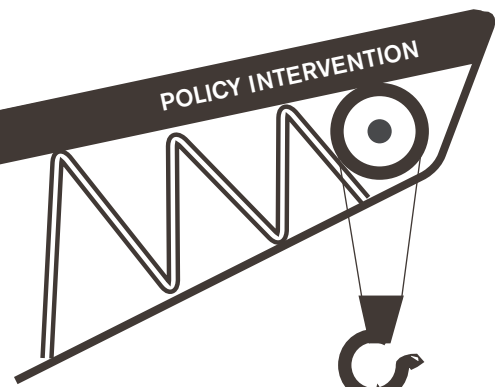




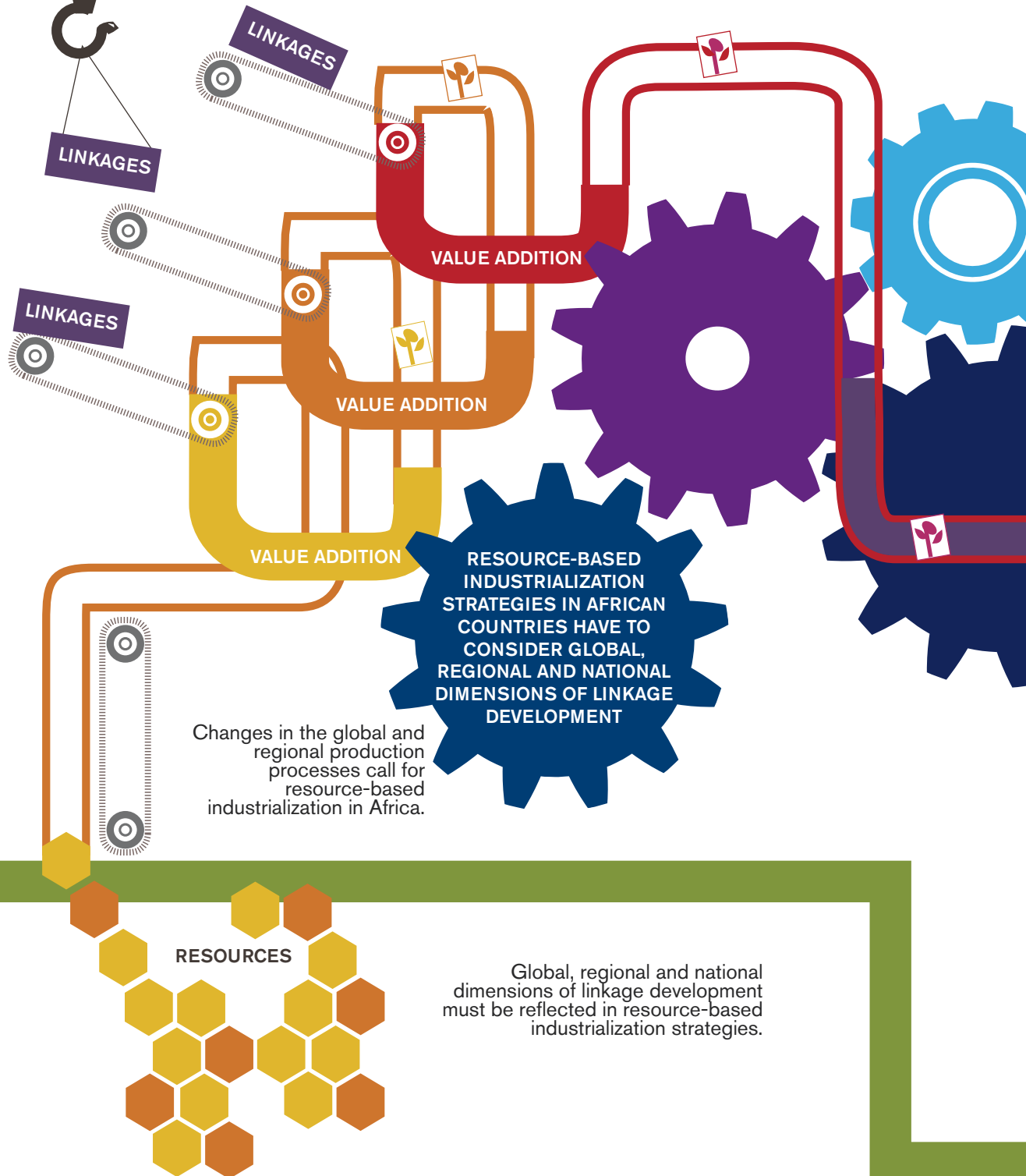
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# State of Value Addition and Industrial Policy in Africa

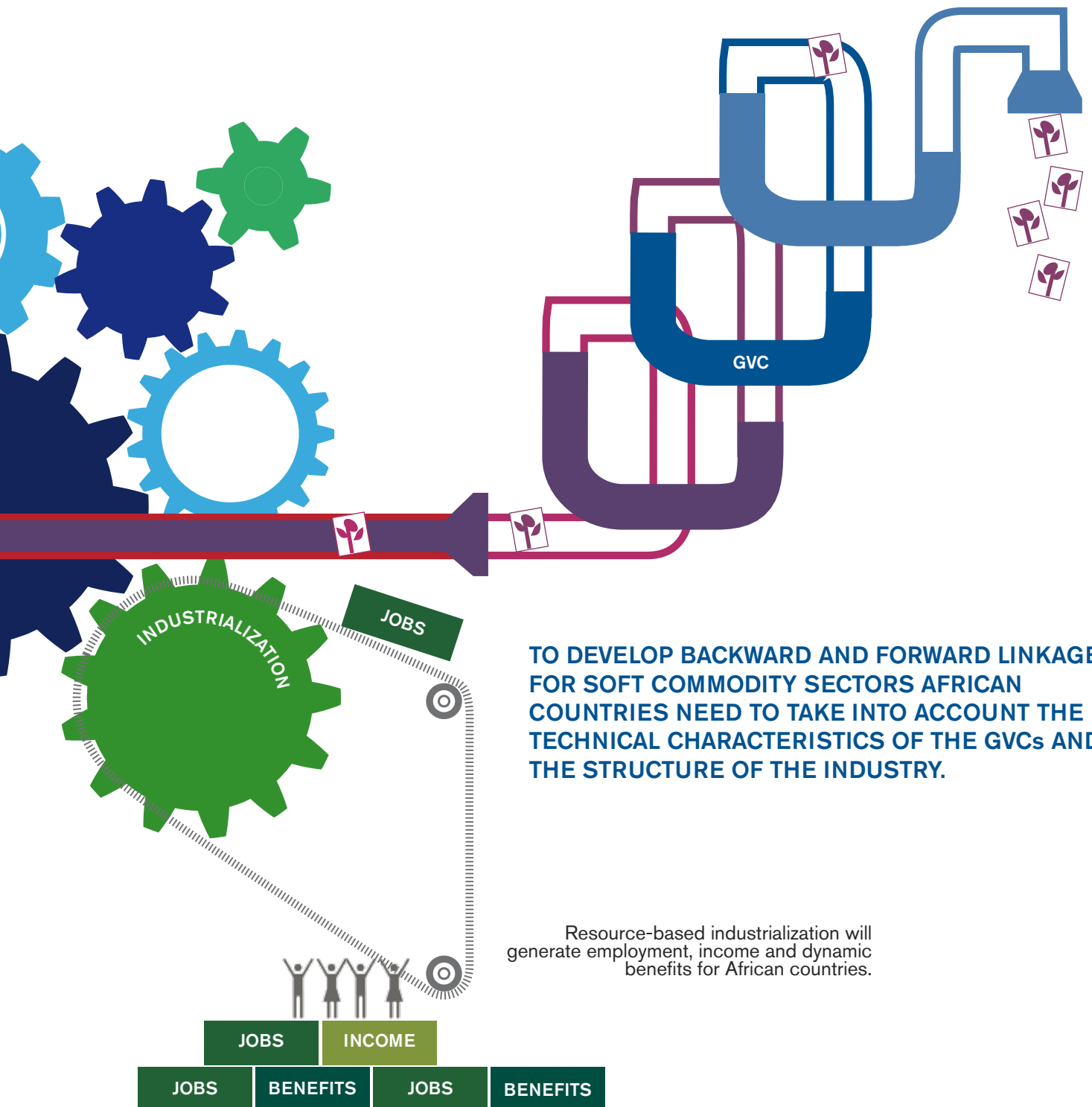


## THERE IS NO “ONE SIZE FITS ALL” POLICY STRATEGY FOR COMMODITY-BASED INDUSTRIALIZATION.

Notwithstanding modest success in value addition and linkage development, African countries face serious challenges which require policy intervention.



INSTEAD THERE IS A CLEAR NECESSITY FOR EACH COUNTRY TO FOSTER LOCAL LINKAGE DEVELOPMENT AND ACCELERATE COMMODITY-BASED INDUSTRIALIZATION WITHIN THE DYNAMICS OF EACH COUNTRY, SECTOR AND DOMINANT VALUE CHAIN.



TO DEVELOP BACKWARD AND FORWARD LINKAGES FOR SOFT COMMODITY SECTORS AFRICAN COUNTRIES NEED TO TAKE INTO ACCOUNT THE TECHNICAL CHARACTERISTICS OF THE GVCs AND THE STRUCTURE OF THE INDUSTRY.

Resource-based industrialization will generate employment, income and dynamic benefits for African countries.

The need for African countries to make the most of commodities for industrialization, growth, jobs and economic transformation is the focus of this chapter. The chapter shows that Africa depends excessively on primary commodity exports, which makes it difficult to create decent jobs. Its average export concentration index has increased since 1995. Compared with both Asian least developed countries and Latin American commodity exporters, Africa shows significantly higher commodity dependence, obviously enhanced by the commodity price boom.

***Africa's industrialization has been weak and inconsistent. In 1980–2009, the share of manufacturing value added to GDP increased marginally in North Africa, from 12.6 per cent to 13.6 per cent, but fell from 16.6 per cent to 12.7 per cent in the rest of Africa.***

African economies depend heavily on natural resources, often a combination of soft, hard and energy commodities. The weights of these sectors vary among countries, but energy and hard commodities may hide the socio-economic importance of commodities, such as cotton in Egypt and sugar in Zambia. This export concentration on primary commodities reflects the weakness of Africa's industrial sector. Although the continent's export orientation and import penetration are high, exports are largely composed of raw materials and imports of final consumer goods. Imports of capital equipment and many intermediate goods are primarily destined for commodity extraction.

Another issue is that global industrialization has largely bypassed the continent. Africa's global trading links have not promoted the structural transformation of its economy towards industrial development. The gap with other developing countries is not only large, but also cumulative and path-dependent.

Africa's industrialization has been weak and inconsistent. In 1980–2009, the share of manufacturing value added to GDP increased marginally in North Africa, from 12.6 per cent to 13.6 per cent, but fell from 16.6 per cent to

12.7 per cent in the rest of Africa. Some African countries have managed to develop manufacturing activities on the back of preferences in third-country markets, but most of these have limited scope and size, and are vulnerable to erosion of trade preferences as trade liberalizes further in destination markets

Globalization has provided opportunities to Asia and Latin America to industrialize—and continues to do so—but in the 1980s and 1990s Africa suffered the most severe process of deindustrialization in the developing world. History—and policy failures—cast a long shadow.

There is strong evidence to show that the root causes of Africa's low levels of industrialization and dependence on primary commodity exports not only lie in the colonial extractive mode of production but also—and more important—the industrial policies executed from the 1950s to the 1990s. Judgement on import substitution industrialization (ISI) in developing countries is mixed, but it did not lead to massive industrialization in Africa. It is debatable whether ISI failed in Africa because many governments simply failed to pursue it, or whether they did not carry out the measures in the same methodical manner Latin American or Asian governments did.

In the mid-1980s, the economic situation of most African countries was very difficult, prompting the International Monetary Fund and World Bank to impose structural adjustment programmes (SAPs). It is now a shared view that the SAPs made African industry worse off. The SAPs in Africa failed in their aims: they did not raise productivity, boost manufacturing export performance or enhance value addition. But they did hurt technological capability and skills levels. Today, the weak African industrial structure has still to move out of the shadow of those interventions—a task made more onerous by the new international context.

Changes in global production systems present an opportunity for Africa. From the 1960s, the world economy witnessed a shift in how production processes were structured. Before then, they were organized within national boundaries, while trade was at arm's length between independent firms. Then, geographically dispersed activities

were functionally integrated and organized in complex transnational production networks. Now known as global value chains (GVCs), they link the different value-added stages—composed of many activities—required to bring a product from conception and design to the final consumer and, finally, to its disposal. Developing countries in Asia, especially, have exploited globalization well and indeed benefited from the benign side by supplying intermediate and final products, engendering increasing relocation of the manufacturing stages of consumer goods to Asia and, to a much smaller degree, Latin America.

Africa must capitalize on its resource endowments and the commodity price boom. Since 2003, all commodity group prices have surged, except for a short-lived period from late 2008 to early 2009. So while in the past African development plans focused on diversifying from commodities, they now put them at centre stage. These plans are tackling issues of investment, labour, the environment as well as trade. Resource-rich countries are reforming their tax regimes to benefit from commodity export revenues, and must therefore tap the opportunities to pursue more diversified development paths, including commodity-based industrialization.

Thus while the booming resource sector carries the obvious risk of further deindustrializing Africa as it specializes in commodity production and export and provides revenues to pay for imports of consumer goods, its resource endowments also create opportunities, bolstered by the continent's increased leverage in negotiating with foreign investors over investment. They can also provide much-needed financing for capital investment, for example through infrastructure, as well as an opportunity to intensify knowledge transfer through backward and forward linkages to the wider economy.

Resource-based industrialization will yield employment, income and dynamic benefits. By moving up the value chain and developing backward and forward linkages to the commodity sector, countries can maximize direct and indirect job-creation effects. Provided their resource-processing industries are internationally competitive and well integrated in GVCs, exporting countries can move into higher-rent value-chain links and

extract the benefits of moving up value chains. For instance, up to 90 per cent of the total income from coffee, calculated as the average retail price of a pound of roasted and ground coffee, goes to consuming countries. This presents an opportunity that can be seized to improve incomes.

Forward integration confers other benefits. It can reduce the exposure of countries producing primary commodities to price fluctuations and thus yield dynamic skills-migration and cluster benefits of linkage development. By developing backward linkage supply firms to the commodity sectors and resource-processing industries, African countries can help to diversify their technological capabilities and skills base, deepening their industrial structure. Moreover, the natural resource sector's need for infrastructure (to extract and transport the commodities) enhances the potential for linkages.

Linkage development creates an opportunity to maximize positive externalities derived from clusters. Supplier and resource-processing industries' closeness to the extraction location generates agglomeration effects. Efficiency gains for firms in clusters include gaining access to a pool of specialist labour and networks of suppliers.

Yet critics argue that this resource-based industrialization is not feasible for Africa. Africa should ignore these criticisms. The experience of resource-rich countries shows the possibilities of commodity-based industrialization—despite all the criticisms, which run along three lines: that it is as hard as any other industrialization path; that commodity sectors are unlikely to promote linkages and externalities; and that resource-based industries do not match Africa's factor endowments. Yes, resource-based industrialization is as hard as any other path but still achievable with the right economic policies. Also, there are many exceptions to the argument that commodity sectors rarely promote linkages and externalities, as this chapter shows. Well-thought-out policies have catalysed resources in Argentina, Malaysia, Thailand and Venezuela. In other countries, good institutions and investment in human capital have paid off.

Africa's experience with linkage development has had modest success. Some African governments have not adopted linkage policies,

forgoing potential opportunities to develop local manufacturing and services (Morris et al., 2012; see box 3.10). Others have adopted measures to promote linkages. However, export bans and taxes with local content regulations have rarely been accompanied by measures to support technological capabilities, skills development and entry into marketing/distribution networks.

The opportunities for linkage development to natural resource sectors are determined by the competitiveness of domestic firms and effectiveness of government policy. Domestic firms' competitiveness in price, quality, lead times and flexibility defines the extent to which they can seize the opportunity to supply commodity lead producers or move into resource-processing for domestic, regional and international markets, or even create domestic lead firms. Other factors also matter in defining linkage development opportunities, including GVCs' technical characteristics, industry structure, lead-firm strategies, location, trade barriers and other bottlenecks.

Continental policy initiatives present opportunities for regional industrialization and value addition. In 2007, the Conference of African Ministers of Industry endorsed the Accelerated Industrial Development of Africa (AIDA) Action Plan. The African Mining Vision, which foresees the mineral sector contributing to broader continental social and economic development, is another instrument that can change the situation. Other initiatives include the High-Level Conference on African Agribusiness and Agro-industries (3ADI), the Comprehensive African Agriculture Development Programme (CAADP), the Maputo Declaration and the African Union (AU) Summit on Boosting Intra-African Trade and Fast Tracking the Establishment of the Continental Free Trade Area.

African countries should consider designing strategies for linkage to GVCs but each African country must develop its own commodity-based

industrialization within the specific dynamics pertaining to each country. A resource-based industrialization strategy should be grounded in the reality of each African country as well as the dynamics of the globalized world economy.

Although Africa has diversified its export markets in the past two decades, its export composition has changed little, and it remains highly dependent on primary commodity exports. And the commodity price boom can, under adequate regulatory frameworks, provide additional revenues for African treasuries and for much-needed capital investment.

However, if Africa is to achieve sustainable development and become a global growth pole, its strong economic growth has to be matched by structural transformation—essentially industrializing and raising agricultural productivity, moving from commodity dependence. So, although the commodity price boom is boosting Africa's economic growth, the continent has to embed industrialization into this trajectory, and developing backward, forward and horizontal links to the commodity sector is one platform for this.

### 3.1 COMMODITY DEPENDENCE

#### **Africa depends excessively on primary commodity exports**

Primary commodity exports have been the critical determinant of Africa's economic performance since it gained independence (ECA and AUC, 2012), even with increasing contributions to GDP from manufacturing, finance, telecoms and tourism. The continent's export profile has not moved far from the commodity dependence of colonial times, as discussed in chapter 2. Export dependence can be seen in export product concentration and diversification indices (table 3.1).

**TABLE 3.1: EXPORT DEPENDENCE ON PRIMARY COMMODITIES, 2011**

Export product concentration index				Export product diversification index			
Central Africa		Southern Africa		Central Africa		Southern Africa	
Central African Rep.	0.33	Angola	0.97	Central African Rep.	0.76	Angola	0.80
Cameroon	0.38	Botswana	0.79	Cameroon	0.71	Botswana	0.89
Chad	0.93	Lesotho	0.33	Chad	0.79	Lesotho	0.83
Congo, Rep.	0.79	Malawi	0.53	Congo, Rep.	0.81	Malawi	0.84
Equatorial Guinea	0.70	Mauritius	0.25	Equatorial Guinea	0.74	Mauritius	0.71
Gabon	0.75	Mozambique	0.51	Gabon	0.82	Mozambique	0.81
São Tomé and Príncipe	0.47	Namibia	0.22	São Tomé and Príncipe	0.56	Namibia	0.77
<b>East Africa</b>		South Africa	0.16	<b>East Africa</b>		South Africa	0.60
Burundi	0.54	Zambia	0.63	Burundi	0.75	Zambia	0.85
Comoros	0.51	Zimbabwe	0.20	Comoros	0.75	Zimbabwe	0.73
Congo, Dem. Rep.	0.43	Swaziland	0.28	Congo, Dem. Rep.	0.78	Swaziland	0.78
Djibouti	0.35	<b>West Africa</b>		Djibouti	0.61	<b>West Africa</b>	
Eritrea	0.65	Benin	0.28	Eritrea	0.83	Benin	0.77
Ethiopia	0.36	Burkina Faso	0.52	Ethiopia	0.79	Burkina Faso	0.81
Kenya	0.18	Cape Verde	0.48	Kenya	0.65	Cape Verde	0.72
Madagascar	0.21	Côte d'Ivoire	0.38	Madagascar	0.77	Côte d'Ivoire	0.70
Rwanda	0.40	Gambia	0.25	Rwanda	0.84	Gambia	0.75
Tanzania	0.19	Ghana	0.41	Tanzania	0.77	Ghana	0.75
Uganda	0.21	Guinea	0.45	Uganda	0.73	Guinea	0.74
Seychelles	0.51	Guinea-Bissau	0.89	Seychelles	0.83	Guinea-Bissau	0.75
Somalia	0.33	Liberia	0.50	Somalia	0.70	Liberia	0.72
North Africa		Mali	0.60	<b>North Africa</b>		Mali	0.81
Algeria	0.54	Niger	0.39	Algeria	0.72	Niger	0.84
Egypt	0.14	Nigeria	0.81	Egypt	0.55	Nigeria	0.78
Libya	0.78	Senegal	0.23	Libya	0.77	Senegal	0.73
Morocco	0.16	Sierra Leone	0.27	Morocco	0.70	Sierra Leone	0.71
Tunisia	0.16	Togo	0.24	Tunisia	0.54	Togo	0.73
Mauritania	0.52			Mauritania	0.82		
Sudan (...2011)	0.81			Sudan (...2011)	0.79		

Source: UNCTADStat, <http://unctadstat.unctad.org>, accessed 20 July 2012.

Note: For the export product concentration index, values closer to 1 indicate an economy more dependent on exports of one product. The export diversification index ranges from 1 (largest difference from world average) to 0 (alignment with world average). Data for South Sudan are not available.

The export product concentration index (or sectoral Hirschman index) measures the degree of export concentration within a country. Industrialized countries are characterized by values closer to zero, reflecting very diversified export sectors. More than half the 53 African countries, however, have an index equal to or higher than 0.40, and one

quarter of them have an index equal to or higher than 0.60, marking dependence on a narrow range of products, such as hydrocarbons in Angola. In comparison, the average export concentration indices in 2011 were 0.12 for Asia and 0.13 for Latin America (table 3.2).



**TABLE 3.2: COMPARATIVE EXPORT CONCENTRATION INDICES BY REGION, 1995 AND 2011**

	Export concentration index	
	1995	2011
Africa	0.24	0.43
Africa excluding South Africa	0.34	0.51
Latin America	0.09	0.13
Asia	0.09	0.12
Low-income developing economies	0.14	0.25

Source: UNCTADStat, <http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx>, accessed 20 July 2012.

The export diversification index measures the extent to which the structure of trade of a particular country differs from the world average. This index helps analysts to overcome a potential problem of the concentration index, namely that it is more susceptible to commodity price variations and so results in a higher concentration during such booms. All African countries have a diversification index of 0.5 or higher, meaning they have lower diversification levels than the world average. For almost a third of them, the diversification index is higher than 0.80, far higher than in other world regions (as supported by the analysis for figure 2.3 in chapter 2, which shows that the continent globally lags far behind in diversified trade).

Worse, Africa's average export concentration index has increased since 1995. Compared with both Asian least developed countries and Latin American commodity exporters, Africa shows significantly higher commodity dependence, obviously enhanced by the commodity price boom.

Africa's highly concentrated export structure is the result of a historical dependence on natural resource sectors. Disaggregating the export profile of 46 countries for which reasonably recent export data are available, we find that in three quarters of the countries, the share of primary commodities in total merchandise exports equals 50 per cent or more (annex table 3.1).<sup>1</sup> In a third of the countries, this share is 90 per cent or higher.

Considering the top three export products, by Standard International Trade Classification at the

four-digit level, we find the extent of concentration high not only at sectoral level but also at product level (annex table 3.2). In more than half the listed African countries, the top three products represent more than 50 per cent of total merchandise exports; for a quarter of them this share rises to 80 per cent or more. In eight countries, one single product accounts for more than 70 per cent of total exports. Because products are identified at a fairly disaggregated level, sometimes two or three of the top products originate from the same commodity subsector—the top three export products of Zambia are copper-based, for example.

The relative share of agricultural raw commodities, ores and minerals (hard commodities) and fuel is further disaggregated in annex table 3.1. Historically, developing countries experienced the rising importance of food commodities and decreasing importance of agricultural raw materials (Yeats, 1991), although the latter group are still important for a small group of countries, mainly in West Africa, where it represents more than 10 per cent of total exports: cotton (Benin, Burkina Faso, Mali and Togo), wood (Cameroon, Central African Republic, the Republic of Congo, Gabon and Guinea-Bissau), rubber (Côte d'Ivoire) and tobacco (Malawi and Zimbabwe). While often dwarfed by minerals or oil in their relative contributions to total exports, these soft commodities remain important because of their labour intensity.

Hard commodities are the main source of foreign exchange in Zambia, Niger, Mozambique, Central African Republic and Guinea. Fuel is the main

export for Algeria, Gabon, Sudan, and Nigeria. Notwithstanding some missing data, Angola and Libya also fit this profile. Diamonds are an important source of foreign exchange for Botswana and Namibia, and gold for Mali, Burkina Faso, Mauritania, Ghana and Guinea. Hard and energy commodities are generally capital and technology intensive, and are organized around large mines and production plants. These sectors are often considered enclave because of their disconnect from the rest of the economy and their closer links to global markets, generally at the lower end of the value chain.

In sum, African economies depend heavily on natural resources, often a combination of soft, hard and energy commodities. The weights of these sectors vary among countries, but energy and hard commodities may hide the socio-

economic importance of commodities. This export concentration in primary commodities reflects the weakness of Africa's industrial sector.

### **Global industrialization has largely bypassed the continent**

Africa's global trading links have not promoted the structural transformation of its economy towards industrial development. The gap with other developing countries is not only large, but also cumulative and path-dependent (Lall, 2004)—in other words, countries in Asia and to a lesser extent Latin America, building on a competitive and dynamic industrial base, are moving faster than Africa to higher-technology and knowledge-intensive sectors. This, coupled with Africa's underdeveloped industrial base, makes it increasingly hard for the continent to catch up (box 3.1).

#### **BOX 3.1: TIME TO CATCH UP**

In addition to the legacy of the colonial extractive economic system, the weakness of Africa's industrial development is attributable to exogenous shocks, such as negative terms of trade and conflicts, as well as endogenous, policy-related ones (Lall and Wangwe, 1998). The following seem the most important.

The technological capabilities to begin industrializing and the financial resources to finance manufacturing development (see chapter 2) are often in short supply. Moreover, until the start of the new millennium, the political instability that characterized a number of African countries added costs that further reduced incentives to invest in manufacturing.

The increasing concentration of Africa's exports in primary commodities may adversely affect the potential for future growth in the region. Indeed, there is considerable evidence that the type of product that a country exports matters to long-run economic performance (Hausmann et al., 2007; Lall et al., 2006) although not all manufactures are better than all commodities (UNCTAD, 2002).

Manufactures, especially medium- and high-technology, have forward and backward linkages with other sectors that may generate positive benefits for the whole economy. Primary products, in contrast, have production structures that are capital intensive and often poorly linked to the rest of the economy. Moreover, primary product prices are set at the world level and are usually more volatile than those of manufactured products.

Africa's marginalization in manufacturing GVCs is evidenced by its trade patterns. Global trade flows have been increasingly characterized by intra-industry trade in intermediate goods, reflecting trade between lead firms—mainly transnational corporations (TNCs) and retail chains in developed countries—and their suppliers around the world. Although Africa's export orientation and import penetration are high, exports are largely composed of raw materials and imports of final consumer goods. Imports of capital equipment and many intermediate goods are primarily destined for commodity extraction.

Africa's industrialization has been weak and inconsistent. In 1980–2009, the share of manufacturing value added to GDP increased marginally in North Africa from 12.6 per cent to 13.6 per cent, but fell from 16.6 per cent to 12.7

per cent in the rest of Africa. Strikingly, by country (annex table 3.3), this share contracted by about 60 per cent in Chad, the Democratic Republic of Congo and Rwanda, by about 50 per cent in Zambia and by a third in Kenya, Malawi and South Africa (although a few countries such as Lesotho, Swaziland, Tunisia and Uganda showed positive trends).

Some African countries have managed to develop manufacturing activities on the back of preferences in third-country markets, but most of these have limited scope and size, and are vulnerable to erosion of trade preferences as trade liberalizes further in destination markets (Kaplinsky and Morris, 2008; Staritz, 2011). Even in their domestic markets, African manufacturers, which mainly concentrate on light consumer goods and agro-processing, are increasingly under pressure from some countries (box 3.2).

### BOX 3.2: THE ASIAN GIANTS HELP, AND HINDER, AFRICA

Manufactured imports from some emerging countries, in particular China and India, are affecting local manufacturing in Africa.

In most cases, domestic producers suffer this competition and are obliged to leave the market. But in some, competition has prompted domestic firms to compete, as in the Ethiopian shoe sector, while in others it has offered some new opportunities. Indeed, as many emerging economies climb the GVC they leave space for other developing countries to produce some of their low-technology goods.

To help their firms exploit these new opportunities, governments need to design and effectively implement industrial policies that will, among other things, help to improve access to credit and address the problem of poor infrastructure and inadequate human capital, which currently constrain market-seeking, or “green”, foreign direct investment flows into Africa.

### History—and policy failures—cast a long shadow

Globalization has provided opportunities to Asia and Latin America to industrialize—and continues to do so—but in the 1980s and 1990s Africa suffered the most severe process of deindustrialization in the developing world (Lall and Wangwe, 1998). What went wrong?<sup>2</sup>

#### *Import substitution industrialization*

There is strong evidence to show that the root causes of Africa's low levels of industrialization and dependence on primary commodity exports not only lie in the colonial extractive mode of production but also—and more important—the industrial policies executed from the 1950s to the 1990s. As with most other developing economies in

the 1960s and 1970s, African countries adopted ISI (Mkandawire, 2001; Galal, 2008).

Governments adopted this strategy largely in the belief that industrialization was necessary for development and that their infant industries had to be nurtured behind protective barriers, anxious lest free trade increased dependence on imported manufactured goods. They used a range of measures to maintain these barriers—tariffs as well as non-tariff barriers like quotas and licences.<sup>3</sup> It was very common, for instance, to grant export monopolies to particular firms, while foreign exchange restrictions frequently imposed large additional taxes on trade.<sup>4</sup>

As in all other developing countries, African governments were keen industrializers. Public ownership of industry was widespread, public investment was extensive and a number of firms were nationalized.<sup>5</sup> But unlike East Asia, most governments did not have the financial and managerial capacity to operate the enterprises efficiently (Nziramasanga, 1995). Moreover, the policies designed to direct investment towards industry had a negative impact on agriculture by distorting factor prices and rates of return. High tariff protection for final goods and subsidized import of foreign capital goods were incentives to expand production of consumer goods rather than of intermediate inputs.

In these circumstances, economies could not generate knowledge spillovers, which ironically were one of the main reasons to protect infant industries. Further, even when foreign firms were nationalized, technology transfer was virtually nil because the national technical capability to absorb it was still very low.<sup>6</sup> Relations between industry and research centres, as in Latin America, were very weak. In most cases, these centres were separate from industry and did not seek solutions to industry's technical problems.

In the African experience of ISI, state control of the financial sector was central (with variations among countries), often in the form of state ownership of banks and other financial institutions. State control was regarded as critical to ensure success of industrial and trade policies, because it provided the state with the power to influence private investment decisions and, more

important, to discipline non-performers (Soludo et al., 2004).

Another issue was foreign direct investment (FDI), which was almost exclusively directed to primary and raw-material sectors.<sup>7</sup> Many countries granted monopolies in some areas to foreign firms, including exclusive exploration rights, sole-supplier contracts and domestic-market exclusivity (Stein, 1992), which had the perverse effect of blocking linkages to the domestic economy.

Judgement on ISI in developing countries is mixed, but the policy did not lead to massive industrialization in Africa. It is debatable whether ISI failed in Africa because many governments simply failed to pursue it, or whether they did not carry out the measures in the same methodical manner Latin American or Asian governments did (Riddell, 1990).

### *Structural adjustment*

In the mid-1980s, the economic situation of most of African countries was very difficult, prompting the International Monetary Fund and World Bank to impose SAPs. The theoretical premises of SAPs were that markets are efficient, but government interventions are inefficient because they distort market signals; and that governments should manage the macro economy and improve general education and infrastructure, while the free market eliminated inefficient firms, releasing productive resources for other, more efficient, firms. The theory was that Africa would expand its agricultural and extractive mineral commodity sectors because those were the sectors with comparative advantages.

All the ISI apparatus was eliminated, as were the measures to protect the domestic market—tariffs and quantitative restrictions on imports, price controls and subsidies, and credit ceilings. SAPs were successful in liberalizing trade and the financial sector, privatizing public enterprises and inducing massive currency devaluations in most African countries (Ogbu et al., 1995). But there it stops.

It is now a shared view that the SAPs made African industry worse off. According to Lall (1995), industrial performance disappointed and many African countries suffered sustained deindustrialization in the 1980s and early 1990s, an impact confirmed for several African countries

by Stein (1992), while Nziramasanga (1995) cites the difficulties of the sugar industry in Kenya and the textile industry in South Africa and Zimbabwe in the mid-1990s. All these sectors reduced output and employment owing to competition from imports in the domestic market. Ogbu et al. (1995) argue that growing dependence on imported goods eroded the weak industrial base of most African economies. According to Riddell (1990), SAPs were a major factor that prevented African countries from restructuring their industries away from primary commodity dependence.

The weakness of the African supply response was particularly marked in manufacturing production and export performance, and even when manufacturing showed an initial favourable response, it did not lead to sustained growth and diversification of production and exports (Jalilian et al., 2000). Stein (1996) concluded that economic reforms should have been based on transforming the economy, and not on retracting state institutions and policies in such a wholesale way. The SAP type of adjustment removed inefficient government interventions but did not create the conditions for development.

Nor did SAPs solve the numerous market failures of African economies, such as a weak tradition of industrial entrepreneurship and a severe shortage of technical skills. According to some, their main problem was that they ignored capability development (Grimm and Brüntrup, 2007, for example).

Moreover, African governments had, often on advice from donors and multilateral development institutions, focused on macroeconomic stability and institutional reforms to protect property rights and ensure contract enforcement, with no coherent strategies to address market failures and externalities that constrained economic activity. And while SAPs were intended to attract foreign capital and, through this, to ensure growth of a stable industrial sector, this did not happen except in the resource-extractive sectors (Elhiraika, 2008).

The SAPs had a particularly negative effect on technological accumulation (Chang, 2009).

Although innovation and growth during the ISI period were often poor, SAPs did not produce better outcomes—see Lall (1995) on Ghana, for example.

To sum up, the SAPs in Africa failed in their aims: they did not raise productivity, boost manufacturing export performance or enhance value addition. But they did hurt technological capability and skills. Today, the weak African industrial structure still has to move out of the shadow of those interventions—a task made more onerous by the new international context.

### 3.2 THE BIRTH OF GLOBAL VALUE CHAINS

#### **Developing countries, in Asia especially, have exploited globalization well**

From the 1960s, the world economy witnessed a shift in how production processes were structured. Geographically dispersed activities became functionally integrated and organized in complex transnational production networks (Dicken, 1998; Gereffi, 1994). Now known as global value chains (GVCs), they link the different value-added stages—composed of many activities—required to bring a product from conception and design to the final consumer and, finally, to its disposal (Kaplinsky and Morris, 2001).

The crucial aspect of globalization is outsourcing by developed-country lead firms of labour-intensive stages of production to countries with low costs. This was made possible by innovations in transport (commercial jets, container transport), communication systems (satellite, facsimile), and microelectronic technologies, which reduced the cost and time for communication and enabled flexible production systems.

By relocating these activities to outsourced firms, lead firms have moved from ownership of the production plants and the vertical integration of all production activities under their direct company control, but have retained control of the organization of such indirect manufacturing activities within the value chains that they drive. In other words, lead firms have focused on governing

these value chains, that is, they are the drivers of these value chains and exercise power by requiring other firms lower in the chain to meet their requirements.

The lead firms decide which functions will be located in which countries, set the standards that supplier firms have to meet if they are to stay in the value chain (technical parameters such as costs, quality and lead times, or health, labour and environmental standards, and so forth), manage suppliers meeting these standards and decide on how to intervene when these parameters are infringed, all the while expanding or shrinking the number of suppliers. These activities can lead to developing-country producers receiving assistance to upgrade their capabilities to meet value chain requirements, and so staying globally integrated, or in their failing to meet these parameters and being excluded from the value chain.

Milanovic (2003) argues that globalization thus has two faces: a benign side accelerating the participation of developing countries into the world economy with positive impacts on industrialization and income levels, and a malign side increasing inequality and leading to major stress on workers and the environment.

Some developing countries indeed benefited from the benign side by supplying intermediate and final products, engendering increasing relocation of the manufacturing stages for consumer goods to Asia and, to a much smaller degree, Latin America. Since lead firms were outsourcing an increasing number of functions to firms in developing countries, they also became more interested in building some of the capabilities of selected supplier firms.

Lead firms kept control of the GVCs' most profitable stages—the intangible, knowledge-intensive activities such as product design, marketing and distribution, which had high entry barriers to competitors in developing countries. Their support to developing-country firms therefore tended not to encroach on their core business. US clothing and footwear manufacturers and distributing companies, for example, upgraded their Latin American suppliers' capacity to


manufacture complex products and manage the production process (Bair and Gereffi, 2001; Schmitz and Knorringa, 2000), but did not extend it to the spheres they regarded as their own core competence—design, product development, marketing and retailing.

“Lead firm” is therefore a political-economy term and not a normative concept implying benevolence. It refers to the power dimension that it exercises within a GVC, and the driving role it plays in setting the rules of the game and in governing the dynamics between the various links along these chains. This lead governance role means that the lead firms may sometimes act to foster the global dispersion of production to various countries and upgrade their suppliers, and sometimes to block upgrading and exclude suppliers from integrating in a GVC. It is a complex and contradictory dynamic, which if not understood and appropriately exploited by developing-country suppliers and governments, can have harsh consequences for countries seeking to industrialize.

***Globalization thus has two faces: a benign side accelerating the participation of developing countries into the world economy with positive impacts on industrialization and income levels, and a malign side increasing inequality and leading to major stress on workers and the environment.***

Some developing-country governments, especially in Asia, did understand the dynamic, and adopted industrial and skills-development policies that enhanced their domestic firms' competitiveness and, in time, enabled these firms to take over more complex functions. As competition between low-cost developing countries became stiffer, profit margins on many types of manufacturing activities shrank. In order to escape this downward price trend, firms in some developing countries, applying various industrial policies, managed to move into more sustainable stages of GVCs. This was done by upgrading (table 3.3).

**TABLE 3.3: UPGRADING TRAJECTORIES**

Upgrading	Process	Product	Functional	Chain
	Increasing the efficiency of internal processes	Introducing new products or improving old products	Increasing value added by changing the mix of activities conducted within the firm or moving to different links in the value chain	Moving to a new value chain
Examples	Improving quality control processes in the plant	A beverage company introducing a new flavoured fizzy drink	Moving from manufacturing to design	Moving from manufacturing mobile phones to smart phones
Degree of intangible activities	Knowledge content of value added increases progressively 			

Source: Adapted from Kaplinsky and Morris (2001).

Upgrading implies improvement in production systems (process upgrading), moving into more sophisticated product lines (product upgrading), moving into higher knowledge-content functions (functional upgrading), or moving into new production activities (inter-sectoral or chain upgrading). East Asia's industrial upgrading has been the result of a complex process shaped by private TNC strategies and local state industrial policies. It often involved domestic substitution of parts and components imported from more advanced economies (Japan, the Republic of Korea and Taiwan, China). The insertion of some Asian firms into dynamic GVCs in which lead firms outsourced increasing levels of value-added links created important opportunities to industrialize, which governments' industrial policies enabled the firms to seize. Although these GVCs were driven by Northern TNCs and retail chains, the result was growth in Southern firms' and economies' capabilities.

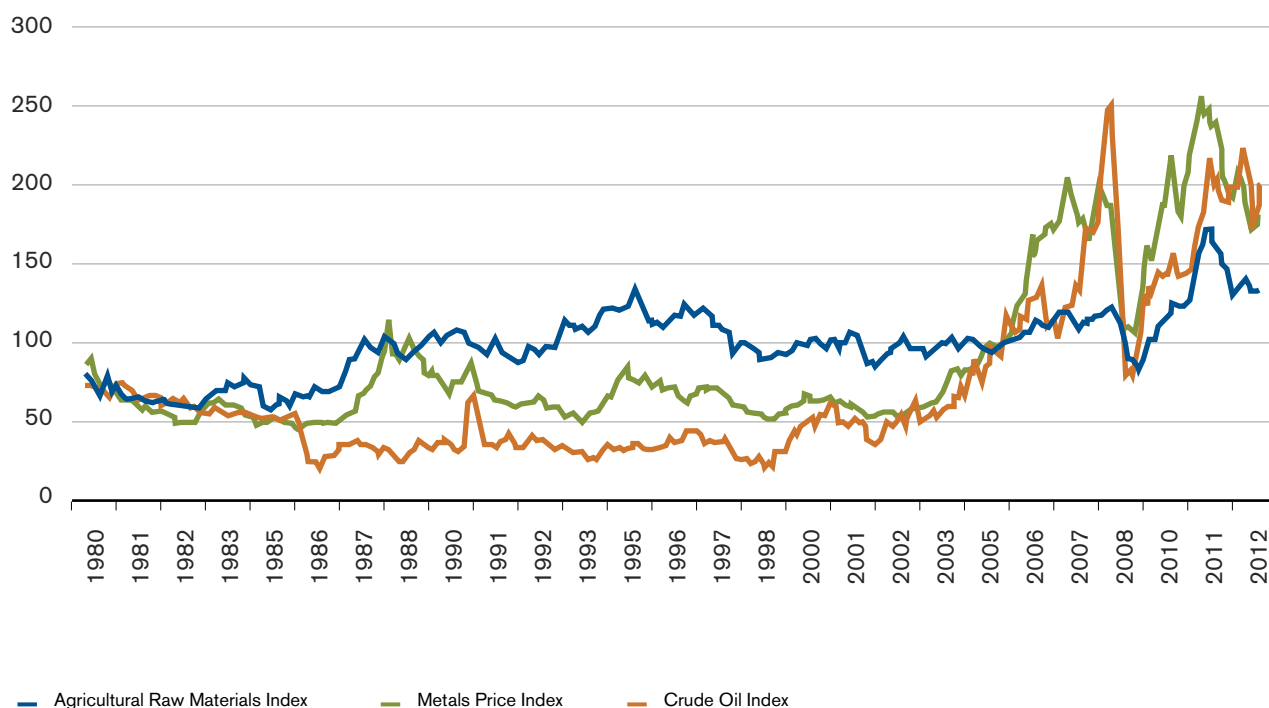
**Africa must capitalize on its resource endowments and the commodity price boom**

Africa's past dependence on primary commodity exports and lack of structural transformation must be seen in a context of declining or static commodity prices. Developing countries found it

straightforward to adopt policy recommendations that urged them to diversify from natural resources to industrialize. This was, for example, the case of Latin American countries that followed the highly influential Prebisch-Singer thesis of declining terms of trade (Prebisch, 1950; Singer, 1950).

But since 2003, all commodity-group prices have surged, except for a short-lived period from late 2008 to early 2009 (figure 3.1). Prices for the metals group have done particularly well, before and after the global financial crisis. This was particularly the case after China shifted to investment-led growth after the crisis when its export markets in the North shrank considerably (Akyuz, 2012). Of 47 African countries in 2000–2005, the terms of trade improved for 25, worsened for 14 and remained almost unchanged for 8, according to World Bank data that estimate net barter terms of trade<sup>8</sup>.

The key driver of the commodity price boom is China (Farooki and Kaplinsky, 2012). China is also becoming a key source of FDI in Africa's natural resource sectors, a major investment destination for Chinese state-owned enterprises and, increasingly, private firms. Until 2005, resource extraction was the second-largest sector for cumulative Chinese FDI (table 3.4).

**FIGURE 3.1: COMMODITY PRICE INDEX, JANUARY 1980–JANUARY 2011**


Source: International Monetary Fund, Primary Commodity Prices, [www.imf.org/external/np/res/commod/faq/index.htm](http://www.imf.org/external/np/res/commod/faq/index.htm), accessed 20 October 2012.

Note: Indices based on 2005 (average of 2005 = 100). Group indices are weighted averages of individual commodity price indices

**TABLE 3.4: SECTORAL DISTRIBUTION OF CHINA'S FDI STOCK IN AFRICA, 1979–2005**

Sector/industry	Number of projects	Investment (\$ million)
Manufacturing	230	316
Resource extraction	44	188
Services	200	125
Agriculture	22	48
Others	3	6
<b>Total</b>	<b>499</b>	<b>683</b>

Source: Adapted from UNCTAD (2007).

Note: Based on investment projects approved by China's Ministry of Commerce. The level of investment realized could be much larger as it includes, for example, projects that were not submitted for approval to government.



Since then, even larger FDI flows have targeted services and extractive industries (Cheng and Ma, 2010). These tend to be less risk-averse than FDI flows from industrialized countries and more influenced by the policy regime in Beijing (Buckley et al., 2007). Natural resources have also attracted large investments from Indian investors, mainly private (Pal, 2008; Pradhan, 2008). Although small in a global perspective, FDI from China and India grew fast in 2000–2010, India’s by 26.6 per cent a year, China’s by 91.7 per cent.<sup>9</sup>

The commodity price boom has implications for Africa’s industrialization strategy. Given the size of China and India’s economies, and the fact that they are in the early stage of structural transformation, resource demand and positive commodity price trends are likely to continue in the long term (Farooki and Kaplinsky, 2012). Yet although Africa has huge resource endowments—the world’s largest for many minerals (table 3.5)—its share of global production is far lower.

**TABLE 3.5: AFRICA’S SHARE OF GLOBAL RESERVES AND PRODUCTION, SELECTED MINERALS (%)**

Mineral	Reserves	Production
Platinum group metals	60+	54
Gold	42	20
Chromium	44	40
Manganese	82	28
Vanadium	95	51
Cobalt	55+	18
Diamonds	88	78
Aluminium	45	4

Source: AfDB (2008).

So while in the past African development plans focused on diversifying from commodities, they now put them at centre stage. These plans are tackling issues of investment, labour, the environment as well as trade. Resource-rich countries are reforming their tax regimes to benefit from commodity export revenues (UNCTAD, 2007), and must therefore tap the opportunities to pursue more diversified development paths, including commodity-based industrialization.

Thus while the booming resource sector carries the obvious risk of further deindustrializing Africa as it specializes in commodity production and export and provides revenues to pay for imports of consumer goods, its resource endowments also create opportunities, bolstered by the continent’s increased leverage in negotiating with foreign investors over investment (ECA and AUC, 2012). They can also provide much-needed financing for capital investment, for example through infrastructure, as well as an opportunity to intensify knowledge transfer through backward and forward linkages to the wider economy.

## Resource-based industrialization yields employment, income and dynamic benefits

### *Employment gains*

The last decade's higher GDP growth rates have not reduced poverty commensurately (see chapter 1), because they failed to translate into adequate job creation and social progress. Mining and energy—the source of much of the growth—are generally less labour intensive than other industries. Indeed, many African countries, particularly in Central and East Africa, have the lowest growth–poverty elasticity in the world (Fosu, 2011). And not only is unemployment high—the incidence of the working poor in total employment is also high (see chapter 2).

By moving up the value chain and developing backward and forward linkages to the commodity sector, countries can maximize direct and indirect job-creation effects. Manufacturing and services involved in input provision to the natural resource sector (backward linkages) and involved in resource processing (forward linkages) are characterized by varying levels of labour and skills intensity (box 3.3). This range and diversity of economic activities offer market opportunities to small and large businesses, and to many skilled and semi-skilled workers. Moreover, in soft commodity sectors, resource-processing industries can stimulate raw material supply, creating further employment in agriculture. China's remarkable success in reducing poverty provides a good example here.

### **BOX 3.3: A LINKAGE FRAMEWORK**

A framework for linkage development was created some decades ago by one of the pioneers in studies of industrial development arising from commodities, Albert Hirschman. He characterized successful economic growth as an incremental (but not necessarily slow) unfolding of linkages between related economic activities and proposed three major types of linkage from the commodity sector (Hirschman, 1981).

The first are fiscal—the resource rents the government can harvest from the commodity sector in the form of corporate taxes, royalties and taxes on employees' incomes. These rents can be used to promote industrial development in sectors unrelated to commodities. Appropriate investment projects resulting from these fiscal linkages are essential if the rewards are to be reaped and the dangers of fiscal bubbles avoided. It therefore remains a priority for African countries to ensure that the natural resource sector provides much-needed financing, that such financing is allocated to productive investment projects, that risks associated with exchange rate appreciation and Dutch disease are effectively managed, and that corruption in misappropriating these fiscal rents is staunch.<sup>1</sup> The opportunities of an industrialization path based on natural resources do not therefore obviate the need for sound macroeconomic policies.

The second are consumption—the demand for the output of other sectors arising from the incomes earned in the commodity sector. The demand generated by employees in the sector has the potential to provide a major spur to industrial production as well as all incomes (whether salaries, wages or profits) earned in the resource sector are spent on products and services. However, Hirschman warned that, since most resource-rich developing economies had poorly developed manufacturing sectors, most consumption linkages would occur abroad as the needs of domestic consumers would be met through imports. The import liberalization of the past few decades has reinforced this trend for demand to “leak” abroad and for domestic manufacturing to be overwhelmed by imports.

The third are production—forward (processing commodities) and backward (producing inputs to be used in commodity production).<sup>2</sup> Hirschman argued that production linkages paved a path for industrial diversification, because he characterized the industrial development process “as essentially the record of *how one thing leads to another*” (1981:75, emphasis added). In other words, successful diversified industrial growth is inevitably an “incremental (but not necessarily slow) unfolding of linkages between related economic activities.” It is this third set of production linkages arising from the commodities boom that this report focuses on.

<sup>1</sup> Fiscal linkages, as well as broader issues around environmental and social impact of mining, human rights, small-scale mining and corporate social responsibility, are comprehensively dealt with in ECA and AU (2011). See also Kaplinsky and Farooki (2012) for a detailed discussion of the relevance of fiscal and consumption linkages to Africa.

<sup>2</sup> Morris et al. (2012) add a further category of production linkages based on value chain analysis—“horizontal linkages”—which is a complex set of linkages made up of suppliers and users in the chain who develop capabilities to feed into other industrial and service chains. A variant of such horizontal linkages is value-adding production activities centred on using “by-products” or “waste” from commodity extraction processes.

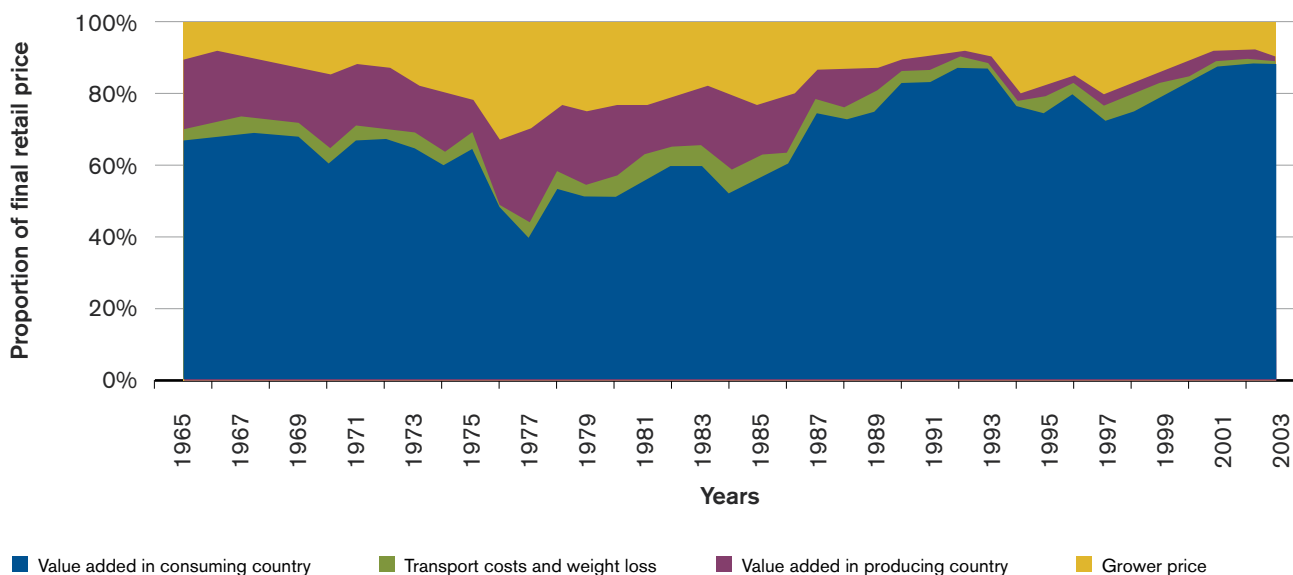
### Benefits of moving up the value chain

Provided their resource-processing industries are internationally competitive and well integrated in GVCs, exporting countries can move into higher-rent value-chain links. This is because GVCs have varying levels of value addition and, crucially, different entry barriers: the higher the entry barriers—usually created

by skills, research and development (R&D) and technology—the more countries and firms can capture high rents because they have fewer competitors.

As an example, up to 90 per cent of the total income from coffee, calculated as the average retail price of a pound of roasted and ground coffee, goes to consuming countries (figure 3.2).

**FIGURE 3.2: INTER-COUNTRY DISTRIBUTION OF INCOME (% SHARE OF FINAL RETAIL PRICE OF COFFEE)**



Source: Kaplinsky (2004) based on Talbot (1997).

Until the mid-1980s, the allocation of coffee income between producing and consuming countries was determined by two, mutually offsetting factors: fluctuations in world output, mainly from Brazil, and export restrictions under the International Coffee Agreement (Talbot, 1997). Except for a short period in 1976–1977, producing countries (growers and exporters) appropriated around half the total income. This changed in 1987–1992 when the world coffee price crashed due to the end of the agreement, but retail prices stayed the same or even increased, shrinking the income share of producing countries while lifting the share of consuming countries.

This reallocation was driven by the increased market power of the largest coffee TNCs, which controlled marketing and distribution links and were able to maintain high prices (Kaplinsky, 2004; Talbot, 1997). By the early 1990s, consuming countries already were already taking 90 per cent of income.

The diamond GVC provides another useful example. While much rent accrues at the extraction stage, the retail value of jewel manufactures is more than three times the value of the rough stone (table 3.6). Yet most African producers have traditionally been excluded from any value-adding, forward-processing links, including sorting, valuing and grading.

**TABLE 3.6: VALUE ADDITION IN THE DIAMOND GVC**

Stage	% of original value
Producer selling value	100
Sorting and valuing	115
Cutting and polishing	127
Polished dealing	133
Jewellery manufacturing	166
Retail	320

Source: Even-Zohar (2007).

Moving up the value chain can deliver benefits for income, but it requires competitive processing industries and access to marketing and distribution networks, as with coffee. Forward integration confers other benefits. It can reduce the exposure of countries producing primary commodities to price fluctuations (Roemer, 1979; Reinhardt, 2000), which can be very high. In 1965–1987, for example, volatility for unprocessed primary commodities was much higher than that for processed commodities (Yeats, 1991). This holds particularly true for the ore, minerals and metals group, with annual fluctuations of 23 per cent for unprocessed material against 13 per cent for processed products. Major gains in price stability for processed products versus raw materials are also associated with tin, tungsten, copper, cocoa and cotton (Yeats, 1991).

For commodity-producing countries, such price volatility has been more problematic than the long-term price decline (Cashin and McDermott, 2002). From the start of the 20th century, price volatility has involved yet larger price movements.

For African countries, price volatility has serious implications for consumption smoothing and investment planning. Indeed some have identified it, when coupled with capital market imperfections, as the key growth-reducing factor of resource-rich countries (Manzano and Rigobón, 2007). Some African countries for instance, have been managing the more recent boom better: some by paying off debt (Nigeria), others by building fiscal cushions against potential balance-of-payments shocks.

*Dynamic benefits of linkage development—skills migration and clusters*

Linkage development opens up opportunities for positive externalities that are difficult to quantify. By developing backward-linkage supply firms to the commodity sector and resource-processing industries, African countries can help to diversify their technological capabilities and skills base, deepening their industrial structure. The copper-mining value chain, for example, needs a wide array of inputs—and skills (see table 5.9 in chapter 5).

The variety of technological capabilities and skills fostered in linkages also opens up opportunities for lateral migration into other sectors, although some have more potential than others (Hidalgo et al., 2007). Engineering services and manufacturing competencies, for example, have general applicability across a wide variety of sectors. It is therefore crucial to invest in engineering skills, used in the broadest sense, encompassing basic technical vocational education up to tertiary education.

Although the migration of technologies and competences from the natural resource sector to other sectors is difficult, many developing countries show efforts in this direction (Lorentzen, 2008). Two examples come from South Africa: firms involved in maize starch production moved into biodegradable plastics, with successful commercial application to some basic products; and low dosage X-ray technology developed for the diamond sector was later used in the medical sector. Equally, oil and mineral supplier industries require, and sometimes help to create, engineering skills in the local economy, which are particularly susceptible to spilling over to other sectors.

Moreover, the natural resource sector's need for infrastructure (to extract and transport the commodities) enhances the potential for linkages, more often with high-volume mineral resources, which usually require roads and rail. As these

modes are built, it becomes easier to develop supplier and resource-processing activities, which increase the economies of scope for further infrastructure development. This positive externality is, however, rarer for commodities such as oil, gold and diamonds, which promote enclave-type infrastructure (Perkins and Robbins, 2011).

Linkage development creates an opportunity to maximize positive externalities derived from clusters. Closeness of supplier and resource-processing industries to the extraction location generates agglomeration effects. Efficiency gains for firms in clusters include gaining access to a pool of specialist labour and networks of suppliers. Knowledge and information flows are facilitated, promoting firms' ability to access information and adopt, adapt and innovate technology. Facilitating specialization and clustering lowers entry barriers for small and medium enterprises, which can enter the resource value chain by mobilizing limited financial and human capital for one activity, without having to invest in all the stages of the production process (Schmitz, 1997). This is particularly important for Africa: by promoting specialist supply networks, buyers accrue advantages in cutting costs, reducing stocks, shortening delivery times and increasing their flexibility to innovate.

The efficiency gains of clusters increase when firms cooperate. They may work together to establish training institutes or business organizations, for example, or when they engage in vertical supplier–buyer cooperation. These relationships are critical to promoting upgrading, because, as seen, supplier firms get access to knowledge and resources both to improve their production processes or products and to move into more technologically sophisticated functions. Clusters also allow governments to catalyse industrial policies, creating economies of scale for investment in skills, technologies, R&D and infrastructure. Chile's government, for one, managed to weave many of the above approaches to create a world-beating salmon industry from scratch (box 3.4).

### **BOX 3.4: REMARKABLE SUCCESS IN CHILE'S SALMON FARMING**

In the 1970s, the government used Japanese technical assistance programmes to lay the foundations for the expansion of its salmon industry, buttressed in the 1980s by Fundación Chile, a government venture-capital foundation that transferred Norwegian and Scottish technology to local entrepreneurs and built local know-how.

In the early stages, the cluster was dominated by small, geographically dispersed domestic firms, but in the 1990s it attracted increasing FDI and became more concentrated. At the same time, firms cooperated on product quality, sustainability certification, branding and overseas marketing, while still receiving support from Fundación Chile, as well as university R&D and training.

Success has been remarkable. Exports were virtually zero in the 1980s, but by 2000 Chile had become the world's second-largest producer of Atlantic salmon, after Norway. Most of the exports are high value added fresh and frozen fillets, commanding a premium in the EU and US (Kjöllerström and Dallto, 2007).

The salmon industry has also fostered backward linkages: egg hatcheries, feed production, manufacturing of cages and nets, construction of floating warehouses, maintenance of refrigerated containers, and transport services. In 2004 around 300 local firms supplied capital goods and knowledge-intensive services worth \$65 million, almost half the value of the supply chain (Torres-Fuchslocher, 2007). Some of the supply firms had already accumulated capital and capabilities in horticulture, and moved into the salmon-farming supply chain. Simultaneously, foreign feed producers integrated forward into farming (Perez-Aleman, 2005; Phyne and Mansilla, 2003).

Efficient supply industries are therefore critical not only in creating additional economic activity but also in achieving efficiency in the commodity sector

(David and Wright, 1997). Natural resources are not a fixed asset—they depend on the efforts devoted to exploring, extracting and processing them (box 3.5).

### **BOX 3.5: EXPLOITING COPPER RESOURCES IN CHILE**

Chile was the leading copper producer until the late 19th century. Between the 1870s and the 1900s the US overtook it through technological advances in drilling and blasting, and in concentrating and refining techniques, which allowed almost complete recovery of metal from the ore.

These innovations expanded the US resource base, at the same time as Chile grappled with declining ore quality.

Source: David and Wright (1997).

Today, countries with poorer natural resource endowments than Africa's are attracting large FDI in exploration and extraction. Although FDI is not necessarily the only way to go, African economies would become more attractive investment destinations if they developed systemic efficiency, as localized, efficient supply chains aligned with the outsourcing and production strategies of commodity-producing firms (Morris et al., 2012).

### **Africa should ignore the criticisms of resource-based industrialization**

The experience of resource-rich countries shows the possibilities of commodity-based industrialization—despite all the criticisms, which run along three lines: that it is as hard as any other industrialization path; that commodity sectors are unlikely to promote linkages and externalities; and that resource-based industries do not match Africa's factor endowments.<sup>10</sup>

#### *As hard as any other path? Yes, but still achievable with the right economic policies*

The first line argues that resource-based industries encounter the same obstacles faced by any industry. Reviewing firm-level surveys conducted in many African countries from the 1990s, Bigsten and Söderbom (2006) found that the growth potential for Africa's manufacturing industries is critically constrained by high uncertainty and risks, which reduce firms' propensity to undertake capital investment, and by high entry barriers to export markets,

which prevent firms from expanding beyond small domestic markets and accruing efficiency gains. Moreover, firms are burdened by high financing and indirect costs—physical and services infrastructure, inputs, etc. For many African countries—including Rwanda, which has ranked as one of the fastest reformers in the world—economic conditions have improved (see chapter 1), with macroeconomic stability, an improved business environment and more focus on developing infrastructure and human capital.

Proximity of a commodity often does not in itself confer sufficient cost advantages to enable an African country to develop competitive resource-based industries. Other factors, such as infrastructure, human capital and access to financial capital may be more important in determining final cost competitiveness. Access to skills has been found to be particularly critical in constraining Africa's resource-based industrial development (Owens and Wood, 1997).

Indeed, developing resource-based industries involves similar challenges to developing any other. Still, selective industrial policies are instrumental in catalysing resources in high-potential sectors rather than spreading them thinly across all sectors. The experiences of resource-rich Argentina, Malaysia, Thailand and Venezuela point to export success of resource-based industries stemming not so much from high levels of initial skills and capital, but from economic policies fostering their development (box 3.6).

### **BOX 3.6: WELL-THOUGHT-OUT POLICIES CATALYSE RESOURCES IN FOUR RESOURCE-RICH COUNTRIES**

In Argentina and Venezuela, the export sector was led by two types of industry: resource-based industries, intensive in unskilled labour (especially for Argentina's agricultural resources); and manufacturing industries, intensive in semi- and high-skilled labour.

Argentina's agricultural resources led to the development of food, beverage and tobacco export industries, while Venezuela's mineral resources led to the development of basic chemicals and metal export industries. Resource-based industries enabled the accumulation of capital, skills and technological capabilities. This process, coupled with import-substitution policies, resulted in a deepening of the industrial base that advanced other manufacturing industries (Londero and Teitel, 1996).

Malaysia and Thailand were very successful in developing resource-based industries. In the 1970s and 1980s, these industries represented around a fifth of total exports in Malaysia, and a third in Thailand. Malaysia's selective policies targeted the expansion of rubber and palm oil production, while supporting domestic palm oil refineries and rubber semi-manufacturing. Thailand's export incentives targeted gems, tinned fish, dried and preserved fruit and preserved vegetables. Palm oil, rubber, leather, wood and fisheries are still important sectors in these countries' industrial development plans (Reinhardt, 2000).

In these countries, resource-based industries developed from initially low skills and capital by mobilizing domestic entrepreneurship and implementing effective industrial policies. Industrialization favoured skills and capital accumulation and facilitated the development of more sophisticated manufacturing capabilities.

*Commodity sectors are unlikely to promote linkages and externalities? Indeed, they can*

The second line is that commodity sectors have an enclave nature—offering few opportunities for backward or forward linkages and with weak positive externalities (Hirschman, 1958, 1981; Prebisch, 1950; Singer, 1950). According to this view, extractive industries are capital intensive and so provide few employment and skills-development opportunities. Moreover, they tend to require fewer supplier linkages than manufacturing, implying that technological externalities are lower and that incentives for

investment in supplier industries are weaker. As TNCs repatriate most revenues to their home countries, developing countries share few benefits. This enclave industry argument was espoused by dependency theorists in the 1970s (Girvan and Girvan, 1973).

The historical experience of many resource-rich countries nevertheless shows that commodity sectors foster productivity growth, technological innovation, as well as forward and backward linkages, if there are good institutions and investment in human capital and knowledge (de Ferranti et al., 2002), as shown in two Nordic countries and the US (box 3.7).

**BOX 3.7: GOOD INSTITUTIONS AND INVESTMENT IN HUMAN CAPITAL PAID OFF**

In the 19th century, Sweden relied on exports of cereals, sawn wood and, later, pulp, paper and iron ore, while Finland relied on wood pulp (Blomström and Kokko, 2007). Although access to foreign knowledge was important, the development of sophisticated processing industries was mainly the result of investments in skills and research from public and private institutions. These built the basis for sustained competitiveness and Swedish and Finnish processing industries were still competitive against low-cost producers. Moreover, successful backward linkage industries developed for specialized machinery, engineering products, transport services and equipment.

Similarly, US emergence as an industrial power at the turn of the past century was propelled by resource abundance: petroleum products, meat and poultry packing, primary copper products and steel works (Wright, 1990).

In recent times, the commodity sectors had a positive impact on broader economic development, including through promoting a diversified industrial structure, in developed economies (Australia, Norway and Scotland) and developing countries (Argentina and Malaysia, as seen; Raines et

al., 2001). With the right policies—for skills, technologies and linkages (Wright and Czelusta, 2004)—and under the right conditions, commodity production can therefore have a positive impact on broader development, including a more diversified industrial structure.



*Resource-based industries do not match Africa's factor endowments*

The final line is that Africa's industrial policies should be designed for unskilled labour-intensive sectors, such as light manufacturing. This is supported by arguments that resource-processing industries are generally capital or skills intensive, or both (Roemer, 1979). It has been estimated that manufacturing industries employ on average 26 per cent more labour per unit of output than resource-based manufacturing (Owens and Wood, 1997). Resource processing would therefore require two factors of production fairly scarce in Africa—capital and skilled labour.

This argument is increasingly challenged by the emerging dynamics of GVCs. Labour-intensive, export-oriented industrialization was the path followed by East Asia. Asia, however, relied on many measures that are prohibited, or at least discouraged, in today's multilateral trade arena. These include tariff protection and performance requirements, such as trade balancing and local content (Chang, 2002). As African countries negotiate trade agreements at multilateral and regional levels, they should push for the necessary policy space for their export oriented industrialization strategies. Further, given the political economy of trade negotiations, countries must work together in articulating regional strategies to have sufficient leverage when engaging with third parties, such as the EU, US or China. Regional integration is therefore an imperative to devise industrialization and value addition strategies which build the necessary

linkages between suppliers and producers within the continent, to overcome the constraints being faced by local production.

Moreover, policymakers need to remember that manufacturing is subject to downward price pressures when designing an industrial policy for Africa, as seen in the developed countries, whose high-cost consumer goods exports have largely been displaced by those from developing countries, mainly in Asia. Africa's manufacturing sector has to compete with these exports, where firms have better access to infrastructure, and to financial and human capital.

These downward price pressures are confirmed by an analysis of unit prices trends of EU imports of manufactured products in 1988–2002, which can be assumed to largely reflect global unit prices. Around a quarter of the EU's manufactured products imported from low-income countries and almost a third of those imported from China saw declining price trends, against less than a tenth of those imported from high-income countries (table 3.7). These declining price trends affected labour/resource-intensive sectors and low-skill/technology sectors the most, that is, those in which Africa competes with China and India. Africa's industrialization through export-oriented, light manufacturing would therefore take place in an environment of falling global prices and high competition. It is therefore arguable that resource-based industrialization will offer better opportunities for African countries to compete in global markets before they can eventually compete in other manufacturing activities.

**TABLE 3.7: SHARE OF EU IMPORTS OF MANUFACTURED PRODUCTS WITH DECLINING UNIT PRICE TRENDS, 1988–2002 (%)**

By region		By sector			
		UNCTAD classification		Lall classification	
Low-income	25.6	Labour/resource intensive	69	Resource-based	61
China	29.7	Low skill/tech/capital intensive	67	Low-technology	71
Lower middle-income	18.3	Medium skill/tech/capital intensive	64	Medium-technology	59
Upper middle-income	17.2	High skill/tech/capital intensive	59	High-technology	51
High-income	8.5				

Source: Adapted from Kaplinsky and Santos-Paulino (2006).

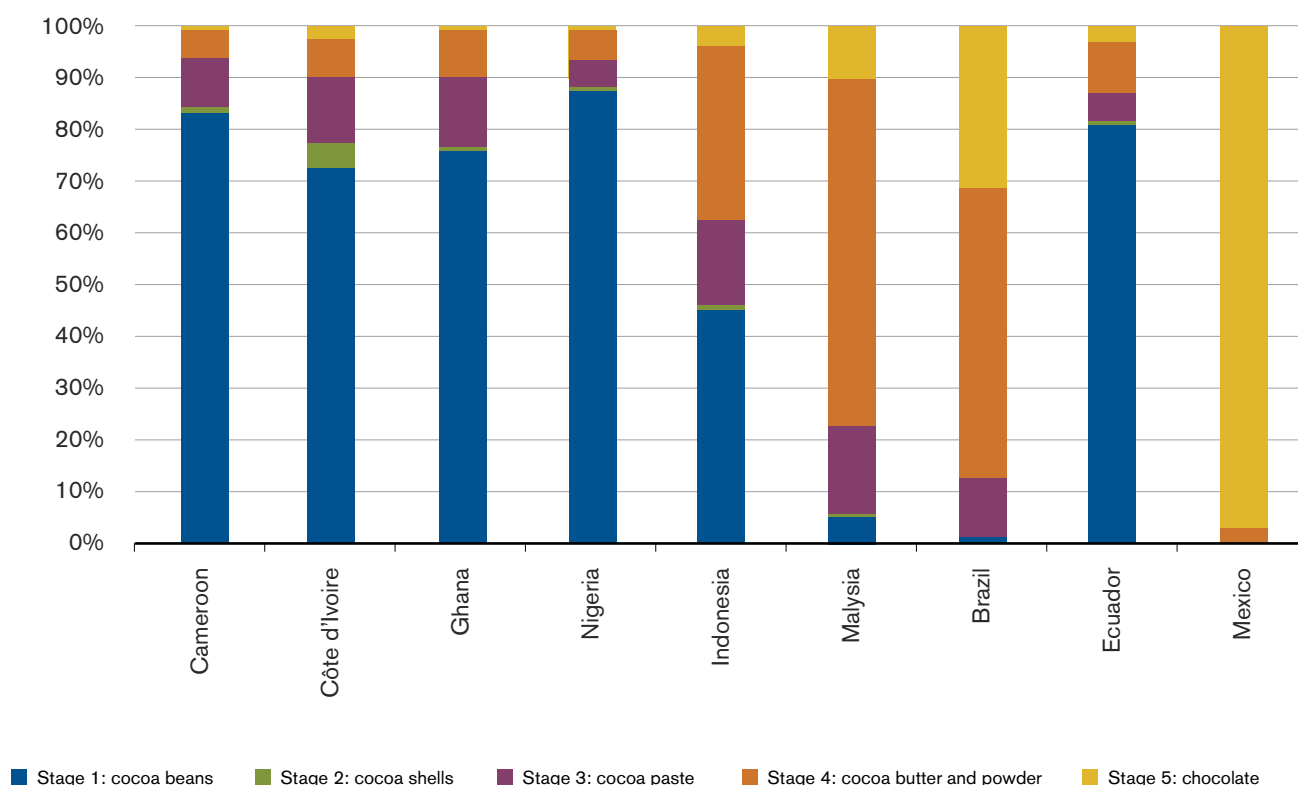
While opportunities still exist for some African countries to industrialize through light manufacturing exports, resource-rich countries need to seriously consider embarking on commodity-based industrialization where they have greater competitive advantage. China's hunger for natural resources is keeping commodity prices high (Kaplinsky, 2006), which provides a good opportunity to capitalize on.

The question then is not whether Africa can industrialize by "ignoring" its commodities, but rather how the latter can be used to promote value addition, new service industries and technological capabilities that span the subregions of the continent. In other words, how can African countries add more value to their commodities to reap larger benefits from them? Another key issue is how to move from resource-based industrialization to higher stages.

### 3.3 ADDING VALUE AND DEVELOPING LINKAGES

The world's number one, two, three and six cocoa bean exporters—Côte d'Ivoire, Ghana, Nigeria and Cameroon—show remarkably low levels of value addition: only Côte d'Ivoire and Ghana exported between a fifth and a quarter of their production in semi-processed form (figure 3.3). Yet 54 per cent of Indonesia's export value to the world was at the lower and higher end of the semi-processed stages (cocoa paste, butter and powder), and 94 per cent of Malaysia's export value to the world was at the higher end of the semi-processed stage (cocoa butter and powder). In Latin America, Brazil and especially Mexico have moved up the value chain: 31 per cent of Brazil's and 99 per cent of Mexico's cocoa exports consisted of chocolate products.

**FIGURE 3.3: VALUE-ADDED CONTENT OF SELECTED DEVELOPING COUNTRIES' COCOA EXPORTS, 2011 (%)**

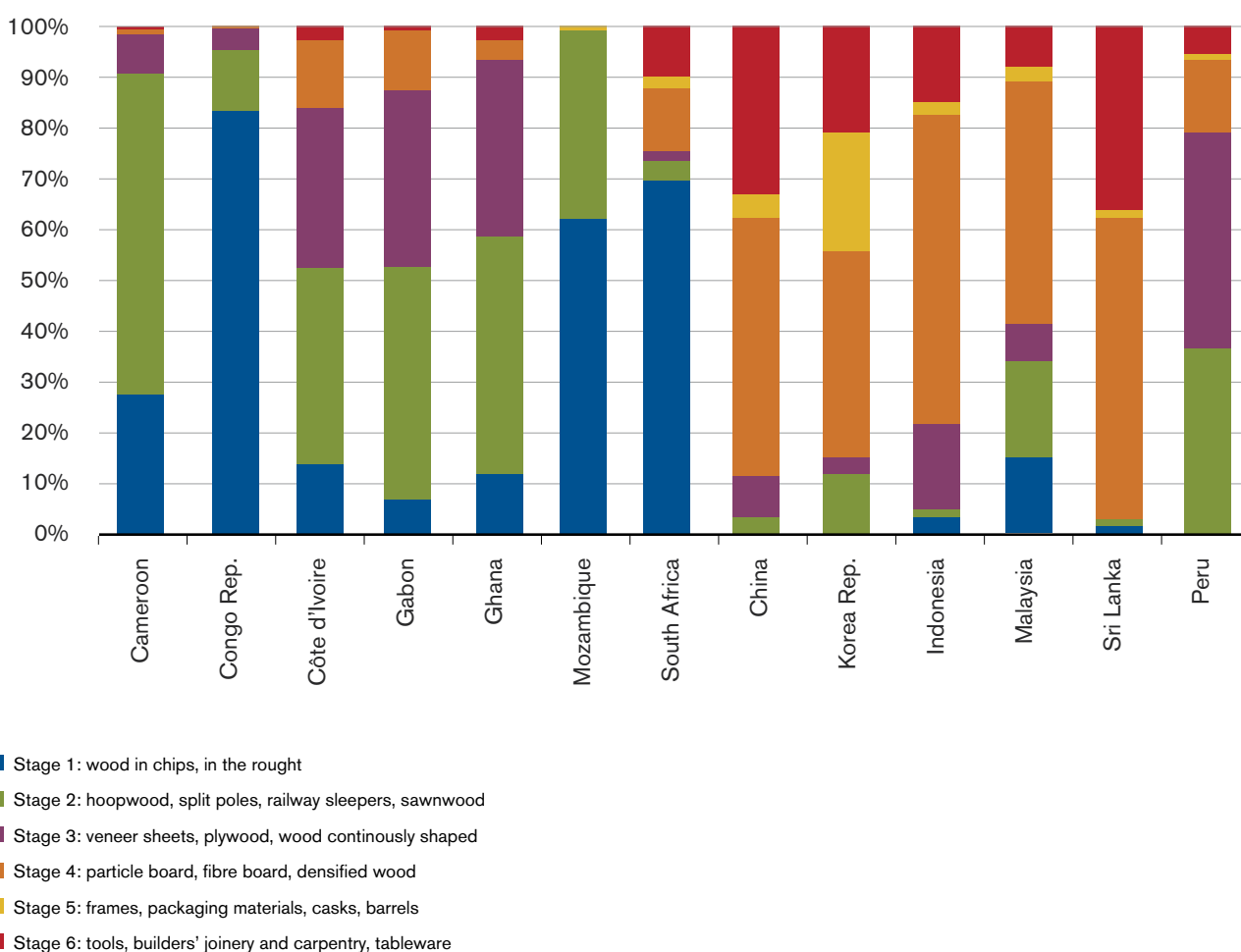


Source: ITC Trademap, retrieved from <http://www.trademap.org/>, accessed 30 August 2012.

The timber GVC shows a similar interregional pattern. In Cameroon, the Republic of Congo, Mozambique and South Africa, between three quarters and all exports were logs or other basic processed forms (figure 3.4). Côte d'Ivoire, Gabon and Ghana export around a third of their production in higher value added form,

including plywood and veneer sheets, in a move that Indonesia had made earlier (box 3.8). Other major Asian producers export 58–97 per cent of their timber in advanced processed stages, including China, the Republic of Korea and Sri Lanka, producing frames, tools and tableware, for example.<sup>11</sup>

**FIGURE 3.4: VALUE-ADDED CONTENT OF SELECTED DEVELOPING COUNTRIES' TIMBER EXPORTS (EXCLUDING FURNITURE), 2011 (%)**



Source: ITC Trademap, retrieved from <http://www.trademap.org/>, accessed 30 August 2012.

### **BOX 3.8: CONTROL OF MARKETING CHANNELS ADD EXPORT VALUE IN INDONESIA**

The critical feature of Indonesia's upgrading strategy was its control of domestic and international marketing channels (Gellert, 2003). A national marketing body, Apkindo, was established in 1976 and private firms were compelled to join, reflecting the government's objective of developing a national processing industry. Apkindo used its control of domestic channels to move into value-added, regional markets (Gellert, 2003).

Until then, it had largely been a "price-taker" for logs, and could not enter the plywood segment of its largest export market, Japan. Japan was protected by high tariff and non-tariff barriers, its plywood producers were highly efficient, and distribution was monopolized by eight trading houses interested in supplying cheap raw materials to their processors.

To break into this market, Apkindo obtained certification of compliance with Japanese agricultural standards for its timber processors and established an independent trading house in Japan, partnering with a minor local trader. This house assumed control of all Indonesian plywood imports, and sold to other trading houses and directly to construction firms. These imports were competitive as they were initially subsidized through the fees collected from Apkindo's members.

Indonesia's strategy paid off. Bypassing the Japanese trading houses competing with its own, it managed to become a "price-maker" for plywood in Japan. It raised the volume and price of its plywood exports: exports rose from \$160 million in 1981 to \$1 billion in 1986 and to \$4 billion in 1992, making it the world's largest hardwood plywood exporter (Thee, 2009). The wood-processing industry also deepened its processing capabilities, investing in particle-board, woodworking, furniture and cement-bonded plants.

The cocoa and timber GVCs highlight a few issues. First, among some of the world's largest raw material producers, African producers are relegated to the bottom of the value chain. Second, intraregional variations emerge: Ecuador and Peru lagged behind other countries in their region, while Côte d'Ivoire and Ghana were ahead in theirs.

The stories of success and failure in creating backward and forward linkages in other developing countries (boxes 3.9–3.13) highlight that they are the result of, among other things, a straightforward combination of policies and domestic capabilities.

### **BOX 3.9: SUCCESSFULLY COMBINING POLICIES AND DOMESTIC CAPABILITIES, BRAZIL**

Brazil's soybean industry took off in the 1970s. Initially, the government supported intensive soybean production in what had been coffee-producing areas such as Rio Grande do Sul. It did so by adopting price and input subsidies, a generous credit policy, and measures to modernize farming practices. Differential export taxes and quotas encouraged value-added exports. These measures were accompanied until the mid-1990s by a duty drawback system and price controls.

The soybean processing industry, increasingly owned by large, modern and often TNC-controlled enterprises, developed by supplying soybean oil to the domestic market, and soybean cake to the growing pig and poultry sector and to export markets. Upstream industries to soybean agricultural production and processing industries also developed (Fold, 2000).

Interventionist policies and high domestic capabilities boosted the cocoa industry, too. In the 1970s, incentives to local processing expanded domestic grinding capacity. When grinders could not access enough raw material, the government incentivized cocoa farming and set export quotas. A mix of Brazilian and transnational companies controls the processing industry (Talbot, 2002).

Africa's experience with linkage development has had modest success (ECA, 2011). In the past, efforts focused on state ownership but failed to build market competitiveness. Ghana's attempts to move into cocoa processing through state ownership performed poorly owing to a combination of mismanagement of firms and low supply of raw materials (Talbot, 2002). This outcome was common in resource-rich countries in the 1970s and 1980s, which pursued forward linkages through strong public participation, tariff protection and high subsidies.

Other strategies also found limited success: Côte d'Ivoire's forward integration relied on high producer

prices to raise cocoa production and FDI (Talbot, 2002). It set up a cocoa-processing industry, largely controlled by foreign companies, but capacity stayed low.

Some governments have not adopted linkage policies (box 3.10), forgoing potential opportunities to develop local manufacturing and services (Morris et al., 2012). Others, adopting export bans and taxes as well as local content regulations, have rarely matched them with measures to support technological capabilities, skills development and entry into marketing/distribution networks (boxes 3.11 and 3.12).

### **BOX 3.10: MISSED OPPORTUNITIES IN GOLD MINING, TANZANIA**

Tanzania's gold mining has, since the late 1990s, underpinned national economic growth. The objectives of the 1997 Mineral Policy and the 2012 Mineral Act include developing backward linkages, but the country has no definite target, incentives or penalty system, leaving linkage development largely to market forces. Legislation reserves primary prospecting and mining licensing to wholly owned Tanzanian companies, which can, however, sell these rights to foreign firms. In this way it has allowed some national companies to accrue rent from gold mining, but has not fostered value-added activities. In gold exploration, local content is limited to drilling services and logistics, while in gold mining, it is limited to fuel, equipment repair and maintenance, and basic services. Most services and goods are imported. One reason for the low value addition is the weak capability of local firms, which also suffer from poor competitiveness, partly owing to high production costs. Another is that tax exemptions for mining inputs apply to mines but not their suppliers, which therefore face higher import costs.

The gold-mines' remoteness is another more fundamental issue, but national infrastructure is poor, raising costs. To address them, Tanzania joined the project of a Central Development Corridor to connect Dar es Salaam port with the Great Lakes region and to stimulate broader economic activity centred on resources (Perkins and Robbins, 2011). The project is lagging behind, however, owing to lack of funding, weak political will and poor institutional capabilities. Skilled labour is also scarce, and industrial research institutes have largely ignored supply chains.

Source: Mjimba (2011).

**BOX 3.11: ANGOLA'S LAWS ARE NOT ENOUGH ON THEIR OWN**

Angola has an ambitious programme to increase local content in its oil and gas value chain. It is based on decrees of 1982 and 2003 and the 2004 Petroleum Activity Law, which required oil and gas companies to train and hire local labour, and to follow preferential procurement from Angolan companies for products that are not capital or knowledge intensive.

Yet despite comprehensive legislation, Angola has had little success in creating backward linkages. In 2010, the only value-added activities were the operations of two components of the subsea umbilicals, risers and flow lines subsector—assembly of flow lines and control lines (box table).

**BOX TABLE: PROVENANCE OF INPUTS**

Types of input	% of oper. exp	Description	Provenance	
			Imported	Locally produced
Production Machinery		Pipe pincers, loaders, rollers, stalk racks, cranes, amortization	✓	--
Raw Material	70–75	Metal, steel, copper	✓	--
Labour (skilled/unskilled)	15–20	Engineers, managers, welders, etc.	✓	✓
Basic General Services	3–4	Health and Safety Executives, catering, cleaning, security, civil construction, recruitment, lease	--	✓
Basic General Goods	2	PPE, IT and electronic equipment, office furniture, stationery, etc.	✓	--

The local content policy helped to provide Angolan firms and joint ventures with access to the supply chain. Previously, oil and gas companies had outsourced supply links related to subsea umbilicals, risers and flow lines through engineering, procurement, construction and installation (“turnkey”) contracts. These contracts outsourced the entire chain to overseas contractors, bypassing locally based suppliers. Through the local content policy, some local firms entered the supply chain, but their local content remained low because everything but labour and some services was imported.

Moreover, these firms were mostly joint ventures and were located in the oil terminal, which granted them access to good transport, electricity, water and telecom, insulating them from the national infrastructure. By contrast, the majority of local potential suppliers faced very poor infrastructure and lacked competitiveness. Moreover, while state ownership through Sonangol assured the linkage development vision, issues in implementation arose, such as lack of coordination with the private

sector and with ministries and agencies responsible for industrial development.

Linkage development efforts have been more successful in employment, and the skills of the local labour force have risen steadily, largely owing to heavy investment in training by the oil and gas companies and the public sector.

Source: Teka (2011).

### **BOX 3.12: UNCOMPETITIVE TIMBER PROCESSING IN GABON**

The 2001 Forestry Code provided a vision for the wood industry that encouraged sustainable farming and value addition (Terheggen, 2011). But as the export market shifted to China and timber was increasingly exported in unprocessed form, Gabon imposed an export ban on logs in 2010.

Although the ban forced domestic logging companies to increase local processing in exports, they remain uncompetitive internationally. Unprocessed wood has to be transported via water (road and rail are inadequate) keeping transport costs high at 14–25 per cent of total production costs, but water is unsuitable for moving processed wood. Labour is also an issue: processing companies have to import not only skilled and semi-skilled labour, but also some of their unskilled workers.

Botswana's beneficiation policy (establishing resource-processing industries) is generally meeting its targets (Mbayi, 2011). The country has been very successful in using natural resources—especially

its huge diamond reserves (box 3.13)—to promote economic growth and reduce poverty through value addition and job creation.

### **BOX 3.13: DIVERSIFYING THE ECONOMY THROUGH DIAMOND BENEFICIATION, BOTSWANA**

Botswana stands out as Africa's success story in expanding its economy. Growth averaged around 9–10 per cent a year, transforming the country from one of the poorest countries at independence in 1966 with GDP per capita of \$77 to a middle-income country with a per capita GDP of \$5,716 in 2005. This growth was driven by diamond mining, which accounts for half of government revenues, two thirds of exports and a third of GDP.

Yet Botswana's growth model—rooted in the neo-liberal orthodox macroeconomic framework—delivered growth that was neither pro-poor nor inclusive, and failed to diversify the economy from almost total dependence on mining. Unemployment, poverty and inequality have remained high relative to comparator middle-income countries: in 2010, unemployment was estimated at 17.8 per cent, poverty at 20 per cent.

As part of its economic diversification strategy, the government started to beneficiate diamonds to create jobs. The ultimate objective is to transform Botswana into a world-class diamond centre and sustain revenues from the industry beyond the life span of the diamond deposits by creating downstream skills in cutting and polishing, jewellery manufacturing, diamond trading and ancillary businesses.

The immediate aims are to increase skilled jobs through labour-intensive cutting and polishing and to diversify the economy by stimulating local economic development and promoting linkages with the rest of the economy. Local communities are to benefit from value addition through employment as well as technical knowledge and skills, which also enrich the social knowledge base, creating capabilities and options for firms to diversify into related goods and services.

The diamond cutting and polishing industry employs around 3,000 workers (about a third of mining jobs) but its jobs are very susceptible to global shocks: the number fell from 3,267 in 2008 to 2,183 in 2009, subsequently recovering to 3,262 in 2011 (Statistics Botswana, 2012). Downstream activities are likely to create more jobs as the sales function of the international branch of the Diamond Trading Company, established in 2008 by the government and De Beers mining company, relocates to Botswana.

Botswana has successfully used its resource intensity to help diversify its economy and create jobs, but it still has to resolve incoherence between social and economic policies and duplication of institutions and functions, as well as weak skills development, especially given the demand for specialist skills under the beneficiation strategy.

Source: Mbayi (2011).

Too few of Africa's linkage development strategies have been matched by efforts to improve the supply of raw materials. Mozambique's cashew-nut processing industry is one example (Cramer, 1999). Previously state owned, it was in prolonged crisis owing to mismanagement and civil war. After privatization, there was policy uncertainty between the objective of exporting high-value raw kernels and encouraging local processing through export duties, making it hard to define strategy. However, the key constraints were related to technology, skills, infrastructure, standards, marketing, branding, and, most of all, access to raw materials. By contrast, Brazil, India, Indonesia and Vietnam promoted cashew-nut processing through industrial policies, export taxes and bans over the last 4 decades.

### 3.4 FACTORS IN LINKAGE DEVELOPMENT

The opportunities for developing linkages to natural resource sectors are determined by the capabilities

of domestic firms and effectiveness of government policy. Domestic firms' competitiveness in price, quality, lead times and flexibility define the extent to which they can seize the opportunity to supply commodity lead producers or move into resource-processing for domestic, regional and international markets or even create domestic lead firms. Other factors also matter, as now discussed.

#### Technical characteristics of GVCs

GVCs have different technical characteristics for processing commodities. Some commodities have to be processed shortly after extraction because the intermediate products are not storable, especially soft commodities such as tea, rubber and palm oil, which need immediate post-harvest processing to preserve their essential qualities. Tea processing from the leaf into "made tea" has to be quick, and customarily has been carried out in producing countries (Talbot, 2002).



By contrast, coffee roasting and grinding have to be done near the consumption stage, to preserve the flavour. Traditionally, forward linkages in producing countries have been limited to processing into parchment coffee (coffee seeds are separated, rinsed and dried) and green beans. Green beans are the most common form of trading because they can be stored for years (Talbot, 2002). Forward linkages have increased in a few producing countries that process coffee into instant coffee or vacuum pack coffee for roasting, which increases durability but also transport costs (Roemer, 1979).<sup>12</sup>

Forward integration by commodity-producing countries is facilitated when there are many discrete stages of production of storable products within a GVC. This is because lead firms could find it profitable to outsource the processing of intermediate products to producing countries, while retaining control of the higher value added stages. The large food TNCs have outsourced the intermediate processing stages of the value chain to international trading houses, because this has not infringed on their core business (Talbot, 2002). From the 1980s, some cocoa processing activities partly relocated to cocoa producing countries, including West Africa (Fold, 2002).

The technical characteristics of the value chain also determine the breadth and type of backward linkages. Ore extraction, for example, is a large-scale activity that requires a raft of suppliers, from low-skilled, labour-intensive to capital-intensive providers, while sugar production requires a narrower range and lower value of capital inputs.

The opportunities for linkage development are also shaped by relative factor intensity and the varying requirements of firms' capabilities. Mineral processing is generally more skills and capital intensive than soft-commodity processing, but wood, rubber and non-basic metal semi-fabricates production are more labour intensive than steel-making or alumina smelting (Londero and Teitel, 1996; Roemer, 1979).

In backward linkages, service-based supply firms are more knowledge intensive and require smaller economies of scale than capital-intensive machinery suppliers, which require larger amounts of capital and R&D and have greater economies of scale.

They are usually controlled by TNCs, although in knowledge-intensive economies like Germany, small and medium-sized producers (*the Mittelstand*) are successful.

Different value chain characteristics affect the capabilities that firms need. The technological distance between stages of the value chain determines how firms can move into backward and forward linkages (Hirschman, 1958). For example, the capabilities required to process wood into sawn wood, plywood and veneer sheets are different from those required for furniture making. In order to undertake this non-linear upgrading, local firms require new capabilities in product design and marketing. Forward and backward integration is facilitated when firms require capabilities similar to their existing ones.

While transport costs do not automatically create an advantage in local processing, in some value chains, processing heavily reduces weight or volume (or both), which is critical with high fuel prices. Copper refining, for instance, cuts the weight of ores by two thirds (Radetzki, 2008). Steep reductions come from processing timber into board products. Rubber processing, by contrast, increases weight and volume, and processing sulphur into acid adds to transport costs because it raises handling risks.

Some processing activities, such as aluminium smelting or steel production, depend critically on cost-effective access to complementary inputs like energy. This factor explains the competitiveness in processing of some developed countries with no endowment of alumina or iron ore.

Lastly, technological change is important. The timber value chain saw sweeping changes when flat-packed furniture arrived in the 1980s, which enabled lower value added activities to be outsourced to low-cost countries (Morris et al., 2012).

### Industry structure

Metal and oil refining present high economies of scale, as do their intermediate product manufacturing (ECA, 2011). This has two implications: the natural resource sector must generate enough output to make processing viable; and manufacture into intermediate or final goods requires large domestic

markets or must be internationally competitive for the export market. Nonetheless, if the continent could eliminate barriers and constraints to regional trade, regional markets might well be instrumental in exploiting economies of scale and in selling the intermediate and final goods that have value added locally and regionally.

Highly concentrated markets can result in captive supplier networks, that is, where suppliers are transactionally dependent on their large buyers (Gereffi et al., 2005). As these networks tend to support local upgrading where industrial capabilities are weak, such market-structure and supplier-network arrangements could benefit Africa's industrialization.

They can also induce firms to forward integrate. As well as the cocoa value chain (discussed above), many larger oil companies are involved in upstream and downstream activities. Forward integration by dominant firms raises entry barriers to potential competitors, a particular problem when the capital and skills requirements are not prohibitive for local processing firms.

It follows that governments have to take account of the market dominance of lead firms in their linkage development strategies, as Botswana did when designing its forward linkage policy (see box 3.13). In the diamond GVC, as De Beers controls much global production as well as marketing and distribution, Botswana's beneficiation policy was designed around

the company, setting restrictions on its marketing of raw diamonds (Mbayi, 2011). When the government renewed the company's mining licence, it established that a set amount of raw diamonds had to be locally marketed, cut and polished. (It is too early to assess the success of this strategy, but many processing firms have now relocated to Botswana and are training local workers.)

### Lead-firm strategies

The strategies of lead firms have a large impact on linkage development. In the clothing value chain for example, US retailers and marketers encouraged their suppliers to upgrade to "full-package" production, while branded manufactures only required basic assembly from their suppliers (Gereffi, 1999). High concentration and the financialization of companies (i.e. the entry of banks and other financial institutions into commodity markets and the development of a range of commodity-based financial instruments) in the United Kingdom led buyers there to rationalize their supply chains, which increased entry barriers and constrained upgrading opportunities for developing-country suppliers (Palpacuer et al., 2005).

In the timber and cassava GVCs, when African and Asian producers widened their export markets to China, they also reduced their processing capabilities as these went to China (Kaplinsky et al., 2010). Gabon exemplifies the downgrade (box 3.14).

#### BOX 3.14: LOSING ITS PROCESSING PROWESS, GABON

The timber industry used to export veneer sheet and plywood products to the EU and to adhere to strict environmental sustainability regulations. But in the 2000s, much of the market shifted to China, which is more interested in large volumes and cheap supplies.

From the 1960s to the 1990s, wood exports averaged around 80,000 cubic metres a year, around 70 per cent of which was exported in semi-processed form (plywood). The shift to China saw, after 2004, an almost fivefold increase in export volumes, but a downgrade to sawn wood and, less so, to veneer sheet (both with less value added than plywood).

In 1997–2007, export volumes of sawn wood—the least processed form—rose 770 per cent.

Source: Terheggen (2011).

Zambia's copper value chain has been shaped by the various strategies of mining companies, often reflecting their country of origin (Fessehaie, 2012). Since 2008, industrial-country mining companies, for example, have increasingly rationalized their supply chains, focusing on value-adding supply firms and raising entry barriers to entry. They cooperate with local suppliers to enhance their processes and competitiveness. Although the largest Chinese copper mining company, NFCA, grants more market opportunities than Western companies to many local suppliers, it offers no cooperation to upgrade local processing. The Indian mining company, KCM, reduces both market opportunities and upgrading processes, through poor supply-chain management.

### Location and infrastructure

Geographical distribution and access to infrastructure play a key role in shaping agglomeration configurations around the commodity sector. Africa's infrastructure has largely been inherited from colonial times, and tends to be designed to link plantations, as well as oil and mining facilities, to ports.

When infrastructure is poor and commodity extraction is based in remote locations, local supply firms face high marketing and distribution barriers, having either to relocate their business or to travel when meeting buyers and to arrange transport of supplies and services. Knowledge and information flows are also curtailed. Moreover, local supply or processing firms find it costly to relocate where there are no second-tier suppliers or other specialist suppliers.

The commodity itself considerably influences the potential for infrastructure to promote linkages (Morris et al., 2012). For example, oil extraction is supported by pipelines, which have very few spillover benefits. Conversely, roads or railways are a public good: they can be used by different users and they generate network effects. This type of infrastructure is particularly beneficial to developing backward linkages because it reduces costs for local suppliers.

Through infrastructure development, the resource sector can promote supply clusters. Geographical

agglomerations reduce marketing and networking costs for suppliers or processing firms, and favour technological spillovers and knowledge flows. They also facilitate just-in-time deliveries and close inter-firm relationships that encourage customized solutions.

Africa's infrastructure deficiencies are therefore a major impediment to linkage development, and regional integration could catapult the continent's ability to enter GVCs. Several initiatives promoting "corridors" across Africa or focusing on infrastructure (such as roads and power pools that span several countries) are examples of how the continent could tackle these deficiencies.

### Trade barriers

Tariff escalation is one major barrier to commodity-based GVCs (alongside rules of origin, product or process standards, and sanitary and phytosanitary measures, which are seldom explicit and are often argued as being non-intentional "technical barriers to trade"). It occurs when import tariffs increase according to the degree of processing of imported products. Raw materials face lower duties to provide processing companies in the importing country with cheap materials, while semi-processed and processed products face increasingly higher duties to protect firms in the importing country from competition. Tariff escalation thus discourages natural resource-rich countries from moving up their commodity-based GVCs.

Tariff escalation is significant not only between raw and semi-finished products but also between semi-finished and finished products (Cernat et al., 2002). It is present in the markets of developed and developing countries (even with various multilateral and bilateral trade initiatives), and it may affect some African countries more seriously in the future.

Both the US African Growth and Opportunity Act (AGOA) and the EU's Economic Partnership Agreements (EPAs) contain trade barriers affecting Africa's move up the commodity-based value chain (see chapter 2). The rules of origin under AGOA impede African beneficiaries from sourcing inputs from African countries that are

not beneficiaries to the agreement (Karingi et al., 2011). In the EPA negotiations, pressure from the EU to obtain MFN treatment would wash down the preference margins of existing and future bilateral and regional agreements between African partners, a prerequisite to shift the sourcing structure to inputs within the continent and foster the creation of regional value chains.

Equally, sanitary and phytosanitary measures, as well as requirements for standards, have impeded countries such as Namibia from exporting table grapes or Botswana from entering the EU beef sector, which would have brought opportunities to highly segmented markets.

It is these aspects that are holding back African countries from fully realizing preferential treatment and using liberalization as a launch pad to industrialize and transform their economies.

### **Technology and Skills Bottlenecks**

African firms face tight bottlenecks in technological capabilities (box 3.15) and skills, among other areas. In 2002, for example, the number of engineers enrolled in tertiary institutions in Africa (excluding North Africa) was only 12 per cent of the number enrolled in the Republic of Korea (Lall and Pietrobelli, 2005).

#### **BOX 3.15: TECHNOLOGY'S GATES HAVE YET TO SWING OPEN**

In 2002, Africa's per capita imports of capital equipment (embodied technology) ranged from very low (Uganda, \$7) to quite high (South Africa, \$165). Yet these pale in comparison with the Republic of Korea (\$1,032) and Thailand (\$403). Regionally, the per capita figures for Africa (excluding North Africa) were \$8 compared with \$242 for East Asia and \$198 for Latin America. Africa (excluding North Africa) attracted much less FDI in manufacturing, and represented a tiny 1.5 per cent of the licence fees for imported technology paid by developing countries.

Total R&D, as a share of gross national product, stood at 0.28 per cent in Africa (excluding North Africa), compared with an average of 0.39 per cent for developing countries and 0.72 per cent for Asia. Most R&D in Africa targets agriculture rather than manufacturing or services.

Source: Lall and Pietrobelli (2005).

Technological efforts are critical for upgrading, but they are not cost-free or risk-less. In Africa, most efforts focus on searching, buying and experimenting with technologies, and adapting them to local conditions. Knowledge needs to be acquired and updated to keep up with

innovation, but most local technology institutions are very poorly resourced (Lall and Pietrobelli, 2005). Africa's industrial-policy weakness is thus hampering local firms' capabilities to be globally competitive in resource processing.

### 3.5 CONTINENTAL POLICY INITIATIVES PRESENT OPPORTUNITIES FOR REGIONAL INDUSTRIALIZATION AND VALUE ADDITION

Africa-wide policy moves are a chance to address challenges. In spite of these disappointing experiences with industrialization, African governments have always included such moves among the highest policy priorities at the continental level, as evidenced by the large number of initiatives calling for action to spur industrialization.

Indeed, the Lagos Plan of Action considered industrialization as a means of attaining self-reliance and self-sustainability. This was strongly reflected in subsequent proposals for Industrial Development Decades for Africa (IDDA) I and II. However, despite isolated successes, IDDA I and II were deemed disappointing by most African countries, as they were hampered by an absence of mechanisms for implementation, coordination and monitoring. In furthering the objectives of the New Partnership for Africa's Development (NEPAD), the African Productive Capacity Initiative was adopted by the AU and NEPAD in 2004 to be the overarching framework for sustainable industrial development in Africa.

In 2007, the Conference of African Ministers of Industry endorsed the Action Plan for Accelerated Industrial Development of Africa (AIDA) (AU, 2007). The plan identifies priorities for action at national, regional, continental and international levels on product and export diversification; natural resource management; infrastructure; human capital, science and technology; standards compliance; institutional frameworks; and resource mobilization. It also recommends national industrial strategies to target value addition of natural resources; national and continental mining codes to support local processing; and revenues from resource sectors to be invested in industrialization.

The Action Plan was endorsed by Heads of State and Government in 2008. They requested the AU and the United Nations Industrial Development Organization (UNIDO) to develop an implementation strategy with relevant regional economic communities and international bodies such as ECA and the World Bank, which led to the following Strategy.

#### *Strategy for the Implementation of the Action Plan for AIDA*

This is a key document in continental action on industrial policies (AU, 2008). Among its objectives are insertion of African companies into GVCs, and development of forward linkages to commodity sectors and backward linkages to local small and medium-sized enterprises. The Strategy recognizes the scope for increased participation by Africa in commodity-based GVCs. It also proposes investing in the first stages of resource-based processing, in the context of increasing FDI into Africa's natural resources from economies like China and India. If complemented by preferential trade agreements to ensure access to these markets, Africa could tap into other emerging economies' capital and technological endowments to foster local industrialization.

The Strategy is composed of seven programme clusters—to be undertaken in the immediate, medium and long term—on industrial policy and institutional direction; upgrading production and trade capacities; promoting infrastructure and energy for industrial development; human resources development for industry; industrial innovation systems, R&D and technology development; financing and resource mobilization; and sustainable development.

Recognizing the role of industrial policies in correcting market failures and of the state as facilitator, its priority sectors for industrial upgrading include resource-processing industries such as agro-food, minerals, textiles and garments, leather and forestry. It recommends that skills training should be aligned with the priority sectors, particularly infrastructure and beneficiation industries. It targets measures to increase the role of the private sector in upskilling workers, as well as technological development and R&D capabilities.

The Strategy envisages several channels to access investment capital. For resource-rich countries, it aims to establish national sovereign wealth funds for industrialization. By establishing a Supplier Benchmarking and Partnership Exchange, countries could assist local enterprises to enter TNCs' supply chains. This project aims to identify and match suppliers and buyers; it also recognizes the need to build the competitiveness of local firms.

The last cluster specifically aims at promoting local content and beneficiation in extractive industries as an avenue for sustainable development.

Part of a wider approach to supranational policy and strategy formulation, the Strategy includes the AU's Vision Paper on African Industrial Development; the road maps adopted by the regional economic communities (RECs), Economic Community of West African States, Common Market for Eastern and Southern Africa, Southern African Development Community (SADC), and Economic Community for Central Africa; and the UNIDO-assisted African Productive Capacity Initiative.

### *African Mining Vision*

The African Mining Vision foresees the mineral sector contributing to broader continental social and economic development. Integral to this vision is the development of upstream, downstream and horizontal linkages (infrastructure, skills and R&D) with the mining sector.

The Vision is informed by initiatives at subregional, continental and global levels. These include the Yaoundé Vision on Artisanal and Small-scale Mining; the Africa Mining Partnership's Sustainable Development Charter and Mining Policy Framework; the SADC's Framework and Implementation Plan for Harmonisation of Mining Policies, Standards, Legislative and Regulatory Frameworks; and the Common Mining Policy and Code Minière Communautaire of the Union Economique et Monétaire Ouest Africaine.

The Vision proceeds from an understanding that companies have an important role. The corporate world, according to the Vision, has now accepted that its success will be assessed on a triple bottom line: financial success, contribution to social and economic development, and environmental stewardship. The Global Reporting Initiative (GRI) was developed to assist corporations to include this supplement in their reporting guidelines. The 2004 GRI guidelines contain social, environmental and economic indicators such as revenue management; compensation payments to local communities; employee benefits beyond those legally mandated; and equal opportunity policies or programmes. The Vision states, however, that the GRI did not incorporate linkage development.

***In 2007, the Conference of African Ministers of Industry endorsed the Action Plan for Accelerated Industrial Development of Africa (AIDA) (AU, 2007). The plan identifies priorities for action at national, regional, continental and international levels on product and export diversification; natural resource management; infrastructure; human capital, science and technology; standards compliance; institutional frameworks; and resource mobilization***

To maximize the impact of the commodity price boom on linkage development, the Vision identifies the following strategies:

- Channelling resource rents to improve the basic physical and knowledge infrastructure;
- Collateral use of the high-rent resource infrastructure to open up other economic activities (such as agriculture, forestry and tourism);
- Establishing resource-processing industries (beneficiation);
- Use of the fairly large resources sector market to develop the resource supply/inputs sector (capital goods, consumables, services);
- Development of niche technological competencies in the resource inputs sector. Opportunities for these are open by the fact that resource exploitation technologies generally need adaptation to local conditions (climate, mineralogy, terrain). These competencies could later migrate to non-resource industries.

So far, these strategies have not been fully pursued because of poor governance in managing resource rents, poor management of feeder infrastructure linking to the resource infrastructure, and real exchange rate appreciation, which hampers local firms' competitiveness. Downstream beneficiation has been hindered by lack of complementary inputs, large economies of scale, and strategies of TNCs. Upstream linkage and local technological development are often prevented by low local capabilities and TNCs' central procurement and R&D strategies.

The Agribusiness and Agro-industry Development Initiative was endorsed by the High-Level Conference on Development of Agribusiness and Agro-industries in Africa, held in Abuja, Nigeria, in March 2010. The goal of the initiative is to have an agriculture sector in Africa that, by 2020, is made up of highly productive and profitable agricultural value chains. The initiative aims to accelerate development of agribusiness and agro-industrial sectors that ensure value addition to agricultural products. Four key areas of support will focus on: enabling policies and public goods; value-chain skills and technologies; post-production institutions and services; and reinforced financing and risk-mitigation mechanisms.

The relevance of value chain analysis and linkage development was endorsed at the Eighth African Development Forum held in Addis Ababa on 23–25 October 2012, convened by the AU, ECA and African Development Bank. The Consensus Statement adopted at the conference said that the “full potentiality of [Africa’s] mineral wealth endowment remains largely untapped owing to structural and institutional challenges [including] the lack of forward and backward linkages” (AU et al., 2012: 2).

Among the recommendations, African countries should undertake to “enhance the contribution of mining activities to various backward and forward linkages in the local economy throughout the entire mineral value chain and overcome the phenomenon of enclave economies” and “urgently invest in tackling the institutional and human capacity challenges faced by stakeholders along the mineral value chain” (AU et al., 2012: 3–4).

### *The High-Level Conference on 3ADI, CAADP and the Maputo Declaration*

Following African leaders’ vision of a food-secure Africa and the establishment of a Common Food and Agricultural Market, the 2010 High-Level Conference on African Agribusiness and Agro-industries (3ADI) aimed to trigger the structural transformation of African agriculture through promoting public-private partnerships (PPPs). AU member States are to establish the requisite legal, regulatory and institutional framework

to support agribusiness and agro-industry development and to put in place programmes to accelerate development of the value of strategic food commodities, build competitive food supply systems and reduce reliance on food imports.

In support of this initiative, the AUC and ECA have set up a multi-institutional platform, to promote and assist in the development of regional value chains especially for designated strategic food and agricultural commodities. It is expected that this will contribute to the achievement of the ultimate objective of Pillar II of the CAADP framework, which is to accelerate growth in the agricultural sector by raising the capacities of private entrepreneurs, including commercial and smallholder farmers, to meet the increasingly complex cost, quality and logistical requirements of domestic, regional and international markets. The 2003 Maputo Declaration had earlier committed member States to increase their public spending on agriculture to 10 per cent of their budget allocation in the context of CAADP.

An example of the work undertaken for value chain creation in agricultural commodities relates to the launch of a pilot scheme in two RECs (COMESA and ECOWAS) that focuses on three of the strategic food and agricultural commodities identified at the 2006 Abuja Summit (livestock, maize and rice). Baseline studies with a regional perspective on livestock in these two regions have determined that intra-REC exports of livestock registered average growth of 15 per cent, compared with overall growth in intra-Africa exports of 25 per cent in 2005. This suggests that trade confined to RECs is less optimal than Africa-wide trade, which would argue for redoubling efforts to harmonize community markets to create a larger Africa-wide marketplace, such as the Continental Free Trade Area (CFTA), given that countries’ trading interests are not confined within their REC borders.

### *AU Summit on Boosting Intra-African Trade and Fast Tracking the Establishment of the CFTA*

African Heads of State and Government recently took decisive steps to move the regional integration agenda forward (see chapter 2), adopting a

Decision on Boosting Intra-African Trade and Fast-Tracking the Establishment of the CFTA during the 18th AU Summit in January 2012. They agreed to operationalize the CFTA by 2017. The Decision and Declaration contain an Action Plan for Boosting Intra-African Trade (BIAT), which is being implemented. The Action Plan has seven critical clusters for development, two of which deal with elements at the heart of industrialization and linkage development, namely productive capacity and factor market integration. The Action Plan has short, medium and long-term periods to deliver concrete outputs and targets pertaining to the clusters, with responsibilities shared between the RECs, member States and the AU, among others.

These regional initiatives are important for industrialization in Africa. They require major coordination efforts from member States, regional bodies and development partners. If taken seriously, their implementation has the potential to support Africa's transformation through resource-based industrialization and value addition.

### **African countries should consider designing strategies for linkage to GVCs**

A resource-based industrialization strategy A resource-based industrialization strategy should be grounded in the reality of each African country as well as the dynamics of the globalized world economy. Unlike the past, Africa has to design linkages for a world in which goods and services move across borders with ease and speed, and GVCs are governed by multinational lead firms that set parameters and have access to consumer markets and for whom Africa's interests may not be a priority.

To be economically sustainable, African countries could, as a first step, look for ways of inserting themselves into these value chains and to continually upgrade their position. Thereafter, they should seek ways of developing their own lead firms. State industrial policies and strategies by lead firms will ultimately define the success of any linkage development strategy.

The global mining industries have similarly moved away from a high level of vertical integration towards outsourcing various stages in the mining process, ranging from the provision of capital goods and intermediate inputs such as chemicals to low-tech and more basic labour-intensive services to independent firms. What they have not done in many African countries, South Africa for example, is to support beneficiation efforts.

Supplier firms have responded to these opportunities and global mining companies are also involved in building capabilities among their suppliers. The same logic of unfolding outsourcing, initially to the lowest-cost global supplier and then, wherever possible, to low-cost close suppliers, is being observed in many commodity sectors, including Africa's.

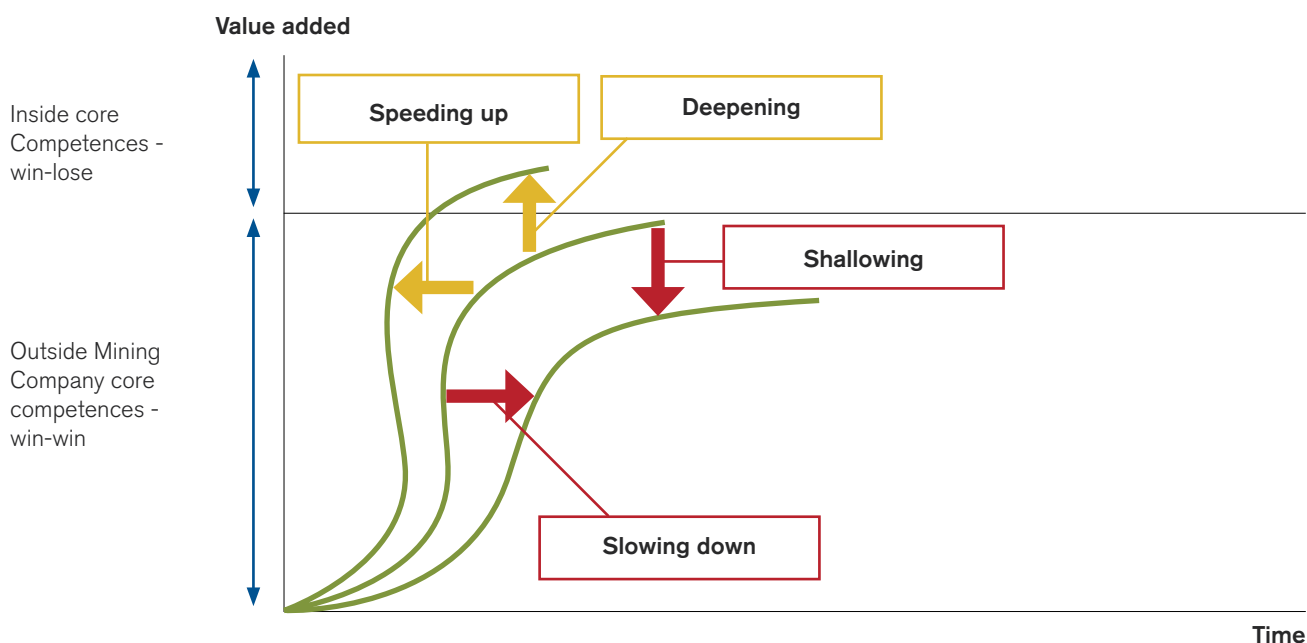
Finding efficient local suppliers is particularly attractive in Africa, because transport and logistics are poorly developed (goods from outside may be greatly delayed) and because government policies have often mandated the deepening of local value addition (Morris et al., 2012). Also, large commodity firms have come to realize that unless their activities are associated with broader local development, they are likely to face hostility both from government and locals. Many such firms have therefore signed agreements to support local development.

Although the expansion of local linkages is thus largely fostered by the growing trend towards outsourcing by the core lead firms, it is not the only driver of localized production. Many inputs into the commodity sector in low-income economies were previously imported by independent suppliers and processors, for example foodstuffs for mineworkers or the cutting of timber from logs into sawn wood. When local capabilities are adequate, these activities can be undertaken domestically and, where possible, close to the point of commodity extraction.

Morris et al. (2012) created a general model of the trajectory of backward linkage development and the impact of industrial policy on it, taking account the growing trend towards outsourcing by lead commodity firms (figure 3.5).



**FIGURE 3.5: DIFFERENT TRAJECTORIES OF LINKAGE DEVELOPMENT OVER TIME**



Source: Morris et al. (2012).

The horizontal axis reflects time. The vertical axis represents value added in provision of inputs for production of a commodity. The curve shows that, as a general consequence of the outsourcing of non-core competences, there is a market-driven process of linkage development in which the lead firm relinquishes the production of those inputs that embody the least rent and that are thus least profitable for them to produce.

Initially, the pace of outsourcing is low. With the accretion of technological capacities by suppliers, the pace of outsourcing speeds up. However, as technological and scale requirements become very demanding and as suppliers begin to stray into the core competencies of the lead firm, the easy hits are exhausted and the degree of outsourcing tails off. Countries and suppliers with weak capabilities will be located towards the bottom of this industry curve and those with strong capabilities towards the top of the curve.

We can therefore distinguish win-win and win-lose linkages. Inputs that the lead commodity producers

have no interest in maintaining in house as they do not reflect their core competences, and that they wish to outsource to suppliers in their value chain, are win-win linkages. Lead producers and local suppliers and customers have a potential common interest in developing efficient local linkages. For example, lead commodity extraction companies may want auditing, office provisions and utilities to be provided by outsiders, and in the best of all cases, by reliable and low-cost suppliers based as close to their operations as possible.

Win-lose linkages are the range of inputs that are central to a firm's competitiveness and that it is reluctant to see undertaken by a competitor or outsourced. There may even be a conflict of interest between lead firms and potential suppliers and users. For example, in diamond extraction lead firms are very reluctant—indeed, have had to be forced—to allow local firms to cut and polish or to be involved in the logistics that guarantee their control over diamond supplies. These are their core competences, and the factors determining their profitability over time.

Contrary to the conventional wisdom of the “resource curse”, therefore, it has now been argued (see e.g. Morris et al., 2012), following Hirschman, that linkage development in the resource sector is possible. But these “linkage effects need time to unfold” (Hirschman, 1981: 63). The older and more established a particular resource sector, the more likely that local linkages will have developed. Moreover, the unfolding of linkages will vary by sector, with the soft commodities at the one extreme and deep-sea energy at the other (Morris et al., 2012).

These linkage relationships are not immutable, in pace or form. Depending on a variety of determinants they can be altered by purposive state and institutional policy intervention. In other words, the curve in figure 3.5 can be deepened or made shallower, and the process can be accelerated or retarded as a result of effective, ineffective or indeed absence of country-specific policy implementation.<sup>13</sup>

For example, local content policies can move the curve to the left, accelerating the development of backward linkages, as in Angola where basic goods and services are increasingly imported through local firms. The breadth of linkages has increased, but not the depth (Teka, 2011).

However, local content policies need to be matched by industrial and business development policies as well as high domestic capabilities in order not only to speed linkage development, but to increase the local value-added content of such linkages. This is seen in Nigeria (chapter 5), where both the breadth and the depth of local linkages have improved (Oyejide and Adewuyi, 2011).

The lack of any local content policy and weak industrial policy, in contrast, tend to slow development of linkages for the range of supplies sourced locally and local value addition. The gold-mining value chain in Tanzania (see box 3.10) is characterized by such dynamics, where mines largely rely on imports and local businesses are not supported in entering the supply chain (Mjimba, 2011).

Forward linkage development is subject to similar dynamics. Beneficiation policies such as Botswana's (see box 3.13) can move the curve to

the left, speeding and deepening the development of local value-added activities (Mbayi, 2011). Likewise, Ethiopia's export taxes combined with local upgrading processes have shifted the composition of the country's exports from raw hides into intermediate and final leather products (chapter 4).

***The lack of any local content policy and weak industrial policy, in contrast, tend to slow development of linkages for the range of supplies sourced locally and local value addition.***

### **Each African country must develop its own commodity-based industrialization strategy**

Given the diversity of resource endowments, social and economic backgrounds, and geographical locations in Africa, the continent cannot be shoehorned into a “one size fits all” industrialization strategy. On the contrary, it has a raft of potential strategies: development of a modern service economy (tourism, information technology, transport), low- and medium-tech manufacturing development in countries endowed with large domestic markets, and resource-based industrialization in countries rich in natural resources. Indeed, each country is likely to have a multifaceted approach to industrializing and to pursue more than one strategy. What links them all is the necessity for African governments to take action to overcome market failure.

Along this perspective, three different strategies for resource-based industrialization can be pursued.

The first is to avoid competing simply on price and, instead, to increase revenues from unprocessed or semi-processed commodities by raising entry barriers to other competitors. This can be done by targeting the high end of the export market through process upgrading and certification (Page, 2010). This strategy can be effective for products such as fresh vegetables and fruits, and speciality products such as coffee and cocoa. The GVCs require efficient service industries (for quality control, transport and storage) and technologies. Among commodity groups, fresh produce is the only one that has experienced both price stability and long-term positive price trends. Ethiopia (chapter 4), Kenya and Zambia are following this strategy.

***Given the diversity of resource endowments, social and economic backgrounds, and geographical locations in Africa, the continent cannot be shoehorned into a “one size fits all” industrialization strategy.***

The second strategy is to develop backward linkages to commodity sectors. Booming investment in the extractive industries is creating large demand for goods and services. Oil and mine companies prefer to focus on their core business and outsource all non-core activities. Outsourcing is facilitated when undertaken through local rather than foreign suppliers, because it reduces transaction costs and lead times (Morris et al., 2012).

The advantage of this strategy is that it can be easily anchored on lead firms, because they have a commercial interest in developing efficient local supply clusters. However, this is often not possible because oil and mining companies are not familiar with local suppliers, or because local suppliers cannot meet their market parameters or because of the long-standing policy of multinationals. While with time, oil and mining companies will tend to increase outsourcing to competent local suppliers, African countries can intervene strategically to both accelerate this process and increase the value-added content of the local supply chain. The African Mining Vision offers a framework for greater engagement of lead firms in the extractive minerals industry and can help to set the modalities and conditions for mineral beneficiation and establishment of local supply clusters.

The third strategy consists of boosting industries that process natural resources. These industries represent on average half the manufacturing activity in lower-middle income countries (Owens and Wood, 1997). A few factors can facilitate this strategy: lead firms in consuming markets who want to relocate their manufacturing; rising fuel costs, which can generate weight or volume savings from processing; and growing regional markets. For example, in the context of relations with emerging economies such as China and India and the need to establish a strategy for engaging with them, it is important to ensure no resource flight to them, by requiring local

content as well as technology and skills transfer to the local workforce.

While much attention has traditionally focused on the final stages of commodity-based GVCs, African countries have considerable room to advance into intermediate manufacturing stages in the short term, as for sawn lumber, cellulose, fishmeal and preserved fruits. Building on their natural resource endowments, countries will find these industries easier to reach than the final stages of beneficiation; these industries will also provide opportunities for learning, technological capabilities, economies of scale and positive externalities (Reinhardt, 2000).

### 3.6 CONCLUSIONS

A discussion of linkage development cannot be conducted in abstract or aggregate terms, but must be country specific, as no single policy has proven to be successful in promoting linkages. The experiences reviewed in this and subsequent chapters highlight that a combination of policies and factors have played a key role in influencing the pace of value addition in Africa.

First, policies to promote value addition were implemented with policies to raise productivity and product quality in the natural resource sector. Raising the output of the sector enabled processing industries to reach economies of scale and governments to sustain investment in ancillary research and technological upgrading.

Second, in the early stages, processing industries exported final products to developing countries and intermediate products to industrialized countries. Only at later stages was it possible to export final products to meet the stringent requirements of Northern markets. Such exports usually require a global market presence acquired through GVCs' brand distribution networks. This implies that there is an opportunity for greater regional and subregional market integration at pan-African level. If African countries can facilitate such integration, this would be equivalent to creating large domestic markets that can help firms to build their competitiveness in final products before they attempt to penetrate industrial-country markets.

Third, domestic firms' capabilities facilitated linkage development. In the early stages, industrialization policies targeted domestic firms and built on existing capabilities. However, the role of foreign investors was also important and tended to increase with the success of the industry, as more FDI was attracted to the supply chain and to processing activities. Further research is required on whether it is possible to rely exclusively on FDI for this type of linkage-based industrialization. Countries such as Brazil, India, Indonesia and Malaysia depended on domestically mobilized capital to targeted sectors.

Finally, the right mix and sequencing of policies were equally important. Export restrictions at times helped to increase value-added content of exports and domestic production. Sectoral policies that selectively allocated resources and created incentives to shift domestic capital and entrepreneurship to targeted industries were also important, as were efforts to build technology and skills, which enabled domestic firms to absorb foreign technologies, partner with TNCs, catch up with competitors and then stay competitive.

## REFERENCES

- AfDB (African Development Bank). 2008. *African Development Report 2007*. Abidjan.
- AU (African Union). 2007. "Action Plan for Accelerated Industrial Development of Africa." AU Conference of Ministers of Industry 1st Extraordinary Session, 24–27 September, Midrand, South Africa.
- . 2008. *Strategy for the Implementation of the Action Plan for Accelerated Industrial Development of Africa*. Report of the Conference of African Ministers of Industry (CAMI) 18th Ordinary Session, 24–28 October, Durban, South Africa.
- AU (African Union), AfDB (African Development Bank), and ECA (United Nations Economic Commission for Africa). 2012. "Consensus Statement." Eighth African Development Forum (ADF-VIII), "Governing and Harnessing Natural Resources for Africa's Development", 23–25 October 2012, Addis Ababa.
- Bair, J., and G. Gereffi. 2001. "Local Clusters in Global Chains: The Causes and Consequences of Export Dynamism in Torreon's Blue Jeans Industry." *World Development* 29(11): 1885–903.
- Bigsten, A., and M. Söderbom. 2006. "What Have We Learned from a Decade of Manufacturing Enterprise Surveys in Africa?" *The World Bank Research Observer* 21(2): 241–65.
- Blomström, M., and A. Kokko. 2007. "From Natural Resources to High-tech Production: The Evolution of Industrial Competitiveness in Sweden and Finland." In *Natural Resources, neither Curse nor Destiny*, ed. D. Lederman and W. E. Maloney, 213–56. Washington, DC: World Bank.
- Buckley, P. J., L. J. Clegg, A. R. Cross, X. Liu, H. Voss, and P. Zheng. 2007. "The Determinants of Chinese outward Foreign Direct Investment." *Journal of International Business Studies* 38(4): 499–518.
- Cashin, P., and C. J. McDermott. 2002. "The Long-run Behavior of Commodity Prices: Small Trends and Big Variability." *IMF Staff Papers* 49(2): 175–99.
- Cernat, L., S. Laird, and A. Turrini. 2002. *Back to Basics: Market Access Issues in the Doha Agenda*. Geneva: United Nations Conference on Trade and Development, Division on International Trade in Goods and Services, and Commodities.
- Chang, H. J. 2002. *Kicking Away the Ladder*. London: Anthem Press.
- . 2009. "Economic History of the Developed World: Lessons for Africa" In *Eminent Speakers Series Volume II—Sharing Visions of Africa's Development*, ed. S. Tapsoba & G. Oluremi Archer-Davies. Tunis: African Development Bank.
- Cheng, L. K., and Z. Ma. 2010. "China's Outward Foreign Direct Investment." In *China's Growing Role in World Trade*, ed. R. C. Feenstra and S. J. Wei, 545–78. University of Chicago Press.
- Cramer, C. 1999. "Can Africa Industrialize by Processing Primary Commodities? The Case of Mozambican Cashew Nuts." *World Development* 27(7): 1247–66.
- David, P. A., and G. Wright. 1997. "Increasing Returns and the Genesis of American Resource Abundance." *Industrial and Corporate Change* 6(2): 203–45.
- de Ferranti, D., G. E. Perry, D. Lederman, and W. E. Maloney. 2002. *From Natural Resources to the Knowledge Economy: Trade and Job Quality*. World Bank Latin American and Caribbean Studies 23440. Washington, DC: World Bank.
- Dicken, P. 1998. *Global shift: Transforming the World Economy*, 3rd ed. London: P. Chapman.

- ECA (United Nations Economic Commission for Africa). 2011. "Industrial Policies for the Structural Transformation of African Economies: Options and Best Practices." Policy Research Paper 2, Addis Ababa.
- ECA (United Nations Economic Commission for Africa) and AU (African Union). 2011. *Minerals and Africa's Development: The International Study Group Report on Africa's Mineral Regimes*. Addis Ababa: ECA.
- ECA (United Nations Economic Commission for Africa) and AUC (African Union Commission). 2012. *Economic Report on Africa 2012: Unleashing Africa's Potential as a Pole of Global Growth*. Addis Ababa: ECA.
- Elhiraika, A. 2008. "Promoting Manufacturing to Accelerate Economic Growth and Reduce Volatility in Africa." Paper prepared at the African Economic Conference, jointly organized by the African Development Bank and ECA, November, Tunis.
- Even-Zohar, C. 2007. *From Mine to Mistress: Corporate Strategies and Government Policies in the International Diamond Industry*. London: Mining Communications.
- Farooki, M., and R. Kaplinsky. 2012. *The Impact of China on Global Commodity Prices: The Global Reshaping of the Resource Sector*. London: Routledge.
- Fessehaie, J. 2012. "What Determines the Breadth and Depth of Zambia's Backward Linkages to Copper Mining? The Role of Public Policy and Value Chain Dynamics." *Resources Policy* 37(4): 443–51.
- Fold, N. 2000. "Globalisation, State Regulation and Industrial Upgrading of the Oil Seed Industries in Malaysia and Brazil." *Singapore Journal of Tropical Geography* 21(3): 263–78.
- . 2002. "Lead Firms and Competition in 'Bi-polar' Commodity Chains: Grinders and Branders in the Global Cocoa-Chocolate Industry." *Journal of Agrarian Change* 2(2): 228–47.
- Fosu, A. K. 2011. "Growth, Inequality, and Poverty Reduction in Developing Countries: Recent Global Evidence." Working Paper 2011/01, United Nations University World Institute for Development Economics Research, Helsinki.
- Galal, A. 2008. "Comparative Assessment of Industrial Policy in Selected MENA Countries." In *Industrial Policy in the Middle East and North Africa: Rethinking the Role of the State*, ed. A. Galal, 1–10. Cairo: American University in Cairo Press.
- Gellert, P. K. 2003. "Renegotiating a Timber Commodity Chain: Lessons from Indonesia on the Political Construction of Global Commodity Chains." *Sociological Forum* 18(1): 53–84.
- Gereffi, G. 1994. "The Organization of Buyer-driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks." In *Commodity Chains and Global Capitalism*, ed. G. Gereffi, and M. Korzeniewicz, 95–122. Westport, CT: Praeger.
- . 1999. "International Trade and Industrial Upgrading in the Apparel Commodity Chain." *Journal of International Economics* 48(1): 37–70.
- Gereffi, G., J. Humphrey, and T. Sturgeon. 2005. "The Governance of Global Value Chains." *Review of International Political Economy* 12(1): 78–104.
- Girvan, N., and C. Girvan. 1973. "The Development of Dependency Economics in the Caribbean and Latin America: Review and Comparison." *Social and Economic Studies* 22(1, Dependence and Underdevelopment in the New World and the Old): 1–33.
- Grimm, S., and M. Brüntrup. 2006. "EU Economic Partnership Agreements (EPAs) with ACP Regions." In *Africa Agenda for 2007: Suggestions for the German G8 and EU Council Presidencies*, ed. S. Klingebiel. Bonn: German Development Institute.

Hidalgo, C. A., B. Klinger, A.-L. Barabasi, and R. Hausmann. 2007. "The Product Space Conditions the Development of Nations." *Science* 317: 482–87.

Hirschman, A. O. 1958. *The Strategy of Economic Development*. New Haven, CT: Yale University Press.

———. 1981. *Essays in Trespassing: Economics to Politics and Beyond*. New York: Cambridge University Press.

Jalilian, H., M. A. Tribe, and J. Weiss. 2000. *Industrial Development and Policy in Africa*. Cheltenham, UK: Edward Elgar.

Kaplinsky, R. 2004. *Competitions Policy and the Global Coffee and Cocoa Value Chains*. Geneva: United Nations Conference on Trade and Development.

———. 2006. "Revisiting the Revisited Terms of Trade: Will China Make a Difference?" *World Development* 34(6): 981–95.

Kaplinsky, R., and M. Farooki. 2012. *Promoting Industrial Diversification in Resource Intensive Economies—The Examples of sub-Saharan Africa and Central Asia Regions*. Vienna: United Nations Industrial Development Organization.

Kaplinsky, R., and M. Morris. 2001. *A Handbook for Value Chain Research*. Ottawa: International Development Research Centre.

———. 2008. "Do the Asian Drivers Undermine Export-oriented Industrialization in SSA." *World Development* 36(2): 254–73.

Kaplinsky, R., and A. U. Santos-Paulino. 2006. "A Disaggregated Analysis of EU imports: The Implications for the Study of Patterns of Trade and Technology." *Cambridge Journal of Economics* 30(4): 587–611.

Kaplinsky, R., A. Terheggen, and J. Tijaja. 2010. "What Happens When the Market Shifts to China: The Gabon Timber and Thai Cassava Value Chains." Policy Research Working Paper 5260, World Bank, Washington, DC.

Karingi, S., L. Páez, and D. Degefa. 2011. *Report on a Survey of AGOA's Past, Present and Future Prospects: The Experiences and Expectations of Sub-Saharan Africa*. Addis Ababa: African Trade Policy Centre.

Kjöllerström, M., and K. Dallto. 2007. "Natural Resource-based Industries: Prospects for Africa's Agriculture." In *Industrial development for the 21st Century: Sustainable Development Perspectives*, ed. United Nations Department of Economic and Social Affairs, 119–81. New York: United Nations.

Lall, S. 2004. "Industrial Success and Failure in a Globalizing World." *International Journal of Technology Management and Sustainable Development* 3(3): 189–213.

Lall, S., and C. Pietrobelli. 2005. "National Technology Systems in sub-Saharan Africa." *International Journal of Technology and Globalisation* 1(3/4): 311–42.

Lall, S., and S. Wangwe. 1998. "Industrial Policy and Industrialisation in sub-Saharan Africa." *Journal of African Economies* 7(suppl 1): 70–107.

Lall, S., J. Weiss, and J. Zhang. 2006. "The 'Sophistication' of Exports: A New Trade Measure." *World Development* 34(2): 222–37.

Londero, E., and S. Teitel. 1996. "Industrialisation and the Factor Content of Latin American Exports of Manufactures." *The Journal of Development Studies* 32(4): 581–601.

Lorentzen, J. 2008. "Knowledge Intensification in Resource-based Economies." In *Resource Intensity, Knowledge and Development: Insights from Africa and South America*, ed. J. Lorentzen, 1–48. Cape Town, South Africa: HSRC Press.

Manzano, O., and R. Rigobón. 2007. "Resource Curse or Debt Overhang?" In *Natural Resources, neither Curse nor*

*Destiny*, ed. D. Lederman and W. F. Maloney, 41–70. Washington, DC: World Bank.

Mbayi, L. 2011. "Linkages in Botswana's Diamond Cutting and Polishing Industry." MMCP Discussion Paper 6, Open University, Milton Keynes, UK.

Milanovic, B. 2003. "The Two Faces of Globalisation: Against Globalisation as We Know It?" *World Development* 31(4): 667–83.

Mjimba, V. 2011. "The Nature and Determinants of Linkages in Emerging Minerals Commodity Sectors: A Case Study of Gold Mining in Tanzania." MMCP Discussion Paper 7, Open University, Milton Keynes, UK.

Mkandawire, T. 2001. "Thinking about Developmental State in Africa." *Cambridge Journal of Economics* 25(3): 289–313.

Morris, M., R. Kaplinsky, and D. Kaplan. 2012. *One Thing Leads to Another: Promoting Industrialisation by Making the Most of the Commodity Boom in sub-Saharan Africa*. Published online by M. Morris, R. Kaplinsky, and D. Kaplan.

Morris, M., and G. Robbins. 2007. "Government Support and Enabling Environment for Inter-firm Cluster Cooperation: Policy Lessons from South Africa." In *Industrial Clusters and Innovation Systems in Africa. Institutions, Markets and Policy*, ed. B. Oyelaran-Oyeyinka and D. McCormick, 243–62. New York: United Nations University Press.

Nzirasanga, M. 1995. *Formulating Industrial Policy in Africa: 2000 and Beyond*. Geneva: United Nations Industrial Development Organization.

Ogbu, O. M., B. Oyeyinka, and H. M. Mlawa, eds.. 1995. *Technology Policy and Practise in Africa*. Ottawa: International Development Research Centre.

Owens, T., and A. Wood. 1997. "Export-oriented Industrialization through Primary Processing?" *World Development* 25(9): 1453–70.

Oyejide, T. A., and A. O. Adewuyi. 2011. "Enhancing Linkages of Oil and Gas Industry in the Nigerian Economy." MMCP Discussion Paper 8, Open University, Milton Keynes, UK.

Page, J. 2012. "Can Africa Industrialise?" *Journal of African Economies* 21(suppl 2): ii86–ii124.

Pal, P. 2008. "Surge in Indian Outbound FDI to Africa: An Emerging Pattern in Globalization?" [http://e-server.iimcal.ac.in/research/download/OFDI\\_Partha-pal.pdf](http://e-server.iimcal.ac.in/research/download/OFDI_Partha-pal.pdf).

Palpacuer, F., P. Gibbon, and L. Thomsen. 2005. "New Challenges for Developing Country Suppliers in Global Clothing Chains: A Comparative European Perspective." *World Development* 33(3): 409–30.

Perez-Aleman, P. 2005. "Cluster Formation, Institutions and Learning: The Emergence of Clusters and Development in Chile." *Industrial and Corporate Change* 14(4): 651–77.

Perkins, D., and G. Robbins. 2011. "The Contribution to Local Enterprise Development of Infrastructure for Commodity Extraction Projects: Tanzania's Central Corridor and Mozambique's Zambezi Valley." MMCP Discussion Paper 9, Open University, Milton Keynes, UK.

Phyne, J., and J. Mansilla. 2003. "Forging Linkages in the Commodity Chain: The Case of the Chilean Salmon Farming Industry, 1987–2001." *Sociologia Ruralis* 43(2): 108–27.

Pradhan, J. P. 2008. *Indian Direct Investment in Developing Countries: Emerging Trends and Development Impacts*. Paper No. 12323. Munich University.

Prebisch, R. 1950. *The Economic Development of Latin America and Its Principal Problems*. Economic Bulletin for Latin America 7. New York: United Nations Department of Economic and Social Affairs.



- Radetzki, M. 2008. *A Handbook of Primary Commodities in the Global Economy*, Cambridge, Cambridge UP.
- Raines, P., I. Turok, and R. Brown. 2001. "Growing Global: Foreign Direct Investment and the Internationalization of Local Suppliers in Scotland." *European Planning Studies* 9(8): 965–78.
- Reinhardt, N. 2000. "Back to basics in Malaysia and Thailand: The role of resource-based exports in their export-led growth." *World Development* 28(1): 57–77.
- Riddell, R. 1990. *Manufacturing Africa*. London: James Currey.
- Roemer, M. 1979. "Resource-based Industrialization in the Developing Countries: A survey." *Journal of Development Economics* 6(2): 163–202.
- Schmitz, H. 1997. "Collective Efficiency and Increasing Returns." IDS Working Paper 50, University of Sussex, Institute of Development Studies, Brighton, UK.
- Schmitz, H., and P. Knorringa. 2000. "Learning from Global Buyers." *Journal of Development Studies* 37(2): 177–205.
- Singer, H. W. 1950. "The Distribution of Gains between Investing and Borrowing Countries." *The American Economic Review* 40(2): 473–85.
- Soludo, C., Ogbu, O. and Chang, H.J (Eds.). 2004. *The Politics of Trade and Industrial Policy in Africa: Forced Consensus?* Africa World Press/IDRC.
- Staritz, C. 2011. *Making the Cut? Low-income Countries and the Global Clothing Value Chain in a Post-quota and Post-crisis World*. Washington, DC: World Bank.
- Statistics Botswana. 2012. *March 2011 Formal Sector Employment*. Stats Brief No. 2012/01. Gabrone: Central Statistics Office, Ministry of Finance and Development Planning.
- Stein, H. 1992. "Deindustrialization, Adjustment, the World Bank and the IMF in Africa." *World Development* 20(1): 83–95.
- Stein, H., ed. 1996. *Asian Industrialization and Africa*. London: Palgrave Macmillan.
- Talbot, J. M. 1997. "Where Does Your Coffee Dollar Go?: The Division of Income and Surplus along the Coffee Commodity Chain." *Studies in Comparative International Development (SCID)* 32(1): 56–91.
- . 2002. "Tropical Commodity Chains, Forward Integration Strategies and International Inequality: Coffee, Cocoa and Tea." *Review of International Political Economy* 9(4): 701–34.
- Teka, Z. 2011. "Backward Linkages in the Manufacturing Sector in the Oil and Gas Value Chain in Angola." MMCP Discussion Paper 11, Open University, Milton Keynes, UK.
- Terheggen, A. 2011. "The Tropical Timber Industry in Gabon: A Forward Linkages Approach to Industrialisation." MMCP Discussion Paper 10. Open University, Milton Keynes, UK.
- Thee, K. W. 2009. "The Indonesian Wood Products Industry." *Journal of the Asia Pacific Economy* 14(2): 138–49.
- Torres-Fuchslocher, C. 2007. "Desarrollo de proveedores en la salmonicultura chilena." *Journal of Technology Management & Innovation* 2(1): 92–107.
- UNCTAD (United Nations Conference on Trade and Development). 2002. *Trade and Development Report 2002*. New York: United Nations.
- . 2007. *World Investment Report 2007: Transnational Corporations, Extractive Industries and Development*. New York: United Nations.

Wood, A., and J. Mayer. 2001. "Africa's Export Structure in a Comparative Perspective." *Cambridge Journal of Economics* 25 (3): 369–94.

Wright, G. 1990. "The Origins of American Industrial Success, 1879–1940." *The American Economic Review* 80(4): 651–68.

Wright, G., and J. Czelusta. 2004. "Why Economies Slow: The Myth of the Resource Curse." *Challenge* 47(2): 6–38.

Yeats, A. J. 1991. "Do Natural Resource-based Industrialization Strategies Convey Important (Unrecognized) Price Benefits for Commodity-exporting Developing Countries?" Working Papers in International Trade WPS 580, World Bank, Washington, DC.

## ANNEX TABLES

**ANNEX TABLE 3.1 COMPOSITION AND SHARE OF AFRICA'S MERCHANDISE EXPORTS, BY COUNTRY (LATEST AVAILABLE YEAR)**

	Primary commodities (%)	Of which (excluding precious stones and gold/food commodities; %)		
		Agricultural raw materials	Ores and Minerals	Fuel
<b>Central Africa</b>				
Central African Republic (2009)	97	11	62	0
Cameroon (2010)	80	15	40	0
Congo, Rep. (2010)	69	2	0	67
Gabon (2009)	94	9	3	81
São Tomé and Príncipe (2010)	95	1	0	0
<b>East Africa</b>				
Burundi (2010)	92	4	5	0
Comoros (2007)	14	0	0	0
Djibouti (2009)	24	0	0	0
Eritrea (2003)	68	7	3	0
Ethiopia (2011)	90	8	1	0
Kenya (2010)	62	11	0	2
Madagascar (2010)	35	2	8	0
Rwanda (2011)	81	4	40	0
Tanzania (2011)	84	3	22	1
Uganda (2010)	64	5	1	1
Seychelles (2008)	42	0	0	0
<b>North Africa</b>				
Algeria (2011)	88	0	0	87
Egypt (2011)	46	3	6	18
Morocco (2010)	35	2	12	2
Tunisia (2010)	23	1	2	13
Mauritania (2010)	92	0	20	0
Sudan (2009)	97	1	0	77
<b>Southern Africa</b>				
Botswana (2011)	88	0	8	0
Lesotho (2009)	15	3	0	0
Malawi (2011)	90	5	9	0
Mauritius (2011)	39	1	1	0
Mozambique (2010)	91	4	53	18
Namibia (2008)	71	0	31	0
South Africa (2011)	61	2	32	9
Zambia (2010)	91	1	83	0
Zimbabwe (2010)	70	6	32	1
Swaziland (2007)	30	7	1	1

**West Africa**

Benin (2010)	85	24	1	0
Burkina Faso (2010)	97	18	1	0
Cape Verde (2011)	85	0	1	0
Côte d'Ivoire (2011)	79	13	0	13
Gambia (2011)	41	6	1	0
Ghana (2011)	91	4	1	39
Guinea (2008)	89	3	52	0
Guinea-Bissau (2005)	100	0	1	0
Mali (2010)	93	8	0	0
Niger (2011)	93	2	69	0
Nigeria (2010)	82	2	1	76
Senegal (2011)	46	1	3	0
Sierra Leone (2002)	93	1	0	0
Togo (2011)	51	31	6	0

Source: Comtrade, retrieved from <http://comtrade.un.org/>, accessed 30 July 2012. Some countries have been excluded because data were older than 2000.

Note: For many countries, the sum of columns 2, 3 and 4, does not equal column 1. This is because column 1 includes food commodities (such as cocoa and coffee), precious stones and gold, which are not represented in columns 2, 3 and 4.

**ANNEX TABLE 3.2: AFRICA'S COMPOSITION AND SHARE OF TOP THREE EXPORTS, BY COUNTRY (LATEST AVAILABLE YEAR)**

	Top three export products (% of total merchandise exports by product)	% of total merchandise export of top three export products
<b>Central Africa</b>		
Central African Republic (2009)	S3-2771 Industrial diamonds (62%) S3-2475 Wood, non-conif, rough, unt (20%) S3-2484 Wood of non-coniferous species, sawn or chipped lengthwise, sliced or pee (11%)	93
Cameroon (2010)	S3-3330 Crude petroleum (37%) S3-0721 Cocoa beans, whole or broken, raw or roasted (16%) S3-2484 Wood of non-coniferous species, sawn or chipped lengthwise, sliced or peeled (6%)	59
Congo, Rep. (2010)	S3-3330 Crude petroleum (65%) S3-3425 Butanes, liquefied (2%) S3-2475 Wood, non-conif, rough,unt (1%)	68
Gabon (2009)	S3-3330 Crude petroleum (81%) S3-2475 Wood, non-conif, rough, unt (7%) S3-2877 Manganese ores and concentrates (including manganiferous iron ores and co (3%)	91
São Tomé and Príncipe (2010)	S3-0721 Cocoa beans, whole or broken, raw or roasted (85%) S3-4211 Soya bean oil, fractions (4%) S3-0739 Food preparations containing cocoa, n.e.s. (3%)	91

**East Africa**

Burundi (2010)	S3-0711 Coffee, not roasted (59%) S3-9710 Gold, non-monetary excl. ores (11%) S3-0741 Tea (9%)	79
Comoros (2007)	S3-0752 Spices, ex. pepper, pimento (14%)	14
Djibouti (2009)	S3-0222 Milk concentrated or sweetened (8%) S3-0989 Food preparations, nes (7%) S3-4222 Palm oil, fractions (3%)	18
Eritrea (2003)	S3-0345 Fish fillets, frsh, child (13%) S3-2911 Bone,horn,ivor.coral,etc. (9%) S3-0341 Fish,fresh,chilled,whole (5%)	27
Ethiopia (2011)	S3-0711 Coffee, not roasted (32%) S3-2225 Sesame (Sesamum) seeds (13%) S3-0545 Oth.frsh,chll.vegetables (10%)	55
Kenya (2010)	S3-0741 Tea (23%) S3-2927 Cut flowers and foliage (8%) S3-0545 Oth.frsh,chll.vegetables (4%)	35
Madagascar (2010)	S3-0361 Crustaceans, frozen (6%) S3-0752 Spices,ex.pepper,pimento (5%) S3-2878 Ore etc. molybdn. niob. etc. (4%)	15
Rwanda (2011)	S3-2876 Tin ores and concentrates (24%) S3-0711 Coffee, not roasted (18%) S3-0741 Tea (13%)	55
Tanzania (2011)	S3-9710 Gold, non-monetary excl. ores (36%) S3-2891 Prec.mtl.ore,concentrats (11%) S3-2877 Manganese ores and concentrates (including manganiferous iron ores and co (10%)	58
Uganda (2010)	S3-0711 Coffee, not roasted (17%) S3-0345 Fish fillets,frsh,child (6%) S3-0741 Tea (4%)	27
Seychelles (2008)	S3-0371 Fish,prepard,presrvd,nes (27%) S3-0352 Fish salted or in brine (13%) S3-4111 Fat,oil,fish,mar.mammals (1%)	41

**North Africa**

Algeria (2011)	S3-3330 Crude petroleum (49%) S3-3432 Natural gas, in the gaseous state (18%) S3-3431 Natural gas, liquefied (9%)	76
Egypt (2011)	S3-3330 Crude petroleum (10%) S3-3431 Natural gas, liquefied (6%) S3-9710 Gold, non-monetary excl. ores (6%)	21
Morocco (2010)	S3-2723 Natural calc.phosphates (6%) S3-0371 Fish,prepard,presrvd,nes (3%) S3-3352 Mineral tars and product (2%)	12
Tunisia (2010)	S3-3330 Crude petroleum (13%) S3-4214 Olive oil etc. (2%) S3-0579 Fruit,fresh,dried, nes (1%)	16
Mauritania (2010)	S3-9710 Gold, non-monetary excl. ores (34%) S3-2831 Copper ores and concentrates (17%) S3-0342 Fish,frozenex.fillets (17%)	67

Sudan (2009)	S3-3330 Crude petroleum (77%) S3-9710 Gold, non-monetary excl. ores (14%) S3-0012 Sheep and goats, live (2%)	93
<b>Southern Africa</b>		
Botswana (2011)	S3-6672 Diamonds excl. industrial (75%) S3-2842 Nickel mattes,sintrs.etc. (6%) S3-9710 Gold, non-monetary excl. ores (1%)	83
Lesotho (2009)	S3-1110 Non-alcohol.beverage,nes (5%) S3-2681 Wool, greasy (2%) S3-6672 Diamonds, excl.industrial (2%)	10
Malawi (2011)	S3-1212 Tobacco, wholly or partly stemmed/stripped (25%) S3-1211 Tobacco, not stemmed/stripped (14%) S3-0611 Sugars,beet or cane, raw (13%)	53
Mauritius (2011)	S3-0371 Fish,prepard,presrvd,nes (12%) S3-0612 Other beet,cane sugar (10%) S3-0611 Sugars,beet or cane, raw (4%)	26
Mozambique (2010)	S3-6841 Alum.,alum.alloy,unwrght (52%) S3-3510 Electric current (12%) S3-3431 Natural gas, liquefied (6%)	70
Namibia (2008)	S3-6672 Diamonds excl.industrial (16%) S3-2861 Uranium ores and concentrates (16%) S3-0342 Fish,frozenex.fillets (7%)	39
South Africa (2011)	S3-6812 Platinum (12%) S3-3212 Oth.coal,notagglomeratd (8%) S3-9710 Gold, non-monetary excl. ores (8%)	27
Zambia (2010)	S3-6821 Copper, anodes, alloys (64%) S3-6825 Copper plate,etc.15mm+th (9%) S3-2831 Copper ores and concentrates (3%)	76
Zimbabwe (2010)	S3-2842 Nickel mattes,sintrs.etc. (14%) S3-1212 Tobacco, wholly or partly stemmed/stripped (13%) S3-9710 Gold, non-monetary excl. ores (9%)	36
Swaziland (2007)	S3-0611 Sugars,beet or cane, raw (14%) S3-2514 Chem.woodpulp,soda,unbl (3%) S3-2484 Wood of non-coniferous species, sawn or chipped lengthwise, sliced or pee (2%)	18
<b>West Africa</b>		
Benin (2010)	S3-2631 Cotton (other than linters), not carded or combed (22%) S3-0123 Poultry, meat and offal (21%) S3-0423 Rice,milled,semi-milled (21%)	65
Burkina Faso (2010)	S3-9710 Gold, non-monetary excl. ores (69%) S3-2631 Cotton (other than linters), not carded or combed (17%) S3-2225 Sesame (Sesamum) seeds (4%)	90
Cape Verde (2011)	S3-0371 Fish,prepard,presrvd,nes (44%) S3-0342 Fish,frozenex.fillets (36%) S3-0362 Crustaceans, other than frozen, including flours, meals and pellets of cr (1%)	82

Côte d'Ivoire (2011)	S3-0721 Cocoa beans, whole or broken, raw or roasted (27%) S3-3330 Crude petroleum (12%) S3-2312 Natural rubber exc.latex (10%)	49
Gambia (2011)	S3-2690 Worn clothing,textls,rag (5%) S3-0612 Other beet,cane sugar (3%) S3-0371 Fish,prepard,presrvd,nes (3%)	11
Ghana (2011)	S3-9710 Gold, non-monetary excl. ores (26%) S3-3425 Butanes, liquefied (24%) S3-3330 Crude petroleum (16%)	65
Guinea (2008)	S3-2851 Aluminium ores and concentrates (40%) S3-9710 Gold, non-monetary excl. ores (32%) S3-2852 Alumina (aluminium oxide), other than artificial corundum (11%)	83
Guinea-Bissau (2005)	S3-0577 Edible nuts fresh,dried (99%) S3-2821 Waste and scrap of cast iron (< 1%) S3-2475 Wood,non-conif,rough,unt (< 1%)	100
Mali (2010)	S3-9710 Gold, non-monetary excl. ores (79%) S3-2634 Cotton, carded or combed (7%) S3-0011 Bovine animals, live (2%)	89
Niger (2011)	S3-2861 Uranium ores and concentrates (69%) S3-9710 Gold, non-monetary excl. ores (9%) S3-0545 Oth.frsh,chll.vegetables (3%)	81
Nigeria (2010)	S3-3330 Crude petroleum (70%) S3-3431 Natural gas, liquefied (3%) S3-3425 Butanes, liquefied (2%)	75
Senegal (2011)	S3-9710 Gold, non-monetary excl. ores (10%) S3-0342 Fish,frozenex.filletts (4%) S3-0341 Fish,fresh,chilled,whole (3%)	17
Sierra Leone (2002)	S3-0711 Coffee, not roasted (87%) S3-0721 Cocoa beans, whole or broken, raw or roasted (3%) S3-0459 Buckwheat etc. unmilled (1%)	91
Togo (2011)	S3-2631 Cotton (other than linters), not carded or combed (31%) S3-2723 Natural calc.phosphates (5%) S3-9710 Gold, non-monetary excl. ores (4%)	40

Source: Comtrade, retrieved from <http://comtrade.un.org/> (accessed 30 July 2012).

**ANNEX TABLE 3.3: AFRICA'S MANUFACTURING VALUE ADDED, BY COUNTRY (% OF GDP, SELECTED YEARS)**

	1970	1980	1990	2000	2005	2009
<b>Central Africa</b>						
Central African Republic	6.8	7.2	11.3	7.0	7.4	
Cameroon	10.2	9.6	14.5	20.8	17.7	
Chad	11.1		14.4	8.9	5.3	
Congo, Rep.		7.5	8.3	3.5	4.0	4.5
Equatorial Guinea				1.4	6.2	18.2
Gabon	6.8	4.6	5.6	3.7	4.1	4.3
São Tomé and Príncipe					6.4	
<b>East Africa</b>						
Burundi	7.3	7.4	12.9	8.7	8.8	
Comoros		3.9	4.2	4.5	4.4	4.3
Congo, Dem. Rep.		15.2	11.3	4.8	6.6	5.5
Djibouti			3.6	2.6	2.6	
Eritrea				11.2	6.8	5.6
Ethiopia			4.8	5.5	4.8	4.0
Kenya	12.0	12.8	11.7	11.6	11.8	8.7
Madagascar			11.2	12.2	14.0	14.1
Rwanda	3.6	15.3	18.3	7.0	7.0	6.4
Tanzania			9.3	9.4	8.7	9.5
Uganda	9.2	4.3	5.7	7.6	7.5	8.0
Seychelles		7.4	10.1	19.2	13.1	11.8
Somalia	9.3	4.7	4.6			
<b>North Africa</b>						
Algeria	17.2	10.6	11.4	7.5	5.9	6.1
Egypt, Arab Rep.		12.2	17.8	19.4	17.0	16.0
Libya					4.7	
Morocco		16.9	19.0	17.5	16.3	15.9
Tunisia	8.4	11.8	16.9	18.2	17.1	16.5
Mauritania			10.3	9.0	5.0	4.1
Sudan	7.8	7.5	8.7	8.6	6.9	6.8
<b>Southern Africa</b>						
Angola			5.0	2.9	3.5	6.1
Botswana		5.1	5.1	4.5	3.7	4.2
Lesotho	4.7	8.4	14.6	14.0	20.5	17.0
Malawi		13.7	19.5	12.9	9.2	10.0
Mauritius		15.8	24.4	23.5	19.8	19.4
Mozambique			10.2	12.2	15.5	13.6
Namibia		9.2	13.8	12.8	13.6	14.7



<b>South Africa</b>	<b>22.8</b>	<b>21.6</b>	<b>23.6</b>	<b>19.0</b>	<b>18.5</b>	<b>15.1</b>
Zambia	11.0	18.3	36.1	11.4	11.9	9.6
Zimbabwe	17.9	21.6	22.8	15.8	16.9	17.0
Swaziland	12.5	20.9	36.8	39.5	40.0	44.4
<b>West Africa</b>						
Benin		8.0	7.8	8.8	7.5	
Burkina Faso	17.1	15.2	15.2	16.2	14.6	
Cape Verde			8.2	9.3	7.6	6.7
Côte d'Ivoire	10.3	12.8	20.9	21.7	19.3	18.0
Gambia	3.3	5.6	6.6	5.4	5.0	5.0
Ghana	13.2	8.1	9.8	10.1	9.5	6.9
Guinea			4.6	4.0	4.1	5.3
Guinea-Bissau	21.2		8.4	10.5		
Liberia	4.0	7.7		9.5	12.4	
Mali	7.9	6.5	8.5	3.8	3.2	
Niger	4.6	3.7	6.6	6.8		
Nigeria					2.8	
Senegal		13.5	15.3	14.7	15.2	12.7
Sierra Leone	6.3	5.3	4.6	3.5		
Togo	10.0	7.8	9.9	8.4	10.1	

Source: African Development Indicators, <http://data.worldbank.org/data-catalog/africa-development-indicators>, accessed 30 June 2012. Empty cells denote missing data.

## NOTES

<sup>1</sup> Primary commodities are categorized according to the broadest United Nations Conference on Trade and Development definition—that is, including not only food commodities, agricultural raw materials, minerals and fuel, but also precious stones and gold.

<sup>2</sup> This section relies heavily on ECA (2011).

<sup>3</sup> The use of non-tariff barriers creates serious problems owing to the difficulties associated with its management as well as its opacity in terms of the effect on beneficiaries.

<sup>4</sup> The effect of foreign exchange restrictions on the current account is an overvalued official exchange rate, coupled with some form of secondary market exchange rate.

<sup>5</sup> In some cases, such as Ghana and Zambia, governments even announced five-year plans and very ambitious targets. In Algeria almost the whole economy was nationalized in 1966.

<sup>6</sup> As an example, Nziramasanga (1995) cites the Zambian case: nationalizing the copper mining industry induced a larger use of local inputs but it had no effect on the domestic process of technological knowledge accumulation, because the latter was embodied in expatriate management.

<sup>7</sup> On the strategy of FDI in developing countries, see Amsden (2001).

<sup>8</sup> World Bank African Development Indicators, <http://data.worldbank.org/data-catalog/africa-development-indicators>, accessed 30 June 2012.

<sup>9</sup> Retrieved from <http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx>, accessed 30 July 2012.

<sup>10</sup> In this section, we refer in particular to resource-based manufacturing rather than primary processing. The latter is often already undertaken in resource-rich African countries in hard commodities in the form of smelting and refining, and in soft commodities in the form of post-harvest processing. Also, existing research has focused largely on resource-based manufacturing.

<sup>11</sup> See [www.trademap.org/](http://www.trademap.org/), accessed 30 August 2012.

<sup>12</sup> Also the technical characteristics of the cocoa value chain facilitate trade in intermediate products rather than the final one, as chocolate tends to deteriorate when transported (Roemer, 1979).

<sup>13</sup> These processes, with concomitant forms of policy intervention, are discussed in detail in chapters 4, 5 and 6 for some value chains and African countries; Morris et al. (2012) discuss other cases.