Africa is richly endowed with natural resources, and new discoveries in such previously non-resource-abundant economies as Ghana, Kenya, Mozambique, Tanzania, and Uganda raise the prospect that an increasing number of African countries will become resource exporters in the future. The exploitation of natural resources is a huge opportunity. It is also one that, as we pointed out in chapter 3, carries considerable risks. Relative prices in resource-rich economies tend, all else being equal, to push them toward economic structures where a high share of output is concentrated in the resource sector and in nontraded services.

If African resource exporters were able to sustain high levels of income based on rents to resources and returns on foreign financial assets indefinitely (like some countries in the Arab Gulf), this structure might not matter too much. This is, however, not the case for most resource-abundant economies in Africa. The resource is finite, so economic structure matters a great deal. The long-run success of Africa’s newly resource-abundant economies will therefore depend on the choices they make as to how resource revenues are used to support future growth. For most of Africa, natural resources are
best seen as a medium-term source of public income that can help countries put in place the institutions, policies, and diverse public investments that will underpin the changes needed to sustain growth once the resource is depleted.

This chapter begins with a look at the savings and investment questions raised by a resource boom. Because governments have the option of using resource revenues to increase the productivity of private investment in industries beyond the resource sector, we also examine how public actions can be used to deal with Dutch disease. This is followed by a discussion of the opportunities the presence of a resource discovery may open up for spatial industrial policies. The chapter concludes with a discussion of two options for diversification in newly resource-abundant economies: investing in new production knowledge and linking industry to the resource.

**Understanding the Boom**

Although our central concern is how resource revenues can support diversification into industry, it is important to begin with the larger questions posed by a natural resource discovery. These are mostly questions of public financial management. There is by now a great deal of writing on the issues of transparency and accountability in the management of resource revenues. We certainly do not need to repeat the lessons here.¹ Our focus is further upstream and downstream. Understanding the size and timing of the boom and putting in place the policies and institutional structures needed to manage resource revenues and public investments are essential first steps toward diversification. They set the boundaries on what will be saved and invested and can improve the efficiency and effectiveness of public investment out of resource revenues.

¹. A survey of good practices in transparency and accountability is available at the Natural Resource Charter (www.naturalresourcecharter.org).
How Much Revenue and When?

The first questions are: How big is the revenue boom likely to be, and when will revenue come online? These are often the questions that are least well understood by politicians and the public. The experiences of Ghana, Kenya, Mozambique, Tanzania, and Uganda show that, in general, the size of the boom is overestimated and the delay in receiving revenues is underestimated. In addition, lack of transparency regarding the terms of extraction agreements between the foreign investor and the government has frequently led to a great deal of confusion and, at times, suspicion.

In Uganda, for example, we found that there are not going to be any significant oil revenues any time soon. With production starting at modest levels as early as 2015, it will take until the second half of the next decade—about 2026—before revenue climbs toward 5 percent of GDP, or just over one-third of nonoil taxation. Even at its height, the size of the boom is modest. A relatively narrow range for the oil price—given the history of the last ten years—of US$75 to $105 per barrel could put revenue per person at US$20 to nearly US$80 in 2030. This is as low as 3 percent of GDP (smaller than aid inflows today) or as much as 9 percent of GDP.  

The Uganda case points to a common thread among the five emerging African resource exporters we have studied. In all of these countries the resource boom most probably will not be large enough to be transformative—none of the oil exporting countries is likely to become another Kuwait—but it could well be large enough to be potentially disruptive, if not well managed. Gas in Mozambique and perhaps Tanzania could bring a larger windfall, but even in these cases the timing and magnitudes are uncertain, and neither is likely to end up as Qatar.

Ironically, the long lead time before revenues begin to flow is on the side of the resource exporters. Prudent revenue management requires establishing how much public spending should increase and how much to save before resource revenues begin to accrue to

the treasury. Countries with new discoveries have a window of opportunity to make these decisions and lock them in before pressures to spend become irresistible.

**Save or Spend?**

Sustainable development depends on the rents from resource extraction being converted into other sources of income. This inevitably leads to the conclusion that some of the revenues must be saved and invested. In a low-income country it also raises the question of where to invest. The rules governing saving from nonrenewable resources—such as those implied by the permanent income hypothesis or the bird-in-hand rule—tend to place substantial, perhaps excessive, weight on the welfare of future generations and in practice encourage the accumulation of foreign assets.

In a poor, capital-scarce economy, this is inappropriate for two reasons. First, it is likely that future generations will be richer than those today, making it reasonable for government to use a portion of the windfall to increase the consumption of today’s poor. Second, the returns to domestic investment in a capital-scarce economy should exceed those offered by foreign assets.3 Put another way, while it may make sense for rich, capital-abundant Norway to invest in U.S. Treasuries, it doesn’t make much sense for most African countries—provided, of course, that the funds are invested and spent well.

This raises the question of how to assess how much spending is too much. Regardless of whether spending is in the form of consumption or public investment, there is an absorption constraint. Getting feedback from the economy as the public investment program is executed will show whether the limits of absorptive capacity have been reached. The most direct signals are in inflation and the market exchange rate. When inflation is going up and the exchange rate is appreciating, spending needs to be scaled back. Once the overall volume of spending consistent with prudent macroeconomic man-

3. Collier and others (2010).
Dealing with Resource Abundance

agement is set, whatever part of revenue should not be spent—either on consumption or domestic investment—should be parked in sensible investments overseas, allowing plenty of room for flexibility in case of unexpected events and shocks to the domestic economy.

The Quality of Public Spending

One frequently neglected determinant of the appropriate quantity of public spending is the quality of that spending. The experience with public expenditure management in the emerging resource exporters we studied suggests that two critical measures are needed to increase the quality of spending: improving the quality of project appraisal and budgeting of recurrent costs of maintenance. One of the major contributors to Botswana’s success in translating diamond revenues into rapid economic growth was a firm insistence on good quality appraisal of every public investment project. Chile, another resource-rich economy, followed similar rules.

To replicate this in other resource-exporting countries would entail building a cadre of economists with training in project appraisal and making them responsible for project preparation across each spending ministry. It would also require designing incentives for the use of project appraisals through the budget process and personnel policies. In Botswana and Chile, writing sound appraisals and identifying and rejecting weak or inadequate appraisals were skills required for officials to advance their careers in the Ministry of Finance.4

Frequently public investments are made without adequate provision in the budget for recurrent costs of maintenance. This is especially dangerous in the case of spending out of resource revenues. Lack of maintenance can seriously degrade the returns to the investments made, and the spending rule is that investments in the domestic economy should only be made when they offer higher returns than foreign assets.

Dealing with Dutch Disease

Because of the relative price changes that tend to occur in a resource-abundant economy, diversification into tradable goods production outside the oil sector is difficult, even with prudent management of overall spending. While Dutch disease reduces the range of internationally competitive industries available, competitiveness does not depend on the exchange rate alone. Governments can use public policies and investments to enhance the productivity of investments outside the natural resource sector.

In resource-rich economies there is an important role for policies and investments directed at improving the investment climate. While we have been critical of the way in which investment climate reforms have been implemented, if properly designed to embrace infrastructure and skills development in addition to regulatory reform, investment climate reforms have the potential to boost the productivity of a wide range of firms outside the resource sector.

Regulatory Reform

Regulatory reforms are an attractive place to begin. They have low fiscal costs and potentially high payoffs. Surveys of manufacturing firms in resource-abundant countries highlight a wide range of areas in which regulatory or administrative burdens raise costs and reduce competitiveness. While the same concerns we raised in chapter 7 apply to the design of the regulatory reform agenda, reforms that encourage the entry and exit of firms and reduce administrative burdens can have a positive impact on firm-level productivity. Well-designed institutional and regulatory reforms should be undertaken sooner rather than later in newly resource-rich countries in order to exploit the opportunity offered by the waiting period before resource revenues begin to flow. This is because institutional and regulatory reforms may prove more difficult to initiate and sustain in resource-abundant economies.5

The institutions that create and enforce regulation can limit competition and create rents. Incumbent workers and firms benefit from lack of competition and have little incentive to support improvements in the regulatory regime. Normally, pressures for regulatory reform would come from other interest groups in the society, but in resource-exporting countries there is some evidence that resource rents gradually weaken the checks and balances that provide scrutiny over the government, making these competing interests less successful in changing policy.\(^6\)

**Infrastructure and Skills**

The new revenues that will flow from natural resources open up fiscal space for governments of resource-abundant economies to address two of the fundamental constraints to competitiveness we highlighted in chapter 7: lack of infrastructure and skills. Investments in trade-related infrastructure can make an important contribution to diversification. The nine currently resource-rich African countries have an average trade-related infrastructure (ports, rail, road, and telecommunications) ranking of 122 out of 160 countries in the World Bank 2014 Trade Logistics Index. Africa’s best-performing resource-rich economy in terms of trade-related infrastructure was Nigeria, ranked at 83. Seven of the remaining eight are in the bottom third of the global distribution and four are in the bottom quintile.\(^7\)

Increasing investments in infrastructure, particularly in the area of trade logistics, can help lower costs and offset the worst effects of Dutch disease. The increase in public revenues made possible by the resource can be partly directed to priority investments in trade-related infrastructure. At the same time, not all infrastructure projects will have the same impact. Careful cost-benefit analysis of proposed infrastructure investments is needed, and governments should have a prioritized list of vetted projects ready for funding.

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The skills gap poses another major constraint to diversification. For example, in Uganda and Mozambique, two emerging resource exporters, lack of skills is emerging as a significant constraint on firm-level performance. Forty-seven percent of Ugandan companies reported lack of skills as a moderate, major, or very severe constraint to business. One-third of the large firms surveyed in the World Bank Mozambique Investment Climate Assessment reported the educational attainment of the workforce as a major constraint to growth. As we saw in chapter 7, the main skills that are lacking are those related to production. These are largely the product of postprimary education, although investments in quality to raise cognitive skills at all levels are also important.

Public spending on improving quality and expanding postprimary education have been heavily limited by the influence of the donors and their pursuit of the primary education Millennium Development Goal (MDG). Newly resource-rich economies should devote some of the incremental funding made possible by resource revenues to secondary, technical-vocational, and university education and to improving quality at all levels. This will not be an easy task. Pressures may still come from the donors to place priority on expanding primary enrollment, and the links between educational spending and educational outcomes are still not well understood. While cost-benefit analysis of projects to develop human capital are difficult, there is no excuse for not demanding rigorous attempts to assess the cost-effectiveness of various proposed skill development programs as an input to sensible policymaking.

Debt management is important. Because the needs in infrastructure and skills are large and the timing of revenues is uncertain, governments face strong pressures to borrow on international capital markets in anticipation of the arrival of resource revenues. In the case of Ghana, for example, the government ramped up infrastructure spending before resource revenues were in place, raising the public debt burden through sovereign borrowing. This means that raising

revenues from general taxation will be needed to service the debt during the waiting period for revenues to come onstream, which may affect the country’s ability to borrow in the future. While it is difficult to resist pressures to spend, prudent debt management is essential.

“Investing to Invest”

Investing resource revenues to expand infrastructure and education will to some extent require transforming public expenditures into physical assets. The construction sector largely determines the ability of an economy to transform investment effort into investment outcomes. In infrastructure, for example, there is evidence from a large sample of countries that higher construction costs are significantly associated with poorer roads. A 10 percent increase in unit road construction costs is associated with a country-level reduction of 0.7 percent in the kilometers of paved roads per person and a 0.4 point reduction in the quality of the trade and transport-related infrastructure index component of the World Bank Logistics Performance Index. Similar considerations apply to public investments in structures, including those needed to improve education.

If construction faces bottlenecks in production and is unable to increase supply, any surge in demand will force up costs and prices, reducing the physical output for a given amount of nominal investment. Paul Collier has emphasized the need for policies to reduce the marginal cost of physical investment, which he terms “investing to invest.” It is potentially an important part of dealing with the challenges of Dutch disease.

Evidence is mixed among the countries we studied with respect to construction costs. In Uganda, construction cost increases have outpaced overall inflation significantly over the past several years and appear to be accelerating. Prices for the construction sector rose by 35.3 percent from September 2010 to September 2011. Reflecting the attempt to boost public investment, the increase in prices was

greatest for nonresidential buildings. In Tanzania, on the other hand, most large-scale construction is carried out by foreign contractors. While this poses problems from the point of view of capability building in the domestic construction sector, it means that the supply price of construction services on major public investment projects is less sensitive to domestic supply constraints.

One reason construction prices tend to rise sharply in response to increases in demand is that the construction sector encounters bottlenecks. The first step in investing to invest is therefore for the government to learn from the construction sector about the bottlenecks it faces. Because the speed with which construction can be expanded without severely driving up prices determines the pace at which public investment can be increased, the government also needs a rapid flow of information to determine the pace of public investment.

Botswana provides a good example of how this can be done. When it realized that construction costs were rising rapidly as a result of the increase in public investment from diamond revenues, the government created a separate annual plan for the construction sector within its overall five-year development plan. Each year construction firms were called in, the feasibility of government construction plans was discussed, bottlenecks were identified and addressed, and the rate of implementation of the overall plan was adjusted.

Public policies can address some bottlenecks. Construction requires land, material inputs, skills, organization, and finance. Each can potentially constrain the expansion of output. Sometimes urban land rights are confused, which can delay construction projects. Similarly, planning permission might be slow. Clearly, these are stages in construction that government can prevent from becoming constraints. Policy restrictions on imports, poorly performing institutions such as customs, or the poor performance of the port may become a bottleneck and should be addressed head-on. For nontradable inputs a combination of economizing on their use and stimulating local production may be needed.

Construction will not be able to expand if there are few skilled construction workers. Bricklayers, welders, electricians, and plumbers are complementary to unskilled labor and capital, and the cost of importing them can be high. With planning, construction skills can be developed locally. Therefore, the government should allocate resources to technical and vocational training in construction skills before the flow of resource revenues begins. Immigration policies that encourage the temporary location of service providers can also be liberalized to reduce the cost of importing skilled labor. For East Africa’s emerging resource exporters this could be done within the context of deeper regional integration of the East African Community.

Corruption and collusive behavior among firms are more difficult areas to deal with. Corruption lowers the efficiency of capital investment generally. It seems to have a particularly strong impact on construction. The study we previously referred to found that unit costs in countries with a level of corruption above the median, as measured by the Worldwide Governance Indicator’s corruption measure, have on average 12 percent higher road construction costs, even after controlling for the business environment and public investment capacity.

We have a very imperfect understanding of the mechanisms by which corruption flows through into higher costs. One obvious channel is “leakage” of funds. The use of inferior materials and the failure to meet specifications are other likely suspects. Inferior inputs are a serious concern. They raise the cost of construction, but they also increase subsequent maintenance costs for the government. Some suggested mechanisms for dealing with corruption include strengthening the role and integrity of the project engineer and checking the wealth of key procurement agency officials. Countries could also experiment with different incentive contracts for engineers to encourage reporting of corruption and fraud.

Collusive behavior by construction firms raises costs in both developed and developing countries. By one estimate overcharges due to cartels lead to about 40 percent higher construction prices on average in developing countries. Given the magnitude of these effects, limiting collusion is a major concern. Collusion, however, has been difficult to detect in advanced economies, making it a daunting task for the average African country. Building up and publicizing databases of unit costs of comparable construction activities can assist governments in ensuring that they are not overpaying, but publishing the data carries a downside risk. There is some evidence that new bids closely track the publicly available data, suggesting that higher transparency has helped companies collude.\(^{16}\)

**Resources and Geography**

We have shown that agglomeration economies are important, even in countries at quite low levels of development, and in chapter 7 we outlined some spatial industrial policies we feel are appropriate for those African countries trying to break into the global market for manufactured goods. The relative price structure of the region’s resource-abundant economies is likely to make rapid expansion of manufactured exports significantly more difficult. On the other hand, the presence of natural resources and the revenues and foreign investors they bring can open up new areas for spatial industrial policy.

**Resource-Based SEZs**

Resource-rich economies will need to develop spatial policies in line with their resource endowments and factor costs. Rather than focus on developing export processing zones (EPZs) to attract trade in tasks, a more promising approach might be to use special economic zones (SEZs) to promote industrial activities in sectors linked to the resource. One example in Ghana is the Shama EPZ, an industrial

park targeted to the petroleum-petrochemical sector, situated in the Western Region. The zone provides investment support to a downstream refinery, distribution, transit, and supply chain businesses and resource-based products (plastics and jellies) intended for export. It also offers development and capacity-building services for employers and employees. The zone provides land for tank farms, storage yards for logistics and haulage contractors, and manufacturing of chemical inputs and accessories for the petroleum industry.

The presence of new natural resources can have knock-on impacts on the communities surrounding the extractive activity through job creation and, as in the case of manufacturing, unanticipated effects on women’s lives and household welfare. Some new research, based on a large sample of mining projects, finds that mining in sub-Saharan Africa creates substantial numbers of jobs that are not directly connected with the mining sector itself, and it has the potential to draw women into work outside the household. The presence of a mine has a positive and statistically significant effect on the likelihood that a female will secure a job in the service sector. Indicators of infant health are also higher in areas near mining projects. Resource-based SEZs can become a focal point for programs designed to increase the benefits to local communities and in particular to women living near an extractive activity.

The challenges surrounding the development of resource-based SEZs are very similar to those for export-oriented zones. Infrastructure, institutions, and attitudes continue to matter. Unless infrastructure and institutions are world class, it may prove impossible to draw a critical mass of firms into the zone. Managers with business experience and a business outlook are critical to success. One important difference is that the zones are designed to foster value chain relationships between the extractive industry and mainly domestic firms, upstream and downstream. This implies that the design of institutions intended to foster value-chain relationships is critical to the success of the SEZ. This is an important topic to which we shall turn later in this chapter.

Growth Corridors

A number of governments are experimenting with the development of regional special economic zones, often called “growth corridors.” Regional SEZs can be developed around key trade infrastructure (ports, roads, power projects) and natural resource discoveries. Both Mozambique and Tanzania are working to design regional SEZs around their newly discovered natural gas deposits. These regional economic zones are intended to play a catalytic role in integrated regional growth initiatives by attracting investors to locations from which specialized regional inputs can be tapped and production scaled up.

Regional SEZs are attractive for two reasons. First, they emphasize the complementarities between transport infrastructure and resource- or agriculture-based projects within the region. The SEZ approach can help to solve coordination problems between investments in related projects, and it raises the prospect of rapid private-sector response to infrastructure improvements. Second, it is possible that in resource-centered zones the bulk of capital spending on infrastructure for both transport and power can be financed by the resource projects themselves. Growth corridors also highlight the possible complementarities between investment projects.

A successful corridor-based approach requires the implementation of a much broader set of policies than those found within an EPZ. These interventions include (i) promoting skills development, training, and knowledge sharing; (ii) developing industry clusters and targeting links with zone-based firms at the cluster level; (iii) supporting the integration of regional value chains; (iv) strengthening public-private institutions; and (v) ensuring that labor markets facilitate the movement of labor across firms. Throughout the process, links with the wider domestic economy must be developed and deepened.

The experience of some countries, including Malaysia and China, suggests that growth corridors hold some promise, but a realistic assessment of the potential of different zones and a rigorous analysis of the costs and benefits of public spending on alternative projects is
needed. This is a difficult area. Narrow cost-benefit analyses of infrastructure projects often miss the role of infrastructure in triggering private investment. Wider analyses run the risk of wishful thinking.

**Transnational Transport Corridors**

One intriguing possibility is to attempt to use natural resource discoveries and the major infrastructure investments that often accompany them to break the logjam currently inhibiting the development of transnational transport corridors. Oil in Uganda provides an example of the potential and the pitfalls of this approach. Uganda is a landlocked country that cannot solve its connectivity problem by itself. Regional approaches to infrastructure, customs administration, competition policy, regulation of transport, and trade-related services are essential for Uganda’s ability to compete.

During the postindependence period the governments in the East African Community have failed to sustain the necessary levels of political cooperation needed to make transnational roads, railways, and institutions operate effectively. Oil is a potential game changer. If the rail transport option for Uganda’s petroleum exports proves to be attractive, an opportunity will arise to develop and operate a rehabilitated rail corridor, either through Kenya or Tanzania. Such a rail line should not be the monopoly of the oil industry. A third-party commercial operator with core competence in infrastructure is the most credible option to carry out rehabilitation and operation of the railway.18

For the new transnational rail line to be commercially viable, the risks to investors and customers would need to be addressed at the start of negotiations. The rail contracts would need to include agreements with the governments and commercial users on access and tariffs, enforced by reference to a dispute settlement mechanism. In effect, the governments involved would have to agree in advance to a limited, clearly specified degree of pooled sovereignty. To achieve this, an intergovernmental rail authority that has sufficient power

to negotiate credibly with a rail company and its commercial users—including the oil companies—would need to be established. The high stakes to all parties of the resource discovery increase the incentives for sharing of sovereignty. Having established a precedent, a similar approach could be used to establish intergovernmental road authorities.

**Some Options for Diversification**

Although the discoveries of natural resources in Africa in many ways make the process of industrial development more challenging, they also offer new opportunities. We want to explore two of them. The first is using resource revenues to develop specialized knowledge, either linked to the resource itself or in unrelated areas in which a resource-abundant economy may have geographical or other country-specific sources of comparative advantage. The second is to use the presence of the resource to acquire firm capabilities from foreign investors.

**Investing in Knowledge**

In addition to investments in the skills needed for production, a strong case can be made for efforts to build specialist knowledge and skills linked to the extractive industries themselves. Resource extraction is idiosyncratic. Particular problems are associated with technology and location-specific geology. This creates scope for specialist knowledge of these localized features, giving local firms a comparative advantage. Norway is a well-known case. When petroleum was discovered Norway had no local expertise in deepwater exploration and production of oil and gas. Through a deliberate policy of building up such expertise through universities and the state oil company, today Norway is a major player in deepwater oil and gas technology, including off the East Coast of Africa. Qatar provides a different ex-

ample; its expertise is in dealing with the environmental consequences of oil spills. Qatari companies have developed a global reputation that has involved them in such high-profile containment and cleanup operations as the BP spill in the Gulf of Mexico.

One appropriate investment for Africa’s newly resource-abundant economies might be to build up the geology and engineering departments of universities with the intention of developing a services export industry related to resource extraction. A public-private partnership between the Jubilee Partners and Takoradi Polytechnic in Ghana, the Jubilee Technical Training Center (JTTC), is an example. The first batch of petroleum engineering trainees (thirty-two in total) graduated in April 2014. While it is neither efficient nor feasible for each African resource-rich country to develop such expertise individually, it should be possible to develop regionwide centers of excellence in mining and petroleum engineering and geology. Makerere University in Uganda, for example, has a long tradition of serving as a regional hub for Eastern Africa and is close to a wide range of new natural resource discoveries.

Knowledge-intensive industries, such as some information technology–based services, and those that exploit localized sources of competitive advantage, such as tourism, may be less sensitive to Dutch disease than final stage task-based manufacturing. Chile provides a good illustration. In Chile, resource revenues made it possible to develop a wholly new line of business—horticulture and agro-industry—in which local geography played a significant role. Chile’s abundant lakes and rivers are ideal for the cultivation of salmon, and its climate is highly suited to the production of wine. The main drivers of productivity improvements in both industries were investments in the generation and diffusion of production knowledge across firms. The initiative was led by an innovative public-private partnership, the Fundacion Chile, and eventually involved private firms, government at all levels, universities, and specialist research institutes.

Many new African resource exporters—Kenya, Mozambique, Tanzania, and Uganda, among them—may, like Chile, find opportunities to invest in knowledge relevant to new exports in agriculture or services, such as tourism, where geography or other endowments
provide a comparative advantage. One approach might be to develop three-way partnerships with the private sector and universities and specialist research institutions: the private firms carry the commercial risks of investments, the research organizations focus on knowledge generation, while the state provides new knowledge as a public good. In this area, as in education and skills development more generally, accurate estimates of the costs and benefits of public investments are difficult but critical.

**Linking Industry to the Resource**

Natural resources change the balance of power between governments and foreign firms. In countries that are not resource-abundant governments are engaged in a global beauty contest to attract foreign direct investment (FDI). For this reason the types of FDI institutions outlined in chapter 7 are essential to attract and retain high-capability foreign investors. In natural resource-rich countries it is the foreign investors who are engaged in the beauty contest, often competing to gain access to the resource. This provides a unique opportunity for African governments to broaden the country’s industrial capabilities by integrating domestic companies into the supply chains of multinational resource extraction firms.

This is an area where governments will need to exercise great care. Simple rules of thumb, like domestic content legislation, that specify a minimum percentage of domestic inputs that need to be sourced locally are usually ineffective. The multinational corporations (MNCs) that dominate extractive industries have long experience complying with the letter of such legislation without meeting its spirit. In general, governments come to the bargaining table with inflated expectations of how many domestic firms can be integrated into the resource-related value chains and the foreign firms come with the expectation that few, if any, domestic companies have the capabilities to become reliable suppliers.

A major pitfall to be avoided is the temptation to take an overly narrow view of what kinds of firms can benefit from the resource boom. There is a tendency for policymakers to focus on two areas.
Dealing with Resource Abundance

Upstream the focus is usually on opportunities for local engineering, fabrication, assembly, and construction firms to participate in the construction phase of the new extractive investments. Downstream the emphasis tends to be on further processing of the resource. Ghana’s industrial development strategy, for example, calls for the establishment of new industries such as petrochemicals, fertilizer, and liquefied petroleum gas (LPG) cylinder production linked to its oil and gas industry. This is too narrow a view of the potential for engagement with the natural resources sector and runs the risk of focusing attention on capital-intensive sectors that require high levels of firm capabilities and generate little employment. It also diverts attention from other opportunities, some as mundane as catering, cleaning, and security services.

One way to move forward is for the government to develop programs in partnership with the foreign investors to identify domestic firms with the capabilities to participate in their value chains in the short run. A first step is to open an active dialogue with the foreign investors to determine their view of the opportunities to source goods and services locally. In many cases capabilities are adequate to permit some degree of integration of local companies into the resource sector’s value chain.

Initially a very small number of local firms may be able to play a leading role in any area of activity. This raises the need to put in place training programs for potential supplying firms that cover both technical and business management subjects. Programs to improve the capabilities of potential supplying firms through training and contacts with the resource sector’s foreign subcontractors can be developed. The success of this approach rests on a willingness, on the part of the foreign investor, to engage in the process and the effectiveness of the government agency charged with implementing the program.\(^\text{20}\)

One of the most important considerations in attempting to bring local firms into the multinationals’ supply chains is finding a way to achieve both transparency and effectiveness in an environment where the number of suitably qualified local firms is initially low. In

Ghana and Tanzania, the number of well-functioning firms in steel fabrication can be counted on the fingers of one hand.21 This is where access to training becomes important. Effective training can raise the capabilities of firms to the minimum level needed to enter the MNC value chains, but if any firm can apply, substantial resources may be wasted on firms that are unable to meet the productivity and quality standards needed, even after training.

Selecting those who are likely to be able to meet the minimum standards of the MNCs or benefit most from training in the early phases of a resource boom is a process fraught with risks, both economic and political. Because some selectivity is essential and the number of domestic firms hoping to benefit from the resource boom is likely to be large, selectivity opens up the door for rent seeking. A solution is to set up a process that allows any local firm to apply, but specifies in advance a set of criteria that will be used in selecting applicants.

For example, one criterion to identify local firms with the potential to enter the business of supplying tank farms might be “proven commercial success in large-scale metal fabrication.” In Ghana, Mozambique, or Tanzania, this requirement alone would restrict eligible applicants to quite a small number of local firms.22 Oversight of the program, ideally by an independent watchdog organization composed of public sector, private sector, and civil society representatives with a reputation for probity and public disclosure of their findings, can help to diminish concerns that selectivity is being abused.

**Summing Up**

The expansion of new discoveries of oil, gas, and minerals represents an unparalleled opportunity for Africa’s newly resource-abundant economies, but one accompanied by substantial risks. Success or

failure will largely depend on how the rents from natural resource extraction are invested. Current trends in economic thinking suggest that for poor and resource-abundant countries some, though not all, of the resource windfall should be saved and invested in their own economies, provided the proposed investments are sound. This places a particular burden on public financial management and public investment planning. Two important steps can help to ensure that the public investments selected are in fact sound. The first is to subject every proposed public project to rigorous cost-benefit analysis. The second is to ensure that recurrent costs of maintaining the asset are reflected in the budget.

For the typical resource-rich economy in Africa, natural resources are not sufficiently abundant to ignore economic structure, and diversification is important. It helps to establish the basis for further sustained growth once the resource has been depleted. The relative price changes that occur in a resource-exporting economy—symptoms of Dutch disease—place Africa’s resource-rich countries at a disadvantage with respect to industrial development.

Policy reforms and public investments can mitigate the worst consequences of Dutch disease. Some of these incorporate conventional wisdom. Investment climate reforms, if properly designed and implemented, can help to raise the productivity of firms outside of the resource sector. This will require a redesign of the regulatory reform agenda to make it address the regulatory constraints to entry, exit, and firm growth. It will also mean making productive investments in infrastructure and skills most relevant to international competitiveness. Investing to invest should play an important role in transforming investment effort in these areas into investment outcomes.

Beyond investments in institutions, infrastructure, and skills, natural resources offer African governments a range of options for diversification. Using spatial policies is one. Growth corridors and regional transit corridors are a potentially powerful way to leverage the investments made by multinational resource extraction firms for regional development. These initiatives need to be carefully designed and rigorously evaluated to ensure that regional rather than narrow corridor growth takes place during implementation.
Investing in knowledge related to the resource itself or promising high value added activities outside the resource sector is one path toward diversification. Agro-industry, tourism, and tradable services may prove to be less affected by appreciation of the real exchange rate than task-based manufactured exports. It makes sense for resource-rich economies in Africa to look for market niches in these industries without smokestacks.

Finally, governments can carefully promote supply chain relationships between domestic firms and the extractive industry. Because they control access to the resource, governments can seek an understanding with multinational resource extraction companies regarding the integration of local suppliers into the resource value chain. Here the challenge for policymakers is to be realistic and patient. Creating a viable public-private partnership to integrate domestic firms into a resource sector’s value chain is not a trivial task. It requires a deep understanding of the current capabilities of domestic firms and a strong commitment to develop the institutional framework needed to expand them.