Part 2
Connecting Africa’s Markets in a Sustainable Way
African countries have registered high growth rates in the past 10 years and have weathered the global economic crisis rather favorably compared with other emerging economies. Yet, as discussed in Chapter 1.1, the level of gross domestic product (GDP) per capita and the pace of GDP growth have not reached levels found in other regions, such as developing Asia. From 2002 to 2012, GDP growth in developing Asia was on average 8.5 percent, while sub-Saharan Africa experienced growth rates of 5.7 percent. A key difference between these two regions is their participation in global trade and investment flows. While trade in developing Asia more than doubled between 1995 and 2010, trade in sub-Saharan Africa over the same period remained at below 2 percent of total world trade. Two distinct observations are of particular importance when discussing Africa’s trade performance: the export base of most countries is undiversified, and regional integration is extremely low.

The State of African Exports

Despite efforts aimed at diversifying the export base, African exports remain highly focused on commodities. Fuels and mining products account for over half of sub-Saharan exports, compared with only about 10 percent for developing Asia and advanced economies. Indeed, when broken down to the country level, the share of mineral products accounts for more than 30 percent of total exports in more than half of all African economies, and for over 90 percent in a few cases (see Figure 1). High dependence on commodity exports means that terms of trade fluctuate with commodity prices, which may have a negative effect on the country’s growth. Government finances also fluctuate with commodity prices, possibly jeopardizing governments’ fiscal stability and leeway. In sub-Saharan Africa alone, for example, 10 economies are fiscally dependent on natural resources. In contrast, another set of countries—including Burundi, Côte d’Ivoire, Ethiopia, and Malawi—are highly dependent on agricultural exports (see Figure 2). Against this backdrop, export diversification—both in goods and services and also across geographies—is key to raising Africa’s resilience to external shocks.

Many regional trading initiatives have been launched on the continent over the last several decades, yet Africa’s markets remain poorly connected with each other. The share of Africa’s intra-regional goods trade in total goods exports is just 12 percent, compared with 25 percent in the Association of Southeast Asian Nations, 65 percent in the European Union, and 49 percent in the North American Free Trade Agreement bloc in 2011, although these estimates probably underreport the actual volume of trade because of the high levels of unregistered cross-border activity. Survey results suggest that informal border flows may comprise up to 90 percent of trade.

Finally, regional integration is closely linked to food security and poverty reduction. Because of their
Figure 1: Exports of mineral products as a share of total exports, 2006–10 average

Source: ITC, April 2012.
2.1: Enabling African Trade

Figure 2: Export share in total exports by category, 2010


Notes: Chad, Liberia, and Sierra Leone do not report data on their merchandise breakdown. Note that the sum of shares does not necessarily add up to 100 because the world total merchandise trade includes other commodities and transactions that are not part of the three main commodity groups—agriculture, fuels and mining, and manufacturing. These commodities are gold, arms and ammunition, and commodities and transactions not classified elsewhere following the United Nations Statistics Division standard international trade classification (SITC) Rev.3, section 9. Chad, Liberia, and Sierra Leone do not report data on their merchandise breakdown. Data in Figure 2 may not exactly match Figure 1. For example, more than two-thirds of exports in Botswana are pearls and precious stones, classified as mineral exports in Figure 1 and manufactures in Figure 2.
There are enormous growth opportunities remain unexploited.

This large share of non-African staple imports exposes African economies to volatile food prices. This exposure not only affects the income of the poor, who need to spend a higher income share on basic food supply, but also adversely affects macroeconomic stability through rising inflation, as was seen in East Africa in 2011 and early 2012. Furthermore, because they are small buyers, most African economies have only limited bargaining power to negotiate prices on a global scale. Regional integration is, thus, key to feeding Africa’s growing population in a sustained fashion by facilitating trade from food-abundant areas to areas with a food deficit.

AFRICA’S POOR REGIONAL INTEGRATION: CAUSES AND PRIORITIES

In view of the benefits to be had, why is Africa’s regional integration so poor? The reasons are complex and many. Historically, most countries have been geared toward trade with developed economies. Policies, measures, and investments were often focused on improving access to developed-country markets because of the high demand in those countries. At the same time, regional integration efforts on the continent were usually not fully implemented, so many barriers between regional markets remain in place. One factor, as discussed in subsequent chapters in this Report, is Africa’s pronounced infrastructure deficit, which is particularly pertinent for connecting markets within Africa (see Chapter 2.2 for a more detailed discussion).

Trade policies, as well as the institutional and regulatory environment, also need to be taken into account. World Bank data show that in sub-Saharan Africa it takes an average of 37 days to import goods and 31 days to export, compared with less than 20 days to export and to import in North Africa, Latin America, and Southeast Asia. The problem is even more pronounced for landlocked Africa, where it takes an average of almost 50 days to import and 40 days to export. Other factors, such as border corruption and multiple road blocks, are a further impediment. For example, a truck driver on the Koutiala–Dakar corridor between Mali and Senegal has to pass through almost 100 checkpoints and border posts and is required to pay about US$437 in bribes along the route. In Mali, on the Bamako–Ouagadougou route, every 100 kilometers drivers have to face about 4.5 checkpoints and have to pay about US$25 in bribes. Furthermore, non-tariff measures (NTMs) in the form of quotas,

Although Africa’s exports have grown significantly over the past decade and its trade has started to recover from the global financial crisis, the impact of this growth on unemployment and poverty has been disappointing for many African countries. This situation reflects export growth that is typically fueled by a limited number of mineral and primary commodities that have only narrow impacts on the wider economy, and formal sectors that remain small.

The key trade objectives for Africa, therefore, are to diversify the export base and to implement policies that allow more people to benefit from trade. Increasing and more youthful populations heighten the need for more inclusive and employment-intensive trade and offer a real opportunity for Africa to harness a significant potential comparative advantage that can drive productivity growth over a sustained period.

Effective regional integration in Africa would play a key role in delivering more diverse, inclusive, and sustained trade growth. With African leaders now calling for a continental free trade area by 2017 to boost trade and investment, a recent World Bank report shows that countries are losing out on billions of dollars in potential trade every year because of high trade barriers with their own neighbors, and that it is often easier for Africa to trade with the rest of the world than with itself. According to the report De-Fragmenting Africa: Deepening Regional Trade Integration in Goods and Services, there are enormous opportunities for increased cross-border trade in food products, basic manufactures, and services and for a larger regional market to provide a springboard to global competitiveness in a wider range of products to reach a larger number of markets. However, these benefits are not being realized because the regional market is fragmented and cross-border production networks that have spurred economic dynamism in other regions, especially East Asia, have yet to materialize in Africa.

To reduce fragmentation, three main changes are needed:

- Improve conditions for cross-border trade, especially those faced by small traders—many of whom are women—by simplifying border procedures, limiting the number of agencies at the border, and increasing the professionalism of officials.
- Remove non-tariff barriers to trade such as restrictive rules of origin, import and export bans, and onerous and costly trade-licensing procedures.
- Streamline regulations and immigration rules that limit the potential for cross-border trade and investment in both goods and services.

Regional integration is a core element in both the World Bank’s Africa Strategy and its Trade Strategy, which are designed to help countries create trade opportunities for their transformation and sustained growth. The World Bank doubled its support for regional integration from US$2.1 billion in 2008 to US$4.2 billion in 2011, and increased it further to US$5.7 billion in 2012.

Source: Contributed by the World Bank, International Trade Department.

Note

1 World Bank 2012.
charges, discriminatory labeling, and health and sanitary regulations play an important role in undermining trade the region. Although data on NTMs are generally scarce, a recent study by the World Bank puts a price tag to their costs and shows that NTMs affected one-fifth of regional exports, or US$3.3 billion of regional trade in 2008 in Southern African Development Community (SADC) countries. Assuming that NTMs are equivalent to a 40 percent ad valorem tariff, this amounts to an estimated cost of US$1.3 billion per year. Finally, crossing borders does not affect only goods and services, but also people. The lack of physical security when crossing borders, for instance, plays a critical role, particularly for women traders in the Great Lake region.

The following analysis of the results of the Enabling Trade Index (ETI) sheds additional light on the key barriers that prevent Africa from reaping the full benefits of international trade. Although the ETI does not permit an analysis of barriers to regional integration, it does indicate the barriers and enablers that exporters and importers in each country face, and thereby informs policy choices. Box 1 complements the analysis by identifying priority action areas that have been identified by the World Bank for enhancing regional integration.

**USE OF THE GLOBAL ENABLING TRADE REPORT**

The Global Enabling Trade Report (GETR) has become a widely used reference since its introduction in 2008. It forms part of the toolbox of many countries in their efforts to increase trade, and it helps companies with their investment decisions. The Report is also the basis for many high-level public-private dialogues facilitated around the world each year by the World Economic Forum. These dialogues focus on practical steps that can be taken by both governments and the private sector to overcome particular trade barriers in a country or region. In building a coalition for change, it has become evident that establishing an “open borders” mindset in a joint and holistic effort to tackle obstacles to the movement of both goods and people is often the most effective approach.

**THE ENABLING TRADE INDEX**

The ETI was developed within the context of the World Economic Forum’s Industry Partnership Programme for the Supply Chain and Transport Industry, and was first published in the 2008 GETR. A number of Data Partners have collaborated in this effort: the Global Express Association (GEA), the International Air Transport Association (IATA), the International Trade Centre (ITC), the United Nations Conference on Trade and Development (UNCTAD), The World Bank, the World Customs Organization (WCO), and the World Trade Organization (WTO). We have also received significant input from companies that are part of this industry partnership program, namely Agility, Brightstar, Deutsche Post DHL, DNB Bank ASA, FedEx Corp., A.P. Moller Maersk, the Panama Canal Authority, Royal Vopak, Stena AB, Swiss International Air Lines, Transnet, UPS, Volkswagen, and AB Volvo.

The ETI measures the extent to which individual economies have developed institutions, policies, and services facilitating the free flow of goods over borders and to destination. The structure of the Index reflects the main enablers of trade, breaking them into four overall issue areas, captured in the subindexes:

1. The market access subindex measures the extent to which the policy framework of the country allows foreign goods into the economy and enables access to foreign markets for its exporters.
2. The border administration subindex assesses the extent to which the administration at the border facilitates the entry and exit of goods.
3. The transport and communications infrastructure subindex takes into account whether the country has in place the transport and communications infrastructure necessary to facilitate the movement of goods within the country and across the border.
4. The business environment subindex looks at the quality of governance as well as at the overarching regulatory and security environment impacting the business of importers and exporters active in the country.

Each of these four subindexes is composed in turn of a number of pillars of enabling trade, of which there are nine in all. These are:

1. Domestic and foreign market access
2. Efficiency of customs administration
3. Efficiency of import-export procedures
4. Transparency of border administration
5. Availability and quality of transport infrastructure
6. Availability and quality of transport services
7. Availability and use of ICTs
8. Regulatory environment
9. Physical security

Each of these pillars is made up of a number of individual variables. The dataset includes both hard data and survey data from the World Economic Forum’s Executive Opinion Survey (the Survey). The hard data were obtained from publicly available sources and international organizations active in the area of trade (such as IATA, the ITC, the International Telecommunication Union (ITU), UNCTAD, the UN, and the World Bank). The Survey is carried out annually by the World Economic Forum in all economies covered by our research. It captures the views of top business executives on the business environment and provides unique data on many qualitative aspects of the broader
The Africa Competitiveness Report 2013

2.1: Enabling African Trade

The nine pillars are grouped into the four subindexes described above, as shown in Figure 3, and the overall score for each country is derived as an unweighted average of the subindexes. The details of the composition of the ETI are shown in Appendix A. It is important to note that, although the pillars are separated out in the Index for presentational purposes, they are intrinsically linked. For example, the regulatory environment is linked to transparency at the border and the availability of transport services, as it contains data on the level of competition in a country. Furthermore, the use of ICTs has an impact on the efficiency of border administration, as ICTs have proven instrumental for making border clearance more efficient.

As econometric tests of the ETI 2009 demonstrated, the ETI has explanatory power with respect to a country’s trade performance. The analysis has shown that a 1 percent increase in the ETI score in an exporting country is associated with an increase of 1.7 percent in that country’s exports. This effect is even higher with respect to an importing country: the model predicts that a 1 percent improvement in an importer’s ETI score would lead to a 2.3 percent rise in imports. Taken together, these two effects predict that a 1 percent increase in the average ETI score of any given country pair would be associated with a 4 percent increase in bilateral trade, all else being equal.

Country coverage

Overall, the 2012 edition of the GETR covers 132 economies and 31 African countries, of which three are in North Africa. In an effort to expand country coverage, two new African countries were added to the Index (Angola and Rwanda) as new data became available. Although Tunisia was covered in the GETR 2012, it was excluded from The Global Competitiveness Report 2012–2013 because of a structural break in the data. To remain consistent with this decision, we do not report or discuss data on Tunisia in this chapter. As Libya was not covered in the ETI 2012 because of lack of data, the North Africa average reported below is composed of three countries out of the five that make up the region. The selected North African countries account for 60 percent of total merchandise trade in the subregion.

Results by subregion and selected countries

Figure 4 shows the ETI results for Africa on a map of the continent. It illustrates the varying ability of countries across the African continent to enable trade, and shows the results for some European and Middle Eastern countries for comparison.

Table 1 shows the ETI results—both ranks and scores—for the 2012 and 2010 editions. The middle column further shows the 2012 rank based on the
2010 constant sample. In the 2012 edition of the GETR, Mauritius (36th), Rwanda (51st), Botswana (54th), South Africa (63rd), and Morocco (64th) emerge as the best performers within the region out of 132 economies covered by the Report (see Table 1). However, Mauritius declines by three places in 2012, following slight falls across all four subindexes. Botswana stays constant, whereas South Africa and Morocco move up by 10 and 12 positions, respectively, considering the constant sample. In South Africa, the improvement is mainly attributable to better transport services and a higher level of physical security. Furthermore, Morocco improves by 12 places, based on more efficient handling of import-export procedures than in previous years, as well as more transparent border administration and improvements in the availability and quality of transport infrastructure and in the regulatory environment.

Overall, these three countries have made great strides toward enabling trade, and their results on the aggregate ETI indicator reach levels close to those found in European countries, above the majority of BRIC economies. However, Africa is also home to some of the weakest performers in terms of enabling trade, such as Chad or Burundi, which occupy the last two positions in the ETI sample. A comparison of the trends shows that, for the majority of African countries covered, the performance in the ETI has deteriorated. Overall, although the three North African countries perform on average somewhat better than their sub-Saharan neighbors (with a score of 3.7, versus 3.5 for the latter), the spread in performance is as important in North Africa as it is in sub-Saharan Africa (ranging from Morocco at 64th to Algeria at 120th). North Africa performs in line with the average of the BRIC economies and those in the Latin American region in terms of enabling trade, but has not yet achieved the level of Southeast Asia. Southeast Asia has been very successful in facilitating trade and promoting regional integration, which is reflected in the good ETI results achieved by this region.

The comparison of Africa with Southeast Asia and Latin America and the Caribbean in Figure 5 shows that, although the region underperforms both comparators on the majority of the ETI pillars, it is doing relatively well in terms of physical security, where it reaches the level found in Southeast Asia, and the regulatory environment, where it performs at the level of Latin America and the Caribbean. A number of African countries achieve good scores on this indicator: for example, Senegal ranks 38th, Botswana 39th, and Rwanda 15th. At the same time, the gaps are the largest in the efficiency of import-export procedures and the availability and use of ICTs, where Africa performs significantly less well than the other regions.

Figure 6 offers yet another view of Africa’s performance in the ETI by comparing the region’s
2.1: Enabling African Trade

Figure 5: Africa’s performance in regional comparison

Notes: Performance on the ETI is measured by scores on a scale of 1 to 7, with 7 being best. BRIC countries are Brazil, Russian Federation, India, and China.

Figure 6: Africa’s performance over time

Note: The constant sample includes the following economies: Algeria, Benin, Burkina Faso, Burundi, Cameroon, Chad, Côte d’Ivoire, Egypt, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe.
2.1: Enabling African Trade

Figure 7 shows the spread in performance across African countries on all nine pillars of the ETI and details the performance of comparators as well as the subregional groups of sub-Saharan Africa, North Africa, and landlocked countries from the region.

Table 1: The Enabling Trade Index 2012 rankings and 2010 comparison

<table>
<thead>
<tr>
<th>Country/Economy or region</th>
<th>ETI 2012</th>
<th>ETI 2010</th>
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<tbody>
<tr>
<td></td>
<td>Rank/132</td>
<td>Score</td>
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<tr>
<td>Mauritius</td>
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<tr>
<td>Rwanda</td>
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<td>4.3</td>
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<td>Botswana</td>
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<td>Morocco</td>
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<td><strong>African average</strong></td>
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</table>

**North Africa** 3.7  
**Sub-Saharan Africa** 3.5  
**Latin America and the Caribbean** 3.9  
**Southeast Asia** 4.4

Notes: Latin America and the Caribbean countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela; North African countries: Algeria, Egypt, Morocco; Southeast Asian countries: Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam; sub-Saharan African countries: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Chad, Côte d’Ivoire, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe.

* The 2010 rank is out of 125 countries. Seven new countries were added to the 2012 Index: Angola, Haiti, Iran, Lebanon, Moldova, Rwanda, and Yemen.

performance between 2009 and 2012. Here it is noteworthy that Africa’s overall performance in the market access pillar has slightly deteriorated, whereas improvements have been made in the efficiency of customs administration, transport infrastructure, and ICTs, albeit the latter from a very low base. The comparison over time further reveals that, when it comes to border administration, the efficiency of customs administration has improved but progress in the efficiency of import-export procedures and transparency of border administration has stalled—despite Africa’s fairly low score on these two pillars.

Analysis by subindex and pillar

Figure 7 shows the spread in performance across African countries on all nine pillars of the ETI and details the performance of comparators as well as the subregional groups of sub-Saharan Africa, North Africa, and landlocked countries from the region.
In terms of market access, which captures both access to domestic markets and access to foreign markets for the country’s exporters, the region is characterized by a relatively large spread in performance. Although some African countries perform better than comparators in Southeast Asia and Latin America and the Caribbean, in the majority of African countries, access to markets is relatively constrained. For North African markets, this constraint to access is more severe, while landlocked African countries enjoy levels of market access similar to those of Africa and sub-Saharan Africa overall and perform far better than North Africa.

Interestingly, significant differences can be observed across African countries in this respect. A number of

### Box 2: Customs reform through increased visibility: Individual performance contracts in Cameroon

Outdated and bureaucratic border clearance processes imposed by customs and other agencies are increasingly seen as posing greater barriers to trade than tariffs do. Cumbersome systems and procedures and poor infrastructure both increase transaction costs and lengthen delays for the clearance of imports, exports, and transit goods, with negative impacts on competitiveness. This is especially true in poor countries, and in Africa the difficulties are particularly severe, with excessive physical inspections being a major source of delays. Countries confront a deep dilemma between facilitating trade and securing control, particularly because their need for customs revenue is still significant.

This scenario has been changing recently, with many African governments adopting major reforms in their border management systems. Among these efforts, the case of Cameroon Customs is one of the most interesting: the agency has undertaken a challenging strategy that relies on technology and improvements in visibility, ensuring a double continuity through visualized performance measurement and human resource management based on the measured performance.

Cameroon’s customs administration has suffered from corruption and struggled to identify options for improving governance. A customs reform program was introduced that sought to reduce corruption while simultaneously raising revenue collection and facilitating trade. The reform included the installation of ASYCUDA++ (an automated customs clearance system) that would enable the administration not only to track the processing of each consignment, but also to measure performance against a number of criteria relevant to the reform.

With the support of the Trade Facilitation Facility, these efforts have continued with the introduction in 2009 of individual performance contracts, making Cameroon the first country in the world to adopt such an approach. These performance contracts use objective and quantifiable performance data from the automated computer system. The objectives of customs administration (facilitation and enforcement) are complemented by specific objectives that aim at abolishing bad practices. With this mechanism, individual customs officers as well as their managers have become aware of their performance data vis-à-vis those of other colleagues, and they receive rewards or sanctions as a result of their performance.

The activity has far achieved several significant outcomes since the start of its implementation:

- Processing time for customs declaration at Douala Port I by customs officers dropped from about 11 hours in 2010 to 2 hours in the third trimester of 2011.
- Customs revenues increased by 22 percent from the first trimester of 2010 to the first trimester of 2011, while growth of activity during the same period was 17 percent.
- An increase in the average revenues per customs declaration was recorded: revenues increased by more than 6.9 billion CFA francs (about US$17.25 million) in 2011, all other things being equal.
- Possibly suspicious practices have been drastically reduced: notably, reroutings (manually changing the control channel from the one selected by the automated system to the other—for example, document verification to physical inspection) fell from 5 percent of the total number of declarations in 2009 to 1.6 percent in 2010 (in Douala Port I).

The activity catalyzes the following positive initiatives:

- The concept of performance-linked treatment is being applied to declarants/economic operators. Performance-contracted importers enjoy a trade facilitation environment: for example, a shorter port dwell time that is 4 days shorter than the average 19 days.
- Performance contracts have had a major impact on importers and are creating the start of a virtuous circle between customs brokers and importers. For successful importers (those who reached the agreed performance targets), performance contracts have been the starting point of revising internal procedures for the clearing processes.
- The culture of collecting and monitoring performance indicators is increasingly accepted. Institutional performance data are becoming publicly available. Stakeholder dialogues are being based on objective data, and the progress and achievements of efforts become publically accountable.
- Several countries, such as Benin and Togo, are following Cameroon’s successful approach to customs reform.

**Source:** Contributed by the World Bank, International Trade Department.

**Note**

1. The Trade Facilitation Facility (TFF) is a rapid-response trust fund with the objective of helping developing countries reduce trade costs and enhance their ability to move goods and services across borders rapidly, cheaply, and predictably. It is designed to finance activities that will make immediate, direct, and effective improvements in trade facilitation systems by modernizing infrastructure, institutions, and policies and improving regulations. The TFF finances activities at country, regional, and global levels including projects and project-preparation activities, advisory work, and technical assistance.
countries have liberalized their domestic markets and have fairly free access to key developed-country markets as a result of trade preference schemes such as those under the African Growth and Opportunity Act put in place by the United States or Economic Partnership Agreements with the European Union. The foreign market access component of the Index takes into account the trade preferences countries enjoy abroad by capturing the margin of preference to which countries are entitled. Because of the preferential schemes in place, two African countries—Malawi and Mauritius—enjoy the highest margin of preference in target markets within the entire ETI sample.

In the case of North Africa, the results show that the region’s trade performance is negatively affected by limited domestic and foreign market access. Further reduction of domestic tariffs and tariffs in key export markets would enable trade in the region. This may be a reflection of the still fairly high tariffs in the region, the low number of regional trading agreements into which countries have entered, and the fact that the region does not benefit from as many trade preferences as sub-Saharan Africa.

Border administration takes into account the efficiency of customs and the transparency and efficiency of the entire clearance process. The results show that, in a number of African countries, customs are more efficient than they are in Southeast Asia or in Latin America and the Caribbean (see Appendix B). However, on average, there is some room for improvement in Africa. The benefits of customs reform are considerable: in addition to speeding up the clearance process at the border, more efficient customs contribute to a better collection of tariff and tax revenues, more formal cross-border trading activity, and lower levels of corruption. Important efforts have been undertaken in recent years toward reforming customs administrations in African countries (see Box 2 for customs reform efforts in Cameroon).

In most countries, however, customs performs only one part of the border clearance process, and other agencies are tasked with the import or export procedure components. These agencies include entities that enforce sanitary and phytosanitary standards as well as technical requirements and entities that grant import licenses. It is therefore crucial for reforms in this field to take a holistic view and consider the import and export procedures as a whole, ensuring that the linkages between the different agencies involved in the import-export process present a minimum of friction and delays. In many cases, information technology (IT)-based systems have proven successful in facilitating procedures across different agencies. For example, the Automated System for Customs Data (ASYCUDA) was implemented...
2.1: Enabling African Trade

Despite rising awareness of this issue and progress achieved on the customs administration front, many African countries still lag behind international standards in terms of the efficiency, cost, and timeliness of the overall clearance process, mainly because the process is still burdened with red tape and insufficient communication between the agencies. Within the African continent, the efficiency of import-export procedures is the area where we see the largest differences across countries and across the three subregional country groupings we present in this Report. While Mauritius, the best-performing country in Africa on this pillar, performs better than Southeast Asia on average and comes in at

Box 3: Overcoming landlockedness: Faster border management through customs data sharing across countries

Delays at border crossings across sub-Saharan Africa have long been identified as one of the largest non-tariff barriers to trade. Some contributing factors include inefficient paperwork and processes, lack of advance notification of goods, poor and fraudulent declarations, lack of cross-border information exchange between customs, and out-of-date or nonexistent transit and trade statistics. One solution to this problem lies in developing a platform for efficient customs and transit data exchange, management, and reporting and, even more importantly, ensuring that the information exchanged is actually used to improve daily operations. For example, in addition to improving connectivity through infrastructure, documents, and procedures, countries in East Africa have also recently electronically interconnected their customs systems to facilitate trade.

Traders typically lose a great deal of time because agencies in each country re-enter trade-related information in their computer systems for customs and other border-control purposes. Re-entering data also makes the process vulnerable to the risk of input errors and fraud; border management measures to combat this risk can further delay the clearance process. Starting from a document that has already been verified by one customs authority ensures data integrity and, more importantly, traceability of the declarations across borders, which is critical for reconciliation and risk management. Uganda and Kenya have been at the forefront of an initiative to share data between their customs administrations. In 2009, the two countries worked with USAID in developing a system to interconnect their customs systems. The interconnecting system, known as the Revenue Authorities Digital Data Exchange (RADDEx), transmits customs transit declaration data in near-real time from a point of initial lodging (seaport, border post, etc.) through all relevant transit points to final destination. RADDEx was first installed at the Malaba border post between the two countries, and enabled the sharing of data between the border-crossing point and the main transit port of Mombasa in Kenya. The border management requirements of the two countries already had in common several data elements. For example, for Uganda transit declarations in Kenya 38 data elements were already captured in Kenya with the declarant adding or modifying only three elements (including declarant’s name) in Uganda. RADDEx has led to significant time reductions in preparation and processing the declarations by:

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in 42 African countries, including Botswana, Ethiopia, Ghana, and Rwanda.21

Despite rising awareness of this issue and progress achieved on the customs administration front, many African countries still lag behind international standards in terms of the efficiency, cost, and timeliness of the overall clearance process, mainly because the process is still burdened with red tape and insufficient communication between the agencies. Within the African continent, the efficiency of import-export procedures is the area where we see the largest differences across countries and across the three subregional country groupings we present in this Report. While Mauritius, the best-performing country in Africa on this pillar, performs better than Southeast Asia on average and comes in at

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Figure A: Change in border-crossing time at Malaba, November 2011–March 2012

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(Cont’d)
Box 3: Overcoming landlockedness: Faster border management through customs data sharing across countries (cont’d)

- avoiding duplicate data entry by declarants at different border posts,
- enabling pre-arrival declaration and data processing,
- sending advance notice for document preparation, and
- facilitating the verification.

However, for maximum benefit, the system has been complemented by and been part of other reforms that include improved risk management and better coordination between agencies when required, vetting clearing agents, streamlining traffic flow, and imposing strict parking rules for truck drivers to decongest the customs control zone. The system for managing the physical movement of traffic through the border post is called the Customs Reconciliation System (CURES). It was developed in-house by the Uganda Revenue Authority to capture information on the physical movement of trucks and containers. Using the CURES system, the authorities are able to keep track of trucks and cargo entering and leaving the control zone.

The Malaba border is one of the busiest in sub-Saharan Africa, with a daily average of 650 heavy commercial trucks crossing from Kenya to Uganda. The border post was congested and border management agencies were operating near capacity. The reforms adopted at the end of 2011 promoted a change in the behavior and operational arrangements of the logistics service providers that could be made possible only through IT developments. Together, the reforms at the border post between Kenya and Uganda have resulted in some of the shortest border crossing times in sub-Saharan Africa (Figure A). The figure shows the dramatic fall in border dwell times when the cocktail of measures took effect in late 2011 into early 2012. Average border dwell times per truck fell from over 12 hours to about 3 hours.

IT can certainly help to improve transit for landlocked countries, but it is by no means a panacea. Several complementary measures are also needed, and IT is often the last to be put into place so as not to substitute for real reforms. Done properly, reforms and judicious automation can significantly reduce the resources required for infrastructure improvements.

Source: Contributed by the World Bank, International Trade Department.
average in terms of availability and quality of transport infrastructure. On the other hand, transport infrastructure appears to be well developed across North Africa, which has reached levels that are on a par with those found in Southeast Asia. The three North African economies tend to perform better in terms of availability of transport infrastructure (with a score of 5.1 out of 7), while the quality of infrastructure is still insufficient (a score of 3.8). Although Morocco and Egypt are well connected to global maritime routes (16th and 17th, respectively, on the transshipment connectivity index), port quality in Algeria is poor, ranked 113th.

Although North African economies perform well on the infrastructure component of the ETI, the assessment of logistics services does not keep up with these good results. Most African countries show room for improvement in the various indicators of logistics quality, such as logistics competence and how easy and affordable it is to arrange international shipments. Maritime services are widely available in countries of the subregion, as shown in the good results achieved on the Liner Shipping Connectivity Index in Algeria (33rd), Morocco (18th), and Egypt (19th). Improving the logistics services in sub-Saharan Africa, including in the landlocked countries, would further reduce the cost of trade from and to this region. The World Bank estimates that reform leading to a more competitive transport sector could halve the cost of moving staples in West Africa over 10 years.24 Although the best performer from the region, South Africa, reaches the level found in Southeast Asia and ranks 26th, logistics services are underdeveloped in the vast majority of sub-Saharan countries.

The rising importance of global value chains has raised the importance of ICT connectivity for goods trade because producing parts of a good requires more exchange on product specification, production-related data, delivery times, and, in some cases, also training. Furthermore, ICTs have become key for business-to-business and business-to-consumer customer relations as well as for identifying buyers, which remains the second most important barrier to exporting, according to data on the most problematic factors for trade obtained from the World Economic Forum’s Executive Opinion Survey (the Survey) (analyzed in detail in the next section). None of the countries from the region reaches the level of ICT connectivity found in Southeast Asia or Latin America. The best-performing African country, Mauritius, ranks a low 79th. Although North Africa is relatively well connected in international comparison, trade in landlocked countries on the continent—and in sub-Saharan Africa as a whole—would benefit from better connectivity. This could be achieved through improvements to mobile and broadband penetration and a greater use of the Internet and other ICTs by business and government. The use of ICTs is important for the degree to which administrative processes related to importing and exporting can be IT.

Figure 8: The most problematic factors for exporting in Africa

Notes: From a list of ten factors, respondents were asked to select the five most problematic for exporting in their country and rank them between 1 (most problematic) and 5. The bars in the figure show the responses weighted according to their rankings. The most problematic factors sample includes all African countries that were covered in the Executive Opinion Survey 2012. The sample includes the following groups of economies: landlocked: Botswana, Burkina Faso, Burundi, Chad, Ethiopia, Lesotho, Malawi, Mali, Swaziland, Uganda, Zambia, and Zimbabwe; North Africa: Algeria, Egypt, Libya, and Morocco; sub-Saharan Africa: Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Côte d’Ivoire, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe.
2.1: Enabling African Trade

based, which in turn is key to making them more efficient and more transparent. More importantly, ICTs could contribute to overcoming the particular challenges related to being landlocked by developing the export of business or tourism services, for example.

The overall business environment is the 4th subindex of the ETI. It consists of the regulatory environment for trade-related activities, which includes factors such as general governance indicators, openness to investment, ease of hiring foreign labor, and the availability of trade finance. A number of African countries have made great strides in improving their regulatory environment. For example, Botswana, Rwanda, and Mauritius—despite many differences in their regulatory environments—have all made significant improvements in this respect and come in within the top 40 on this pillar. Their governments are considered by the business community to be more efficient than those of other countries in the region, and their relevant rules and regulations are supportive of foreign investment.

At the same time, a number of African countries still suffer from very poor institutions that affect their trade performance. Chad (126th), Angola (129th), and Burundi (130th) are the weakest performers in the region on this pillar. Key issues across the continent include the insufficient definition and protection of property rights for physical and intellectual property, widespread corruption, and undue influence. At the same time, countries’ regulations are fairly open to welcoming foreign labor and investment.

Last but not least, the fairly high levels of physical security are an advantage for the African continent, in particular when compared with Latin American countries, which perform significantly less well on this dimension. The best-performing country, Rwanda, occupies an excellent 15th position and is followed by Senegal at 38th and Botswana at 39th. Not surprisingly, very low levels of security are found in some countries, such as Nigeria (119th), Kenya (120th), and Burundi (124th).

THE MOST PROBLEMATIC FACTORS FOR TRADE IN AFRICA

The World Economic Forum’s Survey asks top executives to rate the main bottlenecks for exporting and importing in their countries. Respondents were asked to choose and rank in order of importance from a list of factors (ten factors for exports and eight for imports) those five that they believe have the highest impact on the ease of exporting and importing in the country in which they operate. For exports we included a wide range of factors that may inhibit export development, such as supply-side constraints, technical requirements, rules of origin, and administrative procedures. The import factors mirror the structure of the ETI to the extent possible, providing an indication of the importance of

![Figure 9: The most problematic factors for importing in Africa](chart.png)

Notes: From a list of eight factors, respondents were asked to select the five most problematic for importing in their country and rank them between 1 (most problematic) and 5. The bars in the figure show the responses weighted according to their rankings. The most problematic factors sample includes all African countries that were covered in the Executive Opinion Survey 2012. The sample includes the following groups of economies: landlocked: Botswana, Burkina Faso, Burundi, Chad, Ethiopia, Lesotho, Malawi, Mali, Swaziland, Uganda, Zambia, and Zimbabwe; North Africa: Algeria, Egypt, Libya, and Morocco; sub-Saharan Africa: Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Côte d’Ivoire, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe.
the pillars of the ETI for the trading environment of these countries.

These two questions concerning exports and imports identify the most important bottlenecks to trade and supply-chain connectivity across the economies covered in the Survey. In addition, the results can provide insight about the most important bottlenecks to trade globally and inform multilateral trade negotiations about priority areas for liberalization. Figures 8 and 9 show that the most important impediments to trade are largely the same across the three African subregions. Overall, insufficient access to trade finance is the most important bottleneck to increased exports (although the importance of this factor is less pronounced for North Africa than for the rest of the continent), followed by the difficulty in identifying potential markets and buyers. The limitations in access to trade finance are probably linked to the underdeveloped financial markets in most of the countries, as discussed in Chapter 1.1.25 Other factors—such as difficulties in meeting quality and quantity requirements of buyers and inappropriate production technology and skills—are cited by at least 10 percent of respondents among more than one subregion.

The data thus corroborate findings from the ETI analysis above: burdensome border procedures and corruption, for example, are considered a more important barrier than tariff barriers or NTMs in the narrow sense (compliance with technical and quality standards certificates, etc.). Furthermore, the data confirm the need for more regional integration: high costs or delays caused by poor domestic transportation are considered a higher burden than those incurred by international transportation. This may point to bottlenecks at border crossings to neighboring countries, for example, or inaccurately connected infrastructure. The most problematic factors for exporting yield a slightly different priority in North Africa: similar to sub-Saharan Africa, identifying potential markets and buyers is listed as the second most important impediment. However, difficulties in meeting quality/quantity requirements of buyers, inappropriate production technology and skills, and foreign technical requirements play a more prominent role for North African countries, whereas access to trade finance is considered less problematic.

On the import side, Figure 9 confirms the results from the ETI analysis: from the perception of business leaders, burdensome import procedures emerge as the most important impediment to trade across the continent, nearly on a par with tariffs and non-tariff barriers in the narrow sense. The cost of international transportation is the third most important factor, followed by corruption at the border. However, the figure also reveals that border corruption is much more pronounced in landlocked Africa and North Africa than in sub-Saharan Africa. Crime and theft and poor telecommunications play a much smaller role throughout the continent. This result underlines not only the importance of trade facilitation at multilateral and bilateral levels, but also the potential of countries for facilitating trade through practical measures within their government’s purview.

CONCLUSIONS
This chapter has analyzed how African countries perform in terms of enabling trade by using the World Economic Forum’s Enabling Trade Index. The 31 countries covered in the 2012 edition of The Global Enabling Trade Report were included in the analysis, which covered the four main categories of the Index: market access, border administration, infrastructure, and business environment. The analysis differentiated among three categories of countries within the continent: North Africa, sub-Saharan Africa, and a subgroup of landlocked countries.

The results show that, although a number of African countries have facilitated market access domestically and for their exporters abroad and have achieved high levels of physical security, they lag behind across a number of areas assessed by the Index. There is room for improvement in terms of the efficiency of import and export procedures, the transparency of border administration, and the use of ICTs. Furthermore, logistics services and insufficient infrastructure add to the cost of trading and act as a barrier to higher levels of regional integration.

By improving their performance across the dimensions of the ETI, African countries could better prepare their economies to benefit from international trade. For landlocked countries, the two challenges that need to be tackled are streamlining border administration to reduce the cost of procedures and delays during clearance and improving the coordination of the clearance process. Equally important is the promotion of access and use of ICTs, which is poor not only in landlocked countries but also across all of sub-Saharan Africa. As pointed out in other chapters of this Report, countries in the region could benefit from increased infrastructure investment in the area of ICTs.

In the case of North Africa, transparency of border administration appears to be the most important factor limiting trade in goods in the three North African countries assessed—Algeria, Egypt, and Morocco. These countries could also benefit from more open access to domestic and foreign markets.

These improvements are necessary for countries to more fully participate in global value chains, which account for a significant and rising share of trade flows, and to advance toward a higher degree of regional integration. More trade integration within the region would also contribute to higher food security across the continent. This chapter provides information on one specific set of measures that could enable African countries to further benefit from trade. It is intended to be a motivator for change and a foundation for dialogue, by providing a yardstick of the extent to which countries
have in place the factors that facilitate the free flow of goods and by identifying areas where improvements are most needed.

NOTES
1 IMF 2012a.
2 Authors’ calculations, based on World Trade Organization time-series data.
3 The definition of minerals follows the sector classification developed by the International Trade Centre in their Trade Performance Index. In addition to crude oil and gas, this category also contains all metals and other minerals as well as petroleum products, liquefied gas, coal, and precious stones. The data used covers the years 2006 through 2010 or the most recent year available. Further information on these data can be found at http://www.intracen.org/menus/countries.htm.
4 One-fifth of total government revenues stem from natural resource extraction in Equatorial Guinea, the Republic of Congo, Angola, Nigeria, Chad, Gabon, Botswana, Cameroon, the Democratic Republic of Congo, and Angola (IMF 2012b).
6 World Bank 2012b.
7 World Bank 2012a.
8 World Bank 2008.
9 One of the reasons that the barriers remain in place may be that the complementarity of production structures in many neighboring African countries probably makes it more difficult from a political economy standpoint to pursue regional free trade.
10 Authors’ calculations, based on World Bank Doing Business 2013 data.
11 See Ben Barka 2012, which also contains more examples and a more thorough discussion of the importance of administrative barriers for regional trade in Africa.
12 Bromley et al. 2011.
13 World Bank 2012b.
14 We have focused on the flow of trade in goods in the Index for expository purposes, although we recognize that enabling services is also important. By circumscribing the issue clearly, the Index provides a useful vehicle for analyzing policy on a clearly defined part of the issue. Trade in goods accounts for upwards of 80 percent of all trade, and is therefore highly relevant.
15 See Browne et al. 2012.
16 The score of each subindex is derived as an unweighted average of the pillars that constitute it.
17 The choice of an unweighted average results from the recognition that no current research can provide guidance on the importance of the different factors. At the country level, the most problematic factors for importing shown in Figure 9 provide some indication of the importance of the different factors because they mirror the categories of the ETI to the extent possible.
18 Tests were carried out using regression analysis in a gravity model of trade. See World Economic Forum 2009.
19 Both South Africa and Morocco have benefitted from the removal and revision of the data on non-tariff measures, respectively.
20 A more detailed analysis of country performances can be found in World Economic Forum 2012a.
21 See www.asycuda.org for implementation status of ASYCUDA in African countries.
22 World Bank 2011.
23 Although the ETI elements provide an indication of the potential challenges to be addressed, it has to be noted that these elements are highly interrelated. For example, delays in port clearance may result from issues related to administrative procedures that are captured under border administration.
24 Bromley et al. 2011.
25 Access to trade finance and access to finance overall are most likely strongly correlated for two reasons. First, the availability of trade finance depends on the development of the financial system. Second, respondents are likely to judge the overall availability of finance for their needs and may not clearly distinguish between the different instruments.

REFERENCES
This appendix provides details about the construction of the Enabling Trade Index (ETI).

The ETI is composed of four subindexes: the market access subindex; the border administration subindex; the transport and communications infrastructure subindex; and the business environment subindex. These subindexes are, in turn, composed of the nine pillars of the ETI: domestic and foreign market access, efficiency of customs administration, efficiency of import-export procedures, transparency of border administration, availability and quality of transport infrastructure, availability and quality of transport services, availability and use of ICTs, regulatory environment, and physical security. These pillars are calculated on the basis of both hard data and survey data.

The survey data are mainly derived from the responses to the World Economic Forum’s Executive Opinion Survey and range from 1 to 7. In addition, survey data from the World Bank’s Logistics Performance Index (LPI) have also been included. The hard data were collected from various recognized sources, such as the World Bank, the World Trade Organization (WTO), the International Trade Centre (ITC), and the United Nations Conference on Trade and Development (UNCTAD). The data are described in detail in Appendix C. All of the data used in the calculation of the ETI can be found in the data tables on the website of The Global Enabling Trade Report 2012 (www.weforum.org/getr).

The hard data indicators used in the ETI, as well as the results from the LPI survey, are normalized to a 1-to-7 scale in order to align them with the Executive Opinion Survey results. Each of the pillars has been calculated as an unweighted average of the individual component variables. The subindexes are then compounded as unweighted averages of the included pillars.

In the case of the domestic and foreign market access pillar, the score in the domestic market subpillar accounts for two-thirds and the score in foreign market access accounts for one-third of the overall pillar. In the case of the availability and quality of transport infrastructure pillar, which is itself composed of two subpillars (availability and quality of transport infrastructure), the overall pillar is the unweighted average of the two subpillars. The overall ETI is then calculated as the unweighted average of the four subindexes.

The variables and the composition of pillars are described below. If a variable is one of hard data, this is indicated in parentheses after the description.
SUBINDEX C: TRANSPORT AND COMMUNICATIONS INFRASTRUCTURE

Pillar 5: Availability and quality of transport infrastructure

A. Availability of transport infrastructure
   5.01 Airport density (hard data)
   5.02 Transshipment connectivity index (hard data)
   5.03 Paved roads (hard data)

B. Quality of transport infrastructure
   5.04 Quality of air transport infrastructure
   5.05 Quality of railroad infrastructure
   5.06 Quality of roads
   5.07 Quality of port infrastructure

Pillar 6: Availability and quality of transport services

6.01 Liner Shipping Connectivity Index (hard data)
6.02 Ease and affordability of shipment
6.03 Logistics competence
6.04 Tracking and tracing ability
6.05 Timeliness of shipments in reaching destination
6.06 Postal services efficiency
6.07 GATS commitments in the transport sector (hard data)

Pillar 7: Availability and use of ICTs

7.01 Extent of business Internet use
7.02 Mobile telephone subscriptions (hard data)
7.03 Broadband Internet subscribers (hard data)
7.04 Government Online Service Index (hard data)
7.05 Internet users (hard data)

NOTES
1. The standard formula for converting each hard data variable to the 1-to-7 scale is
   \[ 6 \times \frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} + 1 \]
   The sample minimum and sample maximum are the lowest and highest scores of the overall sample, respectively. For those hard data variables for which a higher value indicates a worse outcome (e.g., tariff barriers, road congestion), we rely on a normalization formula that, in addition to converting the series to a 1-to-7 scale, reverses it, so that 1 and 7 still correspond to the worst and best possible outcomes, respectively:
   \[ -6 \times \frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} + 7 \]
   In some instances, adjustments were made to account for extreme outliers in the data.
2. This indicator is not included in the pillar calculation.
3. Complexity of tariffs is the average of the other four variables.
4. The LPI data are derived from the World Bank’s Logistics Performance Index Survey, which is based on a 1-to-5 scale. LPI data were normalized to a 1-to-7 scale using the above formula in order to align it with the Executive Opinion Survey results.
5. These variables are composite indicators comprising multiple variables used in the World Economic Forum’s Global Competitiveness Index. For details, see The Global Competitiveness Report 2010–2011.
6. Openness to foreign participation is the average of the other four variables.

SUBINDEX D: BUSINESS ENVIRONMENT

Pillar 8: Regulatory environment

8.01 Property rights
8.02 Ethics and corruption
8.03 Undue influence
8.04 Government efficiency
8.05 Domestic competition
8.06 Efficiency of the financial market
8.07 Openness to foreign participation

8.08 Availability of trade finance

Pillar 9: Physical security

9.01 Reliability of police services
9.02 Business costs of crime and violence
9.03 Business costs of terrorism
## Appendix B: The Enabling Trade Index 2012: Africa and comparator economies, by pillar

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This appendix provides detailed information, including computation methods and sources, on all the indicators that enter the Enabling Trade Index (ETI). For each indicator, the title appears on the first line, preceded by its number to allow for quick reference. The numbering matches the one used in Appendix A.

Below is a description of the indicator or, in the case of the Executive Opinion Survey data, the full question and associated responses.

**Pillar 1: Domestic and foreign market access**

### 1.01 Tariff rate

**Trade-weighted average tariff rate | 2011, 2010 or most recent year available**

This indicator is calculated as a weighted average of all the applied tariff rates, including preferential rates that a country applies to the rest of the world. The weights are the trade patterns of the importing country’s reference group (2010 data). An applied tariff is a customs duty that is levied on imports of merchandise goods.

Source: International Trade Centre

### 1.02 Non-tariff measures (included yet not part of the index)

**Index of non-tariff measures (NTMs) | 2011 or most recent year available**

This index is constructed as the average of two NTM-related variables. NTMs may take the form of quotas, charges, discriminatory labeling, or health standards and other restrictive conditions. The variables included are the percentage of trade affected by NTMs and the average number of notifications for products affected by NTMs, for products with imports larger than 0. A notification is a transparency obligation requiring member governments to report trade measures to the relevant World Trade Organization (WTO) body if the measures might have an effect on other members. NTMs that apply to all products are excluded from the calculations because they do not represent discrimination on particular goods. Also, politically motivated NTMs, such as embargos, have been excluded.

Source: Authors’ calculations based on International Trade Centre data

### 1.03 Complexity of tariffs

**Index of the complexity of tariffs | 2011 or most recent year available**

This variable is calculated as the average of the following indicators: tariff dispersion (1.03a), tariff peaks (1.03b), specific tariffs (1.03c), and number of distinct tariffs (1.03d). See below for the description of the single underlying indicators.

#### 1.03a Tariff dispersion

**Standard deviation of tariff rates | 2011 or most recent year available**

This indicator reflects differences in tariffs across product categories in a country’s tariff structure. The variance is calculated across all the tariffs on imported merchandise goods, at the 6-digit level of the Harmonized Schedule.

Source: International Trade Centre

#### 1.03b Tariff peaks

**Share of tariff lines with domestic peaks (percentage) | 2011 or most recent year available**

This indicator is the ratio of the number of tariff lines exceeding three times the average domestic tariff (across all products) to the most favored nation (MFN) tariff schedule. The tariff schedule is equal to the total number of tariff lines for each country. These tariffs are revised on a yearly basis.

Source: International Trade Centre

#### 1.03c Specific tariffs

**Share of tariff lines with specific tariffs (percentage) | 2011 or most recent year available**

This indicator is the ratio of the number of Harmonized System (HS) tariff lines with at least one specific tariff to the total number of HS tariff lines. A specific tariff is a tariff rate charged on a fixed amount per quantity (as opposed to ad valorem taxes, which are based on the assessed value of the property).

Source: International Trade Centre

#### 1.03d Number of distinct tariffs

**Number of distinct tariffs for all sectors | 2011 or most recent year available**

This indicator reflects the number of distinct tariff rates applied by a country on its imports across all sectors.

Source: International Trade Centre

### 1.04 Share of duty-free imports

**Duty-free imports as a share of total imports | 2011, 2010 or most recent year available**

Share of trade, excluding petroleum, that is imported free of tariff duties, taking into account most-favored nation tariffs and preferential agreements. Tariff data are from 2011 or most recent year available and imports data are from 2010.

Source: International Trade Centre

### 1.05 Tariffs faced

**Trade-weighted average tariff faced in destination markets | 2011, 2010 or most recent year available**

This indicator is calculated as the average of the applied tariff rates, including preferential rates that the rest of the world applies to each country.

Source: International Trade Centre

### 1.06 Margin of preference in destination markets

**Index of margin of preference in destination markets | 2010**

This indicator measures the percentage by which particular imports from one country are subject to lower tariffs than the most-favored nation (MFN) rate. It is calculated as the average of two components: (1) the trade-weighted average difference between the MFN tariff and the most advantageous preferential duty (advantage score), and (2) the trade-weighted average of the ratios of the advantageous score to the tariff level. This allows the indicator to capture both the absolute and the relative margin of preference.

Source: International Trade Centre
Pillar 2: Efficiency of customs administration

2.01 Burden of customs procedures
How would you rate the level of efficiency of customs procedures (related to the entry and exit of merchandise) in your country? [1 = extremely inefficient; 7 = extremely efficient] | 2010, 2011

2.02 Customs services index
Extent of services provided by customs authorities and related agencies | 2009 or most recent year
This variable is based on 15 Global Express Association customs barriers survey questions capturing different aspects of the services offered by customs and related agencies. The services included are the following: clearance of shipments via electronic data interchange; separation of physical release of goods from the fiscal control; full-time (24 hours/7 days a week) automated processing; customs working hours adapted to commercial needs; fee for services in normal service hours; inspection and release of goods arriving by air by the operator’s facility; automated risk assessment as primary basis for physical examination of shipments; multiple inspections (inspections by agencies other than customs); and the promptness of those inspections; exemptions from full customs formalities for shipments of minimal value; exemptions from a duties and taxes for shipments of minimal value; clearance of shipments by a third party; appeal of customs decisions to a higher level or an independent tribunal; and use of reference prices or arbitrary uplifts to invoice values. The maximum score an economy can obtain is 12.
Source: Global Express Association

Pillar 3: Efficiency of import-export procedures

3.01 Efficiency of the clearance process
Efficiency of the clearance process by customs and border control agencies [1 = very low; 5 = very high] | 2012
This variable assesses the effectiveness and efficiency of the clearance process by customs and other border control agencies in the eight major trading partners of each country. Respondents to the Logistics Performance Index (LPI) survey were asked to evaluate the effectiveness and efficiency of clearance in the country in which they work, based on their experience in international logistics, on a 1-to-5 scale compared with generally accepted industry standards or practices.
Source: The World Bank, Logistics Performance Index 2012

3.02 Time to import
Number of days necessary to comply with all procedures required to import goods | 2011
The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost, the fastest legal procedure is chosen. It is assumed that neither the exporter nor the importer wastes time and that each commits to completing each remaining procedure without delay. Procedures that can be completed in parallel are measured as simultaneous. The waiting time between procedures—for example, during unloading of the cargo—is included in the measure.

3.03 Documents to import
Number of all documents required to import goods | 2011
This variable takes into account all documents required to import the goods that are recorded. It is assumed that the contract has already been agreed upon and signed by both parties. Documents include bank documents, customs declaration and clearance documents, port filing documents, import licenses, and other official documents exchanged between the concerned parties. Documents filed simultaneously are considered different documents but with the same time frame for completion.

3.04 Cost to import
Cost (US$ per container) associated with all the procedures required to import goods | 2011
This variable measures the fees levied on a 20-foot container in US dollars. All the fees associated with completing the procedures to export or import the goods are included. These include costs for documents, administrative fees for customs clearance and technical control, terminal handling charges, and inland transport. The cost measure does not include tariffs or trade taxes. Only official costs are recorded.

3.05 Time to export
Number of days necessary to comply with all procedures required to export goods | 2011
The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost, the fastest legal procedure is chosen. It is assumed that neither the exporter nor the importer wastes time and that each commits to completing each remaining procedure without delay. Procedures that can be completed in parallel are measured as simultaneous. The waiting time between procedures—for example, during unloading of the cargo—is included in the measure.

3.06 Documents to export
Number of documents required to export goods | 2011
This variable takes into account all documents required to export the goods are recorded. It is assumed that the contract has already been agreed upon and signed by both parties. Documents include bank documents, customs declaration and clearance documents, port filing documents, import licenses, and other official documents exchanged between the concerned parties. Documents filed simultaneously are considered different documents but with the same time frame for completion.

3.07 Cost to export
Cost (US$ per container) associated with all the procedures required to export goods | 2011
This variable measures the fees levied on a 20-foot container in US dollars. All the fees associated with completing the procedures to export or import the goods are included. These include costs for documents, administrative fees for customs clearance and technical control, terminal handling charges, and inland transport. The cost measure does not include tariffs or trade taxes. Only official costs are recorded.

Pillar 4: Transparency of border administration

4.01 Irregular payments in exports and imports
In your country, how common is it for firms to make undocumented extra payments or bribes connected with imports and exports? [1 = common; 7 = never occurs] | 2010, 2011
2.1. Enabling African Trade

4.02 Corruption Perceptions Index

Index of the perceived level of public-sector corruption [0 = very high; 10 = very low] | 2011
(Note that the information used is based on survey data gathered between December 2009 and September 2011)

The Corruption Perceptions Index score relates to perceptions of the degree of public-sector corruption as seen by business people and country analysts and ranges between 0 (high) and 10 (low).

Source: Transparency International

Pillar 5: Availability and quality of transport infrastructure

5.01 Airport density

Number of airports per million population | 2010
Number of airports with at least one scheduled flight in 2010 per million population

Source: International Air Transport Association, SRS Analyser

5.02 Transshipment connectivity index

Type of transshipment connections available to shippers from each country/economy on bilateral routes [0 = low connectivity; 100 = high connectivity] | 2011

This index aims at reflecting the geographical aspects of the liner service supply. In the absence of direct liner shipping between two countries, the cargo will have to be transshipped in a port of a third or even fourth country in order to reach the destination country. The index score is the weighted sum of the four connection types: the number of first-order connections (connection without transshipment) multiplied by 1, the number of second-order connection (connection with one transshipment) multiplied by 0.5, the number of third-order connections (connections with two transshipments) multiplied by 0.33, and the number of fourth-order connections (connection with three transshipments) multiplied by 0.25. Where the weights represent the efficacy of the connections, Landlocked countries are excluded from the index calculation.

Source: United Nations Conference and Trade and Development

5.03 Paved roads

Paved roads as a percentage of total roads | 2008 or most recent year available
Paved roads are those surfaced with crushed stone (macadam) and hydrocarbon binder or bituminized agents, with concrete, or with cobblestones. This indicator shows paved roads as a percentage of all the country/economy’s roads, measured in length.

Source: The World Bank, World Development Indicators Online (retrieved on December 23, 2011); national sources

5.04 Quality of air transport infrastructure

How would you assess passenger air transport infrastructure in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards] | 2010, 2011


5.05 Quality of railroad infrastructure

How would you assess the railroad system in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards] | 2010, 2011


5.06 Quality of roads

How would you assess roads in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards] | 2010, 2011


5.07 Quality of port infrastructure

How would you assess port facilities in your country? [1 = extremely underdeveloped; 7 = well-developed and efficient by international standards]. For landlocked countries, this measures the ease of access to port facilities and inland waterways | 2010, 2011


Pillar 6: Availability and quality of transport services

6.01 Liner Shipping Connectivity Index

Quantity of services provided by liner companies (maximum value in 2004 = 100) | 2011 or most recent
This index captures how well countries are connected to global shipping networks. It is based on five components of the maritime transport sector: number of ships, their container-carrying capacity, maximum vessel size, number of services, and number of companies that deploy container ships in a country’s ports. For each component, a country’s value is divided by the maximum value of each component in 2004, the five components are averaged for each country, and the average is divided by the maximum average for 2004 and multiplied by 100. The index generates a value of 100 for the country, with the highest average index achieved in 2004.

Source: United Nations Conference and Trade and Development

6.02 Ease and affordability of shipment

Ease of arranging competitively priced international shipments [1 = very low; 5 = very high] | 2012
This variable assesses the ease and affordability associated with arranging international shipments. Respondents to the Logistics Performance Index (LPI) survey were asked to evaluate the ease and affordability associated with arranging international shipments to or from eight countries (major trading partners) with which they conduct business. Performance was evaluated using a 5-point scale (1 for the lowest score, 5 for the highest), based on their experience in international logistics and in accordance with generally accepted industry standards or practices.

Source: The World Bank, Logistics Performance Index 2012

6.03 Logistics competence

Competence and quality of logistics services (e.g., transport operators, customs brokers) [1 = very low; 5 = very high] | 2012
This variable evaluates the competence of the local logistics industry. Respondents to the Logistics Performance Index (LPI) survey were asked to evaluate the competence of the local logistics industry in the eight countries (major trading partners) with which they conduct business. Performance was evaluated using a 5-point scale (1 for the lowest score, 5 for the highest), based on their experience in international logistics and in accordance with generally accepted industry standards or practices.

Source: The World Bank, Logistics Performance Index 2012
### Pillar 7: Availability and use of ICTs

#### 7.01 Extent of business Internet use

To what extent do companies within your country use the Internet in their business activities (e.g., buying and selling goods, interacting with customers and suppliers)? [1 = not at all; 7 = extensively] | 2010, 2011


#### 7.02 Mobile telephone subscriptions

Mobile telephone subscriptions per 100 population | 2010 or most recent year available

According to the World Bank, mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service using cellular technology, which provides access to switched telephone technology. Postpaid and prepaid subscriptions are included. This can also include analogue and digital cellular systems but should not include non-cellular systems. Subscribers to fixed wireless, public mobile data services, or radio paging services are not included.


#### 7.03 Broadband Internet subscribers

Total broadband Internet subscribers per 100 population | 2010 or most recent year available

The International Telecommunication Union considers broadband to be any dedicated connection to the Internet of 256 kilobits per second or faster, in both directions. Broadband subscribers refers to the sum of DSL, cable modem, and other broadband (for example, fiber optic, fixed wireless, apartment LANs, satellite connections) subscribers.


#### 7.04 Government Online Service Index

The Government Online Service Index assesses the quality of government’s delivery of online services to the citizens. There are four stages of service delivery (Emerging, Enhanced, Transactional, and Connected). Online services are assigned to each stage according to their degree of sophistication, from the more basic to the more sophisticated. In each country, the performance of the government in each of the four stages is measured as the number of services provided as a percentage of the maximum services in the corresponding stage. Examples of services include online presence, deployment of multimedia content, governments’ solicitation of citizen input, widespread data sharing, and use of social networking. For more details about the methodology employed and the assumptions made to compute this indicator, please consult the UN’s Global E-Government Survey 2012’s dedicated page at http://www2.unpan.org/egovkb/global_reports/12report.htm


#### 7.05 Internet users

Percentage of individuals using the Internet | 2010

Internet users are people with access to the worldwide network.

Pillar 8: Regulatory environment

8.01 Property rights
Composite indicator capturing the degree of protection of property rights and intellectual property from the Global Competitiveness Index 2011–2012.

This indicator is the average of two variables: Property rights: How would you rate the protection of property rights, including financial assets, in your country? (1 = very weak, 7 = very strong) and Intellectual property protection: How would you rate intellectual property protection, including anti-counterfeiting measures, in your country? (1 = very weak, 7 = very strong). This composite variable corresponds to composite indicator 1.A.1 from the Global Competitiveness Index 2011–2012.


8.02 Ethics and corruption
Composite indicator assessing the level of ethical standards and corruption from the Global Competitiveness Index 2011–2012.

This indicator is the average of two variables: Diversion of public funds: In your country, how common is diversion of public funds to companies, individuals, or groups due to corruption? (1 = very common; 7 = never occurs) and Public trust of politicians: How would you rate the level of public trust in the ethical standards of politicians in your country? (1 = very low; 7 = very high). This composite variable corresponds to composite indicator 1.A.2 from the Global Competitiveness Index 2011–2012.


8.03 Undue influence
Composite indicator capturing the degree of undue influence in the judicial system and among government officials from the Global Competitiveness Index 2011–2012.

This indicator is the average of two variables: Judicial independence: To what extent is the judiciary in your country independent from influences of members of government, citizens or firms? (1 = heavily influenced; 7 = entirely independent) and Favoritism in decisions of government officials: To what extent do government officials in your country show favoritism to well-connected firms and individuals when deciding upon policies and contracts? (1 = always show favoritism; 7 = never show favoritism). This composite variable corresponds to composite indicator 1.A.3 from the Global Competitiveness Index 2011–2012.


8.04 Government efficiency
Composite indicator capturing the efficiency of the government from the Global Competitiveness Index 2011–2012.

This indicator is the average of five variables: Wastefulness of government spending: How would you rate the composition of public spending in your country? (1 = extremely wasteful, 7 = highly efficient in providing necessary goods and services); Burden of government regulation: How burdensome is it for businesses in your country to comply with governmental administrative requirements (e.g., permits, regulations, reporting)? (1 = extremely burdensome; 7 = not burdensome at all); Efficiency of legal framework in settling disputes: How efficient is the legal framework in your country to settle disputes? (1 = extremely inefficient; 7 = highly efficient); Efficiency of legal framework in challenging regulations: How efficient is the legal framework in your country for private businesses to challenge the legality of government actions and/or regulations? (1 = extremely inefficient; 7 = highly efficient); and Transparency of government policymaking: How easy is it for businesses in your country to obtain information about changes in government policies and regulations affecting your industry? (1 = impossible; 7 = extremely easy). This composite variable corresponds to composite indicator 1.A.4 from the Global Competitiveness Index 2011–2012.


8.05 Domestic competition
Composite indicator measuring the intensity of domestic competition and the quality of related policies from the Global Competitiveness Index 2011–2012.

This indicator is the average of eight variables: Intensity of local competition: How would you assess the intensity of competition in the local markets in your country? (1 = limited in most industries; 7 = intense in most industries); Extent of market dominance: How would you characterize corporate activity in your country? (1 = dominated by a few business groups; 7 = spread among many firms); Effectiveness of anti-monopoly policy: To what extent does anti-monopoly policy promote competition in your country? (1 = does not promote competition; 7 = effectively promotes competition); Extent and effect of taxation: What impact does the level of taxes in your country have on incentives to work or invest? (1 = significantly limits incentives to work or invest; 7 = has no impact on incentives to work or invest); Total tax rate, defined as a combination of profit tax (% of profits), labor tax and contribution (% of profits), and other taxes (% of profits); Number of procedures to start a business; Time required to start a business, defined as number of days required to start a business; and Agricultural policy costs: How would you assess the agricultural policy in your country? (1 = it is excessively burdensome for the economy; 7 = it balances the interests of taxpayers, consumers, and producers). This composite variable corresponds to indicator 6.A.1 from the Global Competitiveness Index 2011–2012.


8.06 Efficiency of the financial market
Composite indicator measuring the efficiency of the domestic financial sector from the Global Competitiveness Index 2011–2012.

This indicator is the average of five variables: Financial market sophistication: How would you assess the level of sophistication of financial markets in your country? (1 = poor by international standards; 7 = excellent by international standards); Financing through local equity market: How easy is it to raise money by issuing shares on the stock market in your country? (1 = very difficult; 7 = very easy); Ease of access to loans: How easy is it to obtain a bank loan in your country with only a good business plan and no collateral? (1 = very difficult; 7 = very easy); Venture capital availability: In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? (1 = very difficult; 7 = very easy); and Strength of investor protection index on a scale of 0–10 (best), defined as a combination of the extent of disclosure index (transparency of transactions), the extent of director liability index (liability for self-dealing), and the ease of shareholder suit index (shareholders’ ability to sue officers and directors for misconduct). This composite variable corresponds to indicator 8.A from the Global Competitiveness Index 2011–2012.


8.07 Openness to foreign participation
This variable is calculated as the average of four variables: Ease of hiring foreign labor, Prevalence of foreign ownership, Business impact of rules on FDI and Openness to multilateral trade rules.

8.07a Ease of hiring foreign labor
To what extent does labor regulation in your country limit the ability to hire foreign labor? (1 = very much limits hiring foreign labor; 7 = does not limit hiring foreign labor at all) 2011, 2012.


8.07b Prevalence of foreign ownership
How prevalent is foreign ownership of companies in your country? (1 = very rare; 7 = highly prevalent) 2010, 2011

8.07c Business impact of rules on FDI
To what extent do rules governing foreign direct investment (FDI) encourage or discourage it? [1 = strongly discourage FDI; 7 = strongly encourage FDI] | 2010, 2011

8.07d Openness to multilateral trade rules
Openness to multilateral trade rules index [0 = lowest; 100 = highest] | 2011
This index evaluates the overall participation of countries in multilateral trade rules or instruments (MTRs). These rules are all internationally elaborated legal standards currently regulating trade in specific areas. MTRs are primarily comprised of conventions and treaties that countries ratify or accede to, and international model laws that are incorporated into national law. The index is based on ITC’s Trade Treaties map–LegaCarta system, which analyzes the position of each country (in terms of accession/nonaccession and incorporation/nonincorporation) regarding some 280 MTRs as well as 450 protocols or amendments overseen by 28 different international organizations. For the purposes of this index, 40 core MTRs were selected, and each was rated with a score depending on its importance and relevance to trade. The 40 core instruments belong to seven categories (contracts, customs, dispute resolution, governance, intellectual property, investment, and air transport). Each category is given an equal weight in the calculation of the index. Selection of the core instruments is based on their importance and relevance to trade and their universality. The importance and relevance to trade of an instrument is determined by taking into account several criteria including: the impact of its provisions on international trade (reduction of transactional costs, trade facilitation, harmonization, transparency, predictability, creation of a business-friendly business climate, support of private-sector activities, and encouragement of foreign direct investment), the opinion of international legal experts, and the views of the international bodies administering these instruments. Universality means that the selected MTRs can potentially be applied by all countries, notwithstanding their geographical position or economic level. For example, maritime transport conventions, however important, were not taken into account because of their weak relevance for landlocked countries; treaties dealing with securities and insider trading were not included because they do not represent a priority in countries that have not developed sophisticated financial markets. Accession to the World Trade Organization (WTO) Agreements is not taken into account in this index because WTO accession does not depend exclusively on the will of a non-member state to join the WTO.
Source: International Trade Centre, based on data from the Trade Treaties map–LegaCarta database

8.08 Availability of trade finance
In your country, how easy is it to obtain trade finance at affordable cost (trade credit insurance and trade credit such as letters of credit, bank acceptances, advanced payments, open account arrangements) [1 = common; 7 = never occurs] | 2010, 2011

Pillar 9: Physical security

9.01 Reliability of police services
To what extent can police services be relied upon to enforce law and order in your country? [1 = cannot be relied upon at all; 7 = can always be relied upon] | 2010, 2011

9.02 Business costs of crime and violence
Does the incidence of crime and violence impose costs on businesses in your country? [1 = significant costs; 7 = no costs] | 2010, 2011

9.03 Business costs of terrorism
Does the threat of terrorism impose costs on businesses in your country? [1 = significant costs; 7 = no costs] | 2010, 2011
As seen in the previous chapters of this Report, Africa suffers from a pronounced infrastructure deficit. Compared with countries in other regions, African countries have a low stock of infrastructure, particularly in energy and transportation, and the potential for information and communication technologies (ICTs) has not been fully harnessed. Coupled with burdensome trade regulations (as noted in Chapter 2.1), these deficiencies have constrained gains in domestic productivity and present a critical bottleneck to more regional integration.

Against this backdrop, this chapter examines the link between infrastructure development and competitiveness in Africa in greater detail. This connection is analyzed while remembering that competitiveness is determined by a number of interrelated factors, policies, and institutional capabilities, as well as the initial conditions as discussed in Chapter 1.1. This chapter focuses on energy, transportation, and ICTs. It examines the state of infrastructure in these sectors and the challenges to infrastructure development in Africa, including its regulatory environment. It also analyzes the impact of infrastructure development on Africa’s competitiveness and provides the way forward. The chapter draws on 16 country studies undertaken by the African Development Bank (AfDB), the results of which inform the analysis, conclusions, and recommendations presented here.

Inadequate infrastructure has raised the transaction costs of business in most African economies. Today African countries exhibit the lowest levels of productivity of all low-income countries and are among the least competitive economies in the world (see Chapter 1.1). Inadequate infrastructure has been estimated to shave off at least 2 percent of Africa’s annual growth. With adequate infrastructure, African firms could achieve productivity gains of up to 40 percent.2

Infrastructure that is sufficient and works properly is crucial for Africa’s economic integration. African economies can begin the process of deep integration if their infrastructure networks are designed in such a way as to link production centers and distribution hubs across the continent, as the networks of developed economies do. Such infrastructure will enable Africa to compete effectively, tap into regional markets, and
benefit from globalization through investment and trade. To achieve this calls for the construction of an efficient and secure national and cross-border physical infrastructure as well as a coherent system of regulation for business transactions.  

Infrastructure is also critical for the promotion of inclusive and sustainable growth. Rural infrastructure—notably feeder roads and transmission lines that connect rural communities to national grids—enable individuals, households, communities, and small businesses to embark on income-generating activities thanks to improved access to electricity and links to markets. The use of renewable energy or environment-friendly sources of energy—including solar, wind, geothermal, and hydropower, with all of which Africa is well endowed—would contribute to making growth sustainable.  

A considerable investment in infrastructure that uses innovative sources of funding is needed to address Africa’s low level of competitiveness (see Chapter 1.1). Indeed, the Programme for Infrastructure Development in Africa (PIDA) estimates that Africa will need to invest up to US$93 billion annually until 2020 for both capital investment and maintenance. Given the substantial amounts involved, governments will need to be innovative in the search for sustainable approaches to infrastructure development as well as financing. The private sector will need to play an increasingly important role. Governments will do well to create conditions where private-sector engagement is encouraged, probably through public-private partnerships (PPPs). Efficiency gains from performance improvements in infrastructure provision are themselves a significant source of finance, and the development of infrastructure bonds as a financing vehicle will need to be encouraged.  

Adequate maintenance plans are prerequisites for sustainable infrastructure. Maintenance is not only corrective but also preventative because it inspects assets and reduces the risk of failure. Costs associated with statutory maintenance can be substantial—even considerably larger than the value of the asset—yet providing for these maintenance costs is crucial. Without adequate maintenance, infrastructure deteriorates quickly and is unsustainable.  

Indeed, the longer-term performance of the ICT sector should be reviewed in light of the adequacy of maintenance plans. Thus far, ICT sector performance has been good, albeit from a low base. It is noteworthy, however, that although ICT infrastructure is relatively new, it could rapidly become obsolete and downgraded if maintenance plans are not in place and implemented. It is therefore critically important to make adequate provisions to ensure maintenance is undertaken in a timely manner, thereby making gains from ICTs sustainable.  

The rest of this chapter will elaborate on issues of African infrastructure and competitiveness, focusing on the energy, transportation, and ICT sectors. The next section considers the impact of infrastructure on country competitiveness; the following section focuses on the state of Africa’s infrastructure and the challenges this presents, and on its regulatory environment in these three sectors. The final section provides the conclusion and way forward.

THE IMPACT OF INFRASTRUCTURE DEVELOPMENT ON AFRICA’S COMPETITIVENESS

Well-developed energy, transportation, and communication infrastructure networks are a prerequisite for linking less-developed communities to markets in a sustainable way. Effective modes of transport—including quality roads, railroads, air transport, and ports—enable entrepreneurs to get their goods and services to markets in a secure and timely manner, facilitate the movement of workers to the workplace, and encourage foreign direct investment. Economies also depend on electricity supplies that are free from interruptions and shortages so that businesses and factories can work unimpeded. In addition, a solid and extensive telecommunication network allows for a rapid and free flow of information, which increases overall economic efficiency by ensuring that businesses can communicate and make timely decisions, taking into account all available relevant information.

Infrastructure, competitiveness, and the cost of doing business

Empirical research has shown that there is a positive relationship between infrastructure investment and economic growth. Several researchers demonstrate the beneficial impact of infrastructure investments on growth in African economies; this occurs because solid infrastructure accelerates annual growth convergence rates by as much as 13 percent and also increases per capita annual growth by almost 1 percent. In fact, some of this work argues that the strongest impact comes from telecommunications, followed by roads and electricity. For example, it has been estimated that investing an additional 1 percent of gross domestic product (GDP) in transportation and communications on a sustained basis increases the GDP per capita growth rate by 0.6 percent.  

Productivity growth—and thus increasing competitiveness—is higher in countries with an adequate supply of infrastructure services. Infrastructure therefore plays a critical role in enhancing a country’s competitiveness and in easing the cost of doing business, as discussed in Chapter 1.1. The flipside of this relationship is that, in countries with inadequate infrastructure, firms are burdened with high costs as they try to provide infrastructure themselves, suffer potentially huge inefficiencies, or are simply unable to conduct activities for which infrastructure services are a prerequisite. The beneficial effects of infrastructure on competitiveness are captured in Box 1.
Box 1: Infrastructure development indicators and competitiveness, selected countries (2012–13)

Infrastructure, through improved connectivity, changes the incentive structure and impacts market prices, thereby improving consumer welfare and reducing the cost of doing business. It is well documented in the literature that infrastructure development reduces the asymmetry of information and agricultural market efficiencies in Africa. Improved access to price information through better transport or ICT networks reduces marketing costs, improves farm-gate prices and lessens their volatility, and enhances productive efficiency.1

This box illustrates the reciprocal relationship that competitiveness in countries has with infrastructure. Overall infrastructure scores were obtained by averaging the scores of the two subpillars of the infrastructure pillar of the Global Competitiveness Index (GCI): Transport infrastructure (encompassing the quality of overall infrastructure, the quality of roads, the quality of railroad infrastructure, the quality of port infrastructure, the quality of air transport infrastructure and the available airline seat kilometers) and Electricity and telephony infrastructure (encompassing the quality of electricity supply, mobile telephone subscriptions and fixed telephone lines). The scores range from 1 to 7, with 7 being the best outcome. As shown in Figures A1 and A2, weak general

Figure A1: Cost to export

Figure A2: Cost to import

Notes: GCI = Global Competitiveness Index. Country labels are as follows: DZA (Algeria), BRA (Brazil), BFA (Burkina Faso), CMR (Cameroon), TCD (Chad), EGY (Egypt), ETH (Ethiopia), DEU (Germany), GHA (Ghana), HKG (Honk Kong SAR), IND (India), KEN (Kenya), MAR (Morocco), MOZ (Mozambique), NGA (Nigeria), SEN (Senegal), ZAF (South Africa), Tanzania (TZA), Uganda (UGA), USA (United States), and ZMB (Zambia).
Box 1: Infrastructure development indicators and competitiveness, selected countries (2012–13) (cont’d)

Infrastructure impedes trade because it results in increased costs. Countries with better infrastructure tend to have more efficient customs procedures (Figure B1). Access to energy is substantially improved in countries with a higher quality of electricity supply (Figure B2).

Figure B1: Impact of customs procedures

Figure B2: Impact of access to electricity


Notes: The burden of customs procedures measures business executives’ perceptions of their country’s efficiency of customs procedures, and is computed using answers to the following question: “How would you rate the level of efficiency of customs procedures (related to the entry and exit of merchandise) in your country? [1 = extremely inefficient; 7 = extremely efficient].”

GCI = Global Competitiveness Index. For country labels, see the notes to Figures A1 and A2.

(Cont’d)
The availability of the latest technologies has a positive impact on both the use of mobile cellular phones and on Internet use in developing countries (Figures C1 and C2).

**Figure C1: Impact of the latest technology: Access to mobile phones**

![Figure C1](image1)

**Figure C2: Impact of the latest technology: Access to the Internet**

![Figure C2](image2)

**Sources:** World Economic Forum’s Executive Opinion Survey 2011–2012 weighted average; ITU 2012.

**Notes:** Availability of latest technology is assessed through a score (positively ranged) that is computed from answers to the Executive Opinion Survey question “To what extent are the latest technologies available in your country? [1 = not available; 7 = widely available].”

GCI = Global Competitiveness Index. For country labels, see the notes to Figures A1 and A2.

**Sources:** Adapted from the World Economic Forum data platform (http://www.weforum.org) and World Development Indicators online statistics (http://databank.worldbank.org).

**Note**

1. Aker, 2008; Aker and Mbiti, 2010; Muto and Yamano, 2009.
The energy sector
Infrastructure constraints, particularly in transport and energy, are a significant productivity handicap that undermines competitiveness. In East African countries, such as Kenya, infrastructure shortcomings—mainly in energy and transport—are estimated to account for about 30 percent of the productivity handicap faced by Kenyan firms, which are burdened with high costs as they attempt to provide the missing infrastructure or have to forego the activities that require infrastructure. In Central African countries, such as Cameroon, infrastructure constraints account for about 42 percent of the productivity gap faced by firms.

The transportation sector
Reliable transport infrastructure, in all of its four subsectors—roads, railways, air transport, and ports—is an essential component of all countries’ competitiveness. It is particularly crucial for landlocked countries, for which it is a prerequisite to opening up production zones. Reliable transport must be in place for companies to import and export goods, to fill orders, and to obtain supplies. For example, 78 percent of Burkina Faso’s trade is carried by four main roads and rail corridors linking the country to the gateway ports in Benin, Côte d’Ivoire, Ghana, and Togo. Eighty percent of the economic activity in Senegal is concentrated in Dakar. And in South and East Africa, port congestion and shipment delays undermine the ability to acquire imported production inputs, with resulting production losses and higher production costs.

Improvements in infrastructure therefore have the potential to open up production zones and facilitate product delivery while reducing their costs. The lack of a good road network linking the Casamance region to the other economic zones is hampering the region’s enormous agricultural and horticultural production potential. Accordingly, Senegal has embarked on an ambitious program of infrastructure development to foster competitiveness. The program includes the current flagship road infrastructure project, which involves the construction of a 32-kilometer toll highway that will link Dakar to Diamnadio in the western part of the country. This road is part of the Dakar–N’namé–Djibouti corridor, and will serve the Blaise Diagne International Airport, currently under construction.

The list that follows looks at each of the subsectors of transportation in more detail:

- Roads: Infrastructure, particularly roads, facilitates the entry of new firms into the formal sector. Recent research shows a positive correlation between better road infrastructure and the number and size of startups. Firm-level evidence suggests that more companies offering the same product in one location leads to lower prices and higher productivity. Good roads increase both the number of new firms entering a given location and the geographic size of the relevant market. An assessment of the impact of the new rural road from Daleti to Oda Bilingulu in Ethiopia showed how incentives for farmers changed and resulted in a sixfold increase in the production of sesame over

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Box 2: Planned infrastructure projects and expenditures in selected African countries

- **Kenya**: Under Vision 2030 priorities, infrastructure sector financial requirements are estimated to rise from 398.2 billion Kenya shillings (KES) in 2012/13 to KES 486 billion in 2014/15. The government has prioritized the development of high-quality energy and ICT infrastructure, and established the National Construction Authority in 2012 to enhance the efficiency and effectiveness of government service delivery.

  Projects include the construction of over 600 kilometers of roads, the expansion of two international airports, the development and expansion of Mombasa Port, the construction of the new Lamu Port, and new railway lines. Energy projects emphasize renewable energy to increase generation capacity and access to energy. The ICT projects will include the development of Konza Techno City, which is expected to contribute 2.8 percent of GDP through ICT projects. They also include the creation of 30 ICT centers, called digital village projects or PASHA centers.

- **South Africa**: Infrastructure plans are estimated at 3.2 trillion South African rand (R), of which about a quarter are being financed and implemented; the remaining three-quarters are under assessment. Sixty percent of funding for infrastructure is allocated to electricity projects, and the cost of providing energy and transportation for these planned electricity projects is 18 percent of the development costs.

- **Tanzania**: The 2012/13 budget for infrastructure includes (1) 498.9 billion Tanzania shillings (T Sh) for electricity; (2) T Sh 1,382.9 billion for transportation, and (3) T Sh 4 billion for ICTs. Moreover, the government will implement the construction of a gas pipeline from Mtwaras to Dar es Salaam with a Chinese loan of US$1,225.3 million.

- **Zambia**: The 2013 Zambian budget prioritizes roads, rail, and power generation. The government is making efforts to enhance domestic resource mobilization and create the fiscal space needed to support investment in infrastructure and human capital development, and to improve public service delivery. Domestic revenue is expected to increase from 19.0 percent of GDP in 2012 to 20.1 percent by 2015. Zambia has also issued a US$750 million Eurobond to raise development finance at one of the lowest prices for a debut issue in sub-Saharan Africa. The funds will be used for energy infrastructure (US$255 million, or 34.0 percent) and road and rail transport infrastructure (US$430 million, or 57.3 percent).

Source: AfDB, forthcoming.
the 2003/04 to 2007/08 period.17

• Rail transport: Inefficiencies and an inadequate railroad network contribute to high costs of doing business in the continent. This area is being addressed by several African countries. For instance, Zambia’s focus is to improve the operational efficiency of the Zambia Railways and the TAZARA Railway (which connects Dar es Salaam in Tanzania with Kapiri Mposhi in Zambia), and promote new railway developments using the PPP framework. The government also intends to extend the Zambia Railways network to the Botswana Railways network via the planned Kazungula Bridge, which will facilitate the flow of goods and labor. In South Africa, problems with rail transport have resulted in an overuse of road transport. As a result, the World Bank’s Doing Business Database indicates a drop in the country’s overall ranking from 35 to 39 between 2008 and 2013.18

• Air transport: The importance of air transport, particularly for landlocked countries, cannot be overemphasized. It is imperative that countries enhance this sector’s development to improve connectivity and safety and to reduce costs in order to promote intra-African and global trade. Air transport has to be enhanced not only by the amount and quality of physical infrastructure but also, even more importantly, by the way it is operated with regard to air-traffic control and ground-air communications, which are inadequate in much of the region and need to be boosted.19

• Ports: Enhancing port infrastructure substantially reduces the cost of production for enterprises. Accordingly, in West Africa, for instance, as a result of the recent Dakar Port Container Development Project, Senegal has been able to expand its exposure to international markets. Indeed, recent statistics indicate that the volume of the port traffic has increased by 13.37 percent over the period 2007–11. The average waiting time for ships is estimated to have dropped from 15 hours to 2 hours, and for trucks from several hours to less than 30 minutes, significantly reducing the cost of production for enterprises.20 The port enhancement project will increase berth capacity by 50 percent and vessel productivity from 20 moves per hour to 61 moves per hour. Moreover, the port will operate the terminal continuously, on a 24-hour-a-day basis. Costs have also been reduced by improving “soft” port infrastructures because the country has implemented an electronic customs clearance system and liberalized the container shipping market.21

The ICT sector
Development of an adequate-quality ICT infrastructure network will enhance productivity, reduce communication costs, and promote financial inclusion and regional integration. To this end, AfDB-supported projects such as the Eastern Africa Submarine System (EASSy) cable project (a submarine system of fiber-optic cables connecting Africa to the rest of the world) and the Central African Backbone Program (a system of fiber-optic cables linking African countries to each other) are meant to enhance quality and reduce communication prices in mobile backhaul and mobile telephony. Such projects facilitate regional integration and improve outreach to peri-urban and rural areas. An assessment of the impact of EASSy, for example, suggests a reduction of wholesale bandwidth prices by at least 60 percent in Tanzania and up to 90 percent in Kenya; an increase of 150 percent to 200 percent in international bandwidth utilization within less than six months of submarine cable availability in these countries, including penetration in rural and un-served areas; and high mobile phone penetration rates, which have also improved access to banking services for the unbanked, as evidenced by the deployment of the mobile payment system M-PESA in Kenya (see Box 7). The projects may also contribute to the use of ICT applications such as e-government, e-education, and e-health.

Improving infrastructure development and competitiveness: Evidence from selected African countries
To address the infrastructure gap, governments—in collaboration with the private sector and development partners—have put in place policy reforms, programs, projects, and the necessary financial resources to improve on the quantity and quality of infrastructure (see Box 2). This section highlights a few ongoing and planned infrastructure projects and committed resources in selected African countries. It is expected that the combination of these efforts will contribute to improving countries’ productivity and hence their competitiveness in the coming years.

Regional infrastructure development: Lessons learned
In the transportation sector, the AfDB emphasizes the expansion of regional corridors, trunk and rural roads, railways, and urban programs that support or open up economic hubs. In the energy sector, the AfDB focuses on energy efficiency, clean and renewable energy, and the support of regional power pools. In the ICT sector, priority is given to broadband and backbone infrastructure that connect countries to one another and to the rest of the world (see Appendix A for some of the projects in which the AfDB is involved). The AfDB also finances infrastructure development geared toward promoting competitiveness in African countries through regional integration. The lessons learned from the
implementation of these regional integration projects are highlighted in Box 3.

The importance of collaboration
In May 2012, in line with ongoing efforts to enhance infrastructure development, Africa's development partners—including the AfDB and the World Economic Forum—formed a Business Working Group (BWG) that draws on partners from multilateral and regional development banks. The aim is to accelerate Africa’s infrastructure delivery through private-sector involvement with an emphasis on regional integration projects (see Box 4). This approach was endorsed by the African Union in January 2013. The 20th Ordinary Session of the Assembly of the African Union restated the need for active collaboration among the African Union Commission, the New Partnership for Africa’s Development (NEPAD) Planning and Coordinating Agency (NPCA), and the AfDB, in conjunction with the World Economic Forum, in revamping the NEPAD Infrastructure Project Preparation Facility through domestic funding and concerted efforts to increase private-sector involvement in infrastructure development. The implementation of BWG projects will bring in much-needed private-sector infrastructure development finance as well as contribute to improving the productivity and competitiveness of African economies.

AFRICA’S INFRASTRUCTURE AND REGULATORY ENVIRONMENT: CURRENT STATE AND CHALLENGES
Africa has a considerable infrastructure deficit: it lags behind other developing regions, particularly in the area of energy and transportation but also in ICTs. According to the World Bank Enterprises Survey, 26.9 percent of sub-Saharan enterprises identified transportation and 49.2 percent identified electricity as major constraints for their business in 2009. In fact, only 30 percent of the population is estimated to have access to electricity in Africa, compared with 70 percent to 90 percent in other developing regions. Furthermore, road access in Africa is limited to about 34 percent of the population, compared with 50 percent in other parts of the developing world. Although considerable progress has been made in ICTs, as evidenced by the tremendous increase in mobile telephone connections over the last 10 years, Africa started from a low base and its Internet penetration rate is only about 6 percent, compared with an average of 40 percent elsewhere in the developing world. Moreover, as shown in Chapter 1, results from the World Economic Forum’s Executive Opinion Survey for 2012–2013 point to substantial gaps that remain in technological readiness (pillar 9).

Nonetheless, the state of infrastructure development varies between and within regions and countries.
Box 4: AfDB–World Economic Forum partnership: The African Strategic Infrastructure Initiative as a platform for private-sector involvement

The Business Working Group (BWG)—a multi-stakeholder group currently composed of 35 companies and organizations—was conceived in 2012 as a way of getting international and African business leaders involved in accelerating the delivery of Africa’s infrastructure by “accelerating the implementation of the PIDA (Program for Infrastructure Development in Africa) Priority Action Plan’ programs and projects.” PIDA—which was developed by the African Union Commission (AUC) in partnership with the United Nations Economic Commission for Africa (UNECA), the African Development Bank (AfDB), and the NEPAD Planning and Coordinating Agency (NPCA)—provides a strategic long-term framework to enable African stakeholders to build the infrastructure necessary to boost trade, spark growth, and create jobs. The private-sector role in Africa’s infrastructure is critical. This partnership was endorsed by African heads of state, who recognize that effective public-private partnerships (PPPs) in the delivery of Africa’s infrastructure are part of the key to unlocking Africa’s huge economic and development potential.

In this context, the BWG has defined a methodology for identifying programs that could be accelerated based on criteria that the private sector considers to comprise minimum requirements for them to become involved in Africa’s infrastructure projects, including PIDA. These BWG criteria focus on the project’s attractiveness and bankability, its technical feasibility, and its potential economic impact from the private-sector perspective (see Figure A). In particular,

Figure A: BWG methodology for identifying infrastructure programs to be accelerated

As a next step, the public-sector support and private-sector interest for each program will be confirmed at several regional roundtables to be held during 2013 and at the World Economic Forum on Africa in May 2013 in Cape Town, which will include a major pillar on Boosting Strategic Infrastructure.

The BWG also enables the public sector to benefit from objective, transparent, and informed input from the private sector on the key issues impacting on Africa’s infrastructure delivery. If properly addressed through results-driven dialogue, this could create immense opportunities for private-sector participation in driving infrastructure in Africa.

Source: AfDB: NEPAD, Regional Integration and Trade Department, 2012; World Economic Forum: African Strategic Infrastructure Initiative, 2013, forthcoming.
Box 5: Infrastructure in selected African countries, 2000–10

Considering the infrastructure development by region, as the figures in this box show, North African countries have, on average, better infrastructure than sub-Saharan African economies, with the exception of South Africa. This can be seen with regard to electricity generation and telephone subscribers and also, to a large extent, paved roads. These figures also illustrate the varied level of infrastructure development across and within the regions. In fact, within sub-Saharan Africa, West Africa appears to have the strongest infrastructure, while Central Africa appears to have the weakest. Within West Africa, however, the infrastructure development of countries such as Burkina Faso still trails that of others. Even within countries, infrastructure development is highly uneven, with the urban areas benefiting considerably more than the rural areas.

African countries generally exhibit unimpressive progress in electricity generation, with South Africa outperforming the rest and Central African countries lagging even further behind (Figure A). However, telephone subscriptions in North Africa in the last decade have seen phenomenal growth, and West African countries are performing better than other sub-Saharan African countries in that area (Figure B).

Relatively stagnating performances have been typical in road infrastructure improvement in most sub-Saharan African countries, which are clearly outperformed by North African countries (Figure C).

Chapter 1.1 shows that all African countries improved their Global Competitiveness Index scores at varying rates from 2006 to 2012. However, Box 5 indicates that the picture varies according to indicators and countries. In general, progress has been very slow or even negative regarding electricity generation and roads paved, while improvement in telephone subscriptions has been fast and impressive during the last decade.

Landlocked countries in Africa face particular challenges arising from the lack of multimodal infrastructure. The continent’s 15 landlocked countries are constrained in getting their goods to markets and in importing goods because of the lack of multimodal infrastructure that can accommodate their particular requirements. The role of a network of infrastructure linking producers to markets through a connected platform including feeder roads, national roads, airports, and ports in connecting markets, particularly in landlocked countries, cannot be overemphasized.
Figure B: Mobile and fixed line telephone subscribers

Figure C: Paved roads

Note
1 South Africa performs better than North Africa, notably in terms of electricity generation per capita and telephone subscribers in percentage of the population (see Figures A and B).
Energy

Africa faces a huge energy deficit: the 48 countries of sub-Saharan Africa, with a combined population of 800 million, are estimated to generate roughly the same power output as Spain, a country of 45 million.26 This energy deficit is the result of the region’s limited generation capacity—the result, in turn, of a lack of long-term financing to cater for the sector’s needs. The lack of large-scale investment is a consequence of the limited participation of private players and the difficulties in mobilizing long-term financing from African financial systems to fund big-ticket items such as infrastructure.

Furthermore, electrification is weak and largely uneven, and tariffs make it unaffordable for the poor. The household electrification rate is 42.7 percent, on average, for Africa, and 28.3 percent for low-income African countries. North African countries, with electrification rates of 94 percent in 2009, fare better than sub-Saharan African economies, with rates of 32 percent.27 Within sub-Saharan Africa, the rate often falls to just 10 percent, on average, in rural areas. For example, in Ethiopia, electricity access is very good in urban areas (86 percent) but very limited in rural ones (2 percent). In Zambia, access to electricity is only 20 percent—less than half the African average, with much of that power going to the mining sector, crowding out domestic consumption. In Chad, access is less than 3 percent, with the capital city of N’djamena accounting for 80 percent of the total electricity consumption in the entire country. In Kenya, 31 percent of households have access to electricity in the best-served province, five times more than the least-connected province at 6 percent. Although Africa’s power tariffs vary widely, they are all largely unaffordable for the poor, thus limiting access or connectivity for the poor in both urban and rural areas.

System losses compound the energy deficit in Africa. On average, electric power transmission and distribution losses in Africa were estimated at 12 percent of output in 2010, equivalent to the average losses in other low-income developing countries.28 This estimate largely masks differences across Africa. This problem seems especially pronounced in Central Africa, particularly the Democratic Republic of Congo, where the losses were estimated at 83 percent in 2010. In Southern Africa, the losses were lower but still high, at 56 percent in Botswana and 25 percent in Namibia. In East, West, and North Africa, system losses have in general declined, although they remained high at the end of 2011: 26 percent in Uganda, 24 percent in Ghana, 21 percent in Tanzania, 20 percent in Algeria (2010), and 18 percent in Senegal.

Energy sector infrastructure

In addition, aging infrastructure and rising demand have led to intermittent blackouts across all regions of Africa, undermining competitiveness. The blackouts largely started in the 1990s in East and West Africa, in 2007 in South Africa, and later (2010) in North Africa, notably in Egypt. Although these blackouts are declining, they continue to cause considerable production disruptions and losses that damage competitiveness in both low- and middle-income African economies.

Consequently, there is a critical need for innovative investments in the energy sector, including investment from domestically mobilized resources. However, the attractiveness of this investment is undermined by non-cost reflective tariffs as well as subsidies that distort relative prices and profitability. Energy facilities across Africa are in urgent need of new and innovative sources of investment, particularly for generation, transmission lines, and distribution. This much-needed investment is held back because across Africa—especially sub-Saharan Africa—even though tariffs are very high, they do not reflect actual cost because they account for only about 50 percent of the historical production costs (about 44 percent in Zambia, Niger, and Nigeria and 52 percent in Tanzania).29 In addition, in North African countries, such as Egypt, indirect subsidies from the government also undermine investment in energy. In Mozambique, the single-buyer model (a government monopoly) currently in place utilizes unattractive fixed electricity tariffs that have been unchanged since 1997, discouraging investment in the sector.

Even beyond the much-needed physical investment, there is an urgent need to invest in the diversification of the energy mix so as to make the infrastructure sustainable. In East and Southern Africa, overreliance on hydropower energy makes the economies vulnerable to hydrological conditions. The major drought in the mid-2000s caused substantial economic losses—as high as 4 percent of GDP in Tanzania—and increased the demand for expensive emergency diesel power generation. In Northern and Western African countries, the energy mix depends largely on gas and oil reserves (thermal energy), which is more reliable than hydropower but more costly. Box 6 presents a snapshot of the AfDB’s green energy initiatives.

At the regional level, urgent attention should be given to the development of regional energy infrastructure to achieve economies of scale. In the power sector, only Southern Africa has made the transition to a competitive regional power market. Only a few major investments have been made in regional energy infrastructure on the continent; these include the Ethiopia–Djibouti and Ethiopia–Kenya connections, as well as the 300 kilovolt (kV) Nigeria–Benin coastal transmission backbone. Other planned regional initiatives include the North–South power transmission corridor of 8,000 kilometers covering 11 countries from Egypt to South Africa, and the North Africa transmission line that will run from Morocco to Egypt. The NELSAP project, funded by the AfDB together with other donors, is another major regional initiative that interconnects the electric grids of the Nile Equatorial Lakes countries.
of Burundi, Kenya, the Democratic Republic of Congo, Rwanda, and Uganda. Indeed, developing additional cross-border power pools will help countries achieve economies of scale and provide significant savings. For example, plans to extend the Inga hydropower site could lead to a large expansion in low-cost hydropower for the Democratic Republic of Congo, resulting in energy available for export to countries such as Zambia. Adopting a regional approach could save Zambia US$160 million annually. Tanzania also has the potential to play a significant role in regional power trade within the framework of both the East African Power Pool and the Southern Africa Power Pool.

Energy sector regulatory challenges

At the national level, legislation is generally adequate to regulate the industry in countries that have electricity regulators, but its enforcement should be strengthened and the roles of energy administrators clarified. This will serve to support the principles of regulatory independence. For example, Kapika and Ebehard state that, in Zambia, although the Energy Regulation Board determines all retail electricity tariffs and has the authority to carry out general administrative functions, the principles of regulatory independence for the regulator are undermined by its lack of final authority in decision making. In several other countries, such as Senegal, the duplication of efforts with several agencies and institutions involved in the administration of energy issues should be addressed. The administration should be streamlined and the involvement of different stakeholders clarified.

Moreover, the mandate for planning has to be clarified within the sector, particularly in hybrid power markets, to coordinate the planning and procurement functions. Kapika and Ebehard argue that planning is crucial for ensuring orderly market entry and the adequacy and reliability of power supplies. In hybrid power markets such as Zambia’s, where there is a dominant, vertically integrated state-owned utility and also private companies that operate on the margins of the sector, the planning issue can easily become hazy. Those responsible for planning should work closely with those responsible for procurement processes, so that the planning of new capacity is coordinated with the initiation of new bids.

In addition, the renewable energy potential has not been fully harnessed in Africa because of high installation costs as well as gaps in renewable energy policies, strategies, and regulatory mechanisms. Indeed, renewable energy represents an interesting alternative that could potentially help reduce the cost of access to energy for enterprises, though the installation and operating costs of some renewable energy–based power plants are still high because the related technologies are not fully mastered in most of the countries. Not only have these technical considerations been impeding the development of the sector, but renewable energy policies, strategies, and regulatory gaps also hamper investments. Although increasing investments is key for closing the energy infrastructure gap, very few countries in Africa have managed to implement appropriate public policies and regulatory mechanisms that provide investors with predictable tariffs, secured off-take agreements, access to national grids, and business-easing measures. In some countries, such as Burkina Faso, the regulatory framework for renewable energy resources is simply nonexistent, keeping potential investors’ risk perception of the sector relatively high.

At the regional level, it is imperative that planning for regional infrastructure projects be coupled with the requisite regional legal and regulatory framework. For example, in the power sector, regional power pools need to harmonize with national power regulations and

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**Box 6: Green energy and the AfDB’s initiatives**

Africa’s huge gaps in conventional energy infrastructure make it well placed to pursue low-carbon solutions. Africa has more than half of the world’s renewable energy potential: its wind, geothermal, and hydropower potential has barely been tapped. For example, the Grand Inga Dam in the Democratic Republic of Congo has the potential to produce 100,000 megawatts (MW) of electricity, but currently yields a mere 650 MW to 750 MW. The potential to generate 7,000 MW of geothermal electric power exists in the Great Rift Valley in Eastern Africa. However, to date, only 130 MW has been exploited in Kenya and less than 8 MW in Ethiopia because of high upfront engineering costs and lack of local expertise. Regarding solar energy, many countries have favorable daily radiation levels. Some encouraging initiatives to extend access to lower-income households and public institutions are under way in several countries, including Morocco, Tunisia, Mauritius, Seychelles, and South Africa. For wind energy, countries with good potential include Cape Verde, Eritrea, Kenya, Madagascar, Mauritania, Morocco, South Africa, and Tunisia. In fact, the Cabeolica wind farm in Cape Verde, a project that received debt financing from the African Development Bank (AfDB), won the African renewable energy project of the year award in 2011.

The AfDB has recognized the green energy potential on the continent and has taken the lead with US$57 million in establishing a fund, with some other contributors, for renewable energy projects across the continent. Accordingly, it has developed energy policy with two priority areas: ensuring access to modern energy and fostering clean energy investments. Going forward, its pipeline embraces several green energy projects, including support to a 2,000 MW solar-thermal power project to export energy from Tunisia to Europe; the Turkana Wind Project (which has received US$870 million from the joint fund) in Kenya; and, in partnership with other donors, the Menengai Geothermal Plant, also in Kenya, to provide clean energy to 500,000 households.

**Sources:** AfDB: NEPAD Regional Integration and Trade Department, Regional Integration Strategy (RIS) for 2009–2012; http://en.wikipedia.org/wiki/Renewable_energy_in_Africa.
develop dispute resolution mechanisms, which to date has been slow.

Transportation
The ensuing discussion of the transportation sector considers the state of the infrastructure and the challenges confronting the road, rail, air, and port subsectors, as well as the regulatory framework of the entire transportation sector.

Africa’s prolonged underinvestment in transportation has resulted in a dilapidated transport infrastructure. Indeed, compared with other developing countries—excluding the provision for maintenance—African countries invested 15 percent to 25 percent of GDP in transport infrastructure over the period 2005–12, on average, while India and China invested about 32 percent and 42 percent of GDP, respectively, in the same period. This underinvestment has resulted in a decrepit infrastructure and considerably higher transport costs (by as much as 100 percent) in Africa than experienced by other low-income developing countries. This poses a fundamental constraint to Africa’s global competitiveness and economic growth.

Road infrastructure
Although roads are the predominant mode of transport for freight and passengers in Africa, major deficits exist in road infrastructure throughout the continent. A significant percentage of Africa’s road network is unpaved (52.8 percent in 2011), isolating people from basic education, health services, transport corridors, trade hubs, and economic opportunities. In Tanzania, more than 92 percent of the road network is unpaved and is therefore unusable during the rainy season. In South Africa, about 80 percent of the road network is unpaved and about 78 percent of the national road network is older than the 20 years for which it was originally designed.

Moreover, access to the road network is uneven, with rural areas largely underserved. This unequal access makes the flow of goods and services to and from rural areas difficult and expensive. The urban-rural disparity in the road network is a concern across all regions of Africa. In Ethiopia, only 10.5 percent of the rural population lives within two kilometers of an all-weather road. In Zambia, Tanzania, and Burkina Faso, the comparable figures are 17 percent, 24 percent, and

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**Figure 1: Africa’s main road corridors**

![Diagram of Africa's main road corridors](https://example.com/figure1.png)

*Source: ICA, 2009.*
2.2: Developing Africa’s Infrastructure for Enhanced Competitiveness

Poor road maintenance is prevalent across Africa. Recognizing that there are several sources of road funding, including loans and tolling, several African countries now have road funds supported by fuel levies; others have autonomous road agencies that contract out to specialist maintenance agencies. However, more needs to be done. Fuel levies are often too low and road funds and agencies do not meet international best-design criteria. For example, fuel levies vary considerably across countries, ranging from US$0.16 to US$0.30 per liter, with the latter considered the minimum for adequate road maintenance. Unofficial fees or bribes and delays contribute to low collection rates. In addition, toll roads operate in only a negligible portion of the region’s classified road network, and almost all of them are in South Africa.35

Further complicating the issue, roads do not last for their planned construction life span because the overloading of vehicles causes the roads to age prematurely, resulting in high maintenance costs. The road network in several African countries continues to suffer from very high overloading rates (e.g., in Uganda, overloading rates are close to 55 percent) as determined at some major static weigh-station locations, pointing to the need for more weigh stations to be constructed. A harmonized regional axle load control act—such as the East Africa Axle Load Control Act, which will soon be adopted—is also needed.

A high incidence of road fatalities, a consequence of the continent’s poor infrastructure, is prevalent in Africa, resulting in sizeable losses to the economy. The World Bank estimates that road crashes cost approximately 1 percent to 3 percent of a country’s annual GDP (US$100 billion every year in developing countries).36 For example, Uganda has one of the worst road safety records in sub-Saharan Africa, with an average rate of 45 fatalities per 10,000 vehicles. The country is estimated to lose about 2.7 percent of its GDP through losses of life and property. This is equivalent to the proportion of GDP spent on the road sector.

The underdevelopment of the road network has also resulted in severe traffic congestion in several African capitals, causing direct loss of time and productivity. Urban traffic congestion is common across the main

Figure 2: Railways in Africa

Source: AfDB, 2010.
2.2: Developing Africa’s Infrastructure for Enhanced Competitiveness

The Africa Competitiveness Report 2013

Cities of Africa. Indeed, traffic congestion is estimated to cause direct loss of time and productivity at an annual cost of roughly 4 percent of GDP (US$8 billion) in Cairo, US$19 billion in Lagos, US$0.89 billion in Dar es Salaam, and US$0.57 billion in Nairobi. Poor air quality and road accidents may actually double the direct cost of congestion.

The large number of landlocked countries in Africa (15) and those with a vast hinterland, such as the Botswana, the Democratic Republic of Congo, and Sudan, underlines the importance of the cross-border corridors. These transport corridors link markets—particularly important for landlocked countries—and enhance intra-African trade. The map in Figure 1 shows Africa’s main corridors. The Trans-Africa Highway (Cairo–Dakar) is the most ambitious road network on the continent: it comprises nine interlinked highways with a total length of 56,683 kilometers. Other planned or ongoing regional projects include the Abidjan–Ouagadougou–Bamako Transport corridor, connecting Côte d’Ivoire, Burkina Faso, and Mali. However, the effectiveness of the cross-border links is undermined by border inefficiencies, which are discussed in Chapter 2.1.

Road regulatory challenges

At the national level, several legal and legislative issues regarding roads need to be addressed. Legislation relating to axle overload is needed to tackle overloading on roads as well as the related costing/funding for road maintenance. In addition, in some countries (such as Uganda), although a PPP policy is in place, the relevant law has not yet been enacted. With the exception of a few countries (including Senegal and South Africa), toll roads are not yet completed. Going forward, however, several countries (including Uganda) are planning expressways, so it is imperative that, in addition to a tolling policy, a tolling law be enacted.

Rail infrastructure

Outdated infrastructure and limited maintenance have undermined the effectiveness of railways across Africa. The result has been a significant reduction in useable track. North Africa, particularly Egypt, boasts the oldest railway network in Africa, but it has had only a few upgrades since its inception. In West Africa, as evidenced by Senegal, the rail network has deteriorated substantially in recent years because of...
Table 1: Air travel cost per passenger, selected cities

<table>
<thead>
<tr>
<th>Origin</th>
<th>Destination</th>
<th>Distance (km)</th>
<th>Average cost (US$)</th>
<th>Average cost per 1,000 km (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johannesburg</td>
<td>Accra</td>
<td>4,670</td>
<td>1,000</td>
<td>214.13</td>
</tr>
<tr>
<td>Nairobi</td>
<td>Lagos</td>
<td>2,811</td>
<td>800</td>
<td>290.92</td>
</tr>
<tr>
<td>Accra</td>
<td>London</td>
<td>5,116</td>
<td>1,000</td>
<td>195.47</td>
</tr>
<tr>
<td>Dubai</td>
<td>Singapore</td>
<td>5,841</td>
<td>500</td>
<td>85.60</td>
</tr>
<tr>
<td>London</td>
<td>Moscow</td>
<td>2,498</td>
<td>400</td>
<td>160.13</td>
</tr>
<tr>
<td>Dubai</td>
<td>London</td>
<td>5,475</td>
<td>800</td>
<td>146.12</td>
</tr>
</tbody>
</table>

Sources: Travel websites Opodo.com, TripAdvisor.com, and expedia.com, and authors’ calculations.

administrative difficulties, locomotive breakdown, and lack of investment and maintenance. In Southern Africa, the Chinese-built Tanzania–Zambia railway has suffered from underinvestment for the past 30 years. Overall, the amount of usable track has declined across Africa between 2005 and 2011, dropping from 58,000 to 50,000 kilometers, underscoring the pressing need for rehabilitation and maintenance in the sector (Figure 2).39

Differences in rail gauges (which specify the spacing between the tracks in a railway) undermine the regional integration of rail networks. When rail improvements are undertaken, the need for a uniform rail gauge among countries cannot be overemphasized. This complication highlights the need for a regional approach; addressing it effectively will enable trains to cross boundaries. Indeed, the variation in the rail gauges is currently a serious constraint for rail network development, especially between East and Southern Africa.

Rail regulatory challenges
At the regional level, several legal and legislative issues regarding the harmonization of rail gauges in railroads across countries need to be addressed. Customs regulatory framework for the cross-border movement of goods and services will also need to be put in place to facilitate railroad transportation across Africa.

Air transport infrastructure
Air transport in Africa, while crucial, is expensive by international standards. By providing a quick link to export markets, air transport enables the trade of time-sensitive, perishable exports such as cut flowers, vegetables, fruits, meat, and fish, which are becoming increasingly important foreign-exchange earners for African countries. The International Airline Transport Association (IATA) reports that traveling by air is more costly in Africa than anywhere else. This is mainly because of lower passenger traffic, limited liberalization of air space, high passenger and airport taxes, safety issues, and limited infrastructure (airports, runways, and safety systems). Africa still records the lowest safety standards in air transport of any region in the world. Table 1 illustrates the high cost of travel in Africa.

African airlines have also lagged behind in terms of technological upgrades, notably surveillance equipment and fleet modernization. Although Africa boasts some strong airlines—including Royal Air Maroc, South African Airways, Kenya Airways, Egypt Air, and Ethiopian Airlines—the lack of modern air traffic surveillance technology poses critical challenges for the industry in several countries. For example, in Ethiopia, extra distance and time separation between aircraft are necessary to compensate for the lack of civilian radar. In terms of fleet modernization, Africa’s demand for new airplanes represents only 3 percent of the world demand and is concentrated in three or four companies.40

Progress in several countries is hampered by poor basic airport infrastructure and inadequate air connections. Although the continent boasts some world-class airports—such as the Johannesburg International Airport—in general, basic airport infrastructure is lacking in most airports across Africa. For example, because of poor airport infrastructure in Tanzania, safe, reliable, and comfortable air transport services are assured only during the dry season. In addition, there are insufficient air connections within Africa. Indeed, Eastern Africa and Southern African subregions are more connected than the West African subregion.41 The three major hubs in sub-Saharan Africa are Addis Ababa, Johannesburg, and Nairobi. Most international carriers fly from Southern Africa and Eastern Africa, which have more-established national and regional carriers than other regions.

Air transport regulatory challenges
Regulatory challenges in the air sector relate mainly to the liberalization of air space. Despite some countries having liberalized their airspace after the Yamoussoukro Declaration of 1988, several countries in Africa—such as Angola and the Democratic Republic of Congo—have not. This limits competition from foreign-owned airlines, resulting in higher prices for international air travel of both passengers and freight.

Port infrastructure
Many African ports have serious capacity problems that are accentuated by an ineffective inland transport system. Figure 3 is a map showing Africa’s major ports, which include Abidjan (Côte d’Ivoire), Dar es Salaam (Tanzania), Durban (South Africa), Mombasa (Kenya), Port Said (Egypt), and Tangier (Morocco). In North Africa, ports are more developed and have adequate container-handling equipment and faster turnaround times than
ports in sub-Saharan Africa. In East Africa, Dar es Salaam and Mombasa have reached their container-storage limits. New capacity needs to be introduced, not only in the ports themselves but also in downstream linkages, to ensure that cargo can be efficiently moved onto road and rail infrastructure. Similar constraints are evident in other regions of Africa, such as the ports of Lagos (Nigeria) and Tema (Ghana).

Inefficiencies at African ports lead to slow processing times and result in higher charges than those of comparators. Tariffs in South African ports tend toward the high end of the global spectrum, yet performance is well below international benchmarks. In East Africa, there are also significant cost differences within the region. For example, Mombasa charges considerably more than Dar es Salaam in East Africa, primarily because Mombasa’s volume of trade is considerably higher.

In the port subsector, although private-sector involvement has provided some additional financing, it has not achieved the same gains in Africa as it has elsewhere and volumes fall substantially short of requirements. However, the private sector has contributed significantly to improving operational performance, leading to the recovery of funds lost through inefficiency in a variety of areas. Nonetheless, the gains have been undermined by the limited clarity of the public sector’s objectives; the lack of close coordination among the different institutions involved (port institutions, customs, transport ministries, and labor unions); and the absence of other efficiency-enhancing factors, such as pro-competitive policies and arrangements in the sector.

Port regulatory challenges
In the port subsector, ensuring regulatory independence will be crucial to maximize gains from previous reforms. Evidence suggests that reform packages that include regulatory reform and independence of the regulator from government interference will allow other ongoing policy reforms a greater chance of success.

ICTs
The ensuing section considers developments in the ICT sector, notably in mobile telephony, Internet, and undersea and terrestrial cables. It begins with a discussion of the state and challenges of infrastructure in the ICT sector and then proceeds with a discussion of the regulatory framework.

ICT infrastructure
Africa has made progress in ICTs, particularly with regard to laying out the infrastructure using undersea cables and mobile technologies. Indeed, in 2011, 19 undersea cables connected Africa to the rest of the world—up from only 3 in 2005. As a consequence, cumulative capacity increased from 2,900 gigabytes to 102 terabytes over the period. Africa is leapfrogging fixed-line networks and moving directly to mobile technologies. The mobile telephony subsector has been the most vibrant of all, with the share of population receiving mobile signals increasing by a factor of 10 in five years.

Some African countries, such as Ghana and Nigeria, have gone further and are expanding into satellite communication technology. Investment in ICTs, unlike investment in the transport subsector, is largely private-sector driven. However, major differences in the levels of financing available exist between coastal and landlocked countries.

Nonetheless, access to the Internet is still low throughout the continent, and it is expensive and skewed in favor of urban areas. The penetration rate is much higher in North Africa (where 27 percent of the population have Internet access, on average) than in Southern Africa (13 percent), East Africa (12 percent), West Africa (9.5 percent), and Central Africa (4.5 percent). The situation in Central Africa is illustrated by Chad, where 80 percent of Internet users complain about the slow connection speeds and the very high cost of bandwidth, which ranges between US$1,600 and US$2,000 per month—astronomically higher than in Kenya, where it is US$100–US$150, and Burkina Faso, where it is about US$600. Across Africa, unequal access is particularly prevalent in rural areas, indicating the need for continuing public investment to create incentives to extend services to these areas.

One of the most outstanding innovations in the use of ICTs in Africa has been the mobile money sector. This has seen phenomenal growth in East Africa, primarily in Kenya. Box 7 presents the case of the successful M-PESA mobile-payments system in Kenya.

ICT regulatory challenges
Although the ICT subsector has been the most vibrant of the infrastructure subsectors, progress in some countries has been limited by government monopoly, which has resulted in excess costs and undermined the access to and quality of ICT services. Consequently, the price of broadband and international calls is excessive, and the absence of competition has a negative impact on both revenue and productivity of public and private firms, thus undermining investment. This is evident across all regions of Africa, including Ethiopia and South Africa.

The central challenge for those countries that have not liberalized their ICT sectors is to introduce competition through a modernized institutional and regulatory framework. These markets—such as Ethiopia—could potentially benefit from licensing additional mobile operators, which would accelerate the expansion of the global system for mobile communications (GSM) coverage to improve access. While Zambia’s GSM coverage is comparatively low by regional standards, simulations indicate that more than 95 percent of Zambia’s population could be reached by a GSM signal if measures were taken to dismantle behavior that is counter to competition. In addition, establishing a coherent policy framework that
is not weakened by policy reversals is crucial. Such a framework does not always exist. For example, in Zambia, progress in the ICT sector was undermined by the privatization and subsequent renationalization of the telecommunication and Internet provider Zamtel.

For the countries that have liberalized, there is an urgent need to improve private participation in the information technology backbone infrastructure. In several countries, including Uganda, because of its public nature, the backbone project is undertaken by the government. Nonetheless, the introduction of more competition on the backbone side, as advocated for in Zambia, will go a long way toward reducing prices and broadening access.

Reforms to address fragmentation and overlap of regulatory authorities and mandates are necessary to tackle current market challenges arising from the convergence of ICT technologies. Rapid technological advances in the sector, along with their convergence, underlie the need to create and operate in an open, dynamic, and responsive legal and regulatory framework that supports the development of ICTs. The situation is exemplified in Uganda, where there is considerable overlap between the National Information Technology Authority Uganda—which plays a dual role as an operator of the backbone infrastructure and the regulator in charge of government information infrastructure (including e-government and the government’s master plan)—and the Uganda Communications Commission, which regulates telecommunications, broadcasting, and postal services. Clearly, there is a strong case for regulatory convergence that would result in one regulator for the ICT sector that deals with the issuance of licenses as well as planning and managing ICT developments. A periodic review of the operations, provisions, and directives making up the legal and regulatory system is key for ICT sector reforms, including convergence in the industry.

While mobile money has seen phenomenal growth, the requisite regulatory guidelines and oversight have not kept in step. As mentioned in Box 7, in several regions of Africa, particularly in East Africa, mobile money has become increasingly important; annual transactions are estimated to be worth over US$8 billion in Kenya; monthly transactions were estimated at over US$200 million in Uganda in 2012. However, regulatory guidelines and clarity are needed to guide the mobile money industry. For example, establishing whether mobile money is considered to be an information technology service or a financial service will determine the requisite regulatory infrastructure.

**CONCLUSION AND THE WAY FORWARD**

This chapter has demonstrated that, although Africa has made some improvements in increasing its infrastructure stock in recent years, it remains underdeveloped relative to other emerging regions. Improved infrastructure will increase Africa’s competitiveness and productivity, lower the cost of doing business, and facilitate trade and foreign direct investment as well as deepen economic and social integration and create employment opportunities. We must address Africa’s infrastructure gap to further boost economic growth and foster integration, not only across the region, but also with the rest of the world. However, Africa needs colossal financial investments and support to close the region’s infrastructure gap and set itself on a par with the rest of the developing world.

African countries must therefore undertake infrastructure sector reforms and innovation to generate more resources for the sector, because traditional sources of finance will not be enough. A regional approach to infrastructure development is key, and interconnecting infrastructure across country boundaries is the best way to promote trade and regional integration, and thus connect markets in Africa. Possible reforms and innovative solutions are outlined below:

- **Energy sector:** Given its high unexploited potential in terms of wind, solar, and hydropower, Africa could easily satisfy its energy needs at no cost to the environment. Promoting green energy could leverage more funds from development partners and private players than investment in non-green energy. Furthermore, given the prevalence of non-cost reflective tariffs that undermine investments

**Box 7: The success of Safaricom’s M-PESA**

The mobile money sector in Kenya consists of M-PESA, Airtel Money, Essar yuCash, and Orange Money. M-PESA, a mobile payments system operated by Safaricom, was launched in March 2007. It was the first mobile money system to appear in Kenya and is now the most developed and successful mobile money payment system in the world. M-PESA allows people to transfer funds on a person-to-person basis, pay bills, purchase goods, and buy airtime. In addition, people can use M-PESA to remit funds from the United Kingdom to Kenya. Safaricom also launched M-KESHO in March 2010, which allows for the movement of funds to and from an interest-bearing account with Equity Bank. M-PESA had 15.2 million subscribers out of the more than 19 million mobile money subscribers in the country as of the end of October 2012, up from a mere 19,071 subscribers in 2007. M-PESA uses over 45,540 M-PESA agents across the country. The remaining three mobile money service providers have 9,000 agents, of whom 6,000 work for Airtel. Of the total estimated mobile transfers of US$10 billion in 2012, most (90 percent) are undertaken by Safaricom operating on the M-PESA money platform. It has four bank partners for deposits: Commercial Bank of Africa, Standard Chartered Kenya, CFC Stanbic, and Equity Bank Kenya.

Source: Ncube and Ondiege, 2012.
in several African countries, governments should commit to having cost-recovery tariffs that will, in turn, spur much-needed investment. A regional approach should be pursued, with urgent attention given to the development of regional energy infrastructure.

- **Transportation sector—Roads:** Feeder roads are of great importance for poverty reduction, especially in rural areas. Together with the development of corridors, rural roads provide economic opportunities and access to markets. Accordingly, emphasis should be given to developing rural roads so as to enhance access, and also upgrading urban roads, with a focus on those with cross-border connections. Making provisions for adequate maintenance (both corrective and preventative) for roads is vital, as this ensures sustainability. In addition, it will be essential to address the overloading of vehicles by means that include harmonized legislation in the form of regional axle load control acts. Furthermore, to stem the incidence of road fatalities that result in sizeable losses to the economy, road safety programs need to be enhanced and adequately funded.

- **Transportation sector—Railroads:** Outdated infrastructure and limited maintenance programs have resulted in a significant reduction in useable track and undermine the effectiveness of railways across Africa. Addressing these needs will both require further investments in the sector and ease pressure on African roads. A regional approach should be taken, with an emphasis on establishing uniform rail gauges to enable trains to cross country boundaries.

- **Transportation sector—Air transport:** The importance of air transport, particularly for landlocked countries, cannot be overemphasized. It is imperative that countries enhance this sector’s development to improve connectivity and safety and to reduce costs in order to promote intra-African and global trade.

- **Transportation sector—Ports:** Countries should put in place measures to address the serious port capacity problems that, coupled with an ineffective inland transport system, abound in Africa. They also need to deal with inefficiencies that slow processing times and result in higher charges than those of comparators. This calls for encouraging private involvement, which can also provide much-needed additional financing.

- **ICT sector:** Although the ICT sector has made impressive gains, such as the now well-known M-PESA mobile money payment system in Kenya, overall, the potential of ICTs— for example, to support e-government—has not been fully exploited. The need for more investment in backbone (fiber optic) to improve connectivity across countries is urgent. Countries also need to put in place carefully planned maintenance measures to address the anticipated obsoleteness of ICT infrastructure and technology, because this is a fast-growing and evolving industry.

The importance of infrastructure development to enhance the continent’s productivity is discussed further in Chapter 2.3. That chapter focuses on infrastructure investment policy reform processes in the context of developing growth pole projects that would enhance Africa’s competitiveness.

### NOTES

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18. World Bank’s Doing Business Database.
20. AIDB 2010.
22. The 20th Ordinary Session of the Assembly of the African Union (Heads of State and Government), which met in Addis Ababa on January 27–28, 2013, in their Decision on the Report of the Heads of State and Government Orientation Committee (HSGOC) on the NEPAD — Doc. Assembly/AU/4(XX)— and recalling their earlier approval of PIDA, re-stated the need for active collaboration among the Commission, the NEPAD Planning and Coordinating Agency, and the AIDB in revamping the NEPAD Infrastructure Project Preparation Fund through domestic funding by Member States and concerted efforts to increase private-sector involvement in infrastructure development in conjunction with the World Economic Forum.
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The African Development Bank (AfDB) has been involved in projects to develop infrastructure on the continent for several years. It focuses on projects in areas of need but where there is an enabling environment. Some of the main infrastructure development projects currently being implemented are listed below.

ENERGY

The Menengai Geothermal Development Project (Kenya): This project is a Scaling-Up Renewable Energy Program (SREP) under the Climate Investment Funds for which AfDB Group is an implementing agency. The project will set the stage for investments that will help meet Kenya’s rapidly increasing demand for power and transform the country into a competitive clean energy economy; it will also help diversify the country’s sources of power supply by developing its substantial geothermal potential. The Menengai field alone has a potential of up to 1,600 megawatts (MW). The AfDB group support will help develop the steam field for a generation capacity of up to 400 MW in a first phase, representing a 20 percent increase in Kenya’s installed capacity.

The project will result in substantial increase in the provision of reliable, clean, and affordable energy equivalent to the current consumption needs of 500,000 Kenyan households (of which 70,000 will be in rural areas) and 300,000 small businesses, with some 1,000 gigawatt hours (GWh) available for other businesses and industries. The project will also help reduce emissions by some 2 million tons of carbon dioxide per annum.

Senegal Coal Power Plant Project: The project will generate 925 GWh of electricity, which represents 40 percent of 2008 national consumption; reduce annual power shortages from the 176 days reported in 2008 to 40 days by 2014; improve national electrification coverage (with a target of increasing from 46 percent in 2008 to 66 percent in 2015); and contribute to meeting the projected 7.8 percent annual growth in energy demand.

The Mombasa–Nairobi–Addis Ababa Road Corridor Project, Phase III (Kenya and Ethiopia): The objective of the multinational project is to enhance trade, strengthen regional integration, and contribute to poverty reduction in both countries. This third phase covers the Turbi–Moyale section, which is part of the Trans-Africa Highway network. It involves the construction of 320 kilometers of the road corridor, including the 122-kilometer Turbi–Moyale road section in Kenya and the 198-kilometer Hawassa–Ageremariam road section in Ethiopia. The project includes transport and trade facilitation consultancy services to harmonize cross-border procedures. It will contribute a minimum increase of 25 percent in intra-COMESA (Common Market for Eastern and Southern Africa) and increase trade between Kenya and Ethiopia by at least 200 percent by 2017; it will also increase household incomes by an average of at least 10 percent by 2020.

Nacala transport corridor (Mozambique, Malawi, and Zambia): The project will upgrade a major regional corridor and convey significant benefits, including reduced user costs, increased access to social services, and responses to projected traffic increases. It will increase the capacity to handle cargo at Nacala port from 0.9 million tons in 2009 to 1.6 million tons in 2015, and reduce transport and transit costs by 25 percent in 2015.

TRANSPORTATION: RAILROADS

The Tangiers Marrakech Railroad project (Morocco): The project has the potential of connecting the country to its North African neighbors. When completed in 2016, it is expected to significantly boost rail travel, with an improvement in rail traffic fluidity and increased frequency of shuttle, mainline, and freight trains; increase population mobility in the project area; and create direct and indirect jobs during project implementation and operational phases.

TRANSPORTATION: AIR

Blaise Diagne International Airport project (Senegal): This airport will have an annual capacity of 3 million passengers, 80,000 flights, and 53,000 tons of cargo freight (a 3 percent capacity increase). Subsequent expansions will increase capacity to 10 million passengers annually and eliminate over-capacity operation at existing airports. It will be served by the new toll highway (Dakar–Diamnadio), which will facilitate air cargo transportation in reduced time, contributing to the reduction of production costs and the improvement of business productivity.
ICTS

Other 3 billion Networks (O3b) multinational project:
The O3b project will have a constellation of eight
medium-orbit satellites in nine countries. The project will
deliver affordable, high-bandwidth, high-quality Internet
and cellular access to inland markets in developing
countries and island economies. O3b is dedicating one-
third of its capacity to Africa’s needs. It will reach “white
spaces” (unused channels of the wireless spectrum) and
fragile states with high-quality ICT infrastructure; it will
connect 18 million households (in nine Africa countries)
to cellular backhaul, 1.6 million broadband users to
global backbone, and 4,000 firms to corporate voice/
data networks. The total cost savings over the equivalent
capacity from high-orbit satellites is estimated at US$1.3
billion net present value.

The project will promote private-sector development
with growth in revenues of the nine African off-takers
(those who buy Internet services from the O3b investors)
and Internet and telecommunication operators, projected
at US$490 million net present value. It will promote
regional integration by expanding broadband Internet
and cellular access across several Africa countries:
Cameroon, the Democratic Republic of Congo, Ghana,
Kenya, Malawi, Nigeria, Sierra Leone, and Zambia.

Source: AfDB: various infrastructure project reports.
Although some of Africa’s improved economic performance in the past decade has already been driven by improvements in infrastructure, critical investment and policy coordination challenges remain. As the previous chapters have highlighted, the balance for growth and competitiveness is likely to come from structural changes such as (1) reducing costs for building infrastructure; (2) locking in investors from both public and private sectors as risk sharers; and (3) incentivizing the participation, particularly of the local private sector, in these projects. Furthermore, Africa’s competitive industries—such as agriculture, mining, and tourism—carry vast potential, and they require sustained support if they are to deliver on the promise of comprehensive competitiveness and economic diversification.

Despite the efforts of regional organizations to overcome barriers to trade in products and services, competitiveness continues to be constrained by infrastructure deficits, red tape and slow decision making, difficulty in securing and accessing serviced industrial land, and information failures that prevent the private sector from coordinating investment activity. Growth poles, typically multi-year, public-private investments, are emerging as a key instrument to overcome barriers to investment and to support the agglomeration of economic activity.

Growth poles are simultaneous, coordinated investments in many sectors to support self-sustaining industrialization in a country. They bear resemblance to, but are not the same as, special economic zones (SEZs), which are spatially delimited areas within an economy. Examples include export processing zones, economic processing zones, free zones, and foreign trade zones. SEZs, as supply-side competitiveness measures, are aimed at overcoming barriers that hinder investment in the wider economy, including restrictive policies, poor governance, inadequate infrastructure, and problematic access to land. Growth poles, on the other hand, usually combine public and private investments and are specifically built around an already-existing resource at a specific location in an economy.

Central to the growth pole is a group of dynamic industries connected around a particular resource. These industries are, by virtue of their dimension or negotiation strength, anticipated to have the capacity to innovate and adapt to market conditions. The growth of dynamic industries is anticipated to generate further investment, employment, and distribution of factor payments, including profits that may be reinvested. The growth of dominant industries, in turn, generates external effects that stimulate the growth of other industries due to inter-industry linkages.
This chapter will draw from the World Bank’s quite significant experience in supporting the development of growth poles in Africa in recent decades. Good-practice lessons also emerge from Asia, where, for example, the growth poles in Malaysia and Indonesia benefited from investments made through ASEAN regional integration policies. This chapter explains the idea behind growth poles in more detail and outlines how they interact with infrastructure investments, trade, and regional integration. It also discusses particular examples of growth poles in Africa and the benefits, challenges, and potential pitfalls of making growth pole investments. The chapter then outlines the key policy challenges involved with growth poles and, finally, addresses growth pole financing.

As the first part of the chapter explains, the underlying assumption about the benefits of growth poles is that they increase market size so that it becomes profitable for firms to invest. Private-sector investments, in turn, lead to more jobs, higher wages, and economies of scale. Growth pole projects also often attract foreign direct investment (FDI), are built across borders, and have spillover effects beyond national economies. Thus they can also be a boon to regional integration.

A number of challenges characterize growth pole projects. To set a framework for policymakers to plot the course for growth poles to enhance competitiveness, the chapter next discusses three key policy challenges:

- **Growth pole coordination** challenges concern the setting up and sustaining of both the spatial and the political economy linkages that are required to make these poles happen. Tradeoffs and the strategic vision are both required in multi-stakeholder investments and projects such as infrastructure ones, and both need be focused on ensuring that participation is balanced and sustained throughout the process.

- **Accountability questions** concern the push and pull of rewards embedded in the contracts stakeholders make to design and deliver growth pole projects. The key accountability challenges regarding growth poles in Africa today concern the returns of these investments to landlocked countries and coastal countries, as well as to rural and urban populations. Accountability questions also concern the socioeconomic sustainability that growth pole investments can promote across the investment area and industries.

- **Risk management and risk sharing** concern the endeavors that are put in place to make risks and rewards commensurate with each other to drive good performance as the growth pole is built, managed, and maintained.

Finally, the chapter discusses the specific type of investment arrangements that can significantly improve benefits to be realized from growth poles. Experience in growth pole engagements shows that both public and private participation is required to realize results. For example, public-private partnerships (PPPs) for constructing and maintaining infrastructure will broaden the possibilities for private-sector job creation around growth pole projects. Although there is no fixed list of best-practice policies to realize private-sector development objectives from growth poles, and specific related reforms will vary by sector, growth poles show why effective investment and particularly policy-process coordination will make infrastructure projects more productive.

**GROWTH POLES FOR SHARING PROSPERITY IN AFRICA’S MARKETS**

The growth pole approach to economic development looks at how infrastructure that will be developed for an existing private investment in mining, agriculture, and so on can be used to encourage spillovers into other sectors. This could manifest itself through a development corridor or a special economic zone, or even an agglomeration economy in a booming city. A growth pole will have an existing resource that serves as an inherent revenue producer.

**What are growth poles?**

Growth poles, as noted earlier, are comprised of multiple simultaneous investments coordinated throughout many sectors with the purpose of supporting self-sustaining industrialization in a country. Growth pole projects are not oriented around addressing identified market failures, but around capitalizing on and augmenting opportunities that already exist in an economy, as Figure 1, illustrating the dynamics of building growth poles, suggests.

Figure 1 shows how growth poles enhance already-existing opportunities and can multiply them over time, delivering both quick wins and generating medium- and long-term investments. Indeed, the underlying assumption about the benefits of growth poles is that they increase market size so that it becomes profitable for firms to invest, with the resulting higher wages and economies of scale. If an investment in a project induces investment in the following stages of production, it is called forward linkage and has outcomes such as diversification in value chains. A backward linkage is a creation of investment in the stages of production leading up to the final product, such as investment into logistics or the storing of goods. Investment should be pushed into a project that maintains the highest number of total linkage investments.

Furthermore, growth poles, as economic initiatives, are spatially targeted investment instruments and sets of policy for accelerating economic growth in developing countries. As a concept, growth poles are based on Perroux’s assumption that, for an economy to attain higher income levels, that economy should first develop within itself one or several regional centers for economic strength. Growth poles, as a spatial planning tool, draw...
2.3: Growth Poles

on the following concepts: (1) economies of scale, (2) the nurturing of backward and forward economic supply linkages and also fiscal and final demand linkages, and (3) economies of agglomeration, which are associated with spatial clusters and the geographic concentration of economic activities.

Figure 2 illustrates how to identify potential growth poles and shows the specificity of this investment and project development process.

As the steps needed to identify growth poles illustrate, the growth pole model of economic development is distinct from the development corridor of SEZ investments. Growth poles, considered as investments, often consist of infrastructure projects, with associated investments and capacity-building efforts directed at the private sector. Indeed, although development corridors and SEZs can be component parts of growth poles, growth pole projects are built on the assumption that there is a need for simultaneous, coordinated investments in many sectors to get self-sustaining industrialization. As such, growth poles are broader than SEZs or development corridors.

Central to the growth pole is a group of dynamic industries that are connected around a particular resource. These constellated industries are—by virtue of their dimension or negotiation strength—expected to have the capacity to innovate and adapt to market conditions. The growth of these dynamic industries is expected to generate further investment, employment, and distribution of factor payments, including profits that may be reinvested. The growth of dominant industries generates external effects that stimulate the growth of other industries because of inter-industry linkages.

As developing countries advance from largely agriculture-based economies, the assumption is that it is most likely that investments into industry will create the most linkages. It follows that the focus in growth pole projects is on externalities and doing many things at the same time to achieve critical mass. Most growth pole projects that are focused on infrastructure, regulation, capacity-building, and finance for early investors are a mix of policies and investments, but the investment and policy mix varies depending on perceived constraints to private investment and growth (see Box 1 for an example).

Because of the “big push”—style simultaneous commitment of multiple investments for growth poles, the process of identifying key constraints, their relationships, and the underlying political economy of these constraints is critical for achieving outcomes. Growth poles typically bring about large changes in particular locations—they distinctly do not effect marginal changes. This fact has attracted quite an amount of academic critique of the growth pole and SEZ types of intervention as concepts for economic development (see Box 2).

Indeed, as other surrounding competitiveness challenges are addressed, the typical outcomes of growth pole and SEZ types of spatial investments can include increased output and/or exports; measurable

Figure 1: Characteristics of growth pole projects: Quick wins and medium-term investment for long-term development
productivity gains in the enclave from combined components; and, possibly, spillovers to the rest of the economy. These must be considered in the context of the overall location-based development impact of embarking on such projects. Therefore, an emphasis on employment generation emerging out of growth pole projects is a significant focus.

Regional integration and the need for the creation of growth pole linkages
Growth poles emerge as a policy response to the need to create better spatial and political economy linkages in the new African regional markets. As this Report has discussed, the challenges to commerce and trade in these new markets no longer arise predominantly from high tariffs, but rather from barriers behind the borders (see Chapter 2.1). Indeed, to trade beyond their countries’ borders, African exporters will benefit not only from additional hard infrastructure and technical assistance from their governments and other actors, but also from equally ambitious policy reforms to support the agglomerations of competitive industries and to facilitate trade.

Successful reforms will result from the efforts of both the public and private sectors, and will take into account spatial constraints a country faces, targeting landlocked countries in Africa with specific insights.
Box 1: What is a growth pole? The case of Madagascar

The Madagascar Integrated Growth Poles Project aimed at stimulating the growth of three geographical regions of Madagascar centered around the growth poles of Nosy Be, Fort Dauphin, and Antananarivo-Antsirabe (Figure A). The objective of the poles was to address key constraints to investment, including infrastructure, business environment, institutional capacity, skills and access to finance. The poles are multi-sector projects with particular focus on tourism-led growth in Nosy Be, mining- and tourism-led growth in Fort Dauphin, and export-led growth in Antananarivo-Antsirabe.

In Nosy Be, the pole focuses on building support infrastructure (rehabilitating roads and improving water supply); strengthening municipal capacity for administration, fiscal management, and service delivery; and supporting business environment reforms. The project supports a new hotel training school in partnership with other donors and the private sector, and the establishment of a marine reserve to protect rare ecological resources vital to the sustainability of the tourism industry.

In Fort Dauphin, the pole is jointly invested in by the government and the mining company Rio Tinto to ensure that large mining investments benefit the local population. They co-financed the construction of a new public multiuser port managed by a private consortium and in operation since 2009. Investments were also made in road construction to support tourism and to facilitate market access for local production.

In addition, the project is supporting innovative public-private partnerships (PPPs) with Rio Tinto in power generation and transmission—with a guarantee from the Multilateral Investment Guarantee Agency—and in improving access to water supply. A partnership with the United Nations Development Programme, Rio Tinto, and other private firms has led to the establishment of a vocational training center to bridge local skills gaps. The emphasis on ensuring that mining projects have a positive impact on local populations and on the economy more broadly serves as an example of what can be done for other mining investments.

In Antananarivo-Antsirabe, PPPs have been established in skills development for the garments, tourism, and information technology industries. For example, the growth pole includes a private university and firms in the garments industry, which have collaborated to offer the first textile engineering diploma program in Madagascar.

The growth poles in Madagascar are showing positive results, and the main objectives of these investments have not been revised. Until the onset of the political crisis of 2009, the poles were on track to achieve their development objectives and results in terms of private investments and job creation. Private investment increased from US$84 million in 2005 to US$1,045 million in 2007. In 2006–08, some 5,000 new businesses were registered in the three poles. During the same period, an estimated 10,000 formal jobs were created in the three poles, and the number of new hotel rooms in Fort Dauphin and Nosy Be increased by 40 percent and 27 percent, respectively. Regional development plans were adopted and most of the main infrastructure works were completed, leading to major improvements in local infrastructure. Since 2009, Fort Dauphin and Nosy Be continue to show progress, and by 2013, have added over 13,000 formal jobs.

The overall business environment in Madagascar has been improved: it is now easier to register a business, trade, pay taxes, and obtain a license. In Fort Dauphin, it now takes four days to register a new business; before the project was initiated, this took two months. The Economic Development Board of Madagascar regional offices in Nosy Be and Fort Dauphin can now register individually owned enterprises, which has significantly reduced the cost and time required for small business startups. By 2013, following results assessments on the poles, the Antananarivo-Antsirabe pole was deemed less successful and discontinued.

Overall, indicators from the poles suggest promising private-sector response to the investments made in infrastructure, the improvement in the business environment, and job creation.

To fully realize benefits from efforts at regional integration, a number of spatial and political economy linkages need to be established, and need to operate well, to deliver competitiveness and sustainable growth in Africa. This Report has discussed the prospects of specific sectors of infrastructure, including energy and the ICT sectors, of doing so. The attempt to create regional and national spatial linkages by building infrastructure needs to be mindful of the unequal distribution of resources between the coastal and landlocked countries of the continent, and to consider the challenge of spurring equitable growth in both rural and urban areas. One recent example of such efforts is the Lamu Port–South Sudan–Ethiopia Transport (LAPSSET) economic and transport corridor, planned to connect the east and west coasts of Africa and to establish reliable access to the sea for northern and eastern parts of Kenya, South Sudan, and Ethiopia (see Box 4).

GROWTH POLE POLICY CHALLENGES

A number of lessons can be distilled from the growth poles that have been planned and built in Africa over the past decade. To start with, growth pole projects have revealed three kinds of challenges: coordination, accountability, and risk management and sharing issues.

Coordination

Infrastructure and competitiveness projects such as growth poles bring about a number of coordination challenges. First, not unlike other infrastructure and private-sector development initiatives, growth pole coordination challenges concern the setting up and sustaining of both the spatial and the political economy linkages that are required to make the poles happen. More specifically, policy coordination challenges include the question of strategy: how do growth poles get chosen, and how do specific transactions get chosen? Responding to these challenges requires both institutional (horizontal) coordination and effective (vertical) coordination of implementation arrangements.

Horizontal coordination of growth pole projects entails streamlining institutional arrangements to coordinate competitiveness diagnostics and planning, as well as investment issues, both between central and local government and between the public and private sectors. It is often the case that a council or a team in a ministry could play an important strategic role in horizontal coordination and strategic sequencing and timing of efforts, including the monitoring and evaluation of activities. These projects usually also benefit from an administrative unit dedicated to growth poles in government.

Vertical coordination requires that special attention be paid to the implementation arrangements. A common challenge is that, even when the right policies and regulations are in place, they may not be consistently implemented across individual cases (this situation is captured by the term policy implementation uncertainty).

Indeed, success cases—such as that of Mali’s innovation in the mango production value chain (see Box 3)—show how a country can gain from intra-African trade and innovate in infrastructure and private-sector development policy to realize areas of comparative advantage and diversify its economy.

In addition to national measures, policies promoted and adopted by African regional organizations can also provide an enabling environment for the expansion of markets for African goods. Regional integration is a powerful tool that governments can use to spur growth and competitiveness through additional trade facilitation measures, such as the harmonization of safety and quality standards for products and the mutual recognition of educational degrees. The development of cross-border financial services is also important, especially for small- and medium-sized enterprises and traders, which often work in the informal sector and have limited access to credit, banking, and other financial services. Cross-border financial services might encourage trade expansion for producers and traders not already well connected to cross-border trading networks.
Box 3. Mali’s mangos: Linking farmers to markets through innovations in the value chain

Mali, a landlocked country of West Africa, has experienced a spectacular growth in its exports of fresh mangos, which increased sixfold in volume between 1993 and 2008. As one of the poorest countries in the world, and with over 80 percent of the workforce engaged in agriculture, Mali had to overcome a number of very serious challenges to achieve such a result. Over a decade, Mali has been able to build on its comparative advantage and secure access to the fast-growing fresh fruit market in the European Union, generating increasing revenues for its producers and exporters.

The key innovation that allowed Mali to overcome obstacles arising from its situation as a landlocked country and to secure access to this market was the testing and implementation—through a partnership with private operators—of a multimodal transportation system for the export of fresh produce that would provide an alternative to air freight. Thanks to an intervention, the feasibility and profitability of using refrigerated containers all the way to the destination market in Europe, using a combination of road, rail, and sea freight rather than shipping by air, was demonstrated (Figure A). This innovation basically opened the way to accessing the large and growing market of sea-freighted export of perishables. This new multimodal approach to transport is also good from an environmental point of view because it drastically reduces the carbon footprint of this trade.

Moreover, agriculture is a major pillar of Mali’s economy. It accounts for 45 percent of the country’s GDP and employs 80 percent of its workforce. Industry represents 17 percent of the country’s GDP, with food processing, construction, and phosphate and gold mining as the principal industrial activities. Mali’s main exports, since the 1970s, have been gold, cotton, and livestock. However, as a landlocked country, Mali was—and still is—highly dependent on the transport infrastructure and other logistical arrangements of its neighbors for market access and trade.

The mango fruit was traditionally collected and sold mainly for the domestic market. During the 1970s, Mali was the first country in West Africa to focus on opportunities to export fresh mangos. However, these exports were exclusively via air freight, reaching a volume of between 1,000 and 1,500 tons per year and targeting the niche market of the expensive retail shops selling tropical fruits in France. In the early 1990s, the government of Mali recognized the need to design policies to diversify exports and foreign exchange earnings, which had been heavily concentrated for years on only three export products: gold, cotton, and livestock.

The lack of direct access to a port meant that Mali had to rely on its neighbors’ surface infrastructure as well as its own. Until the 1990s, the only rail line with international linkages was run inefficiently, leading to uncompetitive prices and chronically severe delays: the development

Figure A: Transport modes for fresh mangoes from Mali to Europe

Source: Adapted from Sangho et al., 2010.
of an alternative supply chain was of critical importance. However, such development faced three crucial challenges: infrastructure, management, and finance. The paucity of market information for growers and exporters was exacerbated by poor harvesting practices and post-harvest handling techniques, little or no investment at production level, and an extremely challenged domestic finance market.

Mali’s mango export value chain improvement (resulting in the transport innovation) was achieved through a combination of innovation, in-time deployment of the right financing mechanisms, private-sector leadership, and accountability questions concern the push and pull of rewards embedded in the contracts that stakeholders make to design and deliver the infrastructure of growth poles. Indeed, the political economy of a growth pole project is complex because, if the projects are successful, they will induce large local (or regional) changes, and local effects may vary among different sites.

Growth pole projects, and other infrastructure investments, can be at once national and regional, public and private. They are by definition large and risky, and entail a large number of players. In this context, the accountability of the set of institutional tools that reward organizations that consistently perform well for their stakeholders and penalize those that do not is significant. Infrastructure projects often not only connect rural regions with urban ones, but regional infrastructure projects also often connect more naturally advantaged countries (e.g., those with a coastline and ports) with less-advantaged countries (landlocked ones). How then, for example, are spillover benefits to local farmers in rural-urban road projects balanced with benefits accrued from a road built to retailers in the city?

In the case of a road connecting rural and urban areas, land will become much more valuable, which will attract outside investors and job seekers. For this reason, an entire ecosystem of checks and balances is needed, including competition commissions, infrastructure sector regulators, and concession regulators. Furthermore, when infrastructure is developed to facilitate trade and productive sectors, accountabilities to the key stakeholders are also produced. Communities that are affected want to participate in the economic benefits that flow from the project. The local private sector wants to participate in the relevant markets created by the trade of the underlying resource. When high-quality technical and economic work in areas such as market research, value chain cost analysis, benchmarking, and assessment of constraints. Even if, as in the case of the mango sector of Mali, the private sector is weak in the beginning, it is necessary to start working with existing private operators and eventually bring in new ones, such as the company from Côte d’Ivoire that ran the pilot export test for the mangos. There was also a unique public-private partnership sharing of risks for all partners involved.

Accountability

Accountability issues then also pertain to possibilities for the local private sector entailed in a situation where large, private-sector anchor investors internalize the coordination costs of rebuilding value chains that include smaller industry players. The development of export horticulture production in Northern Senegal provides a good example of competitiveness enhancement through trade and standardization that have also raised the incomes of the rural poor.

Risk management and risk sharing

The challenge of risk management and risk sharing concerns attempts to make risks and rewards commensurate with each other to drive the needed private-sector participation. These risks include contingent risks (the risk that contracts will not be violated), political predictability risks (the risk that contracts will not be violated), and the whole raft of technical and market risks that exist in any PPP.

Of particular importance in Africa is how PPPs can help in managing life cycle risks. Often governments do not account for life cycle costs, including regular maintenance and replacement of assets. These costs can be higher than the initial capital costs of the investments. PPPs are designed to provide services to the users over a longer-term period than the traditional procurement methods presented by a construction contract. Consequently, it becomes critical to plan and allocate resources appropriately to ensure inclusive and shared growth over 20–30 years.

Indeed, the question of financing growth poles needs special attention in Africa, as access to finance is a particular challenge on the continent. This area is discussed in detail in the next section of this chapter.

FINANCING GROWTH POLES

Growth pole projects are usually large-scale investments that require considerable upfront expenditure. As such, growth poles present a vast financing challenge.

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**Box 3. Mali’s mangos: Linking farmers to markets through innovations in the value chain (cont’d)**

In order to avoid the costs that delays or unpredictable policy environment can cause to growth pole projects, policymakers will do well to pay attention to the formulation of results-based monitoring and evaluation frameworks for growth poles.7

**Accountability**

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**Source:** Sangho et al., 2010.
Moreover, ensuring the availability of private financing for the longer term, which is needed to match the life of the assets at a reasonable cost, is a formidable task in today’s market conditions. Most investors and lenders are receding from new and untested investments because they are too risky to ensure a reasonable return on their investment. In the case of many growth pole–related investments, the composite projects may not be individually creditworthy and may need additional enhancements, such as government guarantees, extra reserves, and liquidity support, especially during construction. This is why high-quality PPPs play an integral role in growth pole projects.

Growth pole finance differs somewhat from finance models specific to infrastructure and to SEZs. The latter, as indicated at the outset, have commonly been supply-side competitiveness measures. Their finance models have largely been public. See Table 1, which describes revenues for building these zones.

Infrastructure finance includes both public and PPP models. Public finance models can include accruing user fees, property value capture (such as the acquisition and later sale or lease of excess land), tax incremental financing, and so on. Still, growth poles, like infrastructure projects, increasingly see PPPs as their key financing model.
A number of questions need to be answered during the course of planning any PPP project. In infrastructure projects, for example, the specific challenge concerns whether development for the infrastructure to be built should be bid out competitively or should be sole sourced. What measures should be taken for proactive investment generation? Can regional deals for infrastructure investments and development be made, and are local investment banks involved? How can funding be scaled up to engage a more diverse group of actors? To what extent can the regulatory capacity of infrastructure investments be harmonized regionally, to attract and sustain investment and political will? World Bank–supported PPPs, especially on the west coast of Africa, have had success in balancing the coordination of public-private participation and risk sharing in the projects (see Box 5). An example of such a successful PPP from the telecommunication sector accounts for approximately 90 percent of the value of PPPs set up in sub-Saharan Africa.9

In PPPs such as those on the west coast of Africa, public investment through the PPP mechanism undoubtedly helped to unlock the projects that were held in fragile states or those that were too large or risky to have the private sector involved on its own. To ensure private-sector involvement, governments created enabling legal and regulatory frameworks and built pro-competition policies. Overall, to ensure the success of the PPPs, deeper reforms are needed to eradicate monopolies, and regulations have to be adjusted to meet rapid technological changes.

**Growth pole PPPs**

The risk profile of growth poles will be different from that of other types of PPP projects. Indeed, certain areas would be better suited for public funding and some would be better suited for private development. Therefore, the final set of challenges and opportunities to be discussed in this chapter pertains to risk management and risk sharing around growth pole and infrastructure projects.

Risk management concerns the question of how growth pole projects can be made commercially viable. Risk sharing questions concern how infrastructure projects and their construction and maintenance risks can be distributed and leveraged for shared gain.

Risk management and risk sharing are ongoing and continuous parts of growth pole investments. Once the main economic drivers of growth poles are identified—which these are agglomerations of economic activity, such as cities, or the discovery of a new natural resource, for example—the types of risks involved must be identified. The types of risks that usually need managing in growth pole projects have to do with payment and demand risks, market risks, and construction risks. The recent guarantee and credit support in Nigeria for the gas sector provides a good example of innovative solutions to these problems (Box 6).

**Risk-sharing and risk management challenges of growth poles**

Whether the economic driver of a growth pole is a natural resource or a particularly buoyant agglomeration of industrial activity, this economic driver could translate, first and foremost, into a commercial risk to be managed. Such a commercial risk will include both the payment and the demand risks involved in setting up the project. Such risks determine a project’s ability to produce enough cash to be able to cover the project’s daily expenses (incurred in providing the services), pay back its debt, and achieve a reasonable profit. The

### Table 1: Funding SEZs: Revenue streams in typical SEZ arrangements

<table>
<thead>
<tr>
<th>Revenue stream</th>
<th>Description</th>
<th>Typical recipient in SEZ regimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customs revenue</td>
<td>Revenues received from charging duties on imports/exports</td>
<td>National government; note in the case of existing regional agreements (such as the East African Community) there may already be a revenue sharing model</td>
</tr>
<tr>
<td>Corporate tax</td>
<td>Taxes of firm profits</td>
<td>National and sometimes state/provincial governments (often waived or reduced as fiscal incentive)</td>
</tr>
<tr>
<td>Municipal taxes</td>
<td>Taxes charged on profits, assets, and so on from local governments</td>
<td>Local government (often waived or reduced as fiscal incentive and to simplify tax administration for investors)</td>
</tr>
<tr>
<td>VAT/sales taxes</td>
<td>Taxes on production and sales</td>
<td>National government and sometimes state/provincial government (often zero-rated or reduced as fiscal incentive)</td>
</tr>
<tr>
<td>Personal income taxes</td>
<td>Taxes on incomes of individuals living in the zone</td>
<td>National government</td>
</tr>
<tr>
<td>Service fees</td>
<td>Fees for provision of licenses for operating or carrying out specific activities</td>
<td>SEZ developers; SEZ Authority; individual government agencies</td>
</tr>
<tr>
<td>Land/facilities sales and lease</td>
<td>Leases for land plots or rents for prebuilt facilities in the zone</td>
<td>SEZ developers</td>
</tr>
</tbody>
</table>

Source: Dobronogov and Farole, 2012.
investments in the growth pole, for example, might be technically and economically sound, but not necessarily financially viable. Additionally, managing construction risk is particularly important because the risk precludes many sources of patient long-term capital, such as pension funds and sovereign wealth funds, from investing in PPPs.

Another set of risk management questions concerns cost recovery from the growth poles. If the investment generates revenues, are these enough to cover the costs? If the revenues are not sufficient, is there potential for increasing these revenues, or can the public entity involved complement the revenues generated directly by either driving down the capital costs or providing supplementary revenues during implementation? This is a big decision for the governments involved because it becomes an affordability issue both for the users and for the public budget. How much of the costs would (or should) the government pass on to the users?

Finally, governments often do not pay enough attention to the overall costing and the cost-benefit analysis of the whole project cycle at the outset. This is an important point because life cycle costs, including regular maintenance and replacements of the assets, are at stake. These life cycle costs can be higher than the initial capital costs of the investments.

One way to address overall costing issues is to set up high-quality PPPs that are designed to provide services to the users over a longer-term period rather than using the traditional procurement method of a construction contract. Therefore, planning and allocating resources appropriately is vital to ensure that access is inclusive and that growth is shared over 20–30 years.

To achieve shared growth, risk-sharing instruments must be thought through. Cost recovery concerns how well the public partner is able estimate its investment costs and price them into a periodic payment plan, either via users or another source. In this process, risk will be shared. On the other hand, the private sector would not enter into a transaction unless there is a certainty for cost recovery during the operation period.

In the current markets, the potentially shared risk concerning cost recovery is translated into construction risk, which would mean cost overruns and time delays.
Box 5: Success in PPP coordination (cont’d)

Table A: Recent World Bank–supported PPPs, approaches, and models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative</td>
<td>All sector operators (MNOs, ISPs) unite to form a private company (special-purpose vehicle) for the purpose of building, owning, and operating the national backbone as a wholesale operator. The government contributes a subsidy with no related ownership to ensure national coverage, including rural access points, open access, nondiscrimination, and low-cost pricing.</td>
<td>Burundi national backbone project, 2007</td>
</tr>
<tr>
<td>Equity</td>
<td>The equity model is similar to the cooperative model except that the government obtains equity and shareholding ownership rights in exchange for its contribution. Generally, government divestiture mechanisms are built in.</td>
<td>The Gambia, Guinea, Liberia, São Tomé and Príncipe, Sierra Leone</td>
</tr>
<tr>
<td>Concession</td>
<td>This is a traditional build-operate-transfer approach, whereby the government issues a public tender to select a private-sector operator to build and operate the national backbone or specific national and cross-border links. The agreement is in the form of a long-term concession (15–25 years) that requires the transfer of the networks back to the government at the end of the concession.</td>
<td>Republic of Congo, in process</td>
</tr>
<tr>
<td>Bulk capacity</td>
<td>The government, acting as an “anchor client,” issues a public tender for the long-term (10–15 years) supply of bulk capacity (+ 1 gigabit) bandwidth. This model stimulates investment by the private sector through the aggregation of demand. In this case, the partnership is governed by a PPP agreement or supplier contract that establishes the rights and obligation of each party.</td>
<td>Rwanda, 2011; Malawi, in process</td>
</tr>
<tr>
<td>Management contract</td>
<td>This is a standard management contract agreement whereby the government issues a public tender to select a private operator to build, operate, and commercialize the national backbone (or specific national or cross-border links) for a fee during a short-term period (3–5 years). Core assets remain the property of the government.</td>
<td>Gabon, in process*</td>
</tr>
</tbody>
</table>

Source: World Bank, ICT Unit analysis.
Notes: ISP = Internet service provider; MNO = mobile network operator.
* The initial PPP structure allows for conversion to an equity approach at a later stage.

Source: Gallegos, 2012.

in the construction aspects of a project. The longer the construction period, the longer it takes the project to begin operation and therefore the longer it takes to begin generating revenues. Traditionally, this risk was covered by monoliners, but after their demise in the aftermath of the 2008 financial markets problems, very few financiers are able to accept this risk. The other big risk comes from the government itself as a co-financier of the project. In the case where the government is providing financing either with a capital grant toward investment costs or an availability payment during the operational phase, the availability of public budget funds over the life of the concession remains risky. This risk, in turn, is one of the reasons why there are such vast benefits to be gained from policymakers addressing the above-outlined coordination, accountability, and risk challenges associated with growth poles.

CONCLUSIONS

The present time is fortuitous for Africa. The continent is enjoying solid growth, and much international attention is focused on Africa as an investment destination, with a specific emphasis on the continent’s infrastructure. Unfortunately, this growth is uneven and highly reliant on natural resources, with a number of resource-rich countries enjoying very strong growth—in some cases over 10 percent—and other countries not doing very well. These competitiveness figures bring to the fore the important question of how, while enjoying a high rate of growth, African countries can make the types of investments and policies that can put their economies on sustainable growth paths and create jobs for the long term.

This chapter has argued that, for Africa to maintain and accelerate its growth performance, it needs to find ways to develop its areas of key comparative advantages in its competitive industries (for example, agriculture, mining, and tourism). This means improving productivity and connections to and among markets and reaping the benefits of recent trends toward regional integration. The key ingredients to this success are governance and infrastructure, and the deployment of a combined
strategy of spatial and economic development called growth poles.

Because huge infrastructure needs remain and because capacity in both financial and implementation terms is limited, the question of how to use these scarce resources best is a crucial one. The development of a more sustainable policy process around infrastructure investments will enable African countries to enhance the competitiveness of their private sectors. This chapter has highlighted this message in the context of growth pole projects on the continent, focusing on paths forward regarding coordination, accountability, and risk challenges.

Because infrastructure provides the basic services in a country, it both offers great opportunities for business, employment, and the general competitiveness of an economy, and also presents intensely political challenges. Decision makers will want to ask themselves a selection of important questions when seeking to resolve the economically and technically complex challenges of infrastructure and growth pole investments. Among these questions are those regarding coordination: how can infrastructure services best be provided competitively? And what instruments—financial, regulatory, and participatory—can governments deploy to involve the private sector and the broader society most effectively and efficiently in the construction and maintenance of this backbone of growth? Accountability issues must simultaneously be addressed from this angle. An ecosystem of checks and balances—including competition commissions, infrastructure sector regulators, and concession regulators—is required to deliver on accountabilities to the key stakeholders. As growth poles in Madagascar and elsewhere have shown, supporting the growth of competitive industries and jobs to make most of the infrastructure built requires both a large and a long-term investment for a government.

Governments must continuously probe best-practice financial and regulatory mechanisms to attract private financing and servicing for growth pole projects that will advance a country’s export industries to Africa’s regional and global markets. Taking a strategic approach to handling the coordination, accountability, and risk challenges involved in growth poles presents a promising way forward.

NOTES

1 World Bank 2009.
2 SEZs are usually designed as supply-side competitiveness measures, and are meant to establish an agglomeration of firms through the provision of superior infrastructure and operating conditions. Another often-used concept is development corridors. These are usually feeder infrastructures, achieving outcomes by deepening project linkages and by encouraging densification.
3 For comparable experiences and successes in Asia, see World Bank 2005.
5 Perroux 1955.
6 SEZs can be high-tech parks, science parks, industrial zones, and export processing zones. Morocco’s SEZ has been an African success case—see http://specialeconomiczone.org/category/africa-sez/morocco/.
7 Hallward-Driemeier et al. 2010.
10 A monoliner is an insurance company that provides guarantees to issuers, often in the form of credit wraps, that enhance the credit of the issuer.

REFERENCES


