 31 66 01

2. Burundi

Mr. Salvator Niyibizi
Executive Secretary
SETIC
Tel: +257-22258749
Mob: +257 79496000 / +257 77824000

3. Congo (Democratic Republic of the Congo)

Mr. Alphonse Ntita Misakabu
Coordinator Unit NICT
Ministry of Post, Telephones and Telecommunications
Avenue de la Démocratie (ex. Av. des Huileries), n° 4484, KINSHASA-GOMBE.
Tel: + 243 (0) 1-510-1859 – + 243 (0) 1-500-5001 / (243)999909048/(243)810305993
Fax: (+ 243) 13 98 220 - (+243) 12 37 59 8220 – B.P: 15464 Kin I

4. Republic of Congo

Mr. Marc Vincent de Paul Kallyth
Telecoms ICT Focal Point
Ministry of Post and Telecommunications
BP 44 Brazaville, Congo
Tel: +2425495676/ +2426687154
Fax: +2422810470

5. Côte d'Ivoire

Mr. Henri Danon
Assistant Director, Information Systems
NICT Development Division
Ministry of NICT
17 B.P. 737 Abidjan 17, Côte d'Ivoire
Tel: +225 20344531 / 20344536
Mob: +225 07685615 / 01207662
Fax: + 225 20 344375

6. Egypt

Prof. Dr. Nadia Hegazi
Senior Expert for Strategic Planning
Ministry Of Communication and Information Technology MCIT
Smart Village Km 28 Desert Road to Alex Giza B1
Tel: +202 35341375
Fax: +202 24528860

7. Ethiopia

Mr. Debretsiion G. Michael
Director General of the Ethiopian
Information and Communication Technology
Development Agency
Mexico Square, Alta Building Addis Ababa
P.O.Box 1028
Addis Ababa, Etiopía
Tel: +251 115503973 / +251 115500191
Fax: +251 115503974 / +251 115515894

8. Gambia

Mr. Ebrima Jobe
Director
ICT
Ministry of Communications and Information Technology
Banjul, The Gambia
Tel: +220 422 9928
Mobile: +220 7796 710
Fax: +220 422 79 54 / 4378029

9. Ghana

Mr. Issah Yahaya
Head of Policy Planning, Monitoring and Evaluation
Ministry of Communications
Accra, Ghana
Tel: +233 21 68 56 56 / + 233 20 2011036
Mobile: +233 2020 110 32
Fax: +233 21 66 71 14

10. Guinea-Bissau

Mr. Robert Djono
Chief of Department of Universal Service and ICT
Guinea-Bissau Communications Institute (GBCI) – Telecom & Posts Regulatory
Authority
Ministry of Transport and Communications
Rua 5 de Julho, CP. 1372 - Bissau
Bissau
Telephone: +245 320 5152 or +245 320 4875
Mobile: +245 660 7043 Or +245 725 73 63
Fax: +245 320 4876 or +245 320 1137

11. Kenya

John N. Kariuki
Communications Technology Expert
Ministry of Information and Communication
Tel: +254 20 2719953
Tel.+254-20-2719953
P.O.Box 72748
Nairobi, Kenya

12. Madagascar

Ms. Razafitsara Alisoa
Chief of ICT and Public Sector
ICT Division
Ministry of Telecommunications, Post and Communication
Tel: +261341139737 / +261 20 22 389 20
Mobile: +261 33 12 286 09

13. Mali

Mr. Mamadou Diallo
NTIC Adviser
Ministry of Communication and New Technologies
Square Patrice Lumumba x rue de l'Yser
Bamako, Mali
Tel: +223 683 44 86
Fax: +223 222 83 19

14. Mozambique

Eng. Lourino Alberto Chemane
ICT Chief Technical Adviser
ICT Policy Implementation Technical Unit (UTICT)
Ministry of Science and Technology
Bairro da Coop, Rua Particular Dr. Antonio de Almeida, 61 R/C Direito,
Maputo, Mozambique
Tel: +258 21 302241
Mobile: +258 82 305345
Fax: +258 21 302289

15. Niger

Mr. Massani Koroney
High Commission for Informatics and Technology Information and Communication
138 Rue de la Sirba
BP 259 Niamey - Niger
Tel: (+227) 20 72 24 64
Fax: (+227) 20 72 23 37

16. Nigeria

Eng. Solomon I. Ingba
Acting AD (U Access)
Ministry of Communications
Abuja, Nigeria
Tel: +234 805 526 3989 / 234-9-523 7253 / 08055263989/
08045260197/+234 805 526 3989

17. Sénégal

Mr. Babou Sarr
Research
NICT Division
Ministry of Post, Telecommunications and NTIC
58, Bvd de la République
Tel: +221 77 656 49 83 / +221 33 889 17 15
Mobile: +221 77 656 49 83
Fax: +221 842-87-24

18. Sudan

Ms. Alawia Hamadabi
Head of foreign affairs
National Information Centre
Khartoum, Sudan
Tel: 249 11796902 / 12 30 96 23
Fax: 249 11 798081

19. Togo

M. Toyitom Amelete
NICT Technical Adviser
Ministry of Communication, Togo
BP 40 Lomé (Togo)
Tel: (228) 221.29.30 / (228) 222.42.57 / (228) 221.29.23
Fax:(228) 221.43.80
Cel:(228) 934.30.39

20. Uganda

Mr. Patrick Mwesigwa
Director, Technology and Licensing
Uganda Communications Commission
12th Floor, Communications House, Plot 1, Colville Street
P.O. Box 7376
Kampala, Uganda
Tel: +256 414 339004 / + 256 312 339004 / +256 312 339000 / +256 414 339000
Mob: +256 71 2 805 188
Fax +256 41 348832

21. Zambia

Mr. Lotty Kabuko
Communications Authority of Zambia
PO Box 71630, Ndola

Zambia

Tel: +260 211 246 696/246 692

Fax: +260 211 246701

22. COMESA

Dr. Abu Sufian E Dafalla

Telecommunications Officer

Infrastructure Development Division

COMESA Centre, Ben Bella Road,

P O Box 30051, Lusaka, Zambia

Tel: +260 211 229725/30

Fax: +260 211 225107