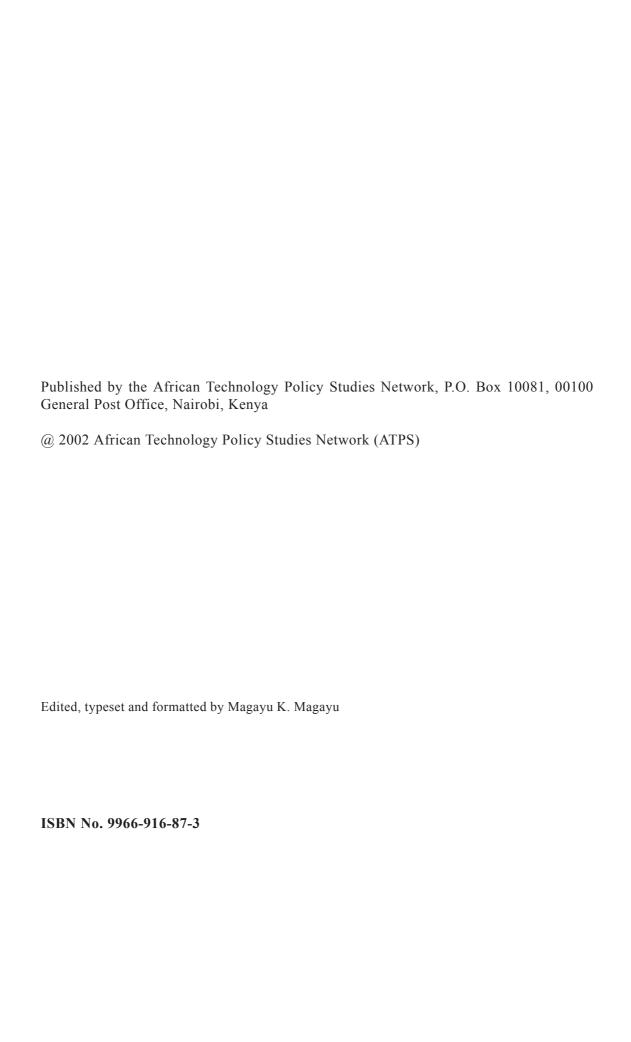# A Blueprint for Developing National ICT Policy in Africa

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P_{reface}

Publications under the *Special Paper Series* are commissioned by ATPS as concept papers or keynote addresses. In keeping with the network's knowledge brokerage function, ATPS publishes papers from distinguished academics and researchers addressing policy issues relevant to the work of ATPS in support of the Southern voice or an African perspective. Theoretical papers advancing knowledge of technology policy issues are also published under this series.

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1.0 The Challenges of Globalization and the Information Age

The world economy is experiencing the impact of rapid globalization and the emerging information age, which is bringing about a new global economic order dominated by information and knowledge-based economies (IKEs). Developing countries, including African nations, are facing new challenges in the socio-economic development process as a result of globalization and the impact of the emerging new information age.

Majority of these countries are already experiencing socio-economic challenges characterized by low growth rates, balance of payment difficulties, weak industrial structures, poor physical and communications infrastructural development, and problems associated with heavy debt burdens and huge public and social expenditure budgets. These problems are likely to be compounded by the new challenges posed by globalization and the information age if steps are not taken to embrace policies aimed at addressing them.

According to Dzidonu and Siochru[1], the emerging information age characterized by information and communication technologies (ICTs) and the extraordinary increase in the spread of knowledge has given rise to an era of knowledge and information. These technologies are offering even less developed agricultural countries like those in Africa the opportunity to transform their economies and accelerate their socio-economic development process as part of addressing the challenges of globalization and the socio-economic implications of the widening digital divide.

2.0 The Digital Divide and its Socio-Economic Development Implications

The concept of the 'digital divide' and its implications is often defined in terms of the degree of access to ICTs in general and in particular to the Internet and its related emerging advanced communication technologies. According to Dzidonu[2], statistics showing the number of Internet hosts and subscribers, the level of computer penetration within a given society or economy, among others, are often used as a rough indicator of the digital divide between two communities, nations or regions. Based on these estimates, most developing countries, including African countries, are generally classified as having comparatively less or inadequate access to these technologies.

We argue that the problem of the digital divide is not a technological one; in fact it is not merely an issue of a divide between 'technological-haves' and the 'technological-have-nots'. The threat posed by the digital divide is more of an economic development problem than a technological one. For developing countries like those in Africa, the digital divide and its implications has more to do with the inability of these countries to deploy, harness and exploit the developmental opportunities of the emerging digital information and technological revolution to advance the process of their socio-economic development.

There is, therefore, need to go beyond looking at the implications of the digital divide purely in terms of access to technological resources and services and examine its wider

implications in socio-economic development terms. In other words, the deployment, exploitation and development of ICTs in support of transforming the predominantly agricultural economies of African countries and moving them towards an information and knowledge economy is the central question that needs to be addressed in the context of the digital divide.

There is no doubt that the information and knowledge-based economy is the economy of the future and the challenge facing African countries relates more to how they should go about *formulating and implementing appropriate ICT-led socio-economic development policies and plans that could aid the process of moving their economies and society to the other side of the digital divide.* It is however worth pointing out that there is no single blueprint for developing the information and knowledge economy or society. This blueprint offers guidelines for facilitating efforts aimed at developing ICT-led socio-economic development policies, strategies and the corresponding plans in African countries. For each of these countries, the development of the information economy and society will be addressed in the context of the needs and priorities facing the country.

3.0 A Review of ICT for Development Efforts on the World Scene

Governments world-wide recognize the crucial role ICTs play in facilitating and accelerating socio-economic development. A number of countries in the developed and developing world are putting in place policies and strategic plans that will enable them to transform their economies into information and knowledge-based economies. For example, the USA, Canada and a number of European countries as well as Asian countries including India, Singapore, Malaysia, Thailand, Sri Lanka, South Korea, Japan and Vietnam and South American countries, among them, Brazil, Chile, and Mexico, in additon to Australia and Mauritius have already put in place these policies and plans or are at an advanced stage of implementing the programmes.

In India, for example, the government sees ICTs and their deployment for socio-economic development as an area in which the country can quickly establish global dominance and reap tremendous payoffs in creating wealth and generating quality employment. Finland regards the development and use of ICTs in its economy as key to national efforts to improve the quality of life, knowledge and international competitiveness.

Malaysia's Vision 2020, which envisages the country as a fully developed nation by year 2020 and Singapore's vision of transforming the country into an 'Intelligent Island' see ICTs as the main engine for promoting accelerated development and growth, and for gaining global competitive advantage. Mauritius, learning from the Singaporean experience has developed a strategic ICT plan that forms an integral part of its overall vision of social and economic development. Mexico also sees ICTs as key to achieving progress in social and economic development. Finally, Rwanda, as is the case of Senegal, Mozambique and South Africa, has seriously taken on board the deployment and exploitation of ICTs to facilitate their socio-economic development. From powerful countries like the USA to small countries like Andorra, Mauritius and Rwanda, the need to embrace the information

revolution to transform economies and societies to improve the quality of life of their people has been recognized.

It could be argued that because of the portable nature of the underlying technologies driving the development of the information society and economy, developing countries, especially in Africa, are equally placed to take advantage of the technologies to facilitate socio-economic development. The information and knowledge economy facilitated by these technologies is one that the mighty and the weak could take advantage of. But, these technologies will be creating new winners and losers within the emerging new global economic order. The new winners will include the developed and some developing nations who seize the opportunity to embrace the technologies to support their socio-economic development.

The prediction is that the gap between the new winners and losers in the new world economic order dominated by IKEs will be much larger than the development gap that now exists between the advanced nations and the under-developed nations. African countries, most of which are currently under-developed, are at risk of being further marginalized if they fail to embrace the technologies to transform their economies. The need for the countries to put in place policies to address the challenges of globalization and the information age in the context of devising *ways and means* to aid the process of developing the information economy and society cannot, therefore, be over-emphasized.

4.0 Developing the African Information Society and Economy AISI and DOI

The African Information Society Initiative (AISI)[3] initiated by the United Nations Economic Commission for Africa (UNECA) is a bold attempt aimed at developing the Africa information society and economy. This initiative adopted by the 22nd Meeting of the UNECA Conference of Ministers in 1996 serves as a framework for a radical socio-economic transformation through deployment and exploitation of ICTs in the context of globalization and the information age. It could be argued that the failure of African countries to *recognize* and *exploit* the developmental potentials and opportunities of the information and technological revolution could seriously undermine the capacities of hese countries to embark on and sustain their socio-economic development efforts in the emerging information age.

The first Africa Development Forum, organized by UNECA in 1999 and based on the theme 'Challenges of Globalization and the Information Age', used AISI as point of reference to re-focus the attention of African governments on the socio-economic development implications of the digital divide. The forum examined and proposed a number of actions that need to be taken at the national and continental levels within the AISI framework to accelerate Africa's development efforts in the new information age.

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This 'What-to-do' framework has, since adoption, been operationalized, field-tested and refined. With support from UNECA and other development partners, including the International Development Research Center (IDRC), the United Nations Development Programme (UNDP) and the European Union (EU), a number of African countries have embarked on the process of developing their national information and communications policies and plans based on it.

Countries like Rwanda, Senegal, Mozambique, Tunisia, among others, have operationalized, adapted and refined the AISI framework to develop their respective national information and communications policies and plans. On the basis of work done since the adoption of AISI, there is now an extensive body of knowledge and accumulated experience in the area of formulation and development of relevant policies and plans to facilitate accelerated economic development in the emerging information and technological age in a number of African countries.

Details of the broad guidelines contained in this blueprint are drawn from experiences and the lessons from the implementation of the AISI framework at the country level, especially in such countries as Rwanda, whose ICT policy and plan development are regarded as good models for African countries.

It is also worth pointing out that the proposed guidelines also address some of the key requirements and provisions of the Digital Opportunity Initiative (DOI)[4], an initiative led by the UNDP. The DOI, like AISI, is aimed at guiding the 'ICT for Development' process in developing countries, including African countries. Drawing from the varied experiences of a number developing countries including Costa Rica, Taiwan, Brazil, India, Korea, Malaysia, Trinidad and Tobago, Gambia, Estonia and South Africa, the DOI report highlighted some important lessons in relation to the role of ICT in development. Some of these are:

- An export focus approach can produce significant economic benefits, such as growth and foreign investment;
- Building domestic ICT production capacity may address local needs and help strengthen domestic economic linkages;
- It is imperative to use ICT to improve the competitive position of a developing country in the global economy;
- An explicit focus on using ICT in pursuit of development goals allows countries to achieve a wide diffusion of benefits from ICT and contributes to both broad-based economic growth and specific development goals.
- A number of interrelated factors should be addressed to maximize the benefits of ICT for development. These include building human capacity, creating incentives for enterprise, developing appropriate content and increasing competition, especially among telecommunications and Internet-related businesses.

- Finally, the success of national ICT strategies is dependent upon the coordination and alignment of efforts undertaken by all actors involved, at global, local and national levels.

Based on these lessons, the DOI developed a strategic framework to help guide developing countries in investing in, and implementing strategies which take advantage of the potential of ICT to accelerate social and economic development. The framework consists of five critically interrelated areas for strategic intervention. These include:

Infrastructure – deploying a core ICT network infrastructure, achieving relative ubiquity of access, and investing in strategically focused capacity to support high development priorities.

Human Capacity – building a critical mass of knowledge workers, increasing technical skills among users and strengthening local entrepreneurial and managerial capabilities.

Policy – supporting a transparent and inclusive policy process, promoting fair and open competition, and strengthening institutional capacity to implement and enforce policies.

Enterprise – improving access to financial capital, facilitating access to global and local markets, enforcing appropriate tax and property rights regimes, enabling efficient business processes and stimulating domestic demand for ICT.

Content and Applications – providing demand-driven information which is relevant to the needs and conditions experienced by local people.

9.0 Making a Case for Developing National ICT Policies, Strategies and Plans

It can be argued that in the new emerging economic order, the fundamental basis for poverty reduction, wealth creation and national prosperity is information and knowledge, and African countries cannot afford to be without either of these. Information and communications technologies are key to achieving progress in economic and social development in African countries. There is no doubt that the information and knowledge economy is generating opportunities across all sectors in developed and developing countries. It is a new source for the creation of quality jobs, wealth generation and redistribution, rapid economy development and prosperity as well as a source for facilitating global competitiveness.

The argument being put forward is that if African countries are to achieve rapid and radical social and economic transformation in the new information age to be dominated by information and knowledge-based economies, they will need to implement comprehensive ICT-led socio-economic development policies, strategies and plans. The premise is that the emerging information and communications technologies underlying the information revolution are offering even under-developed agricultural countries, like those in Africa, a window of opportunity to leap-frog the industrialization stage and transform their economies into high value-added information economies that can compete with the advanced economies on the global market.

In other words, the opportunities offered by the emerging information revolution could enable African countries to circumvent the classical developmental path that stipulates

that economies in the process of their development will need to move from agricultural to industrial and then to what is now termed the information and knowledge economy (IKE). The basic argument is that it will be possible for under-developed countries, including the vast majority of African countries, with predominantly subsistence agriculture-based economies, to transform their economies into a predominantly information and knowledge economy without first being fully industrialized. To explore this argument further as a step towards making the case for the development of national information and communication policies and plans in African countries, we examine below the broad question of what constitutes an information and knowledge-based economy.

What is an Information and Knowledge Economy?

Although there is no standard accepted definition of what constitutes an information and knowledge-based economy, it could be argued that such an economy should first and foremost be a reasonably rich economy dominated by development, production and trading in ICT products and services. Furthermore, an information and knowledge economy is likely to be an economy:

- characterized by a large commercial service sector with a reasonably large and vibrant ICT service sub-sector and industry;
- characterized by a technology-based knowledge-driven industrial sector;
- in which the majority of the working population are either directly or indirectly involved in information and communications-related activities;
- with a modern, efficient and competitive agricultural sector;
- in which a reasonably large proportion of the population has access to information and communications technology products and services;
- in which the provision and delivery of goods and services of the key sectors of the economy are, to a large extent, facilitated by information and communications technologies
- in which the provision and delivery of services by government and its administrative machinery are, to a large, extent facilitated by information and communications technologies;
- based on an advanced and reliable national information and communications infrastructure; and
- based on a literate society with a high proportion of computer literates.

It could be argued that given the above characteristics of what constitutes an information and knowledge-based economy and society, there is no doubt that most of the industrially advanced countries will only need to put in place specific ICT deployment programmes and national information infrastructure (NII) programmes to move their advanced and globally competitive economies into information and knowledge-based economies. African countries will, however, need to do more to achieve the same goal.

In other words, it will not be enough for these countries to implement a number of isolated ICT projects and programmes or sectoral policies that are not tied to their overall socio-economic development strategy, and hope to transform their economies into information and knowledge economies that exhibit the characteristics outlined above. There is no doubt that for African countries to be able to address the challenges of the emerging globalization and the information age, they will need to put in place ICT policies and plans in the wider national socio-economic development plans.

Thus it will be possible for predominantly agricultural economies, including those in Africa, to be transformed into predominantly information and knowledge economies without first being fully industrialized, provided some developmental prerequisites are met and the necessary policies, and plans are put in place. We illustrate this point below by considering each of the characteristics of an information and knowledge-based economy.

A high income economy dominated by trading in ICT products and services

It will be possible for predominantly agricultural and industrially weak countries in Africa to transform their economies into one dominated by trading in ICT products and services without the need for them to be first fully industrialized. This can be achieved mainly by developing the service sector, especially the ICT services sub-sector and promoting the development of an ICT industry by putting in place specific policies backed by sound development plans, packages and policy instruments and by mobilizing the necessary financial and technological resources to support the development of these sectors.

An economy characterized by a large commercial service sector with a reasonably large and vibrant ICT service sub-sector and industry

A number of under-developed African countries can develop their economies into economies characterized by a large commercial service sector with a reasonably large and vibrant, ICT service sub-sector and industry by putting in place sound sectoral development policies and incentive packages. Full industrialization is, therefore, not a pre-requisite for developing this aspect of the information economy in these countries.

An economy characterized by a technology-based knowledge-driven industrial sector

It has been acknowledged that in the emerging technology and knowledge-driven new economic order, the most efficient and competitive industrialized economies are those that are moving away from traditional industrial processes and methods of production to the deployment of knowledge-driven or knowledge-programmed processes and methods within their industrial, production and delivery set-ups and systems. Although subsistence agricultural based and industrially weak economies like those in Africa lack the necessary resources and know-how to develop and deploy cutting-edge knowledge-driven industrial

processes and methods, it will be possible for these countries to mobilize and train the necessary human resource to serve as the necessary pool of knowledge and know-how to facilitate the process of developing a technology-based knowledge-driven industrial sector. In other words, although not industrialized, it will still be possible for these countries to embark on the process of developing a technology-based knowledge-driven industrial sector with the right policies and programmes, and the required financial and technological resources.

An economy in which the majority of the working population is either directly or indirectly involved in information and communications related activities

The predominantly agricultural economies can be transformed into economies in which the majority of the working population are either directly or indirectly involved in information and communications-related activities without the need to be first fully industrialized. The development of sectors like the service sector and ICT industry can, for example, substantially contribute to increasing the number of the working population involved in information and communications-related activities. Furthermore, the development of these ICT-based sectors can facilitate the deployment, exploitation and utilization of ICTs in other sectors of the economy which will, in turn, impact on the number of the working population that are directly or indirectly involved in information and communications-related activities.

An economy with a modern, efficient and competitive agricultural sector

It will be possible for African countries to transform their subsistence agricultural economies into a modern, efficient and competitive agricultural sector with the right policies backed by the mobilization of the necessary financial and technological resources. Full industrialization of these countries is, therefore, not a prerequisite for the modernization of the agricultural sector of these countries. The argument being put forward is that African countries, in their pursuit for development of their information and knowledge-based economies cannot abandon the agricultural sectors on which they currently depend. However, they must make this sector modern, efficient and competitive. The point has to be made that even such an efficient, modern and competitive agricultural sector cannot be the engine for accelerated economic growth and development in the emerging information and technological age.

An economy in which a reasonably large proportion of the population has access to information and communications technology products and services

Under-developed economies like those in Africa can, with the right ICT policies, plans, packages and financial and technological resources, be transformed into economies in which a reasonable proportion of the population has access to information and communications

technology products and services without the need to be first industrialized. For example, the necessary legal, regulatory and institutional framework necessary in facilitating the development and provision of ICT services can be put in place as part of government effort towards this goal. Also, sectoral development policy packages and instruments targeted at the development of rapid growth sectors could lead to the expansion of these sectors, which would, in turn, contribute to the rapid development and growth of the economy to facilitate increased access to ICT products and services by a large section of the population.

An economy in which the provision and delivery of goods and services of key sectors of the economy are to a large extent facilitated by information and communications technologies

It will be possible for predominantly agricultural economies of Africa to promote the deployment and exploitation of ICTs in all sectors of their economies to facilitate the provision of goods and services without first being fully industrialized. They can, for example, achieve this through specific policies backed by special programmes, initiatives and incentive packages in the areas of tax and investment promotion incentives to encourage public and private sector organizations and business to invest in ICTs to support their operations. A booming economy led, for example, by the service sector including the ICT service sub-sector as well as the broader ICT industry will also facilitate the spread of ICTs in businesses and organizations as they take advantage of the favourable economic climate to modernize their operations through deployment and exploitation of ICT products and services.

An economy in which the provision and delivery of services by government and its administrative machinery are to a large extent facilitated by information and communications technologies

Developing economies, those in Africa included, could be transformed into economies in which the provision and delivery of services by government is to a large extent facilitated by information and communications technologies without the need to first industrialize. They could, for example, achieve this by mobilizing the required financial and technological resources to put in place a programme to modernize their civil and public service. A component of this could be the computerization of all government ministries and public organizations.

An economy based on an advanced and reliable information and communications infrastructure

Without the need to first industrialize, it will be possible for developing countries, including the vast majority of African countries, to mobilize the necessary financial and technological

resources to build, rehabilitate and expand their information and communications infrastructure to support the development of their economies towards an IKE. Policies could, for example, be put in place to promote private sector (domestic and foreign) investment in this sector and put in place the necessary legal, regulatory and institutional framework to encourage its development.

An economy based on a literate society with a high proportion of ICT (e.g. computer) literates

Developing African countries can achieve the goal of a literate society by putting in place appropriate educational policies, human resource development policies and programmes and by mobilizing the necessary financial and other resources for implementation. Businesses and organizations in a growing economy will also be investing in skills development, especially in ICT skills as they train the necessary manpower for their operations. Government could also put in special incentive packages to promote this process, which in addition to its other efforts, could make their societies literate with a high proportion of ICT literates without first being fully industrialized.

In a nutshell, without doubt, it will be possible for the predominantly agricultural economies of Africa to be transformed into predominantly information and knowledge-based economies (PIKE) without the need to fully industrialize provided:

- some crucial enabling conditions are met
- sound ICT-led socio-economic development policies, plans and programmes, packages and policy instruments are put in place
- the necessary resources (human, financial and technological) are mobilized in support of the programmes and initiatives put in place.

However, the extent to which African countries will benefit from the information revolution and transform their economies will depend very much on their readiness and capability to develop, deploy and exploit ICTs in their respective economy as part of a comprehensive policy. The role of African governments is crucial in this respect. They have to develop, in consultation with key stakeholders, the necessary vision, missions and strategies to provide direction as well as environment conducive to the promotion, deployment, exploitation and development of ICTs. It is also their duty to put in place sound socio-economic policies, plans as well as policy programmes and incentive packages and policy instruments that will facilitate the process of accelerated development and economic growth towards an IKE using ICTs.

In addition, it is the responsibility of governments to provide the necessary legal and regulatory framework that will facilitate the development of the economy towards an IKE. The responsibility for providing good governance and a conducive socio-political environment also lies with the governments.

The diagram below illustrates key factors that need to be addressed to transform subsistence agriculture-based and industrially weak African economies into information and knowledge-based economies through the development, deployment and exploitation of ICTs. These key factors are grouped into three broad areas: *Enabling environmental factors*, which need to be addressed to provide the necessary environment to aid the process; *Facilitating factors* for facilitating the socio-economic process towards an information and knowledge-based economy and society and *Policy actions, programmes and packages* for aiding, influencing and supporting the development process towards a PIKE.

It is of interest to note that even if the *Enabling environmental requirements* identified in the diagram were addressed, not very much can be achieved by way of moving subsistence agricultural economies towards PIKE unless steps are taken to address the other key requirements forming part of the *facilitating factors* including:

- **S**ound socio-economic development plans
- **L**ead sector s development plans
- **E**ducated and informed society
- **G**overnment commitment and sound leadership
- **M**odernized and efficient civil and public service
- **F**inancial and technological resource availability and
- **H**uman resource availability

However, it is again worth pointing out that addressing the facilitating factors and requirements will not necessarily guarantee that subsistence agriculture dominated economies of Africa will be transformed into PIKEs unless governments put in place relevant policy programmes, incentives and policies specially designed for aiding, influencing and supporting the developmental process towards achieving PIKE. Some examples of these programmes and policy instruments are listed in the diagram. But it could be argued that suitable programmes and policy packages can only be identified and formulated as part of an overall process of developing comprehensive integrated ICT-led development policies and plans aimed at transforming the economies and societies of these countries. We examine below specific guidelines for aiding this policy and plan development.

8.0 Guidelines to Facilitate the Process of Developing Integrated National Communication and Information Policies and Plans

It is clear that African countries with the right policies and plans, set within the required enabling and facilitating environment can transform their economies and societies as part of meeting the challenges of globalization and the emerging information age. Given that the necessary *governance and socio-political enabling environment* issues identified in the diagram are addressed, it will be possible for these countries (following some specific guidelines) to put in place the required ICT-led socio-economic development policies,

Factors to be addressed in trasforming subsistence agriculture based African economies into information and knowledge-based economies

plans and the necessary legal, regulatory and institutional structures and provisions as well as the required policy programmes and packages to aid their socio-economic development. We present in this section, key elements in facilitating the process of developing national ICT policies and plans set in the wider context of the socio-economic development objectives and priorities of the respective countries.

6.1 The Key Outputs of the Process

It is proposed that for any given country, the national ICT policy and plan development process should be aimed at four key outputs, namely: the *Framework, Policy, Plan* and *Structures*. The idea is that the *Framework* document will set the agenda for guiding the development of other elements of the process. The *Policy* document based on the Framework will aim at providing the details of key policy commitments and considerations of the government. It is envisaged that the corresponding *Plan* will provide details of the programmes and initiatives aimed at implementing the policy commitments of government as contained in the Policy document. Finally, the *Structures*, or institutional set-ups, will serve as the relevant national coordinating structures, bodies or institutional arrangements to support the formulation, development and implementation of the policies and plans.

In a nutshell, the Policy document, based on the Framework document will provide details of the policy commitments of government in relation to *what* needs to be done towards the realization of the nation's social and economic development aspirations through the deployment, exploitation and development of ICTs while the Plan, based on the details of the Policy document, will provide details of *how* these policy commitments can be translated into concrete programmes and initiatives for implementation.

6.2 Phasing the Process

Assuming a phase-wise approach is adopted, the first phase of the process will be devoted to the development of the *Framework*, the second phase to the development of the *Policy* document based on the details of the framework and the third phase to the development of the *Plan* based on the details of the policy.

On the *Structures* or the institutional arrangements for supporting the policy and plan development and implementation process, it is recommended that these be identified during the first phase of the process and documented in the framework document. In cases where these structures do not exist, efforts could be made to put them in place during the second or third phases of the process. It is recommended that the key structures should be in place either as fully operational structures or institutions, or at least as temporal set-ups or institutional arrangements before the completion of the plan development phase. The details and the deliverables of each of the phases of the process are elaborated below.

7.0 Guidelines for Developing the Framework to Guide the Policy and Plan Development Process

It will be necessary in the majority of cases to start the national ICT policy and plan development process with the development of an integrated *framework* document aimed at guiding the development of the policy and the plan. This framework document should, among other things:

1. Provide an analytical basis for the development of the relevant policies and plans. Specifically, the framework should review and analyze the government's socio-economic development frameworks, policies, programmes and provisions as well as examine the general ICT landscape and infrastructure; the degree and level of ICT deployment, utilization and development in the country with a view to defining and specifying the general problem and policy areas worth pursuing.
2. Serve as a conceptual framework for identifying and crystallizing specific developmental challenges as well as the relevant socio-economic development, vision, missions and strategies that need to be pursued to address these challenges as per the specific policy commitments and corresponding implementation plans.

On the whole, the framework document should be able to identify specific policy issues and orientations that are required to guide the policy development process and the subsequent strategic plans.

Elements of the Framework Document

Acknowledging the fact that the details of the *framework document* will be determined by the specific social and developmental parameters of each country and, as such, will differ from one African country to another, we provide below, in broad terms, some of the key subject areas and topics that could be addressed in varying degrees in the document:

- An Analysis of the current socio-economic situation of the country
- Identification of the key socio-economic developmental challenges facing the nation
- A review of efforts being made (past and present) to address the identified developmental challenges
- A review and analysis of national socio-economic development policies, programmes and long-term development frameworks, (e.g. Vision 2020s, Vision 2010s etc)
- Making the case for the need to take steps to address the emerging challenges of globalization and the information age
- An analysis of the limitations and potentials for transforming the economy and society into an information and knowledge-based society and economy
- A clear statement of the national vision for social and economic development and the corresponding missions for the realization of the vision, as well as strategies aimed at the attainment of the stated missions
- Details of specific sectoral development goals directed at transforming the economy and society as per the stated vision, missions and strategies
- Identification of specific institutional arrangements and structures for facilitating the policy and plan development and implementation process and
- Details relating to the scheduling of the remaining phases of the national policy and plan development process

It is important to emphasize that the process of developing the framework document should be a consultative one aimed at bringing on board all key stakeholders: government, the private sector and civil society. The requirement is that the study underlying the development of the framework should, apart from yielding specific deliverables, be used to build national consensus on key issues on which to base the development of the policy and plan as well get a general agreement on the way forward in terms of direction and orientation of the national policy and plan development and implementation process.

In other words, the aim is not only to come out with specific outputs but also to mobilize the government machinery, the private sector and the entire society to play an active role in the consultative process, leading to the development and the implementation of the relevant policies and plans for transforming the economy and society.

8.0 Guidelines for Developing the Policy Document

Although no two African countries are the same, it is still possible to define in broad terms key policy issues that need to be taken on board in formulating and broadening the scope of national information and communication policies and strategies in the context of national socio-economic realities, priorities and objectives. For example, according to Dzidonu[5], it is imperative that national information and communication policies and strategies should, among other things, address in broad terms issues relating to the:

- creation of the necessary enabling environment to facilitate the deployment, utilization and exploitation of ICTs within the economy and society;
- development of a local ICT industry to facilitate the production, manufacturing, development, delivery, and distribution of ICT products and services;
- development of the national human resource capacity to meet the changing demands of the economy;
- development of the national information and communications infrastructure;
- development of the legal, institutional and regulatory framework and structures required to support the deployment, use and the development of ICTs within the economy and society; and the
- development and promotion of the necessary standards, practices and guidelines to support the deployment and exploitation of ICTs within the society and economy.

The above form the basis of the UNECA adopted SUNRISE model designed for guiding the development of national ICT policies, strategies and plans in the context of national socio-economic development objectives, priorities and realities. For the purpose of enhancing this process in general and to specifically provide guidelines on how to broaden the scope of national efforts in this area, we describe below, in broad terms, some of the key requirements and considerations that need to be taken on board in addressing each of the policy areas identified above.

Policy on creating and facilitating an enabling environment for the development of the national information society and economy

There is a need for African governments to recognize in their broad policy framework for the development of their national information society and economy, that they have a key role to play in creating a favourable enabling political and socio-economic environment to facilite the process of establishing their country's information society and economy. Governments in the region will, therefore, need to put in place mechanisms to provide and facilitate the necessary enabling political, economic, regulatory, legal and institutional environment to support the process of moving their respective countries from a predominantly agricultural economy to an information-rich knowledge-based society and economy.

Policy on implementing special tax packages, instruments, and incentive programmes to promote the development of the information economy

African governments, apart from putting in place mechanisms for providing and facilitating the necessary enabling environment, will also need to address policy issues directed at implementing special tax packages, instruments, and incentive programmes to promote the development of the information society and economy in their respective countries. They will, therefore, as part of a comprehensive ICT policy and plan, have to take the necessary policy and programmatic initiatives that will include implementing the necessary budgetary packages and investment incentive programmes to promote the deployment, exploitation and development of ICTs in the economy and society to facilitate and accelerate the process of moving the economy towards an information and knowledge-base economy.

Policy on human resource development and deployment to support the development of the country's information society and economy

For the majority of African countries, the extent to which they will be able to benefit from the advances and the opportunities of the emerging information age will depend on how they develop and harness their nation's human resources to initiate, support and maintain their socio-economic development towards an information and knowledge economy. Therefore, African governments need to facilitate implementation of a comprehensive human resource development programme to meet the changing demands of the ICT sector and other key sectors of the economy.

Policy to facilitate the deployment and exploitation of ICTs in the educational system

The key role the educational system can play in socio-economic development process has been recognized[6]. Also acknowledged is the key role ICTs can play in educational delivery and training. The need for ICT training and education in schools, colleges and universities should therefore be taken on board by African governments in the formulation and implementation of their national information and communication policies and strategies. A specific proposal is that policies should be put in place to facilitate deployment, use and exploitation of ICTs in the educational system from primary school upwards.

Policy on the deployment of ICTs to support the operations of the civil and public services

In the majority of African countries, civil and public services play a key role in socio-economic development. But a number of concerns have been expressed with regard to their efficiency in delivery of government services and on the effect of their size and the resultant huge costs of running them. The crucial role that ICTs can play in improving the

efficiency of delivery of government services in reducing the operational costs of these institutions and in bringing government closer to the people has been acknowledged. It is, therefore, proposed that the deployment and exploitation of ICTs in support of operations and activities of the civil and public services in African countries should form a key component of the comprehensive national information and communications policy and strategies.

Policy on facilitating an investment climate for mobilization of financial and technological resources

Apart from the development and mobilization of human resources, critical factors for ICT deployment, exploitation and development in the society and economy, there is also the need for governments in the region to develop polices and put in place mechanisms that will facilitate the mobilization of financial and technological resources through foreign direct investment (FDI) and domestic investment to aid the socio-economic development process in their countries.

Policy to encourage and facilitate physical infrastructure development

 Socio-economic development cannot take place without the necessary modern physical infrastructure: roads and general utilities, social infrastructure as well as telecommunications and communication infrastructure. There is, therefore, the need to put in place policies directed at facilitating the development, upgrading, improvement and deployment of the necessary infrastructure in all key areas.

Policy on the development of standards, best practices and guidelines to guide the deployment, exploitation and development of ICTs

Deployment, exploitation and development of ICTs in African countries will need to be guided by appropriate standards, practices and guidelines. There is therefore a need to incorporate within national ICT policies mechanisms on how these issues can be addressed.

Policy on creating the necessary enabling regulatory framework for facilitating the deployment, exploitation and development of ICT products, services and systems

There is a need for governments in the region to acknowledge that the development and exploitation of ICTs in the economy and society as well as the development of the information and knowledge economy will need to be supported and facilitated by the necessary regulatory framework and provisions. As part of broadening the scope of national information and communication polices, governments should consider the possibility of implementing relevant sections of the recommendations of the African Telecommunication Policy and Regulatory Framework Development Programme (African Connection Group, 1998)[7] —

prepared by the Africa Ministers of Communication. Key policy areas that need to be taken on board include:

- Separation of government regulatory and operator duties;
- Establishment of independent regulatory institutions;
- Universal service and access to basic and value added telecommunications services;
- Creation of conditions for an investor friendly telecommunications environment;
- Development of local communications industry towards competitiveness;
- Liberalization and encouragement of private investment in the ICT sector;
- Establishment of national regulatory institutions; and
- Establishment of a mechanism for co-ordinated spectrum management and frequency planning

Policy on the enactment of the necessary cyber laws and legislative provisions

The development of the information economy and society will need to be facilitated by the necessary legal and legislative provisions. There is, therefore, the need for African governments to facilitate the enactment of the necessary cyber laws and legislative provisions to govern and regulate cyber-related activities in their countries. For example, each country in the region will need to put in place the necessary legislation to facilitate electronic commerce and other Internet-related activities in the country. There will also be the need in most of these countries for governments to put in place the necessary policy guidelines that will facilitate the enactment of laws relating to intellectual property rights, data protection and security, freedom of access to information, computer and cyber crime and other cyber laws.

Policy on setting up of national ICT structures and bodies

As part of their comprehensive national information and communications policies and strategies, there is need for African governments to consider putting in place the necessary mechanisms for setting up appropriate national ICT coordinating structures and bodies to coordinate, support and facilitate the implementation of the ICT policies, strategies and the corresponding plans in the country. These structures or institutional arrangements will be essential for supporting the policy and plan development and in facilitating their implementation.

Policy to facilitate and promote the implementation of national ICT applications

 For ICTs to assist in the development process and make their impact felt in the economy and society, it will not be enough for governments in the region to put in place a number of special ICT promotion packages, policy instruments, and incentive programmes. Equally important is the need to implement a number of national ICT applications across all

sectors. Some of these applications, which could be executed as projects or programmes, may be targeted at the implementation of socially relevant national ICT initiatives in sectors like health, education, youth and commerce. Specifically, national ICT programmes and projects could, for example, be targeted at:

- Using ICTs to meet the needs of the youth and the educational sector
- The deployment and exploitation of ICTs to support the national health delivery system and
- Exploitation of the opportunities of electronic commerce and electronic trade.

Specific national ICT projects that could be considered for implementation on a nation-wide basis include multipurpose community telecenter projects, tele-education and SchoolNet projects, telemedicine projects and e-commerce projects, among others.

Policy to take into account gender sensitivity issues in the context of national information and communication programmes

It is imperative that gender sensitivity issues should be taken into account in all aspects relating to the formulation and implementation of national information and communication policies and strategies. In particular, mechanisms have to be put in place to (i) ensure the participation of women in the formulation of ICT policies at all levels and (ii) ensure that information and communication policies at all levels are engendered and geared toward meeting specific developmental needs of women.

Policy on promoting universal access to information and communication technologies and systems

Africa's entry into the information age will demand rapid extension of access to ICTs. To reach out to, and benefit, the majority of the population in, for instance, health, education and e-commerce, special effort must be made as part of policy to extend services and access to rural areas where many of the most disadvantaged and remote communities are. Policy initiatives can be put in place in this area to harness ICTs to extend access to rural and disadvantaged sections of the population.

Policy on the development of a local ICT industry

National information and communication policies should also address the development of local ICT industry to facilitate the production, development and delivery of ICT products and services i.e. towards the development and promotion of an ICT industry. A number of ICT production initiatives could be undertaken by each country in the region as part of developing their local ICT industry. An example would be assembling of computers for the local market and possibly for export. The development of a local industry for the

repair and maintenance of ICT equipment is one other possible initiative that could be undertaken to promote the development of the local ICT industry.

The development of software for the domestic and export market and the provision of ICT services could also be other ways of quickly developing a vibrant ICT industry in support of other sectors of the economy. Some of the ICT services that can be encouraged and promoted as part of a policy for the development of the local ICT production and service provision industry are telecommunication services, Internet services, ICT training and education services, web-hosting and publishing services, content development services, video production and recording services, computing services, professional ICT-based secretarial and business services, video conferencing services, TV production services, desktop publishing services, information provision services, market research services, ICT-based and electronic banking and financial services, computer design services, e-commerce and e-trade services.

Policy initiatives to facilitate the role of the private sector in development and participation in the information economy

The private sector in most African countries has a crucial role to play as a key partner to government in the process of moving the country into an information and knowledge economy. Governments in the region, therefore, need to promote and facilitate the role of the private sector in the development and participation in the country's information society and economy. Apart from facilitating the private sector through creation of the necessary enabling environment and putting in place the necessary policy programmes and incentive packages, these governments should also create a stable economic and investment climate that will facilitate the mobilization of necessary resources by both domestic and foreign private sector organizations to aid the development and exploitation of the opportunities of the information economy.

On the whole, it is anticipated that the private sector operating in the right enabling environment can be a key partner in the development of the information society and economy and, in this respect, assist in transforming the economy into an information and knowledge-based one. For example, the private sector operating in a facilitated and enabled economic environment can play a key role in the development of the physical ICT infrastructure, human resource, and in the development of ICT services and a production sector. The private sector can also play a key role in the mobilization of both domestic and external financial resources and other technological resources to aid the process of developing and exploiting the opportunities of the information economy. The sector can also support R&D initiatives and in the implementation of national ICT programmes, initiatives and projects. Finally, it is envisaged that the private sector will also be involved in lobbying government and its agencies to implement suitable policies, incentive programmes and packages that will facilitate the active involvement of the sector in the development of, and participation in, the information economy.

Policy on the promotion and support of R D initiatives directed at the development and exploitation of the opportunities of the information society and economy

To enhance the capacity of African countries to produce and develop ICT products and services as a step towards developing their local ICT industry, there is a need for governments to put in place policies that promote and support R&D initiatives in local research institutions and organizations and universities. Such an initiative will broaden the scope of the national information and communication policies and strategies to address issues relating to ICT production and the development of a local ICT industry.

Policy on involving key national stakeholders and civil society in the process

Beyond actions on policies and strategies for developing the national information society and economy, there is a fundamental need to mobilize key national stakeholders and, where necessary, the public to be part of the exercise formulating and implementing the national information and communication policies, strategies and plans. The argument is that governments cannot go it alone in carrying out this national exercise; other stakeholders need to be part of the process to build consensus and encourage national mobilization and participation. Apart from the private sector, other key and stakeholders, including the media, NGOs, labour unions, academics and other sections in the civil society need to contribute to the process.

90 Guidelines for Developing the Plan

On the question of *how* the broad policy guidelines suggested above could be implemented in a given country, it is recommended that for each policy area, specific programmes, initiatives and projects should be developed and incorporated into appropriate plans for implementation over a designated plan period in the context of a long-term socio-economic development framework (e.g. Vision 2020) of the country. The idea is that, for a given policy, a number of plans could be developed and implemented sequentially, with each having a fixed time frame.

The premise is that ICT-led socio-economic development policy and strategies could be designed to have an operational life equivalent to the time-frame of, say, a Vision 2020 socio-economic development framework while the plans developed to implement the policy are each of shorter time-frame as illustrated below. For example, it is possible that during the implementation of a given socio-economic development framework (e.g. 20 years as per a Vision 2020 time-frame) a number of plans (each with a time-frame of, say, four years) can be implemented sequentially, with each addressing (in varying degrees) some, if not all, of the identified broad policy issues in the Policy document.

It is also proposed that each of the plans should incorporate the necessary evaluation and monitoring mechanisms to monitor the impact of the various programmes and projects against defined targets and evaluate their overall effectiveness in achieving the stated socio-economic development objectives aimed at addressing the challenges of globalization and the information age.

9.1 Some General Principles for Guiding the Development of the Plans

The development of a specific Plan could be guided by the following general principles:

1. The Plan should recognize and contribute to the realization of the stated socio-economic development *Vision* (e.g. Vision 2020) of the nation as well as contribute to the achievement of the relevant *missions* and the *strategies* identified for the attainment of the vision.
2. The Plan should, as far as possible, address the cost, budgetary and resource requirements, allocation and mobilization implications of the programmes, and the initiatives identified for implementation under the Plan.
3. Efforts should be made to introduce a structure into the Plan by sub-dividing the Plan into sub-plans, each addressing a broad area of policy e.g. human resource development or infrastructure development.

4. The various programmes, initiatives and packages identified for implementation under the sub-plans should be practical, realistic and implementable, with clearly stated *time-bound measurable* (TBM) targets.
5. Targets that are set for the various programmes and initiatives of the Plan should, where appropriate, be based on a baseline study data on the status of relevant key socio-economic and ICT-related indicators.
6. The Plan should take into account the fact that the government will continue to formulate and implement its short to medium term socio-economic development and budgetary plans during the lifespan of the Plan. In this respect, the Plan should not be aimed at substituting this exercise. Rather, it should serve as a policy-reference point and a framework to complement and supplement the exercise in the context of the government's long-term goal towards the development of an information and knowledge-based economy and society.
7. The Plan should incorporate elements of risk analysis that take into account the socio-economic development risks involved in implementing or not implementing the specific aspects of each of the sub-plans.
8. The Plan should incorporate a programme monitoring and evaluation mechanism that allows for appropriate intervention procedures and actions with clear guidelines (where appropriate) on how and when these can be activated and by which agency or authority.
9. The Plan should as far as possible be flexible enough to allow for modification, revision and adaptation as the need arises during implementation.
10. In order to build flexibility into its implementation, the Plan should, as far as possible, avoid going into specific implementation-details relating to its programmes and initiatives. The premise is that, for each programme or initiative, details should be developed and worked-out during the actual implementation of the Plan to take into account specific circumstances, constraints and opportunities and developments. This approach will also allow for the fine-tuning of the programme details as the need arises during the implementation of the Plan.

9.2 The Need for Sub-Plans and for Structuring the Plan

As pointed out above, there will be a need to structure the Plan as a collection of sub-plans with each of the sub-plans targeting a specific broad area of policy. In the case of Rwanda, for example, the country's ICT-led socio-economic development plan (NICI-2005 Plan)[8] serving as the first of four five-year plans to be implemented in the 20 year time-frame of Vision 2020, targeted eight broad areas, with each representing a sub-plan of the national plan. These are:

- Human Resource Development;
- ICTs in Education;
- Facilitating Government Administration and Service Delivery;

- Developing and Facilitating the Private Sector;
- Deployment and Spread of ICTs in the Community;
- ICT Infrastructure Development, Legal Regulatory; Institutional Provisions and Standards; and
- Foreign Direct Investment Drive in ICTs.

The national Plan, apart from being organized in terms of sub-plans, could further be structured in terms of the details pertaining to each of the sub-plans. Briefly, the structure of the Rwandan NICI-2005 Plan as illustrated below is a collection of sub-*plans* — with each constituting a collection of *programmes* to which a number of *plan actions* were associated with corresponding specific *time-bound measurable* (TBM) targets and *implementation agencies.* Again, taking the case of Rwanda as an example, the details of its Plan [the NICI-2005 Plan] is organized as follows:

Structure of the Rwandan Plan

9.3 The Need for a Baseline Study to Guide the Development of the Plan

To develop a realistic Plan whose programmes, initiatives, projects and targets take into account the current status of key socio-economic and ICT-related indicators, there is a need to carry out a baseline study prior to the development of the Plan. The objective of the baseline study will be to compile relevant data on key ICT and socio-economic indicators

in the economy and society to serve as a basis for the Plan projections and targets.

It is, however, worth pointing out that the aim of such a study is not to conduct a comprehensive national survey in the economy or society, but rather to carry out a focused study concentrating on establishing the status of the number of key indicators that relate more specifically to the Government's ICT Policy commitments on which the Plan is to be based. The baseline study should be designed to draw on both primary and secondary sources of data. It should also conduct interviews where appropriate to obtain data and the necessary details. There may, therefore, be a need to design appropriate questionnaires in cases where primary data gathering or interviews will be required. Some of the key indicators that could be targeted include:

- The economy (focusing on key socio-economic indicators)
- The level of ICT exploitation, deployment in key sectors of the economy including the:
    - Private sector
    - Civil and public service
    - Agricultural sector
    - Industrial sector
    - Service sector
    - Education, health sectors etc
- Human resource development capacity
- Employment levels in key relevant sectors
- Demand and supply of ICT-related skills in the country
- The ICT Infrastructure with specific reference to the:
    - Physical infrastructure (transport, electricity etc)
    - Telecommunications and Internet infrastructure
    - Communications and the mass media infrastructure
- Others.

10.0 Facilitating Structures to Support the Policy and Plan Development and Implementation

As pointed out earlier, a key aspect of the national ICT policy and plan development and implementation will be the setting up of facilitating structures or institutional arrangements. Illustrated below is a classification of these institutional arrangements in terms of the relevant *stage* of the process (development versus implementation stage) and the *level* of authority or operation of the structure (leadership/championing versus facilitation/coordination).

The horizontal (stage of the process) classification relates to a distinction between structures aimed at supporting the policy and plan *development process* as against those that are designed to facilitate the policy and plan *implementation process*. The vertical categorization distinguishes between *'process-champion/leadership'* type of structures as

against the *'process-facilitation or coordination'* types of structures or institutional arrangements.

For example, in the case of Rwanda, the Ministry of Public Service, Transport and Communications (MINITRACO) aided by a National Task Force set up by the President served as the facilitation structures responsible for coordinating the policy and plan development process while the President, facilitated by a small executive level team at the Office of the President, served as the top level political leadership structure for championing the process during the policy and plan development stage.

The National Information Technology Commission (NITC) and the Rwanda Information Technology Authority (RITA) are two of the new structures specifically set-up to facilitate the implementation of the policy and plan. Going by this categorization, the NITC relates more to an institutional arrangement designed to provide leadership during the implementation of the plan, while RITA, reporting to the NITC, was set up to provide facilitation and coordination of the plan implementation activities.

Countries like Malaysia, Mauritius, and Senegal, among others, also have NITC type of structures to facilitate the implementation of their national ICT programmes at the highest level. Singapore and Mauritius also have in place a RITA-type of organization called the National Computer Board.

11.0 Identifying the Critical Success Factors

For a country, the success of its national ICT-led socio-economic development policy and plan development and implementation process depend on a number of critical success factors. Some of the key ones are:

- Active high profile national ICT champion — the President/Vice President
- Top level political leadership, support and commitment to the process

- A clear national vision, missions and strategies to guide the development of the process outputs
- Government endorsement and commitment to the national vision, missions and the corresponding strategies designed to contribute to the realization of the vision and the corresponding missions
- The goodwill and support of the people and their endorsement of the need for the Vision and stated missions and their realization
- Strategic government ministry or agency to facilitate and coordinate the policy and plan development process on behalf of the government.
- Dedicated policy decision makers, and professionals, cutting across the public and private sector committed to the process
- Adoption of a well-scheduled step-by-step approach with specific milestones and deliverables during the policy and plan development process
- The identification and the setting of realistic objectives and targets that can be achieved within a given time frame
- A well-researched policy formulation and plan development process that makes an effort to learn from the experiences of other countries
- Access to key ministers and stakeholders in the public and private sectors to facilitate consultation and across the board contribution to the process
- Rounds of dialogue sessions with key stakeholders — government, private sector and civil society
- Logistical support and facilitation for the process and
- Continuous push from the top for action and results

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