

Information and Communication Technology Policy in Rwanda

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INTRODUCTION

Most of Africa is underdeveloped and lacks many of the resources that other parts of the world have access to. One of the main resources Africa lacks access to is the Internet, which is driving a large portion of today's economy. However, the government of Rwanda understands the direction of the global economy and believes the current situation in Rwanda presents an opportunity to become the leaders of the knowledge-based Internet economy in Africa. The government sees the use of Information and Communication Technologies (ICTs) as the key tool in transforming the economy. Not only does the government believe this is one of the best ways to develop the nation, they also believe it is crucial for the survival of the nation.

OVERVIEW

Country Background

Rwanda is a small, landlocked nation in East Africa. Rwanda gained independence from Belgium in 1962 amidst ethnic strife between the two main ethnic groups, the majority Hutus and the minority Tutsis. In 1959 the Hutus overthrew the Tutsi king and began killing Tutsis en masse. Over 150,000 Tutsis fled into exile and many of the displaced formed a rebel army, the Rwandan Patriotic Front (RPF). Thirty years of tension sparked a civil war in 1990 between the RPF and the Hutu-dominated government. The war took a turn for the worse in April of 1994 when President Habyarimana's airplane was shot down over Kigali. The assassins were unknown, but Hutu extremists used it as an excuse to declare genocide against Tutsis and Hutu moderates. Before the RPF could mobilize and stop the killing, over 800,000 people were killed. The genocide claimed the lives of

about 75% of the Tutsi population that was living in Rwanda at the time (about 11% of the total population was lost). The aftermath of the genocide had an additional devastating effect on the population—about two million Hutus fled the country into exile. Approximately 750,000 exiles from before 1994 returned, but the genocide resulted in the loss of millions of people. Losing this many people obviously had a crippling effect on the nation's economy, which was suffering to begin with. The genocide resulted in the real GDP declining by 60%.

Economic Climate Ripe for ICT Development

Rwanda's economy is primarily agrarian with about 90% of the people engaged in agriculture. Most people are involved in subsistence agriculture, primarily growing food for their own use. The country is landlocked and has no major natural resources or exports, so its economy is very small. In addition, Rwanda is densely populated, with 340 people per square kilometer (highest in Africa and 21st in the world) and all arable land outside of national parks is being used for crops. This leads to soil erosion and exhaustion and the land is becoming less and less productive. Countries like Holland are denser than Rwanda but use highly mechanized agriculture, so few in the economy can feed the nation. The population growth rate is 3.1% (4th highest in the world) so the problem will only get worse if the current trend continues. With the population increasing and refugees returning, there is constant competition for arable land for use in agriculture. Their needs to be a shift in the economy, and many are considering a "knowledge-based" economy based on information and communication technologies to be a way to provide economic diversity and make use of Rwanda's large population and overcome their lack of natural resources.

Singapore is a perfect example of a country in a similar situation that used a knowledge-based economy and ICTs to help drive enormous economic growth. After Singapore was ejected from the Malayan Union in 1965, the economy was left with no attractive global markets or natural resources to trade, much like Rwanda. All the country had was its people, and the government worked to develop a manufacturing-based economy. After the growth eventually tapered off, the Singaporean government committed to taking the country to the next level of economic power by focusing on an ICT based economy. Education in science and mathematics was encouraged and connectivity through telephone and the Internet was made a top priority. Now, according to the World Economic Forum, Singapore is ranked as the most advanced economy taking full advantage of ICTs, overtaking the United States, which held the position for the previous three years. While Rwanda does not have the impressive track record of economic growth for the past several decades like Singapore did, the Rwandan government is trying to skip the manufacturing based economy and launch the nation into an ICT based economy.

ICT POLICY IN RWANDA

The government of Rwanda, under the leadership of President Paul Kagame, has made several strides to develop Rwanda into the ICT leader of Africa. The government is looking to follow very ambitious plans to accelerate Rwanda into this role, but with the dedication of the President and other government leaders this is a realistic goal.

Vision 2020

The Rwandan government released a plan for Rwanda's social and economic development, with the ultimate goal of being a prosperous nation by 2020. The Vision 2020 plan is centered on "a prosperous knowledge-based economy." The plan contains six "pillars" and four "cross-cutting domains," one of which is "science and technologies, including ICTs." ICTs are mentioned as crucial components of the development of the education system in Rwanda. One bullet point lays out specifically how serious the government is about ICTs:

143. To achieve these objectives, the country will endeavor to
- (1) put in place the legal, institutional and structural framework, favourable to the unfolding and the integration of ICT in the economy and within society,
 - (2) encourage the private initiatives in the communication sector
 - (3) improve Rwandan skills in using and managing ICT,
 - (4) adapt technological co-operation to the transfer of ICT to Rwanda,
 - (5) improve communication facilities.

Furthermore, the government recognized its main role in this development:

144. The main players in the development and dissemination of ICT are the State as promoter of infrastructure and development initiatives and the private sector as an investor and a good manager.

The plan continues to declare that by 2020, Rwanda will have scientists and technicians to meet the needs of the economy, and that they develop this through secondary and tertiary education, including an increase in the number of professional and polytechnic universities. The government realizes that they need to hit the pipeline early and establish universal primary education and improve the low literacy rate (48%). Once students enter high school they will be taught skills in computer science, electronics, electromechanical engineering and will be encouraged to pursue these fields at the

various universities in the country. The government also wants to train more professionals to teach in these areas and encourage other technical professionals to start their own by using micro-credit programs to fund their ventures.

The goals of using ICTs seem pretty ambitious, but the government put itself in the main role as promoter of the ICT development of the country. Since the release of the Vision 2020 plan, the government of Rwanda has taken steps to further define this role and develop a concrete plan.

The ICT Plan for Rwanda

In 2001 the Rwandan government released the 1st National Information and Communications Infrastructure (NICI) plan, “An Integrated ICT-led Socio-Economic Development Policy and Plan for Rwanda” to address a plan for the ICT development of the nation between 2001 and 2005. There are subsequent 2nd, 3rd, and 4th phase plans guiding ICT policy through 2020. The 1st NICI plan (2001-2005) aims to develop a knowledge-based economy around ICTs. The 2nd phase of the plan (2006-2010) is centered on strengthening this new economic base. The 3rd plan (2011-2015) looks to sustain the development and compete in the global market for information-based services and products. The 4th plan (2016-2020) will finally look to see how the new processes and development can bring Rwanda to middle-income status.

Currently, the government is wrapping up the 1st NICI plan. The NICI plan consists of three major sections: the policy, the plan, and the structures. The policy section provides the basic framework and context for the government policies and the

challenges that they will encounter. It is motivated heavily by the high-level goals of the Vision 2020 document.

The plan section is the heart of the documents. It is based around 8 Pillars and the sub-plans that are used to achieve their goal. The 8 Pillars are:

1. Human Resource Development
2. ICTs in Education
3. Developing and Facilitating the Private Sector
4. ICT Infrastructure Development
5. Foreign Direct Investment Drive in ICTs
6. Legal, Regulatory, Institutional Provisions and Standards
7. Deployment and Spread of ICTs in the Community
8. Facilitating Government Administration and Service Delivery

Each Pillar has an extensive sub-plan developed around it. The sub-plans consist of timelines, specific actions, and measurable targets for each initiative within a Pillar. For example, in the Developing and Facilitating the Private Sector sub-plan, the Ministry of Finance and Economic Planning is responsible for including in all budgets from FY2002 to 2005 special tax incentives aimed at broadening and speeding up growth in the ICT sector. Each sub-plan also delves into who takes ownership of initiatives and what agency or group is responsible for implementation. The sub-plans also explain how much money will be spent on each initiative and where the money should come from.

The third component of the 1st NICI plan set up the structures to facilitate and monitor the ICT development within the country. The two main institutions within the government are the National Information Technology Commission (NITC) and the Rwanda Information Technology Authority (RITA). NITC is the main advisory group and think-tank for the Rwandan government. It is chaired by the President and is composed of several other important government officials. The commission is charged with helping Rwanda develop ICT policies and plans and also facilitating them. It must

also monitor and evaluate the policies and programs as well. The NITC also is responsible for increasing awareness about ICTs and the policies that the government is enacting in order to transform the society in a knowledge-based economy. RITA is a body that works with the Office of the President and Ministry of Public Works, Transport, and Communications and reports to NITC. It is the main body that is in charge of actually implementing the ICT policies and all of the associated projects and programs. RITA is responsible for human development in the area of ICTs and other related skill areas to help increase the number of people qualified to work in this area. Through its National Computer Center division it also acts as a consulting group, providing services to the government and public and private sector organizations. RITA is essentially the link between the government policy-makers and the people on the ground.

PROGRESS MADE

As the end of the 1st NICI plan comes to a close, it is important to assess the success and problems Rwanda has faced so far. No formal comprehensive assessment has been done by the government yet on this plan. Looking at some of the events over the past five years it appears that ICT development in Rwanda is making significant strides. The government and President Kagame are gaining notoriety and recognition as being the leaders in ITC in sub-Saharan development and no other country is competing besides South Africa, which has significantly more resources. The education and private sectors are areas that have shown significant improvements.

Rwanda Terracom

Rwanda Terracom was founded in 2004 as a private company charged with developing a state-of-the-art fiber optic network in Rwanda. Terracom's first goal is to connect schools, hospitals and government buildings in the capital, Kigali. The network will then be extended to the next four largest cities: Butare, Gisenyi, Gitarama, and Ruhengeri. As of December 2004, 30 schools and over 150 facilities were connected in Kigali. Since the summer of 2005 there has been over 1,000 km of fiber optic cable laid. In October the Rwandan government recently sold Rwandatel, the national telecom service provider, to Terracom. The privatization of public utilities is something that is usually recommended by development agencies as private companies are typically more efficient and provide better services. In Rwanda, a phone call to the United States has dropped from 92 cents per minute to 23 cents per minute and will continue to drop.

Kigali Institute of Science, Technology, and Management

In 1997, Rwanda's first technology institute of higher learning, the Kigali Institute of Science, Technology, and Management (KIST), was established. KIST was founded to increase the capacity of the country to produce qualified scientists, engineers, and administrators. It offers degree programs in Computer Engineering, Electrical Engineering, Business Administration and many more. Universities can have a profound effect on the development of a nation and KIST is taking the lead. It not only looks to equip students with the necessary engineering, management, and science skills, but it also wants students to understand how they can use these skills for development. KIST also has a realistic outlook on the world and understands that the economy is not fully developed and there are few job opportunities for the graduates. As a result, KIST trains

students in entrepreneurship and encourages them to create their own jobs instead of looking for them in the tiny market.

KIST has seen some early success. A few classes have graduated from KIST and the initial response from employers has been very positive. The institute has achieved tremendous growth in such a short time—it opened with 209 students and now has over 4,000. It has made strides in research in areas that are relevant to development in Rwanda like appropriate technologies and renewable energy. KIST operates with the government's NICI and Vision 2020 plans in mind. The government of Rwanda committed KIST to be the Regional ICT Training and Research Center.

While KIST has been largely successful so far, it has encountered some difficulties. The Institute has enormous support from the government, but not from elsewhere. There is low investment in their research activities and they struggle with the lack of resources available. ICT facilities are still lacking and there are few qualified professionals to train the next generation of scientists and engineers.

PROBLEMS FACED

Most of the problems that have been encountered in Rwanda's attempt to transform the economy are a direct result of the situation that the country was in at the start of the plan. Many of the problems still plague the country and are slowing the development process. The fact that the country had almost no ICT infrastructure before the plan means it has a long way to go to have a fully developed system. At the time of the creation of Vision 2020, Rwanda had a teledensity rate of 1.1% and Internet density of just 0.06%. So even as availability of these technologies increases, people's awareness

and understanding of them will surely be lagging behind. While KIST and other educational institutions are expanding at a rapid rate, they can only take as many students as they can teach. The schools are struggling to find enough qualified instructors and professors to teach in the nation's institutions of higher learning. The agrarian culture is also limiting the effectiveness of the plan. A remarkable 90% of the country lives in rural areas, so it is harder to reach them and make them aware and convince them of the new direction the economy is heading. As a result of the high rural population, although Rwanda Terracom is wiring the five largest cities, the vast majority of the country will still not have access to the Internet. The Rwandan government wants to generate more human resources and make better use of the network infrastructure by having the urban population increase to 30% by 2020.

OUTLOOK ON THE FUTURE

Despite the huge mountain Rwanda has to climb to achieve middle-income status by 2020, many people consider this goal to still be realistic. The government led by President Paul Kagame has been the most avid supporter of integrating ICTs into Rwandan society. As long as this support does not wane, the future will be bright for Rwanda. Much of the ICT growth, especially in the realm of education, has been occurring despite a lack of resources. As long as Rwanda does not suffer from a massive brain drain and the universities continue to encourage their students to start their own businesses, the growth should skyrocket once this first generation of graduates matures and the students that are being targeted early in the education pipeline matriculate into Rwandan universities. Besides the government and human development side, there is a

positive outlook for the ICT infrastructure of Rwanda. Terracom is near completion of its wiring of the cities of Rwanda and will soon have more people, business, and schools connected. Their recent acquisition of government-owned Rwandatel should also decrease the prices of services and increase the speed of which they can be acquired. Another major milestone should be reached by 2007. The Eastern Africa Submarine System (EASSy) should be completed, connecting Rwanda to the global fiber optic network. The undersea cable is in the process of being installed along the coast of East Africa, which was completely ignored when past undersea cables were laid. This should further reduce the cost and increase the speed and reliability of the Internet in Rwanda, as well as help their neighbors develop systems as well. With neighbors better equipped to work in a technology-driven world, they should be able to collaborate and leverage one another to give Africa a stronger share in the global ICT market.

CONCLUSION

The end of the Rwandan genocide in 1994 saw a decimation of the nation's people, economy, resources, and political system. However, miraculously the country rebounded with a sense of forgiveness and optimism and looked turned the tragedy into an opportunity for a new beginning. The government has been ardent about developing the country economically and is willing to drastically change the way of life to do achieve this goal. The use of information and communication technologies (ICTs) is becoming a crucial component of the global economy and Rwanda wants to be the leaders in Africa in this area. They have already outlined several concrete plans for accomplishing this by 2020. The government developed the plans keeping in mind the

history and economical state of the country and was realistic about the challenges they would face. Because of this insightful and cautious approach they have been relatively successful early on in their endeavor. The government, private, non-profit, and education sectors have been collaborating and are helping each other achieve the common Vision 2020 goals. The outlook for Rwanda is now more positive than it has ever been in its modern history. Barring any drastic negative change in the political climate, Rwanda should enter the next quarter of the century as a prosperous country and a key player in the knowledge-based economy.

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