

## four

# Approaches to Building Africa's Private Sector

*Today, countries like Uganda are still 90% unserved by electricity. Can you imagine not having power in 90% of any country and still trying to grow the economy? Do we expect Africans to wait for grid electricity to incrementally reach people or are there disruptive innovations that can provide off-grid renewable energy to rural Africans in scaleable ways? What would this look like given large geo-thermal and bio-diesel reserves in East Africa and can renewable energy sources provide opportunities for greener solutions in Africa? Interacting with dynamic and bright Africans under 30 (who make up 70% or more of most African countries), I cannot help but wonder what is on the horizon. People are innovating all over the continent with bio-gas, small scale hydro, wind, and solar power. Where people have electricity, there is a massive difference in economic activity, public services, productivity, and hope about the future. Energy is truly a platform that affects nearly every aspect of rural life. Today, Africa is mostly unserved by power grids but given innovation possibilities, are there not scalable ways to introduce renewable energy to millions of people who are completely unplugged from the global economy today?*

ALEEM WALJI, from the Google.org blog, July 9, 2008

**E**nterprise surveys conducted in many African countries point to a number of constraints that are slowing the emergence of vibrant, competitive business sectors. Most obvious and immediate is the need to improve the poor quality

of infrastructure services, power especially but also transport. Also important are two other issues: the need to overcome the constraints imposed by small, sparse national markets with limited competition and the need to broaden the base of the private sector. Low competition and the split of many national business sectors along the twin dimensions of size and productivity and ethnicity complicate the political economy of reform, making it less likely that governments and business will form unified fronts to push for better business services, greater openness, and more competition.

The problems are real, but there is room for optimism as well. On the infrastructure side, advancing technology, partly impelled by concern about climate change, holds out special promise for Africa. So do new approaches toward project finance, including public-private partnerships and approaches based on regional cooperation. In terms of policy, African leaders are more pro-business than before, and they are eager to get away from aid dependence and donor conditionality. The private sector in Africa has a stronger voice as well—for example, it is now more common to see private sector representatives at consultative meetings with rich country aid organizations. More African leaders and members of cabinets are being drawn from the private sector, and the concerns of this new generation, such as high levels of unemployment, poverty, and dependence on foreign aid, are different from those of their predecessors who were more concerned with independence, statehood, and the maintenance of power (Emery 2003). Moreover, businesses based in African countries are beginning to invest across borders, creating a potential constituency that can be helpful to drive initiatives for regional integration.

Another reason to be optimistic is the rising technocratic class in sub-Saharan Africa that is well aware of the challenges to raising income and competing globally, including infrastructure investments, regulations, and maintenance. This is not the Africa of the 1970s and 1980s when many infrastructure projects failed because of poor design and lack of capacity to regulate and maintain services. Most countries in Africa have undergone macroeconomic reforms and have inflation under control. Many non-resource-rich countries have been enjoying high growth rates for over a decade (Gelb, Ramachandran, and Turner 2007), and some, such as Ghana, are now able to borrow from commercial markets. Central banks and finance ministries are run now largely by very competent, highly trained individuals. In several countries, democratically elected leaders have searched the world to bring the best talent back to their countries.

## **Plugging the Infrastructure Gap: Clean Energy, Better Roads, and Regional Cooperation**

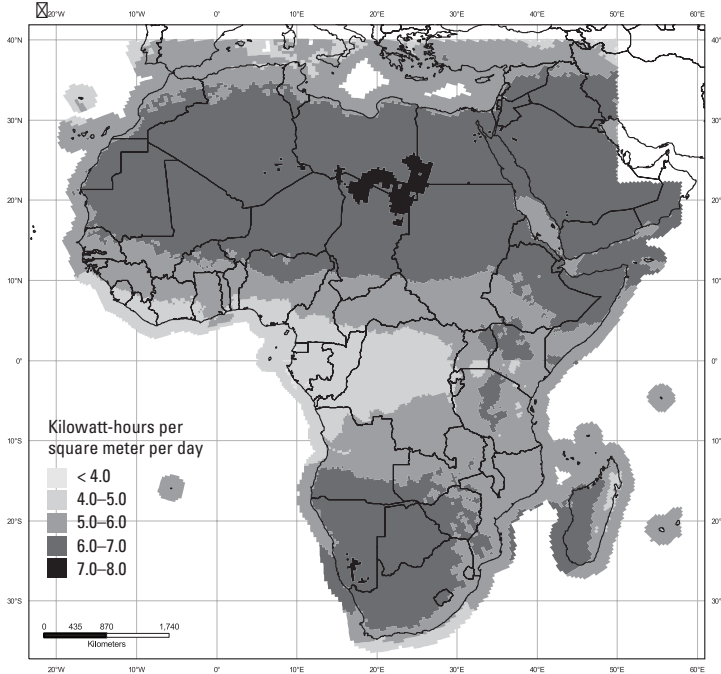
The evidence on the constraints as seen by businesses discussed in chapter 2 points overwhelmingly to the need to invest in infrastructure. In particular, a steady and reliable supply of electricity is hard to come by in many countries.<sup>1</sup>

Conventional energy investments will continue to be vital to sustain growth in Africa. But the continent also has a unique opportunity to lead the way for the rest of the world—to become a producer (and even an exporter) of energy with zero net emissions of greenhouse gases, notably hydroelectric and solar power. Countries in Africa can avoid the predicament that some rapidly growing countries now find themselves in—rising incomes accompanied by a high incidence of ill health and respiratory disease caused by severe air and water pollution.

Africa has tremendous potential for the production of various kinds of renewable energy (OECD 2003/2004). African reserves of renewable resources are the highest in the world (Buys and others 2007), and many countries have a potential for solar, wind, hydro, and biofuel generation that greatly exceeds their total energy consumption. Buys and colleagues list the top thirty-five countries in the world that have the biggest total reserves of solar, wind, hydro, and geothermal energy—the set includes seventeen countries in sub-Saharan Africa. Of the top thirty-five countries, Africa also has twenty-one for solar energy, six for wind, eleven for hydro, and seven for geothermal. Buys and colleagues show that Africa has renewable energy reserves to meet its future needs and possibly the needs of other parts of the world, including Europe.

Much of sub-Saharan Africa receives solar radiation of the order of 6–8 kilowatt-hours (kWh) per meter squared per day—some of the highest levels of solar radiation in the world. For firms now paying upward of 15 to 20 cents per kWh for electricity that is unreliable and of low quality, the installation of solar panels can reduce reliance upon poorly maintained grids and would lower costs, which in turn would enable them to compete more effectively in the global market. Solar energy generated via rooftop panels is

1. Macroeconomic analyses of the returns to infrastructure also confirm the importance of a reliable supply of power and roads (Munnell 1992; Calderon and Servén 2004; Demurger 2001; Canning and Pedroni 1999). The lack of infrastructure has also been shown to have negative impacts on intra-African trade, shrinking cross-country and cross-regional flows to a fraction of their potential levels (Limao and Venables 1999).

**Figure 4-1.** Solar: Annual Average Latitude Tilt Map at 40 km Resolution for Africa<sup>a</sup>

Source: Adapted from Solar and Wind Energy Resource Assessment (SWERA) of the United Nations Environment Programme (UNEP) and National Renewable Energy Laboratory (NREL) of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, 2005 ([http://swera.unep.net/typo3conf/ext/metadata\\_tool/archive/download/africatilt\\_218.pdf](http://swera.unep.net/typo3conf/ext/metadata_tool/archive/download/africatilt_218.pdf)).

a. The latitude tilt measurement of solar radiation is the total radiation (sun plus sky and clouds) falling on a flat plate that is angled from the ground toward the sun equal to the latitude. The sun is closer to being perpendicular to the plate during parts of the year, and the overall solar resource is somewhat higher than the “global horizontal” data and likely to be the most relevant for our purposes.

also less problematic in terms of the regulation and management issues that have plagued delivery of grid-based energy by public utilities. Figure 4-1 shows the solar radiation and solar energy potential of the African continent. In a 2007 article, the *Economist* argues that solar energy will become cost effective in Africa if costs are lowered by 30 percent.<sup>2</sup>

Some types of renewable energies are the most cost-effective solutions right now, according to a publication from the Energy Sector Management Assistance Program (ESMAP) of the World Bank (World Bank 2006a). Given

2. “The Dark Continent,” *Economist*, August 16, 2007.

its title, “Technical and Economic Assessment of Off-Grid, Mini-Grid and Grid Electrification Technologies,” this report does not exactly jump off the shelf. But it has particularly important implications for the private sector in Africa. The good news in the report is that for much of Africa, where millions of people have yet to be connected to a power grid, renewable energy may well be the cheapest option. The report carefully costs out a variety of power generation technologies that range from 50 watts to 500 megawatts (MW) and that include renewable energy technologies (such as photovoltaic, wind, geothermal, hydro, biomass-electric, and biogas-electric) as well as conventional generation technologies. The costing exercise was conducted for three periods—2005, 2010, and 2015—incorporating uncertainty and sensitivity analyses around key assumptions. It concluded that renewable energy is more economical than conventional energy for off-grid generation of less than 5 kW—exactly the sort of power currently needed by almost half of the 500 million people who do not have access to modern energy. Renewable energy is also potentially the cheapest source of power for mini-grid generation. Conventional power generation still holds the advantage for large-scale needs, but for much of sub-Saharan Africa, it is off-grid and mini-grid generation that is necessary to meet the needs of a sparsely distributed population and to enable businesses to widen their geographic spread, especially the smaller businesses that are unable to absorb the costs of generator power.

New research also shows that baseload-scale solar thermal power is now lower cost than high-efficiency coal-fired power, at a carbon dioxide emissions charge below the level that is set by the European Union’s new climate action plan, and far below the level recommended by the Stern Review (Wheeler 2008). Using carbon charges to guide project selection is increasingly feasible, because new bilateral and multilateral clean technology funds are available to finance the incremental cost gap between dirty and clean power. The World Bank has recently launched a Clean Technology Fund, for which the United States, the United Kingdom, and Japan have already pledged several billion dollars. This fund must always focus on major shifts toward clean energy as opposed to changes at the margin. In the medium to long term, clean energy funds would have to grow tenfold in scale to handle the emissions problem globally: the International Energy Agency estimates that \$30 billion annually will be required to close the incremental cost gap between clean and conventional energy investments. Africa should position itself to benefit from the opportunities created by such funds.

Firms in rich countries are increasingly engaged in research and development of a vast array of newer, cleaner sources of power, much of which can

be transferred to Africa. Exciting new developments include hydro, wind power, and biofuels, such as oil from the jatropha plant. Micro hydro projects in Africa are now providing electricity for several hundred households each, bringing modern energy to far-flung areas. In Kenya, the community-owned Tungu-Kabiri Micro Hydro project, located in Mbuiru, supplies 18 kW of power and has 200 shareholders, each of whom has bought shares in the enterprise.<sup>3</sup> On an even smaller scale, pico hydro schemes that typically supply power up to 5 kW are also proving to be good value. In two towns in the Kirinyaga district in Kenya, very small-scale hydro units (so called micro hydro and pico hydro) are providing power to about sixty households each, while substantially reducing the use of kerosene and biomass fuels (Television Trust for the Environment 2002). These options are extremely relevant for a continent where it is likely that the costs of expanding traditional grid-based electricity will limit its spread to sparsely populated areas.

Dozens of firms in the United States and Europe, fueled by venture capital investments, are engaged in research and development to bring down the cost of such renewable energy alternatives. Venture capital activity in solar energy increased almost fourfold, from \$59 million in 2004 to \$308 million in 2006.<sup>4</sup> The U.S. government's interest in the development of alternative energies, in addition to legislated emissions reductions, is creating demand that investors see as a major incentive for investments in renewable energy sources.<sup>5</sup> Solar efficiency has increased dramatically since the 1970s, with accompanying declines in costs. The goal of the U.S. Department of Energy is to make the cost of solar power competitive with the grid by 2015, and many in the field think that that is a conservative target.<sup>6</sup> Some companies in the United States and Australia are trying to build large-scale plants that will store and supply base-load power on a twenty-four-hour basis at competitive prices. Appendix 2 lists some of the venture capital-funded efforts in the United States and other rich countries that are focused on solar energy.

Rich countries can use incentives such as tax credits to lower the risks of technological development, speed up the production of clean technologies, and facilitate contact between solar energy developers and relevant partners in Africa. For example, the Overseas Private Investment Corporation (OPIC)

3. For more information about this and other hydro power projects, see Practical Action's website ([www.practicalaction.org/?id=region\\_east\\_africa\\_energy](http://www.practicalaction.org/?id=region_east_africa_energy)).

4. "Bright Prospects," *Economist*, March 8, 2007, citing Cleantech Venture Network.

5. Twenty-five states plus the District of Columbia have binding clean energy standards. California's recent greenhouse law requires the state to reduce its overall emissions by 25 percent by 2020.

6. "Bright Prospects," *Economist*, March 8, 2007.

has a strong tradition of providing support to the private sector and can play a key role. In 2007 OPIC launched a program to reduce emissions from OPIC-supported projects and to support projects that are focused on energy efficiency and clean technology. OPIC has also announced the creation of a private equity investment fund—the Catalyst Private Equity Fund—with a target capitalization of \$100 million to invest in projects in the water and clean energy sector in the Middle East and North Africa. That type of market-driven mechanism can be expanded to sub-Saharan Africa, where it can be combined with risk insurance and financing to firms investing in the development and provision of clean energy. In general, aid institutions can play a key role, monitoring new developments in solar, wind, and hydro power; facilitating the transfer of new technologies; and funding start-up and other costs in bringing these technologies to Africa.

Large-scale hydropower projects also have the potential to meet a significant share of Africa's power needs. These projects continue to generate controversy because of environmental and governance concerns, but there are new best practice models that can be relied on to mitigate negative effects. Several hydropower projects are currently under consideration or at the early stages of development in Uganda, Ethiopia, and elsewhere that have the potential to address Africa's energy crisis. In 2007 the African Development Bank commissioned a feasibility study for Grand Inga. It is the most ambitious of all and seeks to vastly expand Africa's power generation capacity by harnessing the Inga Falls on the Congo River. Inga sends 42.5 million liters of water pouring into the Atlantic Ocean every second—a flow volume that is second only to the Amazon. It is estimated that Grand Inga will cost upwards of \$40 billion and generate up to 39,000 MW of electric power, supplying the needs of many African firms and households and even possibly those in Europe and the Middle East.<sup>7</sup>

No approach is without its concerns, however. One is the risk of increasing countries' dependence on hydropower during an era of drought and unreliable rainfall induced by climate change. But water storage capacity is grossly underexploited and estimated to be only about 5 percent of potential storage levels. Increased capacity can provide considerable potential for hydropower even in areas of variable rainfall.

Issues of governance have also been of concern in the delivery of large-scale projects. In recent years, energy projects have had to deal with charges

7. John Reed, "The Inga Hydroelectric Plant: Coincidence Inspires Hope," *Financial Times*, November 20, 2006, p.4.

of bribery and corruption. Multilateral institutions and individual countries have taken action against large firms, albeit in a somewhat piecemeal fashion. Ironically, these efforts have led to the exit of some large firms that are capable of delivering large infrastructure projects. In 2003 the world's largest power-producing company, AES, pulled out of the Bujagali Falls project, resulting in delays that have left much of Uganda with rolling blackouts of 8 to 10 hours per day (Environment News Service 2003). AES's decision was driven in part by economic reasons, but the company also fell victim to problems of corruption; in 2003 it was alleged that AES paid, or agreed to pay, bribes in violation of the U.S. Foreign Corrupt Practices Act. In addition, the original contract between AES and the government of Uganda was kept secret; when legal action forced the document to become public, civic organizations complained that the payments to AES would have been greatly in excess of what would be considered fair compensation.

Similar fates have befallen Lahmeyer International GmbH, a major infrastructure company operating in several countries around the world, and Acres International, a Canadian enterprise specializing in infrastructure (World Bank 2006b, Bretton Woods Project 2004). Both companies are large and capable of delivering major infrastructure projects. Between 2002 and 2003, both were convicted of bribery and corruption charges in Lesotho. Several more construction and engineering firms from the United States, the United Kingdom, Canada, and Japan currently appear on the World Bank's list of debarred businesses. Many firms capable of delivering on large-scale infrastructure projects either are wary about bidding on projects in Africa or are already on the list of debarred businesses. This reduces the number of firms that can bid on any given project and therefore means less competition in the construction sector.

The management of large-scale projects by national governments raises a number of governance-related issues, including tendering and procurement processes, the collection of tolls, and contracts for maintenance of roads and power plants. Some may be pessimistic about the capacity of African governments to manage these administrative functions well. However, new best practice models are available to governments and investors (such as the Nam Theun 2 hydroelectric power project in Laos) as well as a vast amount of technical capacity from multilateral institutions such as the World Bank and the African Development Bank. In addition, moving to a regionally cooperative project base could secure a degree of separation from national political pressures and so help in containing corruption. It may seem that national governments lose a degree of sovereignty in regional investment projects that



are backed with large amounts of international funding. But it is important to keep in mind the benefits that come with these projects—good project design using the lessons of best practice can create layers of safeguards as well as more transparent and rigorous methods of procurement, distribution, maintenance, and pricing of services. Agreed tariff policies should be implemented vigorously, and competitive bidding, in the most transparent manner possible, must be the focus of all infrastructure projects.

Concerns about resettlement due to the loss of homes and farmland and the destruction of environmental assets, including the loss of habitat for wildlife, are indeed serious. But they can be addressed by consultative processes, involvement of community organizations at every stage of design and construction, and external monitoring by relevant agencies. The Nam Theun 2 project serves as a good example of this process.<sup>8</sup> On the basis of an extensive, multiyear consultative process, this 1,070 MW hydropower project has a number of environmental and social safeguards to protect the people affected by the project and to preserve the biodiversity in the area (Asian Development Bank 2007). Although not based in Africa, the Nam Theun 2 project can serve as an important model of learning from outside the region, especially for the design and planning process for large-scale infrastructure development. Governance and environmental concerns can and do coexist with infrastructure development, but we can mitigate them by learning from experience and best practice models, both from within Africa and from other regions.<sup>9</sup>

The New Partnership for Africa's Development (NEPAD) has placed high priority on the need to build infrastructure, including projects on a regional basis, and end Africa's power crisis. NEPAD recently held a roundtable on Grand Inga, which attracted 120 participants from the public and private sectors, regional institutions, utility companies, nongovernmental organizations, civil society, and the media. In 2006 NEPAD launched its Infrastructure

8. See [www.namtheun2.com](http://www.namtheun2.com).

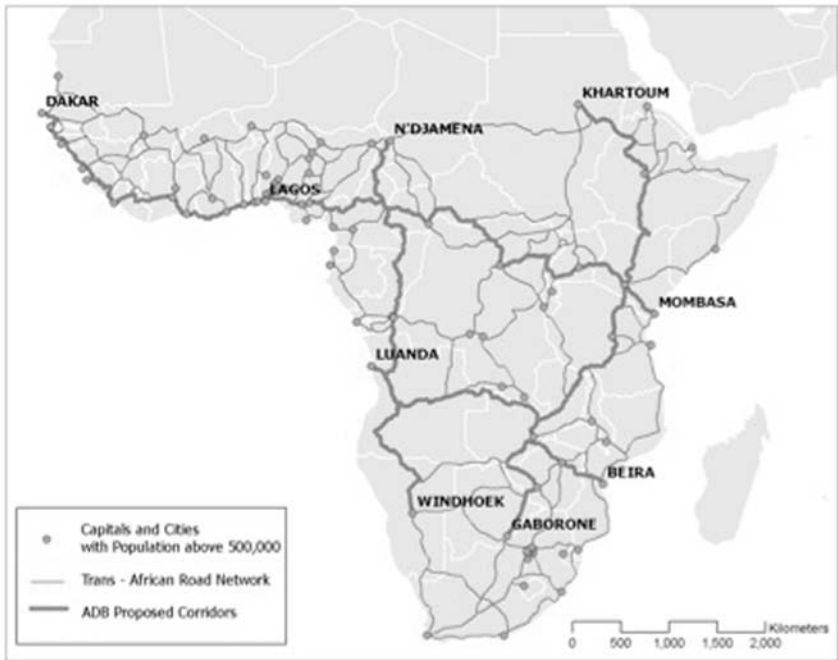
9. Many of the locations that would be ideal for road or power projects in Africa are also of great importance from a conservation point of view. But detailed information is now available that can substantially mitigate the effects of new construction. A database compiled by the Global Environment Facility, the World Bank's Development Research Group, and the World Conservation Union contains information about habitats and other data relating to 5,329 amphibians, 4,612 mammals, and 1,098 endangered birds. These data enable the overlay of biodiversity maps with potential road networks to identify sensitive zones (Buys, Deichmann, and Wheeler 2006). International agencies and individual governments can tap into the scientific community's considerable expertise on biodiversity to ensure that conservation planning is a *mandatory* component of infrastructure projects in Africa.

Investment Facility (NIIF)—a private sector–led initiative to raise *domestic* financing for infrastructure projects. NEPAD is also encouraging the growing effort to raise funds for *private investment* in infrastructure. It includes six main areas—advisory services (help individual clients to bid, develop, and construct infrastructure projects), capacity building (conduct training courses, workshops, and seminars to increase the understanding of private participation in infrastructure development), clearinghouse for information (collect and disseminate information on opportunities for investment), advocacy (NIIF would advocate that governments open up infrastructure projects for private participation), collaboration (work with other technical assistance providers), and outreach (reach potential developers as well as government agencies, international institutions, and so on). NIIF is an outcome of discussions of the Africa Business Roundtable, a private sector forum that is well aware of the burden of poor roads and inadequate power supply.

There is potential to address the transport bottleneck as well, especially with strengthened regional cooperation. Buys, Deichmann, and Wheeler (2006) make a compelling argument for the creation of a major road network in sub-Saharan Africa, estimating that a network of roads connecting all sub-Saharan capitals and major cities with populations of 500,000 or more would result in an expansion of overland trade by about \$250 billion over fifteen years, with both direct and indirect benefits for Africa's rural poor. They point out that overland shipments between South Africa and Nigeria—the two largest economies in Africa—are almost nonexistent because of the very poor quality of roads in transit countries such as the Democratic Republic of the Congo. Figure 4-2 presents the transnational road network proposed by Buys, Deichmann, and Wheeler along with the transcontinental corridors proposed by the African Development Bank.

Are such ambitious schemes viable? For a gain of \$250 billion in trade, it does not seem difficult to justify road upgrading, even at a substantially greater cost than the \$20 billion and a further \$1 billion in annual maintenance estimated by Buys, Deichmann, and Wheeler. Financing mechanisms similar to those proposed above for power (for example, from OPIC) could also facilitate the development of a transnational road network on the African continent, bringing together American construction companies and African governments. Furthermore, road construction is labor intensive, and a transnational upgrading could generate much-needed jobs across several African countries.

Investments in roads should be sensitive to the need to preserve biodiversity and wildlife habitats and also include efforts to improve road safety.

**Figure 4-2.** A Proposed Transnational Road Network

Source: Buys, Deichmann, and Wheeler (2006).

Africa is estimated to have a very high road death rate relative to the size of its vehicle fleet—10 percent of global road deaths with only 4 percent of global vehicles (Jacobs and Aeron-Thomas 2000). This may partly reflect the fact that only 12 percent of roads in Africa are paved, but safety issues have in general received little attention or funding. As interest in infrastructure is growing and new players enter the picture, it is very important that road construction reflects safety concerns and that every available technology be considered to reduce the rate of death and injury on African roads.

Together with small-scale local power generation using new technologies, regional cooperation is therefore likely a key to easing infrastructure constraints.<sup>10</sup> But an active thrust toward regional cooperation requires, in the first instance, governments wanting to collaborate and, in the second, support

10. The G-8 and partners launched the Infrastructure Consortium for Africa in 2005 to ensure that financing is available for infrastructure, but funding levels (while rising) are still below the levels recommended by the Commission for Africa and the High Level Panel Report of the African

from donor institutions now structured to operate at country, rather than at regional, level. One example of successful cooperation is the West African Power Pool, in which collaborating governments have successfully given up some decisionmaking power so that the supply of electricity can be maximized on a regional basis.<sup>11</sup> Under the umbrella of the Economic Community of West African States (ECOWAS), heads of state meet periodically to set the terms of the regional electricity generation and distribution system. In many ways, this type of investment in large-scale infrastructure is more likely to succeed than efforts that come with less money, less international attention, and fewer safeguards.

Many donors are heavily focused on country-level programs within which incentives to encourage regional cooperation have been minimal. Several years ago, IDA (the World Bank's soft loan facility) introduced a regional project component to its funding. Energy and road projects are well suited to this new funding window, which can supply two-thirds of the funding for regional projects to complement allocations of funds from country aid envelopes. This type of funding, therefore, creates a strong incentive for national governments to cooperate. Resources for the regional component of IDA can also be used to help with grid management and with regulatory reform connected to traditional utility provision. Other donors could similarly strengthen the regional components of their programs, sending a strong signal by rewarding cooperative countries. Donor institutions can go further, however. In addition to introducing regional funds, they could also allocate part of their own operating budgets to multicountry projects on a matching basis to further provide incentives to encourage country units to collaborate on the development of regional projects.<sup>12</sup>

Even with improved fiscal management and aid, public funding will not be enough to plug Africa's infrastructure gap. Governments must also make

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Development Bank (2007). At a recent meeting, the Infrastructure Consortium for Africa concluded that infrastructure needs are on the order of \$38 billion per year, about two-thirds of which is required for the energy sector (ICA 2008). In 2007 consortium members committed about \$10 billion in infrastructure funding. The EU-Africa Infrastructure Trust Fund, launched in 2007, is also receiving pledges from several EU member states.

11 For further information, see its website ([www.ecowapp.org](http://www.ecowapp.org)).

12. Regional funds from IDA hold particular promise because they can be used for projects such as the ones described above. But none of this is easy, and not just because of the scale of these projects. The World Bank Group and other aid institutions, including the African Development Bank, are largely geared to serving the national level. The World Bank, for example, is mostly organized along country units, with budgets allocated to country directors to fund work on national programs. Although this has many advantages, getting managers to work collaboratively across country

every effort to develop public-private partnerships to attract capital for the funding of infrastructure projects. Public-private partnerships (PPPs) are often mentioned as key to improving services and infrastructure in sub-Saharan Africa, where government capacity and revenue can be too limited to support the volume and size of needed investments (Farlam 2005). The opportunity to leverage private expertise and share project risk is attractive in many ways, but governments cannot expect PPPs to be the magic bullet. As with any project, corruption during tendering, implementing, and monitoring can make a viable project turn bad very quickly. And ensuring appropriate tariffs, project terms, and regulatory conditions is as essential as it is complex. Despite these difficulties, successful PPPs in sub-Saharan Africa show that they are useful instruments, provided that the project, responsibilities, and expectations are clearly defined.

African governments are fortunate that the global economy is creating large pools of savings seeking suitable investments. During a recent speech, World Bank president Robert Zoellick noted that sovereign wealth funds held an estimated \$3 trillion in assets and argued that “if the World Bank Group can help create the platforms and benchmarks, the investment of even one percent of their assets would draw \$30 billion to African growth, development, and opportunity” (Zoellick 2008). The World Bank and other actors can facilitate such investments in infrastructure by devising new and better instruments for underwriting and reducing risk for investments in so-called frontier markets. There is a good base to build on: The record of IDA and IBRD partial risk guarantees, discussed further below, suggests that public funding can be structured to leverage-in far greater volumes of private capital; the leverage ratio for these operations has averaged almost 10:1.

What about the maintenance of road and power projects? This is often cited as a bigger challenge than building infrastructure, but there are two reasons to be optimistic: the development of better-practice models for road construction and maintenance and the rise of a technocratic class in many African countries. Maintenance can be included in construction contracts, outsourced to independent providers, or contracted in other ways based on competitive bidding. User charges can also play a role in funding maintenance costs. Funding for

lines can be difficult; for staff, it means reporting to multiple country directors as well as to other managers. In sum, there are limited incentives to launch regional projects and to press for countries to collaborate. Disbursement rates on commitments to regional projects also appear low, and this may be due partly to such coordination problems and bureaucratic hurdles. While the main impetus needs to come from the countries concerned, the shareholders of aid organizations should consider how they can further reinforce internal, as well as country, incentives to cooperate.

infrastructure projects, no matter the source, must include mechanisms by which maintenance costs can be met, with these costs acknowledged upfront and provided for when the infrastructure contract is signed. One way to encourage competitive bidding is for maintenance projects to be bundled regionally, thereby providing enough scale to interest a large number of bidders.

The final potential success factor on the infrastructure front is the emerging role of China and potentially other middle-income countries such as India. Will China (and potentially India) step in to fill the infrastructure gaps in Africa? Despite the attention this question is getting, it is still quite difficult to predict how much will be achieved. China has indicated a strong interest in delivering infrastructure projects in Africa, often in exchange for natural resource concessions. Letters of intent have been signed at high-level public events; for example, in Nigeria, China has agreed to finance and build a \$1.5 billion, 2,000 MW plant on the Mambila Plateau in exchange for oil exploration rights. Similar deals, involving oil or mineral resources, have been made between China and host country governments in Angola, Ethiopia, Sudan, Zambia, and Zimbabwe. Appendix 3 lists ongoing and proposed Chinese investments that reflect a strong interest in infrastructure. India also is interested in Africa's oil reserves and has entered into agreements for infrastructure development in Sudan.

The role of China in Africa is beyond the scope of this work. But it is worthwhile to take a look at what China has done in the area of infrastructure investments. Detailed data on the activities of Chinese firms have been collected by at least two organizations—the Organization for Economic Cooperation and Development (Goldstein 2007) and the Centre for Chinese Studies at Stellenbosch University in South Africa (Centre for Chinese Studies 2006). These studies shed light on countries in which China has become a major investor, including Zambia, Angola, Ethiopia, and Sierra Leone. The data show that infrastructure-related projects carried out by Chinese firms rely heavily on financing from China, that sometimes they are not competitively bid, and that they use labor from China and the host country in about equal measure. Management of the projects is, not surprisingly, carried out by the staff of the Chinese firm rather than by local staff.

At this point, we do not have sufficient information to determine what is actually happening on the ground. There are daily reports in African newspapers about new projects that will be undertaken by the Chinese government, but many of these projects have yet to take off. There is some evidence that Chinese investors are running into many of the same problems that other foreign investors encounter. Take the case of Zambia. The Zambians

have made a concerted effort since 2003 to attract Chinese financing. Despite this, only one hydropower project had been completed as of 2007—the Kariba North dam. This is not to say that investment is not moving forward. In the construction sector in Ethiopia and Angola, for example, there is a large and visible Chinese presence. But in Angola, which has been a main target of Chinese interest, given its oil reserves, less has happened than was previously anticipated. Some fairly large-scale road construction projects have begun, but recently the *Financial Times* reports that several projects have been stalled, downsized, or simply never started. China has run into some of the same problems that other countries and donor agencies have encountered, such as unforeseen delays and cost overruns. Recently, the Angolan government revised estimates of its lines of credit from China downward by two-thirds.<sup>13</sup>

In the medium-to-long run, China, and potentially other middle-income countries, probably will make a considerable contribution to the enormous task of infrastructure building. At present, its companies are certainly providing stiff competition for the traditional contractors for infrastructure, something that is potentially to Africa's advantage. But for now, one should be patient in assessing China's performance in Africa. The popular fear about China and its motives in Africa vastly exceeds knowledge of actual events.

### **Regional Integration: Wider Markets, Increased Economic Density, and Greater Competition**

Infrastructure is not the only argument in favor of regional or pan-African economic ties. The surveys suggest that in terms of opening up space for greater competition, and also potentially for increasing economic density, regional integration of markets in Africa can play a significant role.

Regional integration of markets and the accompanying harmonization of customs, regulations, and trading rules will expand the size of the market and the number of firms in the marketplace. This will reduce firms' market shares from their currently very high levels, making it harder and less worthwhile for any given domestically entrenched enterprise to invest resources to retain market share. Regional integration might also meet with less resistance as opposed to further trade liberalization if local firms perceive that additional profits may be made in a larger regional market.

13. Alec Russell, "Infrastructure: Big Projects Fall behind Schedule," *Financial Times*, January 24, 2008, p. 3.

An expanded regional market that is not dominated by any single government or firm and in which the gains from entry are potentially larger relative to the costs of establishment may also make it easier for new firms to enter the picture. This will impact economic density as well as increase levels of competition. To the extent that they present a new opportunity to increase the size of the market while attracting new entrants, regional reforms may be easier to implement than some other types of reforms.

Regional integration could also spur greater competition for investment, not only between national governments but among subnational governments. In much of East Asia, competition has been a hallmark of development, not only among firms but also among national and local governments vying for investment and seeking to overtake competing jurisdictions. In China, for example, from the early years of reform onward, communities have competed vigorously with each other for investors and resources (Byrd and Gelb 1990). States and regions continue to benchmark their performance against each other and compete.<sup>14</sup> States in India are now also beginning to compete for investment and new business.

How can such competition be unleashed in Africa, where most jurisdictions have a low density of economic activity? In addition to the opening of regional markets, which will help to establish a wider range of benchmarks, fiscal arrangements might be reviewed to encourage active competition—at present, in contrast to China, they provide limited incentive to municipalities to compete. This could include introducing municipal incentive funds that are based on a municipality's success in attracting investors, as well as competitions offering prizes and free publicity to successful municipalities. Performance-based incentives could also be considered for key providers of business services, such as port management and customs and tax administration. These would need to be based on a combination of fiscal revenue targets (when appropriate) and business-related performance indicators, such as clearance or transit time. None of this will happen, however, unless national governments themselves are convinced of the need to become regionally or globally competitive.

## **Broadening the Base of the Private Sector**

In his seminal work on Africa published over two decades ago, Robert Bates provided several reasons for why governments were slow to pursue market-

14. For the example of Singapore and Johore province in Malaysia, see Kassim (2006).



based reforms (Bates 1981). Despite decades of donor advice and some significant reforms, it is still relatively difficult to find policymakers who really trust markets to deliver results; given the choice, governments often prefer a regulatory or administrative solution (Emery 2003). Governments are sometimes concerned that liberalizations or reforms will benefit already entrenched business groups. In other cases, of course, they may be concerned that reforms are potentially threatening to the position of the relatively few large businesses, which often have large market shares and long-standing relationships with governments.

How can governments be convinced that a broad-based, relatively unfettered private sector is both possible and in their interest? As noted above, some governments have tried drastic measures to curb the rights of minority entrepreneurs, but these have not resulted in viable opportunities for indigenous entrepreneurs. Others fear the emergence of a private sector that will be “unmanageable,” but experience from around the world suggests that a more competitive private sector will not immediately translate into a threat to whoever is in office. Available evidence shows that for the most part, reforms to promote private sector development have led, at least in the early stages, to a proliferation of small and medium-size firms in countries such as Taiwan and Malaysia. These firms are hardly a challenge to political incumbents and indeed are probably less likely to lead to political problems than systems that foster the rise of a small, wealthy class of tycoons and the continued dominance of a minority ethnic group.

A first point to emphasize is that reforms that benefit a large number of firms, such as licensing reforms, the abolition of “nuisance taxes” and regulations that serve only to make firms more vulnerable to harassment, and improvement of the functioning of financial markets (including setting up credit and asset registries, which seem to be potentially important in widening the access to finance), should be pursued as energetically as those focusing on trade, which may be seen as benefiting importers and larger exporting firms more than anyone else. Benchmarking regulatory performance in these areas can be helpful. Tax regimes, too, need to be reviewed to ensure equity.

Strong links can be created between institutions carrying out systematic research on the business climate and public-private consultative groups tasked with recommending approaches to reforms and contributing to the design of reforms. This can help to ensure a substantive agenda of reform that is underpinned by sound analysis.

The “network effect” within minority ethnic groups may be of particular significance in Africa, as information flows and contract enforceability are

weak in much of the region. Minority entrepreneurs within a network have greater incentive to stick to their contractual obligations since members of the network will monitor contracts and inflict penalties for violations. Indigenous entrepreneurs who are not operating within a network are not bound by these types of enforcement mechanisms, nor are they able to generate enough credible information to enable them to access trade credit and other resources. Members of the network have detailed knowledge of each other's firms and the characteristics of the owners and managers; this enables a positive flow of credit, technology, and other resources on terms that are unavailable to firms outside the network.

In these conditions there may be a concern that the real beneficiaries of reforms will be a small group of entrenched firms, often composed of ethnic minorities. Some populist governments have in the past sought to penalize ethnic minority groups to promote indigenous entrepreneurs, but the undermining of confidence in the business sector has made such efforts very costly and counterproductive. Efforts are therefore needed to help indigenous businesses and create alternative, competing networks. These concerns can be addressed with interventions that will help small domestic investors operate sustainable businesses.

One essential component will be higher education. The surveys show that university education is significant in determining the performance and rate of growth of indigenous businesses. This result may partly reflect the role of education in easing entry into a network of business professionals that serves as an alternative to ethnic minority networks. Access to a network may enable the flow of information—about business performance, characteristics of the entrepreneur, and other vital data that enable lending, the supply of trade credit, and the transfer of technological know-how. If this is the case, it points to the need for more and better education, whether it comes through formal educational institutions or some other type of training directly related to business-specific skills. It might also be in the form of workshops or entrepreneurial boot camps. Enhancing local capacity to provide such training should be an important objective. Outside of South Africa, African business schools are generally much in need of skills enhancement and curriculum development. Initiatives such as the Global Business School Network (GBSN) that seek to build the capacity of selected African business schools by bringing them together with leading business schools in industrial countries can play a role. Until recently, for example, there were no African business cases to provide teaching materials; under the auspices of the GBSN, case writers have been trained and sets of Anglophone

and Francophone cases have now been produced and are in active use in East and West Africa.<sup>15</sup>

Is there scope for affirmative action in the African context? Countries such as South Africa and Zambia have launched major initiatives, such as the Black Empowerment Act, to address the huge gaps between the indigenous and non-indigenous populations. Several other countries, including Liberia, are considering legislation that would grant certain groups preferential access to loans, equity, and services. But is this a good idea? A detailed discussion of affirmative action is beyond the scope of this book. But it is worth noting a recent paper from the Brenthurst Foundation in South Africa. It discussed Malaysia's efforts in this area and concluded that affirmative action may have some relevance, if implemented according to strict guidelines (Stead 2007). The Malaysian program stressed participation in, rather than control over, the economy by the indigenous population, thereby making its programs more viable. But in the end, it has not increased participation by all that much. Malay ownership in the local economy stood at 18.4 percent in 1990 in contrast to the goal of 30 percent. Steve Stead argues that there should be a clear time limit on such programs and that they often "run the risk of becoming divisive and self-defeating." Writing in the context of South Africa, he concludes that securing commitment of the nonindigenous population to the future is at least as important as attempts to increase local ownership. Capital flight at the first sign of trouble is suggested to be perhaps the most damaging aspect of the current ownership pattern in South Africa and elsewhere.

Another option to encourage domestic investors could be to make available more broadly some of the programs that have been used to encourage foreign investment. Partial risk guarantees from the World Bank and IDA have been used for the last decade to facilitate private investment in large infrastructure projects. Experience from twenty-eight projects around the world suggests that leverage ratios are quite high, with total guarantees of \$2.9 billion catalyzing private capital of almost \$30 billion, for an average leverage ratio of close to 10:1. Examples in Africa include Azito Power and the West Africa Gas Pipeline.<sup>16</sup> In such operations, aid can be used to enhance

15. For more information on business school development in Africa, the reader is directed to the Management Education & Research Consortium, which works in partnership with members of the Global Business School Network and the Association of African Business Schools. See its website ([www.mercnetwork.org/](http://www.mercnetwork.org/)).

16. The Multilateral Investment Guarantee Agency's Africa portfolio has also been growing rapidly. Twenty-one contracts totaling \$180 million were concluded in 2006, many in traded goods sectors such as agribusiness, manufacturing, and tourism. Programs have also been initiated to use guarantees to

credit quality by providing a “first loss” reserve that enables private insurers to provide cover at lower cost.

An essential step in leveling the playing field would be to offer partial risk guarantees to *domestic* investors on an equal basis with external investors, including long-term savers like pension and insurance funds. Except possibly for the repatriation of investment and profits, most of the contingencies covered by a partial risk guarantee, such as expropriation and government failure to fulfill contractual obligations, apply equally to domestic and foreign investors. That would require developing an appropriate process to deal with covered domestic investments, a step that would not seem to be insuperable. For example, domestic pension and insurance funds might be covered through the syndication of their financing with that of covered external investors. Wider application would likely require specific arrangements with governments on the treatment of covered domestic investors.

Partial risk guarantees could also be broadened to include “service guarantees,” which also would be available to domestic and foreign investors on an equal basis. Under such an approach, countries implementing reforms in key areas such as power, customs, licensing, and so on, would commit themselves to service standards. Firms could purchase insurance against service failures, perhaps not on an individual basis (since that would invite moral hazard) but on the basis of overall performance. These contracts would be underwritten by risk guarantee programs, possibly funded by donor countries through international financial institution (IFI) programs. Widespread or persistent failure to provide business services to agreed standards would then activate the guarantee. This would do more than just compensate firms for lost business. It would force the question of business service standards to become a priority topic of discussion among policymakers. The guarantees would then serve two purposes: to provide risk mitigation for investors and to strengthen the credibility of reforms in the business environment and of performance-based government.

How might such guarantees work? Although they are a form of insurance, service guarantees could not be implemented like political risk guarantees: the transaction costs of such an approach would be prohibitive because they would cover large numbers of businesses, providing relatively small payments against periodic service lapses. Using available data, governments and firms would need to reach a consensus on the most serious impediments to investment and the effective operation of existing businesses. These might include

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increase the volume of trade credit, an area of particular interest for smaller firms not able to tap into existing networks.

the unreliability of power supply, slow port and customs clearance times for imported inputs and for exports, long delays in rebating import duties or VAT to exporters, and poor security.

Donors may already have projects that address these areas. A private sector program, encompassing all of these projects, would aim for an agreed set of performance standards, between the private sector and the government, and systems for monitoring performance. Some services can be benchmarked against international norms. Businesses, perhaps starting with those in export processing zones (EPZs), would be offered the opportunity to purchase service guarantees. The guarantee would not insure against lapses in service provided to that particular business; it would insure against lapses in average service provided to firms in general (perhaps starting with those in EPZs). This is necessary to avoid moral hazard and also to simplify monitoring.

To ensure that firms would not be able to profit just by betting on the performance of government, payouts would be subject to two ceilings, one related to the level of insurance purchased by a firm and the other to the volume of sales or exports. Monitoring would be on a monthly basis; it would be part of the performance agreement between government and the responsible ministry underpinning the private sector program; and it would be reviewed by a tripartite commission representing government, the private sector, and the funding donors. Lapses in performance beyond specified levels would trigger automatic compensatory payments to covered businesses. For firms in an EPZ, for example, these could be provided simply in the form of rebates on rent, fees, and other service charges. In cases of extreme nonperformance, fees inclusive of rebates would be negative. Only in truly extreme cases (for example, war or severe natural disasters) would the service standards be waived.

Compensatory payments above the levels of funding provided by the premiums would be provided from a fund guaranteed by donors through a component of the private sector operation. Total liability would be capped at a multiple of the total payments by firms that would be accepted in a given operation (for example, total liability of up to ten times the premiums) and a limit set on the term of the guarantee program (about ten years). Calls on the guarantee facility would trigger a government counterguarantee to the donor (for example, if to World Bank, this would be funded by an IDA credit that would come out of the country allocation).

This type of program could offer several potential benefits to the private sector. By forcing governments, businesses, and donors to focus on service delivery results, it would provide a framework for capacity building and investment. Without picking winners, it could play a role in encouraging

investment, especially in export-oriented activities, and could serve as an important signal to potential investors that the private sector is taken seriously by the government. Most important, it would enhance the level of policy dialogue and reform in the business environment area by restructuring accountability, ensuring that governments and development partners bear some real accountability for poor implementation of programs in this area. Even if firms do not sign up for the program in large numbers, many of its purposes are served—with performance shortfalls, small guarantee payments are made, performance lapses are documented, and the issue is pushed to high levels of policy dialogue.

## Conclusion

Africa's infrastructure needs pose an enormous and urgent challenge. Rather than focus on conventional, national-level investments in power and roads, we argue that large-scale investments made under regional cooperation agreements will yield the greatest benefits. Africa's vast potential for renewable energy sources suggests another avenue as well—very small-scale technology to harness solar and hydropower that will power villages and small towns without having to rely on a public grid. Finally, a transcontinental road network has the potential to increase overland trade within the continent itself.

The base of the private sector remains very small and must be broadened to sustain a vibrant business sector and a middle class. To achieve this, we propose that commonalities of purpose be identified and be used as the basis for merging the various business forums that currently exist in any given country. The business-government dialogue can be strengthened by such convergence, and real gains can be made against the constraints faced by the private sector. Investments in education, especially to build entrepreneurial skills, are also important to build a broad-based private sector.

Finally, rich countries must support the efforts of individuals and governments, *but they must also do no harm*.<sup>17</sup> Large amounts of aid can lower the need for private sector reforms because they can be seen as replacements for tax revenues that would otherwise be generated from the private sector. In the longer term, dependence on donors can lead to real disincentives to reform and grow. Rich countries need to balance this problem with the need to provide financing in critical areas such as infrastructure and training.

17. Birdsall (2007).