Transformation-Ready: The strategic application of information and communication technologies in Africa

Regional Trade and Integration Sector Study

MAIN REPORT

Prepared for the African Development Bank, the World Bank and the African Union by:

Lishan Adam, David Souter, Abiodun Jagun and F. F. Tusubira, with contributions from Ibrahima Diagne, Patricia Makepe, Rosemary Mburu and Murali Shanmugavelan

Project coordination and report edited by David Souter and Lishan Adam

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PRINCIPAL ABBREVIATIONS

AEC  African Economic Community
AEO  Authorised Economic Operator
AMU  Arab Maghreb Union
ARIA  Assessing Regional Integration in Africa
ASEAN  Association of South East Asian Nations
ASEPEX  Senegalese Export Promotion Agency
ASYCUDA  Automated System for Customs Data
AU  African Union
B2B  Business to business
B2C  Business to customer
B2G  Business to government
BCEAO  Central Bank of West African States
BECI  Botswana Export Credit Insurance and Guarantee Company
BEDIA  Botswana Export Development and Investment Authority
BURS  Botswana Unified Revenue Service
C&F  Clearing and forwarding
CAB  Central African Backbone project
CCS  Cargo Community System
CDMA  Code division multiple access
CEMAC  Economic and Monetary Community of Central Africa
CEN-SAD  Community of Sahel-Saharan States
CICES  Senegalese Centre for External Trade
CIQS  Customs, immigration, quarantine and security
CM  Common market
CMA  Customs Management Act
CMS  Customs Management System
COMESA  Common Market for Eastern and Southern Africa
COSEC  Senegalese Shipping Council
CTA  ACP–EU Technical Centre for Agricultural and Rural Cooperation
CU  Customs union
DHS  Department of Homeland Security (United States of America)
DPW  Dubai Port World
DRC  Democratic Republic of Congo
EAC  East African Community
EAC-BIN  East African Backbone Infrastructure Network
EASSy  Eastern Africa Submarine Cable System
ebXML  Electronic business extensible mark-up language
ECCAS  Economic Community of Central African States
ECOWAS  Economic Community of West African States
ECTS  Electronic Cargo Tracking System
EDI  Electronic data interchange
EDIFACT  Electronic Data Interchange for Administration, Commerce and Transport
EMU  Economic and monetary union
ESCAP  United Nations Economic and Social Commission for Asia and the Pacific
f.o.b.  Free on board
FTA  Free trade area
GATS  General Agreement on Trade in Services
GATT  General Agreement on Tariffs and Trade
Gbps  Gigabits per second
GCCS  Global Cargo Community System
GCMS  Ghana Customs Management Service
GDP  Gross domestic product
GFP  Global Facilitation Partnership for Transportation and Trade
GPS  Global Positioning by Satellite
GSM  Global System for Mobile Communications
HS code  Harmonised Commodity Description and Coding System
HSDPA  High-speed downlink packet access
IBM  Integrated border management
ICBM  Integrated cross-border management
ICT  Information and communication technologies
IFI  International Financial Institution
IGAD  Intergovernmental Authority on Development
IMF  International Monetary Fund
ISO  International Organisation for Standardisation
KEBS  Kenya Bureau of Standards
KEPHIS  Kenya Plant Health Inspectorate Service
KPA  Kenya Ports Authority
KRA  Kenya Revenue Authority
KWATOS  Kilindini Waerfront Automated Terminal Operating System
LPI  Logistics Performance Index
MACCS  Mauritius Cargo Community Services Ltd
MFN  Most favoured nation
MNS  Mauritius Network Services
NACSS  Nippon Automated Customs Clearance System
NAFTA  North American Free Trade Area
NTB  Non-tariff barrier
NTM  Non-tariff measure
OASIS  Organisation for Advancement of Structured Information Standards
OECD  Organisation for Economic Cooperation and Development
OSBP  One-stop border post
PCS  Port Community System
PIA  Permit Issuing Agency
PSI  Pre-shipment inspection
RADDEx  Revenue Authority Digital Data Exchange
REC  Regional Economic Community
RFID  Radiofrequency identification device
RKC  Revised Kyoto Convention
SACU  Southern African Customs Union
SAD  Single Administrative Document
SADC  Southern African Development Community
SAFE  Framework of standards to secure and facilitate global trade
SARS  South African Revenue Service
SATH  Southern African Trade Hub
SOAP  Simple Object Access Protocol
SSE  Electronic cargo tracking system (Senegal)
SW  Single Window
SWS  Single Window
TEAMs  The East African Marine System
<table>
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<td>TMSA</td>
<td>Trade Mark Southern Africa</td>
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<td>TPS</td>
<td>Trade Point Senegal</td>
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<td>UEMOA</td>
<td>Economic and Monetary Community of West Africa</td>
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<td>UN/CEFACT</td>
<td>United Nations Centre for Trade Facilitation and Electronic Business</td>
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<td>UNI-PASS</td>
<td>Korean Customs Service Customs Management System</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>VAT</td>
<td>Value added tax</td>
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<td>W3C</td>
<td>World Wide Web Consortium</td>
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<td>WACIP</td>
<td>West African Common Industrial Policy</td>
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<td>WAMZ</td>
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<td>WATRA</td>
<td>West African Telecommunication Regulators Assembly</td>
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<td>WCO</td>
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<td>WiMAX</td>
<td>Worldwide Interoperability for Microwave Access</td>
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<td>WTO</td>
<td>World Trade Organisation</td>
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<td>XML</td>
<td>Extensible mark-up language</td>
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This report describes the findings of a study of ICTs, trade and regional integration in Africa. The study was undertaken between January and July 2011 by ict Development Associates ltd as part of the Transformation Ready or eTransformAfrica programme implemented by the African Development Bank and the World Bank, in partnership with the African Union.

The Transformation Ready programme seeks to identify ‘how information and communication technologies (ICTs) ... have the potential to change and fundamentally transform’ a number of development sectors in Africa (including agriculture, education, financial services, health and public services as well as trade), address the challenge of climate change adaptation and leverage development of the local ICT sector.\(^1\) The overall objectives are to assist the partners and other development agencies to maximise the developmental value which they can achieve from the rapidly changing ICT environment and from appropriate investment of financial and other resources, and to raise awareness of the potential of ICTs among stakeholders in government and the development community.

This study of ICTs, regional trade and integration focuses on trade, particularly regional trade, and the role and work of Regional Economic Communities (RECs). Within this context, the partners asked that the study should focus on three aspects of regional trade facilitation:

A. governance of efficient and transparent flows of goods
B. logistics and trade infrastructure support; and
C. development of public-private platforms and information systems to document and support the efficient flow of goods and services.

The study accordingly reviews experience in these three areas in order to:

a. provide an overview of African experience, including experience with the use of ICTs;
b. provide examples, where available, of successful practice in the use of ICTs for trade facilitation in Africa and elsewhere; and
c. make policy recommendations on the application of ICTs for trade and regional integration to governments, RECs, IFIs and development actors.

A note on the terms of reference and methodology for the study, and selected bibliography, can be found in Annex 1.

**Structure of report**

The structure of this report was set out in the Terms of Reference for Transformation Ready reports, and is as follows:

\(^1\) The programme as a whole is described at http://etransformafrica.org.
Chapter 1 (Introduction) describes the background context for trade and regional integration in Africa, and for the application of ICTs in trade facilitation.

Chapter 2 (Landscape Analysis) describes in some detail the role which ICTs can play and are playing in trade facilitation, illustrating this with examples from Africa and other regions.

Chapter 3 (Challenges and Opportunities) sets out the opportunities and constraints facing ICT applications trade in Africa, and considers the implications for regional integration.

Chapter 4 is in two parts. Section A focuses on the experience of and prospects for trade facilitation in regional integration and in particular the role of Regional Economic Communities (RECs). Section B summarises the findings of three case studies of ICTs and trade in Kenya, Senegal and Botswana, which were undertaken for the project. A more detailed regional review and full country case study reports can be found in Annexes 2 to 5.

Chapter 5 (Conclusion and recommendations) summarises the conclusions of the study and recommends priority interventions for governments, Regional Economic Communities (RECs) and International Financial Institutions (IFIs).

As in all areas concerned with ICTs and development, the design and implementation of appropriate policies and programmes depends on expertise and knowledge being drawn from both the ICT sector and from the development domain concerned. It is, in particular, critical that ICT specialists understand the particular challenges, constraints and objectives of those who are primarily concerned with that development domain, in the case of this report with trade. ICT-based approaches which are developed without that understanding are unlikely to be successful, let alone transformative. Decisions about large-scale investments such as those that are discussed in this report also require a thorough understanding of the context for trade and regional integration on the continent if funds are to be effectively and appropriately deployed.

This first chapter of this report focuses on trade, regional integration and the role of ICTs in trade facilitation in order to address this requirement for contextual understanding. It is divided into four sections:

- Section A describes the current state of African trade, including intra-African trade, at a continental and regional level.
- Section B describes the framework for regional economic integration in Africa.
- Section C outlines the opportunities and challenges for trade in Africa and the relevance of ICTs.
- Section D provides an overall framework for reviewing the role of ICTs in trade facilitation.

These provide essential background for understanding the analysis contained in later chapters, and for assessing the potential and appropriateness of ICT-enabled interventions.

A – OVERVIEW OF TRADE ISSUES IN AFRICA

Trade is critically and increasingly important in the global economy. It accounted for some 30% of global GDP in the middle of the last decade, a figure which it has been suggested will rise, perhaps to 50%, by 2020.\(^2\)

Trade is generally associated with economic prosperity, enabling countries to expand production and gain revenue from sectors in which they have comparative advantage, secure productive inputs and consumption goods at lower prices, improve productivity and generate employment. Value derives both from trade with neighbouring countries, where it most obviously expands domestic markets for manufactures or agricultural produce, and trade with distant countries, where there are often large markets for commodities which have

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limited domestic or regional demand. Governments and development agencies are anxious to improve Africa’s trade performance, which is weak compared with other world regions, in order to secure these developmental gains.

World trade has been changing rapidly in recent years. Six trends have been particularly important.

- The overall volume of world trade has increased rapidly following the liberalisation of national and global markets and of trading infrastructure. Improved transport and electronic communications have enabled businesses to draw on skills and resources located in different world regions. Recent decades have therefore seen increased globalisation of trade, with many production processes now undertaken internationally, together with changing patterns of multinational business ownership. The ICT sector is a notable example of this globalisation. Africa’s share of world trade has remained well below its share of world population, and the continent has not gained as much as other regions from these changes.

- The conduct of trade has changed substantially, including both physical movement of goods (through containerisation) and payment systems (through electronic commerce). Globalisation and ICTs have enabled businesses to operate with less inventory, using just-in-time and quick-response production patterns. Containerisation, multi-modal transport and door-to-door services have flourished in the more competitive trading and shipping markets that have resulted from liberalisation. African ports have been slower than those in other world regions to adjust to these changes, in particular to the requirements of container traffic.\(^3\)

- The global balance of trade has shifted as a result of geopolitical change, including the end of communism, more rapid economic growth in Asia than in the wealthier economies of Europe and North America, and the expansion and diversification of trade to and from large developing countries including China, India, Brazil and countries in South East Asia. There has been substantial growth in trade between Africa and these rapidly-growing developing economies.

- There has been stronger growth in non-merchandise trade (such as financial services) than in merchandise trade, and in trade in services than in trade in goods. African economies continue to depend on commodity exports and are therefore poorly equipped to take advantage of these new opportunities for trade – particularly as other developing regions have diversified from commodities into manufactures.

- The ICT sector has been one of the fastest growing markets in world trade, because of extensive infrastructure investment, very rapid growth in the capacity of networks and range of services, and the new popularity of mobile telephones and the internet. The sector has enabled changes in the organisation of trade (e-commerce), in the nature of goods traded (virtualisation of some products) and in the development of new product and service markets (software development, business process outsourcing). While some African countries have sought to take advantage of these opportunities, the continent as a whole lags behind other developing world regions in take-up of more advanced ICT networks and services (particularly broadband), and in adoption of the digital trading interfaces required for electronic commerce and ICT-enabled service sectors.

- Trade management is concerned with achieving a balance between facilitating the rapid movement of goods ensuring public safety and collecting revenue. The importance of security has been heightened since the events of 11 September 2001, placing greater emphasis on the ability of governments and border

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agencies to identify risks associated with the movement of goods, vehicles, people and money. This places a premium on automated and integrated trade management, in which ICTs play a prominent role but in which Africa has lagged behind other world regions.

**African trade: the state of play**

Africa’s share in world trade is low compared with that of other world regions, as illustrated in Figure 1.1. In the period 2000-2008 (up to but not including the recent downturn), Africa’s share of global trade increased from 2.2% to 3.3%, a significant recovery against long-term decline. It is now a little higher than its share of world GDP (2.5%), but well below its share of world population (14.6%).

![Figure 1.1: Proportions of world exports and imports by region, 2009](http://www.wto.org/english/news_e/pres10_e/pr598_e.htm)

The weakness of Africa’s trade performance is widely recognised as a constraint on economic growth and poverty reduction. The expansion of trade is a central theme of efforts to enhance regional integration which have been promoted by the African Union and other international agencies. Low volumes of trade from Africa imply that the continent is less integrated with world production and so less able to benefit from the economic growth generally associated with trade than are other world regions. However, these low volumes also imply that, if Africa is able to overcome the challenges inhibiting its trade performance, there is significant scope for above-average gains in economic welfare to be made from accelerating trade. This provides a strong incentive for trade facilitation to which – as discussed later in this chapter – ICTs should make a major contribution.

Primary commodities – oil, plus a variety of mineral and agricultural goods – make up almost 75% of African exports. Demand for these derives from global rather than regional markets. Historically this demand has come principally from Europe and North America, and developed countries in these regions remain Africa’s largest trade destinations. However, rapid economic growth in Asia and some other non-African developing regions has led to high levels of demand for African commodities in those markets and a shift in the balance of

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trade between Africa and the rest of the world. Economic conditions in geographically distant regions are therefore highly influential on African trade outcomes, with consequential impacts on the continent’s primary producers.

In return for primary commodities, historic trading partners in Europe and North America have seen African countries as markets for manufactured goods whose production on the continent has been limited. This exchange of commodities for manufactured goods is now being replicated in trade between Africa and non-African developing regions. 75% of imports to Africa from outside the continent are manufactured goods. The availability of cheap imported manufactures, combined with the small size of domestic markets in most African countries, makes it difficult for African producers to compete with major international manufacturing exporters, raising the risk that Africa will remain locked in a pattern of exchanging commodities for manufactures. UNCTAD and others have suggested that lower-cost imported manufactures from emerging markets may be inhibiting the development of African manufacturing, to the continent’s long-term detriment. 5 Challenging this trade pattern is an important objective of regional integration and trade facilitation.

The economic downturn of 2007-2010 had a severe dampening effect on world trade, which declined by 13% by volume and 23% by value in the year 2009. 6 Contrary to some expectations, however, Africa as a whole did not suffer as dramatically from the downturn as other world regions. Continental growth rates – which had averaged 6% in 2006-2008 – nevertheless fell below 2.5% in 2009, 7 about the same as the rate of population growth in Africa, and this resulted in stagnation or decline in GDP per capita in half the countries on the continent. Southern Africa was hardest hit, moving from average growth of 8% in 2006-8 to recession (-1% growth) in 2009. 8 West Africa performed more strongly than other regions, with a growth rate of 3.09% in 2009. 9

The dampening effect of the downturn in Africa was significant, however, as demand for the continent’s exports and commodity prices both declined in global markets. The value of African trade fell by 21% in 2009 over 2008 (compared with an increase of 29% the previous year), while exports as a share of African GDP fell from 41.0% in 2008 to 31.2% in 2009. 10 Export prices also fell more sharply than import prices, resulting in deteriorating current account balances and leaving the continent with a trade deficit of $93 billion in 2009. Oil producers suffered particularly heavy falls in export receipts. 11 The downturn emphasised Africa’s vulnerability to external economic factors and the desirability of expanding and diversifying its export base.

Significant, if uncertain, recovery in global trade has followed the downturn. This has not been led by the developed countries of Europe and North America which were Africa’s primary export markets in the 20th century, but by emerging market economies, particularly (but not exclusively) in Asia. According to UNCTAD:

> Robust demand from rapidly growing developing countries, mainly China, has been the key driver of the recovery of commodity prices, particularly metals and minerals, and crude petroleum, and partly also agricultural raw materials. 12

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7 African Export-Import Bank, African Trade Report 2009, p 2, gives a figure of 2.26%, down from 5.5% in 2008.
8 OECD & African Development Bank, African Economic Outlook, 2010. Negative growth rates of over -5% were recorded in Botswana and Seychelles; of -1.8% in the region’s lead economy, South Africa.
9 African Export-Import Bank, op. cit. p. 3
11 African Export-Import Bank, op. cit., Chapter 3.
12 UNCTAD, Trade and Development Report 2010, p. III
The OECD and African Development Bank estimated in 2010 that continental growth would recover to 4.5% that year and 5.2% in 2011, with East Africa showing most resilience and Southern Africa lagging behind other continental regions.\(^{13}\)

Increased demand for African exports in emerging market countries is contributing to a long-term shift in African trade away from former colonial partners towards more diverse and global trade relationships. The share of non-African developing countries in Africa's merchandise trade grew from 8% in 1980 to 15.4% in 1995 and 28.7% in 2008, while the share of the continent's historic partners in the European Union correspondingly declined, from around 55% in the mid-1980s to less than 40% in 2008 (though the value of trade with both categories increased substantially during that period). The most dramatic growth of all has been with China, which now accounts for 11% of Africa's external trade, is the region's second largest trading partner (after the United States) and largest source of imports. The value of trade between Africa and China in 2008 was almost ten times as great as it had been eight years previously.\(^{14}\) These trends are illustrated in Figure 1.2.

![Figure 1.2: Share of Africa’s total trade by region, 1980-2008](image)


As noted above, the pattern of trade between Africa and non-African developing countries, particularly the BRIC countries, now replicates the exchange of primary commodities for manufactures that has characterised African trade with developed countries. The proportion of African exports to developing countries which are primary commodities rose from 55% to 75% in the period 1995-2008, while the proportion of imports from such countries that are manufactures rose from 22% to 56%. As a result, Africa now has a significant trade deficit with non-African developing countries, the value of imports from which exceeds that of exports by more than 25%. This has potential long-term detrimental implications for the economies of Africa, requiring policies that address both export promotion and domestic industrial production.

African exports to non-African countries are highly (and increasingly) concentrated. Three countries – two oil exporters (Algeria and Nigeria) and the continent’s biggest economy (South Africa) – account for almost half such exports; the top ten exporting countries for almost 90%. Imports are less concentrated: the top five importers account for 57% of imports, South Africa for 23%.\(^{15}\)

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One of the most striking features of Africa’s trade performance is the very small proportion of its trade that takes place within the continent or its sub-regions. Worldwide, 25% of trade is conducted between geographic neighbours (countries which share a common border). Yet, as at the end of 2008, intra-African trade (i.e. trade between countries within the continent, not just neighbours) represented only 10% of Africa’s total trade. Comparable figures for other world regions were 70% in the European Union, 32% in North America, 47% in developing Asia and 27% in Latin America and the Caribbean.\textsuperscript{16} Africa therefore trades overwhelmingly not with itself, but with regions from which it is geographically remote.

This has profound effects on the continent’s vulnerability to changing economic patterns in the rest of the world, and is at the heart of the challenge linking trade and regional integration which underpins this report. Intra-regional trade is important because it has the effect of expanding domestic markets and facilitating the development of larger businesses which may compete effectively at a global level. Burkina Faso’s domestic market, for example, has about 17 million people, of whom a little over half are adults – but another 93 million people live in its neighbour countries, and the population of the ECOWAS region as a whole is close to 300 million. The ability to reach beyond domestic national markets into regional markets, and then to use those as a platform for expansion into global trade, is widely believed to have been critical to economic development in other world regions, particularly the ASEAN region in south east Asia.\textsuperscript{17}

Regional variations in the proportion of trade within Africa and within five of the continent’s Regional Economic Communities areas are set out in Figure 1.3.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure1.3.png}
\caption{Exports and Imports within RECs and within Africa: selected African RECs}
\end{figure}

The highest proportion of intra-African trade is found in Southern Africa, where it is supported by the economic weight and more diversified economy of South Africa; followed by East and West Africa, where Kenya, Nigeria and (at least until recently) Côte d’Ivoire are significant trade hubs. The lack of intra-regional trade is particularly acute in Central Africa where insecure borders, lack of political harmony, poor road infrastructure, limited energy supply and inadequate ICT infrastructure combine to pose major obstacles to trade between countries in the ECCAS region. However, the decline in intra-African trade during the economic downturn (2008-2009) was only 8%, much lower than the 21% decline in African trade overall at that time - a more positive performance which the African Export-Import Bank attributes partly to ‘sustained efforts of African governments in deepening economic integration at the sub-regional and regional levels.’\textsuperscript{18}

\textsuperscript{17} United Nations Development Programme, \textit{Regional Integration and Human Development – a pathway for Africa}, 2011, Chapter 4.
\textsuperscript{18} African Export-Import Bank, \textit{African Trade Report 2009}, p. 52.
While these overview figures accurately describe a general pattern of weakness in intra-African trade, they are affected by high volumes of specific commodity exports (particularly oil) from some larger countries. Individual country experiences are more diverse, illustrating that there are also opportunities for expanding trade within the continent.

- Some African countries send a higher proportion of their exports to other countries in Africa, in six cases (Zimbabwe, Somalia, Zambia, Malawi, Mali and DRC) at levels above 40% of total exports. Several SADC countries export between 10% and 34% of their total exports to South Africa. For these countries, therefore, regional markets play a more significant part than overall figures for Africa or its regions might suggest. However, these are principally exports of the same commodities as those countries export to global markets.

- Those few countries that have a significant domestic manufacturing base, such as South Africa and Kenya, export manufactured goods to neighbouring countries on the continent. As a result, manufactured goods play a more significant role in intra-regional trade than in Africa’s trade with the rest of the world – accounting for some 40% compared with under 20% for agricultural commodities. However, unless cross-border business partnerships develop, this does not imply that their import partners will also experience diversification or growth in manufacturing.

- There is significant informal trade, conducted outside the purview of customs and other border management agencies, which revolves around local (agricultural and other) products. Informal trade is by its nature extremely difficult to measure. A brief discussion of the implications of informal trade can be found in Box 1.1.

**Box 1.1 – Informal trade**

Although difficult to measure, the scale of informal trade is significant and appears to vary significantly as a result of local circumstances. The published literature offers little guidance to estimate its total volume or value, other than an expectation that it is likely to be substantial. Informal trade is primarily bilateral – i.e. conducted across individual land borders rather than on extended overland routes that include more than two countries. A recent study of informal trade in East Africa suggests that staple food commodities and low-quality consumer goods account for much of the activity.

The relationship between informal and formal trade is complex. By its nature, informal trade lies outside the trade processes which are discussed in this report. However, both formal and informal traders evade tariffs and other regulations – the former for example by misdeclaration or by offloading (“dumping”) dutiable goods in transit countries rather than in countries of declared final destination; the latter by using informal border crossings or breaking up larger lots into small quantities of goods which are taken across legitimate border crossings by individuals. The EAC study cited in the previous paragraph found that many informal traders were familiar with formal trade regulations: however, ‘some … attribute their continued engagement in ICBT [informal cross-border trade] to presence of physical and technical barriers in formal trade; others to the incentives inherent in ICBT; and still others [to] their socio-economic problems hindering beneficial engagement in formal trading.’

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20 For a substantive analysis, see African Export-Import Bank, *op. cit.*
22 *loc. cit.*
Trade facilitation which reduces tariffs and non-tariff barriers does not directly affect informal traders who do not, by definition, pay tariffs or comply with trade regulations. However, trade facilitation may encourage more informal traders to move to formal routes as these become more attractive and less burdensome, costly or time-consuming. The role of enforcement is also important in this context.

While informal trade contributes to national economies and to the livelihoods of some communities and individuals, it also reduces government revenue which could be invested in social welfare and economic infrastructure. Formal firms are also generally more productive than informal firms, and have more scope for generating new business opportunities at a regional, rather than national or bilateral, level.

There is consensus among international agencies that a number of critical structural factors lie behind the low level of intra-African and intra-regional trade. Six of these have been identified as particularly important.

1. Africa’s international relationships continue to be influenced by the legacy of its colonial era. Trade patterns and transit routes which were established then – in particular linking African economies with France and Britain – remain strong, and are reinforced by linguistic, legal and other institutional factors. The inadequacy of infrastructure (particularly transport) links between African territories at the time of independence has been insufficiently addressed since then, with the result that cross-border trade costs exceed those on established intercontinental trade routes.

2. Landlocked countries are particularly adversely affected by infrastructure challenges because their exports need to traverse additional national borders en route to final destinations. Exporting from the heart of Africa is therefore more arduous and less competitive than exporting from almost any other location. Africa’s fifteen low-income landlocked countries together have around 25% of the continent’s population – far more than any other world region. Transport costs in these countries are estimated to be as high as 14% of the value of exports, compared with 8.6% for all developing countries, and significantly lower figures for industrial countries. Some regions within countries which do have ocean access (such as Sudan and DRC) are also effectively landlocked because their main trade routes pass through other countries’ territory rather than their own.

3. African economies are poorly diversified and lack complementarity with one another. Exports are dominated by a small number of primary commodities; imports by manufactured goods. Neighbouring economies within African regions tend to be similar in character - also primary producers, often of the same commodities, and exporting to the same third country markets; neither producing manufactured goods of the kind which each imports. There is therefore less which they can exchange with one another than is the case with countries in other world regions.

4. There are political tensions at many international borders on the continent, either between governments or through the presence of insurrectionary groups and/or criminal gangs. International institutions, including the Regional Economic Communities, have proved relatively weak in addressing the resulting economic and political challenges.

5. African exporters are hampered by the lack of reliable financial institutions and other mechanisms to facilitate trade activity. Capital markets are weak, and banks lack expertise and experience in managing trade investment. Insurance markets are weak, adding to levels of risk. The costs of transacting business

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are exacerbated by the non-convertibility of many currencies, complex currency exchange mechanisms, and the lack of correspondent relationships between banks.  

6. As a result of these and other factors, intra-regional trade has significantly higher costs in Africa than in other world regions. The OECD and African Development Bank have summarised the intra-African barriers to trade which exacerbate trade costs as follows:

... less than a third of the African road network is paved and its railway network is very poor. ... The numerous roadblocks and checkpoints on African highways further raise transport costs and contribute to delivery delays. They also limit the free movement of commodities, persons, inputs and investments. African customs administrations are often inefficient, reinforcing trade barriers within and outside the continent. Customs regulations require excessive documentation, which must be done manually as information and communication technologies are absent in most customs offices. Customs procedures are outdated and lack transparency, predictability and consistency. The resulting delays all increase transaction costs.

The implications of these structural factors and their relationship with other aspects of trade management and trade facilitation are discussed in Chapters 2 and 3.

**B – OVERVIEW OF REGIONAL INTEGRATION IN AFRICA**

Continental and regional integration have been important elements in thinking about Africa’s economic and political development since the 1960s. Their most substantive political form lies in the creation of the Organisation of African Unity in 1963 and subsequently the African Union (AU) in 2002. Its economic counterpart is the programme to develop an African Economic Community (AEC) by 2034 which was set in motion by the Abuja Treaty of 1991. This section of the chapter outlines the economic objectives of regional integration and progress to date towards achieving these.

**The economic value of regional integration**

The value of regional integration in enhancing trade derives from its ability to extend ‘domestic’ markets beyond national boundaries, enable more efficient distribution of production by exploiting comparative advantage and the development of regional partnerships, and thereby create new opportunities for employment and prosperity. UNECA summarises the case for this in the introduction to the fourth report in its series Assessing Regional Integration in Africa (ARIA) as follows:

*Regional integration remains the key strategy that will enable African governments to accelerate the transformation of their fragmented small economies, expand their markets, widen the region’s economic space, and reap the benefits of economies of scale for production and trade, thereby maximizing the welfare of their nations. Regional integration increases competition in global trade and improves access to foreign technology, investment, and ideas. African leaders thus consider it an important path to broad-based development and a continental economic community....*

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The economic benefits of regional integration are not, however, confined to trade. The United Nations Development Programme has described the wider benefits, and their impact on overall development, as follows:

The process of regional economic integration can have significant effects on human development. The term ‘integration’ signals a process that is considerably broader than simply eliminating barriers to trade in goods and services between countries. Integration can also encompass harmonizing standards and regulatory frameworks; reducing restrictions on financial capital and labour mobility; adopting common approaches to fiscal and monetary policy; promoting peace and conflict prevention; and pooling investment in crossborder infrastructure for transport, power and communications. In addition to the breadth of integration, the depth of integration is a key factor in determining the outcomes for human development. For example, at greater degrees of integration countries may choose to adopt a common currency or agree to redistributive fiscal mechanisms between geographical regions. They may also agree to common approaches on health and education policy.  

There are risks as well as benefits in regional integration. Some economists argue that regional trade associations protect inefficient local businesses from exposure to competition in global marketplaces, reducing the incentive for them to raise productivity, improve quality and lower costs. Trade may be diverted to high-cost regional producers, for example, where duty-free trade within a region is accompanied by high external tariffs against competing goods from outside the region. Tensions may also arise between regional trade agreements and bilateral or multilateral arrangements which are made by one or more of the countries involved with countries elsewhere in the world. Even where political and economic integration are well established, crises in individual countries can be exported to others within regional associations, as illustrated by current experience in the European Union.

The African Economic Community and African Regional Economic Communities (RECs)

The centrepiece of Africa’s search for economic integration is the programme to develop an African Economic Community (AEC) which was endorsed in the Abuja Treaty of 1991 and came into force in 1994. The AEC project envisages the evolution of eight Regional Economic Communities (RECs) through four levels of increasing economic integration. The timetable for AEC development resulting from the Abuja Treaty is illustrated in Figure 1.4.

The four levels of economic integration at the heart of this process are as follows:

- A free trade area (FTA) requires member-countries to eliminate tariffs amongst themselves – although grace periods are usually required to reduce those in ‘sensitive’ sectors over a period of time. Members of an FTA maintain independent trade and tariff arrangements with countries outside it. Where an FTA has been established within a REC, it may not include all of the member-countries of the REC concerned: that in COMESA, for example, includes only 14 of COMESA’s 19 member-countries.

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28 e.g. trade agreements between African countries and the United States, the European Union’s Economic Partnership Agreements or regional trade associations in Asia and Latin America such as the New Asian-African Strategic Partnership, the Africa-South America Initiative and the Afro-Arab Cooperation Initiative
29 The treaty is at http://www.uneca.org/itca/ariportal/abuja.htm.
30 The COMESA webpage on the FTA and CU lists only 11 FTA members but does not seem to have been updated since 2008 - http://about.comesa.int/lang-en/overview
A customs union (CU) builds on an FTA by including agreement to a common external tariff between the FTA member-countries and those countries that are outside the FTA (or REC).

A common market (CM) extends the principles of integration beyond tariffs to other factors of production, enabling free movement of capital, labour and business establishment throughout the CM area. This is particularly important in liberalising trade in services.

Economic and monetary union (EMU) implies the adoption of common monetary and fiscal policies, including (in time) a common currency. (Countries in the UEMOA group within ECOWAS and the CEMAC group within ECCAS have shared common currencies, both called the CFA franc.)

Figure 1.4: The AEC schedule

A number of Regional Economic Communities (RECs) already existed in Africa when the Abuja Treaty was signed (while some customs unions had survived from the colonial era). The AEC project recognised eight RECs as regional building blocks for establishing, managing and evolving trade/economic partnerships that could ultimately coalesce at continental level. These are:

- the Arab Maghreb Union (AMU)\textsuperscript{31}
- the Community of Sahel-Saharan States (CEN-SAD)\textsuperscript{32}
- the Common Market for Eastern and Southern Africa (COMESA)\textsuperscript{33}
- the East African Community (EAC)\textsuperscript{34}
- the Economic Community of Central African States (ECCAS)\textsuperscript{35}
- the Economic Community of West African States (ECOWAS)\textsuperscript{36}
- the Intergovernmental Authority on Development (IGAD, in eastern Africa)\textsuperscript{37} and
- the Southern African Development Community (SADC).\textsuperscript{38}

\textsuperscript{31} www.maghrebarabe.org/en
\textsuperscript{32} www.cen-sad.org
\textsuperscript{33} www.comesa.int
\textsuperscript{34} www.eac.int
\textsuperscript{35} www.ceeac-eccas.org
\textsuperscript{36} www.ecowas.int
\textsuperscript{37} www.igad.int
\textsuperscript{38} www.sadc.int
These RECs are the equivalent of economic groupings in other regions such as the European Union, ASEAN, NAFTA and Mercosur/Mercosul. Seven of them recognise and participate in the AEC project, though the AMU does not at present do so. The geographic range of the eight AEC-recognised RECs is illustrated in Figure 1.5. Although broadly geographically distinct, there is a significant amount of overlap between their memberships.

Figure 1.5: African Regional Economic Communities

Source: UNEP, reprinted in http://www.eoearth.org/article/Regional_cooperation_for_peace_and_sustainable_development_in_Africa

In addition to the eight AEC-recognised RECs, African countries also belong to a number of other regional trade and economic associations on the continent. Four of these are sub-groups within the AEC-recognised RECs which have achieved a higher level of integration than the full RECs of which they form part. These are:

- the Economic and Monetary Community of Central Africa (CEMAC, within ECCAS)³⁹
- the Economic and Monetary Union of West Africa (UEMOA, within ECOWAS)⁴⁰
- the West African Monetary Zone (WAMZ, within ECOWAS)⁴¹ and
- the Southern African Customs Union (SACU, within SADC).⁴²

Beyond these are another fifteen or so further regional economic groupings which involve some African countries. These include the Indian Ocean Commission, the Economic Community of the Great Lakes Area and the Greater Arab Free Trade Area (which includes non-African members). Altogether, African countries hold membership in some 30 regional economic associations, with varying membership requirements and obligations, each of which requires government time and resources. This is a more complex pattern of regional association than those found in other world regions and imposes significant administrative burdens on the limited resources of many African countries.

The current state in development of Africa’s RECs and REC subgroups towards AEC objectives varies significantly, as illustrated in Table 1.1.

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³⁹ www.cemac.int
⁴⁰ www.uemoa.int
⁴¹ www.wami-imao.org
⁴² www.sacu.int
Table 1.1: African Regional Economic Communities, subgroups and current status

<table>
<thead>
<tr>
<th>REC</th>
<th>Sub-REC association</th>
<th>Member-countries</th>
<th>Free trade area</th>
<th>Customs union</th>
<th>Common market</th>
<th>Economic &amp; monetary union</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMU</td>
<td>5</td>
<td>Not yet established</td>
<td>Not yet established</td>
<td>Not scheduled</td>
<td>Not scheduled</td>
<td></td>
</tr>
<tr>
<td>CEN-SAD</td>
<td>25</td>
<td>Not yet established</td>
<td>Not yet established</td>
<td>Not scheduled</td>
<td>Not scheduled</td>
<td></td>
</tr>
<tr>
<td>COMESA</td>
<td>19</td>
<td>Established in 2000 with 14 participating countries</td>
<td>Launched in 2009 with three year transition period</td>
<td>Not scheduled</td>
<td>Proposed for 2018</td>
<td></td>
</tr>
<tr>
<td>EAC</td>
<td>5</td>
<td>Established</td>
<td>Established</td>
<td>Agreement ratified 2010; five year transition</td>
<td>Scheduled for 2012</td>
<td></td>
</tr>
<tr>
<td>ECCAS</td>
<td>10</td>
<td>Not yet established</td>
<td>Not yet established</td>
<td>Not scheduled</td>
<td>Not scheduled</td>
<td></td>
</tr>
<tr>
<td>CEMAC</td>
<td>6</td>
<td>Agreed but implementation delayed</td>
<td>Established</td>
<td>Freedom of capital in place</td>
<td>Monetary union with common currency</td>
<td></td>
</tr>
<tr>
<td>ECOWAS</td>
<td>15</td>
<td>Established, but with limitations</td>
<td>Not yet established</td>
<td>Initial steps re freedom of movement</td>
<td>Proposed for 2018</td>
<td></td>
</tr>
<tr>
<td>UEMOA</td>
<td>8</td>
<td>Established</td>
<td>Established</td>
<td>Initial steps re freedom of movement</td>
<td>Monetary union with common currency since 1994</td>
<td></td>
</tr>
<tr>
<td>WAMZ</td>
<td>5</td>
<td>As in ECOWAS</td>
<td>As in ECOWAS</td>
<td>As in ECOWAS</td>
<td>Proposed for 2012</td>
<td></td>
</tr>
<tr>
<td>IGAD</td>
<td>7</td>
<td>Not yet established</td>
<td>Not yet established</td>
<td>Not scheduled</td>
<td>Not scheduled</td>
<td></td>
</tr>
<tr>
<td>SADC</td>
<td>15</td>
<td>Established 2008</td>
<td>Launch was due in 2010 but postponed</td>
<td>Proposed for 2015</td>
<td>Proposed for 2016</td>
<td></td>
</tr>
<tr>
<td>SACU</td>
<td>5</td>
<td>Established</td>
<td>Established in colonial period</td>
<td>As in SADC</td>
<td>In progress at practical level</td>
<td></td>
</tr>
</tbody>
</table>

The performance of the RECs has been analysed in a series of UNECA publications, *Assessing Regional Integration in Africa (ARIA)*, four volumes of which have been published since 2004. Overall, these find that the outcomes of integration have so far been disappointing. Integration has moved forward less rapidly than had been hoped, and has not yet had strong impact on African trade performance.

In practice, as can be seen from Table 1.1, four of the RECs - COMESA, EAC, ECOWAS and SADC - have progressed significantly further than their peers - AMU, CEN-SAD, ECCAS and IGAD. Of the latter, AMU has been affected by political differences between member-states and has not participated in the AEC project; CEN-SAD has limited resources and is constrained by extensive overlaps with other RECs; ECCAS has suffered political and financial problems; while IGAD has been affected by regional political instability and civil conflict. Where sub-groups exist, they have generally achieved higher levels of integration than the larger RECs of which they form part.

This differential progress at regional level inhibits progress towards the overall AEC objective. As things stand, it would be both difficult and economically unattractive for the more successful RECs to seek further integration with the less successful RECs (with the possible exception of ECCAS, or at least CEMAC). Doing so

43 The reports can be accessed at http://www.uneca.org/aria/.
would tend to inhibit their moving beyond the level of regional integration which they have already achieved until less successful REC partners had caught up with them.

The establishment of free trade zones in the four fully functioning RECs (though partial in some cases) has had some impact, by eliminating or reducing tariff barriers within REC regions. There is evidence that FTA members in the COMESA region have performed better in regional trade than non-FTA members. As much as 85% of trade within the SADC region is now duty-free, a figure that rises to 98% in the SACU sub-region.\(^44\) Reductions such as these have reduced the relative importance of tariffs as trade barriers within Africa, placing more emphasis as a result on the need to address non-tariff barriers in efforts to improve trade performance. As the World Bank notes:

\[\textit{Whereas customs unions and the creation of a common external tariff were once seen as the leading tools for integration, today the process is more likely to be influenced by easy access to quality input services at low cost; efficient regulations in areas such as product standards and rules of origin; the removal of non-tariff barriers to trade; and, streamlined border management. The formula and toolbox for effective regional integration have therefore changed.}\] \(^45\)

A broad consensus has emerged from UNECA’s and other assessments of the underlying reasons for the strengths and weaknesses of Africa’s RECs. Four principal constraints on REC performance have been identified:

- **Complex and overlapping REC membership** (illustrated in Figure 1.6). Almost all African countries are members of more than one REC. If associations other than AEC-recognised RECs are included, countries average membership of four such entities.\(^46\) Membership overlaps militate against the development of strong regional identities, dissipate the focus of government officials and businesses, deplete administrative resources and create potential conflicts, for example in the application of different common external tariffs or the application of different rules of origin.

![Figure 1.6: Overlapping membership of African RECs](Source: UNCTAD, Economic Development in Africa Report, 2009\(^47\))

\(^{45}\) ibid.
\(^{46}\) African Development Bank, Regional Integration Strategy, 2009-2012.
\(^{47}\) Metzger, Martina, “Regional Cooperation and Integration in Sub-Saharan Africa”
• **Economic factors.** Many African countries continue to have stronger trade and infrastructure links with former colonial powers than they do with neighbour countries. Cross-border transport links are generally poor and there is little trade complementarity between neighbour countries that export similar primary commodities and have limited domestic manufacturing sectors. Economic factors favouring integration are stronger in the more successful RECs – the EAC, for example, can build on the legacy of an earlier East African Community and other common heritage shared by three of its five members; SADC benefits from political links forged during the apartheid era and from the integrative power of South Africa’s regional economic predominance; UEMOA countries share a common currency and other legacies from the period before independence, as do CEMAC countries. Countries in the rest of ECCAS and in IGAD have less in common, much poorer cross-border infrastructure and very low levels of intra-regional trade.

• **Political and administrative factors.** Regional integration requires strong political will and substantial administrative capacity. Political leaders are wary of ceding authority to regional entities, particularly where citizens fear economic dominance by neighbour countries. It is not the RECs themselves but nation-states that have authority over the AEC project as signatories of the Abuja Treaty. The requirements of the AEC timetable are onerous – particularly if it extends to ‘common market’ objectives which include freedom of establishment, capital and labour – but the RECs have very limited central resources to undertake the necessary planning and implementation.

• **Non-tariff barriers.** Regional economic integration is inhibited by a variety of non-tariff barriers – ranging from constraints on trade in particular goods, through rules of origin and sanitary certification, to customs and other border management issues, the high cost of transport and the complexity of transactions. These non-tariff barriers are often not standardised within REC regions. They are discussed further below.

Responding to these challenges, African Union heads of state agreed in 2008 to accelerate the process envisaged in the Abuja Treaty through a **Minimum Integration Programme** for the period 2009-2012. This **Minimum Programme** seeks to help RECs and their member-governments to identify and act upon priorities for accelerated harmonisation and integration at both intra-REC and inter-REC levels. The ICT sector ranks seventh among the sectoral priorities identified in the **Minimum Programme** report, after action on tariff and non-tariff barriers, customs procedures, free movement of goods, services, persons and capital, transport and energy.

The most important recent step towards rationalisation of the REC structure and regional integration was taken in 2008 when the governments represented in COMESA, EAC and SADC entered into a Tripartite Agreement which seeks to draw together their 26 member-countries – almost half of Africa’s total, with about half the continent’s population – into a single free trade area covering all three RECs. The Agreement also set up processes to harmonise legal and institutional frameworks, develop joint infrastructure programmes, permit free movement of labour and services, and prepare common positions in international trade negotiations. The African Development Bank has described this as ‘a major opportunity for concerted effort to

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upscale infrastructure development and trade expansion in the region. However, it is difficult to see how it might be extended to the three less effective adjacent RECs (CEN-SAD, ECCAS and IGAD).

To date, regional integration in Africa has focused on trade in goods, which is directly addressed by free trade zones and customs unions, rather than on trade in services, which is more dependent on common market reforms that are scheduled later in the integration process. Significant further modifications of national regulations will be needed to permit lawyers and accountants, for example, to practice freely within REC rather than merely national borders. Issues such as the free movement of capital and labour, ownership rights over utility infrastructure, mutual recognition of qualifications and the right of businesses based in one REC member-state to establish businesses in other member-states involve concessions of national sovereignty which are likely to be controversial among both politicians and citizens.

Regional integration is not concerned solely with trade, but has wide-ranging implications for Africa’s political and economic development. The potential breadth of integration is indicated in the strategic plans of the four successful RECs. The EAC Strategy, for example, refers to more than fifty different aspects of governance requiring harmonisation as part of integration towards a common market. The oversight of regional integration also requires significantly more devolution of authority from national to regional entities than has occurred to date. This is a daunting programme of work for any group of nations, let alone those with limited government resources.

As will be discussed later in the report, some RECs have established programmes to promote ICT use for trade facilitation, some of which date back for a considerable period. COMESA has been supporting the installation and training of the Automated System for Customs Data (ASYCUDA) for over two decades and has worked closely with SADC on the development of a regional customs Transit Management Information System. ECOWAS has also promoted customs automation in its member states, including interconnection and information sharing between customs agencies. In 2010, ECOWAS Ministers responsible for ICTs approved a US$100 million ECOWAN project to strengthen cross-border information sharing, establish a regional single window, expand the ECOWAS trading opportunities information system (Ecobiz) and set up a Regional Vehicles Administration Information System (RVAIS) aimed at monitoring truck movements. However, the success of RECs in promoting the use of ICTs for trade facilitation has been constrained by prolonged decision-making processes, inadequate coordination, lack of resources to sustain ICT projects, and the limited ability of national governments and other stakeholders to seize the opportunities afforded by the RECs.

These issues are discussed further in Chapter 4.

C - THE CHALLENGES AND OPPORTUNITIES OF TRADE IN AFRICA

The trade challenges which the African continent faces can be divided into four categories. These challenges set the framework within which the role of ICTs in trade facilitation should be considered, clarifying both


53 SADC Regional Development Programme, http://www.sadc.int/index/browse/page/104

opportunities for and constraints on the contribution which they can make. This framework provides an important part of the structure for considering ICT-enabled opportunities that follows in the final section of this chapter and in subsequent chapters.

1. **Structural challenges.** These arise from Africa’s geography, from the characteristics of African economies and from the nature of their participation in increasingly globalised world markets.

2. **Infrastructural challenges.** These arise from deficiencies in the infrastructure assets that enable economic production and trade within and between countries.

3. **Trade process challenges.** These arise from decisions made by governments and other actors about the ways in which trade is conducted, lack of coordination between different actors within the trading environment, inefficient administration, and weak mechanisms for information gathering and sharing. They include tariffs and non-tariff barriers (NTBs), and the trade and transaction costs that result from them. They can be divided into two sub-categories:
   
   a. **Legal barriers,** including tariffs and formal NTB requirements which are instituted in order to meet trade, security or other public policy objectives (such as rules of origin, freight tonnage restrictions and visa requirements).
   
   b. **Bureaucratic barriers,** including inefficiencies resulting from the over-complex or overzealous administration of NTBs and from lack of coordination between different government agencies and other actors in trade management.

This distinction between structural, infrastructural and trade process challenges is crucially important to understanding the potential role of ICTs in improving trade performance. One way of looking at the relationship between them, and their impact on trading capacity is illustrated in Figure 1.7, which shows conceptually how trading opportunities and potential profit margins for trading enterprises are constrained by the cumulative impact of these challenges and the costs arising from them. All of these challenges need to be addressed by governments, RECs and their development partners if the scope for trade – the route from potential exporters to potential markets in Figure 1.7 – is to be widened. The potential role of ICTs must be considered in this holistic context.

**Figure 1.7: Conceptualisation of the relationship between types of challenges in the trade environment**
Structural challenges

Two major structural challenges affect African trade, particularly intra-regional trade. The first concerns the lack of complementarity between available exports and imports. The commodities exported by most African countries are not in high demand amongst their neighbours, while few African countries produce manufactured goods which are in demand within their regions. Even where manufacturing sectors are established, they are likely to be undercut by cheap imports from non-African developing countries such as China.

The second major structural challenge facing African trade concerns the continent’s geography. A much higher proportion of African countries are landlocked than in other world regions, while substantial parts of the territories of some countries (such as DRC) are effectively landlocked because export routes through other countries are more reliable than those to coastal ports in their own territories. The continent’s sixteen landlocked countries can only gain access to the global markets to which they primarily export by traversing other national territories. As a result they face higher transport and transaction costs, including those incurred at border crossings, adding to administrative burdens on trading businesses and reducing their competitiveness. Median landlocked country transport costs are estimated to be 46% higher than those for coastal countries. Landlocked countries also tend to have poorer access to infrastructures which have been extended inland from the coast, including both transport and communications networks, while many land borders are affected by political instability and/or hostility between national governments.

Landlocked status can be regarded as an opportunity as well as a problem. If the infrastructural weaknesses and associated costs were substantially reduced, then landlocked countries could become significantly more competitive, opening up new opportunities for potential exporters. ESCAP and other international agencies have described this as an aspiration to turn landlocked into ‘land-linked’ countries, able to leverage higher rates of growth in trade (and greater developmental gains) as they take advantage of reduced trade costs to catch up with coastal neighbours.

Infrastructural challenges

The second major group of challenges for African trade concerns infrastructure, particularly transport (roads, railways, ports and airports), power and communications infrastructure.

There are five main challenges where transport infrastructure is concerned.

- Transport routes in much of Africa are still aligned with historic (colonial era) patterns of trade and poorly suited to meet the potential for cross-border trade within the continent.
- Road infrastructure is often inadequate to meet current, let alone increasing, levels of freight and non-freight traffic (e.g. single carriageway highways) and is poorly maintained, leading to congestion, delays and increased costs.
- Roads are often blocked by legal and illegal checkpoints. These not only delay traffic, but also increase trade costs through bribes, theft of goods and other rent-seeking activity. It was reported in 2009 that there were 34 roadblocks between Lome in Togo and Ouagadougou in Burkina Faso, a West African trade route of less than 1000 kilometres.

• Rail infrastructure is very limited in Africa, generally poorly maintained and inefficiently managed.

• Port and border crossings are often inadequate to meet current, let alone increasing, levels of traffic, discouraging the movement of goods, people and vehicles – a problem exacerbated by inefficient and/or over-bureaucratic border processes.

Power infrastructure is also generally inadequate and poorly managed in Africa. The majority of countries suffer serious energy shortages, which have been exacerbated by limited investment in power generation at a time of unprecedented growth in electricity consumption and demand. Power blackouts often halt the supply of electricity and interrupt the production of goods and the flow of information that underpins the trade supply chain.

Telecommunications infrastructure was, until recently, available only in urban areas and along transport corridors but has now become much more widely available, though broadband connectivity is still limited and there are continuing problems where national communications networks intersect at border crossing points, particularly in remoter regions. The quality of networks is still poor in most countries, often constrained by intermittent power supply and inadequate technical capacity. This constrains the extent to which ICTs can be relied upon in some trade facilitation contexts.

Addressing structural and infrastructural challenges

These underlying structural and infrastructural challenges require strategic economic interventions at both national and regional levels – interventions which need to be embedded at the heart of national and regional development strategies.

The failure of most African countries to develop significant manufacturing sectors for example, is rooted in more general weaknesses of African economies. Many domestic markets are too small, with populations too poor, to sustain the production of mass market goods at competitive prices, particularly when these are produced at high volumes in countries such as China. Small businesses in Africa find it difficult to obtain capital for investment and expansion. There are significant costs for entrepreneurs in moving from the informal to the formal sector, in taxation, regulation and the simple task of establishing a business entity. The World Bank’s 2009 Doing Business report estimated that, while it took only six days to fulfil the requirements to start a business in Mauritius, it took as many as 155 days in DRC and 233 days in Guinea-Bissau.58 Levels of educational attainment in Africa are lower than in other developing regions, leading to skill shortages for entrepreneurs seeking to develop and market products. While there are many examples of dynamic entrepreneurship in Africa, these constraints are important inhibiting factors to the development of more extensive local production, for either domestic or export markets.

Changing the nature of African production can only be addressed by long-term large-scale measures that seek to diversify output (and thereby exports) away from commodities towards a wider range of goods and services. Investing in infrastructure and education on the necessary scale requires long-term large-scale strategic planning and resources from national and international sources.

These structural and infrastructural dimensions of Africa’s trade challenge are not strongly susceptible to ICTs. However, ICTs can make a contribution to the long-term policy frameworks that are necessary in order to transform the overall social and economic development environment. The following are three examples of ways in which ICT initiatives can form part of overall development strategies to address these structural challenges. These are not the principal subjects of this report, but should be borne in mind as part of the overall relationship between ICTs, trade and economic development.

a) ICT-enabled business development can be incorporated in national strategies for economic diversification. One prominent example of this is the encouragement of call centres and business process outsourcing (BPO) in Kenya, where it forms an important part of the country’s national ICT strategy.\(^{59}\) Success in the BPO sector, however, requires more than high-quality, low-cost ICT infrastructure. It also depends on complementary factors such as the availability of suitably skilled workers, with relevant language qualifications, who will accept lower wages than those in outsourcers’ home markets or alternative BPO suppliers. Experience in countries which have been more successful in this area – such as Egypt, Morocco and Tunisia – suggests that it is important to develop specialised niche areas of activity that create the platforms for securing further opportunities.

b) Transport corridors, which are being implemented in Africa to reduce the costs to landlocked countries of routing goods from production area to port, rely not just on improved transport infrastructure but also on improvements in the efficiency of trade management, on the efficient flow of goods, people and (especially) payments, and on coordination between government agencies in different countries in order to achieve desired benefits. ICT-enabled innovations that support the role of transport corridors are discussed in Chapter 2.

c) ICT infrastructure and services themselves enable economic development and entrepreneurial innovation. The spread of wireless networks into areas which previously had no telecommunications infrastructure has changed the business relationships between small producers, their suppliers, intermediaries and customers, for example by giving farmers access to information on inputs, production options and market prices.\(^{60}\) The advent of mobile transactions has made it easier for small businesses to manage cashflow and improved access to credit or capital from family members. Larger businesses have been able to market themselves online and shift towards e-commerce business models. The adoption of electronic commerce and related standards for digital business has created opportunities for the facilitation of trade documentation as well as of transactions. Lastly, the continuous development of new ICT services and applications creates opportunities for local ICT companies, which are the subject of another study in the Transformation Ready programme.

High expectations have been raised of the potential value of mobile telephony and mobile internet in extending opportunities for small businesses in Africa. Some international studies have suggested significant associations between network access and broadband infrastructure, on the one hand, and GDP growth rates on the other,\(^ {61}\) though the strength of these analyses is affected by problems of reverse causality and they require further corroboration. Strategies for overall economic development increasingly and rightly pay attention to the potential contribution of ICT networks and services for future growth. However, as UNCTAD emphasised in its 2010 Information Economy Report, ICT policy should not be seen in isolation here, but as an integral part of development planning, integrated in particular with strategies for education, entrepreneurship and innovation.\(^ {62}\)


Trade process challenges

The third main category of challenges to Africa’s trade performance, which is concerned with the process of trade, is much more susceptible to ICT-enabled interventions than the structural and infrastructural challenges described above. The costs and delays in trade flows which undermine trade performance can be ascribed to two main causes:

- **Legal constraints, including tariffs and formal non-tariff barriers (NTBs).** Tariffs are charges levied on traded goods, particularly imports. Formal non-tariff barriers are regulations governing trade which are imposed by government agencies. These include prohibitions and quotas, import licensing requirements, rules of origin and sanitary standards. Many are important trade management mechanisms which aim to secure public health and other public policy objectives. Not all, however, are necessary. Trade can be artificially and adversely constrained by costs and delays where NTBs are imposed unnecessarily or inappropriately.

- **Bureaucratic constraints, resulting from inefficiencies and lack of coordination.** These barriers arise from poor management practice along the supply chain, particularly in the way that formal NTBs are administered. They include barriers such as roadblocks and inspection arrangements, complex requirements for data entry and delays in documentation, processing times for customs release and waiting times for laboratory results at entry/exit points, and lack of coordination between government agencies.

The World Bank has listed the most important (and so deleterious) non-tariff barriers in Africa as being:

- inefficiencies in transport, border management and logistics;
- cumbersome financial arrangements;
- restrictive rules of origin;
- poorly designed technical regulations and standards;
- and other non-tariff barriers ... such as import bans, permits and licensing.  

The trade costs arising from these barriers affect trading businesses adversely in four main ways:

1. They incur direct costs in the form of fees, licences and (in some cases) bribes required in order to obtain necessary certificates and other documents.
2. They incur administrative costs (such as staff time) in managing documentation and other requirements of trade management.
3. They incur both direct and indirect costs (for example, warehousing costs and drivers’ wages and the impact of unpredictable delivery times) as a result of inefficient and uncoordinated transport logistics, border management and cross-border processes.
4. Higher levels of risk, uncertainty and management complexity than those incurred in domestic (in-country) markets deter businesses from exporting at all or entering new export markets.

Higher trade costs add to the price of traded products and make them less competitive in the markets into which they are imported, so reducing sale volumes and profit margins. However, they do so without adding to the value to producers of making and selling the goods concerned, making exports less attractive within their business models relative to domestic sales.

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Africa experiences higher average trade and transaction costs than other world regions. The impact of costs arising from NTBs and inefficient trade arrangements can be illustrated by indicators of trade performance which have been developed by the World Bank, such as its Logistics Performance Index and the annual *Global Doing Business* report.\(^{64}\) Rankings for these indicators indicate that there are particular disadvantages for low-income countries where tariff barriers and NTBs are high. Figure 1.8, derived from the *Global Doing Business Report* for 2011, shows that, on average, sub-Saharan African countries rank lowest among world regions in ‘the ease of doing business’. The worst performers where trading across borders was concerned were the Republic of Congo (Brazzaville), Burkina Faso, Burundi, Niger and the Central African Republic.\(^{65}\)

![Figure 1.8 – Average rankings on ‘business-friendliness’, 2011](http://www.doingbusiness.org/~media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB11-FullReport.pdf)

Tariffs have been significantly reduced within the continent in recent years following the introduction of free trade areas in some of the RECs. As a result, non-tariff barriers have become substantially more important cost factors for African exporters, and the main focus of efforts at trade facilitation, including facilitation through the use of ICTs. Trade facilitation measures are particularly concerned, in this context, with reducing barriers in three main areas – cost, time and (un)reliability.

**Stakeholders in the trade environment**

Before looking in more detail at the way in which these non-tariff barriers affect the supply chain, it is useful to clarify the range of stakeholders that participate in trade management and in individual trade transactions.

Trade systems are complex and have many different stakeholders. Trade itself is intrinsically a matter of relationships. The central relationship in any transaction is that between the principals, i.e. the supplier and

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purchaser of the goods that are being traded. That relationship is bounded around by other relationships and interfaces which are necessary for goods or services to be transferred between the principals. These include those between traders in goods and the original manufacturers, farmers or other producers of the goods or services themselves — and, at the other end of the supply chain, between the purchasers of goods or services and the retailers or customers to whom they in turn sell them on. In between, both suppliers and purchasers interface with other businesses hired to perform different functions along the supply chain, such as shipping agents, freight companies, truck drivers, banks and insurance companies. The result is a highly complex web of relationships, the quality of each of which may facilitate or delay the process of trade or the progress of a consignment.

Suppliers and purchasers of goods also interface with a variety of government departments and agencies, such as those responsible for health and safety, for regulating competition and for collecting business and personal taxation. Even in domestic trade, the number of these agencies can be significant. Where business is conducted internationally, domestic government/business interfaces are joined by national border agencies for customs, immigration, security, and a variety of regulatory inspections (for health and safety, dangerous goods, compliance with non-tariff formalities such as rules of origin, and quarantine). Those interfaces occur on both sides of every border — land, sea or air — that is crossed by a consignment; and they occur between government agencies with comparable responsibilities on either side of any border.

The complexity of the resulting web of stakeholder relationships is illustrated conceptually in Figure 1.9. This also indicates the location or potential location of critical single window interfaces in trade management, a critical area for the use of ICTs in simplifying and facilitating cross-border trade.

**Figure 1.9: Stakeholder relationships in the trade environment**

Each and every one of the interfaces between the principals and other stakeholders illustrated in Figure 1.9 involves some kind of transaction, often but not always financial. There are also important interfaces between other parties, for example between hauliers and government agencies, which are likewise often but not always financial. The principals have only limited influence over these third party transactions.

These interfaces can be categorised in three major groups:
• Interfaces along the route of the supply chain between the suppliers, shippers and purchasers of goods and services, including those between:
  o supplier and purchaser (including transactions)
  o supplier, purchaser and financial institutions (responsible for payments)
  o supplier and freight transit businesses in country of origin and country of transit,
  o supplier and freight forwarding businesses responsible for shipping the consignment by sea or air, and
  o customer/purchaser and freight transit businesses in country of final destination.
• Interfaces between businesses and government agencies, including those between:
  o supplier, customs and other border officials in a) country of origin and b) country of transit
  o customs officials and other border officials in a) country of origin, b) country of transit and c) country of final destination
  o freight drivers and immigration officials and land border points, and
  o customer/purchaser and border officials in country of final destination
• Interfaces between different countries, including:
  o border officials in country of origin and their peers in country of transit and country of final destination.

Much of the potential for ICTs in trade facilitation lies at these interfaces, in reducing the inefficiencies that occur within them as a result of poor management and lack of coordination, and thereby reducing the burdens of cost, time and unreliability.

Identifying trade and transaction costs

There are a number of ways of analysing the causes of trade and transaction costs incurred at these interfaces, whether in Africa or elsewhere. For illustrative purposes, however, a good starting point is to consider the progress of an export consignment along the supply chain from supplier to end-recipient (or customer). This supply chain model also provides a useful framework for assessing where ICT-enabled interventions are likely to be effective.

There are three main stages involved in a trade transaction from the point of view of the principals concerned (the supplier/exporter and the recipient/purchaser):

a. the initial negotiation between purchaser and supplier to arrange for purchase of the goods;
b. the despatch and transit of those goods from supplier to purchaser;
c. and the final settlement of payment by the purchaser to the supplier.

The supply chain is mostly concerned with the second of these, the transit of goods between supplier and purchaser once the order for goods has been negotiated and before the final payment becomes due. Figure 1.10 illustrates the supply chain for a consignment which has been ordered by a purchaser outside Africa from a supplier in a landlocked country on the continent. The consignment illustrated here is first transported by land (road or rail) from its place of origin in a landlocked country (for example Uganda) to its port of departure in a neighbouring country (for example Kenya). This may involve one or more freight hauliers. It is then transported by sea or air to its destination country (for example Spain), and finally by land again within the destination country, where transport will be arranged by the purchaser rather than the supplier.

Figure 1.10: Supply chain model
The consignment must traverse three border crossings during this journey – that between the landlocked country of origin and its neighbouring coastal country (Uganda and Kenya), where there will be usually be two border crossing points involved, one in each national territory; the exit sea or airport from this coastal transit country (Kenya), and the entry sea or airport in the destination country (Spain). At each of these border crossing points, it will be subjected to a variety of border management processes, usually involving customs, immigration (for freight drivers), quarantine and security, which will be more extensive at entry points than at points of exit. Freight agents and other businesses will be involved in handling the cargo as it moves from one transport operator to another. Some of the main actors in the trade management process for this consignment are illustrated in the development of the process diagram in Figure 1.11.

Figure 1.11: Supply chain model with actors at key points

This is a highly complex set of processes, which requires extensive documentation and many interactions between different parties – the supplying company; freight businesses, forwarders and commission agents; warehousing agencies en route and at borders; customs, immigration, quarantine and security agencies in three separate countries; shipping and or airline businesses; and the final purchaser/recipient of the goods concerned. Transactions associated with the consignment include not just payment for the goods themselves but also payments to hauliers and freight handlers, customs duties and other fees, insurance charges and contingency costs (perhaps including bribes). In addition to these necessarily involved actors, an individual consignment may meet with official and non-official actors such as traffic police and those running official and non-official roadblocks as it proceeds along the supply chain.

It is easy to see from this account how costs accumulate within the trade management process – including charges for services and fees levied on transactions, costs arising from time spent completing and exchanging documentation, delays resulting from poor road maintenance and traffic congestion and from uncoordinated border clearance processes (requiring warehousing, additional payments to drivers, etc.) As well as direct costs, such as fees, each and every one of these points of interaction between steps of the process and/or between different actors within them causes delay, which adds further cost, making the transaction more expensive and the goods supplied less competitive than alternatives that could be supplied from other countries. Delays are particularly problematic in the case of perishable goods. Their negative impact can be compared with that of friction between the moving parts of a physically engineered system.

The accumulated trade costs resulting from the friction at these points of interaction make up a significant proportion of the total price paid by the purchasers of goods, whether the purchaser in question is buying goods exported from an African country or importing goods into that country. The extent of the inefficiencies causing this friction is therefore critical to the viability of an individual transaction or, as transactions accumulate, to a particular trade route. Where alternatives are available, trade is likely to move to more efficient, better coordinated routes; where it is not, then traders are compelled to incur what amount to monopoly routing costs. Any measures that reduce these trade costs are beneficial to traders and likely to enhance trade, which is the purpose of trade facilitation.
These issues are particularly important in the case of light manufacturing industries such as apparel, leather goods, manufactured wood and metal goods, and some agri-business products. The low labour costs and abundant raw materials which characterise these sectors mean that they have significant potential to enhance African participation in global trade, contributing to both individual livelihoods and national economic growth. However, these competitive advantages are undermined by high trade costs.

This can be illustrated from a recent case study in Ethiopia, which has been reported by the World Bank. The study showed that poor trade logistics – slow access to letters of credit, long customs delays, difficult access to foreign currency, etc. – were important constraints on the development of the apparel industry in that country. Evidence from other sectors showed that these difficulties intersect with other, structural economic constraints. Farmers involved in agri-business, for example, also faced problems because of high input prices, poor roads and the lack of linkages between farm production and downstream processing and marketing. Wood and metal goods producers had problems obtaining financial capital. Improvements in trade logistics will not solve difficulties like these on their own, but they can and should be a significant part of broader initiatives that governments and other stakeholders take to address the challenges facing small-scale domestic manufacturers in Africa.

**Trade facilitation**

The principal value of a process engineering diagram such as that above is that it provides a tool that actors in the trade process can use to identify where friction/delay/cost occurs, to assess its scale, and to consider how it might be curtailed in order to reduce overall trade and transaction costs and improve competitiveness. Identifying such barriers is the necessary first step in trade facilitation and therefore in identifying points of intervention which would be most susceptible to ICTs.

The World Trade Organisation has defined trade facilitation as ‘the simplification and harmonisation of international trade procedures,’ including ‘activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade.’ Many organisations have elaborated on this definition in different ways, without substantially changing its key message. UNCTAD, for example, has usefully divided trade facilitation into three main areas of activity:

- **Simplification** – defined as the process of ‘eliminating all unnecessary elements and duplications in formalities, processes and procedures’;
- **Harmonisation** – defined as the ‘alignment of national procedures, operations and documents with international conventions, standards and protocols’; and
- **Standardisation** – defined as the process of ‘developing internationally agreed formats for practices and procedures, documents and information.’

The first of these – simplification - is essentially concerned with efficiency gains derived from better management practice, the second and third – harmonisation and standardisation - with efficiency gains derived from better coordination between different actors within and between national trade environments.

From the point of view of trading businesses, trade facilitation should reduce the costs and inconvenience of doing business, the delays experienced at different points along the supply chain, and the risks associated with exporting goods and services. From the point of view of governments, trade facilitation should enable higher performance levels to be attained by border agencies (customs, immigration, quarantine/inspections and

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security), so achieving more revenue and increased security at lower cost. By reducing trade barriers, it should also encourage higher volumes of trade, resulting in benefits from increased productivity, from the growth of markets and export earnings and from increased employment. It is in this task of expediting supply chain processes, reducing the level of friction at critical points along the chain and reducing the risks associated with cross-border movements of goods, people, vehicles and payments, that ICTs can play their most important role.

If is relatively easy from a business perspective to identify the major points within the supply chain at which inefficiencies and lack of coordination cause friction, delays and costs. These friction points (Challenges) are identified in the second row from the top of Figure 1.12, together with some of the most significant ways in which they can be addressed (Opportunities, top row).

![Figure 1.12: Supply chain model with challenges and opportunities](image)

Earlier in this section a distinction was drawn between legal and bureaucratic barriers to trade, the former consisting of tariffs, rules and regulations, the latter of inefficiencies due to poor management and lack of coordination. The two are strongly related, but distinct. ICTs can play a supportive role in addressing legal barriers, but it is the latter, bureaucratic barriers that are more susceptible to ICT-enabled interventions.

The adoption of common standards and documentary formats across borders and within regions, for example, tends to simplify trade processes and thereby facilitate intra-regional trade. The fundamental reason for adopting common standards and formats is to simplify processes at border crossings and other points along the supply chain. However, standardised formats are ideally suited to digital transmission and data-sharing, and the potential for implementing ICT applications is a strong additional driver in favour of standardisation.

International trade agencies strongly recommend that standardisation and simplification of processes should precede the deployment of ICT applications, to avoid the risk that those applications merely automate inefficient and unnecessarily complicated systems, with less benefit accruing to trading businesses.  

D - ICTs AND TRADE FACILITATION

Information and communication technologies (ICTs) include electronic and digital networks, hardware (equipment), software and applications which enable users (individuals and businesses) to access information, entertainment and other resources. The range and reach of ICTs in all societies, including Africa, has extended greatly in the last two decades, as a result of innovations in technology (notably mobile wireless technology), increased network capacity and lower costs for the deployment of networks and services. As a result, telecommunications in Africa has been transformed from a high-cost service available only in certain locations and affordable only to large organisations and rich individuals, into a mass market service which is available in the large majority even of rural areas. The *Transformation Ready* programme is concerned with identifying

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69 This has been stressed consistently since the pioneering discussion by Robert Schware and Paul Kimberley in *Information Technology and National Trade Facilitation - guide to best practice*, World Bank, 1995.
ways of leveraging that technology and market transformation to achieve comparable transformation in social and economic development.

The linkages between ICTs and business activity are many and various. They include trade in ICT goods and services themselves (computer hardware and software, telephony and internet access, business process outsourcing, etc.), the use of ICTs in facilitating domestic and international business deals, and the use of ICTs for facilitating trade across borders (customs clearance, port management, interconnecting border management agencies), which is the principal theme of this report. The relationship between ICTs and trade, and between ICTs and regional integration, is bi-directional. ICTs can stimulate trade and regional integration (through cross-border connection, trade facilitation, data sharing, improvements in security, etc.). Regional integration also creates new platforms for ICT development and use (e.g. regional research and education networks, which are discussed in the education component of the Transformation Ready reports).

The principal concern of this report is with trade facilitation and associated regional integration. It is important, however, to understand this within the broader context of ICT-enabled business activity in Africa.

- The ICT sector itself is an increasingly important business sector throughout Africa, generating revenues and creating employment through the sale of hardware (computers, mobile phones, etc.), software and applications, and particularly from the use of mobile telephony and the internet. Many jobs have been created, for example, through the sale of airtime and the establishment of cybercafés. The ICT sector has also had a significant impact on regional integration, through the emergence of regional services (such as low-cost cross-border roaming), regional network operators and regional regulatory associations.

- Governments and businesses in Africa have been attracted by the opportunities to develop trade in ICT goods and services, in particular in the global IT Enabled Services (ITES) sector, including business process outsourcing. This interest has grown as international bandwidth has become cheaper. McKinsey estimates that the annual addressable market for IT services and ITES in 2008 was some $500 billion, but that less than 20% of that market was exploited. Countries that participate in trade in ITES compete on the basis of human capacity and skills, cost advantages, infrastructure and an enabling policy, regulatory and business environment, all of which need careful nurturing in Africa. ICT-related trade is also governed by obligations under a number of agreements, including the General Agreement on Trade in Services (GATS).

- Wireless technologies such as mobile phones and the internet provide platforms for applications that give access to information and other resources to trading businesses in developing countries. On rural farms and in urban trading communities alike, small-scale enterprises use these, particularly mobile telephony, to manage their supply chains, reduce input costs, maintain and extend customer relationships and find the best markets for their goods. In Senegal for example, Manobi, a joint venture run by French and Senegalese entrepreneurs, gathers information on the prices of foods being sold in markets in and around Dakar and uploads them to its central database using mobile phones. Farmers in the field then use their mobile phones to establish where they will obtain the best price before taking produce to market.

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This report is primarily concerned with a fourth major impact of ICTs on business activity, the facilitation of cross-border trade by reducing trade and transaction costs and promoting regional cooperation and integration. ICTs are important tools for achieving this because they enhance transparency, enable consistency and support simplification of processes and data sharing. As Chapter 2 will show, they can play an important part in improving the governance and efficiency of trade flows, facilitating logistics and distributing information within and between trading communities.

There are two natural starting points for describing the main potential impact of ICT in facilitating trade:

- the barriers that affect trade flows and undermine the competitiveness of trading businesses in Africa, which are susceptible to ICT-enabled interventions; and
- the potential which ICT-enabled interventions have to improve human and organisational performance in trade and other development domains.

Figure 1.13 illustrates how ICTs can open up the space and reduce the bottlenecks restricting trade flows between potential exporters and potential markets. At the same time, it recalls that there are limits to what trade facilitation, with or without ICTs, can achieve in Africa. As discussed earlier in this chapter, African trade performance is constrained by structural and infrastructural barriers as well as by barriers associated with trade processes. If opportunities for trade are to be widened further, and in particular if opportunities created by ICT-enabled trade facilitation are to be fully realised, governments, RECs and IFIs also need to take action which will address these structural and infrastructural barriers.

Figure 1.13: The impact of ICTs in trade facilitation

The bureaucratic barriers which are experienced by African traders and which occur at different points along the supply chain can be divided into two groups.

- Firstly, there are **inefficiencies in the way that individual processes are undertaken**, in particular the need for repetitive entry of consignment data, multiple documentation, repeated inspections of goods at different points along the supply chain, etc. These can result from poor management but are also inherent in paper-based administrative processes.
• Secondly, there are inefficiencies due to lack of coordination between different actors, particularly government agencies at entry/exit points, where the most serious delays experienced by trade consignments generally occur. Poor coordination between agencies at border crossings means, for example, that progress through them cannot be scheduled to minimise clearance times.

The consequences of these inefficiencies result in three main problems for traders, which are concerned with:

• cost, resulting from tariffs and non-tariff barriers, including fees, burdensome and inefficient processes and unnecessary levels of inspections and bureaucratic intervention;

• delay to the speed at which transactions can be conducted and goods conveyed from supplier to consignee, often leading to additional costs in transport, warehousing, etc.; and

• unreliability, as the accuracy of information exchanged between trading businesses, government agencies and other stakeholders in the trading process is adversely affected by repetitive manual entry.

One further barrier to participation in trade, especially where new markets are concerned, is lack of information about customs and other trade management requirements and about market opportunities in potential export markets.

There is a strong correlation between these challenges and the potential which ICTs have to enhance organisational behaviour and business performance. In trade, as in other sectors, this potential is rooted in three core qualities of information technology which enhance human and organisational capabilities.

• ICTs enhance efficiency because they enable data to be collected, stored, analysed, replicated and distributed on a scale and with a speed which could not previously be attained, and with much lower error rates than could be achieved manually.

• They enhance coordination because they enable data to be shared, accurately, both instantly and over time, across large groups of users, with varying degrees of data privacy and security, in many cases without the need for human intervention.

• They enhance information and knowledge because they enable access to a much wider range of information resources than was previously available even to highly-equipped specialists, through devices which are becoming cheaper and more widely distributed, so improving the quality of decision-making and participation by people and organisations in decisions that affect their lives and livelihoods.

In the context of trade facilitation, the impact of these core qualities of ICTs can be summarised thus:

• ICTs improve the efficiency with which trade interfaces and transactions are handled, reducing the cost of human interfaces and eliminating both delay and the potential for corrupt interactions between traders and officials.

• They improve the coordination that can be achieved between different actors in the trade management process, particularly between government agencies within and across borders and within communities of business and government stakeholders.

• They improve the information and knowledge which trading businesses can acquire of trade processes and markets, enabling them to manage their consignments more efficiently and to enter new markets at lower risk.
The critical contribution which ICTs make to trade facilitation is achieved through data-sharing - the way in which they enable more, and more accurate, information to be used by more actors at more points along the supply chain, with much less human intervention and many fewer data entry points. Most of the ICT-enabled trade facilitation applications which are discussed and illustrated in Chapter 2 derive their potential value from more efficient data entry and from data-sharing. The concept of a ‘single window’ is increasingly used to describe this mechanism, particularly where data-sharing applications are drawn together along the supply chain, and provides an overarching framework for the analysis in Chapters 2 to 4 and the recommendations in Chapter 5 of this report.

Looked at in this way, it is possible to identify two clear objectives for ICTs in trade facilitation, which can be summarised as being:

- to use ICTs to improve the efficiency and coordination of trade management and trade processes in ways that improve reliability, reduce costs, and expedite the flow of goods, people, vehicles and money along the supply chain; and
- to increase the information resources available to trading businesses;

with the overall aim of thereby increasing the volume, profitability and developmental contribution of trade to African businesses and communities.

The following questions arise from this discussion and are addressed in Chapters 2 to 5 of this report:

- What measures can be taken to improve the efficiency of administration and transactions, for all parties (government and business) by introducing ICTs (particularly data-sharing) into different aspects of trade management?
- What measures can be taken to improve coordination and the ability to make transactions between different actors (business/government, intra-government and inter-government) by introducing ICTs?
- What measures can be taken to improve the knowledge which business actors have of markets and trade management requirements through the use of ICTs?
- What quantifiable benefits are likely to result from these measures and what targets should therefore be set for trade facilitation outcomes?
- What organisational changes and human resource improvements are required to leverage full value from these measures and achieve these targets?
CHAPTER 2 – LANDSCAPE ANALYSIS – ICTs AND TRADE IN AFRICA

This chapter of the report uses the supply chain model set out in Chapter 1 as the basis for illustrating approaches to the use of ICTs in trade facilitation that have been adopted in Africa and other world regions. The aim is to survey the landscape, describing interventions which experience and international analysis suggest have potential for enabling significant improvements in trade outcomes, and therefore merit investment by governments, RECs and IFIs. These interventions are illustrated by examples from Africa and elsewhere, which provide supporting evidence for the approaches which have been deployed - though it should be noted that many of them are too recent to have been the subject of thorough evaluation, and that many of their impacts will be closely related to national context.

A long-term transition can be discerned in the ways in which ICTs are being used in trade facilitation around the world. In the past, ICTs have been used to improve efficiency and coordination at points along the supply chain, in particular by automating customs procedures, enhancing the management and integration of ports and inland transport, and promoting coordination and information exchange amongst key players within particular trading communities, especially government border agencies (customs, quarantine, immigration and security) and the trading businesses with which they interact. Examples of these ICT applications for trade facilitation are described in Section A.

Recently, however, there has been considerable progress towards integrating disparate applications and diverse actors within a single window approach – initially at critical points in the supply chain such as ports and border crossings but also, now, at national and even regional level. The single window approach takes advantage of the capacity of ICT systems to share common data among a wide range of users, making it possible for information to be entered once and then distributed among both businesses and government agencies throughout the supply chain. Such approaches are highly dependent on simplification, harmonisation and standardisation but, where these underpinning factors are addressed, they offer the potential for ICT-enabled trade facilitation to be applied systemically, throughout the supply chain, rather than merely at particular points of impact. Examples of single window applications are described in Section B.

The challenges and opportunities concerning this evolution in ICT-enabled trade facilitation, including the need for standardisation and issues concerned with governance and human capacity, are discussed in Chapter 3.

A- ICT APPLICATIONS FOR TRADE EFFICIENCY AND COORDINATION

The terms of reference for this study identify three areas of trade management in which there has been significant deployment of ICTs to enhance efficiency and coordination. These are:

a) the facilitation of efficient and transparent flow of goods, including customs administration;

b) the promotion of efficient logistics and trade infrastructure; and

c) the facilitation of information systems to document and support trade activity and facilitate the flow of goods and services.

Information flows, which run alongside flows of goods, are central to ICT-enabled interventions in trade management. ICTs are increasingly used to facilitate information exchange between trading businesses, intermediary businesses on which they depend such as hauliers and banks, and government agencies including permit issuing authorities and the four official agencies which are usually represented in border management (customs, immigration, quarantine and security, often collectively abbreviated to CIQS). Efficient information flows facilitate and expedite the flow of goods, people, vehicles and money between trade principals and
across trade borders, and in so doing reduce delays, cut costs and increase reliability. Applications that make use of the capabilities of ICTs are not new – customs automation dates back to the 1980s – but the rapid growth of ICT infrastructure, the development of technology and the introduction of new, more complex applications have given added impetus to ICT-enabled trade facilitation in recent years and offer significant new opportunities.

Table 2.1 sets out some examples of ICT applications for trade facilitation and the stakeholder communities that make use of them. These communities of trade actors – whether within a location such as a port or a system such as customs – are crucial to the coordination of trade and to the development of single windows.

Table 2.1: ICT applications for Trade Facilitation

<table>
<thead>
<tr>
<th>ICT applications</th>
<th>Customs modernisation and trade flows (CMS, RFID)</th>
<th>Logistics and supply chain (CCS, PCS, TMS, TS)</th>
<th>Information and knowledge exchange platforms among CIQS (IBM, NSW, WS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications areas</td>
<td>• Electronic Customs Declaration and processing</td>
<td>• Efficient flow of goods, people and money across border</td>
<td>• Single entry and sharing of data</td>
</tr>
<tr>
<td></td>
<td>• Online approval of permits</td>
<td>• Infrastructure management (port, airport)</td>
<td>• Availability of information on regulations, fees, procedures (WWW and other sources)</td>
</tr>
<tr>
<td></td>
<td>• Detection of fraud</td>
<td></td>
<td>• Information on market opportunities, business products and services</td>
</tr>
<tr>
<td></td>
<td>• Monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examples</td>
<td>• Customs systems – ASYCUDA, GAINDE 2000, 2010, SIMBA 2005</td>
<td>• Cargo Community System</td>
<td>• GCNet – Ghana Single window system</td>
</tr>
<tr>
<td></td>
<td>• GCNET, Trade Mauritius</td>
<td>• Port Community System</td>
<td>• TradeNet – Tunisia</td>
</tr>
<tr>
<td></td>
<td>• SARS modernization programme</td>
<td>• Electronic shipment tracking system (RUFAATRACK)</td>
<td>• TradeNET- Mauritius</td>
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<td></td>
<td>• Revenue Authorities Digital Data Exchange (RADDEX)</td>
<td>• Africa West Cargo (Togo)</td>
<td>• Tradestream (SARS, ZA)</td>
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<td></td>
<td></td>
<td>• DHL and Fedex tracking systems</td>
<td>• NSW (Kenya, Rwanda)</td>
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<td></td>
<td></td>
<td>• e-payment systems - Equity Bank (M-Kesho)</td>
<td>• TradeNet Senegal</td>
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<tr>
<td></td>
<td></td>
<td>• Mobile payment</td>
<td>• Ecobiz</td>
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<tr>
<td>Stakeholders</td>
<td>• Customs</td>
<td>• Shipping agents</td>
<td>• Customs</td>
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<td></td>
<td>• Permit Issuing Agencies</td>
<td>• Customs brokers</td>
<td>• Quarantine</td>
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<td></td>
<td>• Shipping agents</td>
<td>• Storage and warehousing organizations</td>
<td>• Immigration</td>
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<td></td>
<td>• Traders</td>
<td>• Freight forwarders</td>
<td>• Security</td>
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<tr>
<td></td>
<td></td>
<td>• Banks</td>
<td>• Shipping &amp; forwarding agents</td>
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<tr>
<td></td>
<td></td>
<td>• Port tenants</td>
<td>• Banks</td>
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<td></td>
<td></td>
<td>• Truck operators</td>
<td>• Ministries of Trade</td>
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<td></td>
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<td></td>
<td>• Other government ministries concerned with the economy and international relations</td>
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<td>• RECs</td>
</tr>
</tbody>
</table>

Abbreviations in this table are clarified in the text and in the table of abbreviations at the beginning of the report.

Chapter 1 of this report used a supply chain model to illustrate the dynamics of trade processes and management. Figure 2.1 extends that model by illustrating where the most significant points of ICT-enabled trade facilitation tend to occur along that chain.
The main areas of application of ICTs, in the order in which they are considered in this section of this chapter, are as follows:

1) Customs management
2) Trade and transport logistics, including cargo tracking and trade corridors
3) Intelligence-led risk management and inspections
4) Integrated border management (IBM)
5) Integrated cross-border management (ICBM), including one-stop border posts (OSBP)
6) Port and cargo community systems (PCS, CCS)
7) Transaction management
8) Business information resources.

**Interpreting the evidence base**

A word of caution about the use of the material in this chapter is appropriate before beginning to explore the landscape. The examples which follow are intended to illustrate experience in different contexts. While specific examples such as these are useful in illustrating potential, they need to be treated with care.

- Firstly, although there are strong common features to trade challenges and trade facilitation across Africa, which make it possible to apply broad common principles to ICT-enabled innovation, there are considerable variations in individual countries’ economic structures, trade patterns, ICT infrastructure capabilities, skill profiles and security status. The application of ICT innovations of the kind described here needs to be tailored to the circumstances of individual countries. It is particularly important to recognise the differences between Africa’s current trade experiences and those of Asian countries and regions which, for example, export more manufactures and have stronger intra-regional trade relationships.

- Secondly, ICT technology and use are in very rapid change. New infrastructure is continually being deployed, changing the capability of national trade environments to adopt more complex bandwidth-intensive applications. Those applications themselves go through regular upgrades, with each new generation of technology and software offering new capabilities. The exceptionally rapid growth of mobile networks in Africa, and the anticipated rapid growth of internet on the continent, are changing
the modalities of access which are likely to be preferred by system users (particularly as data-sharing becomes more web-based). Yesterday’s experience in one country should therefore be considered cautiously when planning what to do today or tomorrow in another.

- Thirdly, only limited critical analysis and evaluation is available of ICT-enabled trade facilitation initiatives. It is important to guard against assumptions about the impact which systems have had and against the claims that are sometimes made for them by their management teams, for example on their websites. Many systems are relatively new and too little time has passed since their introduction for their impact to be properly evaluated. Older systems have demonstrated substantial impacts using metrics which are inherent in the way they work. These provide positive evidence of impact. However, much less has been done to assess user perceptions of ICT-enabled trade facilitation (in the manner, for example, of the brief survey of Botswana users included in the case study in Annex 4). Original research along these lines is beyond the remit and timescale for this report, but would be valuable in adding greater substance to our understanding of the achievements of customs automation and other ICT-enabled trade facilitation in Africa and elsewhere.

The remainder of this section of the chapter describes the purpose of and experience with different ICT applications in trade in the eight numbered areas of experience identified above. Particular attention is paid to customs automation as this has seen the longest experience of ICT-enabled intervention.

1. Customs management and automation

The automation of customs management has been and remains one of the most important tools for simplifying trade procedures and achieving improvements in timeliness, cost and reliability. The principal functions of customs administrations are to control cross-border flows of goods, ensure compliance with government rules and regulations, collect the duties and taxes that are due to the importing country, and protect against the import of goods and materials that are intended for illegal purposes. They can be seen as the centrepiece of the supply chain which provides the basic framework for understanding ICTs and trade facilitation in this report. Their modernisation – and, in particular, automation – has therefore often been considered critical to improving governance and the efficient flow of goods.

Growing international trade has put additional pressure on customs agencies and substantial reform is underway in many countries to make customs more efficient and effective – with evident improvements in the collection of revenue, facilitation of legitimate trade, community protection and supply-chain security. International standards for customs modernisation are set out in the revised *International Convention on the Simplification and Harmonization of Customs procedures* – commonly known as the Revised Kyoto Convention (RKC) – which was agreed in 1999. This covers the transparency of customs systems, simplification and standardisation of documentary requirements, authorisation procedures and the use of risk management and audit-based controls. It strongly encourages customs administrations to ‘use information technology to support customs operations when it is cost-effective for customs and trade.’

A number of different systems have been developed for customs automation and are in use in Africa, including UNCTAD’s ASYCUDA family of applications and independently developed applications such as GAINDE/SIMBA in Senegal and Kenya, which are discussed in the case studies at Annexes 2 and 3.

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74 The ASYCUDA family of applications is described at http://www.asycuda.org/.
ICT applications facilitating customs have evolved over the past three decades from early computer-driven processes to today’s increased use of the World Wide Web for integration of multiple data sources. The evolution of customs management at global level is illustrated in Figure 2.2.

Figure 2.2: Global customs automation experience, 1980-2010

Africa’s experience with customs automation has also developed over time, but with significant lags behind that of major trading nations, as summarised in the following paragraphs.

**Phase 1 – 1980s – Harmonisation and simplification of procedures**

Few customs administrations in Africa were computerised in the 1980s. The deployment of customs automation on the continent was hampered by the lack of reliable telecommunications networks with relatively low costs. However, there was acknowledgement that African customs administrations should adopt harmonised standards and simplify procedures. The ASYCUDA customs management system was launched by UNCTAD during this period in the ECOWAS region, while some individual countries – including Ghana, Senegal and Côte d’Ivoire – engaged in their own programmes of customs modernisation.

**Phase 2 – 1990s – Automation processes**

The 1990s were the critical decade for the launch of automated customs processes in Africa. Many countries adopted successive generations of the ASYCUDA system during the decade, while others adopted systems of their own devising. However, a lack of skills and resources in the management of automated systems meant that many failed to achieve their full potential or deliver the benefits that had been anticipated. The prospects for countries with higher levels of ICT and customs management expertise were relatively good, in that their systems were able to develop and improve over time. Where countries lacked such expertise, however, systems tended to remain in an early stage of development, with a high degree of dependence on Northern suppliers.

**Phase 3 – 2000s – Trade facilitation and security and web based applications**

Approaches to customs and trade facilitation changed significantly after the events of 11 September 2001. While revenue collection and trade facilitation remained priorities for customs, more attention was focused on the security of the supply chain. The World Customs Organisation (WCO) published its SAFE Framework in
2005 with the aim of bringing these challenges together, reinforcing trade facilitation without jeopardising security.

Most suppliers of systems to implement the new arrangements have been from the West and more recently from Asia, with the examples of Korea and Singapore providing benchmarks in trade facilitation. African customs administrations have obtained support from PSI (pre-shipment inspection) operators to provide non-intrusive scanning and risk assessment tools, though some countries such as Kenya have opted to develop their own capabilities in order to avoid supplier dependency (see below).

Phase 4 – 2010s – Paperless trade and regional integration

Until recently, much discussion about regional integration in trade has assumed that countries will need to move towards the adoption of common systems. Since the end of the last decade, discussion of options has moved from an expectation of uniformity towards one of interoperability. African customs administrations have begun to implement single window processes. Countries using ASYCUDA have migrated from version 2.7 to version ++, while the latest version, ASYCUDA World, was first implemented on the continent in Côte d’Ivoire and is now being used in other countries (see Table 2.3). New applications such as GAINDE/SIMBA, TRADENET and BADR (Morocco) have emerged within the customs management market. The biggest challenge for the new decade concerns how and how far single windows and interoperability can improve customs operations and border cooperation.

There is a significant amount of global experience with the integration of customs and other border management processes into single window systems. Some countries such as Japan have now attained very high levels of integration between customs and other single window functions, and that country’s experience – described in Box 2.1 - can serve to illustrate the potential which can be realised over time as countries implement the automation and single window approach recommended in this report.

<table>
<thead>
<tr>
<th>Box 2.1: Customs management in Japan</th>
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</table>
| Japan’s customs administration uses one of the most advanced electronic trade facilitation systems in the world. The Nippon Automated Customs Clearance System (NACCS) was introduced in 1978 with the establishment of Air-NACCS to process rapidly increasing air cargoes imported through Narita Airport. Sea-NACCS, which processes import/export by sea, was put into operation in 1991. The NACCS provides a system for the completion of administrative procedures, a database for cargo and transport management and a communication network amongst users.  

After full automation of customs procedures was achieved in 1997, priority shifted towards building the interface between NACCS and other relevant trade management applications in order to ensure interoperability. NACCS first interfaced with the Food Automated Import Notification and Inspection Network System (FAINS) operated by the Ministry of Health, followed by the Animal Quarantine Inspection Procedure Automated System (ANIPAS) and the Plant Quarantine Network System (PQNETWORK) operated by the Ministry of Agriculture. These interfaces made it possible to enable procedures for food sanitation, animal quarantine, and plant quarantine, together with customs procedures, to be completed through a single client terminal of NACCS. Subsequently, NACCS interfaced with the Japan Electronic Open Network Trade Control System (JETRAS) operated by the Ministry of Economy, Trade and Industry, which handled trade control procedures. |

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By 2003, the system was ready to be fully integrated and the Government of Japan introduced its Single Window System (SWS). However, the administrative forms of various stakeholders were not harmonised until 2005 when the numbers of forms and terms were reduced from 16 to 8 and from 600 to 200 respectively. During the same year it was also decided to move on to a Next Generation Single Window and a common portal for user-friendly service and efficient single access, which has been operational since October 2008. The evolution of Japan’s single window process is illustrated in Figure 2.3.

Figure 2.3 – Evolution of an integration next generation single window in Japan

The integration of different services and the creation of a single window have resulted in harmonisation and simplification and are said to have reduced the lead time for sea cargo imports from 7 days in 1991 to 2.6 days in 2009. There have also been initiatives to harmonise data exchange between the Next Generation Single Window and single windows in other Asian countries and Australia. The success of the Japanese system owes much to coordination between government agencies, active participation of the private sector and privatisation of the operation of NACCS.

The Republic of Korea’s Customs Service’s Customs Management System, known as UNI-PASS, is another example of a successful customs management system that has been developed in-country. The Korea Customs Service supported the computerisation of customs administration from 1992, and established a fully electronic customs clearance system in 1998. This was then developed into an online customs clearance system in 2005. UNI-PASS integrates seven systems including those for export customs, import customs, tax collection, trade freight management, refund and a unified customs channel. It is an intelligent network that connects to 110,000 customers, including trade and shipping companies, custom services, bonded warehouse and other government institutions, delivering customized information for each company’s needs. Under UNI-


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PASS, it takes less than 2 minutes to clear export customs, 2.5 hours for import customs, 5.2 hours for tariff refunds and 10 minutes to pay taxes, which makes it one of the most efficient customs management systems in the world.\(^{77}\)

However, the implementation of customs automation is complex and can be problematic, as illustrated by the example from the Philippines which is described in Box 2.2.

**Box 2.2: Customs administration in the Philippines\(^ {78}\)**

The Philippines Bureau of Customs is the second largest collector of revenue for the Philippines government, responsible for some 20% of total government revenue. There have been historic problems of corruption in customs administration, which have led to a series of modernisation and anti-corruption programmes dating back to the early 1970s.

As well as reducing opportunities for corruption, reforms have aimed at improving the efficiency of cargo clearance and the effectiveness of revenue collection. These have included a World Bank project to implement IT systems in customs processing during the 1990s, a USAID Economic Growth Technical Assistance programme between 1998 and 2004, and an initial pilot of the World Economic Forum’s Trade Enhancement Initiative. Modernisation projects have included the implementation of ASYCUDA ++, physical modernisation of customs facilities, the introduction of risk analysis and threat assessment procedures, the introduction of paperless, cashless and queueless clearance processes, and partnerships with business associations to assist in customs processing.

While there have been improvements, these cannot be guaranteed and there are suggestions that improvements in policy and practice may be proving difficult to sustain. In an article published in 2004, the President of the Customs Checkers and Representatives Organization reported big reductions in clearance handling processes: “There used to be 52 signatures to release a shipment,’ he said; ‘now we can release a shipment with the signatures of only 3 or 4 Customs officers. This is one thing we could say is a miracle.”\(^ {79}\) On the other hand, a survey of business perceptions of corruption in 2005 found that 65% of respondents considered the Bureau of Customs the most corrupt government agency. They also gave it a -75 net rating for its sincerity in fighting corruption (on a scale of +/-100). These figures did not show significant improvements over those from earlier in the decade.\(^ {80}\)

The following paragraphs identify six areas in which customs administrations make use of ICTs to facilitate trade from their position in the supply chain.

a. **Publication of rules and information concerning tariffs and procedures.**

The publication of rules and information about customs procedures is essential for effective customs administration as it helps to ensure that businesses comply with what they need to do and therefore reduces the requirement for costly and time-consuming inspections. Many customs administrations and trade

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\(^{78}\) USAID, Customs Reform in the Philippines, Improving Efficiency, Effectiveness and Anti-corruption Outcomes, http://www.fsmb.am/Maac/ImprovingEfficiencyEffectivenessAndAnti-CorruptionOutcomes.pdf


facilitation bodies have implemented sophisticated tools for information dissemination, but these have often failed to achieve their potential (or maintain initial momentum) because of lack of capacity to manage content.

One example of a Web-based information management tool of this kind is the LEUK content system in Kenya, which was introduced following implementation of the SIMBA customs management system. The purpose of LEUK is to reduce time spent by clients in consulting customs officials. It has a reference database and search facility to relevant Acts of Parliament, Customs Regulations and Tariffs, and can also make tax computations.

However, introduction alone does not spell success. A LEUK system was implemented, for the same purpose, in Senegal in 2005. In that case, it was little used by traders as a result of poor system implementation. A new version is now on track and will be launched in early 2012 with a more substantial communication plan. If they are to use digital information systems effectively, these experiences show that customs administrations need to recruit information and content management professionals to ensure that material is available and updated as required, and that the information provided meets the needs of trading businesses.

b. Customs operations

Since the 1980s, all customs administrations have introduced at least a minimum level of computerisation or automation. No customs administration today uses only paper systems to process operations. In Africa, however, the process of modernisation has been long and resulted in the adoption of diverse models with varying results.

Most African countries have used UNCTAD's ASYCUDA system to achieve a significant degree of automation. ASYCUDA is a computerised customs management system that covers most foreign trade including manifests and customs declarations, accounting procedures, and transit and suspense procedures. It also generates trade data that can be used for statistical and economic analysis. It is fully compliant with international codes and standards developed by the ISO (International Organisation for Standardisation), WCO and the United Nations. It can be configured to suit the national characteristics of individual customs regimes, national tariffs and legislation. It also provides for electronic data interchange (EDI) between traders and customs administrations using EDIFACT rules (see Chapter 3).

Since its first implementation, ASYCUDA has evolved through three later generations – ASYCUDA 2.7, ASYCUDA++ and (since 2009) ASYCUDA World. Different countries use different generations of the programme. According to UNCTAD, ASYCUDA World will enable greater revenue collection and lower transaction costs than ASYCUDA++, making it a potential showcase for e-government. It is Web-based and will allow customs administrators and traders to handle most of their transactions through the internet.

Currently 31 African countries use ASYCUDA systems, the highest proportion of countries in any world region, and ASYCUDA applications connect 192 physical customs sites with 2,500 computers. The distribution of ASYCUDA systems is summarised in Table 2.3.

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81 Personal interviews
82 http://www.asycuda.org/aboutas.asp
Table 2.3: ASYCUDA and GAINDE/SIMBA systems

<table>
<thead>
<tr>
<th>Countries implemented in Africa</th>
<th>ASYCUDA ++</th>
<th>ASYCUDA World</th>
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</thead>
<tbody>
<tr>
<td>Benin</td>
<td></td>
<td>Burundi</td>
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<td>Botswana</td>
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<td>Congo</td>
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<td>Burkina Faso</td>
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<td>Cote d’Ivoire</td>
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<td>Cameroon</td>
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<td>Djibouti</td>
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<td>Cape Verde</td>
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<td>Liberia</td>
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<td>Central African Republic</td>
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<td>Libya</td>
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<td>Chad</td>
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<td>Mali</td>
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<td>Comoros</td>
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<td>Sao Tome and Principe</td>
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<td>Democratic Republic of the Congo</td>
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<td>Sudan</td>
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<td>Equatorial Guinea</td>
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<td>Ethiopia</td>
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<td>Guinea</td>
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<td>Guinea-Bissau</td>
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<td>Madagascar</td>
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<td>Malawi</td>
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<td>Zambia</td>
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</table>

Countries that have not adopted ASYCUDA can be divided into three groups:

- Some have developed their own solutions. These include Senegal, which developed the GAINDE system as early as 1986 (in operation since 1990), and Mauritius which began with ASYCUDA but has subsequently moved to its own Customs Management System (CMS).

- A second group of countries began with their own systems but have now moved to ASYCUDA because of lack of capacity to maintain alternatives. This group includes Côte d’Ivoire, Tunisia and Cameroon.

- Other countries have adopted proprietary solutions other than ASYCUDA from other countries. Kenya, for example, chose to base its SIMBA system on GAINDE from Senegal, while Ghana has chosen the CMS system from Mauritius. South Africa has adopted a customs management system developed by the South African firm Tatis, while Angola is using one from Crown Agents of the United Kingdom. All of these are

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83 www.asycuda.org
84 See Annex 3.
85 See Annex 2.
using specialist firms with experience in customs management which can be expected to provide systems with a high degree of appropriate functionality and support. Problems are more likely to arise – e.g. with costs and maintenance – if proprietary systems are procured from companies which are not specialised in customs management.

Experience in Ghana, Mauritius and South Africa suggests that countries whose customs administrations perform best, and interconnect best with other administrations, are those which are running their own systems and have a high degree of internal maintenance capacity. These countries are better able to customise their systems according to needs. However, careful consideration needs to be given to system selection based on a variety of factors including the availability of necessary expertise.

The deployment of different customs management systems in neighbouring countries is a potential drawback which can have negative implications for trade facilitation at a regional level. For example the use of SIMBA 2005 in Kenya and ASYCUDA by neighbouring countries posed a number of challenges and has led to the deployment of the Revenue Authority Digital Data Exchange (RADEx) system which facilitates interconnection between the Uganda and Kenya Revenue Authorities.

<table>
<thead>
<tr>
<th>Box 2.3: The Revenue Authority Digital Data Exchange (RADEx) system</th>
</tr>
</thead>
<tbody>
<tr>
<td>RADEx is a trade facilitation tool in East Africa which has been developed with the support of USAID, aimed at expediting transit of cargo through border crossings. It is a distributed system that tackles the lack of direct exchange of electronic information between border posts by messaging through Web services, requiring minimal bandwidth and working without the need for constant connectivity. In short, RADEx transmits Customs declaration data from the point of initial lodging, through all affected transit points to final destination. It interfaces with diverse existing customs software. For example the Uganda Revenue Authority uses it to connect its ASYCUDA customs system to Kenya Revenue Authority’s SIMBA system in order to communicate customs data instantly from the point of data capture to affected trade stakeholders along a cargos route.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure 2.4: RADEx 1.0 Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="RADEx 1.0 Sites" /></td>
</tr>
</tbody>
</table>

Source: Payne, J. Government ICT applications that save businesses time and money. 2010

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c. **Customs collection and risk management**

Customs revenue makes a major contribution to the budgets of most African countries. In 2010, for example, the government of Namibia gained almost 40% of its revenue from customs receipts through SACU. It is very important, therefore, for African governments to ensure that goods are declared and taxes and duties collected, and that customs automation/modernisation should improve revenue collection rates rather than putting them at risk. The need to improve and modernise inspection techniques which seek to prevent evasion of duties has been a priority for customs administrations (as it has been in other border management areas such as sanitary inspection and inspection for dangerous goods). The objective of administrations should be to improve the volume and accuracy of revenue collection while reducing the time taken for the declaration, inspection and processing of goods.

ICT-based scanning tools are highly appropriate for this purpose. However, they must be used in conjunction with a risk analysis engine which is capable of identifying accurately those consignments and declarations that should be scrutinised. Most countries in Africa lack the necessary capacity and organisational structure to deploy a sophisticated risk analysis system and rely heavily on scanners. A review of experience in Botswana, Namibia and South Africa shows that the Botswana Unified Revenue Service (BURS) and the Namibia Customs and Excise (NCE) are in this position. BURS and NCE use the ASYCUDA++ customs administration system and have begun to use the system’s cargo selectivity module (MODSEL). By contrast, the South African Revenue Service (SARS) customs modernisation initiative has a well-developed risk management and audit capacity. SARS has implemented a sophisticated Integrated Customs Risk Analysis System (ICRAS) that provides risk analysis and has profiling capabilities.

Other governments have been helped to manage inspections and risk without investing in scanners and other equipment by pre-shipment inspection (PSI) providers which package services to governments under contract. The Société Générale de Surveillance (SGS), COTECNA and Inchcape Testing Services International (ITSI) of London have been supporting African countries in pre-shipment Inspection. COTECNA for example, provides pre-shipment inspection and risk assessment for Angola, Burkina Faso, Congo, Equatorial Guinea, Ghana, Niger, Nigeria, Senegal and Togo. Services provided include the independent inspection of goods at their point of origin, non-intrusive inspection of cargo, tagging, secure transmission of electronic information captured within the supply chain, and development of integrated end-to-end supply chain systems. The computerised risk management support to these countries is intended to help Customs to determine the appropriate level of intervention for each trade transaction, based on the type of goods to be inspected, making the best use of available modelling and other resources and of post-entry audit.

It is important, in this area, to focus on the outcomes of the process – whether the level of revenue collection (or security) is raised – rather than simply on the equipment deployed (for example the number of scanners deployed).  

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89 http://ipsnews.net/africa/nota.asp?idnews=50700  
that have been bought). The topic of risk management is covered from a transport corridor perspective later in this chapter.

d. **Valuation assessment**

Most disputes between customs administrations and traders are concerned with the determination of value. The World Trade Organisation has indicated that the reference value for goods in customs should be their commercial value. However, this has not stopped customs administrations in Africa, faced by pressure from governments to maintain and increase customs revenues, from contesting invoices on the grounds that they do not trust the traders concerned. In Ethiopia, for example, the Federal Internal Revenue Agency uses a combination of international information and its own internal database that often relies on relatively old data rather than real time information.  

In the past, the International Monetary Fund (IMF) and other organisations recommended PSI in order to improve customs revenues. However, PSI as it used to be implemented is no longer compatible with trade facilitation and is no longer recommended by the IMF. Many African customs administrations have replaced it with strong valuation database tools, which rely on international valuation databases and/or on information which has been built up locally from the history of past imports. Customs valuation databases are primarily used to prevent importers from reducing the customs value of imported goods, but they are also valuable for risk assessment. The software system is built around valuation databases designed to comply with WCO data models and guidelines on the development and use of a national valuation database as a risk assessment tool. This is another area in which the use of ICTs – in the form of databases and information-sharing – is very evident, but in which the most important challenges arise from management and administration, in particular the need and capacity to keep data up-to-date.

e. **Electronic payments**

Electronic payment has been the most challenging process of ICT implementation in customs management. Even when appropriate platforms have been established, the proportion of traders making use of them tends to remain low until or unless they become mandatory.  

Various models are used for electronic payments, including the following:

- **Payment of duties to the bank account of the customs administration.** In most Anglophone countries in Africa, payment of taxes and duties is made through commercial banks, sometimes before a declaration has been processed. When this payment is made electronically, the bank can confirm online to Customs that the payment is effective.

- **Payment of duties to the Treasury through a bank instruction.** In Francophone countries, by contrast, payment of taxes and duties is made through a Treasury counter, because the Treasury has no account with commercial banks. In Senegal, the Treasury is connected to the customs system and all payments are validated in that system immediately so that goods can be released.

- **Payment through credit in the customs system.** Some traders that have Treasury guarantees are allowed to release their cargo and pay taxes and duties days after clearance. This is quite common in Francophone countries in Africa, and reduces the need for electronic payment systems.

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93 Personal communication with staff or Ethiopian Revenue Authority.
94 Personal interviews
• **Centralised payment of services through one bank.** A significant portion of many customs taxes and duties is due to entities other than customs, such as port and shipping agents, control agencies and warehouses. In some cases, payments which are not due to customs are centralised through a single window, either physically or electronically.

• **Decentralised payment services.** Complex electronic payment systems are required where payments are not centralised. In Senegal, GAINDE 2010 is expected to implement a decentralised payment service in partnership with banks during 2012.

Payment systems are not entirely electronic, by definition, wherever traders have to make use of Treasury or bank counters. If a payment is to be considered truly electronic, then a trading business should be able to issue electronic instructions to its bank from its own premises. Secure electronic transactions can be made available where the necessary legal framework has been put in place. However, the effectiveness of any such solution requires coordination with and between banks, and this may be more of an obstacle than customs challenges.

Although electronic payment systems have been successfully implemented by customs administrations in some African countries (notably Tunisia, Ghana and Mauritius⁹⁵), experience (such as that from Botswana which is illustrated in Annex 4) suggests that many traders still, at present, prefer to use traditional means of payment when electronic systems are non-mandatory. Making electronic systems mandatory would require traders to implement approaches that they have consciously rejected and in which they will incur additional costs. Their consent will therefore be more difficult to secure in any compulsory arrangement of this kind.

**f. Traceability of transit goods**

The physical escorting of goods in transit from ports to the point of clearance or the point of exit, which has traditionally taken place, is progressively being replaced by or combined with modern tracking systems using GPS (Global Positioning by Satellite) and GSM wireless technologies (see below). For customs administrations, the security of goods conveyed in transit is critical in order to prevent the offloading (or ‘dumping’) of goods which have not paid duty as they have been cleared for transit to a third country. GPS technology provides reliable means to track transit and can be associated with the use of closed circuit cameras to monitor whether containers are opened during transit, and of scanners to ensure that the volume of a container has not changed en route.

Many applications are now available in the market to assist customs administrations with escort procedures and to open dry ports to reduce congestion of sea ports. Most transit countries have adopted the GPS system to improve the competitiveness of their corridors. This approach has been implemented for the Government of Senegal by the specialist inspection and certification company COTECNA. Since the end of 2009, it has operated an Electronic Cargo Tracking System (SSE) to manage security on the Dakar-Bamako (Senegal-Mali) trade corridor.⁹⁶ The SSE uses electronic beacons that transmit alerts whenever a truck stops or deviates from its prescribed itinerary. These alerts allow border officials to scrutinise suspected cargoes. Physical escort arrangements have therefore been replaced by ‘electronic escorts’. This has resulted in a significant reduction in waiting times as it was often previously necessary for trucks to wait two or three days for Customs to designate their escort officer.

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⁹⁶ See Box 2.5.
2. ICTs in trade and transport logistics

The theme of trade and transport logistics includes a wide range of activities which are essential for moving goods, people, vehicles and money along the supply chain and across borders. These activities include the management of trade corridors, freight and other transport operations, ports and airports, warehousing, cargo consolidation, border clearance, distribution and payment systems. Actors in these areas of activity come from both public and private sectors and include shipping lines, port terminal operators, customs officials, operators of off-dock container yards, land transport agents, clearing and forwarding (C&F) agents, banks and Permit Issuing Agencies (PIA). These various activities and actors cannot function effectively without coordination and the exchange of information.

As in other areas of trade facilitation, the main opportunities for ICT implementation in trade and transport logistics lie in improving efficiency, coordination and the exchange of information, thereby reducing transit delays and costs incurred both directly and indirectly through delays. Major problems in transport and transit include the need for vehicles and their drivers to obtain permits from several different agencies and multiple checkpoints managed by different actors – legal and illegal – on roadways and at entry/exit points. Complicated arrangements and control processes are often required by public bodies, with multiple procedures for data entry, compounded by a lack of information for exporters and drivers on rules and regulations constraining the flow of goods over borders. As a result, long lines of vehicles are frequently seen at border crossing points in Africa.

The time required to negotiate these logistics challenges, and the resulting cost, are measured internationally through the Logistics Performance Index (LPI), a benchmarking tool which is administered by the World Bank. This is a composite index that measures transport and information infrastructure, supply chain management and trade facilitation capabilities at ports and airports. It is compiled through a survey of global freight forwarders and express carriers, and therefore reflects the views of larger businesses with wide-ranging international experience. These qualitative observations are supplemented by quantitative data on logistics performance. Overall ratings in the international LPI are built around weighted average scores on six dimensions of logistics which affect timeliness and cost:

- the efficiency of the clearance process at border control;
- the quality of trade and transport related infrastructure (including ICTs);
- the ease with which competitively priced shipments can be arranged;
- the competence and quality of logistics services such as transport operators and customs brokers;
- the ability to track and trace consignments; and
- the timeliness of shipments in reaching destinations, as against scheduled or expected delivery times.

Aside from their role in determining the LPI, these six dimensions of logistics provide a useful menu for government agencies looking to benchmark, review, monitor and improve their country’s performance in trade facilitation, and of potential areas for the application of ICT-enabled interventions.

African countries perform poorly against the LPI, with weaknesses across all six benchmarked dimensions in the above list. Africa’s highest performing country against the overall LPI is South Africa, which ranks 28th out of 155 countries. This is comparable with other middle-ranking exporting nations such as Malaysia and Portugal, and a higher ranking than Brazil, the Philippines or India. It is, however, much higher than the rankings of other African countries. Senegal, the second highest ranking African country, is 58th in the table.

Tunisia (the third) is 61st. The five lowest ranking countries are all African (Somalia, Eritrea, Sierra Leone, Namibia and Rwanda). Figure 2.5 shows the LPI outcomes for selected African countries in 2010.

![LPI outcomes for selected African countries, 2010](image)


ICT applications for the management of trade and transport logistics include electronic shipment tracking, Port and Cargo Community Systems and electronic payment systems, all of which are discussed later in this chapter. While customs and other border functions are located at specific points along the supply chain, where nation-states interconnect and freight transfers from one authority (if not one haulier) to another, the trade management functions which they perform relate to consignments as much as to locations. They therefore depend on information which is relevant throughout the supply chain and which is integrally linked with trade logistics and the integrity of logistics processes. Customs clearance and border management should, for example, be integrated with Port and Cargo Community Systems and with systems for managing the security of consignments *en route* from supplier to border crossing, and from border crossing to consignee.

ICTs already play a central role in the way in which actors in the supply chain manage their business and government functions. Individual actors such as freight forwarders, shipping agents, and customs brokers rely heavily on them. Courier and express service providers such as DHL and Federal Express are particularly dependent on ICTs for their supply chain management. Many of the benefits of ICTs for logistics arise from the interconnection of these actors. The concept of smart transport logistics – the use of software tools to monitor, optimise and manage freight operations, ensure optimal load ratios, etc. – is even cited as one of the ways in which ICTs can help to mitigate the carbon emissions that lead to climate change.

Another area in which ICTs play an important role is in combating transport cartels and corruption. These abuses are significant barriers to entry for modern operators that might otherwise improve the efficiency of transport logistics. They are particularly challenging in West and Central Africa, where large mark-ups by haulage operators working in cartels significantly raise the transport cost of goods. Cartels extend the margin

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between costs and prices and provide low quality services, operating older, less efficient trucks. ICT tools such as Intelligent Transport Systems can give other stakeholders access to real-time information on truck movements, stimulating a more competitive market for both established truck operators and new entrants. However, the breaking of cartels is ultimately less of a technical issue than one of politics and regulation, which requires policy dialogue between governments and truck operators leading to market reform over a period of time.

This use of ICTs in transport logistics is most evident in developed countries where it has had profound impacts on the organisation and operations of ports, airports and inland transport, and in arrangements for informational and transactional exchange. The object of these ICT-enabled interventions has been to achieve faster movement of goods, vehicles, people and money across borders; better cargo and asset control; reduced costs and lower error rates; real-time management reporting; and seamless information flows along the whole supply chain - all of which contribute to cost savings and competitiveness. Transport and logistics service firms in developed countries provide a wide range of information through the internet and manage secure transactions online with their customers.

In Africa, however, the application of ICTs to logistics management in this way is still limited. African trade and transport logistics are characterised by inefficient practices, fragmentation, and weaknesses in supply chains which are blighted by congested borders, bureaucratic customs procedures and inefficient and ineffective port management and rail services. Major ports, such as Durban (South Africa), Lagos (Nigeria), Mombasa (Kenya) and Tema (Ghana) are heavily congested. Container transport is increasing in volume by an average annual growth rate of 7.2% in Africa, and by as much as 13.8% in West Africa. Transport across corridors remains uneconomical due to the high number of inspection points and delays. This is particularly problematic for exporters from landlocked countries which bear higher costs for the movement of goods along the continent’s main transport corridors.

Transport corridors

Inland transport is the most significant component in trade logistics, and its share of overall logistics costs has been increasing in recent years, especially where tariffs have been falling. Trade efficiency is generally linked to the adequacy of a number of critical routes or trade corridors which link major economic centres with sea (especially) and air ports. While some routes in Africa are only road transport corridors, most of them include more than one mode of transport, and rail is significant in some corridors.

There are 16 countries in Africa – and a number of regions within countries – that face additional trade challenges and higher costs because of their landlocked status. These rely on transport corridors through other countries for the movement not just of regional trade but of imports from and exports to the wider world. Botswana, Burkina Faso, Burundi, Chad, Central African Republic, Ethiopia, Lesotho, Malawi, Mali, Niger, Rwanda, South Sudan, Swaziland, Uganda, Zambia and Zimbabwe all lack maritime access, are isolated from world markets and suffer high transit costs. These factors significantly constrain their overall development.

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103 Africa Infrastructure Country Diagnostic, Ports and Shipping: Landlord Needed, www.infrastructureafrica.org/system/files/WB147_AIATT_CH12.pdf,
There are now more than ten major transport corridors in eastern and southern Africa linking landlocked countries and regions to the ports that serve their global import and export trade. Table 2.4 lists the most important corridors. A description of one of these, the Trans-Kalahari corridor can be found in Box 2.4.

Table 2.4: Transport corridors in Africa

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Region</th>
<th>Distance</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dakar-Mali</td>
<td>West</td>
<td>1250 Km</td>
<td>Rail</td>
</tr>
<tr>
<td>Abidjan – Burkina Faso – Mali</td>
<td>West</td>
<td>1200 Km</td>
<td>Multi-modal</td>
</tr>
<tr>
<td>Tema/Takoradi – Burkina Faso – Mali</td>
<td>West</td>
<td>1100 Km</td>
<td>Road</td>
</tr>
<tr>
<td>Lome – Burkina Faso – Niger/Mali</td>
<td>West</td>
<td>200 Km</td>
<td>Road</td>
</tr>
<tr>
<td>Cotonou – Niger – Burkina Faso – Mali</td>
<td>West</td>
<td>1000 Km</td>
<td>Multimodal</td>
</tr>
<tr>
<td>Lagos – Niger</td>
<td>West</td>
<td>1500 Km</td>
<td>Road</td>
</tr>
<tr>
<td>Douala – Central African Republic – Chad</td>
<td>Central</td>
<td>1800 Km</td>
<td>Multimodal</td>
</tr>
<tr>
<td>Pointe Noire – Central African Republic- Chad</td>
<td>Central</td>
<td>1800 Km</td>
<td>Rail/river</td>
</tr>
<tr>
<td>Walvis Bay – Zambia-DRC (Trans –Caprivi)</td>
<td>South</td>
<td>2100 Km</td>
<td>Road</td>
</tr>
<tr>
<td>Walvis Bay – Botswana – South Africa (Trans – Kalahari)</td>
<td>South</td>
<td>1800 Km</td>
<td>Road</td>
</tr>
<tr>
<td>Durban – Zimbabwe – Zambia –DRC (North – South Corridor)</td>
<td>South</td>
<td>2500 Km</td>
<td>Multimodal options</td>
</tr>
<tr>
<td>Maputo – Swaziland- South Africa (Maputo corridor)</td>
<td>South</td>
<td>600 Km</td>
<td>Multimodal options</td>
</tr>
<tr>
<td>Beira – Zimbabwe – Zambia – DRC</td>
<td>South</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dar es Salaam – Rwanda – Burundi – Uganda – DRC (Central Corridor)</td>
<td>East/Central</td>
<td>1600 Km</td>
<td>Multimodal options</td>
</tr>
<tr>
<td>Mombasa – Rwanda – Bujumbura, DRC (Northern Corridor)</td>
<td>East/Central</td>
<td>2000 Km</td>
<td>Multimodal options</td>
</tr>
<tr>
<td>Djibouti-Ethiopia</td>
<td>East</td>
<td>900 Km</td>
<td>Multimodal options</td>
</tr>
<tr>
<td>Berbera_Ethiopia</td>
<td>East</td>
<td>850 Km</td>
<td>Road</td>
</tr>
</tbody>
</table>


Box 2.4 – Trans-Kalahari Corridor eCustoms and eTrade Pilot Project on Customs Systems Interface, Connectivity, Electronic Data Interchange and the Single Window Concept.

The Trans-Kalahari Corridor is described as a ‘well maintained tarred 1,800km (highway) linking Port of Walvis Bay, Namibia, to Gaborone, Botswana, and onto Johannesburg/Gauteng, South Africa.’\(^{104}\) It allows for a transit time of 48 hours from the Port of Walvis Bay to Gauteng, and vice versa. It is illustrated in Figure 2.6

Figure 2.6 – The Trans-Kalahari Corridor


The e-customs and e-trade pilot project which is associated with the Corridor was launched in January 2011. Its goals are to:

- allow for electronic data interchange of customs and other documents and information;
- enable the electronic submission of supporting documents to Customs and relevant stakeholders;
- reduce transaction costs on traded goods and increase efficiency in the Customs Service;
- create a Single Window (SW), connecting government agencies, private sector traders, freight forwarders, transportation companies and other stakeholders; and
- provide a platform for automating the Trans-Kalahari Corridor Performance Monitoring System (CPMS).

The Single Window along the Corridor is a partnership between Microsoft, the United States Agency for International Development (USAID) and the customs agencies of Botswana and Namibia. Its objectives include increased connectivity and compliance between the customs agencies of Botswana, Namibia, and South Africa. The Single Window will connect the customs systems of these three countries through Microsoft’s Cloud Computing Programme.

The most fundamental challenges for these transport corridors are infrastructural, the results of a lack of capacity to handle existing and future traffic volumes, poor maintenance and inadequate security. The Kenya country case study in Annex 2, for example, illustrates the weakness of road, rail and pipeline infrastructure in that country. Aside from these problems, however, the effectiveness of transport corridors is undermined by failures to manage them as holistic international systems, by the overloading of trucks, by the proliferation of in-country checkpoints concerned with different aspects of traffic movement, and by delays caused by inspections at land borders. Permits are often required from several controlling authorities to transport goods across borders, while vehicles pass multiple state control points inland and within the border area. A survey in West Africa has shown that the number of checkpoints varies between two and four per 100 kilometres, each involving inspection delays of between 7 and 23 minutes, and payment of bribes costing between US$2.5 and US$11 per checkpoint depending on the country concerned.

The multiplicity of these administrative controls can be attributed to a number of factors, in particular:

- the lack of a coordinated regional approach to facilitate trade and transport;
- the lack of uniform procedures at border crossings;
- lack of transparency in the required procedures, processes and documentation;
- lack of cross-border cooperation in risk management and in compliance, border and post-entry controls;
- independent or unauthorised activities by border authorities (including corruption).

ICTs play a significant role in reducing trade barriers along inland transport corridors. Advance information on the movement of goods, people and money, together with appropriate tracking processes, make it possible to eliminate multiple inspections and reduce transit delays and road harassment along corridors. The automation of border control posts and their integration into national customs and border management systems can also reduce the barriers which trading companies face in transporting goods across borders.

Cargo tracking

The loss of goods and dumping (unauthorised offloading of goods in transit countries to avoid payment of taxes and duties) is a major problem affecting the movement of goods along international transport corridors. Significant progress has been made in deploying ICT solutions to manage vehicles and minimise the opportunities for dumping and loss of goods in transit. The ability to trace goods, containers and means of transport, including tracing consignments from point of origin to destination, is increasingly associated with information transfer using communication tools such as global positioning systems (GPS), radio frequency identification devices (RFID) and barcode scanning.

RFID is a wireless-based way of transmitting data using electronic tags. In the case of trade management, these are attached to containers and can be read by officials at different points along the supply chain. (They can also be used by trade principals to verify their cargo.) RFID is beginning to displace barcodes as a security mechanism in some contexts and is also used outside Africa for other purposes associated with trade, such as road toll payments, animal tagging, library security and electronic passports.\(^{109}\)

Electronic Cargo Tracking Systems (ECTS) that use RFID have been deployed in east Africa (Kenya) and west Africa (Ghana and Senegal) to improve accountability, enable enhanced risk management assessment and minimise opportunities for loss. These systems use electronic GPS seals to reduce the potential for fraud, reduce or eliminate the need for physical escorts, improve truck turnaround, and so both reduce the cost to traders and improve revenue collection. Such systems should alleviate congestion and curtail illegal activity, as well as improving compliance with environmental standards. They help to ensure that goods reach their destination in their intended condition and improve the integrity and efficiency of international supply chains.

The Kenyan Electronic Cargo Tracking System (ECTS) was implemented by the Kenya Revenue Authority to facilitate revenue collection, eliminate the need for physical escorts for goods in transit, secure transit goods crossing Kenya and increase the efficiency of cargo handling. It tracks consignments along trade routes extending from the Port of Mombasa to free trade zones within Kenya and along transit routes to neighbouring landlocked countries (Southern Sudan, Uganda, Rwanda, Burundi). Implementation has enabled the elimination of physical escorts from the Port of Mombasa, improvement in the movement of goods and reduced theft and contamination.\(^{110}\) It is discussed further in the Kenya case study at Annex 2. Similar systems are scheduled for implementation in other EAC countries (Uganda, Rwanda, Tanzania and Burundi).\(^{111}\)

The ECTS implementation in Ghana in 2010 was intended to seal all bonded cargo arriving at Ghana’s ports and so ensure secure transit of goods destined to landlocked countries to the north (Burkina Faso, Mali and Niger). Traders and hauliers in these countries have also benefited from faster customs clearance and from the elimination of physical escort requirements for bonded cargo transiting through Ghana.\(^{112}\) The electronic cargo tracking system in another West African country, Senegal, is described in Box 2.5.

The implementation of approaches like this is related to the adoption of intelligence-led risk management inspection regimes, which are discussed below. However, it is also dependent on the integrity and quality of data entered into the system by suppliers at the point of origin for a consignment, which needs to be assured through associated data management arrangements.

\(^{109}\) For a description on RFID applications, see www.classle.net/sites/default/files/text/27761/Radio.doc


In February 2008, the trade management company COTECNA Inspection S.A signed a contract with the Government of Senegal to provide pre-shipment and destination inspection, including scanners and risk management, together with transit monitoring services. This contract involved the installation of scanners at various checkpoints along the transport corridors linking Senegal with Mali and Mauritania, and at Dakar airport for the control of air freight, as well as implementation of a new transit monitoring system.

This transit monitoring system, known as Cotrack, aims to provide the Senegalese authorities and private sector businesses with means to control transit operations more effectively while expediting the flow of goods along transport corridors. Its primary motive was to reinforce the customs administration's capacity to control international and inland transit and reduce fraud through the smuggling of illegal goods and dumping of goods in transit. It was hoped also to reduce staff time and facilitate decision-making by enabling quick release of vehicles at exit, thereby reducing congestion at inspection points caused by long procedural delays.

The system uses a GPS device capable of detecting a vehicle’s exact location, together with a communication module which transmits data concerning the status of the vehicle (position, speed, direction, and reports on predefined events) to a remote control station. This information allows customs officers to reinforce compliance with transit regulations and detect any abnormality that has occurred during a journey, such as prolonged immobilisation of the vehicle or deviation from the authorised corridor, which suggests that dumping might have occurred and/or that investigative inspection is required.

The system has been deployed along the Dakar-Bamako (Senegal-Mali) and Dakar-Nouakchott (Senegal-Mauritania) corridors. Senegalese Customs has installed 670 tracking units with six connected border posts. Installation of the transit monitoring system is reported to have enabled improvements in knowledge and control of transit, reduced the number of false declarations, and reduced transit time thanks to more efficient authorisation of border crossing. It has improved physical verification of consignments by targeting inspections on those that have experienced unusual events during their journey. The tracking system has also helped to combat fraudulent dumping of goods on the national market, and has been used to resolve disputes between transporters and consignees of merchandise when abnormal activity has taken place.

Another application of ICTs in transport logistics is the implementation of Intelligent Transport Systems (ITS) that allow truck drivers and freight operators to make informed decisions when planning international trips. ITS rely on a combination of real-time traffic data and past records in order to plan fleet movements, and can also contribute to the improved efficiency of freight transport along corridors. They integrate a number of ICT tools – using wireless and high-bandwidth fibre networks, and including complex software, sensors and video and web applications – to improve safety, reduce delays and travel times and optimise the use of transport infrastructure and other resources. They are widely implemented in the United States, Europe and Asia. In the USA, they are deployed on major metropolitan freeways and as many as 70% of transit agencies have adopted automated vehicle technologies such as traveller information and route guidance systems to facilitate the efficient movement of people, goods and vehicles. Increased availability of ITS in Africa, along with deregulation of the truck market, would help to break the longstanding transport cartels in national markets and along transport corridors.


The availability of reliable, high-quality communication networks along transport corridors, including mobile cellular networks, is obviously essential if these methods are to be deployed and achieve their objectives, just as it is for the simpler task of enabling freight operators to maintain contact with their drivers and direct them as required. The poor quality of communications infrastructure therefore inhibits their full deployment in many African contexts today.

3. Intelligence-led risk management

Enforcement is an essential part of any system based on laws, rules or regulations, including any trade management regime. If traders are required to pay tariffs, comply with rules of origin, obey truck loading limits, and ensure the safe transport of hazardous goods – to take a few examples – then measures need to be taken by government agencies to ensure that they comply. This is the principal role of the border agencies concerned with customs, immigration, quarantine and security (CIQS).

One challenge for enforcement agencies in Africa is the prevalence of informal traders smuggling goods across borders, either at unofficial crossing points or by concealing them as they or people acting on their behalf transit formal border crossings. Informal trade is inherently difficult for enforcement agencies to manage, and is not discussed in substance in this report, which is largely concerned with formal trade.\textsuperscript{116}

Formal traders, however, may also seek to mislead enforcement agencies by misdeclaring goods or failing to comply with other regulations governing their transit. Inspections take place on goods as they enter national territory (either as imports or for transit), but consignment data have been generated in the country from which they are being exported. This means that, in the absence of data-sharing, inspection authorities have limited evidence to support detection other than their own inspection regimes.

Any enforcement regime in trade depends upon inspections. The problem with inspections, however, is that they are time-consuming, and cause delays which are expensive for both governments and traders. Inspections for different purposes are also generally undertaken by different specialists at the same border crossing (passport control to oversee immigration, phytosanitary inspection to oversee plant health, etc.). The last decade has seen increased concern among governments about international security, including the threat of terrorism, with associated demands for greater scrutiny of passenger, goods, vehicles and money as they move across international borders.

The simplest solution to enforcement might seem to be to inspect every consignment for every possible infringement, but that would be immensely time-consuming and inefficient as it would require very large resources, the large majority of which would be devoted to inspecting consignments with which there is no problem and no suspicion of a problem. It would also cause delays to all consignments, so raising trade costs and reducing competitiveness. As the World Customs Organisation (WCO) has put it, ‘It is an unacceptable and an unnecessary burden to inspect every shipment. In fact, doing so would bring global trade to a halt.’\textsuperscript{117} It is equally impossible, however, to rely on a culture of compliance, in which no inspections are necessary because no-one seeks to infringe the regulations, or in which very few inspections are carried out.

A critical challenge for all customs and border management agencies is, therefore, to strike the right balance between ensuring compliance and security, on the one hand, and enabling the efficient flow of goods, people, vehicles and money on the other. Automation and sharing of information are crucial to achieving this.

\textsuperscript{116} A note on informal trade can be found in Box 1.1 in Chapter 1.
WCO’s approach has been to develop a set of international standards – the WCO Framework of Standards to Secure and Facilitate Global Trade, known as the SAFE Framework - which does not conflict with other intergovernmental requirements. It was adopted in 2005 and consists of four elements:

- **First, it harmonizes the advance electronic cargo information requirements on inbound, outbound and transit shipments.**
- **Second, each country that joins the SAFE Framework commits to employing a consistent risk management approach to address security threats.**
- **Third, it requires that at the reasonable request of the receiving nation, based upon a comparable risk targeting methodology, the sending nation’s Customs administration will perform an outbound inspection of high-risk containers and cargo, preferably using non-intrusive detection equipment such as large-scale X-ray machines and radiation detectors.**
- **Fourth, the SAFE Framework defines benefits that Customs will provide to businesses that meet minimal supply chain security standards and best practices.**

Two sets of relationships are critical to the implementation of the SAFE Framework: those between customs administrations in different countries, and those between customs administrations and businesses. Both are highly dependent on ICTs for their effectiveness. As WCO puts it:

> The central tenet of [the customs to customs pillar] is the use of advance electronic information to identify high-risk containers or cargo. Using automated targeting tools, Customs administrations identify shipments that are high-risk as early as possible in the supply chain, at or before the port of departure.

Businesses can seek the status of Authorised Economic Operators (AEOs), whose record and profile - built up through prior trade transactions – secures them minimum intervention at border crossings and so more rapid customs and border clearance.

Implementation of a regime based, like this, on intelligence-led risk assessment depends on the quality of intelligence and on the quality of assessment. The aim, as suggested above, is both:

a. to identify those consignments that appear to pose a high risk of infringing regulations, and target these for inspections; and, equally importantly,

b. to identify those consignments that pose a low risk of infringing regulations, and allow these to proceed without inspection or with merely cursory inspection.

Another way of looking at this is to see the inspection process as taking place throughout the supply chain rather than at particular points of intervention along it. In an intelligence-based risk management process, every consignment is in fact subject to inspection but only those deemed to be high risk are subject to physical inspection (or repeated physical inspection). ICTs are critical to implementing this kind of inspection regime through a combination of data management, data-sharing, data analysis and monitoring.

- The most important data relating to any consignment are those which are entered at the starting point of the supply chain by the supplier (producer) and consigner of the goods. In an intelligence-led risk management system, it is crucial to ensure that these data are accurate, and that they are secured

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118 ibid.
119 ibid.
against modification throughout the consignment’s progress to its destination. Consignees also rely on the integrity of this initial data entry.  

- These data can then be shared between agencies along the supply chain, distinguishing consignments that may need special treatment at either side of the border (for example, those conveying dangerous goods or plant products) from other consignments. The value of data-sharing along these lines is much greater where it extends across all countries in the supply chain, as controls on the entry of goods into a country are much more important than those on exit. It is, for example, the phytosanitary inspection team in the country of final import that is most concerned with plant disease, not those in the country of export or transit.

- Data on individual consignments can be combined with other data sources, for example on the compliance record of suppliers and transport companies, to build a profile which provides much stronger indications of risk than reliance merely on the data supplied at the time that consignments are despatched. The intelligence which is central to effective risk assessment comes from multiple sources, the level of risk being determined partly by the number of different data elements that make a consignment open to suspicion. Although human involvement in intelligence assessment is important, the analytical capabilities of databases and other computerised systems to spot anomalies and patterns of suspect behaviour are of crucial value.

- Monitoring of consignments then completes the picture. Barcodes, RFID devices, scanners, GPS seals and GPS surveillance of traffic movements combine to alert enforcement agencies when a consignment has been opened in transit (to allow goods on or off) or there have been suspect truck movements en route. Barcode or RFID scanning at border posts is much quicker than physical inspection, enabling most consignments to be cleared at speed, while those consignments with anomalous records or movements can be treated as high risk and targeted for full inspection.

Together, these ICT-enabled procedures allow inspection regimes to combine high levels of security with expeditious clearance. They are, however, highly dependent on data-sharing, particularly data-sharing across borders, and on surveillance or at least confidence in the integrity of initial data entry by suppliers and despatches of consignments. Another example of the intelligence-based risk management in Africa is illustrated in Box 2.6.

Box 2.6 - ICTs in risk assessment and management in South Africa

The South African Revenue Service (SARS) has introduced a fully automated risk management module known as the Integrated Customs Risk Analysis System (ICRAS) as part of its modernisation programme. ICRAS provides risk analysis and profiling capabilities for imports and exports from a transactional and behavioural context in three process phases.

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The first phase provides tactical targeting based on specific information developed by SARS risk analysts or provided to them by others. If a declaration comes up against a Phase 1 risk profile, it is directed to the yellow or red channel as appropriate. If a declaration clears Phase 1 without coming up against specific risk profiles, it then moves to Phase 2 which performs a generic check against importer codes, tariff codes, clearing agent codes, country of origin codes and Customs Procedure Codes. This second phase has been enhanced since the system was first implemented to include information on first time or infrequent importers, routing, relationships, and source countries, so as to improve the way it can address safety and security as well as fiscal and trade issues. Phase 2 provides a weighted scoring of each of these elements. In this phase, the system can search its knowledge base to identify low frequency importers, unusual routings, questionable relationships, etc. Depending on staffing and capacity, local managers can establish on a daily basis the range of scores that they will treat as low, medium and high risk. If a declaration clears both Phases 1 and 2 and is not selected for a specific customs control, it may then be subjected to a Phase 3 random selection.

The South African Revenue Service is also implementing a WCO-compliant Authorised Economic Operator approach through its Preferred Trader (PT) programme. This will include more stringent eligibility requirements for supply chain security and will provide eligible voluntary participants with tailor-made benefits.

4. Integrated border management (IBM)

Border management refers to the process or system of activities governing the movement of goods, people, vehicles and money between two or more countries. Customs administration is only one of the government agencies which are responsible for border management. Typically, in any country, four major agencies will be involved, concerned with customs, immigration, quarantine (including a variety of inspection regimes), and security. These are known collectively as CIQS. In some countries, the number of agencies may be significantly higher. Where these agencies work together to facilitate clearance and to coordinate documentation and transportation, the time taken for goods to pass through border crossings can be kept to a minimum. Where their work is uncoordinated, clearance times are likely to be much longer (a situation which also leads to bribery as actors in the supply chain seek to expedite clearance or bypass delays).

Border management became more critical within trade management following the attack on the United States on 11 September 2001, when the US government and European Union began to require advance information on passengers and consignments and more countries adopted stringent rules concerning illegal trade and the trafficking of drugs and people across borders.

The core objectives of border management are to control air, land and sea frontiers; to safeguard lawful trade and travel; and to identify, disrupt, and dismantle illegal trade and transnational criminal organisations. Border management therefore requires both domestic integration/coordination between government agencies within one country, and international integration between customs and other border authorities in neighbouring or other countries. Both types of border management require inter-agency cooperation, parallel processing, advance information and coordination at ports, harbours, and land border points.

Information is the central factor in border management and ICTs have become increasingly crucial to obtaining and managing that information. The deployment of appropriate ICTs can facilitate rapid detection, collection, organisation, and dissemination of data, including those related to identity and threat. ICTs can also enhance the ability of trained officers or analysts to make appropriate security judgments about individuals and situations encountered at the border.

An important feature of border management in developed nations has been the delegation of frontline enforcement responsibilities to customs or police, while other agencies focus on back office operations and
risk analysis. In the United Kingdom, for example, officials have adopted a steering group approach whereby the directors-general of the major agencies (customs, police and immigration) work together on and with a common strategy. In France, coordinated operational processes have been put in place among the four ministries involved (Equipment, Defence, Interior and Finance). In Japan, work is coordinated by the Cabinet and the Ministry of Land, Infrastructure, and Transport, with an emphasis on facilitating trade. Responses to security are reactive to comply with international or bilateral standards. The United States has a clear strategy and a centralised approach through its Department of Homeland Security (DHS), with a strong emphasis on security. Customs and border protection are managed in one agency under DHS, by contrast with other countries where they are usually distinct. Canada has started to integrate the Canada Border Services Agency (CBSA) under Public Safety and Emergency Preparedness Canada, focusing primarily on security and facilitation of trade.

African governments are striving to tighten their countries’ border controls, often forced to do so by international requirements. A number of different platforms for border management have been deployed by CIQS agencies in recent years, although these often have to rely on uncoordinated systems. In Kenya, for example, the customs administration uses the SIMBA 2005 customs management system, a single window for customs, while the immigration service relies on proprietary Aliens Management and Passport systems. Some of the implications resulting from lack of interoperability of border systems in Kenya are raised in the country case study at Annex 2.

IBM is a complex administrative environment. A well-designed IBM system will encompass front-end systems at national border crossing points and other places, together with core systems such as those for immigration and visa control, customs and vehicle traffic management. This requires complex communications and support components including end-user access to different forms, rules and regulations. Two important approaches have been adopted by CIQS officials to mitigate the challenges of multiple agency border management.

- information sharing, through the establishment of CIQS task forces that identify cooperation priorities and select suitable approaches, including ICT-enabled data-sharing, coordination of appointment times, etc.; and
- delegation of functions between agencies, for example of front-end functions to police and immigration.

The implementation of IBM therefore requires a great deal of consultation between agencies involved in border management, consolidation of the activities of CIQS agencies and coordinated planning of an integrated and interoperable system for information sharing. An important first step toward this in individual countries is the establishment of a platform for the regular and timely exchange of information and the coordination of activities among CIQS agencies.

However, progress towards IBM is not easy to achieve in Africa as security and immigration agencies have often opted for independent computerised systems which meet their specific needs. The deployment of national single window systems provides incentives and a structure for border agencies to coordinate not only for trade facilitation but also for the improvement of security and other functions. However, the deployment of a single window is itself a complex matter which takes time to put in place (see Section B), and should follow rather than precede the managerial and attitudinal changes required for IBM. Immigration and security are in practice often the last to join a single window process, and as a result no African country has yet achieved comprehensively integrated border management.

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5. Integrated cross-border management (ICBM)

If IBM is problematic within single countries, it is even harder to achieve across international boundaries, where the CIQS agencies of different countries are involved. The challenges of interoperability in such circumstances are likely to be compounded by differences of law and regulation, for example concerning the rights and responsibilities of persons crossing borders, and in many cases also of language. As a result, consignments can be held up for prolonged periods not once but twice at land crossings, as they exit from one country and as they enter its neighbour.

The potential advantages of single windows, with extensive cross-border data-sharing, are substantial where ICBM is concerned. Sharing of information between two countries’ border management agencies, together with the necessary cooperation and trust in the judgment of each other’s officials and the application of consistent rules, potentially enables border processes to be located in one territory with minimal additional scrutiny required at the other’s border crossing point. Even better (potentially), it makes it possible for governments to establish one-stop control posts at border crossings, where the exit and entry (CIQS) functions of both countries are co-located and responsibilities for CIQS functions may be shared (see below). However, the administrative challenges of building cooperation across national frontiers are considerable as illustrated in the following paragraphs.

One-stop border posts

Some experiments with one-stop border crossings are now taking place in Africa. The first one-stop border crossing on the continent was initiated at Chirundu on the Zimbabwe/Zambia border in December 2009. Other one-stop border posts are in preparation elsewhere in the SADC region involving crossing points between, variously, Zambia, Zimbabwe, Tanzania, Mozambique and DRC. The EAC has committed to initiating one-stop border posts within its region, with the aim of halving the time spent at borders. The construction of one-stop posts for both road and rail traffic at Namanga on the Kenya/Tanzania border and Malaba on the Kenya/Uganda border has been commissioned by the Kenyan Ministry of Transport. At the time of writing, the Kenya and Uganda Revenue Authorities at Malaba verified goods at one point on the Ugandan side of the border. There is also a one-stop border point at Gatuna/Katuna on the Rwanda/Uganda border. This is said to have reduced the time taken to process documents.

The experience of the Chirundu border crossing is instructive. It lies on the North-South transport corridor, between Zambia/Zimbabwe and the port of Durban in South Africa, and handles more than 6000 trucks a month, most of which are registered in Zimbabwe or South Africa. It is heavily congested. A commentary on the planned monitoring process for the one-stop border post illustrated some of the challenges faced by trading businesses at a typical high-volume land border crossing. It was reported, for example, that ‘more than 50 trucks [are] parked on each side of the approach roads in both directions. Space in the area between the border posts is very limited, and trucks that have been cleared through Customs are often held back for hours because of traffic gridlocks.’ Total border crossing times in 2007 were recorded as being over 35 hours northbound and approximately 15 hours southbound. Customs accounted for about 60% of this time, largely because there were no pre-clearance arrangements, but there were also long waiting times for payment of duties in the northbound direction, while different axle load limits in the two countries meant that inspection of trucks had to be carried out at weighbridges on both sides of the border. This account illustrates the kind of administrative challenges highlighted above.

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of issues that one-stop border posts should be able to address – but also suggests the substantial range of issues on which agreement needs to be reached before they are instituted.

TradeMark Southern Africa (TMSA) published a preliminary report on experience at the Chirundu one-stop post in November 2010, after about one year of operation.\(^{127}\) This report notes that the political context – the support both of national politicians and of local communities – has been crucial in getting the project off the ground. Setting up the border post required bilateral agreement between the governments concerned and legislation in both countries, and so was far from simple to achieve. In spite of several years of planning, there were unexpected complications in implementation which have led to changes in practice – although this was highly likely to occur given that there were no precedents for such a post in Africa from which lessons could be learnt. Some of these problems resulted from the fact that the site was not designed for one-stop operation, which has required some reconfiguration of its internal geography. Agreement between the two administrations has been achieved in some areas – for example, to use a single scanner and a single weighbridge – but others remained unresolved at the time of the report, including the need to improve communications between the various administrative functions involved.

The problem of communications between officials on either side of the border illustrates the way in which minor challenges can disrupt the well-laid plans of ICT system designers. As the TMSA report puts it:

\[\ldots\text{owing to a fault in the wiring system in the Zimbabwean terminal, there is no connectivity between the Zambian and Zimbabwean sides of the border post. The general perception is that laying fibre between Zambia and Zimbabwe will solve the connectivity problem. There are plans to link the buildings by fibre optic as a long-term solution but the process of linking the three terminal buildings with fibre optic cables is more complicated than originally thought as there are no drawings available to show the lay-out of the existing ducts on the Zambian side of the border; if new ducts are to be built they will need to go through solid rock in parts (or go overhead); and there are no drawings showing how the fibre optic cable will go across the bridge or where it will connect to.}\]^{128}\]

The study also found a need to pay more attention to ‘greater coordination between the 25 agencies operational at the border post on both sides,’ and with other stakeholders, and noted that ‘in-country co-ordination is at least as difficult to achieve as co-ordination between the countries.’ It strongly recommended implementation of a cross-border single window, noting however that there were difficulties with incompatibilities at present between the two sides’ IT systems which it would be difficult to resolve without giving each country an inappropriately high level of access to data held by the other.

The experience at Chirundu is important, partly because it demonstrates that one-stop border posts can be implemented in Africa, but also demonstrates the scale of the challenges that need to be addressed in doing so. Two critical lessons are drawn in TradeMark Southern Africa’s initial assessment for other possible locations around the region: that it would be much simpler to design a one-stop border post from scratch than to modify existing border posts (though the cost of this would be significantly higher), and that ‘the process of introducing a one stop border post should \ldots be accompanied by a change management process.’ Failure to manage change with the necessary seriousness ‘could lead to poor or non-implementation of the border as a one stop border post.’\(^{129}\)

\[^{127}\text{http://www.trademarksa.org/sites/default/files/publications/Chirundu_OSBP_November2010.pdf}\]

\[^{128}\text{ibid.}\]

\[^{129}\text{ibid.}\]
6. Port and Cargo Community Systems (PCS, CCS)

Ports are critical points within the logistics supply chain for international trade, and ICT applications at ports are increasingly central to the efficient flow of goods between countries. Poorly-performing ports reduce trade volumes, raise trade costs and have a general dampening effect on trade. The improvement of port management and efficiency through the use of ICTs has the potential to achieve significant positive impact on trade flows and multimodal transport (i.e. the movement of goods on one journey using more than one mode of transport). Intensive use of new technologies in port management can set standards and rules that can be applied across the board by all that participate in the supply chain.

Ports are highly complex systems, with multiple actors including shipping lines and agents, forwarders and brokers, transport operators and ports/terminal operators, as well as the CIQS group of government agencies. Together, these multiple actors form a ‘port community’. Because of the complexity of this community, involving both public and private sector actors, integration of port management is more complex than IBM which is built primarily around the CISQ agencies. In particular, the management of the port itself is a highly complex operation, involving the piloting and berthing of ships, warehousing, loading and offloading of cargoes, provision of security against theft, management of transit to onward modes of transport and many other functions. A single window mechanism for a port community – a Port Community System (PCS), defined as ‘an electronic platform that connects the multiple systems operated by a variety of organizations that make up a seaport community’\(^{130}\) – is therefore much more complex and diverse than that required for customs management or for an integrated inland border crossing.

The quality of service offered by each of the different actors within a port environment depends substantially on the efficiency of its internal structures and process management, including the extent to which this is automated and/or makes use of ICTs. In addition, the performance of each actor and the effectiveness of the system as a whole depend on the accurate and effective exchange and coordination of information required to enable them to perform their functions effectively. Specific applications of ICTs for port management cover many different activities including planning vessel and cargo movements, berthing and gate operations, in-port transport and collection booking. ICT tools are also used for message and data exchange between the various actors in the port community. They are extensively used in the management of location and retrieval, scheduling of pick-up and internal transport, container scanning, pre-shipment inspection, stevedoring, navigation, bunkering and licensing operations, as well as billing and linking up with other systems.\(^{131}\)

A typical Port Community System therefore consists of many modules. One of its key components is a Geographic Information System (GIS) which provides a real-time representation of what is happening within the terminal area. This triggers a Yard Planning System that in turn generates and manages the stowage plans. Another module, the Documents Submission System, enables the electronic submission of formal documents. In order to ensure the safety of the terminal, the Entry or Exit Control System is responsible for the electronic checking and authorisation of truck movements. A Loading or Unloading module authorises the loading of containers after ensuring fulfilment of requirements set by the port authorities.

All of these different modules need to interact effectively, which is a matter not just of technology but of management and logistics. The most important part of the PCS is the Resource Management System that coordinates requests from other subsystems and enables movements and processes to be carried out efficiently. This is connected with a Yard Inventory System which enables responsible personnel to control the


collection and placement of containers in accordance with the stowage plan. The central module of information exchange is the Central Information Management System which allows the integration of all applications. It uses an Information Dissemination System to provide clients with real-time information about containers that have entered or exited the terminal area. Lastly, the Administrative Support System updates the Main Database with any information that, for legal or other reasons, cannot be submitted electronically.

The Port Community Systems that integrate and coordinate these complex functions and ICT applications are usually centrally managed by port authorities, private companies or partnerships between the two. Ideally, a PCS should provide a one-stop shop for port customers/users and facilitate message exchange for stakeholders involved in seaborne transport. It should, for example, enable shipping companies and freight forwarders to enter manifests using EDI and Web technologies. They may book berth space and confirm times of arrival and departure; book bunkering, maintenance and repairs; and submit a variety of certificates and visas needed for specific goods, vessels, crew and passengers so that all data logistics and clearances are obtained off the critical path of arrivals and departures. In addition, PCS can manage vehicle scheduling so that trucks arrive at a precise scheduled time, ensuring minimum waiting and efficient use of equipment by all parties. Coordinating all of these functions to optimise and minimise the time that a consignment spends in port can substantially reduce delays and associated costs for trading businesses, and also increase the profitability of the port as it handles higher cargo volumes.132

The participation of private sector businesses such as freight forwarders, shipping agents, brokers and hauliers means that they need to share information which is available to the CIQS agencies. Their capacity to do this is therefore important. Port and revenue authorities are the first to receive information on the movement of goods. Private companies are dependent on the PCS and integrated customs systems to locate containers, calculate invoices and obtain information about what has been paid and when. For this to work, those private companies need to have information about the rules, regulations and procedures which govern the port and all the processes taking place within it. Ensuring that they have and use up-to-date information can be challenging.

A large number of ports around the world are have implemented or are currently implementing PCS in order to reduce costs and increase the speed of formalities. The Port of Singapore’s Portnet system, for example, provides an integrated service to shipping companies, hauliers, freight forwarders, shippers and local authorities to facilitate exchange of documents, transactions and efficient clearance. It has one of the most sophisticated systems for handling port operation and management worldwide, operating in one of the world’s two or three busiest ports. Portnet operations include terminal planning, berth allocation and vessel, yard and rail planning; terminal operations, including computer-aided and real-time operations, control centres and gate operations; equipment maintenance; and invoicing and performance reporting for analysis and strategic planning purposes.133 Other examples of Port Community Systems in major international ports include the Data Communications System (Dakosy) and Container Authorization System (COAST) of the Port of Hamburg; the Customer Plus Programme and OnePort Ltd, and Tradelink of the Port of Hong Kong; and PortofRotterdam.com, Virtual Port and WebJonas of the Port of Rotterdam.134

Major African ports are introducing Port Community Systems, although progress has been slower than at these Asian and European examples. The main regional ports in Africa - such as those at Durban (South Africa), Tema (Ghana), Mombasa (Kenya) and Alexandria (Egypt) - have seen substantial upgrades to their ICT environments over the last five years. An integrated port ICT system in Alexandria, for example, has implemented a message

132 UNCTAD, ICT Solutions to Facilitate Trade at Border Crossings and in ports, P 11
133 see, www.portnet.com/
134 Smit, Suzanne, A Comparison of Port Community Systems,
exchange broker application that integrates all PCS members to expedite clearance of the 60% of the goods that enter Egypt through the port (see Box 2.7). The Transnet Ports Authority of South Africa initiated a centralised Web-enabled port information system in 2006, while the PCS at major South African ports, including Durban, was rolled out in 2008. It links all parties in the port and shipping community to a common neutral information platform, enabling real-time information flow and transactional service delivery in a manner that is visible to all relevant parties.135

| Box 2.7: The Port Community System of Alexandria Port136 |

The Alexandria Port Authority’s Port Community System was initiated in response to inefficiency bottlenecks including the lack of data-sharing among critical actors in port management and goods clearance. The port handles 60% of Egypt’s foreign trade traffic and is one of the largest in North Africa.

In 2004, the Port Authority of Alexandria decided to implement a Port Community System with the aim of establishing a one-stop shop for submission of manifests and facilitating the handling of vessels and cargo, monitoring and billing. The implementation process involved a task force drawn from public and private stakeholders and was supported by the Ministry of Transport.

Implementation of the PCS has involved four steps:

(i) business process analysis and reengineering, in particular in the areas of vessel movement, general cargo export, container import and export and passenger traffic;
(ii) software and applications development, including the adoption of Smart Port Solution (SPS) software;
(iii) establishment of the necessary ICT infrastructure for port operation, including a data centre and wired and wireless connectivity with internet access;
(iv) development of human resources to provide systems and end-users with support and implement uninterrupted workflow.

The PCS includes modules for cargo, safety, stevedoring, customs, quarantine and inspections. One of the principal benefits claimed is increased efficiency in goods clearance. Before implementation of the PCS, it is reported that customs clearance required submission of 38 procedures and 28 signatures over a period of at least two days. No signature is now required and it is said that the whole process can be completed in less than five hours.

Another broadly successful Port Community System is the Kilindini Waterfront Automated Terminal Operating System (KWATOS), which was inaugurated in 2006 and went live at the Port of Mombasa, Kenya in 2008. This PCS, which cost US$7million, covers container terminal, conventional cargo and marine operations, together with inland container depots in Nairobi and Kisumu. Stakeholders in the project include the Kenya Ports Authority (KPA), Kenya Revenue Authority (KRA), Kenya Bureau of Standards, Kenya Shippers’ Council and clearing and forwarding agencies that operate within the port.137

With a full electronic clearance system introduced in 2010, KWATOS has been instrumental in reducing paperwork, improving response times and access to information, and reducing process delays. As a result, KPA claims to have reduced cargo dwell time from more than ten to around five days and to have cut the number of days spent by ships in port by 40%, as well as enhancing the efficiency of customs release, inspections and

135 http://www.transnetnationalportsauthority.net/NPA_Ports_online.html
137 KWATOS is discussed in more detail in Annex 2.
manifest submission through an interface with the KRA’s SIMBA customs management system. As the country case study of Kenya in Annex 4 reports, however, integration between SIMBA and other systems was initially problematic, and the effectiveness of both KWATOS and SIMBA in the Port has been adversely affected by power outages and management problems.

Experience at Port Klang in Malaysia, the Port of Gothenburg in Sweden and the Port of Muscat in Oman suggests that PCS can be interconnected to other systems in order to facilitate trade in the supply chain. Interoperability between PCS and other systems, however, requires the adoption of technical standards such as ebXML and other business process standards which are described in Chapter 3, together with committed action to overcome infrastructural challenges such as unreliable energy supplies and human and organisational challenges associated with process engineering and capacity-building. It is only when efforts to address these multiple challenges are undertaken holistically and system-wide that they are likely to maximise the potential gains that can be leveraged through ICTs.

The experience of major ports nevertheless suggests that the establishment of a Port Community System is an important step towards the adoption of National Single Windows in countries with major port infrastructure. The PCS presents a reference point for integration, networking, efficiency and for the simplification and automation of processes that can be adopted by other actors in the supply chain, paying the way for evolution of a national window along the lines described in Section B below.

**Cargo Community Systems**

The airline industry – airports and airlines – uses a variety of technology-enabled approaches to improve passenger journeys, streamline and integrate airline and airport operations, track baggage and cargo, and ensure necessary levels of maintenance and aircraft safety and security. There are, however, significant differences in the quality of outcomes from these approaches and in the trade facilitation performance of airports within and beyond Africa.

ICT applications for airport efficiency address diverse functions including aircraft management and air traffic control, freight management, and passenger processing and security. ICT applications in this last area include security systems, biometric identification, advance passenger information, machine-readable travel documents, flight information and information display systems, electronic ticketing, self-service kiosks, airport facility allocation systems and baggage handling. As with ports and land border crossings, systems must deal with a complex environment that involves the movement of goods and people, including those in transit as well as those entering or exiting a country itself.

Information exchange and integration between these different aspects of airport and airline management are crucial if the sector is to function effectively and achieve high airport usage volumes with efficient clearance times. They are particularly crucial if an airport is running near or above its operational capacity. Annex 4 illustrates the problems which have arisen, for example, at the airport in Nairobi which is operating at traffic volumes well above its planned capacity. Freight forwarders, postal services and express messenger/courier services, amongst others, need special arrangements with Customs for manifest presentation and clearance and revenue payment to ensure fast clearance and logistics.

Cargo Community Systems (CCS), the airport equivalent of PCS, are implemented in almost all airports round the world. A typical CCS comprises airport/airline cargo handling, booking, scheduling, invoicing, payment, forwarding, labelling and tracking components. Africa-based airlines including Ethiopian Airlines, Kenya

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139 Personal communication with KRA staff.
Airways, South African Airways and Egypt Air use a proprietary Global Cargo Community System (GCCS) marketed by CHAMP, a company owned by SITA and Cargolux S.A.\textsuperscript{140} GCCS implements a standard EDI message-based information exchange platform between airlines and other stakeholders including forwarders, handling agents and customs, through which all relevant cargo and transport-related data can be exchanged. It also offers shipment status, online booking and customs interfaces.

An interoperable interface with customs systems, to provide efficient clearance of goods at airports, is one of the critical requirements of any CCS. However, although most African airlines use GCCS for the delivery of cargo, there is often a lack of integration between this and customs systems such as ASYCUDA, resulting in separate entry of the manifest for customs purposes. South Africa, Mauritius and Ghana are among countries that have initiated full integration of their CCS and Customs within the context of a national single window.\textsuperscript{141} The Kenya Revenue Authority (KRA) and Kenya Airways are exploring the possibility of integration between the KRA’s SIMBA system and the GCCS at Nairobi airport.\textsuperscript{142} The example of Mauritius’ CCS, described in Box 2.8 below, shows how the integration of air cargo systems with customs and port systems is important in facilitating trade and the efficient flow of goods across borders.

\begin{boxedtable}
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\begin{tabular}{|p{0.9\textwidth}|}
\hline
\textbf{Box 2.8: Mauritius Cargo Community System}\textsuperscript{143} \\

Incorporated in January 2008, Mauritius Cargo Community Services Ltd (MACCS) has been appointed by the Government to build and manage a national Cargo Community System (CCS). MACCS is a public-private sector trade facilitation project that is concerned with three national objectives:
\begin{itemize}
  \item improvement of the competitiveness of Mauritian products;
  \item development of Mauritius as a regional trade and transport hub; and
  \item meeting international requirements (including USA and EU obligations) and implementing the WCO SAFE framework and standards.
\end{itemize}

Founding shareholders of MACCS include the Mauritius Export Association (MEXA), the Mauritius Chamber of Commerce and Industry (MCCI), State Investment Corporation Ltd (SIC), Mauritius Ports Authority (MPA), Cargo Handling Corporation Ltd (CHCL), the Customs House Brokers Association (CHBA) and the Association of Mauritius Shipping Agents (APAMM).

The purpose of the Mauritian CCS was to allow for easier access to data related to cargo movements for all logistics stakeholders (Customs, Port Authority, Port Terminal, Container Freight Station, freight forwarders, importers, exporters, customs brokers and shipping agents). The CCS is an integrated information system operating in real time which aggregates, optimises, synchronises and secures supply chain processes for cargo stakeholders. It acts as an intermediary between customs, the GCCS system of the airlines and the Port Community System. Achievements claimed for the CCS include:
\begin{itemize}
  \item integration of disparate systems, reducing the time required to process documents such as manifests;
  \item reduction of dwell times for cargo at export and import, giving Mauritius a competitive advantage; and
  \item reduced logistic costs for all stakeholders within a context of improved efficiency.
\end{itemize}

\end{tabular}
\end{boxedtable}

\textsuperscript{140} http://www.champ.aero/index.php/ourportfolio/communitydistributionservices/gccs.
\textsuperscript{142} Personal communication with KRA staff
The deployment of the CCS in Mauritius through a public-private partnership has been beneficial compared with other African countries, such as Kenya, where public sector Revenue Authorities have had more difficulty in integrating their systems with the private sector GCCS maintained by airlines such as Kenya Airways.

7. Transaction management and online payment systems

Payments are required in every trade transaction and their efficiency is an important factor in trade facilitation. Three main types of transaction are involved in the supply chain for any consignment:

a) the transaction between the principals, in which the purchaser pays for goods;
b) the transactions between the supplier and intermediaries who are paid to take responsibility for transit and other arrangements, including hauliers, commission agents and insurance companies; and
c) the transactions between trading parties and government agencies, which are concerned with customs duties and other fees (and, in some cases, bribes).

The payment of fees and taxes is a critical requirement in the movement of goods and people across borders. It has been estimated that between ten and twenty payments may need to be made in a typical import transaction in Africa. These payments include insurance bonds for consignments, letters of credit, customs and other service fees. Banks, financial institutions and other agencies such as forwarding and shipping agents and customs authorities are among those receiving payments. They take place throughout the supply chain, as illustrated in Figure 2.7.

Figure 2.7: Payments in the supply chain

Inadequate and inefficient payment systems are not only costly in financial terms; they also cause delays in the import or export of goods, and bottlenecks for other activities along the supply chain including transportation and border crossings. The efficiency of payments systems affects the efficiency of the circulation of goods and services and the pace of economic growth.
Trade transactions are much less well handled in Africa than in most world regions. Banks can be unenthusiastic about handling transactions which may appear risky to them, for example those required for entry into new markets, and are poorly interconnected with one another within the continent. Transactions between currencies are more difficult where these are not convertible, where exchange rates fluctuate widely, and where inflation rates are high. Commission and other transaction costs can therefore be considerable.  

Likewise, a substantial number of different payments may be required by government agencies along supply chains, including fees for passengers, cargo, conveyances, transit bonds, tariff duties on commodities and value-added taxes (VAT). These fees have traditionally been processed by trading parties visiting banks or making payment to cashiers of different agencies within the port or border crossing. The processing of these payments consumes a significant amount of time that adds to trading costs.

ICTs can play a significant role in facilitating these payments, provided that the necessary enabling communications and financial frameworks are in place. Improvements to cross-border transactions between principals – which may, for example, reduce commission rates – need to be enabled by banks in conjunction with inter-governmental arrangements governing financial transfers (including money-laundering regulations). These can be quite complex. Two relatively straightforward changes in payment mechanisms, enabled by ICTs, can make a substantial difference to the financial cost and time spent waiting to make smaller transactions.

- The introduction of online payment options for official fees, through customs management, Port and Cargo Community Systems port and other single window mechanisms, eliminates much of the time spent by trading parties waiting for cashiers to take their money and adds to the security of transactions (not least because trading parties no longer have to carry as much cash). Transaction receipts which are automatically generated within a single window system also provide a secure record of transactions, which can be printed and/or digitally communicated to other parties in customs management and revenue collection processes.

- Micro-payments through mobile phones can reduce the need to go through banks when making relatively small transactions (time spent on which is more costly than the actual transaction value). They also reduce the need for drivers and other intermediaries to carry cash. Personal mobile transactions have become widespread in some African countries during the last five years, especially in Kenya. Enabling small mobile transactions to be made across borders as well as within national territory would be particularly useful, but this is not yet a significant feature in African trading practice.

Applications such as these could have significant value in reducing the gross cost of what are usually small net transactions along the supply chain. India’s Central Board for Customs and Excise provides an example of the online payment of duties, which illustrates this point. Introduced in 2007, its system allows importers and exporters to log on to a web application, select the duty to be paid and the bank through which payment will be made, and then to make a payment. Information about the duty is securely forwarded to the bank’s financial application. After crediting duty to the Customs account, this application forwards a duty payment report, identifying the transaction, to the custom’s ICEGATE Server. A message is transmitted to the Customs EDI application to update payment details. Although this payment system has been largely restricted to designated banks, the introduction of e-payment has reduced the amount of time required to process payment and thereby expedited clearance of goods at ports and border posts.

146 Source: http://bangalorecustoms.gov.in/TF_94_2010.htm
Effective payment systems depend on a number of factors including the integrity of a country’s border control and duty collection personnel, the soundness of the processes involved in collecting money, the presence or otherwise of safeguards in border systems to prohibit fraud and prevent theft, and the quality of the banking process. The introduction of electronic payments and online banking provides a significant opportunity for reducing fraud and expediting payments, offering greater convenience to traders, public fee and duty collecting authorities and other service providers.

Various payment models are currently in use within trade in Africa, including payment of duties through commercial banks before the delivery of goods, direct payment to the treasury, and payment of bonds to guarantee the release of goods and secure their movement across borders (see section on customs above). There have also been attempts to move towards centralised online fee payments through single windows. However, payment systems in Africa are not currently well adapted to facilitate trade across borders. Payments are inefficient in terms of cost, time, convenience and adaptability to modern technologies and international standards. An international fund transfer using electronic networks that takes just a few minutes to go around the globe can take two weeks to arrive at the cross-border beneficiary in some African countries.147

This reflects the generally slow development of online payment systems of all kinds on the continent, in both business and personal financial markets. Barriers arise from the nature and structure of banking services and products, in bank management and customer attitudes, and from lack of integration between systems (for example, in trade, between customs administrations and PCS). The most important barriers to online payment services in Africa include:

- high internet access costs, including connection fees, usage costs and hosting charges for websites with sufficient bandwidth;
- limited availability of credit cards and nationwide credit card networks;
- poor and limited transport infrastructure, which results in slow and uncertain delivery of goods and services, constraining confidence in online payments;
- network security problems and inadequate security safeguards;
- lack of skilled human resources in payment technologies and in the complexities of integrating online payment systems with customs management systems such as ASYCUDA; and
- cross-border issues, such as lack of recognition of transactions under the laws of other countries and lack of certification services.

In addition, applications which enable online and mobile transactions require changes in the enabling legal and regulatory environment in many countries, and in the procedures used by official agencies, as well as in the availability of relevant ICTs. Legislation and regulations enabling e-commerce transactions, including digital signatures, are particularly important. Where regulations permit, some countries (notably Kenya) have seen rapid growth of mobile money markets, and there is potential for much greater growth elsewhere. Banks in some countries on the continent can now clear international credit transactions, paving the way for cross-border online payments. Legislative and regulatory changes necessary to expedite mobile and online transactions should be part of the modernisation of trade management which is undertaken by governments in Africa.

The regional economic associations UEMOA and CEMAC in West and Central Africa provide some examples of what is taking place. Both have taken advantage of the availability of single currencies within their regions to

press for the introduction of online payment systems. The Central Bank of West African States (BCEAO), which covers the eight countries that use the West African version of the CFA franc, has promoted access to banking services and the use of electronic payment systems through a regional administrative order. BCEAO member-states are expected to adopt similar laws to facilitate electronic payments in their jurisdictions. The BCEAO has established an e-payment governance and supervisory body within UEMOA that is working towards an interbank e-payment system in the region by providing technical and operational infrastructure, making it possible to meet cash withdrawal and payment needs through bank cards.

Similar efforts are underway in the CEMAC region, while the development of national payment systems in AMU countries has created the potential for harmonisation of payments to facilitate electronic payments within the Arab Maghreb.

There is growing integration of payment systems into Customs software to facilitate valuation and payments through a single window. Recent customs automation projects in Senegal and South Africa have fully integrated electronic payment systems. Senegalese enterprises have been working on an e-payment system within a framework of paperless trade to enable businesses to pay customs dues from their offices electronically. An e-payment sub-component known as CORUS links directly with the national Single Window (ORBUS) and GAINDE 2010 customs systems. This online payment service contributes to the reduction of time required to make payments, and reduces costs, thanks to the elimination of paperwork and of the need for people to be in the same place physically to make transactions. Scaling up the use of electronic payment systems, through the promotion of electronic channels to taxpayers and traders, and simplifying the ease of use of these channels, are also objectives of the SARS modernisation programme in South Africa.

There has been a number of pilot projects to promote the use of mobile banking in trade facilitation, in particular for payments by small and informal traders. The potential of mobile payments is significant due to availability of low-cost mobile roaming across much of Africa and because of the large number of small payments which are typically required for informal trading and clearance.

The M-Kesho service in Kenya, for example, allows customers to link payments to the widely-used M-PESA mobile money network. M-Kesho is a product of the telephone operator Safaricom, which operates M-PESA, in partnership with Equity Bank. It allows customers to make deposits and withdraw cash between Equity Bank and M-PESA accounts. Other facilities available through M-Kesho include emergency micro-credit and micro-insurance. Progress in this area shows that the use of micro-payments for trade transactions is now feasible in Kenya, although other countries in Africa have not experienced as rapid development in mobile money systems as has been experienced in that country.

More work is still needed to promote regional payments systems and reduce transaction costs. The full implementation of e-payment systems that facilitate logistics requires concerted efforts in standardisation and automation of the banking system as well as the implementation of a cohesive legal framework for settlement of payment obligations. Governments also need to facilitate diverse approaches to payments including those that make use of mobile phones. An example of innovative practice in this field is summarised in Box 2.9.

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148 through Order No. 08/2002/CM/UEMOA
149 See UEMOA
151 See Annex 3.
152 See SARS e-filing, http://www.sarselfiling.co.za/Payment.aspx
Box 2.9: TradeMark East Africa - One Point Regional Duty Payment Project in East Africa

TradeMark East Africa (TMEA) is a not-for-profit company that has been established to support the EAC and each national government in its region to promote economic integration. One of the challenges that TMEA addresses concerns the multiple payments that are required at a point of entry and the need for bonds of guarantee for transporting goods across borders. Bond requirements are repeated in every country along a transit route, leading to costs and delays in intra-regional transport and trade. The amount of money tied up daily as transit bonds in the COMESA region is in excess of Sh81 billion ($1 billion). TMEA also estimates that custom procedures - together with other administrative barriers such as lengthy and duplicated immigration procedures, inspection requirements, unharmonised standards, payments and police road blocks - raise the cost of imports into the region by 15%.

TMEA has been working with revenue authorities and banks in East Africa to develop a system for improved handling of duties and transit bonds. The purpose of the project is to collect duties and taxes at the port of entry (for imports) or at the start of journey (for exports). Payment is made electronically to relevant revenue authorities on completion of transit. The bank’s role is to handle such money transfers according to existing laws, leveraging the robust information infrastructure that revenue authorities have installed to monitor the entry and exit of the transit goods at border points.

This system was initially piloted in February 2011 by the Tanzania Revenue Authority at the port of Dar es Salaam, which handles imports to neighbouring landlocked countries, before being replicated at the Port of Mombasa, which serves the Northern Corridor towards Uganda, Rwanda, Burundi and DRC. Under the scheme, banks are expected to transfer duties and taxes to relevant revenue authorities right from the country of customs declaration, sealing evasion loopholes and accelerating cross-border transactions. Instead of repeating customs procedures at each country’s border control points, a message is simply relayed from one scheme manager to another indicating that the consignment is still intact, with the duties and taxes collected at the port of entry serving as a guarantee to countries of destination. In the event of non-compliance en route, the revenue authorities affected are able to access the funds as penalties and fines.

This project has not only improved the efficient flow of goods but has also expedited regional integration in East Africa by facilitating revenue-sharing among revenue authorities in the region. In the long term, the scheme is expected to reduce the cost of doing business in East African region, lowering transport costs and thereby the costs of goods in landlocked countries, and making the region more internationally competitive.

8. Business information resources

The discussion of experience of ICTs and trade facilitation above has been mostly concerned with the potential for ICTs to improve the efficiency and coordination of trade management and thereby reduce costs and delays in transit. As noted at the start of this chapter, the contribution of ICTs to development outcomes derives from their ability to enhance the efficiency and coordination of human and organisational behaviour and from the way in which they can extend access to information and knowledge. This final part of section A is concerned with the contribution of ICTs to improved trade performance by extending the information and knowledge available to trading businesses. It primarily addresses two issues: the transparency of trade management processes and information about market opportunities.

Trade management processes

The requirements of trade management are potentially burdensome for businesses. It takes time and money to ensure that goods meet the standards, rules of origin and other certification requirements that are necessary for both import and export trade, to understand tariff obligations, to understand and complete the necessary range of documentation (without omitting any necessary documents or data), to research the best transport routes to use and the best agents to manage the transit of goods and their progress through complicated systems such as border crossing points and ports. Trade facilitation is essentially concerned with making these requirements easier for trading businesses, by simplifying, standardising and automating them. Transparency, however, is also crucial. No matter how simple or efficient a requirement may be, an importing or exporting business – particularly one that is inexperienced – will fail to comply with it if it is ignorant about what precisely it should do.

Trade management agencies should therefore make as much information readily available to trading businesses as they can, in formats that are easy to understand and that can be accessed flexibly in ways that are convenient to business (including mobile phones and the internet). Because trade is international, this is not just about the relationship between trading businesses and agencies of their own government, but also (and, for exporters, more importantly) about that between them and the agencies of governments with whose territories they trade. The extent to which businesses are familiar with these requirements affects their propensity to trade by lowering risk/uncertainty and reducing the bureaucratic cost of managing consignments. Bilateral information, covering individual import/export routes, is useful, but information can also be provided on a regional basis by RECs, regional business associations or private companies.

One example of this is TradeMark East Africa’s Integrated Sharing Portal (ISP), which is associated with progress towards integrating national single windows and facilitating flows along trade corridors in the East African region. TMEA is supporting customs and revenue authorities, phytosanitary and standards certification agencies, regional private sector trade facilitation organisations, importers and exporters in the EAC region to create databases on procedures, rules, and regulations which they can then make available to their staff and to the wider trading community. The purpose of the ISP is to facilitate the exchange of information between trade facilitation agencies at ports and border posts. The initiative was launched in 2011 and seeks to:

- create a database of existing rules, regulations and procedures for import and export;
- develop an online web portal for export procedures, which provides for interfaces and linkage with single window systems; and
- develop both online and offline methods of dissemination for documentation.

Trade Mark East Africa also aims to develop an e-learning platform to assist in the delivery of training programmes and courses, and to provide relevant information to clearing and forwarding agencies under the auspices of the Federation of East Africa Freight Forwarders Association (FEAFFA).

Another important way in which ICTs can be used to enhance the transparency of trade management is by providing a reporting mechanism for complaints about non-tariff barriers, corruption and other problems encountered by trading businesses. Such mechanisms have the capacity to empower traders who seek to challenge dishonest and bureaucratic practices. Examples include the TradeMark South Africa trade barrier

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reporting portal\textsuperscript{157} and the East African corridor diagnostic portal.\textsuperscript{158} The reporting mechanism established under the COMESA-EAC-SADC Tripartite Agreement is described in Box 2.10.

**Box 2.10: COMESA, EAC and SADC Non-Tariff Barriers (NTBs) reporting and monitoring mechanism**\textsuperscript{159}

This Non-Tariff Barriers (NTBs) reporting, monitoring and eliminating mechanism was initiated as part of the drive to establish the Tripartite Free Trade Area (FTA) that was agreed by COMESA, EAC and SADC in 2009. The web-based mechanism supports the reporting and monitoring mechanisms that all three RECs have established, and incorporates timelines for the removal of NTBs.

![Figure 2.8: Screen shot of NTB web site](http://www.tradebarriers.org)

The online portal, which is illustrated in Figure 2.8, enables trading businesses and others to report, and then to monitor the resolution of, barriers encountered as they conduct their business in the COMESA, EAC and SADC regions. Stakeholders (upon registering an account) are able to report complaints, which are then passed on to the appropriate country representative. These complaints are published on the website, which enhances transparency as well as facilitating easy follow-up of reported and identified NTBs and Non-Tariff Measures (NTMs). A review of the 334 complaints so far registered on the site shows that the large majority relate to ‘inadequate or unreasonable customs procedures or charges.’ While about 65\% of these have been resolved, the remaining 35\% have remained unresolved for more than 60 days.

**Market opportunities**

Knowledge of market opportunities is just as important in reducing risk and increasing propensity to trade for local firms as is knowledge of trade management requirements. The more detailed and more accurate the information that traders have about market opportunities, the better they are able to select the best markets for their goods (which may be those with most potential or with lower risk) and to organise documentation, transport logistics and border process management in order to maximise their financial return. The better their market information, in short, the more likely they are to export more goods and to export to more destinations. Enhancing the knowledge of trading businesses about market opportunities is therefore a

\textsuperscript{157} www.tradebarriers.org

\textsuperscript{158} www.eastafrica corridors.org

\textsuperscript{159} Non-Tariff Barriers (NTBs) reporting, monitoring and eliminating mechanism website: http://www.tradebarriers.org
significant part of ICT-enabled trade facilitation, alongside improvements in the efficiency and coordination of trade management processes.

Information and communications media can add significantly to the range and value of information available to trading businesses. Most businesses in Africa are now equipped with mobile phones and all but small businesses are likely to be equipped with computers. Both platforms now provide access to the internet, which is exceptionally well-suited to the dissemination of information on trade procedures and market conditions, and can be used as a vehicle for documentary or financial transactions. It is important, however, to ensure that information is reliable and up-to-date, and that trading businesses have the necessary skills to make effective use of it in planning their activities.

Evidence from other sectors, such as agriculture, shows that small businesses use mobile phones and the internet to reinforce existing supply chain relationships as well as to identify the best markets in which to purchase inputs or sell produce and to search for business relationships that extend their current areas of activity. For businesses which are reliant on a relatively small number of customers, or which have only one purchaser of their goods in a particular export market, the opportunity to build stronger personal relationships within established commercial partnerships can be as crucial as the opportunity to establish new business relationships.

Trade facilitation agencies can do much to take advantage of mobile phone and internet access by providing portals or hubs that offer access to trade-related information and to guidance from trade promotion agencies. Public websites and subscription communications services can provide information on potential export openings in neighbouring countries and even match-make potential suppliers and purchasers of goods and services. Examples of such online resources include the ECOWAS Business Opportunities portal ECOBIZ, Trade Point Senegal, and the Jamaica Trade Point service.

ECOBIZ, for example, which is illustrated in Figure 2.9, is one of ten regional programmes linked to implementation of West Africa’s Common Industrial Policy (WACIP), and forms part of the ECOWAS Regional Trade Information system.

**Figure 2.9: Screenshot of ECOBIZ**

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161 www.ecobiz.ecowas.int
162 www.tpsnet.org
163 www.jamaicatradepoint.com
It facilitates trade contacts among companies in the region and enhances ECOWAS’ trade capacities by making information more rapidly available to users. Content is delivered through the web-based regional Système Informatisé de Gestion des Opportunités d’Affaires - Trade Opportunities Management System (SIGOA TOPS).  

As well as matching suppliers and purchasers of goods and services, the greater ease of communications using mobile phones and the internet and the availability of business association hubs make it easier for businesses in one country to explore possible collaborative partnerships with peers or potential associates in other countries. One of the advantages put forward by proponents of regional integration is that it can enable entrepreneurs in separate countries (or even across a region) to build new businesses that take advantage of the different specialisations and comparative advantages that are found in different countries – for example using a bottling plant in one country to produce drinks that depend on fruit grown in another. Regional integration provides a stronger economic foundation for this kind of collaboration, but it still has to be enabled by interaction between entrepreneurs. It is this interaction that can be fostered by portals and hubs such as ECOBIZ.

**B – CONSOLIDATION OF ICT-ENABLED TRADE FACILITATION: SINGLE WINDOW SYSTEMS**

Section A of this chapter has described and illustrated eight areas of trade facilitation in which ICTs have played an increasingly important role, around the world and in Africa, since the beginnings of customs automation in the 1980s. Many of these initiatives, particularly in the early years, have been undertaken in relative isolation, addressing particular points along the supply chain (such as border crossing points) or particular communities of trade stakeholders (such as port communities). They have been specifically concerned with improving efficiency at these points or in these communities.

In the last few years, however, attention has increasingly focused on approaches to ICT-enabled trade facilitation which address the supply chain more systemically. These approaches are rooted in the capacity of ICTs to improve coordination between different stakeholders in trade management. In particular, they rely on the potential for ICTs to:

- replace the need for data on consignments to be entered at multiple points along the supply chain with a single data entry point; and
- share the resulting data between all stakeholders that need access to them either within particular communities (e.g. customs stakeholders) or across the supply chain as a whole.

This ‘single window’ approach, with its potential to improve efficiency and coordination across the whole trade system, has become central to thinking about the future of trade facilitation, and lies at the heart of the recommendations in this report. Although inherently systemic in approach, it has the advantage that it can be implemented incrementally, beginning with specific communities in specific locations, such as Port Community Systems, integrating these with one another (and particularly with customs management), and developing over time into national and subsequently regional systems that manage and share data amongst all relevant stakeholders.

**Definition**

The single window for trade is defined in UN/CEFACT’s Recommendation No. 33 as being:

>a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfil all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once.\(^{165}\)

A single window process creates a single point for data entry concerning a consignment, which is supported by interconnection and data-sharing between stakeholders within a trading community. This trading community may include a variety of trading businesses and government agencies, depending on the scope of the particular single window process concerned. Examples of such communities include Port and Cargo Community systems and customs management systems that are built around single points of data and document submission, payment and decision-making. Their user communities include public sector agencies such as CIQS, Permit Issuing Agencies and trade promotion bodies, as well as private sector businesses (both trading businesses and those responsible for managing facilities such as ports and airports).

A single window allows traders to send and receive necessary information at a single point in time, using standard digitised documentary formats, thereby providing accurate data for import, export and transit of goods that meet requirements along the whole supply chain. This reduces the need for repetitious data entry, avoids unnecessary errors creeping into data management, and thereby allows more planned and managed flows of both goods and information. In this way, it simplifies and expedites transactions and consignments, improves reliability, reduces the direct cost to firms of trade management processes, and creates opportunities for efficiency savings by eliminating bureaucratic interventions, inspections and delays. As a result, it can improve the competitiveness and profitability of trading businesses in established markets. By reducing the costs of market entry, it can also make it more attractive or commercially viable for businesses to take up new export opportunities, including those across borders within REC regions.

Single window principles are not just relevant to trade but applicable to all complex organisational systems which have multiple participants and require the frequent and accurate sharing of large amounts of data to run multiple processes (especially if these include transactions where the integrity and accuracy of data are paramount).

The adoption of the single window principle in trade facilitation presents a major opportunity for African countries to move away from a silo-based approach to trade management, in which agencies have acted more or less autonomously of one another, to an interoperable and integrated approach. It both requires and facilitates the adoption of international standards for documentation (see Chapter 3). CEFACT has summarised the benefits of a single window approach as follows:

> The implementation of a Single Window can be highly beneficial for both Governments and trade. For Governments it can bring better risk management, improved levels of security and increased revenue yields with enhanced trader compliance. Trading communities benefit from transparent and predictable interpretation and application of rules, and better deployment of human and financial resources, resulting in appreciable gains in productivity and competitiveness.\(^{166}\)

Implementation

Implementing single window processes is, however, far from simple. As described in Chapter 1, trading communities are highly complex, involving many different stakeholders, based in different jurisdictions, with different interests in trade outcomes. Integrating trade management facilities which fall under different

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165 UN/CEFACT Single Window recommendation 33
166 UN/CEFACT Single Window recommendation 33
agencies and are at many different locations poses political, administrative, financial and infrastructural challenges which cannot be resolved quickly. These are discussed in Chapter 3.

As a result of these challenges, progress from single windows within specific communities to national single window systems can take a significant period of time. In Mozambique, the implementation of a single window system has been scheduled over seven years.\textsuperscript{167} It takes a number of years even in a highly developed country such as Japan (see Box 2.1), and requires a full modernisation programme at ports and airports, in road transit management and customs administration. The experience of the South African Revenue Service, described in Box 2.11, illustrates the need for long term planning as part of the modernisation and single window process.

**Box 2.11: SARS modernisation, South Africa\textsuperscript{168}**

The South African Revenue Service (SARS) programme to modernise and simplify its customs administration followed the country’s accession to the Revised Kyoto Convention in 2004. Legislation was introduced with the aims of standardising customs procedures across different transport modes; automating critical customs processes including import/export clearance, advance notification and secure recording of goods movements; and expediting clearance formalities. Risk management was central to this process. The Customs Risk Engine within the modernisation programme aimed to ‘provide the nucleus around which import/export transactions may warrant scrutiny or detailed checking by Customs. In this way, shipments which are perceived to be non-risk will receive a green light for release and onward movement to their destination.’\textsuperscript{169} Another important element has been staff development.

The first phase of customs modernisation, begun in 2009, involved implementation of new Customs Procedure Codes at ports of entry and improvements in reporting arrangements with the South African Reserve Bank, with two months of pilot testing. The second phase, planned for early 2011, involved implementation of a new Customs Act, the introduction of new technology, new clearance declaration and notification forms, a new electronic filing payment system, a single registration system and electronic supporting documents. Later phases are planned to include new warehousing and inward processing systems, integrated cargo and clearance declaration management, integrated account and revenue management, integration with other government departments and the introduction of a full single window.\textsuperscript{170}

Although discussion of the potential of single window principles often focuses on their implementation in national or regional systems, it is important to recognise that their value at this level derives from their ability to integrate systems at different points along the supply chain. So, for example, single window principles can be applied:

- within the framework of customs automation, enabling data entry and sharing by suppliers and customs administrations;
- along the supply chain, enabling data sharing between suppliers, transport contractors and consignees as well as some or all government agencies;


\textsuperscript{169} ibid.

amongst government agencies responsible for different issues (customs, immigration, quarantine and security) at a border crossing point (integrated border management);

within the whole trading community at a particular facility such as a port (including port management, customs, transport contractors, shipping agents and banks) (port community systems);

amongst customs agencies (or government agencies more widely) across international borders (cross-border integrated border management).

Some of these configurations are illustrated in Figure 2.10. As this suggests, there is a complex web of overlapping arrangements that need to be integrated over time into a national system.

**Figure 2.10: Single window variants**

The differences between single window implementations at these different levels are significant, as suggested by the following three examples:

a. The single **port window**, whose services are generally restricted to users of the port after which it is named, and which does not therefore include other transport (road, rail and air) transactions. Single port systems and cargo community systems, which were discussed earlier in this chapter, offer three main services to port officials and trade users:

   - electronic sharing of manifest data and their processing status;
   - sharing of information on logistics flows; and
   - centralisation of payments around a virtual or physical window.

b. The single **customs window**, which is a downstream and upstream extension of the customs information system. This enables all the necessary authorisations for importing or exporting goods to be requested and obtained, regardless of transport mode and of the entry or exit point. A single customs window can be more or less complex, depending on the extent to which the customs information system is open to the outside world. Together, the single window and customs systems should provide a full range of services for completing customs formalities.

c. The single **business window**, which offers a platform to perform commercial transactions linked to international trade. This includes services which give rise to financial payments, for which the customer
may choose the provider and the form the service takes (subject to negotiation). Some of these transactions may be compulsory in some countries, though the majority are optional or voluntary.

Each of these single window processes shares information between different actors in the trade environment. All the government authorities or authorised agencies involved in the process are linked together and their data requirements and control mechanisms are co-ordinated. In addition, the single window enables government agencies to disseminate information and collect data for analysis and planning purposes. A payment interface within a single window can facilitate effective revenue collection or payment of fees.

Although there may be disparate starting points, as illustrated in Figure 2.10, and although the process will be complicated, the inherent similarity in the underlying principles of all single window systems – a single point of data entry and the principle of data sharing – provides the framework for bringing these together into a cohesive national single window system, which can then in turn be integrated with other national windows at a regional level (and even ultimately in a global single window, though this is today more of a distant vision or aspiration). The way in which location- or community-specific single windows can be integrated into a national single window is illustrated conceptually in Figure 2.11.

![Figure 2.11: 'User communities and broad functionality of a single window ecosystem']

As noted earlier, constructing and advancing a single window is a challenging project, which entails strategic planning, effective use of information technologies, securing financial and human resources and, critically, the mobilisation of political commitment and the support of stakeholders in the trade community. There are many such stakeholders. A fully integrated national single window might involve ten or more ministries or government agencies, concerned not just with trade but also with industry, finance, banking, transport, forestry and fisheries, health and veterinary health, labour, tourism and telecommunications. As well as serving these government agencies, a single window provides services to many different kinds of business – large and small, domestic and multinational, those exporting goods and services and those providing services to firms whose goods and services are being exported (or who are importing them).

Collaboration between these different stakeholders, recognising their different objectives and capabilities, is essential to making single windows work. If a single window is to reflect and meet the needs of this trading community, a sizable proportion of the community needs to be involved in planning and design, in implementing business process changes and change management, in ICT design and implementation, in training and capacity-building, and in governance of what should be seen as the community’s joint effort.
Effective mechanisms for problem-solving, including conflict resolution, are important in convincing trading partners to make changes in the ways that they have done things in the past, which are necessary to make sure the single window works.\textsuperscript{171} Public-private partnerships have been found to be valuable mechanisms for developing and managing single windows, partly because they share investment costs but also because they emphasise the involvement of the whole trading community in large-scale system change.\textsuperscript{172}

The implementation of a national single window is also a considerable governance challenge. New legislation and regulations are almost always required. With or without a public-private partnership, the relationship between government agencies and trading businesses is changed significantly. As the discussion above implies, single windows can follow a number of different institutional models. Three of the most common of these can be summarised as follows:

- A single authority model. This involves establishing a lead agency that processes information, manages the entire documentation system and distributes information, at request and need, to all relevant government agencies and business stakeholders. In many countries, customs agencies lead the single window process. In others, the function is devolved to a company or public-private partnership.

- A single automated system for the collection and dissemination of information. In this model, the lead agency will manage an information system that integrates the electronic collection, storage and distribution of data.

- An automated information transaction system. This includes issuance of certificates, declarations and approvals that are electronically transmitted from government to traders. The TradeNet automated information system, for example, allows for this facility in Ghana, Mauritius and Singapore as described below.

This chapter concludes with a number of boxes illustrating examples of single window and related implementations in Africa and elsewhere.

The landscape analysis in this chapter has indicated the extent of progress that has taken place in the application of ICTs to the modernisation of customs, the facilitation of trade and transport logistics, risk management, payment arrangements and information resources. Different countries have achieved different levels of progress in establishing community systems such as those for ports and airports. The development of one-stop border post and other forms of cross-border integration has been slow due to the complexity of coordinating multiple stakeholders at national and regional levels. Payment systems are evolving, although challenges of law and regulation, trust and integration still need to be resolved. Some countries have moved to single window systems while others are progressing towards them. The opportunities and challenges associated with these developments are discussed in Chapter 3 and lead to recommendations which can be found in Chapter 5.

\textsuperscript{171} Kimberly, Paul, Multiple Lessons from Single Window, Trade Transport and Logistic Facilitation Single Window, 2010
\textsuperscript{172} Kimberly, Paul, Multiple Lessons from Single Window, Trade Transport and Logistic Facilitation Single Window, 2010
The Government of Senegal decided that it was necessary to automate customs operations in the country as early as the mid-1980s. At that time, computers were far from common in Senegal and so this was a major undertaking. Although UNCTAD was at the time promoting the first generation of its ASYCUDA system, the government in Senegal decided to develop an independent system which would allow traders and shipping companies to submit their declarations online. That was considered possible because of the country’s comparatively advanced telecommunications infrastructure.

The Senegalese system, called GAINDE, was developed by local and international experts and began operation in 1990. This made it one of the first automated customs systems in sub-Saharan Africa. There were significant teething problems during its first year of operation, in particular concerning network availability, which led to demand among stakeholders for the return of paper systems. However, strong political support for GAINDE ensured that these problems were worked through and the system was improved in ways that gained stakeholder acceptance. GAINDE has since been developed through further generations in Senegal. It was also chosen in 2003 by the Government of Kenya as the basis for its new customs automation programme, SIMBA, which was implemented in 2005.

GAINDE 2000 has been responsible for implementing the national single window, ORBUS. Initially, ORBUS provided a technological platform and set of services to facilitate transactions among a community of more than 300 trading businesses. The aim was to move on from this to a single window system in which a single form could be submitted electronically using a Web-based interface.

Use of ORBUS is now mandatory for pre-clearance procedures and has replaced with a single form the various trade-related documents that were previously required in the pre-clearance chain. Twenty government agencies, banks, exporters, importers, customs authorities and insurers are linked through the system. Once the single form is submitted electronically by a clearing agent through its Web-based interface, ORBUS automatically distributes data to the relevant stakeholders for that transaction or consignment, including public agencies, banks, insurance companies, and inspection services. The system also generates requests for electronic documents that are required to complete transactions and sends these to relevant stakeholders. Customs and other agency processing officers can validate, reject requests, or ask for modifications. The reported impact of this system on processing time is summarised in Table 2.5.

Table 2.5: Changes in average processing times since implementation of ORBUS

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of ORBUS brokers</th>
<th>Average processing time (days)</th>
<th>Number of active ORBUS stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>136</td>
<td>4.0</td>
<td>5</td>
</tr>
<tr>
<td>2005</td>
<td>245</td>
<td>5.5</td>
<td>23</td>
</tr>
<tr>
<td>2006</td>
<td>259</td>
<td>3.5</td>
<td>20</td>
</tr>
<tr>
<td>2007</td>
<td>298</td>
<td>3.0</td>
<td>23</td>
</tr>
<tr>
<td>2008</td>
<td>312</td>
<td>0.5</td>
<td>23</td>
</tr>
<tr>
<td>2009</td>
<td>345</td>
<td>0.5</td>
<td>24</td>
</tr>
<tr>
<td>2010</td>
<td>365</td>
<td>0.5</td>
<td>25</td>
</tr>
</tbody>
</table>


**See Annex 3.**

**UNNExT (2011) Towards a single window trading environment: Senegal’s transition from a paper-based system to a paperless trading system.** UNNExT Brief No. 05, January 2011
In Malaysia, the private sector company Dagang Net (established by the Chamber of Commerce in 1989) was appointed by the government in 2009 to develop a national single window. Interconnection to facilitate import and export declarations and clearances had been introduced between the customs administration and the port community at Port Klang, Malaysia’s main seaport in 2004. This interconnection included the use of e-government, digital signatures, smartcards and electronic fund transfers to enhance the effectiveness, efficiency and productivity of the port. Dagang Net now interconnects the maritime and aviation activities of Port Klang, Kuala Lumpur International Airport, Penang’s major ports in Butterworth and Bayan Lepas, Johor’s two major ports and the major ports in Kota Kinabalu and Kuching. The single window managed by Danang Net provides a single point where data are gathered, collated and distributed to all relevant agencies and payment of duties and taxes is facilitated.

Tunisia’s TradeNet (TTN) was established in 2000 as a semi-public agency to operate a value-added network providing electronic data interchange for stakeholders and expediting the flows and processing of trade documents. TTN shareholders include ten government agencies, including the national port authority and Tunis Air, and eighteen private organisations, including several banks and the Tunisian Internet Agency. The system connects all actors involved in international trade, including the customs administration, the Ministry of Commerce, technical control agencies, the Central Bank, ports, private traders, agents, freight forwarders, customs brokers and banks.

TTN processes major trade documents including shipping manifests, customs declarations, and technical control documents. In addition, the system processes online tariff payments and transport documents. A connection to the TTN server enables participants to exchange documents and messages with other participants using standards such as EDI and ebXML. It has a simple user interface.

TTN serves as:

- an online system for tariff payments and transport documents; and
- a network platform to allow for exchange of documents and messages among participants.

The development of TTN was preceded by considerable work in customs reform and modernisation, the streamlining of technical controls inspection procedures and transport processes, and the adoption of international standards like Single Administrative Document (SAD) and EDIFACT for trade documents.

It is claimed that TTN has reduced manifest processing time from four days to less than two days. Payment of customs and port duties and storage charges are reported now to take only a few hours, rather than a full day. The time needed to prepare and process customs declarations is said to have dropped to 15 minutes, where previously this took as long as three days.

**Box 2.15: TradeNet Mauritius**

TradeNet Mauritius is ‘an electronic network that allows traders, customs brokers, shipping agents and freight forwarders to submit trade documents like manifests, declarations, EUR1 certificates, import/export permits to MRA-Customs, and Ministry of Industry and Commerce.’ It was developed by Mauritius Network Services (MNS), a public-private partnership which was set up specifically to offer value added services beginning with a system modelled on Singapore’s successful TradeNet system. Originally introduced in 1994, the critical date in TradeNet’s evolution was 1997 when Phase III enabled the electronic submission of customs declarations. Commercial banks are also linked to TradeNet, enabling electronic payment of duties and taxes.

The introduction of TradeNet in Mauritius required the country also to move towards a replacement for ASYCUDA, which did not meet TradeNet’s technical requirements. The Custom’s Department’s Customs Management System (CMS) was therefore developed so as to make the TradeNet communication platform effective, an important example of the need for systems compatibility even within the same organisation. TradeNet provides a front end that gives all Customs Department users access to the CMS.

In 2008, the Mauritius authorities wanted to improve the enabling environment by adding a Web-based Cargo Community System component. A new public-private partnership - Mauritius Cargo Community Services Ltd (MACSS) – was created to run that system (see Box 2.8).

TradeNet is both a network and a messaging software system, though the difference is not necessarily evident to its 900 end users as it provides a focal point for exchanges between them. Messages are sent and received in EDI standard with some specific Mauritian formatting.

Since implementing TradeNet, MNS has developed a number of other solutions for business management in Mauritius, including a Contribution Network used by the Mauritius Revenue Authority and the Ministry of Social Security.

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**Box 2.16: The Ghana Community Network (GCNet)**

The Ghana Community Network (GCNet) has been operational since December 2003, and is designed to facilitate rapid and effective processing of cargo clearance and related operations. It is operated as a public-private partnership joint venture company with five shareholders – Ghana Customs, the Ghana Shippers Council, Ecobank, the Ghana Commercial Bank and SGS Group, the international company that was responsible for overhauling the cargo clearance system.

GCNet has two main components:

- The Ghana Customs Management System (GCMS) is intended to provide the Ghana Customs, Excise and Preventive Service with a fully-integrated computerised system for the processing and management of customs declarations and related activities. It is designed to work in an EDI environment where manifests and customs declarations are electronically received and automatically processed.

- Ghana TradeNet is the platform which enables GCMS to share data with the various parties involved in the processing of trade documents and customs clearances. The design of the system is illustrated in Figure 2.12.

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177 http://mns.mu/tradenet-trade-facilitation.php
GCNet trained 1500 people in its operations at the time of launch. The single window is reported to interconnect 800 users around the country and to handle over a million transactions each year.

Figure 2.12: Configuration of Ghana GCNet
CHAPTER 3 – OPPORTUNITIES AND CHALLENGES

Chapter 2 of this report has described and illustrated the range of ICT-enabled interventions in trade facilitation which are currently underway, in Africa and elsewhere. This chapter steps back from those examples to place them in a wider context of opportunities and challenges for ICT-enabled trade facilitation.

Policy and practice in ICT-enabled trade facilitation are, as indicated in Chapter 2, in a period of development from the deployment of ICTs at specific points within the supply chain and in specific trade communities, particularly customs administration, to a more systemic approach based around single window principles for the management and sharing of data. Africa’s experience of national single windows is still relatively limited, but single window principles are increasingly applied at different points along the supply chain on the continent, such as Port and Cargo Community Systems, and there is growing experience of data sharing within and even between national trade administrations. Progress towards the integration of these ICT deployments (and others that will follow them) into national single windows is underway, can be expected to become more widespread, and should – this report will recommend – be encouraged by RECs and international financial institutions. Progress beyond national towards regional single windows is still more limited at present, but also offers promise.

This chapter considers opportunities and challenges - factors which are likely to encourage or discourage that development. It is divided into three sections.

Section A considers some of the global trends which present opportunities for increased ICT-enabled trade facilitation on the continent.

Section B discusses two critical underpinning requirements – infrastructure and standardisation – which are essential if the potential for ICTs in trade is to be realised.

Section C describes the policy and practice challenges that inhibit the development of ICT-enabled trade facilitation, and the complementary policy and organisational factors which are necessary to foster its success.

A – THE CONTEXT FOR ICT-ENABLED TRADE FACILITATION IN AFRICA

African trade does not take place in isolation. As discussed in Chapter 1, the continent’s trade is actually more dependent on exchange between Africa and other continents than is the case for other world regions – a reflection of a dominant pattern in which African countries export commodities in exchange for manufactured goods. While there are significant variations in the nature of commodities – in particular between oil exporters such as Algeria and Gabon, exporters of other minerals such as Zimbabwe and Botswana, and countries which particularly export agricultural produce such as Kenya and many countries in West Africa – the impact of this dominant pattern of trade has been significant. One of its implications has been the relatively low level of intra-African trade on the continent. Another has been the extent to which African trade can be influenced by the economic performance of countries in other continents that are the main markets for its exports.

It is generally agreed by continental and global agencies concerned with Africa’s economic development that improved trade performance would have positive and lasting consequential impacts on productivity and output, employment and poverty reduction. Concern has been expressed that the dominant pattern of exchange of commodities for manufactures has been spreading from Africa’s traditional trade relationships with Northern countries to the rapidly growing trade relationships which it is building with non-African developing countries such as China. Economic diversification and, in particular, increased intra-regional trade
which might stimulate local manufacturing, are therefore to be encouraged. Measures which have been taken to foster intra-regional trade include the reduction or elimination of regional tariffs through the RECs and the development of transport corridors extending across a number of countries (though the latter are primarily oriented towards extra-continental trade). Other critically important measures, to be considered in Section B, are concerned with infrastructure and standardisation. Aside from these, intra-regional trade in Africa suffers from inefficiencies due to poor management practice and lack of coordination, which raise the cost of goods imported into Africa and of African exports. It is these inefficiencies in particular that ICT-enabled interventions, including single window processes, are intended to address.

ICT-enabled interventions in trade facilitation are, of course, taking place around the world. African countries have been lagging behind this global experience but are affected by changes which are taking place within their trading partners. The experience of countries in other regions – especially countries which have experienced rapid development such as Malaysia and the Republic of Korea – provides examples to African governments of ways in which ICTs have been used to facilitate transparency and the efficient flow of goods, to support logistics and to coordinate trade communities. Africa is also far from immune from global problems such as the desire for heightened security in the face of terrorism, or the need to adapt to the results of climate change, which are altering trade relationships. Five important trends surrounding global trade which are shaping the environment for ICT-enabled interventions are summarised in the following paragraphs.

1. Globalisation

Globalisation of trade has been taking place, it can be argued, since at least the European expansion of the fifteenth and sixteenth centuries, but recent years have seen its intensification as a result of changes in production patterns, transportation and the role of ICTs in global economic relationships. Other aspects of global interdependence, such as security, have also influenced the role that ICTs now play in trade.

From a trade perspective, increasingly stringent business requirements for rapid turnaround in production processes, door-to-door services and multi-modal transport have amplified the roles of ICTs in trade management. ICTs enable much greater coordination of trade flows to meet requirements, allowing costs to be saved through just-in-time procurement, business process outsourcing and 24-hour operations that are distributed across the world. ICTs allow for control operations that are executed beyond the physical border, enabling trade processes to be undertaken before arrival of goods at a country’s points of entry. For all these reasons, ICTs have been increasingly adopted by traders, logistics and transport businesses, customs, immigration and quarantine authorities. It has become increasingly difficult to trade without some form of Internet connection and Web presence.

From a political and security point of view, the events of 11 September 2001 have significantly affected requirements for managing the flow of goods, people, vehicles and money across borders. The resulting increased demand for international coordination and sharing of information about cross-border movements has been a significant driver for automation of trade processes in Africa.

Compliance with international security requirements depends substantially on the use of ICT solutions. One critical development has been the adoption in 2005 of the World Customs Organisation’s Framework of Standards to Secure and Facilitate Global Trade – the SAFE Framework.179 This rests on two pillars - customs-to-customs network arrangements and customs-to-business partnerships - and consists of four core elements, all of which require the use of ICTs:

- Firstly, the Framework requires the strict harmonisation of advance electronic cargo information on inbound, outbound and transit shipments.

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• Secondly, countries that adopt it must commit themselves to employing a consistent risk management approach in addressing security threats.

• Thirdly, the Framework requires that an exporting country’s customs administration shall perform outbound inspection of high risk-containers and cargo at the request of a receiving nation (which should base its request on risk-targeting methodology). This outbound inspection should preferably make use of non-intrusive detection equipment such as large-scale X-ray machines and radiation detectors.

• Fourthly, the Framework defines benefits and exemptions that customs administrations need to provide to businesses that meet supply chain security standards and best practices. Implementing these requires considerable information flow that can only take place through ICTs.

2. **GATT commitments**

GATT commitments represent another external driver that has promoted the increased use of ICTs in trade facilitation. Countries that have signed the WTO treaties need to make increased use of ICTs to meet the obligations imposed by a number of GATT Articles, including:

• Article V on freedom of transit;
• Article VIII on fees and formalities for importation and exportation; and
• Article X which sets out obligations on the publication and administration of trade regulations.  

Article V has three main obligations. Firstly, it requires that traffic in transit should not be subject to unnecessary delays or restrictions and should be exempt from customs duties, transit duties and other charges. Secondly, it requires that charges such as those associated with transportation or administrative expenses need to be reasonable. Thirdly, it requires that products in transit should be given most favoured nation (MFN) treatment.

Article VIII imposes on WTO members the requirement to keep within reasonable limits the fees and processes for importation and customs entry, such as inspections and the processing and clearing of documents and goods. A second requirement concerns the need to reduce the number and range of fees and charges, to minimise the incidence and complexity of import and export formalities and to decrease and simplify import and export documentation requirements.

Article X imposes on contracting parties the obligation to publish promptly, in relevant media, all decisions affecting international trade policy such as laws, regulations, judicial decisions and administrative rulings of general application that affect imports and exports.

These GATT obligations cannot be easily met without the extensive use of ICTs, which offer considerable gains in the efficiency of trade management processes and provide the means for widespread publication of trade notices.

3. **E-commerce and related standards**

Electronic commerce is an increasingly important vehicle for transactions both within and between countries, including business-to-business (B2B), business-to-consumer (B2C) and business-to-government (B2A) transactions. E-commerce processes digitise both transactions themselves and related documentation.

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enabling the more rapid issue, submission, acceptance and processing of electronic documents between all the parties involved.

Digitisation of documents has also driven progress in the development and adoption of appropriate documentary standards. The most important of these include the United Nations Layout Key (UNLK), the Single Administrative Document (SAD), and documentation and data elements which are contained in international conventions and recommendations such as the World Customs Organisation’s (WCO) Data Model and the Harmonized Commodity Description and Coding System (HS).

The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) has been one of the leading drivers of data management standards that are widely used in international trade such as Electronic Data Interchange (EDI). Other compliant technologies related to EDI, such as Extensible Markup Language (XML) and electronic business XML (ebXML), have developed over the last two decades.

The adoption of common standards, including those mentioned in these paragraphs, is necessary in order to enable much of the use of ICTs in trade facilitation, especially in the exchange of data between different stakeholders. Their evident value in improving efficiency and coordination also acts as a driver for adoption. Standards are discussed further in section B below.

4. The availability of new communications infrastructure

The last decade has seen three major developments in communications infrastructure in Africa – the very rapid growth of mobile cellular networks, the landing of new submarine fibre optic cables along the African coast, and investment in new broadband networks. These improvements in infrastructure have probably increased cross-border trade because of the way in which they have made it easier for trading parties to coordinate business activities and logistics. They have also made it feasible for trade administrations to make much more extensive use of ICTs in areas such as those described in Chapter 2, including customs administration, integrated border management and evolving single window systems. These are, however, substantially dependent on the quality and reliability of both communications and power networks. Barriers in this area, particularly where broadband networks are concerned, are discussed further in section B below.

The liberalisation of communications service markets has led to price falls, higher ICT penetration and the introduction of new services of value to traders, customs and other stakeholders involved in trade and border management. The ICT sector in Africa has seen exceptionally dramatic growth in voice communications. Mobile subscriptions in the region grew from 32 per hundred people in 2008 to 42 per hundred at the beginning of 2010 and were expected to reach the 50% mark at the end of 2011. Innovative mobile applications and, increasingly today, use of mobile devices for internet access, have created opportunities for enhancing trade as well as for the delivery of health, education, government and financial services.

Progress in the mobile broadband segment has also been extensive, with almost all countries seeing the roll-out of 3G CDMA and HSDPA networks. The average teledensity of mobile broadband (subscriptions per 100 citizens) was estimated to be 3.2% in sub-Saharan Africa at the end of 2010, which was still very low, though South Africa claimed to have attained a figure over 10%. The pace of growth, however, is significant, and mobile broadband is likely to prove a valuable asset for trade processes within the next few years. Mobile internet is becoming fashionable and increasingly used among some sections of the African population, as recent studies have shown in South Africa and Kenya.

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181 International Telecommunications Union, www.itu.int/statistics
182 See e.g. Tino Kreutzer, Generation Mobile: Online and Digital Media Usage on Mobile Phones among Low-Income Urban Youth in South Africa, 2009; D. Souter, 'Mobile internet usage and demand in Kenya: the experience of early adopters,' in Making Broadband Accessible for All, Vodafone, 2011
In terms of international connectivity, the completion of four new undersea cables - SEACOM, LION, TEAMs and EASSy – on the eastern and southern side of the continent in recent years has tripled available bandwidth from 1940 Gbps in 2008 to 7200 Gbps in 2010. Africa’s international fibre connectivity is expected to grow tenfold when other major projects such as Glo1, MainOne, the West African Submarine Cable, the Europe India Gateway and Africa Coast to Europe cables are completed.\(^{183}\)

Progress has also been made with national backbones. Angola, Botswana, Ethiopia, Ghana, Rwanda, Burundi, Kenya, Malawi, Madagascar, Uganda, Burkina Faso, Niger, Tanzania, Sudan and South Africa are among the countries that have launched aggressive plans for the development of national backbone networks that should have impact on trade management and performance. Investment by governments, often supported by international financial institutions (IFIs), has complemented that from private sector telecommunications businesses.

5. **International support for the integration of ICTs in African trade**

Finally, there has been significant support from IFIs and donor agencies for the application of ICTs to trade facilitation in Africa. Supportive agencies have included the World Bank, the International Monetary Fund (IMF), the European Union, IFIs including the African Development Bank, the United States Agency for International Development (USAID), the Department for International Development (DFID), AusAID, the Japan International Cooperation Agency (JICA) and the Canadian International Development Agency (CIDA). Their contributions have included support for:

- the reform of customs administration (including support for the roll-out of ASYCUDA) and business process engineering leading to the introduction of ICTs;
- projects aimed at reducing non-trade barriers along trade corridors;
- the creation of regional trade hubs that facilitate ICT integration into trade;
- the design of legislation concerning electronic transactions, taxation, banking, and the development of the communications sector; and
- the automation of ports and deployment of national single window projects.

One problem in this area, as in other areas of development practice, is that there has sometimes been a lack of coordination between different trade facilitation and donor agencies. Recent efforts by development agencies to build a more coordinated approach have suggested the need for a fresh approach to enhanced use of ICTs for trade facilitation. This has included support for initiatives such as Trade Mark East Africa (TMEA) and Trade Mark South Africa (TMSA). TMEA, for example, has been promoting innovative applications such as one-stop regional payment of duties, transit observatories along trade corridors and national single windows.

Finally, experience from around the world - in particular from Asian countries such as Japan, Korea, Malaysia, Singapore and Thailand – has offered useful evidence concerning the integration of ICTs in trade and the evolution of single windows in Africa. Experience in Asia is relatively well documented and some has been transferred to Africa through private sector companies such as Crimson Logic, which has developed ICT-in-trade programmes in Ghana and Mauritius. The Kenya Revenue Authority’s KWATOS system draws on Korean experience. The opportunities for drawing on good practices in Europe, Latin America and Asia, as well as those within Africa, are abundant, though, as noted in Chapter 2, these need to be used with care to ensure that they are properly adapted to the national contexts in which they are to be deployed.

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\(^{183}\) Steve Song, Africa Undersea cable, [http://manypossibilities.net/african-undersea-cables/](http://manypossibilities.net/african-undersea-cables/)
B – UNDERPINNING REQUIREMENTS FOR ICT-ENABLED TRADE FACILITATION

Two underpinning factors are crucial in enabling ICT-enabled interventions to be effective in trade facilitation. Without these factors, ICTs are unlikely to be able to achieve the same level of benefit as could otherwise be attained.

a) Trading businesses and government agencies need access to high-quality and reliable communications infrastructure both within national territories and across international borders.

b) Government agencies in countries that trade with one another, and within REC regions, need to standardise and/or harmonise non-tariff regulations and documentation required for data-sharing.

The importance of these two factors is discussion in the following paragraphs.

**ICT infrastructure**

Africa lags behind other world regions in the deployment of broadband infrastructure. Recent years have seen the broadband deficit between Africa and other world regions widen rather than narrow. However, this widening gap reflects the very rapid pace of broadband development in more economically prosperous regions. Africa is also seeing extensive investment in broadband connectivity and this is set to continue, within a framework of strong commitment from the African Union, the African Development Bank and other continental agencies. It has been reported that, when current planned backbone networks are completed, over 80% of Africa’s population will live within 50 kilometres of a fibre node, close enough for WiMAX connectivity. Much of this investment comes from private companies, although governments have also re-engaged in network development, using finance from their own revenues, IFIs and other donors. A great deal still remains to be done, particularly in remote rural areas, along trade corridors and at border posts.

One area where more investment is needed is in regional backbones, where there is less private sector interest because of the diversity of regulatory frameworks and the unattractiveness of some routes from a commercial (investment recovery) point of view. Fibre backbones have been extended in Southern Africa, with South Africa acting as a hub for surrounding countries; and in western Africa, with Nigeria, Ghana and Senegal acting as nuclei of connectivity for that region. It is not coincidence that these are also among the continent’s leading trading nations: broadband network investments tend to follow regional trade and economic activities, with the goal of connecting profitable urban centres. Major regional broadband gaps in west, central and eastern Africa are being bridged through projects such as the East African Backbone Infrastructure Network (EAC-BIN) and the Central African Backbone (CAB) project, though it will take some time before these investments are fully operational.

Improvements in broadband networks and the growth of affordable mobile broadband are likely to improve opportunities for connection of border posts; enhance access to trade transactions by traders anytime and anywhere; allow better coordination of goods in transit as drivers can be kept in touch with hauliers by mobile phone much more effectively than was previously the case; and enhance security through tracking mechanisms such as GPS. Broadband also provides enhanced infrastructure for data transmission, and adds to the ease with which business actors can access information on markets and trade management requirements.

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185 Hamilton Research Ltd., [www.africabandwidthmaps.com](http://www.africabandwidthmaps.com).
186 ibid.
from online sources. Nevertheless, until high-quality, reliable communications infrastructure is available throughout the supply chain, the potential of ICT-enabled trade facilitation – particularly complex data-sharing applications such as those based on single window principles – will continue to be constrained.

It should be noted that communications infrastructure does not stand alone, but needs to be accompanied by improved energy infrastructure. Africa’s energy crisis is a major obstacle to trade facilitation. Power interruptions are common in most African countries and highly disruptive to automated production and management systems, including ICT-enabled trade facilitation. As noted in Annex 2, for example, power blackouts have caused significant problems with implementation of Kenya’s customs automation system SIMBA and with the KWATOS port community system at the Port of Mombasa. Unstable power supplies are therefore a significant obstacle inhibiting progress towards ICT-enabled paperless trade in Africa.

**Standardisation of regulations and documentation**

Trade processes require information to be available to many different actors at many different points along the supply chain. Most of these data remain constant throughout the progress of individual consignments, however, and many (such as information about suppliers, consignees and transit operators) are consistent across multiple consignments. If data can be entered only once, electronically, and then shared by all who require them throughout the supply chain – preferably including all countries on transit routes – then substantial savings can be made in administrative time and in time wasted as consignments queue for information to be checked at various points along the chain. Data integrity is likely to be improved as multiple manual entry of identical data carries significant risk of error, while reduced contact between trading businesses and government officials reduces the likelihood that corrupt payments will be offered or accepted.

Standardisation is critically important in a number of ways to the implementation of effective data management and data sharing. Standardisation of rules and regulations across borders and within regions, including non-tariff barriers, means that fewer checks and inspections are required since compliance in one country implies compliance in others. Standardisation of documentary forms between countries makes automated data-sharing feasible, cuts the time and cost required for document handling, and reduces error rates.

The digitisation and sharing of data require coordinated action along the supply chain, including the adoption of standardised forms, interoperable systems for data interchange, and reliable processes for the authentication of documents, electronic signatures etc. International standards for these are provided through a series of Recommendations from the UN Centre for Trade Facilitation and Electronic Business (CEFACT), which is managed by the UN Economic Commission for Europe (UNECE). These include Recommendation 14 on the authentication of documents, Recommendations 25 and 26 on electronic data interchange (EDI), and Recommendations 31 and 32 on electronic commerce.188 Significant positive developments in standardisation have taken place in recent years as a result of efforts by CEFACT, the Global Facilitation Partnership for Transportation and Trade (GFP), the WCO, the World Wide Web Consortium (W3C) and the Organisation for Advancement of Structured Information Standards (OASIS). The range of standards produced by these bodies includes EDI techniques, XML routines and the use of mapping tools such as UN/CEFACT’s UNeDocs and the WCO data model. The following paragraphs describe some of the most important standards for ICT-enabled trade facilitation in Africa.

Electronic data interchange (EDI) is the most important international standard for trade facilitation. It was defined in 1996 by the United States National Institute of Standards and Technology as ‘the computer-to-computer interchange of strictly formatted messages that represent documents other than monetary

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188 UNECE, *Summary of UN/CEFACT Trade Facilitation Recommendations*, at http://www.gfptt.org/uploadedFiles/19c6089a-8ef8-48ef-b52f-e86db6975232.pdf
instruments.’\textsuperscript{189} It provides common ‘language’ for message identification based on agreed abbreviations or codes for data representation and uniform rules with respect to communication procedures, the type of message acceptable to different parties, character sets, language, and data elements and code used.

EDI has been a core interface used to transmit trade documents and data electronically between computer systems including contracts of sale, letters of credit, certificates of origin and other certificates for safety, quality and quantity, import and export licenses, receipts, customs declarations and certificates for clearance of goods for exit from or entry into a country. EDI data transmission is explicitly automated, only requiring human intervention in the event of a need for error correction. It therefore depends on the adoption and use of strict standards, which are designed to be independent of particular communications technologies or software. This enables it to accommodate new platforms, including the internet.

The content of EDI documents in particular trade processes is normally the same as that found in equivalent paper documents. This is essential when paper and electronic means of recording and transmission are being used for the same type of document, and illustrates the importance of international standardisation. The United Nations Electronic Data Interchange for Administration Commerce and Transport (EDIFACT)\textsuperscript{190} is the only international standard for EDI, although other national standards exist and are used in particular contexts outside Africa. EDIFACT is widely used in international trade and has been adopted by the European Union as well as by non-European countries such as the United States, Brazil, the Republic of Korea and Singapore. It has been the major tool for creating Cargo Community Systems and Port Community Systems (as described in Chapter 2).

Today, the critical standard for business messaging exchange is ebXML (electronic business eXtensible Markup Language), which has emerged from earlier generations of EDI and is sponsored by UN/CEFACT. It aims to create a single electronic marketplace that allows businesses to find one another and conduct business through the exchange of XML-based messages. The adoption of ebXML and of Web services has greatly enhanced integration between various data sets, which enables improved data sharing and supports the creation of public-private partnership platforms for data interchange. The use of XML has made implementation of standards more flexible, less dependent on specialist expertise, and enabled data exchange through more widely available access modes such as mobile telephones and the internet. Other XML-based standards that facilitate electronic trading include electronic catalogue, payment systems, product model standards, authentication and security standards.

These are not the only international standards that are crucial for ICT-enabled trade facilitation. Others include the Harmonized Commodity Description and Coding System (HS code) of tariff nomenclature – an internationally standardized system of names and numbers for classifying traded products which is maintained by the World Customs Organisation.\textsuperscript{191}

As noted above, the EDIFACT standard provides the basis of much of the online data exchange between trade and other stakeholders involved in African trade management, such as customs and ports administrations. Most community systems in Africa use the EDI messaging format for exchange of information. The Kenyan Port Authority’s KWATOS system and the South African Revenue Service (SARS) automation, for example, both rely on the EDIFACT standard. System-to-system integration is being developed using Web service standard tools such as the Simple Object Access Protocol (SOAP) and Universal Description, Discovery and Integration


\textsuperscript{191} http://www.wcoomd.org/home_online_services_hs_online.htm
KWATOS uses these Web service standards to interact with the Kenya Revenue Authority’s SIMBA system. The adoption of EDIFACT and other standards outlined above is therefore considered the most important step in promoting interoperability, particularly within the context of single window systems.

The conjunction of increased broadband availability with widespread adoption of trade facilitation standards lays an important foundation for the deployment of advanced and integrated processes such as those described in Chapter 2. ICT-enabled trade facilitation is more difficult to achieve without them. With them, government agencies and other stakeholders will have more confidence that new systems can be relied upon to deliver improved trade management and performance.

C. CHALLENGES AND COMPLEMENTARY FACTORS FOR ICT-ENABLED TRADE FACILITATION

This report has emphasised the importance of governments addressing trade issues holistically – of analysing the supply chain systemically and integrating trade facilitation, with or without ICTs, with other measures designed to stimulate economic production, improve infrastructure and enhance trade performance. Within this broad strategy for economic growth, the development of national single windows, building on experience of implementing automation and ICT-enabled facilitation at critical points along the supply chain, can be regarded as a crucial target for national trade facilitation policies. Effectively implemented, a national single window should improve the efficiency of trade flows and so contribute positively to the overall dynamic of a growth-oriented economic policy.

Implementing a single window system effectively, however, is challenging. It requires management and coordination, backed by political commitment from government and by business confidence, strong project management, a high level of managerial and technical skill, and adequate financial resources. The success of ICT-enabled trade facilitation, whether through a single window or at single points along the supply chain, will therefore depend on a number of surrounding contextual or complementary factors. These are discussed in the following paragraphs.

Firstly, the effectiveness of ICT deployment depends not just on infrastructure, but also on institutional factors such as the quality of management, engagement of stakeholders and capabilities of personnel involved. Two aspects of this are particularly important.

- As discussed earlier, many trade processes in Africa are unnecessarily complex and bureaucratic, imposing regulations where they have little or no value and using standards which are not compatible with those in neighbouring countries. There is nothing to be gained from automating processes which should rather be eliminated. Trade processes should be simplified and standardised before ICTs are deployed (and the imminence of ICT deployment provides a strong incentive for their rationalisation).

- The implementation of ICTs in complex systems such as trade is not straightforward. As in other areas of e-government, there is a temptation for policymakers to overestimate the potential impact of technology and innovation, and to underestimate the constraints imposed by infrastructural, human and institutional factors on their deployment in the field. ICTs are unlikely to fulfil the aspirations of policymakers if they are implemented by untrained stuff using unfamiliar equipment in locations without reliable power supplies. The result in many e-government contexts has been what has been called a ‘design-reality gap’, i.e. a
mismatch between the aspirational vision of service improvements held by programme designers and the capability of infrastructure, institutions and stakeholders to achieve desired outcomes.  

Programmes to introduce ICT-enabled trade facilitation need to address these challenges in both design and implementation. It is particularly important to pay attention to these institutional factors, as well as to the technical aspects of ICT deployment, when considering what lessons can be learnt from implementations in other countries such as those described in Chapters 2 and 4. The following paragraphs draw attention to six complementary institutional changes which are essential for the effective implementation of ICT-enabled trade facilitation, and the transition to single window processes which is described in Chapter 2 and recommended in Chapter 5.

1. **Skills and capacity-building**

ICT skill shortages are among the major challenges facing government agencies seeking to deploy ICTs in trade facilitation, as they are in other areas of African development. Improving the institutional capacity of government agencies involved in trade facilitation and the specific skills of personnel working in those agencies is critical to the success or failure of ICT-enabled applications. Ensuring the presence of relevant ICT skills in the private sector is also critical. Port Community Systems, for example, can only maximise their value if all participating stakeholders are able to make effective use of the technologies and applications that they make available.

The shortage of ICT skills in developing and managing modern distributed web environments in Africa is acute. Most port and cargo community systems and customs modernisation applications which are being deployed around the world require specialist ICT skills that are not readily available at national levels in African countries. Almost all countries on the continent are dependent to a high degree on external consultants and companies to develop their trade facilitation options. This does not necessarily increase costs, but has made it more difficult to tailor systems for local needs. Experience of progress in Mauritius, Ghana and South Africa shows that the development of a critical mass of ICT skills and skilled personnel is vital for the implementation of community systems, the deployment of national single windows and the automation of customs and other processes such as certification for plant and animal exports. The development of a sufficient pool of skilled personnel should be a feature of government strategies for ICT-enabled trade facilitation. This should complement educational policies which seek to improve the ICT skills of school-leavers and graduates.

The absence of sufficient ICT skills and skilled personnel among business users of trade management systems is likewise challenging. Retraining staff to implement new systems is expensive but generally reaps rewards in higher productivity. However, there is likely to be a time lag between the implementation of ICT-enabled trade facilitation and the acquisition by smaller businesses, and businesses which are less oriented to international markets, of the equipment and skills needed for them to comply and take advantage of new systems. Incentives may be needed to expedite transition.

The quality of information which government agencies provide to other stakeholders within the trade environment is also crucial. Traders often deal with multiple trade facilitation organisations – such as customs administrations, phytosanitary and certification agencies – in several countries. These frequently have different, and sometimes conflicting rules, and it is often difficult for trading businesses to find out exactly what they need to do in order to comply. Even in a single country, traders often have to travel from one office to another in order to access basic information, complete forms and pay fees. Obscure, imprecise and poorly-publicised regulations are also a breeding-ground for corruption.

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In practice, ICTs can provide most of the information that trading businesses require online. Whether they do so, however, is not so much a technical as an administrative problem. A significant effort is still needed to improve the online availability of information on rules and regulations, policies and processes governing everything from axle weights and labelling requirements, in order to reduce the cost in time and money that is incurred in meeting these requirements. For many countries, this requires a change in attitudes in government agencies concerned – from restricting information to making it openly available, and from controlling trade towards facilitation.

2. System redesign

Business or administrative processes are at the heart of the supply chain, governing the way that various control points affect the flow of goods, money and people.

Customs administration provides a useful illustration of this point. The rapid pace of customs modernisation around the world is putting pressure on African customs administrations and personnel to keep up with global standards. Internationally, customs administrations are increasingly making use of Web-enabled online services to interact with other stakeholders, deploying Web-based applications and working closely with Port and Cargo Community Systems to make integration with these as seamless as possible and begin transition to a single window.

African countries need to keep pace with these developments if their markets are to remain attractive and competitive. Customs modernisation is not just a matter of introducing something new; it also requires jettisoning much that is old. Many of the steps that have traditionally been taken in customs administration become unnecessary when ICTs are introduced. Much of the use of paper, stamps, signatures and seals can be eliminated, for example, along with face-to-face and personal interactions between traders and customs officials which have offered scope for unfairness and corruption.

Such processes nevertheless have a way of outliving their original purpose. ICT systems cannot be expected to achieve the full gains which can be achieved through them if the underlying processes that were served by paper, seals and personal interaction are not eliminated too. Files need to be held on computers rather than in filing cabinets; rules need to be amended to make sure that documents can be submitted online; etc. The introduction of ICT-enabled trade facilitation should be accompanied by a systems audit designed to identify processes that have become unnecessary and that should be eliminated as part of the implementation of ICT-enabled systems.

One example where simplification of business processes is necessary to leverage the full value of ICTs concerns the physical inspections of goods in transit. Full physical inspection has been normal practice in African countries, for everything from bulk cargo to briefcases. Inspecting everything and everyone contributes to delays in the flow of goods and people, as more time is spent inspecting consignments that are innocuous than those about which there are grounds for suspicion. Customs officers face two competing pressures from their governments and international partners – to facilitate the clearance of legitimate goods and passengers as expeditiously as possible, while also responding to increased anxiety about terrorism, smuggling and transaction crime. The introduction of ICT-driven rule-based processes for risk management, based on systematic risk profiling and the use of cargo tracking reduces the time taken for inspections, facilitates consistent, transparent, and fair processes, and, if properly managed, should lead to higher levels of interception. However, it requires changes in the rules and practice of inspections which enable border officials to change their ways of working from those more relevant to pre-digital times. Inspection regimes are discussed in more detail in Chapter 2.
Port and Cargo Community Systems are another critical part of system redesign. About 80% of world trade is transported by sea,\textsuperscript{193} and so ports play a vital role and have great impact on the efficiency of the supply chain. They can easily act as bottlenecks which delay transit and raise costs for both trading businesses and consumers. The need for efficiency in ports has become even more important as a result of the growth in world trade and freight traffic. Countries whose ports are inefficient – or act as bottlenecks – are at a commercial disadvantage compared with those whose ports provide rapid, easy conduits for goods entering and exiting their territory. Unfortunately, the exchange of information within and between ports in Africa is still cumbersome, involving a lot of manual work and paper-based transactions. The redesign of ports and airports around Port and Cargo Communities is therefore critically important to African trade environments. Not only does it improve the flow of goods, people and transactions at individual locations; it also enables the electronic transfer of information between ports, airports and logistics services, providing an entry point for the development of a national single window along the lines described in Chapter 2 and recommended in Chapter 5.

3. Interoperability and standards

Standards present significant opportunities for simplification and harmonisation of trade documents and for the implementation of data and message exchange between systems. Although regulations and documentary standards do not need to be identical to facilitate data-sharing, they must at least be interoperable. Unfortunately, there has been something of a proliferation of different proprietary systems in Africa, both within and between countries. Insufficient attention has been paid to the need for common working, whether within national jurisdictions or across international boundaries. This can be addressed by movement towards adoption of international standards such as those described in Section A.

The WCO’s Revised Kyoto Convention sets out a range of governing principles for the transparency, standardisation and simplification of customs processes and documents.\textsuperscript{194} A number of international data exchange standards have been developed by international agencies, including the United Nations Layout Key for Trade Documents, the EDIFACT standard for electronic data interchange for use in international trade, and WCO customs codes for different products and services.\textsuperscript{195} Standards such as these provide a framework for the harmonisation of information exchange between trading partners.

However, although governments in Africa have widely agreed to adopt these standards, there is often no national strategy to create interoperable systems based upon them. Customs, ports, airports and phytosanitary agencies have developed and paid for their own systems independently of one another, leading to incompatibility and lack of interoperability which hinder integration in single windows and other forms of data-sharing. Agencies are reluctant to abandon their own systems in favour of alternatives, even where this is necessary to realise the value of ICT deployment. This reinforces the need for coordination between government agencies and others involved in trade facilitation, and for the development of strategic policy approaches to trade reform at both national and regional levels.

\textsuperscript{194} World Customs Organizations, Revised Kyoto Convention, http://www.wcoomd.org/files/1.%20Public%20files/PDFandDocuments/Procedures%20and%20Facilitation/kyoto_yourquestionsanswered.pdf
\textsuperscript{195} National Board of Trade, Trade Facilitation: The Swedish Experience, http://www.kommers.se/upload/Analysarkiv/Arbetsomr%E5den/Handelsprocedurer/Trade%20Facilitation%20kursmaterial_webben.pdf
4. Coordination and governance

The impact which ICTs can have on trade facilitation is highly dependent on the extent to which these changes have high-level political commitment. It also depends on the extent to which stakeholders in general are prepared to share information within trade communities and to change their own processes in order to achieve the gains that ICTs make possible. Users must have confidence in the integrity and the value of the systems that are being introduced. This is particularly important in the case of large-scale systemic changes such as the introduction of national single windows.

As illustrated in Figure 1.9, many different stakeholders are involved in the import, export and transit of goods. Each of these stakeholders needs access to information which can only be provided by others in the supply chain. Information therefore needs to be shared along transport corridors and across borders in order to enable more efficient handling of goods. This raises two challenges, one concerned with coordination, the other with regulation.

- The coordination challenge concerns the need to accommodate within a single system data which are generated and required by different stakeholders for different purposes which may sometimes be in conflict. Trading businesses, for example, are concerned to maximise profitability through efficiency gains while government agencies are concerned to maximise revenue and ensure compliance with NTBs and other rules. One way of accommodating these diverse needs has been to implement data-sharing initiatives including single windows through public-private partnerships. A note on these can be found in Box 3.1 below.

- The regulatory challenge concerns who should have access to what information when. Most of the information which is shared within a single window system is of value only to certain stakeholders at certain points in time. Some of that information is commercially confidential and much may have commercial value. Rules are needed to safeguard the integrity and security of data, in order to ensure that stakeholders have confidence that it will be used only for the purposes for which it is required. Rules governing data security need reconfiguring for digital transmission.

Institutional rivalries between government departments can also prove problematic. Integrated border management and single window systems in particular, such as those described in Chapter 2, tend to concentrate authority in specific agencies (often customs administrations, which have traditionally been predominant in border management). This concentration may be resisted by agencies and individuals that lose power, status or income-generating opportunities as a result. Coordination across borders is also essential for integrated cross-border management and the development of regional single windows, but is likewise vulnerable to institutional, and in this case national, rivalries between CIQS agencies and other government departments.

**Box 3.1 – Public-private partnerships**

Many of the most successful customs automation and single window processes today are the result of public-private partnerships. The case of Singapore is often cited as an example for other countries. Singapore initiated the first single window project in trade facilitation in 1987 before the internet became a major force. This was a communication network infrastructure which used EDI to allow all trade participants to deliver permits and to process declarations. Singapore’s Trade Development Board recommended the creation of a public-private (PPP) company to develop and operate the system, and this has become a reference model for other single window operators.

The PPP model is important for two main reasons.
• Customs as a process is about the interface between government and business. While governments are anxious that customs procedures should generate anticipated revenue and help to ensure security and other public policy goals, businesses are anxious that procedures should be fair, transparent, consistent and expeditious.

• The application of ICTs, which is at the core of customs automation, is outside the core remit of customs management. The cost of implementing ICT solutions in customs is very high, and will be higher still if decisions are taken by those who lack the necessary expertise. Among the key decisions which need to be taken in the process, managers must consider:
  - the definition of project scope, objectives and activities;
  - whether a system needs to be bought in from elsewhere or can be developed in-house;
  - what infrastructure is required to run it;
  - what other measures, such as process reorganisation, are necessary to enable it to fulfil its objectives;
  - what training and capacity-building is required for staff and users; and
  - what measures need to be taken to ensure that it can be properly maintained and upgraded.

Drawing on the expertise of both public and private sectors adds considerably to the likelihood that cost-effective approaches will be adopted which meet the needs of both.

5. Legislative frameworks for automation and electronic payments

The use of ICTs in trade facilitation also requires an appropriate legal framework. Electronic documents and signatures cannot be used in place of paper documents and handwritten signatures in contracts, agreements and certification documents unless legislation authorises their use. Most countries in Africa still lack the necessary legislative framework for the exchange of electronic documents and the recognition of electronic signatures. This is a significant obstacle to the adoption of ICTs in trade facilitation and progress towards paperless trade. A variety of international legal models is available, and there is growing experience in this field from other countries.  

Financial services is one critical area in which legislation lags behind the requirements of ICT-enabled trade in many countries, for example for easy authorisation of electronic payments and other transactions. This is partly because government-controlled central banks have proved reluctant to change established rules and practices. However, some commercial banks are also reluctant to expose themselves to what they consider may be risky modes of business. Changes in law, regulation and bank practice, including international inter-bank transfers and international currency convertibility, are required if businesses are to be able to take full advantage of the flexibility and other benefits of mobile and internet transactions. Legal changes may also be needed to enable the payment of official fees through these new media.

6. Finance

ICT systems on the scale of customs automation, Port and Cargo Community systems and other single windows are not cheap to procure or to deploy. For many countries with limited resources, financing the automation of critical aspects of trade facilitation can prove the biggest obstacle. This is an important area for intervention by international financial institutions such as the African Development Bank and the World Bank.

196 An example of this is the UNICITRAL Model E-Commerce Law available at:
http://www.kommers.se/upload/Analysarkiv/Arbetsomr%E5den/Handelsprocedurer/Trade%20Facilitation%20Kursmaterial_webben.pdf
While the benefits of automation – in terms of cost savings to businesses and customs revenue for governments – can be considerable, public authorities are sometimes reluctant to spend resources on costly ICT solutions. Initial costs may well rise as dual systems need to be operated during the period of transition from paper-based to largely paperless trade. Significant costs are also incurred in retraining staff, not just by government agencies but also user enterprises (see above). Operational costs need to be considered alongside the initial capital costs of deployment, and a total cost of ownership approach should be adopted in making financial projections.

The shortage of funding for trade automation projects is often apparent when projects that were initially financed by donor agencies need to be upgraded. The dependence of many countries in Africa on donor funding for deployment of the ASYCUDA customs management system, which was often initially installed through donor finance, is illustrated by the difficulties that governments have had in funding the upgrading of their systems from AYCUDA++ to the latest standard ASYCUDA World.

Summary

This chapter has reviewed the opportunities and challenges for implementing ICTs in trade facilitation. The opportunities are considerable. African trade is hampered by inefficiencies and unreliable information and processes which add significantly to the time taken for goods to reach their destinations and to the costs incurred by trading businesses and consumers. ICTs can be used at a number of points along the supply chain to reduce these inefficiencies and achieve improvements in the timeliness, cost and reliability of import and export trade. Further gains can be achieved by integrating these various supply chain processes within a national single window. Port communities provide an important opportunity to gain experience of complex ICT-enabled systems in coastal countries. However, the gains that can be made through ICTs will only be realised if implementation of ICT-enabled trade facilitation takes place within a favourable governance environment and if they are accompanied by necessary steps to redesign business and administrative processes, amend legislation to enable the effective use of ICTs, and equip institutions and people with the skills and resources needed to take advantage of new systems. Technology alone cannot bring about the improvements in trade management and performance that technology enables. To do so, governments and businesses must change the ways in which they work.
CHAPTER 4 – REVIEW REVIEW AND SUMMARIES OF COUNTRY CASE STUDIES

This chapter supplements the evidence in Chapter 2 by summarising the findings of a regional review of experience with ICTs and trade in Africa and of three country case studies which were commissioned as part of this Transformation-Ready project. It draws broad conclusions from this evidence which underpin the recommendations in Chapter 5. It is in two parts.

- Section A reviews the implications of the report’s findings for regional integration and in particular the Regional Economic Communities. It draws on summaries of performance and ICT/trade-related activities of six of the RECs which are described in Annex 5.

- Section B summarises the findings concerning ICT-enabled trade facilitation of country case studies of Kenya, Senegal and Botswana. These case studies supplement the wider landscape analysis provided in Chapter 2. Their findings are described in more detail in Annexes 2 to 4.197

A – TRADE FACILITATION AND REGIONAL INTEGRATION

Efforts to improve trade performance, particularly that of intra-regional trade, have been the driving force of Africa’s plans for regional integration. The African Economic Community project, which the African Union envisages reaching completion in 2034, is built around four successive phases of trade-related integration, beginning with the establishment of regional free trade areas, followed by customs unions (with common external tariffs), then by common markets (which effectively extend free trade principles to services as well as goods), and finally economic and monetary unions. As described in Chapter 1, progress along the AEC integration route has been varied, with much more being achieved in East and Southern Africa (COMESA, EAC and SADC) and in West Africa (ECOWAS, UEMOA) than in North or Central Africa (AMU, ECCAS) or in the Sahel and Horn of Africa regions (CEN-SAD, IGAD). The most significant recent development has been the establishment of a free trade area that draws together 26 of the continent’s countries which are members of COMESA, EAC and SADC.

The economic case for regional integration is based on its potential to increase economic opportunity and engender growth by establishing a single economic space in which businesses from any member-state can compete equally – initially through free trade for goods (with no tariffs between member-states), extending over time to a common market for both goods and services (with free movement of labour and capital, right of business establishment and mutual recognition of qualifications). Regional free trade areas give businesses in small countries access to much larger quasi-domestic markets and provide opportunities for collaboration between businesses from different countries in the region. They are likely to increase specialisation according to competitive advantage and may, though this is not necessarily their intention, offer a degree of tariff protection for nascent industries within a region against goods from outside the free trade zone.

Regional integration is, however, also politically contentious. Even the first stage – entering a free trade zone – involves some repudiation of national sovereignty, while more is conceded at the establishment of a common market and more again in monetary union. Economic and political challenges increase the higher the level of integration goes, as even the world’s most integrated region, the European Union, has experienced during 2011. Citizens of smaller and less economically successful countries often fear that integration will lead to economic domination by businesses from larger, more successful neighbours. Such sentiments may increase as integration deepens.

197 Only key references are given in footnotes in the main report. More detailed references can be found in Annexes 2 to 4.
As noted above, the degree of integration so far achieved is highly variable in different African regions. In those regions which have made significant progress – COMESA, EAC, ECOWAS and SADC, plus the CEMAC region of ECCAS – it has been mostly possible to establish free trade areas in which tariffs have been largely, though not yet entirely, eliminated between member-states. It has been much more difficult to establish customs unions, with a common external trade policy and tariff. There are no established common markets yet in African regions, although the EAC is making progress towards common market principles such as freedom of movement and establishment. There are, however, two sub-regional currency unions (UEMOA and CEMAC).

Progress along the AEC trajectory, particularly towards a common market, requires much more extensive harmonisation of national legal and regulatory regimes than has taken place to date. Analysis of the EAC’s strategic plan, which antedates recent agreements to move more rapidly towards common market principles, indicates more than 50 different areas in which harmonisation is required, including highly contentious areas such as immigration and fiscal policy. The four fully functioning RECs are also increasingly concerned with a much wider range of economic and social developments than the trade and economic integration emphasised in their initial mandates, looking towards regional coordination in areas such as climate change and HIV/AIDS. ICTs can play an important part in the coordination of activity in all of these administrative areas, as computers and new communications platforms are mainstreamed in relevant development sectors. The quality of regional communications infrastructure will be important in this context.

This degree of integration requires a high level of political consensus, amongst national political leaderships and the general population. It also requires a high level of administrative coordination at regional level, which is beyond the current legal competence and administrative resources of REC secretariats. This in turn requires very substantial planning, economic modelling and assessment of options for future regional development. Information technology and new communications platforms can help to improve the levels of coordination required, but cannot take the place of political will, legal competence, administrative capacity or policy analysis.

**ICTs and regional integration**

The ICT sector itself provides a useful indication of how RECs can contribute to sectoral development within their regions beyond the trade facilitation purposes described above.

Regional aspects of the ICT sector have become increasingly important since liberalisation and privatisation of telecommunications began in Africa in the 1990s. Before liberalisation, telecommunications services were provided in almost all African countries by state-owned national monopolies which provided fixed telephone services to very small markets, made up largely of government departments, larger businesses and elite citizens. Since liberalisation this market has been transformed. Telecommunications services, including the internet, are now offered in mass markets which reach the majority of adults in almost all African countries, using wireless handsets connected to competing mobile voice and (increasingly) data networks. Telecommunications, which as recently as fifteen years ago, were restricted to urban centres and transport corridors, now reach into even remote rural areas, with population coverage estimated at around 85% of Africans.

The implications for trade of this mass market in mobile communications have been discussed elsewhere in this report. Here we are concerned with its implications for regional integration. There are several dimensions to this.

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Firstly, the near ubiquitous availability of mobile telecommunications has led to significant changes in social and economic behaviour. Connectivity between migrant workers and their families, for example, has reduced the significance of international boundaries in interpersonal relations. Borders have become more porous to relationships and ideas, though it is not yet clear what effect this has had on the physical movement of goods and people.

Secondly, the liberalisation of telecommunications and rapid adoption of mobile telephony have led to the displacement of national by international telephone companies as the dominant forces in national telecoms markets. The leading telecoms operators in Africa are now multinational companies with businesses in many countries, including countries within the same African region. In the EAC region, for example, major international players include UK-based Vodafone, South Africa-based MTN and India-based Airtel. Multinational companies like these are concerned with regional as well as national markets and likely to locate and develop their businesses in ways that leverage regional opportunities.

Thirdly, the deployment of new international submarine cables around the African coast has had a significant effect on communications markets, enabling access to higher bandwidth and lower prices in both coastal countries and their landlocked neighbours – provided that regulatory regimes prevent operators from exploiting dominant positions in their markets. The advent of competitive undersea cables in East Africa has facilitated the spread of mobile internet and led to a wave of investment in national and regional network infrastructure. As regional integration continues, it would be beneficial for both governments and operators if they were able to configure these new networks to meet regional as well as national needs – an objective which may require policy and regulatory change.

Fourthly, a number of significant new business developments have taken place at a regional or continental level in communications markets. One of the most significant of these has been the effective elimination across much of Africa of international mobile roaming charges, a challenge that still confounds European regulators. The effective end of roaming charges originated in the decision of one operator with licences in several EAC countries to seek competitive advantage by eliminating roaming charges for its customers within that region, in which it was rapidly followed by other regional operators. Although this roaming environment is now more continental than regional, it illustrates a potential dynamic for regional cooperation beyond government action that was not apparent before liberalisation.

Another important development on the continent has been the rapid adoption of mobile transactions in some countries. The very substantial success of M-PESA in Kenya and the implementation of similar mobile money businesses elsewhere have raised the possibility that international as well as domestic transactions will transit from conventional (bank or Western Union-style) to mobile handset-enabled modes. Although there are regulatory and security challenges involved, including the relationship between telecommunications and financial service regulation, there is considerable scope in this possibility for reductions in the costs and complexity of cross-border trade transactions, which may help to bypass some of the constraints of Africa’s banking systems. However, to date, the performance of mobile money businesses has varied significantly between countries, and more research is needed into the drivers and barriers that bring about this variation.

Finally, there has been significant regional integration of telecommunications at a policy and regulatory level within the four active REC regions. SADC countries first adopted a protocol on transport, communications and meteorology in 1998, and this served as an important basic policy document as

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199 See Alison Gillwald & Muriuki Mureithi, Regulatory Intervention or Disruptive Competition?: Lessons from East Africa on the end of international mobile roaming charges, Research ICT Africa, 2010.
200 See e.g. Alex Comninos et al., M-banking the Unbanked, Research ICT Africa, 2008.
201 http://www.sadc.int/index/browse/page/162.
countries in the region liberalised their telecommunications markets. Regulatory associations in COMESA, EAC, ECOWAS and SADC regions have enabled telecoms/ICT regulators to develop joint approaches to issues such as interconnection and cross-border spectrum management, sometimes adopting joint guidelines in areas of regulatory practice.\textsuperscript{202} Regional benchmarking is another potentially important regulatory tool. In at least one case (the EAC) regulatory associations have provided a forum for regional dialogue between regulators and regulated businesses, which could provide a worthwhile model for dialogue in other sectors of the economy.\textsuperscript{203}

The opportunities presented by continuing improvements in infrastructure and services also pose new challenges for coordination and regional integration. Regional cooperation is essential for further deployment of broadband networks, the upgrading of which has regional as well as national value (and particularly sub-regional value in the case of coastal countries and their landlocked hinterlands). A significant challenge still remains in harmonisation of policies and legislation, in particular that pertaining to online transactions and electronic trade and commerce. At the level of infrastructure, recent discussion of regional backbones has made critical the harmonisation of a number of regulatory issues, including:

- interconnection and technical interoperability of networks;
- cross-border connectivity and tariffs;
- open access to allow for interconnection at any point in a network and sharing of infrastructure such as towers and masts;
- pricing and tariffs of networks; and
- cross-border spectrum use and reduction of interference.

Unfortunately, the secretariats of RECs have been under-resourced with expertise where ICTs are concerned, making it difficult for them to act as focal points for regional policy development. RECs and (particularly) their member-governments need to rethink the way in which RECs can be used to add value to regional thinking about the future of the ICT environment and its integration.

\textit{Regional integration, trade and the work of RECs}

The principal role of the Regional Economic Communities in facilitating trade rests on the AEC programme of progressive liberalisation of trade relations. Without underpinning progress towards a more enabling trade environment, of the kind included in that programme, other trade facilitation measures, including the ICT-enabled measures described earlier in this chapter, can have only limited impact.

The scope for ICT-enabled trade facilitation is therefore greater at present in those REC regions which have moved furthest along the liberalisation continuum set out in the Abuja Treaty. In practice, this means four of the RECs – COMESA, EAC, SADC and ECOWAS – with particular new opportunities arising for the first three of these because of the broader Tripartite Agreement which they have now signed. In the case of ECOWAS, there has been further progress towards trade-related integration in the UEMOA region than in ECOWAS as a whole, partly because of the advantages resulting from a common language, heritage and currency. The availability of a common currency also has value in the CEMAC sub-region which gives it more chance of overcoming the severe limitations on integration that are evident in ECCAS as a whole.

\textsuperscript{202} An example is WATRA, the West African Telecommunication Regulators’ Assembly, whose website is www.watra.org.

The most advanced of the RECs in some ways is EAC, which has benefited from the relatively small number of countries involved and the close historic ties which the majority of them have had. It is the one REC which is proceeding with reasonable confidence towards the common market phase of the AEC agenda, which opens up more prospects for growth in trade in services.

The ability of a REC to progress along the AEC continuum appears to be related to its institutional capacity. None of the RECs has institutional capacity, including financial and human resources, comparable with leading world regional economic associations like the European Union or associations such as ASEAN. The ability of the RECs to press forward with a more complex trade agenda depends substantially on the extent to which they are able to act as fora for innovation in governance in their regions. This is difficult for them unless they have strong backing from the political leaderships of member-states and enough staff with the necessary skills to develop new ideas. Recommendations concerning these weaknesses of the RECs and how they might be addressed are included in Chapter 4.

The evidence described in Chapters 2 and 3, and in the country case studies later in this chapter, has identified a number of aspects of trade facilitation in which RECs are currently active and suggests others in which they could be so in future. Some of these experiences are summarised in Table 4.1

### Table 4.1 — REC activities in trade facilitation

<table>
<thead>
<tr>
<th>REC</th>
<th>Theme</th>
<th>Areas of activity</th>
<th>Examples</th>
</tr>
</thead>
</table>
| AMU      | Logistics infrastructure and support | • Payment infrastructure                               | • Development of regional payment strategy, by bringing together the central banks of AMU member-countries.  
                                      |                                                      | • Adoption of standards that facilitate online payment systems                                      |
| COMESA   | ICT for governance and flow of goods | • Support to customs capacity building                 | • Regional Customs Transit Guarantee scheme (RCTG)  
                                      |                                                      | • Transit Data Transfer Module (TDTM)                                                            |
|          |                                      | • Guaranteer Scheme                                    | • Support for the adoption of the ASYCUDA system by 15 COMESA Member States in particular the ASYCUDA World system that integrates e-customs to e-government  
                                      |                                                      | • Transit Data Transfer Module (TDTM)                                                            |
|          |                                      | • Transit data management                              | • Regional ASYCUDA centre for capacity building in COMESA member states                            |
| EAC      | Logistics infrastructure and support | • Public and Private Partnerships for transit management| • Trade Mark East Africa transit observatory project, aimed at identifying total time delays across corridors and establishing a database to analyse and disseminate this information and thereby address transit problems.  
                                      |                                                      | • One stop payment                                                                                       |
|          |                                      | • National single windows                              | • Trade Mark East Africa’s one stop fee and duty payment system to facilitate revenue sharing between countries in East Africa                                      |
|          |                                      | • Public and private partnership for revenue sharing and payment |                                                                                   |
| ECOWAS   | Information Exchange                 | • Regional business opportunities initiative            | • Ecobiz service aimed at facilitating the automatic processing and dissemination of business       |

This table suggests that COMESA and EAC currently undertake more trade facilitation activities than other RECs. COMESA has supported roll-out of the ASYCUDA customs management system and associated capacity-building, a regional customs transit guarantee scheme and a transit data transfer module aimed at monitoring goods as they move across borders and along transport corridors. The AMU has made significant strides in fostering collaboration on regional electronic payments. The EAC has worked closely with Trade Mark East Africa (TMEA), a public-private partnership concerned with trade facilitation and information resources, to develop a transit observatory that uses ICTs to assess delays along its northern and southern transport corridors, the implementation of single windows in its member states and the establishment of a one-stop regional payment system.

Although much of the discussion in the RECs, and in this report, has been about trade at a regional level, it should be remembered that the trading partnerships which are most likely to develop dynamically at first are those between countries which are geographically contiguous. Trade is likely to be stronger between, say, Kenya and Uganda because they are neighbours than between Kenya and Rwanda, where goods needs to traverse another country en route. Informal trade is particularly likely to take place over single rather than multiple borders.

Bilateral trade and intergovernmental relationships therefore have an important part to play alongside regional agreements. Indeed, bilateral agreements will often provide useful stepping stones towards more widespread reform. Cross-border integrated border management is an obvious case in point. The sharing of data between CIQS agencies in, say, Zambia and Zimbabwe does not require agreement at SADC level, but can be achieved through bilateral agreement between the agencies and governments of the two countries concerned. The discussion of the Chirundu one stop border post between these two countries, which can be found in Chapter 2, illustrates how important specific bilateral issues can be in determining whether or not a cross-border facilitation initiative will succeed – and also how difficult cross-border issues can be to resolve. It is important for trade managers not to lose sight of bilateral challenges and opportunities when they are trying to address challenges and take advantage of opportunities at a regional level.

The evidence in this report suggests a number of areas in which RECs have been taking and could take more of a role in stimulating regional trade, including the use of ICTs in trade facilitation, building on experiences such as those in Table 4.1.

The starting point for these concerns the vision at the heart of trade facilitation. One of the criticisms that has been leveled against the RECs is that they have been too concerned with institutional structures (deciding how the governance of trade should work in principle) and insufficiently concerned with outcomes (reforming how the governance of trade works on the ground in practice).

Part of the challenge here is the need to understand exactly what is going on. Although there has been some excellent work to study the record of the RECs – notably UNECA’s series of reports Assessing Regional Integration in Africa210 – we still know too little about the dynamics of intra-African trade. For example, we have data for some border crossings and transport corridors concerning volumes of traffic, delays in clearance,

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208 http://www.ecobiz.ecowas.int/
209 http://www.tradebarriers.org/
210 available at http://www.uneca.org/aria/,
etc., but we have little data on the perceptions of trade participants about these challenges and the impact
which they have on their economic outcomes (such as profitability) and their behaviour (such as propensity to
trade). Even if RECs do not have the resources to commission the necessary research, they could seek funding
for it from other sources and act as clearing houses distributing greater knowledge of the trade environment
within their memberships.

They could also, and in the case of the more successful RECs do to some extent, act as channels for sharing
experience of the use of ICTs in trade facilitation. Advocates of ICT solutions are usually more keen to share
information about their plans and positive experiences than they are to share knowledge of problems and
failures. In practice, however, there is just as much to be learnt from the problems that are experienced – for
example those reported at the Chirundu border post (see Chapter 2) or in the early implementation of SIMBA
and KWATOS in Kenya (see Annex 2) – and from the ways in which those problems were resolved. This
experience needs to be shared not just between professionals concerned with ICTs in trade but also among
senior managers and politicians who have the power to make decisions.

Sharing experience, however, is only a small part of the potential role of RECs in this area, at the softer edge of
regional integration. RECs can also play a more central role at the harder end of integration, fostering the
implementation of trade facilitation systems, including those that make use of ICTs. Despite the activities
listed in Table 4.1, REC work on trade facilitation so far has been limited. There are a number of critical areas
in which the RECs could play a more prominent role in fostering ICT-related trade facilitation. These include
the following:

- **Adoption of a regional vision for trade facilitation, built around the single window concept.** As discussed
  above, the single window principle encapsulates the ways in which data-gathering and data-sharing can
  advance efficiency and coordination of trade and thereby save time and money. Coordination and data-
  sharing are more valuable if they extend across borders than if they are confined within one country, and
  should be more valuable still if they are enabled regionally as well as bilaterally and nationally. In spite of
  the many difficulties in the way of securing single window approaches across multiple countries, the
development of a regional single window provides a suitable visionary focus for REC activity that would
add new substance to the AEC agenda.

- **Focused attention on the infrastructure challenges that inhibit trade.** This would include the further
development of ICT-enabled transport corridors with improved quality road, rail and port infrastructure.
ICTs are important to these corridors in two ways – the availability of physical telecommunications
networks, and the use of cargo-tracking and other ICT-enabled applications which displace physical
inspections and weighbridges and thereby expedite trade flows. The growing network of recognised
international transport corridors provides a framework for achieving this.

- **Development of guidelines to foster critical national and bilateral trade facilitation initiatives of regional
  value.** As noted above, regional guidelines have been important in adding value to the liberalisation of
telecommunications markets in four REC regions. They could prove equally valuable in helping national
trade managers and other stakeholders to formulate design and implementation strategies for facilities
such as port community systems (at the larger end of the scale) and one-stop border posts.

- **Support for the harmonisation of national trade management arrangements across a region.** It is
critically important that the procedures, standards, documentary formats and IT-based systems which are
used for trade in different countries are interoperable. This is relevant in two areas.

  o Firstly, it applies to common standards in trade regulation requirements, such as rules of origin, plant
hygiene standards, truck loading maxima, etc. Standardisation of these non-tariff barriers would
reduce the need for multiple inspections and facilitate the smooth implementation of international single windows.

- Secondly, it applies to common data standards, based on those which have been agreed by relevant international agencies. It is essential for integration that different countries’ agencies are able to share data seamlessly, in order to enable single window processes to spread from national to bilateral and regional implementation. Harmonisation does not and should not mean that different countries are expected to adopt the same software solutions – it does not, for example, require them to adopt a particular type of customs automation programme – but it does require the use of common standards for data transmission and guidelines which will help to ensure that harmonisation occurs. RECs have played a role in this ever since they encouraged the adoption of ASYCUDA systems twenty years ago, and they should continue to do so.

- **The implementation of portals and other information resources** to give trade stakeholders more, and more reliable, information about trade management requirements and market opportunities within their region. The Ecobiz portal supported by ECOWAS is described in Chapter 2 and in Annex 3. RECs in east and southern Africa could use the Tripartite Agreement between EAC, COMESA and SADC to share (government and business) experience of different aspects of ICT-enabled trade facilitation including single windows, port and cargo community systems and customs automation, and of their integration at national and regional levels. The RECs could also provide a platform for public-private partnerships to launch training programmes in the use of ICTs for trade facilitation.

- **Monitoring and evaluation.** The four fully functioning RECs obtain data from countries across their regions in order to build a stronger statistical understanding of trade performance. This is a valuable contribution to the information resources available to decision-makers. The increasing digitisation of data means that much more information will in future be available, adding granularity to the picture that can be obtained of the performance of individual supply chain elements such as ports and airports, railways and road corridors. This increased volume of data will also help to evaluate the performance of ICT-enabled trade facilitation. RECs can expand their role as clearing houses for these data, and commission or coordinate more systematic evaluation of individual trade facilitation initiatives.

Two broader challenges, which are beyond the main focus of this report, face trade promotion in all regions of Africa over the medium term.

- The first of these is the development of trade in services. Some RECs, notably the EAC and UEMOA, have begun to take steps towards implementing the freedoms of movement, capital and establishment that form part of the common market framework which follows customs union in the AEC liberalisation programme. Other RECs should consider how far they can follow suit in order to enable service sector businesses to develop regional capacity which should, in turn, help them to meet the needs of global markets.

- The second concerns informal trade. Too little is known about the levels and dynamics of informal cross-border trade in Africa to enable effective policy formulation where it is concerned. From the point of view of government revenue and security, it would be desirable to see informal trade move into the formal sector where it complies with regulations and contributes to taxation. If formal trade becomes much cheaper, less administratively burdensome and time-constrained as a result of ICT-enabled innovation, that may encourage diversion of informal trade into formal channels. RECs could usefully consider how they can measure informal trade more accurately and attract it into formal channels through coordinated action across their regions.
As stated earlier, only some of the RECs are at present institutionally capable of progressing this agenda. Those which have not yet achieved real institutional capacity need to concentrate on that and on the first step of building functional free trade zones. Recommendations concerning how the more successful RECs might address the agenda set out above can be found in Chapter 5.

B – REVIEW OF COUNTRY CASE STUDIES

The terms of reference for this study asked for the inclusion of country case studies of ICT-enabled trade facilitation in three African countries. The three countries chosen for these in conjunction with the partners all have significant trade profiles but differ in a number of different characteristics.

- Kenya is a substantial country with a population of about 40 million, located on the coast of East Africa where it provides the entry/exit point for goods from a number of hinterland countries, particularly Uganda. It is a member of COMESA and EAC.

- Senegal is a smaller country in West Africa, with a population of about 12 million, which also provides the entry/exit point for imports and exports from its hinterland, particularly Mali. It is a member of ECOWAS and UEMOA.

- Botswana is a low-population landlocked country in Southern Africa, with a population a little under 2 million, most of whose trade passes through South Africa. It is a member of SADC and SACU.

The following paragraphs summarise the three countries’ trade profiles in more detail.

- Kenya’s economy is highly dependent on agriculture, which accounts for 22% of GDP though a much higher proportion of the population is wholly or partly dependent on agriculture for its livelihood. The main export commodities are tea, horticultural products, coffee, petroleum products, fish, and cement, with a value of US$ 4.6 billion f.o.b. Major export partners in 2009 included the United Kingdom (11.3%), the Netherlands (9.8%), Uganda (9.1%), Tanzania (8.8%), the United States (5.9%) and Pakistan (5.6%). Leading imports included machinery and transportation equipment, petroleum products, motor vehicles, iron and steel, resins and plastics with a value of US$10.4 billion f.o.b., showing that the country has a substantial trade deficit. The main import partners in 2009 were India (11.7%), China (10.6%), the United Arab Emirates (9.3%), South Africa (8.4%), Saudi Arabia (6.5%), the United States (6.2%) and Japan (5.1%). Kenya is the main trade gateway to Uganda and a transit route for goods bound to or from Rwanda, Burundi and Southern Sudan, as well as parts of DRC and Tanzania. Goods imported from EAC countries are zero-rated, while tariffs are levied in three bands on other imports – 0% on raw materials, 25% on finished goods and 10% on intermediate goods.

- Senegal’s economy is dominated by a few strategic sectors including groundnuts, fisheries and services. The country’s exports were valued at 983 billion CFA (US$2.09 billion) in 2010, with the bulk of export revenues derived from a limited range of staple products, including fisheries, petroleum products, phosphoric acid, fertilizers, cotton, groundnut, cement and non-monetary gold. Investments in the mining sector, in the tobacco and cement industries have contributed to increased exports from these sectors. Unusually for Africa, about 50% of Senegal’s exports go to other African countries. Mali is the leading

211 References to information in the case studies can be found in the text of the full case studies which are in Annexes 2 to 4.

212 For references and further details, see Annex 2.
recipient of Senegalese exports in the ECOWAS region, followed by The Gambia and the Republic of Guinea (Conakry). In Europe, the main export recipients are France, Italy and Spain. Imports are dominated by petroleum products, cereals, machines and equipment, metals and metallic works, and transportation equipment. Like Kenya, Senegal has a substantial trade deficit.  

- Botswana's principal exports are diamonds (the main source of its prosperity relative to much of the rest of Africa), copper and nickel, textiles and meat and meat products. Diamonds accounted for 68.1% of exports by value in 2010. The principal imports were machinery and electrical equipment, food, beverages and tobacco, fuel, chemicals and rubber products. Almost three quarters of these came through South Africa, which took just over 13% of Botswana's total exports during 2010. The country’s most important export markets are in Europe, especially the United Kingdom which received 55.3% of its exports in 2010.

Kenya and Senegal are considered major trading hubs for their respective regions. All three countries are members of the World Trade Organisation. They therefore have commitments to WTO agreements including those concerning most favoured nation (MFN) treatment to all trading partners, anti-dumping and intellectual property agreements. All three have also made commitments to WTO Agreements which relate to trade facilitation, including the Customs Valuation Agreement, and Agreements on Pre-shipment Inspection, Rules of Origin, Import Licensing Procedures, Technical Barriers to Trade and Sanitary and Phyto-sanitary Measures. Likewise, they are all committed to WCO conventions including the Harmonized System of Codes and the Revised Kyoto Convention on Simplification and Harmonization of Customs Procedures.

A number of public and private sector institutions are active in the trade sector and the adoption of ICTs in the three countries. Coordination between these different agencies has been problematic in all three countries.

- The most important trade institutions in Kenya are the Kenya Revenue Authority (KRA) and the Kenya Ports Authority (KPA). Other official agencies include the Kenya Bureau of Standards (KEBS), the Horticultural Crops Development Authority (HCDA, overseeing one of the major growth areas in Kenya’s international trade), the Police, the Port Health Department, the Department of Veterinary Services and the Kenya Plant Health Inspectorate Services (KEPHIS). Prominent private sector stakeholders include the Kenya Association of Manufacturers, the Kenya Transport Association, the Kenya International Freight and Warehousing Association and the Kenya Shippers Council.

- Senegal also has a wide range of institutions involved in trade facilitation, including the Port of Dakar, the Senegalese Export Promotion Agency (ASEPEX), the Centre for External Trade (CICES), Trade Point Senegal (TPS), the customs automation enterprise GAINDE 2000 and the Senegalese Shipping Council (COSEC).

- The most important trade institutions in Botswana are the Botswana Unified Revenue Services (BURS), the Botswana Export Development and Investment Authority (BEDIA) and the Botswana Export Credit Insurance and Guarantee Company (BECI).

**ICT applications for trade facilitation in Botswana, Kenya and Senegal**

Kenya and Senegal have both accumulated quite extensive experience in ICT-enabled trade facilitation, with Senegal more advanced in implementing a national single window. Botswana’s experience is more limited. The following paragraphs summarise their experience in the main areas of ICT applications discussed in Chapter 2.

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213 For references and further details, see Annex 3.
214 For references and further details, see Annex 4.
Customs automation

The most common customs automation system in Africa is the ASYCUDA programme, developed by UNCTAD. This is the system used in Botswana. Senegal and Kenya, however, have both preferred to develop their own national systems, which are variations of the GAINDE customs automation system. GAINDE was originally developed for Senegal and the variant used in Kenya is known as SIMBA.

- Senegal has been one of the pioneers of customs modernisation in Africa, its automation programme GAINDE being one of the first to be commissioned on the continent in 1986. GAINDE – a French abbreviation for words meaning ‘Automated Management of Customs Information and Exchange’ - took four years to implement and was running by 1990. GAINDE has been strongly supported by political and business leaders in Senegal, who have recognised its importance of improving the efficiency of trade and reducing delays in trade flows.

In 2002 a new modernisation project was launched to migrate customs management towards Web platforms that are more open and accessible to users. This new application, GAINDE 2000, was the result of a partnership between public and private sectors, and was first deployed in 2004 at the airport in Dakar and in the city of Kaolack, at the border with The Gambia. It met with some problems resulting from the need for system architecture to interface with the infrastructure available inside port stations.

Development towards the third generation of GAINDE began in 2005 with the launch of the GAINDE 2010 project. This has focused on ensuring compatibility between the various systems that are in operation. This new version of GAINDE was launched at the Dakar Petrol station in January 2009, extended to the airport and port in Dakar in early 2010, and to all port stations by the end of May 2011. It has enabled Senegalese customs to move towards a paperless trade environment, in which electronic documents have the same validity as paper documents have had. The aim of this paperless trade approach is to reduce clearance time from fourteen days to nine days during 2010-2011, in order to approach standards in more developed countries.

GAINDE 2010 has upgraded the customs automation system through Web technologies. It provides sufficient redundancy in software, hardware and network components to prevent service disruption, and pays a high level of attention to ensuring the integrity and security of shared data. GAINDE 2010 has encountered transition problems such as slow response of the system at the beginning of 2011 but is now becoming stable.215

- As noted above, the Kenya Revenue Authority has adopted a version of the Senegalese GAINDE 2000 system known as SIMBA 2005. This consists of six modules:
  
  o Manifest Module: This enables shipping agents to capture cargo data into the customs automated system. It is fitted with an EDIFACT tool enabling the automatic transfer of cargo information.
  o Declaration Module: This enables importers/exporters or their mandated agents to lodge their declarations to customs online.
  o Customs Module: This enables customs officers to receive entries and process them according to the current customs procedures.
  o Statistics Module: This enables Customs to produce statistics on the spot.
  o Warehouse Management Module: This caters for inward/outward movements of goods in bonded warehouses and sheds.
  o Risk Management Module: This provides a risk analysis tool to enable efficient targeting with varying inspection levels.

In addition to the traditional modules catered for in similar customs automation systems, SIMBA includes the following innovations:

- A system of real-time consultation (LEUK) of legislative and regulatory information (customs code, customs tariffs, treaties, community rules, etc.) with the possibility of effecting simulations of the amount of taxes and dues payable during the clearance of a given product;
- The establishment, through a data warehouse and website, of a database enabling the collection of detailed statistics and other information on particular economic sectors;
- The electronic collection of pre-customs clearance documents such as import declaration forms or import licenses is completed by importers using the single window system known as ORBUS.²¹⁶

The launch of the SIMBA system in 2005 was followed by serious transitional problems due to lack of adequate preparation and training for users (traders) and resistance from some importers and customs clearing agents. However its subsequent stabilisation and the introduction of scanners at ports have reduced the lead time for export-import document processing from five days to one. Clearance time through linkage between SIMBA and the KWATOS Port Community system has also reduced on average from seventeen days to ten. However, the SIMBA system has yet to integrate the air cargo clearance system at Nairobi and Mombasa airports. The Kenya Revenue Authority is working with civil aviation authorities to achieve this integration and is also in the process of upgrading SIMBA 2005 to a new version of GAINDE 2010.²¹⁷

- The Botswana Unified Revenue Service uses THE ASYCUDA++ system to manage customs duties, payments, goods declaration and processing, risk management, cargo control and pre-shipment inspection and revenue accounting. A total of fourteen customs stations (all commercial border posts and five regional offices) has been computerised, reducing clearance times. Other achievements include greater transparency in customs procedures and a reduction in cumbersome paperwork at border posts.²¹⁸

Port Community Systems

Port Community Systems are important in Kenya and Senegal, not just for trade between those countries and other continents, but also because their ports act as points of entry/exit for landlocked hinterland countries, particularly Uganda and Mali.

- The Port Community System at Mombasa in Kenya is known as the Kilindini Waterfront Automated Terminal Operating System (KWATOS), and was launched by the Kenya Port Authority (KPA) in 2008 with the aim of automating critical port and marine operations. The KWATOS team worked closely with the private sector and various agents in the export/import logistics business. Training of stakeholders, end-users and authority staff was undertaken during the launch. Even so, KWATOS faced a number of teething problems at the time of its launch, including conflicts in data, inadequate preparation for adaptation to a new system on the part of users, inadequate integration between the Kenya Revenue Authority SIMBA 2005 system and KWATOS, and staff resistance.

²¹⁷ Personal communication with KRA staff
The KPA worked on these issues between 2008 and 2011, with the aim of resolving growing concerns over increased congestion and delays in cargo clearance. One of the major achievements of this work in 2011 has been completion of the interface between the KWATOS and SIMBA systems, which has led to a fully integrated Port Community System. This has paved the way for a paperless regime in cargo documentation and tax payments, and has helped to reduce the number of days required to clear cargo from the port. The average container dwell time in 2011 was 6.4 days against 13.1 days in 2008, reflecting an improvement of just over 50% or almost a week. The turnaround for container vessels now stands at three days, down from the five days that were previously recorded.

The KWATOS system still faces exogenous challenges such as congestion on the wireless communications network and intermittent power cuts that often lead to congestion and delays. Other constraints that undermine its potential include poor offtake of cargo by road and rail and inadequate synchronisation with gate clearance.

- The main port at Dakar in Senegal is operated by Dubai Ports World (DPW), a major global operator of port infrastructure. DPW uses its own container and terminal management systems. The container management system supports all operations, including vessel, berth and yard operations, container inventory, equipment management and financial billing. The terminal management system, known as Zodiac, manages vessel and yard planning and equipment control.

However, unlike the KWATOS system’s link with SIMBA, there is no interface between data generated by DPW to GAINDE 2010: manifests are fed to the GAINDE 2000 manually for clearance of cargo by customs, and this causes considerable delay. The Government of Senegal has initiated a project to establish a platform for data-sharing, a portal and an e-payment system for logistic services and these activities were due to start during the latter half of 2011.

- Botswana is a landlocked country that relies heavily on South African ports such as Durban and Port Elizabeth and on Namibia’s port at Walvis Bay. There has been significant interest in switching import-export trade to Walvis Bay because of long turnaround times in the South African ports. The Namibian government granted land to the Government of Botswana for construction of a dry port in 2006. However, construction did not begin until August 2011 when the government awarded a contract to a private company to build, operate and transfer the dry port. As a result, to date, Botswana has not implemented a port community system for managing its imports and exports. The processing of these relies on the manifests that are processed through ASYCUDA++ at border posts, and all customs, quarantine and safety assessments are carried out locally by BURS and health authorities.

Risk management

There are significant differences in approaches to risk management in the three case study countries. All three countries recognize the importance of risk management both in ensuring the integrity of revenue collection and in reducing delays caused by inspection regimes. Kenya and Senegal have seen significant progress in this area, but progress in Botswana has been hampered by limitations of its current customs management system and of human and organisational capacity.

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219 Presentation of the Kenya Port Authority during the project workshop in August 2011.
220 Business daily, KPA bid to change Mombasa facility into e-port gets boost, http://www.businessdailyafrica.com-/539444/823118/-/view/printVersion/-/f0vt32z/-/index.html
222 See Annex 3.
224 KRA Presentation, Customs Role in Meeting the Needs of Importers and Exporters, www.kenyashippers.org
The Kenya Revenue Authority has implemented a risk management system through SIMBA 2005. This categorises traders into green, yellow and red groups according to selection criteria based on familiarity and past experience. These categories determine whether a consignment should gain direct release and/or what documentary checks, scans and physical verification interventions are required. KRA has also introduced an Authorised Economic Operator (AEO) scheme that allows approved traders to be eligible for post-clearance audit. An Electronic Cargo Tracking System (ECTS) is used to manage risks in the movement of consignments and collection of information on transit goods. The KRA mandated the use of ECTS in 2010 in order to monitor cargo transfer to container freight stations and transit traffic in order to prevent diversions or dumping of goods. About 1200 trucks have been fitted with ECTS devices that facilitate reporting of loss of goods and diversions.\(^\text{225}\)

Senegalese authorities have made concerted efforts to apply an intelligent risk management system that has been built into GAINDE 2000 and, more recently, GAINDE 2010. The latter incorporates a fully developed risk management module.\(^\text{226}\) The oversight of goods transiting Senegal to Mali is a major concern for Senegalese customs, which are anxious to avoid goods being offloaded in Senegal without payment of required duties. The Government of Senegal commissioned the trade management firm COTECNA to establish an Electronic Cargo Tracking System (SSE), which became operational in December 2009, facilitating security along the Dakar-Bamako corridor.\(^\text{227}\) Trucks \textit{en route} from Senegal to Mali are fitted with electronic beacons that transmit an alert when a truck stops or deviates from its planned itinerary. Where alerts suggest suspect activity, border officials physically verify cargo to make sure that no fraud or evasion of duty has occurred. The SSE system makes it possible to detect false transit and fraudulent discharge of goods and to take rapid and effective action when required. It gives trade administrators better command of transit operations, but also reduces costs as it is no longer necessary for consignments to be accompanied by physical escorts. Implementation of the system has eliminated delays of two or three days that typically occurred as traders awaited the designation of escorts by customs officers before authorising a truck to begin its journey.\(^\text{228}\)

In Botswana, BURS uses the ASYCUDA++ system's cargo selectivity module (MODSEL) for risk management. However, it lacks a well-developed departmental capability to make use of complex tools and databases for assessing risks. BURS has established a post-clearance audit function, but this has not yet had the opportunity to develop fully and is not benefiting from the substantive application of risk targeting. Efforts are underway to improve the risk management capacity of BURS.\(^\text{229}\) However, more sophisticated risk management cannot be achieved with the current version of ASYCUDA++, which is now closed for development as it has been succeeded by a later version of ASYCUDA, and this has prevented BURS from developing more efficient risk management applications.\(^\text{229}\)

**Business information**

countries, though these are not nearly as extensive as those which might be expected in a European or Asian trading nation. Botswana also has significant information resources available, reflecting its relative prosperity and high quality of governance.

- Senegal has been the most active of the three countries in this area, and has longstanding experience in providing information on trading opportunities. The trade information service of Trade Point Senegal\(^\text{230}\) began operations in 1998. It provides the following services:
  
  o advertising and browsing of trade opportunities (offers and requests for services, products, skills, technical and financial partnerships);
  o access to the Directory of Senegalese Enterprises (which lists over 1,500 companies active in various sectors);
  o online advertising;
  o the design and hosting of web interfaces; and
  o attribution of email addresses to traders.

Senegal is also part of an ECOWAS project called Ecobiz, which aims to provide trade-related information across West Africa. The Ecobiz website offers detailed information on commercial events, product offers, requests and business details of registered companies, and directories of enterprises by activity, sector, country or group of countries.\(^\text{231}\) A database has been developed to collect relevant information from businesses in ECOWAS member countries. These can exchange information and engage in trade relations, but traders from non-member countries can only view information on products, traders and prices. An online portal concerned with rules and regulations is also available, which is accessible to all.\(^\text{232}\) GAINDE 2010 has a search engine through which users can enquire about national formalities and customs tariffs. There has been discussion to bring together the information available through GAINDE 2010, TPS, COSEC, and ASEPEX within the context of a national single window.

- Substantial progress has been made by Kenyan trade facilitation institutions in providing online information on rules, regulation and business opportunities, though more could still be done. The KRA,\(^\text{233}\) KPA,\(^\text{234}\) KBS\(^\text{235}\) and other agencies have well developed websites that provide information on their activities, standards, rules and regulations. The Kenya Shippers’ Council also has an extensive portal concerned with regulations and a database of service providers.\(^\text{236}\) The SIMBA 2005 system has an integrated module known as LEUK which allows for creation of an electronic database on customs tariffs and legislation which can be made available to traders. However, this has not been fully developed.

- In Botswana, the BURS has an extensive website that provides information on rules and regulations, trade statistics, tax rates and online forms that are required for customs clearance.\(^\text{237}\) This is complemented by portals of the Botswana Export Development and Investment Authority (BEDIA)\(^\text{238}\) and the Botswana Export Credit Insurance and Guarantee Company (BECI),\(^\text{239}\) which provide information on business, credit and investment opportunities in the country.

\(^\text{230}\) accessible at www.tpsnet.org

\(^\text{231}\) http://www.ecobiz.ecowas.int/fr/faq.htm. See also Chapter 2.

\(^\text{232}\) at www.ecobizensenegal.com

\(^\text{233}\) http://www.revenue.go.ke/

\(^\text{234}\) http://www.kpa.co.ke/Pages/default.aspx

\(^\text{235}\) http://www.kebs.org/

\(^\text{236}\) http://www.kenyashippers.org/

\(^\text{237}\) http://www.burs.org.bw/

\(^\text{238}\) http://www.bedia.bw/

\(^\text{239}\) http://www.beci.co.bw/
The development of national single windows

It is evident from the above account, and from the more detailed accounts in the Annexes, that the three countries in these case studies have made considerable progress in seizing the opportunities provided by growing access to broadband networks, applications and standards to enhance the flow of goods across national borders through ICT-enabled trade facilitation. There are significant initiatives underway in all three countries. However, these are not necessarily well-coordinated and there have been problems in implementation resulting from inadequacies in infrastructure, organisation and human capacity, and from resistance to change by both officials and system users.

Progress towards system-wide coordination, through a national single window, has moved more slowly than the initiatives discussed above.

- Progress has been particularly slow in Botswana compared with the other two countries. The Botswana Revenue Service still uses the ASYCUDA++ programme, which is behind both its successor ASYCUDA programme and the country-based customs automation systems in use in Senegal and Kenya in terms of enabling a national single window. Discussions about the development of a single window in Botswana are at an early stage.

- Kenya’s experience with single windows began with the adoption of the ORBUS module in the SIMBA 2005 customs management system. This allows for interconnection of all the administrative bodies involved in the processing of import/export formalities, and enables traders to lodge declaration requests through a single electronic form. Further impetus for a single window was created through interconnection between the Port Authority’s KWATOS system and the Revenue Authority’s SIMBA 2005 programme to facilitate efficient clearance of cargo. However, other important trade locations such as the airports are not interconnected with SIMBA 2005.

Encouraged by the expected benefits from an integrated national system for trade facilitation and by international experience (e.g. that in Singapore, Malaysia and the Republic of Korea), the Government of Kenya has made a strong commitment to the creation of a national single window. It has enacted legislation to enable this and established a company to drive the national single window, Kentrade, in 2011. Kentrade has undertaken preparatory work on systems requirements and specification, on needs assessment including capacity and business process redesign, and in establishing its office. It has also developed a five year master plan for the evolution of a national single window, which is expected to be fully operational and self-sustaining by 2014.240

- Senegal has been the most active of the three countries to date in promoting and implementing a national single window. Its ORBUS single window system was set up in 2004 by GAINDE 2000 to facilitate foreign trade formalities through electronic data sharing between stakeholders. It has led to a significant reduction in pre-clearance times and formalities-related costs, together with the near-elimination of trade management paperwork.

The main objectives cited for establishing ORBUS were:

- closer relations among foreign trade stakeholders;
- improved working conditions;
- simplification and harmonisation of procedures;
- reduction of costs and time; and
- the introduction of new technologies in administration and trade circles.

240 Alex Kaguba’s Presentation at the workshop
The system interconnects the main trade stakeholders in Senegal in order to enable automated processing of requests for permits and certificates required in any given import/export operation. These stakeholders can be divided into the following groups:

- **Clients (applicants).** These are the clearing agents and licensed companies authorised by Customs to clear their own goods. A module within ORBUS enables them to send a request for the collection of electronic documents required in a given operation.
- **Public stakeholders (official agencies).** These include the Currency and Credit Department (DMC), the Plant Protection Unit (DPV), the Livestock Department (DIREL), the Foreign Trade Department (DCE), the Department of Fish Processing Industries (DITP), the Quality Control Department (DCQ) and the Metrology Division (DM).
- **Private stakeholders,** including banks, insurance companies and inspection offices (which are managed by COTECNA).

A full implementation of ORBUS is underway in a context which includes the upgrading of customs management to the GAINDE 2010 system, the creation of an online e-payment system known as CROUS, improvements to the performance of ORBUS itself and the overall objective of enabling paperless trade. This full implementation is expected to enhance the availability of information, increase efficiency and reduce delays. It should also allow for better planning of consignments and orders, secure and efficient payments, and the reduction of corruption through near-elimination of physical contact between administrative personnel and traders.

**Assessment**

These case studies of Botswana, Kenya and Senegal reflect circumstances in most African countries, though the experience of Kenya and Senegal, as major trading nations, may be among the more developed on the continent.

The majority of African countries have now introduced ICTs in facilitating customs clearance and logistics across borders, using the potential of ICTs to improve efficiency and (at least to some degree) coordination at national level. Recent progress in the deployment of broadband networks and the availability of web applications has also increased access to information.

However, there has clearly been substantial variation in the extent to which ICTs have been applied in trade facilitation. The most important challenges to the application of ICTs in trade illustrated by the case studies are not technical but infrastructural and institutional.

- Established systems have long been entrenched within government and many vested interests have grown up around them, leading to institutional difficulties in achieving coordination and to resistance to change from some stakeholder groups. Government commitment at a senior level, and the investment of sufficient resources to overcome problems and re-engineer processes, are crucial to the effectiveness of programmes to institute ICT-enabled trade facilitation.

- Revised legislation and regulation is needed to enable digital transactions and other new ways of doing business that take advantage of the opportunities of ICTs to share data and facilitate payments. New ways of doing business also need to take root in the trading and financial communities.

- Inadequate technical capacity, ongoing power interruptions and congested wireless networks have undermined the operational effectiveness of new systems once they are in place. Confidence needs to be built in new systems, particularly where these require investment in change by user communities, and this
can easily be undermined if the underpinning infrastructure prevents new systems from delivering promised gains in cost, time and reliability.

Coordination is a critical challenge, and the three countries have progressed only so far along the route to fully coordinated trade management, in particular towards implementation of a fully functional national single window. One recurrent problem in all three cases has been the absence of the immigration and security authorities from discussions of trade facilitation and lack of coordination between their systems and those of customs and quarantine authorities. This inhibits progress towards integrated border management and single window processes. It is important that government agencies fully understand the value of addressing trade facilitation at a systemic level, rather than just at particular locations or among particular communities. This has wide-ranging ramifications, from coordinated software procurement to process re-engineering that fosters flexible interaction between government agencies and trading businesses.

In the case of Botswana, reliance on ASYCUDA++ has been a drawback in efforts to enhance the capacity of the Botswana Revenue Authority, particularly in using advanced techniques for risk management and in moving towards a national single window. This problem occurs also in other countries that are still using ASYCUDA++ and have not been able to upgrade to the Web-enabled AYCUDA World. It illustrates the importance of understanding that technology is changing and that investment is required in system evolution if maximum advantage is to be taken of the potential benefits of ICTs within this sector.

The three case studies reported in this chapter demonstrate areas in which individual countries are lagging behind, and suggest the value of experience-sharing, particularly within REC regions. Botswana, for example, has made some progress in providing information on trade through websites and in investment promotion, but has lagged behind the other two countries in its overall use of ICTs for facilitation of trade and logistics. Senegal has seen considerable progress in customs automation and the development of a single window, but is behind Kenya in the promotion of integration between its port and customs systems. Kenya took advantage of Senegal’s experience in developing a national customs management system in order to develop its own national system. However, it is now taking an institutional approach to the development of a national single window rather than the organic and technical approach to the creation of paperless trade which can be seen in Senegal.

The experience of Botswana and Senegal shows the importance of data and information on business opportunities, rules and regulations. The benefits of trading business having access to reliable information about these— and the costs of ignorance of rules, duties or market opportunities — are well understood. It is important, however, that information resources of this kind are developed in consultation with the private sector businesses that will make use of them, if not as public-private partnerships. There is much here that individual countries and RECs can learn from different types of information resource that are becoming available.

These experiences suggest the value of an ongoing platform for information and knowledge exchange between countries on the continent – a facility which can most readily be provided by the RECs, perhaps acting in conjunction with a continental forum such as the African Union and/or the African Development Bank.

The overall experience in the three countries also points towards the core message of this report, which is elaborated in the recommendations in Chapter 5. The success of ICT-enabled systems at particular points in the supply chain, such as port community systems and customs management, is both a precursor to and a prerequisite for the successful implementation of a national single window. Kentrade’s master plan in Kenya shows that the National Single Window will be based on the achievements and lessons of KPA’s KWATOS system and KRA’s SIMBA system. Its performance should provide valuable lessons for other countries. In Senegal the success of ORBUS is largely dependent on the successful operation of GAINDE 2010 and the CORUS e-payment system. These experiences provide steps towards the implementation of a single window
which are important in building the capacity and confidence to move on to a comprehensive, systemic national framework. This approach is much more likely to succeed than an attempt to impose a national single window on a trade environment that has not been adequately prepared for it.

The three case studies also illustrate the long-term nature of the transition from pre-automated to ICT-enabled trade management. They show that this cannot be transformed overnight simply by the introduction of new technology. Transformation requires changes in government and business practice and attitudes, new working relationships and improvements in complementary resources such as power and communications infrastructure as well as ICT applications. The pace of transformation is determined by that of human and organisational adaptation as well as that of technological innovation. From government and business alike, this requires long-term commitment, careful planning and scheduling of change, awareness- and capacity-building, and significant financial resources.
CHAPTER 5 – RECOMMENDATIONS

This final chapter of the report sets out recommendations which are based on the analysis in Chapters 2 to 4. These recommendations are addressed successively to governments; to Regional Economic Communities and the African Union; and to international financial institutions, development cooperation agencies and financial institutions including the African Development Bank and the World Bank. They are, however, interlinked, and there is a strong need for interaction between the different stakeholders involved.

The benefits of improved trade accrue both to governments (and thereby citizens), on the one hand, and to trading businesses, on the other. Progress towards trade facilitation requires the involvement of both. The investments required in ICT infrastructure, the political and economic challenges involved in regional integration, and the changes in governance and technology required to improve national trade performance are integrally linked. National policy, REC integration and IFI investment need to come together to maximise the value, in turn, of trade, trade facilitation, and the use of ICTs.

The objectives of ICT-enabled trade facilitation are to:

- improve the efficiency with which individual trade processes are undertaken;
- improve coordination between different actors along the supply chain; and
- improve access by trading parties to necessary information on trade management and market opportunities.

ICTs have an important role in the governance and efficient flow of goods, in particular in supporting logistics infrastructures such as roads, ports and railways, in expediting the formal clearance of goods and movement of goods and people across borders, and in enabling transactions to take place efficiently. The role of ICTs in interconnecting producers and consumers, as well as other actors in the supply chain, is critical as the better information flow which they make possible underpins the smooth passage of goods within and between countries. ICT-enabled trade facilitation should achieve reductions in the costs and delays to which trading businesses are exposed, improve their profitability and competitiveness, and encourage them to extend their participation in regional and global markets.

However, the efficiency gains which can be made through ICTs cannot be achieved without an enabling policy and regulatory environment, adequate institutional capacity, carefully planned change management and business process redesign, and institutional arrangements and governance for cross-sectoral coordination, as illustrated in Figure 5.1.

**Figure 5.1 – ICTs and trade – the supporting environment**

[Diagram of the supporting environment]

Formalities, governance and efficient flow of goods
Logistics, transactions and infrastructure support
Information on regulation, taxation, non-tariff barriers, business opportunities and compliance

Policy and regulation, standards, human capacity development, business process change, governance and coordination
The developmental value of ICT-enabled trade facilitation is substantial because of Africa’s underlying weakness in international trade (described in Chapter 1) – in particular, its very low share of global trade by volume and value, the prevailing pattern of exports of commodities and imports of manufactures, and its low level (by world standards) of intra-regional trade. Countries that achieve higher levels of trade, both within the continent and with the outside world, should make positive gains in employment, wealth creation and poverty reduction. Countries that achieve higher levels of manufactured exports to neighbouring countries, in particular, may be able to build more competitive manufacturing potential for wider world markets on the basis of those exports, as some countries in Asia have been able to do. Higher export volumes are, in short, likely to bring developmental gains, and governments and other actors should leverage the potential of ICTs to help bring them about.

The recommendations in this chapter are set out as follows:

- Section A identifies five cross-cutting areas for action by governments, RECs and IFIs which have a profound influence on the extent to which the potential benefits of ICT-enabled trade facilitation can be realised. They represent essential background areas of development action for the ICT interventions which follow.

- Section B outlines a core programme of nine areas of ICT-enabled activity which the report recommends should guide the work in this area of governments, RECs and IFIs. This core programme is based around the adoption and implementation of single window principles.

- Section C sets out recommendations for governments which emerge from this core programme.

- Section D sets out recommendations for RECs.

- Section E sets out recommendations for IFIs.

A – CROSS-CUTTING THEMES

While ICTs have considerable potential to facilitate trade, their value can only be fully realised within an enabling framework of policy and action which addresses the structural and infrastructural weaknesses in African economic and trade policy and practice. The implementation of any programme of ICT-enabled trade facilitation will only be fully effective if it is integrated with measures to address these wider trade challenges. Five areas of government and regional policy and practice are especially important in this context.

1. Trade and industrial policy

Governments should be committed to a trade policy which encourages businesses within their countries to participate in the global economy, and which actively promotes this participation by committing resources to trade promotion and trade facilitation. Governments should also recognise that high levels of dependence on commodity exports and on manufactured imports do not provide a sustainable basis for economic development. They should actively promote economic diversification, including the development of manufacturing and services which can exploit areas of potential competitive advantage. In some cases, this may include the promotion of ICT service exports (such as business process outsourcing).

2. Infrastructure development

Governments need to invest in improvements to power and transport infrastructure and to integrate these with trade and industrial policy. Improvements in productive capacity and in ICT-enabled trade facilitation will have limited value if power is insufficiently available or reliable to enable production to run consistently and to maintain communications along the supply chain, or if the roads are so badly maintained or disrupted by
roadblocks that higher production volumes cannot be moved readily along trade routes. Computerised and automated production processes and data-sharing along the supply chain are only viable if computers and communication networks can be kept online. Investment in other physical infrastructure is essential alongside investment in IT systems and applications.

3. ICT policy and the enabling environment for e-commerce

The potential for ICTs to facilitate trade and other aspects of economic and social development also depends on the availability of affordable, high-quality communications services. Investment in broadband infrastructure is increasingly seen as essential for the future development and exploitation of communications. Appropriate attention should be paid to the deployment of broadband networks (whether through private or public investment, or through public-private partnerships) and to the development of services that make use of them. Experience in Africa and elsewhere has demonstrated the value of competitive markets and of strong regulation for networks and services in reducing communications costs. A commitment to competition and pro-competitive regulation should be part of national ICT policies.

In addition to communications sector regulation, legislation and subsidiary regulations are required to provide an appropriate legal framework for the transition from paper-based to electronic transactions and interfaces, including, for example, acceptance of electronic signatures.

4. Regional policy

Continued/accelerated progress towards regional integration has considerable potential to support economic growth, foster trade and facilitate economic diversification. Governments should give a higher profile to regional integration within their domestic and international policies, at least in the COMESA, EAC, ECOWAS and SADC regions where existing RECs have demonstrated their capacity to deliver trade and other developmental gains. This should include a commitment to greater regional coordination, including policy coordination, standardisation and harmonisation of regulatory requirements, completion of free trade areas and customs unions, and faster progress towards regional freedoms of capital, movement and establishment.

5. Standardisation

Standards play a major role not only in facilitating trade, but also in ensuring the interoperability of systems that enables countries to harmonise their trade and border crossing formalities and to share data across international frontiers. Standards that require adoption in this context include e-business standards such as ebXML, formatting standards for electronic data interchange (EDI), and WCO common database standards for customs. The adoption and implementation of international standards for trade documentation and regional standards for certification of rules of origin, sanitary requirements, etc. will improve interoperability and the smooth flow of goods across borders. The adoption of National Single Window processes that connect with those of other countries also requires adherence to globally agreed standards and formats.

B – A CORE PROGRAMME OF ICT-ENABLED TRADE FACILITATION

The analysis and evidence presented in this report confirm that ICTs can play (and have been playing) an important part in trade promotion and facilitation around the world, and that African governments and businesses should take more advantage of this potential. ICTs’ ability to improve efficiency and coordination in trade management results in particular from the opportunity which they provide to simplify the management of information which is necessary to both trading parties and governments, and to share those data between all who need access to them along the supply chain. The efficiency gains which can be made through ICTs, however, cannot be fully achieved without an enabling policy and regulatory environment (see
section A), adequate institutional capacity, carefully planned change management and effective arrangements for coordination within and between countries.

The core programme for ICT-enabled trade facilitation which is recommended by this report focuses on the adoption of single window principles and their implementation along the supply chain. As described in Chapter 2 Section B, a single window process creates a single point for data entry concerning a consignment and enables those data to be shared by communities of trading parties and government agencies. Single window principles can be applied at particular points along the supply chain (such as border crossing points) or can reach along that chain, either within single countries (national single windows) or across international boundaries (bilateral or regional single windows). These principles are evident in most of the examples of ICT-enabled trade facilitation which are discussed in Chapter 2.

The simplified data management and data sharing capabilities of single window processes represent the most important opportunity for improvements in the efficiency and coordination of trade management. Their comprehensive implementation is, however, complex, requiring the participation of many different stakeholders, the deployment of ICTs throughout the supply chain and extensive changes in trade management processes in general. The report therefore recommends that governments, Regional Economic Communities and International Financial Institutions should work with other stakeholders to exploit ICTs in trade facilitation progressively over time:

- firstly, through the assessment of different needs in the trade supply chain, which should be followed by measures to strengthen the capacity of government institutions and trading businesses to embrace advanced web-based information management and online transaction systems;
- secondly, through the deployment of ICT-enabled applications at critical points along the trade supply chain, such as at ports and border crossings, where they can achieve substantial efficiency savings in cost and time to trading businesses and government agencies;
- thirdly, through the development of national single window systems for data management and sharing, which integrate these ICT applications along the supply chain, adding further savings in cost and time as a result of inter-agency and inter-stakeholder coordination within countries;
- fourthly, through the extension of single window principles to regional level, enabling a third level of savings in cost and time to be achieved through cooperation between agencies in different countries throughout the supply chain and throughout Regional Economic Communities.

In the first phase of implementation, the report recommends that measures should be taken by governments and RECs to promote ICT-enabled data management, data-sharing and information resources in nine aspects of trade management. In addition to the adoption of single window principles as is central feature(point 3 in Table 5.1), allowing the electronic sharing of documentation between trade actors, this core programme includes:

- strengthening of the capacity of government institutions and private companies involved in trade to modernise their information systems and make effective use of ICTs;
- automation of customs management and integration of customs with other trade management processes at entry/exit points (border crossings, ports and airports);
- adoption of an intelligence-led risk-based approach to the management of traffic flows along trade corridors and in border clearance;
- strengthening the ICT capacities of major trade actors such as port authorities, shipping councils, cargo and forwarding agencies, including through the implementation of port and cargo community systems;
• integration of government agency functions at entry/exit points, enabling more efficient coordination of clearance requirements;
• promotion of shred border control between neighbouring countries, within a framework of bilateral and regional integration, making appropriate use of common standards and single window documentation;
• promotion of electronic commerce and payment systems; and
• development of portals and other information resources for trading businesses.

This core programme of ICT-enabled trade facilitation is set out in Table 5.1. Sections C to E of this chapter consider its implications for governments, RECs and IFIs.
| Priority area                                                                +-+-+Projects and action areas                                                                                                                                           | Examples of projects with relevant experience (referenced in text) |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 1 Support for the application of ICTs in all government departments that are involved in trade facilitation and to build the capacity of the private sector to conduct B2B transactions to facilitate trade and logistics. | o Support for the development of web portals concerned with rules, regulations and procedures.  
  o Supporting the acquisition by government institutions of simple automation systems that manage their processes, and enable them to share information through national single windows.  
  o Enhanced availability of information on business opportunities and databases concerned with facilities such as trucks, logistics service providers, etc.  
  o Training and other capacity-building to enable the private sector to take advantage of B2B transactions that facilitate trade and logistics. | o Trade Mark East Africa Information Sharing Portals. |
| 2 Automation of customs and integration of customs with other trade management processes at entry/exit points (border crossings, ports and airports). | o Upgrading of customs tools to latest Web technologies.  
  o Integration of customs tools with payment systems.  
  o Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance.  
  o Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows. | o SARS modernization.  
  o GAINDE 2010.  
  o CGNET.  
  o Tradenet Mauritius.  
  o Tunisie Tradenet. |
| 3 Adoption of Single Window principles, allowing the electronic sharing of documentation between trade actors, as the central feature of a core programme of ICT-enabled trade facilitation. | o Planning - identification of objectives and benefits, governance arrangements and financing; enlistment of participant institutions; awareness-raising.  
  o Preparation - process redesign, review of the regulatory framework, analysis of systems and processes and development of blueprint.  
  o Design - simplification and harmonisation; business and data modelling; ICT procurement; prototyping and piloting.  
  o Implementation and operation - initial roll-out; revision of plans based on experience; changes to processes and regulatory framework; tightening of governance framework and institutional strengthening of Single Window.  
  o Overall roll-out and ongoing evaluation – attaining paperless trade, integration with other national single windows in regional single window, development of metrics to quantify benefits and take remedial actions. | |
| 4 | Adoption of an intelligence-led risk-based approach to the management of traffic flows along trade corridors and border clearance. | **o** Introduction of ICT-enabled tracking of the flow of goods along the supply chain.  
**o** Introduction of an intelligence-led risk-based approach to inspections and clearance of goods across borders. | **o** Cotecna Tracking System (Senegal).  
**o** RUFAATRACK – electronic shipment tracking system.  
**o** Africa West Cargo. |
|---|---|---|---|
| 5 | Strengthening the ICT capacities of major trade actors such as port authorities, shipping councils, cargo and forwarding agencies, including implementation of port and cargo community systems. | **o** Support for the establishment of Port Community Systems and Cargo Community Systems through public-private partnerships (PPPs).  
**o** Support for the PPP-enabled introduction of border management systems. | **o** Kilindini Waterfront Automated Terminal Operating System (KWATOS).  
**o** Alexandria, Mauritius and Dakar Port Community Systems. |
| 6 | Integration of government agency functions at entry/exit points, enabling more efficient coordination of clearance requirements. | **o** Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance.  
**o** Integration of customs tools with Port and Cargo Community Systems in context of National Single Windows.  
**o** Connection of border posts and relevant agencies to single window processes, with measures to improve the capacity of border post operators to use ICTs in expediting trade flows.  
**o** Leveraging the availability of broadband and wireless networks to link border posts. | **o** Chirundu one-stop border post. |
| 7 | Promotion of shared border control between neighbouring countries, within a framework of regional integration, making appropriate use of common standards and single window documentation. | **o** Modernisation of border posts in integration and use of ICTs.  
**o** Initiation of projects for advance information exchange between border agencies in neighbouring countries.  
**o** Interconnection of national Single Windows. | **o** TMEA one-stop payment for clearance of goods. |
| 8 | Promotion of electronic commerce and payment systems. | **o** Enactment of legislation enabling electronic commerce and e-payments.  
**o** Introduction of electronic payment mechanisms for official fees and duties.  
**o** Establishment of regional payment systems. | **o** ECOBIZ.  
**o** Trade Point Senegal.  
**o** NTB reporting and complaining system – TMSA tradebarriers.org.  
**o** Kenya Shipping Council’s e-portal and database of providers. |
| 9 | Development of information resources for trade businesses. | **o** Support for the development of portals containing information on policy, legislation and regulations.  
**o** Support for the development of portals concerned with business opportunities and for databases of trade and transport providers.  
**o** Establishment of one-stop reporting point on non-tariff barriers. | **o** |
C - RECOMMENDATIONS TO GOVERNMENTS

Improved trade performance in Africa will result from action taken by both national governments and RECs, and is likely to be most effective where these work in collaboration. Governments are particularly concerned to:

- ensure efficient collection of revenue from fees and duties;
- ensure compliance with rules and regulations to protect security, public health and other policy objectives; and
- encourage trade, particularly exports, which will have beneficial impacts on employment and economic growth.

Overall trade policy

ICT-enabled initiatives in trade should not be seen in isolation. The starting point for national government engagement with ICTs and trade facilitation should be an overall national policy framework for trade and its role in national economic development. This should be based around:

- A clear, detailed and realistic assessment of the present state of trade and trends in national trade performance, including the identification of opportunities to grow exports in particular product and service markets, and the scope for increased intra-regional trade with neighbour countries.
- A clear, detailed and realistic assessment of barriers which inhibit trade and reduce trade performance, including tariffs, formal non-tariff barriers, transport and other infrastructure challenges, bureaucratic inefficiencies and institutional challenges, and weaknesses in business culture, institutions and information resources.

These assessments should draw on the experience of all trade stakeholders. Ideally, they should lead to:

- the development of an overall national trade policy which aims to grow export volume and value by addressing the structural and infrastructural challenges facing the national economy and the barriers to trade resulting from inefficiencies and lack of coordination in trade management;
- the collection of data and monitoring of trade and trade performance, enabling government agencies and trading businesses to identify clearly where there is scope for increased efficiency and improved coordination; and
- enhanced dialogue between government agencies and trading businesses, allowing stakeholders with experience across the trade environment to contribute positively to the development of trade policy and to influence the implementation of trade management.

The role of ICTs in the national trade environment should be rooted in a coherent policy approach which applies the core programme of ICT-enabled trade facilitation described in section B to the national context emerging from this policy development approach.

In addition to the policy framework, the scope for ICT-enabled interventions will depend on the quality of national infrastructure, particularly for transport, power and telecommunications. National governments should invest in the maintenance and improvement of major trade routes, including international trade corridors, and address security requirements along those routes, with a view to reducing the time it takes for goods to travel between supplier and border crossing or between border crossing and consignee. They should invest in port and airport infrastructure in order to reduce congestion and expedite transit, planning ahead to meet anticipated future levels of demand. They should also invest in broadband communications networks,
which are necessary to take full advantage of ICTs in trade facilitation and in many other development domains. Financial support for investment in these areas may be available from IFIs. Without them, the potential impact of ICTs on trade will be much reduced.

**ICT-enabled trade facilitation**

Governments and government agencies have the central role in introducing the core programme of ICT-enabled trade facilitation outlined in Table 5.1 within their territories. It is important to recognise that different countries have different starting points today where the use of ICTs in trade is concerned.

Each government should make a clear assessment of its current status in relation to each aspect of the core programme, and use this to prepare a national programme of action to achieve the gains envisaged, which may also form the basis of funding applications to IFIs and other donors. This programme should prioritise interventions which will have a substantial impact on trade flows by improving efficiency at key points in the supply chain (such as border crossings) and envisage gradual progress towards implementation of a comprehensive national single window. It should be consistent with the plans of neighbouring countries and REC partners where these are also actively pursuing this agenda.

Within the overall trade policy described above and this caveat concerning national circumstances, the report recommends that governments should consider prioritising the following ICT-enabled interventions (in cumulative sequence):

1. Adoption of international standards for non-tariff barriers and for trade documentation, and harmonisation across land borders.
2. Adoption of single window principles as a target and development of a strategy for gradual implementation based around needs assessment and stakeholder participation.
4. Introduction and development of intelligence-led inspections with high levels of data integrity.
5. Integration of compatible border management systems aimed at minimising clearance time at border crossings.
6. Procurement and implementation of a national single window process which is consistent with automated customs management, and which will integrate ICT-enabled applications at particular locations and in particular communities within a coherent system which has the active engagement of both government agencies and trading businesses (and which may be jointly managed by them through a public-private partnership).
7. Experimentation with bilateral one-stop border posts with neighbouring countries where harmonisation of non-tariff structures has been achieved.

In addition they should address issues of transaction and information access:

8. Enactment of legislation and implementation of regulations and procedures that enable e-commerce and electronic transactions.
9. Implementation of portals that provide information concerning national trade processes, including rules, regulations and procedures, and information concerning business opportunities.

A recommended programme of government action based around this framework is set out in Table 5.2.

Few if any African countries have the capacity to manage rapid comprehensive change in systems as complex as trade management. The way in which ICT systems are introduced will have significant impact on the quality of outcomes achieved. In implementing the core programme, governments should pay particular attention to the following six points.
• Implementation of new processes needs to be undertaken gradually, in manageable stages which can be properly resourced (in terms of personnel and finance) and at a pace which can be absorbed by stakeholders along the supply chain (particularly, trading firms and businesses such as hauliers, which need to adapt their own systems, at some cost, to comply with ICT-enabled administration). Experience suggests that incremental change is more likely to achieve sustainable results than a ‘big bang’ approach. It also enables governments and other stakeholders to learn from experience as they proceed.

• Prioritisation and planning are crucial. Some initiatives may unlock substantial gains which can be achieved early in the process of automation, adding value quickly and building confidence among users in the merit of new systems. In other cases, it will be necessary to implement specific parts of a programme before others can be brought into effect. Some standardisation of documentation, for example, is essential for data-sharing to take place, while secure electronic tracking of cargoes is a prerequisite for intelligence-based risk assessment.

• Selecting the right system is a complex and difficult task. Governments can choose between established generic programmes (such as ASYCUDA in the customs context) and alternatives designed specifically for their national trade environments. There is a risk that over-engineered systems will be introduced which cannot be managed effectively by either officials or trading businesses, leading to poor acceptance and underperformance. Experience in this area suggests that:
  o Simpler implementations are easier to introduce and manage than those that are more complex. It is usually easier to add new functions to successful systems than to replace unsuccessful ones.
  o Selected systems must be interoperable with other systems in the national trade management process, with which they share data, and with those of other countries with which there are substantial trade relationships. Interoperability does not mean that countries in a region have to adopt the same technology or software, but they should ensure that systems will work harmoniously together and not add costs to trade management processes (for either government or business).
  o ICT systems must be readily usable by trading businesses, which requires that complementary business management systems are available and affordable. New trade management systems that work well with software that is already used by trading businesses will be more welcome and facilitate transition. Systems that require businesses to replace or upgrade their software will raise business costs, provoke hostility and restrict or slow adoption.
  o Systems must be upgradable to cope with future technological change, particularly the opportunity to make use of new or more readily accessible platforms as these become available. In particular, the use of smartphones and the internet/World Wide Web is increasingly widespread in Africa. Both of these platforms are readily accessible to many/most actors along supply chains and offer opportunities for more extensive data exchange. This trend is likely to continue. It is better to implement systems that can make flexible use of multiple platforms than to risk locking agencies into technology and platforms that may become redundant.
  o Calculation of the total cost of ownership, and of financial sustainability, should always form part of procurement decisions.

• The consent and engagement of all stakeholders needs to be sought and secured.
  o All relevant government agencies must be involved in the design and implementation of systems, including immigration and security agencies which are sometimes not included.
Business stakeholders must also be fully involved. Trade facilitation seeks to enable businesses to operate more effectively and profitably within the trade environment. Systems designed to achieve this must be fully informed of business needs and must secure business confidence. Experience suggests that the best way to achieve this may be through formal public-private partnerships in the management of trade facilitation initiatives such as port community and single window systems, and the scope for using such partnerships as design and management vehicles should be at least explored by governments and trading communities.

The implementation of ICT-enabled systems may lead to staff redundancies, to the loss of income streams (legal or illegal) by individual workers, and to the loss of status by managers and other qualified personnel. Even those who stand to gain from changes may feel insecure about their future. Measures to secure staff support can have a major impact on the success of implementation, though it also important to ensure that vested interests do not inhibit necessary change.

- Retraining and capacity-building of staff are critically important both in securing consent and in enabling effective implementation. Retraining needs to take place ahead of new systems being implemented, to avoid the risk that early breakdowns and errors will lead users (particularly businesses) to lose confidence in ICT-enabled systems. Substantial resources need to be devoted to retraining of both government and business personnel if the value of ICT-enabled initiatives is to be fully realised.

- All new systems should be monitored for their effectiveness, and implementation adjusted if they seem to be failing to meet objectives. System managers usually have a vested interest in claiming that their systems work effectively, and so monitoring and evaluation should be undertaken by outside parties who do not have vested interests. The views of users, particularly trading businesses, should be prominent and should be actively sought through surveys such as that used in the national case study of Botswana which is reported in Annex 4.
### TABLE 5.2 – THE ROLE OF GOVERNMENTS IN IMPLEMENTING THE RECOMMENDED CORE PROGRAMME FOR ICTS IN TRADE FACILITATION

<table>
<thead>
<tr>
<th>Priority area</th>
<th>Projects and action areas</th>
<th>Role of government (examples)</th>
</tr>
</thead>
</table>
| 1 Support for the application of ICTs in all government departments that are involved in trade facilitation and to build the capacity of the private sector to conduct B2B transactions to facilitate trade and logistics. | - Support for the development of web portals concerned with rules, regulations and procedures.  
- Supporting the acquisition by government institutions of simple automation systems that manage their processes, and enable them to share information through national single windows.  
- Enhanced availability of information on business opportunities and databases concerned with facilities such as trucks, logistics service providers, etc.  
- Training and other capacity-building to enable the private sector to take advantage of B2B transactions that facilitate trade and logistics. | - Strengthening the IT and information management functions in government departments.  
- Supporting the deployment of information-sharing portals.  
- Facilitation of training and capacity-building for the private sector and for public officials in the use of web-based tools to facilitate logistics and trade. |
| 2 Automation of customs and integration of customs with other trade management processes at entry/exit points (border crossings, ports and airports). | - Upgrading of customs tools to latest Web technologies.  
- Integration of customs tools with payment systems.  
- Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance.  
- Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows. | - Selection and adoption of optimal customs automation systems, respecting domestic requirements and relevant technological developments.  
- Promotion of coordination and collaboration between stakeholders.  
- Promotion of public-private partnerships for integration of trade facilitation systems. |
| 3 Adoption of Single Window principles, allowing the electronic sharing of documentation between trade actors, as the central feature of a core programme of ICT-enabled trade facilitation. | - Planning - identification of objectives and benefits, governance arrangements and financing; enlistment of participant institutions; awareness-raising.  
- Preparation - process redesign, review of the regulatory framework, analysis of systems and processes and development of blueprint.  
- Design - simplification and harmonisation; business and data modelling; ICT procurement; prototyping and piloting.  
- Implementation and operation - initial roll-out; revision of plans based on experience; changes to processes and regulatory framework; tightening of governance framework and institutional strengthening of Single Window.  
- Overall roll-out and ongoing evaluation – attaining paperless trade, integration with other national single windows in regional single window, development of metrics to quantify benefits and take remedial actions. | - Promotion of the environment for development of a national single window. |
| 4 Adoption of an intelligence-led risk-based approach to the management of traffic flows along | - Introduction of ICT-enabled tracking of the flow of goods along the supply chain.  
- Integration of risk-based management into |
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<thead>
<tr>
<th>5</th>
<th>Strengthening the ICT capacities of major trade actors such as port authorities, shipping councils, cargo and forwarding agencies, including implementation of port and cargo community systems.</th>
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<tbody>
<tr>
<td><strong>O</strong></td>
<td>Support for the establishment of Port Community Systems and Cargo Community Systems through public-private partnerships (PPPs).</td>
</tr>
<tr>
<td><strong>O</strong></td>
<td>Support for the PPP-enabled introduction of border management systems.</td>
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<tr>
<td><strong>O</strong></td>
<td>Support for the development of public-private partnerships to introduce port and cargo community systems.</td>
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<tr>
<th>6</th>
<th>Integration of government agency functions at entry/exit points, enabling more efficient coordination of clearance requirements.</th>
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<tbody>
<tr>
<td><strong>O</strong></td>
<td>Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance.</td>
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<tr>
<td><strong>O</strong></td>
<td>Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows.</td>
</tr>
<tr>
<td><strong>O</strong></td>
<td>Connection of border posts and relevant agencies to single window processes, with measures to improve the capacity of border post operators to use ICTs in expediting trade flows.</td>
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<tr>
<td><strong>O</strong></td>
<td>Leveraging the availability of broadband and wireless networks to link border posts.</td>
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<tr>
<td><strong>O</strong></td>
<td>Redesign of border management systems and reconfiguration of relationships between border management agencies to enable collaborative working.</td>
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<tr>
<td><strong>O</strong></td>
<td>Selection and adoption of ICT systems to share information between agencies at border crossing points.</td>
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<tr>
<th>7</th>
<th>Promotion of shared border control between neighbouring countries, within a framework of regional integration, making appropriate use of common standards and single window documentation.</th>
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<tr>
<td><strong>O</strong></td>
<td>Modernisation of border posts in integration and use of ICTs.</td>
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<tr>
<td><strong>O</strong></td>
<td>Initiation of projects for advance information exchange between border agencies in neighbouring countries.</td>
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<tr>
<td><strong>O</strong></td>
<td>Interconnection of national Single Windows.</td>
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<tr>
<td><strong>O</strong></td>
<td>Consultation with neighbour countries to facilitate development of cross-border data-sharing and collaboration between peer CIQS agencies.</td>
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<tr>
<td><strong>O</strong></td>
<td>Consideration of implementation of one-stop border posts, with adequate finance and connectivity.</td>
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<th>8</th>
<th>Promotion of electronic commerce and payment systems.</th>
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<tr>
<td><strong>O</strong></td>
<td>Enactment of legislation enabling electronic commerce and e-payments.</td>
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<tr>
<td><strong>O</strong></td>
<td>Introduction of electronic payment mechanisms for official fees and duties.</td>
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<tr>
<td><strong>O</strong></td>
<td>Establishment of regional payment systems.</td>
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<tr>
<td><strong>O</strong></td>
<td>Enactment of legislation and introduction of technical mechanisms for national/regional payment systems.</td>
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<th>9</th>
<th>Development of information resources for trade businesses.</th>
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<tbody>
<tr>
<td><strong>O</strong></td>
<td>Support for the development of portals containing information on policy, legislation and regulations.</td>
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<tr>
<td><strong>O</strong></td>
<td>Support for the development of portals concerned with business opportunities and for databases of trade and transport providers.</td>
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<tr>
<td><strong>O</strong></td>
<td>Establishment of one-stop reporting point on non-tariff barriers.</td>
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<tr>
<td><strong>O</strong></td>
<td>Rationalisation and reduction of formal non-tariff barriers.</td>
</tr>
<tr>
<td><strong>O</strong></td>
<td>Implementation of portals providing information on government rules and regulations.</td>
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The terms of reference for this report cover both trade and regional integration. This section of chapter 5 concerns the role of RECs in relation to ICTs and trade facilitation. Discussion and suggestions concerning the wider role of regional integration and RECs can be found in Chapter 4.

Regional integration is crucial to ensuring the interoperability of national trade management systems and so to expediting cross-border procedures such as integrated border management and to facilitating routes such as transport corridors. Regional integration also helps to establish positive conditions for the growth of national and regional businesses, by expanding the reach of tariff-free (and so effectively domestic) markets, by providing conditions for greater product specialisation and by fostering partnerships between businesses based in different national territories.

RECs are only able to act as significant enablers of ICTs in trade if they have functioning secretariats and political commitment from their member-states. In practice, therefore, only four of the RECs – COMESA, EAC, ECOWAS and SADC – currently have the capacity to play a dynamic role in trade facilitation and to fulfil the recommendations in this section. The priorities for the four less functioning RECs should be the achievement of sufficient capacity to perform the role of a regional economic association and the establishment of free trade zones where these are not yet in effect.

COMESA, EAC and SADC have made some progress in promoting public-private partnerships in the use of ICTs for trade facilitation. REC-sponsored projects such as TradeMark East Africa and TradeMark Southern Africa have launched significant and valuable ICT-enabled initiatives addressing regional trade barriers – such as transport observatories, an online reporting system for non-tariff barriers, and a one-stop electronic payment system for cross-border duties – which have shown promising results. Some initial discussions have been held in some regions about the development over time of regional single windows.

As trade promotion is a founding purpose of the RECs, it should be discussed in depth, on a regular basis, within their institutional fora. This will require strengthening of the trade policy capacity in REC secretariats, and of working relationships between trade management personnel in different member-states which should help to foster a stronger culture of regional cooperation.

With the support of appropriate expertise, preferably from within their regions, the four successful RECs can play a significant coordinating role in support of the core programme of ICT-enabled trade facilitation set out in Table 5.1. In the case of COMESA, EAC and SADC, it would be sensible for them to act not just on the basis of individual RECs but also on that of the whole Tripartite Agreement region. These three RECs, ECOWAS and the Central African regional sub-group CEMAC should prioritise the following objectives.

- Adoption at a regional level of standard trade documentation formats which can be used as the basis for information-sharing between all national trade and border agencies and other trade parties within REC regions.
- Standardisation or harmonisation of certification requirements, rules of origin, import licensing, sanitary and phytosanitary requirements, inspection regimes and other trade procedures. This would have the equivalent effect in reducing the cost of non-tariff barriers as the introduction of a free trade zone has had on tariff barriers. It would help to spread positive/successful experience around the region, avoid unnecessary confusion and make it easier to facilitate clearance of goods within REC regions.
- The development of trade/transport corridors within regions to facilitate physical movement of goods, tracking of consignments and associated trade management functions. This would have particular value for landlocked countries and landlocked regions within countries.

- The implementation of dedicated facilities in ports and airports where goods enter or leave the continent, to support the transit of goods between these and landlocked countries (along the lines of the dry port warehousing facilities in Dakar, Senegal and Bamako, Mali which are described in Chapter 2).

- Promotion of data-sharing through single window procedures, building on national single window experience within regions, enabling data to be shared between national administrations as a basis for progress over time towards a regional single window.

- Sharing of intelligence on trade, security and other border control matters, in order to facilitate the introduction of intelligence-based risk management and targeted inspection and clearance processes, in line with the WCO SAFE Framework.

- Implementation of one-stop border posts, initially on a pilot basis in order to trial experience, with a view to standardising single border post operation on the majority of major trade corridors over a period of time.

- Promotion of regional broadband connectivity along transport corridors, to expedite clearance and facilitate progress towards integrated cross-border management.

- Promotion of one-stop payment systems for duties and bonds, drawing on the experience of TradeMark East Africa which is described in Chapter 2.

- The introduction of measures to enable professionals and service providers from one REC member-state to practice and/or provide services to businesses and other entities in other member-states, in order to promote intra-regional trade in services. This could proceed in advance of comprehensive agreement on common market principles such as the right of establishment and free movement of persons, and would help to promote progress towards such agreement.

- Promotion of model/harmonised legislative frameworks for e-commerce and efforts to facilitate cross-border transactions within REC areas, including positive regulatory support for international transactions such as customs duties and inspection fees.

- Supporting measures to promote correspondent relationships between banks and other financial mechanisms required for easy and low-cost transaction management.

- The establishment of platforms for information-sharing at a regional level, concerning trade rules and regulations within the region and in export markets, and providing information on business opportunities including partnerships with businesses in other countries of the region (see below).

- Consistent monitoring of trade and trade facilitation at a regional level, to help RECs and their member-governments to identify and address problems and to improve the impact of measures undertaken within the core programme set out in Table 5.1.

RECs provide a framework within which trade management and business personnel from different countries can share experience and information, and so develop a stronger culture of regional cooperation. It is important for regional integration that personnel from different national administrations understand the rules, regulations and ways of working that pertain in other countries within their regions, especially neighbouring countries. A number of steps can be taken to facilitate the development of a common understanding/culture
and shared objectives at a regional level, including joint working parties on standardisation and harmonisation, joint training activities and short-term staff exchanges. Secondments of staff to REC secretariats may also be useful in building capacity at REC level.

One approach which may be useful in this context is the development of compendia of current legislation, regulations and practice in particular aspects of trade management (customs, quarantine, visa controls, etc.) within REC regions. These would serve three purposes:

• to provide information of value to trading businesses and administrators;
• to identify aspects of policy and practice which are incompatible or disharmonious and so likely to cause problems in cross-border trade; and
• to build stronger working relationships between officials from different countries.

RECs could provide valuable information to trading businesses and trade management personnel by initiating portals which provide:

• access to information on legislation and regulations within their regions, including guidance on the best ways for businesses to take advantage of ICT-enabled trade facilitation;
• information on market opportunities in countries within their regions, including potential opportunities for business partnerships;
• reporting mechanisms for trading businesses to report on non-tariff barriers and other problems experienced in the course of trade;
• discussion fora for trade management personnel on the implementation of ICT-enabled trade facilitation, including problems that arise with widely-distributed systems such as ASYCUDA and with cross-border integration.
<table>
<thead>
<tr>
<th>Priority area</th>
<th>Projects and action areas</th>
<th>Role of RECs (examples)</th>
</tr>
</thead>
</table>
| 1             | Support for the application of ICTs in all government departments that are involved in trade facilitation and to build the capacity of the private sector to conduct B2B transactions to facilitate trade and logistics. | o Development of a regional platform for information sharing.  
|               | Support for the development of web portals concerned with rules, regulations and procedures. | o Fora for capacity-building and sharing of experience between countries within the region.  
|               | Supporting the acquisition by government institutions of simple automation systems that manage their processes, and enable them to share information through national single windows. | o Support for the acquisition by government institutions of simple automation systems that manage their processes, and enable them to share information through national single windows.  
|               | Enhanced availability of information on business opportunities and databases concerned with facilities such as trucks, logistics service providers, etc. | o Enhanced availability of information on business opportunities and databases concerned with facilities such as trucks, logistics service providers, etc.  
|               | Training and other capacity-building to enable the private sector to take advantage of B2B transactions that facilitate trade and logistics. | o Training and other capacity-building to enable the private sector to take advantage of B2B transactions that facilitate trade and logistics.  
| 2             | Automation of customs and integration of customs with other trade management processes at entry/exit points (border crossings, ports and airports). | o Upgrading of customs tools to latest Web technologies.  
|               | o Integration of customs tools with payment systems. | o Creation of platforms for sharing experience of customs automation between countries and for resolving cross-border problems.  
|               | o Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance. | o Support for integration of customs into national and regional single windows.  
|               | o Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows. | o Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows.  
| 3             | Adoption of Single Window principles, allowing the electronic sharing of documentation between trade actors, as the central feature of a core programme of ICT-enabled trade facilitation. | o Planning - identification of objectives and benefits, governance arrangements and financing; enlistment of participant institutions; awareness-raising.  
|               | o Preparation - process redesign, review of the regulatory framework, analysis of systems and processes and development of blueprint. | o Creation of platforms for sharing experience of single window development.  
|               | o Design - simplification and harmonisation; business and data modelling; ICT procurement; prototyping and piloting. | o Promotion of concept of regional single window and of dialogue to promote integration between national single windows.  
|               | o Implementation and operation - initial roll-out; revision of plans based on experience; changes to processes and regulatory framework; tightening of governance framework and institutional strengthening of Single Window. | o Overall roll-out and ongoing evaluation – attaining paperless trade, integration with other national single windows in regional single window, development of metrics to quantify benefits and take remedial actions.  
|               | o Overall roll-out and ongoing evaluation – attaining paperless trade, integration with other national single windows in regional single window, development of metrics to quantify benefits and take remedial actions. | o Overall roll-out and ongoing evaluation – attaining paperless trade, integration with other national single windows in regional single window, development of metrics to quantify benefits and take remedial actions.  
| 4             | Adoption of an intelligence-led risk-based approach to the management of traffic flows along trade corridors and border clearance. | o Introduction of ICT-enabled tracking of the flow of goods along the supply chain.  
|               | o Facilitation of shared technical approaches to intelligence-based risk management. | o Facilitation of shared technical approaches to intelligence-based risk management.  

TABLE 5.3 – THE ROLE OF RECs IN IMPLEMENTING THE RECOMMENDED CORE PROGRAMME FOR ICTS IN TRADE FACILITATION
| 5 | Strengthening the ICT capacities of major trade actors such as port authorities, shipping councils, cargo and forwarding agencies, including implementation of port and cargo community systems. | Support for the establishment of Port Community Systems and Cargo Community Systems through public-private partnerships (PPPs).  
Support for the PPP-enabled introduction of border management systems. | Regional review of requirements for and implementation of port and cargo community systems, in light of regional trade requirements. |
|---|---|---|---|
| 6 | Integration of government agency functions at entry/exit points, enabling more efficient coordination of clearance requirements. | Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance.  
Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows.  
Connection of border posts and relevant agencies to single window processes, with measures to improve the capacity of border post operators to use ICTs in expediting trade flows.  
Leveraging the availability of broadband and wireless networks to link border posts. | Consideration of security and other requirements for integrated cross-border management. |
| 7 | Promotion of shared border control between neighbouring countries, within a framework of regional integration, making appropriate use of common standards and single window documentation. | Modernisation of border posts in integration and use of ICTs.  
Initiation of projects for advance information exchange between border agencies in neighbouring countries.  
Support for cross-border bond and other systems to reduce the transaction costs of ensuring the prevention of ‘dumping’ and certainty of dues payment on goods in transit. |
| 8 | Promotion of electronic commerce and payment systems. | Enactment of legislation enabling electronic commerce and e-payments.  
Introduction of electronic payment mechanisms for official fees and duties.  
Establishment of regional payment systems. | Development of information portals at regional level. |
| 9 | Development of information resources for trade businesses. | Support for the development of portals containing information on policy, legislation and regulations.  
Support for the development of portals concerned with business opportunities and for databases of trade and transport providers.  
Establishment of one-stop reporting point on non-tariff barriers. | Development of information portals at regional level. |
E - RECOMMENDATIONS TO INTERNATIONAL FINANCIAL INSTITUTIONS AND DONORS

International financial institutions are major sources of investment for large-scale development initiatives which cannot be readily financed from national budgets. They also provide technical assistance and policy advice, and undertake research such as that in the Transformation-Ready programme.

The African Development Bank has a number of established strategic priorities with which investment in ICTs trade must interact. In particular:

- The Bank’s ICT Operations Strategy seeks to ‘make an important contribution to poverty reduction and economic growth of [Regional Member Countries] by increasing [the] Bank’s role in extending access to ICT infrastructure, stimulating private sector investment and ultimately enhancing good governance, [including] the efficient delivery of public services like education and health.’ Its second phase emphasises ‘stimulation of the demand for ICT networks and services,’ for example by ‘promoting e-government and connectivity to schools, universities [and] health institutions’ and through ‘customised responses to the needs’ of member countries. The Transformation-Ready programme coincides with the shift to this second phase.

- The Bank’s Strategy for Regional Integration sees integration as ‘essential to building markets, creating robust and diverse economies, increasing opportunities for growth, and attracting new sources of investment finance.’ The continental strategy for regional integration has been reinforced by a series of Regional Integration Strategy Papers for particular regions, including Central Africa, East Africa and Southern Africa.

The IFIs have a threefold role in relation to trade, trade facilitation and regional investment. They are:

- critical sources of investment for initiatives to address the structural and particularly infrastructural challenges constraining trade;
- potential sources of funding for initiatives within the core programme of ICT-enabled trade facilitation such as those recommended in this report; and
- potential sources of policy guidance and expertise for governments and RECs.

The following recommendations address these three areas in turn.

A. Investment in the enabling environment

IFIs are highly appropriate sources of investment for large-scale transport and other infrastructure projects which can have substantial and lasting value in facilitating trade and economic development. National government and private sector finance in Africa are unlikely, on their own, to find the capital investment required for the construction or upgrading of major highways, the upgrading of railway lines, the modernisation of port infrastructure or the development of high-standard and resilient transport corridors linking landlocked countries with the sea ports on which they depend to import and export goods. These underpinning infrastructural changes are essential if African countries are to achieve the gains that can be derived from trade facilitation. From the perspective of this report, IFI investment would be particularly valuable in the development of transport corridors, the upgrading of other major trade routes and the upgrading and modernisation of seaports, all of which would significantly increase the capacity and efficiency of distribution networks.

Although the primary sources of finance for recent communications infrastructure in Africa have been private sector companies, IFIs have also played a role in this area, focusing on geographical areas that have proved unattractive to the private sector and more recently, in conjunction with national governments, on the development of regional broadband infrastructure. Improvements in the quality of infrastructure are valuable
for trade facilitation, particularly at entry/exist points such as ports and border crossings, and along transport corridors. IFIs can and should continue to play a role in these areas, including through the integration of communications infrastructure investment in transport infrastructure programmes. However, care should be taken to ensure that IFI investment does not undermine or duplicate that from the private sector, and that the facilities funded by IFI investment are available to all potential users.

IFIs can also support the work of Regional Economic Communities. All of Africa’s RECs are under-resourced and need to expand their secretariats if they are to play a more strategic role in trade and economic development. ECCAS, in particular, has faced severe financial problems and is unlikely to make strong headway in a very difficult region without access to necessary funding backed by policy support. The work of the more successful RECs, meanwhile, has become increasingly complex as they move along the route towards AEC objectives. While free trade zones and customs unions are largely concerned with physical trade and economic cooperation, common market arrangements – such as those to which the EAC in particular is moving – require complex harmonisation of many different aspects of social, economic and political life. These have proved challenging in much better-financed regions like the European Union. IFIs can assist the integration process through financial support for institution-building and through policy support (see below).

B. Investment in ICTs and trade facilitation

IFIs and other donors can and should also support well-designed proposals for implementing ICT-enabled trade facilitation, in particular programmes that fall within the core programme described in Figure 5.1, especially where funding is not likely to be available from government and private sector sources.

The implementation of port and cargo community systems and of national and (in time) regional single windows are initiatives in which external financial assistance could make a substantial difference, particularly in smaller and poorer countries. Financial support should be targeted on measures which modelling suggests will have significant impact on reducing trade costs and barriers and which will foster further regional integration. Some examples of measures which could be taken by IFIs in this context are included in Table 5.4 at the end of this section.

C. Policy support and capacity building

IFIs and donors have extensive experience in delivering policy support and technical assistance to RECs and national governments. This report recommends that they focus policy support on the following areas:

- Assessment of national trade performance and development of national trade policies, including strategies for trade facilitation and the use of ICTs (see recommendations to governments above).
- Implementation strategies for national core programmes in line with Table 5.2 above, building on regional and national assessments of existing rules, regulations and practice.
- Regional harmonisation of NTBs and documentary standards (in conjunction with other international agencies such as WCO and UN/CEFACT).
- Processes for the selection and implementation of ICT-enabled interventions such as customs modernisation and intelligence-based risk management.
- Introduction of measures designed to promote trade in services, including the right of establishment, mutual recognition of qualifications, and more open movement of capital and labour.
- Implementation of more sophisticated monitoring of trade and trade performance, including efforts to assess the scale of informal trade and the potential for bringing more informal trade within the formal trade regime.
• Training and skills development of government officials and others responsible for trade management.

The strategic objectives of the African Development Bank’s strategy for regional integration emphasise capacity-building. The strategy for the East African region refers explicitly to:

(i) *enhancing capacity in trade policy harmonization through the training of trade officials on trade issues and their attachment to relevant international organizations to gain more experience;*

(ii) *creating expertise in the Secretariats to drive and coordinate the regional trade in services agenda ... by providing advisors who will drive the agenda, develop training modules and provide on the job training and knowledge transfer to the staff of the Secretariats; and*

(iii) *enhancing knowledge in modern custom practices by providing assistance to RECs in revising the Customs Management Act (CMA) for make it adhere to the Kyoto Convention and in publishing risk management guidelines as a common regional framework which each country can adopt to develop its own risk management system.*

It is important that policy support and technical assistance build national and regional expertise, enabling countries to become less dependent on external expertise and helping to ensure that interventions are rooted in national and regional contexts and requirements.

The IFIs and other international agencies are well placed to monitor the implementation of regional integration, trade performance, trade facilitation and ICT-enabled trade. In the short term, more research is needed into some specific areas of trade facilitation that are discussed in this report:

• Many of the critical challenges in Africa lie in the area of road transit. Further work is needed to identify the bottlenecks in transport corridors and the potential value of intelligent transport systems.

• Port Community Systems, as highly complex systems, are a good testing ground for the technical, institutional and other challenges that will arise in national single windows. Detailed research into the performance of PCS would make a useful contribution to future trade facilitation planning.

• Payment systems lag behind other areas of trade. There is a need for deeper investigation of payment systems in trade facilitation, including the potential for internet and mobile payments.

• Further analysis is needed of the border management systems that bring CIQS agencies together within and between nation-states and into the potential and challenges of one-stop border posts.

• As noted earlier in the report, Africa has a high incidence of informal trade. More research is needed to develop greater understanding of the extent of this trade, how it relates to formal trade, and how ICTs might be used to bring it within more formal trading structures.

• Few evaluations and impact assessments are yet available of ICT applications for trade facilitation of the kind described in this report. IFIs could usefully build on this study by commissioning a number of evaluation and impact assessment studies to inform detailed support for the recommendations outlined here.

UNECA’s series of reports assessing performance in regional integration has been authoritative and valuable in providing insight to African policymakers during the past decade and should continue.

The World Bank and African Development Bank should build on that experience, on their own considerable work in transport and trade analysis, and on this report, to ensure that Africa’s experience of ICT-enabled trade facilitation continues to be properly researched and that the outcomes of research are made available to help policy-makers in government and business.

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<tr>
<th>Priority area</th>
<th>Projects and action areas</th>
<th>Role of IFIs (examples)</th>
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<tbody>
<tr>
<td>1</td>
<td>Support for the application of ICTs in all government departments that are involved in trade facilitation and to build the capacity of the private sector to conduct B2B transactions to facilitate trade and logistics.</td>
<td>o Financing of structural reform of government departments. o Support for capacity-building of public officials and other stakeholders in effective participation in ICT-enabled trade management systems. o Financing of information-sharing portals.</td>
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<td>o Support for the development of web portals concerned with rules, regulations and procedures. o Supporting the acquisition by government institutions of simple automation systems that manage their processes, and enable them to share information through national single windows. o Enhanced availability of information on business opportunities and databases concerned with facilities such as trucks, logistics service providers, etc. o Training and other capacity-building to enable the private sector to take advantage of B2B transactions that facilitate trade and logistics.</td>
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<td>2</td>
<td>Automation of customs and integration of customs with other trade management processes at entry/exit points (border crossings, ports and airports).</td>
<td>o Upgrading of customs tools to latest Web technologies. o Integration of customs tools with payment systems. o Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance. o Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows.</td>
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<td>o Planning - identification of objectives and benefits, governance arrangements and financing; enlistment of participant institutions; awareness-raising. o Preparation - process redesign, review of the regulatory framework, analysis of systems and processes and development of blueprint. o Design - simplification and harmonisation; business and data modelling; ICT procurement; prototyping and piloting. o Implementation and operation - initial roll-out; revision of plans based on experience; changes to processes and regulatory framework; tightening of governance framework and institutional strengthening of Single Window. o Overall roll-out and ongoing evaluation – attaining paperless trade, integration with other national single windows in regional single window, development of metrics to quantify benefits and take remedial actions.</td>
<td>o Policy development and financial support to RECs and national governments concerning the design and implementation of single window systems.</td>
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<td>3</td>
<td>Adoption of Single Window principles, allowing the electronic sharing of documentation between trade actors, as the central feature of a core programme of ICT-enabled trade facilitation.</td>
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<td>4</td>
<td>Adoption of an intelligence-led risk-based approach to the management of traffic flows along trade corridors and border</td>
<td>o Introduction of ICT-enabled tracking of the flow of goods along the supply chain. o Introduction of an intelligence-led risk-based approach to inspections and clearance of goods across borders.</td>
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<td>5</td>
<td>Strengthening the ICT capacities of major trade actors such as port authorities, shipping councils, cargo and forwarding agencies, including implementation of port and cargo community systems.</td>
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<td>Support for the establishment of Port Community Systems and Cargo Community Systems through public-private partnerships (PPPs).</td>
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<td>Support for the PPP-enabled introduction of border management systems.</td>
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<td>Financing of port and cargo community systems, where possible as part of public-private partnerships of national stakeholders.</td>
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<td>6</td>
<td>Integration of government agency functions at entry/exit points, enabling more efficient coordination of clearance requirements.</td>
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<td>Linking of customs with immigration, quarantine and security tools and agencies to facilitate smooth and coordinated clearance.</td>
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<td>Integration of customs tools with Port and Cargo Community Systems within the context of National Single Windows.</td>
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<td>Connection of border posts and relevant agencies to single window processes, with measures to improve the capacity of border post operators to use ICTs in expediting trade flows.</td>
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<td>Leveraging the availability of broadband and wireless networks to link border posts.</td>
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<td>Policy support for the development of revised governance arrangements and integration of the work of CIQS agencies.</td>
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<td>Financial support for the restructuring of border control arrangements and reconfiguration of border posts.</td>
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<td>Financing of connectivity to remote border posts.</td>
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<td>7</td>
<td>Promotion of shared border control between neighbouring countries, within a framework of regional integration, making appropriate use of common standards and single window documentation.</td>
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<td>Modernisation of border posts in integration and use of ICTs.</td>
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<td>Initiation of projects for advance information exchange between border agencies in neighbouring countries.</td>
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<td>Interconnection of national Single Windows.</td>
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<td>Review of current experience with one-stop border posts.</td>
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<td></td>
<td>Financial support, for the cross-border integration of border posts along trade corridors, focused on high-traffic routes which currently experience significant delays.</td>
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| 8 | Promotion of electronic commerce and payment systems. | o Enactment of legislation enabling electronic commerce and e-payments.  
o Introduction of electronic payment mechanisms for official fees and duties.  
o Establishment of regional payment systems. | o Guidance on legislation and regulations required for electronic transactions and e-commerce.  
o Support for the development of regional electronic payment mechanisms.  
o Support for cross-border bond and other systems to reduce the transaction costs of ensuring the prevention of ‘dumping’ and certainty of dues payment on goods in transit. |
|---|---|---|---|
| 9 | Development of information resources for trade businesses. | o Support for the development of portals containing information on policy, legislation and regulations.  
o Support for the development of portals concerned with business opportunities and for databases of trade and transport providers.  
o Establishment of one-stop reporting point on non-tariff barriers. | o Support for the development of frameworks for the implementation of secure regional trading, including issues of policy, capacity, intellectual property and sustainability.  
o Support for the development of regional information portals. |