Innovative Governance Systems – Kenya, Rwanda and the implementation of Africa’s Agenda 2063 through the AfCFTA

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The task now is to ratify the African Continental Free Trade Area and the Protocol on the Free Movement of Persons, so that they may come into force as soon as possible. Let’s use the momentum we have gained to push forward with the other Agenda 2063 flagship projects that we have committed ourselves to in the first Ten-Year Implementation Plan. AU Chairman and Rwanda President Paul Kagame statement at the closing ceremony of the AfCFTA Business Forum in Kigali, Rwanda, 21 March 2018.

Africa should build her digital knowledge base and engage on this basis to ensure that any development of disciplines in e-commerce must have a development content that advances the future of Africa’s Integration and Industrialization Agenda in the digital economy in line with the Africa Union vision 2063. Kenya President Uhuru Kenyatta speaking at the inaugural UNCTAD Africa Ecommerce Week in Nairobi, Kenya, 11 December 2018.

Introduction

Achieving Africa’s ambitious Agenda 2063 will require a continental, multi-sectoral innovation ecosystem, such as the African Continental Free Trade Area (AfCFTA) – a free market anchored by new institutions (or those yet to be established) whose success depends on the free movement of people across traditional borders. This free movement of goods and services is supported by logistics, payments and dispute resolution. Most importantly, the AfCFTA is envisioned as a digital, free trade area that is effectively an ICT innovation ecosystem.

In March 2018, 44 African countries signed the AfCFTA agreement at a business forum hosted in Kigali, Rwanda. Two months later, Kenya, Rwanda and Ghana, with the support of their respective legislatures, were the first three countries to deposit the instruments of ratification to the AfCFTA. This was an important step in the agreement’s implementation.

Using the AfCFTA to achieve Agenda 2063 requires governance systems that are innovative, inclusive, integrated and supportive of the 4th Industrial Revolution. Such governance systems need to be structured to maximise the provision of public goods underpinned by a social contract, be aligned with systems of innovation, and embrace the Sustainable Development Goals (SDGs). This chapter highlights the experience of Kenya and Rwanda, two countries that have established governance systems for promoting ICT innovation and actively support the AfCFTA.

The successful implementation of the AfCFTA lies in ‘creating and designating regional economic communities as the building blocs for continental economic integration’ (Mangeni & Juma 2019: 30). Through their membership of overlapping Regional Economic Communities (RECs), such as COMESA and EAC, Kenya and Rwanda have the catalytic potential to ‘operationalise a continent-wide digital system’ through the AfCFTA (Mangeni 2018: 31). Within the EAC, the two countries have actively explored ways to collaborate in the areas of technology, infrastructure, tourism and education. Both countries have been globally praised for their innovations in the technology sector: countrywide mobile money in Kenya and citywide free internet access in Rwanda. These innovation successes have in turn extended to the governance realm. Kenya has

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1 Several resources provide greater detail on Africa Agenda 2063 and the AfCFTA, and their connection to the eight AU recognised Regional Economic Communities, the linkages to broader African integration efforts from the Lagos Plan of Action to TFTA, and to broader global efforts on trade – Brexit, America First, One Bridge One Road and WTO (Juma 2011; Juma & Mangeni 2018; Mugabe 2011; Ismael 2016).
2 Common Market for Eastern and Southern Africa
3 East African Community
played an important global leadership role in establishing and championing the SDGs, both at a multilateral level through the UN and domestically through its Vision 2030 development blueprint; while Rwanda has distinguished itself as a post-conflict nation that used traditional innovations for successful national reconciliation, and embraced various transformations that have improved its global competitiveness. However, both countries have struggled with social inequality, and Kenya has struggled with electoral malpractice, corruption and social cohesion.

The chapter examines three case studies of innovative governance systems at national and sub-national level with strong linkages to the rest of the ICT innovation ecosystems: Kenya’s devolution through the revenue-sharing formula and improved service delivery through the Huduma Centres, and Rwanda’s experience with Umushyikirano (National Dialogue). Both countries have in place ICT policies that are based on clearly defined problems and supported by strong implementation efforts through well-evaluated projects and programmes. Their experience illustrates good practice in implementing projects and explains their willingness to extend their successes to the AfCFTA.

The ICT innovation ecosystem in Kenya and Rwanda is described through a ‘sectoral system of innovation’ model that comprises eight inter-linked pillars (or nodes). One of the pillars is ‘ICT governance and leadership’, and its policy implementation is viewed using a three-part framework: ‘interests, implementation and institutions’ that enables the seamless analysis of a governance system using a paradigm that spans public policy and innovation. The chapter concludes by proposing a policy recommendation on continental knowledge flows that optimises linkages between an innovative governance system and other pillars in an ICT innovation ecosystem. The recommendation is applicable at different levels of government and can be harnessed by leaders and citizens to transform the African continent through a thriving multi-sectoral innovation ecosystem such as the AfCFTA.

Kenya and Rwanda as Examples of Innovative Governance Systems

The three case studies from Kenya and Rwanda highlight the optimisation of institutions and ICT sector ecosystem linkages. They show how innovative governance systems can improve support to – and engagement with – citizens. Kenya’s revenue-sharing formula illustrates how a governance system can optimise public participation, by enabling citizens to communicate through web- and SMS-enabled mobile phones during the budgeting process, while the Huduma Centres case study shows how the availability of reliable data connectivity may ensure access to service delivery. In the case of Umushyikirano, social media and media broadcast play an important role in facilitating communication between government institutions and citizens. Viewed collectively, the strong linkages between each governance system and the rest of the ICT innovation ecosystem at a national level represent a scaling opportunity at a regional and continental level.

Revenue-sharing formula: devolution of revenue sharing in Kenya: optimizing interests and ICT Sector ecosystem linkages

In Africa, one of the most contested issues in politics is revenue sharing in federal systems, combined with devolution. In the 1990s, Kenyan citizens began demanding constitutional review, against the background of a global wave of democratisation and constitutional reform that followed the collapse of the Soviet bloc in the late 1980s and the post-Cold War realignment of geopolitical relations. This led to the spread of liberal ideas on state organisation, which challenged the ideology of the developmental state that had been prevalent among the African elite since independence. One consequence was the opening up of the political space for internal dialogue in most African countries, which led rapidly to pressure for constitutional reform, and in Kenya resulted in the promulgation of a more devolved Constitution in 2010 (Mudida 2015). The Constitution includes for participatory budgeting, which first took root in Brazil and then throughout Latin America, especially during the period 1990–2005.

Chapter 12 of the 2010 Constitution of Kenya lays out detailed principles and elaborate procedures for making decisions about public finances. In making decisions about sharing resources, the Constitution requires policy-makers to consider the views of the public and the principle of equity, which is made explicit in Article 202(1): ‘Revenue raised nationally shall be shared equitably among national and county governments’. The

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The annual budget process must include public participation: (i) when the decision about the division of revenue between national and county governments is made; and (ii) when Parliament makes its decision about the executive’s proposed budget. Funding for counties is singled out as a decision that particularly requires broad participation (Lakin & Mudida 2015). Additional principles include: choices should be deliberative and not left to any one institution; democratic choice should be partially constrained by detailed technical guidance; and decisions should be frequently reviewed and revised.5

In overhauling the way in which resources are shared across the country, the Constitution took the power away from the executive and created new bodies, including the Commission on Revenue Allocation (CRA) and the Senate. Under the previous Constitution, Permanent Secretaries were the Accounting Officers in charge of all monies allocated to the ministry – they cascaded the budget to grassroots through authorities to incur expenditure (AIEs) issued directly to the district heads in the regions. This changed with the enactment of the new Constitution, and the 47 counties took charge of their budgeting process. It was an important governance innovation in how devolution is implemented to optimise the interests of citizens. The decision about how much money to give counties involves two key decisions that must take into account the principle of equity: (i) how much of the total national pot to give to the two levels of government (the ‘vertical’ share), and (ii) how much each individual county gets of the total given to the counties’ level of government (the ‘horizontal share`). Factors that should guide the horizontal share include developmental needs, fiscal capacity and incentives for counties to optimise their own revenue collection, as well as ‘economic disparities’ and ‘affirmative action in respect of disadvantaged areas and groups’. Further enshrining the equity principle is the creation of the Equalisation Fund (Chapter 12) that channels a small fixed share of annual revenues to marginalised areas in order ‘to bring the quality of those services [roads, water, electricity and health] in those areas to the level generally enjoyed by the rest of the nation, so far as possible’.

As decisions around public finances are intended to be taken by multiple institutions, the Constitution gives the CRA agenda-setting power, while the final decision is taken by Parliament. The CRA is mandated to make recommendations:

- For the equitable sharing of revenue raised by the national government between national and county governments, and among the county governments – Article 216(1).
- On other matters relating to the financing of, and financial management by, county governments and to encourage fiscal responsibility – Article 216(2).

The CRA recommendations are forwarded to Parliament, which makes the final determination. Even within Parliament, responsibility is divided between the two houses: the Senate has the larger role and can accept/amend the CRA proposal, but the National Assembly has the power to amend if it has a supermajority. Even if the National Assembly does amend it, the proposal has to go back to the Senate for review or mediation. While the decision on the horizontal share is taken every five years (or three at the outset), the Senate can also review it at any time with a supermajority vote. All of this was intended to take financial decisions away from the executive and to make them temporary, reducing the likelihood of permanent losers emerging in financial matters. This intention has been largely realised. The parliamentary process is an important part of policy legitimation, which is a vital step in the public policy process that gives legal force to decisions or authorises/justifies policy action. It aims to achieve a proper exercise of government authority and its broad acceptability to public and other policy actors (Morse & Struyk 2006).

The process of deciding how to share resources requires a high degree of public participation and concrete mechanisms for accountability. A key innovation in Kenya’s ICT sector that has facilitated public participation and accountability is the ubiquity of mobile phones (both web and SMS enabled). Kenya boasts a robust mobile phone market, high mobile penetration, strong uptake of data/internet services, and a large portion of the population that accesses the internet mainly via the mobile phone. The country’s rapid ICT development has offered a huge opportunity for social and economic development when combined with political action. Few counties have adapted fast and innovated to use ICT and social media to relay key messages and mobilise participation (NTA 2013; IBP 2019). The update of ICT sector innovations remains a challenge despite the presence of an innovative governance system.

The ability of citizens to communicate through web and SMS-enabled phones, in the context of Kenya’s high mobile penetration, is a critical ICT sector innovation that can ensure effective public participation and accountability during the process of determining how resources are shared.
Huduma centres – optimising implementation and ICT Sector ecosystem linkages

Innovation is crucial to boosting productivity, which is vital for long-term economic growth. Firms innovate usually by combining different products and processes, and a study found that the rate of innovation among formal sector firms in Kenya was at 63% (Mendi & Mudida 2016). In contrast, Kenya's public service delivery is historically poor and characterised by “delayed services, long queuing and reports of massive corruption” (Wambugu et al. 2016: 4). In response to the demand by citizens for government to deliver services at the same level as the private sector, the Government of Kenya is promoting citizen-centred public service delivery through a variety of channels, including deploying digital technology and putting in place citizen service centres (Huduma centres) throughout the country (World Bank 2017). Huduma is Kiswahili for ‘service’.

In November 2013, the Huduma programme was launched, with the aim of having at least one centre in each of Kenya’s 47 counties. At this centre, people could access public services under one roof, rather than having to go to different buildings to obtain (for example) birth and other certificates, identity cards, passports, business registrations and permits, seasonal parking tickets or drivers' licences (World Bank 2017). A specific intent of the programme was ‘to fight and reduce corruption in the public sector’ (Wambugu et al. 2016: 4). As of February 2017, the Huduma programme was running in 45 centres, five of which are located in Nairobi. The programme offers a single point of service for many of the government services. The key principles underlying the innovative service delivery offered by the centres include speed, dignity, convenience and value (World Bank 2017). The innovation comes from the ability to implement a policy solution of delivering services aligned with the expectations of citizens based on their experience with the private sector.

An evaluation of the centres found that service delivery had improved at the centres, as a result of the product and service innovations. The positive impacts of these innovations included: ‘increasing the number of people served, reducing time of service delivery, increasing accountability and transparency and finally improving public understanding of government activities’ (Wambugu et al. 2016: 22).

An important aspect of the Huduma programme is to transform the citizen experience in public service delivery. More recently, the Kenyan government has focused on citizen-centric approaches to service delivery, leading to a dramatic increase in interactions between citizens and government at all levels of the recently devolved political system. The trend towards citizen-centric delivery models (which are more cost-effective from a government perspective) is the result of increasing internet and mobile penetration rates, as well as higher expectations around government service. This has been achieved primarily by innovation in government processes. The e-Government innovation is nested in the much larger vibrant national innovation ecosystem with deep penetration of ICT, private sector innovation and linkages. The private sector has provided the technology used in running Huduma centres, with the database solutions for running the centres (a backward linkage) from Oracle. Computers at the different counters in the centres are connected to their mother ministries through Safaricom and Telkom Kenya. All Huduma ICT systems are monitored in real time by the Technology Operating Centre of the Huduma Secretariat (World Bank 2017). Despite some challenges, the use of this technology has enabled the Huduma centres to act as an antithesis to corruption and inefficiency, by reducing the interaction of citizens with the bureaucracy.

Building on the success of Huduma centres, the ‘Huduma Mobile Outreaches dubbed Huduma Mashinani (swahili phrase meaning “service to the grassroots”)’ was introduced, enabling government services to be taken to reach a wider audience, including ‘the marginalized, the old, the poor and the vulnerable’.6

In 2015, Kenya’s Huduma programme won first prize (out of 398 nominations) in the ‘Improving the Delivery of Public Services’ category of the annual United Nations Public Service Awards. According to the award, the Huduma programme integrates the delivery of public services through five channels: Huduma Centres, Huduma Web Portal, Huduma Mobile Platform, Huduma Call Centre and the Huduma Payment Gateway.

‘The programme has enabled customers to access a myriad of Government services. They are currently serving more than 10,000 customers per day. Additionally, over 25 Million U.S Dollars have been collected so far from Huduma Centres.’7

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7 UN Public Service Award Winners 2015 http://workspace.unpan.org/sites/Internet/Documents/UNPAN94633.pdf
In 2019, the Government of Kenya is exploring how Huduma Centers can embrace the 4th Industrial Revolution through a new free government service called Huduma Namba. Biometric data is collected and used to generate a unique number (Huduma Namba) that enables citizens to access government services.\(^8\)

The availability of reliable data connectivity is a critical ICT sector innovation that promotes access to service delivery through digital technology-enabled Huduma Centres.

**Umushyikirano (National Dialogues) – optimising institutions and ecosystem linkages**

An innovative solution that incorporates participatory governance is Umushyikirano in Rwanda (Mudida 2017). *Umushyikirano* is a Kinyarwanda word that refers to a meeting where participants are able to exchange ideas, share experiences and question one another. Known today as the National Dialogue Council, Umushyikirano was formed in response to the need to reconstruct and nurture a shared national identity. Established by Article 168 of the Constitution of the Republic of Rwanda of 4th June 2003 as amended, Umushyikirano is an annual event chaired by the President of Rwanda that gives Rwandans from all walks of life the opportunity to ask questions directly to their leaders. The first National Dialogue Council took place on 28th June 2003, since when it has been held annually. The event brings together members of the Cabinet, members of Parliament, representatives of councils and local administrative entities, and representatives of Rwandan society (including the Rwandan diaspora and friends of Rwanda) to debate issues relating to the state of the nation, state of the local government and national unity. The strength of Umushyikirano comes from the direct participation of citizens in holding their leaders to account and fast-tracking government programmes and citizen priorities based on the resolutions tabled each year (Mudida 2017). The Umushyikirano usually takes place in December of each year and is televised and broadcast live on radio. Each Umushyikirano has a theme. For example, the theme was ‘Shaping together the Rwanda we want’ in 2016 and ‘Rwandans’ choices – foundation of national development and dignity’ in 2015.

Home-grown solutions enhance governance in developing countries more than externally driven policies to address issues of common concern to a country’s citizens. The national dialogues focus on bottom-up implementation of participatory governance based on indigenous values. Much of what is discussed draws on aspects of Rwandan culture and traditional practices that enable development programmes to be enriched and adapted to the country’s needs and context. The result is a set of home-grown solutions, which translate culturally owned practices into sustainable development programmes. For example, discussions at the national dialogues improved the implementation of the One Cow Per Family Programme by bringing to light the corruption that had affected the programme, which is aimed at fighting malnutrition, poverty and vulnerability by building assets for families in rural areas.

Umushyikirano is underpinned by group theory, which argues that power in a state’s political system is widely shared among interest groups, each of which seeks access to the policy-making process – power is pluralistic rather than concentrated in the hands of only a few elites (Kraft & Furlong 2015). This balance helps to ensure that no one group dominates the policy process. The Rwanda national dialogues illustrate that innovation in governance can be grounded in indigenous practices and blended with the latest in technological innovation. It is based on inclusive institutions that are better at promoting the common good, which is critical to development (Mudida 2011).

Along with South Africa, Rwanda was an innovator in using national dialogues as a post-conflict resolution mechanism. Participants are selected in a bottom-up process, through local government structures starting from the village to the district levels, as well as through organisational structures of youth, women, associations, cooperatives, non-profits, the private sector, civil society, etc. An election system is used to select opinion leaders vetted by their peers from the village to provincial level, with a pre-determined number of participants being allocated to each level.

To increase local ownership and participation, discussions are conducted in the Kinyarwanda language and technology is used to reach locations throughout the country. Those unable to attend in person at Rwanda’s Parliament building can participate via telephone, SMS, Twitter and Facebook as well as follow the debate live on television and radio. Proceedings are web-streamed and broadcast in real time to other large gatherings taking place simultaneously. Some districts in remote areas are also digitally connected, allowing their populations to follow the proceedings via video conference. All questions during the Umushyikirano are

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recorded – for example, 127 questions, comments and proposals were received for the 2012 Umushyikirano – and a summary report and recommendations are produced.

The Umushyikirano has played an important role in the political and socio-economic transformation that Rwanda has experienced since 1994, the year of the Genocide. Rwanda’s GDP quadrupled between 2003 and 2015, from R1.923-billion to R8.278 billion.9 The rapid growth in GDP was accompanied by outstanding strides in development outcomes:

- Today, 98% of Rwandans are medically insured, which is a remarkable achievement given that the country had just 20 medical doctors in 1994.
- 98% of children have access to primary education (Akena et al. 2014).
- In 2018, Rwanda is ranked 29 among 190 economies in the World Bank’s Ease of Doing Business, compared to its rank of 41 in 2017.10

The national dialogues are part of a broader innovation ecosystem in Rwanda. In June 2018, the Government launched the National Research and Innovation Fund that is supported by a loan of US$30-million from the African Development Bank.

The Umushyikirano represents a unique blend of the traditional and the modern methods of participatory governance. In Rwanda, practice at national and community levels is strongly influenced by indigenous institutions (Rwiyereka 2014). The concept of dialogue was initially crafted at village level – in Rwandan society, people used to come together in their villages, to sit around the fire and discuss different issues, and to begin to teach their young ones. Direct conversation with the people has always been important – pre-colonial Rwandan kings would go to a region and ask the local populations what they thought of their leaders and, based on these discussions, decide to promote or remove the local chief. Modernisation and technology have enabled these dialogues and conversations to extend beyond the village to the national level. Other practices with cultural roots that are integrated into Rwandan public policy include: umuganda (community work), muganura (harvest) and imihigo (performance contracts).

The use of social media channels, traditional broadcast media, SMS, video conferencing and digital recording is a critical ICT sector innovation that facilitates communication between government institutions and citizens.

Strengthening Linkages between Innovative Governance Systems and Other Nodes in an Innovation Ecosystem

Kenya and Rwanda are innovative continental leaders with growing and dynamic ICT sectors. Innovation in the two countries has an impact on the AfCFTA through their membership in two RECs, the EAC and COMESA, which are key building blocs of the continental effort.

Innovation refers to ‘the implementation of a new or significantly improved product (good or service), or process, a new market method or a new organizational method in business practices, workplace organization or external relations’ (OECD 2005: 46). For the Kenyan Ministry of Science and Technology (2008), innovation is ‘the practical application of creative ideas which often involves introduction of inventions into the marketplace’. It further observes that two fundamental types of innovation exist, namely product and process. Process innovation is described as ‘changes that affect the methods of producing outputs’ while product innovation is defined as ‘changes in actual outputs’. The Rwanda development blueprint, ‘Rwanda Vision 2020’, underscores the importance of innovation to a country. It notes, ‘There is a need to generate, disseminate and acquire scientific skills as well as technological innovations, in addition to integrating them into the social and economic development drive’ (The Republic of Rwanda 2000: 22).

Innovation ecosystems

The ICT innovation in Kenya and Rwanda represents an ecosystem because of the presence of multiple intermediaries interacting for the successful achievement of an innovation, which is one of the features of ecosystems. Ecosystems are ‘characterised by interdependency of and between organisms and resources, and are dynamic rather that static – seeking equilibrium through motion rather than stasis’ (Schalkwyk et al. 2012: 3). ICT is one of many sectorial ecosystems within the larger socio-economic ecosystem that contains

10 https://www.doingbusiness.org/en/rankings
dynamically interacting organisms (firms, non-firms, intermediaries and consumers) bound by exchange as well as by the institutions (the repositories of rules, values and norms) in which they are embedded (Fransman 2010). The ICT ecosystem is driven by innovation (i.e. the injection of new knowledge into the ecosystem). The interaction between firms and consumers (i.e. between knowledge creators and knowledge consumers) generates new knowledge, which leads to innovation in the ecosystem. The pursuit of innovation keeps the ICT ecosystem in motion. The interaction between firms and other actors in the ecosystem can also be characterised through the concept of clusters, which are ‘critical masses in one place of linked industries and institutions—from suppliers to universities to government agencies—that enjoy unusual competitive success in a particular field’ (Porter 1998: 1).

Systems thinking highlights the systemic nature of innovation best exemplified by Malerba’s (2002) sectoral innovation system, which takes into account the users, the knowledge and capabilities, the interactions and the institutional setup. Introducing a systems approach brings to the fore the question of system efficiency, where the emergent behaviour of the system is based on not only the existence of the nodes, but also the interactions between these nodes. The existence of the nodes does not necessarily pre-condition the outcome and may result in varied effects from one country to the next due to collective system efficiency. Therefore, policy-makers need to realise that developing a ‘Silicon Valley’ in Africa goes beyond establishing nodes but also depends on the interactions between these nodes.

The ecosystem primarily revolves around a market and industry environment that finds utility in a given innovation. The research and development environment then engenders the ideas and innovations to feed this market. The triple helix concept exemplified by Etzkowitz (1993) and Etzkowitz and Leydesdorff (1995) introduces the importance of a third environment, namely governance (Etzkowitz 2008). The definition used borrows from Malerba (2002) and is applied through a stakeholder analysis driven by a causal loop that establishes the systems thinking to the ICT sectors in Kenya and Rwanda (Figure 1).

**Figure 1: Causal Loop Diagram**

All agents and actors involved in producing, delivering and using ICT tech products set the boundaries and drive the organic and ever-changing (evolutionary) nature of the tech-innovation ecosystem. These agents are the ecosystem stakeholders, which can be ‘any organization, group or individual defined as an actor, who can affect or is affected by the outcome’ of the delivery of ICT (Freeman 1984: 46). A useful taxonomy can be derived from systems thinking, with the sector stakeholders organised into backward, horizontal and forward linkages of the ICT ecosystem (Hanowsky & Sussman 2009).

- **Backward linkages** are organisations, groups or individuals that provide inputs (in form of goods, services, finances and knowledge) into the ICT ecosystem.
- **Horizontal linkages** are those organisations, groups or individuals involved in the process of providing, or ensuring the provision of ICT products and services within the ICT sector.
• Forward linkages are those industries, organisations, groups or individuals that are a resulting output from an established ICT ecosystem (e.g. Digital & Virtual Economies)

An organisation may fall into one or more of these conceptual taxonomic groups. Organisations, groups or individuals are a generic grouping of entities ranging from entire sectors or industries to single individuals. This taxonomy therefore establishes a meta-model of stakeholders represented in Figure 2.

Figure 2: Stakeholder analysis representation

Examples of linkages for the Rwandan and Kenyan ICT innovative ecosystem are show in in Table 1.

Table 1: Linkages for the Rwandan and Kenyan ICT Innovation Ecosystem

<table>
<thead>
<tr>
<th>Backward linkages</th>
<th>Horizontal linkages</th>
<th>Forward linkages</th>
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<tbody>
<tr>
<td>Contributors of knowledge – universities, such as the University of Nairobi and Strathmore University (Kenya); and the Carnegie Mellon University in Kigali and the College of Science and Technology University of Rwanda (Rwanda).</td>
<td>Commissioners and regulators appointed by government to lead and regulate the sector/ecosystem – State and government agencies, such as the Ministry of Devolution that oversees the Huduma centres and the Ministry of ICT in Kenya that provides locations for the Huduma centres.</td>
<td>ICT-driven competitive productions – centres of innovation and new product development, hubs, digital economy (ICT as an enabler in other sectors), creation of other sub-sectors (BPO, hardware assembly industry) – In Kenya, Huduma centre service provision, pushed demand for stable internet connectivity all over the country; the success of the programme emboldened the government to undertake the schools’ laptop project, as well as the manufacturing/assembly of these devices in Kenyan universities.</td>
</tr>
<tr>
<td>Contributors of finance – banks, international organisations and financial institutions, such as the World Bank.</td>
<td>Channels (ICT businesses) – large, medium and small-scale enterprises and start-ups such as certified resellers of software and hardware who supplied and fitted the Huduma centres.</td>
<td>Ripple effect into other sub-sectors and environments, e.g. eGovernment – in Kenya a direct result of the Huduma centres was the eCitizen</td>
</tr>
<tr>
<td>ICT suppliers or platforms – multinational ICT companies that provide hardware, such as HP, EMC, Cisco, Lenovo and Oracle, and providers of platforms such as Facebook, Twitter, etc.</td>
<td>Collaborating/supporting sub-sectors: transporters, power utility companies.</td>
<td>ICT manpower – trained software engineers,</td>
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Pillars and linkages in the ecosystem
The above holistic analysis and definition of the ecosystem resulted in the mapping of eight ICT ecosystem pillars, as shown in Figure 3. Of specific interest in this chapter is ICT leadership and governance pillar.

Figure 3: Ecosystem pillars and linkages

ICT is a key sectoral innovation ecosystem within the continental multi-sectoral innovation ecosystem the AfCFTA. Replicating the experience of Kenya and Rwanda through the RECs (EAC and COMESA) would advance the integration of Africa’s digital economy in line with the AU Vision 2063.

An innovative governance system occupies the intersection of interests, implementation and institutions (Figure 4). This interests–implementation–institutions framework enables a seamless analysis of a governance system using a paradigm that spans public policy and innovation. It draws on the three-part framework developed by Cloete and De Coning (2011) that includes contextualisation (‘interests’), policy process (‘implementation’) and capacity building for policy improvement (‘institutions’). The relationship between the two frameworks is explained below.
Interests
Contextualisation entails looking at paradigms, theories, models and concepts in relation to public policy, which also helps to define the interests of various actors in a political system. This dimension of public policy is referred to as agenda setting. Therefore, the ICT Governance and Leadership pillar can be analysed by asking the question ‘what are the interests?’.

The quotes by President Kenyatta and President Kagame in the introduction of the chapter underscore the need for a multi-helical partnership in the context of an innovation ecosystem that includes government, industry and academia in partnership with civil society. The devolution of revenue sharing in Kenya highlights the optimisation of interests, through a systematic process involving all arms of government (executive, legislature and judiciary) that captures and harnesses (through the revenue-sharing formula) the priorities of citizens occasionally representing competing interests, to maximise the public good.

Figure 5: Policy Process Model

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11 Political systems theory, the interest group model and the institutional model (classical theory) are useful theories/models for such analysis as discussed by Cloete and de Coning (2011).
Implementation
The Policy Process Model (Figure 5) is anchored in political systems theory and provides a systematic way of moving from a policy problem to a solution. The ICT leadership and governance pillar can be analysed based on the third step of the policy process model to answer the question ‘how is the implementation?’

Institutions
Capacity building for policy improvement considers institutional arrangements for policy management and the institutionalisation of policy capacity in government and beyond. Such capacity building is particularly important in aligning a governance system with an innovation system. Useful frameworks for exploring the link between the two systems are the triple helix innovation (Etzkowitz 2008) and the model of clusters in national competitiveness (Porter 1998). The ICT and Governance pillar combines these two frameworks to explore capacity building for policy improvement and to answer the question ‘who are the institutions?’

Rwanda and Kenya are signatories to various bilateral and multilateral agreements at different levels of government that play a key role in AfCFTA’s implementation. They are both members of two RECs: EAC and COMESA. Kenya is also a member of the Intergovernmental Authority on Development, while Rwanda supports the planned merger of three RECs with overlapping membership, i.e. EAC, COMESA and SADC (Southern African Development Community) into the Tripartite Free Trade Area (TFTA). Together, Kenya and Rwanda are part of a network that covers more than half of the African continent. Both countries have played host to multiple high-level multilateral gatherings at a sub-continental, continental and global scale. For instance, in 2018 Kenya hosted UK Prime Minister Theresa May and was hosted by US President Trump (building on a previous 2015 visit to Kenya by US President Barrack Obama), while Rwanda hosted China President Xi Jinping. Kenya and Rwanda have championed triple helix innovation and the establishment of globally competitive clusters within the context of regional integration. In Rwanda, Umushyikirano (National Dialogue) shows how a country is able to enhance the global competitiveness of specific clusters through a structured set of interactions between citizens and institutions spanning government, industry and academia. Kenya has sought to learn from the experience of Rwanda with a desire to replicate the concept at a national level.

Ecosystem linkages with the ICT leadership and governance pillar
Rwanda and Kenya provide a useful case study of African countries with strong innovation ecosystems underpinned by strong linkages to the ICT leadership and governance pillar built on the foundation of an action-oriented executive arm. They show how a strong governance system at a national level can be a pillar for establishing linkages with an innovation ecosystem at a continental level as envisioned by the AfCFTA. What RECs such as EAC, COMESA and SADC need are ‘coherent strategies for building regional systems of innovation as nested networks of national systems of innovation with differentiated capabilities and competitiveness’ (Mugabe 2011: 28). These strategies should promote shared/regional research and development infrastructure, harmonised technical standards and regulations, collaboration among regional universities, cross-border public-private partnerships, ‘regional intellectual property rights protection frameworks’ and other measures that would improve ‘the climate for regional innovation activities’ (Mugabe 2011: 29).

Viewing the experience of Kenya and Rwanda in the context of an innovation ecosystem (pillars and linkages) and a governance system (interests, implementation and institutions) yields a variety of recommendations. One such policy recommendation focuses on the mobility of talent in the context of EAC and is presented in the next section.

Recommendation: Facilitate Continental and Global Knowledge Flows
The policy recommendation, which spans both governance systems and innovation ecosystems, is to facilitate continental and global knowledge flows in order to optimise the linkages among institutions (Saxenian 2006). Practically, this entails mapping out institutions as pillars in an innovation ecosystem and optimising the linkages among them through increased interactions. For example, a network of university and innovation hubs across the African continent, with anchors in key countries within each REC, would make it easier for other countries to learn from, and replicate within their local context, the experience of Kenya and Rwanda.

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12 At a continental level the King Codes of good governance of South Africa are a useful innovation warranting further study on how to ensure effective leadership, good governance, objectivity, fairness, accountability and transparency- https://home.kpmg/za/en/home/insights/2016/10/king-iv-summary-guide.html
The AfCFTA would also make it easier for innovation leaders, such as Kenya and Rwanda, to harness new opportunities because their innovative governance systems would enable them to better define their interests and implement policies.

A study by Mbaya et al. (2010) proposes a useful framework of global knowledge flows to harness the linkages between governance and innovation systems. It notes:

Science, technology, and international relations tightly intertwine, with each affecting the other (Weiss, 2005). Science yields discoveries subsequently deployed as technologies, with these innovations ultimately having political and economic implications within and across states. In this era of globalization, a dominant aspect of this interplay, particularly in relation to developing countries, is the increased capacities that result from regional integration. This situation also raises new possibilities for diplomatic interactions between developed and developing countries, especially if they are built on a framework of scientific and technological interactions. (Mbaya et al. 2010)

An approach for using this African resource pool calls for the circulation of global knowledge flows. Achieving this objective requires a framework that allows scientists and engineers to collaborate on two separate continents with clearly defined goals. The goals also require enabling institutional environments that ensure productive output will yield the desired development outcomes in their respective home countries. This framework requires new forms of diplomacy between developed and developing countries, specifically a strong emphasis on the potential of science and technology. Facilitating these global knowledge flows creates powerful platforms for promoting technological catch-up by developing countries and, ultimately, convergence (Fagerberg, 2005).” (Mbaya et al. 2010)

The study alludes to the important role of innovative governance systems that harness their diaspora populations towards development priorities.

Diasporas have sometimes played a critical role in the establishment of entire industries in their home countries. All the instances involved a combination of top-down and bottom-up approaches that were sustained over several years. These examples included Israel and telecommunications, Taiwan and semi-conductor integrated circuit (IC) fabrication, and China: IC fabrication and software development, and India and outsourcing (Saxenian 2006). Proactive actions by governments provide a strong theme around which the Diaspora can rally, for example the Nigeria Diaspora Day held in 2006, the U.S.-based Singapore Philadelphia Innovators Network (SPIN) coordinated through the U.S.–based Singapore community, and the U.S.–based Swiss House of Advanced Research and Education (SHARE) coordinated through the Swiss government.” (Mbaya et al. 2010).

Japan and South Korea are other examples of countries that have excelled in the fields of electronics/ICT-related applications and multi-sectoral innovation ecosystems for alleviating poverty and job creation.

The concept of global knowledge flows can be reimagined as continental knowledge flows, based on a virtual innovation corridor anchored by institutional nodes (pillars) at a national level and cross-border interactions that are aligned with the interests of citizens. The 4th Industrial Revolution, through technologies such as blockchain and artificial intelligence, can help to address historical challenges in Africa associated with identity and sovereignty. Such challenges can be reconceptualised as opportunities for Africa through continental knowledge flows. For example Somalian and South Sudanian refugees and their children in Kenya face acute challenges with post-secondary education and employment due to their immigration status. However, they can be easily granted virtual citizenship based on innovations in identification underpinned by blockchain and artificial intelligence, allowing them to contribute to the economy through knowledge creation and dissemination.13 Such innovations would allow them to be productive citizens in both their home and adopted countries by enjoying rights equivalent to other citizens. Lessons from such innovations could easily be replicated and scaled for citizens of African countries seeking to pursue economic opportunities beyond their home borders in the context of AfCFTA. The result would be increased global competitiveness of African economies.

The success in achieving continental knowledge flows through AfCFTA would depend on two factors:

- The ability to harness digital technologies in support of data-driven implementation. Practically, this entails using data to define, execute and evaluate programmes and projects, which would be defined in the

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context of innovation ecosystem implementation and aligned with interests of citizens. Two examples of this are the upgrading of micro, small and medium enterprises through digital learning, and the adding of value through manufacturing and processing with a focus on both continental and global markets. The 4th Industrial Revolution and the 1st Digital Revolution offer Africa opportunities to leapfrog innovation, especially using digital learning to enhance the skills of Africa’s predominantly youthful population.

- **The ability to formalise and deepen existing pillars in the innovation ecosystem.** Practically, this entails identifying all the institutions within each pillar and optimising the interactions among them, guided by citizen interests. For example, the establishment of a technology savings and credit cooperative (SACCO), as a way of addressing the diverse needs of citizens. This approach can collectively address challenges of capital, finance, community intellectual property and the personal welfare of innovators. It takes the form of the successful co-operative model that has been tested in the agricultural commodities sector on the continent. Such a cooperative model in the ICT sector would yield a strengthened innovation ecosystem by involving the community in the innovation production process. As innovations scale and span across national borders, challenges associated with governance may be experienced. In spite of these challenges, such cross-border involvement is an example of how eCommerce can help to achieve the ambitious AfCFTA goals.

**Conclusion**

Africa’s ambitious Agenda 2063 is achievable through an agreement such as the AfCFTA. It requires an innovative governance system (based on interests, implementation and institutions) with optimal linkages to other pillars within an innovation ecosystem. The success story of Kenya and Rwanda in the ICT sector and their experience with innovative governance systems can offer models for the rest of the African continent. Such governance systems are innovative, inclusive, integrated and supportive of the 4th Industrial Revolution. They are structured to maximise the provision of public goods underpinned by a social contract and embracing the SDGs.

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