European Centre for Development Policy Management
ecdpm

Discussion Paper

No. 179
September 2015

Resource-based industrialisation in Africa: Optimising linkages and value chains in the extractive sector

by Isabelle Ramdoo

www.ecdpm.org/dp179

Resource-based industrialisation in Africa

Optimising linkages and value chains in the extractive sector

Isabelle Ramdoo

September 2015

Key messages

Industrialisation is key to Africa's economic transformation. The key question therefore is not whether countries should conduct industrial policies but rather how to implement policies in an efficient and pragmatic way.

Successful resource-based industrialisation depends on how countries and regions optimise different forms of linkages within and outside the extractive sector. Private-led initiatives and collaborative partnerships are essential.

Many African resource-based economies still face challenges to plug into global value chains. GVC upgrading is a necessary condition.

There is no blueprint to address the challenges of linkages development but this requires policy designs to be implemented in a sequenced and phased manner, with collective efforts and responsibilities at the national, regional and global level as well as leadership from the private sector.

Table of Contents

List of Boxes

List of Figures

List of Tables

Acknowledgments

ECDPM gratefully acknowledges the financial contribution of the UK Department for International Development (DFID), which made this study possible.

The lead author of this Study is Isabelle Ramdoo. The author would like to thank her colleagues San Bilal, Andrew Sherriff, Sean Woolfrey, Francesca Guadagno, Francis Osiemo Omesa and Sebastian Großе-Puppendahl for their guidance and useful contributions.

She would also like to thank external experts, in particular Harsha V. Singh and Sofie Flensborg (ICTSD), Claudine Sigam (AMDC) and Rafael Benke for their valuable comments.

The views expressed in this Study are those of the author only and should not be attributed to any other person or institution.

Acronyms

ACET	African Centre for Economic Transformation
AfDB	African Development Bank
AGOA	Africa Growth and Opportunity Act
AOE	African Economic Outlook
ASCM	Agreement on Subsidies and Countervailing Measures
ASM	Artisanal and Small Scale Mining
BAGC	Beira Agricultural Growth Corridor
BBBEE	Broad-Based Black Economic Empowerment
BITs	Bilateral Investment Treaties
CSR	Corporate Social Responsibility
DCED	The Donor Committee for Enterprise Development
EBA	Everything But Arms
ECDPM	European Centre for Policy Development Management
EOI	Export Oriented Industrialisation
ENH	Empresa Nacionale de hidrocarbonetos
EPA	Economic Partnership Agreements
EPZ	Export Processing Zone
EU	European Union
FDI	Foreign Direct Investment
FTAs	Free Trade Agreements
GATT	General Agreement on Tariff and Trade
GATS	General Agreement on Trade in Services
GDP	Gross Domestic Product
GNI	Gross National Income
GPA	Government Procurement Agreement
GVCs	Global Value Chains
ICMM	International Council for Mining and Metals
IFC	International Financial Corporation
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
ISI	Import Substitution Industrialisation
ITI	Industrialisation through Innovation
LCPs	Local content policies
LCRs	Local content requirements
LDCs	Least Developed Countries
LNG	Liquefied Natural Gas
MFN	Most Favoured Nation
NAFTA	North American Free Trade Area
NIRP	National Industrial Revolution Plan
NGOs	Non Governmental Organisations
OECD	Organization for Economic Co-operation and Development
SADC	Southern African Development Community
SDT	Special and Differential Treatment
SEZ	Special Economic Zones
SOEs	State Owned Enterprises
SSA	Sub Saharan Africa

SMEs	Small and Medium Enterprises
R&D	Research and Development
TPP	Trans-Pacific Partnership
TRIMs	Trade Related Investment Measures
TRIPS	Trade Related Intellectual Property Rights
TTIP	Transatlantic Trade and Investment Partnership
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
UNIDO	United Nations Industrial Development Organization
U.S	United States
VAT	Value Added Tax
WB	World Bank
WEF	World Economic Forum
WGC	World Gold Council
WTI	World Trade Institute
WTO	World Trade Organization

Executive Summary

The last two decades have witnessed a reactivation of dynamic industrial policies, equally in developed and in developing countries, although for different but interconnected reasons. First, the global economic and financial crisis precipitated many developed and large emerging countries to bail out some of their industrial champions, marking a historical turnaround towards active support to industries (e.g. Buy America Act; Made in France campaign etc). Second, low-income countries, notably in Africa, have experienced buoyant growth rates for over almost a decade but paradoxically also saw an increasing marginalisation of their industrial sectors, nationally and globally. This has triggered strong political will to revive government support to industrial development, in particular as the need to create more and better jobs became more urgent. Third, as the centre of manufacturing gravity shifted east, the rise of new mega-poles of production, initially headed by China but now more widely spread across Asia, have drained or attracted less activities in other parts of the world. This has led to a profound re-thinking of industries' competitiveness, through active government support, in particular in industrialised countries. Policies were driven by the logic of the inter-linkages between production of and trade in goods and services, technological innovation, modularity of manufacturing activities, improvement in product design and logistics, reduction in transport costs and capturing global value chains (Berger: 2011). While the importance of industrial policies have became the '*new normal'*, policies have been embraced through different ways and have taken different forms.

The overall purpose of the paper is not to gauge whether industrial policies should be conducted or not, nor is it meant to distribute scores for or against industrial policy. It is rather meant to examine how such policies could be implemented in a pragmatic and constructive way. The paper focuses in particular on the potential to leverage extractive industries (that is, mineral and hydrocarbon resources) as a potential for industrial development in African resource-rich economies.

This paper is divided in four parts. The **first part** lays out the industrialisation debate today in Africa. It reviews the general debate about industrial policy and outlines the different types of policies that have been adapted by various countries over time. Focusing on Africa, this section outlines the state of play of industrialisation in Africa today and highlights the salient features of industrial performance, with particular reference to the situation in resource-rich countries. This section also looks at the key challenges facing Sub-Saharan African economies and draws the main lessons learnt from past industrial development efforts in Africa. Finally, the section ends by providing a mapping of recent findings outlines in key policy reports that have been published in the recent years.

The **second part** of the paper focuses on resource-based industrialisation, with a particular emphasis on opportunities and challenges in optimising various forms of linkages, such as backward, forward, lateral linkages within the extractives sector. This section examines, in particular, the question of local content as a means to foster backward linkages. Lessons are drawn from the experiences of a selected group of countries (in Africa and beyond) in the mining and in the hydrocarbon sector, looking at what has worked or not and the reasons for successes and failures. It also looks at different private-led initiatives in supporting local suppliers to provide inputs to the industry. With regards to downstream linkages, the paper assesses where the gaps currently exist in Africa. It draws some lessons from the experience of selected countries (in Africa and elsewhere). The section also looks at the types of linkages that can be leveraged between the extractive sector and other sectors of the economy. The case of agriculture is particularly highlighted. The legal and regulatory frameworks that govern linkages, and in particular local content, is analysed in detail, in particular with regards to commitments that countries have taken by signing bilateral and international trade and investment treaties, such as the agreements of the World Trade Organization, free

trade agreements and bilateral and international investment treaties. It looks, in particular, at the policy space that countries have left to implement national policies given their international commitments.

The **third section** of the paper examines the current situation of African resource rich economic in global value chains. It acknowledges the current challenges and difficulties in moving up the value chain in the extractive sector and focuses on one particular consideration, that is found to be necessary, that is, global value chain upgrading.

The **fourth and final section** of the paper proposes a series of policy recommendations, although it is acknowledged that there is no blue print or one-size-fits-all solution to address the challenges of linkages development in resource-rich countries. The key recommendations are structured around what different stakeholders can do. For *public policy makers*, these include:

1. Optimising the use of policy instruments and space. The paper argues that the main problem is not so much a lack of policy space, but rather *how to make better use* of existing policy instruments and space, although it is true that developing countries operate in a much more regulated trading environment today than what was historically available to industrialised countries when they climbed the ladder of development. What is key is the capacity to:

    a. Broaden and deepen the use of existing policy instruments and space.
    b. The need to have a good balance in policy mix, between hard and soft policy instruments.
    c. The capacity to embrace policy shifts as the economic situation changes domestically and as international trade dynamics evolve.
    d. *The ability to develop sufficient incentives* to stimulate and facilitate the industrialisation process, building on market forces dynamics, while *avoiding to generate undue economic distortions*, at the domestic and international level.
    e. The ability to manage conflicting interests within the domestic economy (including from international actors), and avoid capture by vested interests.

2. Fixing structural weaknesses in the domestic economy by:

    1. Building supply side capacity.
    2. Enhancing Industrial Capacity.
    3. Investing in R&D, Innovation and Technology Development.
    4. Promoting skills development and human development.
    5. Adopting a regional approach.

This section also highlights the role that the *private sector* can play in the development of linkages, notably by taking the lead in developing local suppliers, not only to comply with local content or other linkages regulations but also to improve the performance of local suppliers to meet their requirements, by mapping and publishing their procurement requirements with availability of goods and services from local suppliers. It is also proposed that companies can step up their role in supporting capabilities development or in promoting research and development. The paper also highlights the importance of having strong strategic and collaborative partnerships between governments and companies, in order to ensure that gaps can be identified and local suppliers can be supported. Finally, the role of *development partners* is stressed, in particular the need to align and coordinate their development and financing strategies to prevent policy fragmentation and duplication of efforts.

1. Introduction

1.1. Setting the scene: The industrialisation debate today in Africa

The last two decades have witnessed a ***reactivation*** of dynamic industrial policies, equally in developed and in developing countries, although for different but interconnected reasons. First, the global economic and financial crisis precipitated many developed and large emerging countries to bail out some of their industrial champions, marking a historical turnaround towards active support to industries (e.g. Buy America Act[1]; Made in France campaign etc). Second, low-income countries, notably in Africa, have experienced buoyant growth rates for over almost a decade but paradoxically also saw an increasing marginalisation of their industrial sectors nationally and globally. This has triggered strong political will to revive government support to industrial development as the need to create more and better jobs became increasingly urgent. Third, as the centre of manufacturing gravity shifted east, the rise of new mega-poles of production, initially headed by China but later spreading across Asia, have drained or attracted less activities in other parts of the world. This has led to a profound re-thinking of industries' competitiveness, through active government support, in particular in industrialised countries. Policies were driven by the logic of the inter-linkages between production of and trade in goods and services, technological innovation, modularity of manufacturing activities[2], improvement in product design and logistics, reduction in transport costs and capturing global value chains (Berger: 2011). While the importance of industrial policies became the *new normal* (Rodrik: 2008; 2010; Stiglitz: 2013; Chang: 2011; Lin and Chang: 2009), policies have been embraced through different ways and have taken different forms.

The overall ***purpose*** of the paper is not to gauge whether industrial policies should be conducted or not, nor is it meant to distribute scores for, or against, industrial policy. The objective is rather to examine how such policies could be implemented in a pragmatic and constructive way. The paper focuses in particular on the potential to leverage extractive industries (that is, mineral and hydrocarbon resources) as a potential for industrial development in African resource-rich economies.

1.2. Industrial policy: definition, scope and approach

Although economists have fought over its rationale for centuries, there is actually no universally accepted ***definition*** of industrial policy. It is often described in broad generalities and spans its coverage across various types of policy tools. UNCTAD (2009) for instance, defines industrial policy as a "*concerted, focused, conscious effort on the part of government to encourage and promote a specific industry or sector with an array of policy tools*", while the World Bank (1993) considers it as "*government efforts to alter industrial structure to promote productivity based growth*". Pack and Saggi (2006) consider industrial policy as "*any type of selective intervention or government policy that attempts to alter the structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention, i.e., in the market equilibrium*".[3]

The main ***objective*** of industrial policy is therefore to "*anticipate structural change, facilitating it by removing obstacles and correcting for market failures*" (Syrquin 2007). Hausmann and Rodrik (2003, 2006) identify three

[1] See Luckey J. R. 2012. Domestic Content Legislation: The Buy American Act and Complementary Little Buy American Provisions. Congress Research Service Report for Congress.

[2] By modularity of activities we mean the separation of research and development and design from production activities, which led to outsourcing and offshoring of parts of the production process, without causing any damage to the engines of innovation (Berger, 2011).

[3] For a short synthesis debate on industrial policy, see DCED. 2014. Industrial Policy. Private Sector Development Synthesis Note. September 2014. For a more comprehensive literature survey on industrial policy, see for instance, Lin and Chang (2009); Rodrik (2004; 2007); Stiglitz et al. (2013a; 2013b; 2013c)

main types of market failures that need particular attention and correction. These are (i) coordination externalities, as specific new industries or activities require simultaneous, large investments to become profitable; (ii) information externalities, as discovery of new activities requires an investment whose returns cannot be fully appropriated by the investor; and (iii) skills development externalities, as firms regard labour mobility as a disincentive to invest in on-the-job training, thus reducing technological spillover effects.

Historically, industrial policies were successfully used for centuries, notably in today's industrialised economies, such as Britain, France, Finland, Norway, and the US (see Chang: 2004; Angelini et al., 2010). Later, Latin American countries such as Brazil, Mexico or Argentina followed by putting in place interventionist import substitution policies. More recently, East Asian economies have been associated with active industrial policies to promote outward oriented manufacturing sectors, facilitate technological transfer or industrial upgrading (Angelini et al: 2010).

Chang (2011) dates the *modern*[4] industrial policy debate in the late 1970s, with the rise of Japan, although the practice of (selective and active) industrial policy was a feature of the French economic policy in the 1960s[5] and other regions of the world have experienced large waves of inward looking policies. However, since then, East Asia[6] has been the main centre of industrial policy making, with Taiwan, South Korea and China leading the way. Industrial policies were not confined to Asia. In Europe, certain local governments in Italy (Emilia-Romagna) and Germany (BadenWürttemberg) followed effective industrial policy, notably by promoting particular *industrial districts*, through directed credits (from local banks, often owned by the local government), support for research and development (R&D), and export marketing help (see Piore and Sabel 1984). The US on its side, despite being the champion of free markets, equally used numerous industrial policies, particularly in the form of R&D support for defence and public health. Sectors such as aircraft, computers, microchips, the Internet and genetic engineering thrived thanks to extensive public support.

Given the lack of universal definition, the ***coverage*** of industrial policy spans across a broad range of activities. It naturally applies to the manufacturing sector but can also be extended to agricultural or service sectors (DCED: 2014). Rodrik (2007) for instance, argues that industrial policy "*is not about industry per se*", and that "*policies targeted at non-traditional agriculture or services qualify as much as incentives on manufacturers*".

Therefore, as a result, industrial policy ***tools*** cover a wide range of economic areas. Pangestu (2002), for instance, identifies three usual sets of instruments used in the implementation of industrial policy, namely: (a) *external market* interventions, such as trade-related instruments (i.e. import tariffs, quotas, licensing, local content requirements) and measures to promote exports (such as export subsidies, export processing zones, subsidized credit); (b) *product market* interventions, whose objective is to promote competition in domestic markets, through competition policy and other regulatory measures; and (c) *factor market* interventions like foreign direct

4 In his book, The Bad Samaritan (2007), Chang related the history of industrial policy and dates it back to early policies adopted in today's rich countries.

5 The French policy was seen as a part of the broader exercise of "indicative planning".

6 Chang (2011) list key industrial policy measures adopted in East Asia as follows: (a) coordination of complementary investments (the so-called Big Push); (b) coordination of competing investments through the regulation of entry, "investment cartels," and (in declining industries) negotiated capacity cuts; (c) policies to ensure scale economies (for example, licensing conditional on scale of production, emphasis on the infant industries starting to export early on, and state-mediated mergers and acquisitions); (d) regulation of technology imports (for example, screening for overly obsolete technologies and caps on technology licensing royalties); (e) regulation of foreign direct investment (for example, entry and ownership restrictions, local contents requirements, technology transfer requirements, and export requirements); (f) mandatory worker training for firms above a certain size, in order to resolve the problem of underinvestment in the training of skilled workers due to the possibility of poaching; (g) the state's role in providing venture capital and incubating high-tech firms; (h) export promotion (export subsidies, export loan guarantees, and marketing help from the state trading agency); and (i) government allocation of foreign exchanges, with top priority going to capital goods imports (especially for export industries) and the bottom priority going to luxury consumption goods imports.

investment (FDI) performance requirements, restrictions on capital and finance markets, labour market and equity requirements. According to Rodrik (2004), industrial policy should focus on "*strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them*". In addition, he supports the idea of providing temporary[7] incentives to new products and technologies with a view to creating new markets and support competition.

Low and Tijaja (2013) identify four broad ***categories*** of industrial policies, which are based on specific focus of interventions. These are:

1. ***Import substitution industrialisation (ISI)*** policies. These were initially developed to close the gap between less industrialised and high-income countries. Early generation of ISI were essentially aimed at producing previously imported goods and services targeted to the local market, with the support of trade and fiscal instruments to protect new or infant industries. Policies that followed the lines developed by ISI hoped to promote and develop specific sectors and strengthen their technology and production capabilities with a view to create linkages and generate domestic demand. Largely adopted in many developing countries (in particular in Latin America and Africa), this model however found its limits as a result of insufficient domestic market size, the introduction of permanent market distortions and support to non-viable sectors and increasing difficulties competing with foreign products (Ramdoo: 2015a).

2. ***Export-oriented industrialisation (EOI)*** policies. The objective was to produce manufactured goods for foreign markets. These policies are often cited to herald the East Asian miracle, driven by Hong Kong, Singapore, South Korea and Taiwan. Key measures included liberal trade policies, low taxes to attract FDI and state intervention to promote exports. One of the characteristics of EOI is that while firms are relatively *easy to attract*, they are however quite *difficult to retain* over time because they tend to be *footloose* (Ramdoo: 2015a). Policies have therefore been most successful when they were taken within the broader industrial strategy, with complementary efforts (i) to stimulate different types of linkages, (ii) to retain firms by supporting firms' upgrading along the value chain; and (iii) to ensure support to innovation and research as well as transfer of know-how and skills from low- to high- productivity sectors through partnerships with foreign firms.

3. ***Resource-based industrialisation (RBI)*** policies. Policies to stimulate value addition or beneficiation in the extractive sector differ significantly from those required to attract FDI in that sector. To encourage industrialisation, many resource-rich countries have traditionally used policies such as export restrictions to discourage exports of unprocessed products or attached local content requirements on procurement and on employment to mining contracts. This has not been very successful, partly because the policies did not target the right groups of stakeholders. Miners are not necessarily manufacturers, and are not likely to turn into manufacturers despite all incentives given to them. For instance, if a country wants to stimulate beneficiation-related activities, incentives and support programmes should be targeted to potentially interested manufacturers and not against miners (Ramdoo: 2015a).

4. ***Industrialisation through innovation (ITI)*** policies. In this case, the policy focus is to stimulate changes *within* the firms themselves. This policy assumes that firms' upgrading within the value chain potential can be substantially improved by strengthening innovation systems[8] and firm-level technological capabilities.

[7] Rodrik (2004) indicate that government support should be discontinued after the necessary investment and infrastructure are established.

[8] Innovation systems are defined as the flow of technology and information among people, enterprises and institutions that facilitate innovation and are key to firms' competitiveness.

Such policies include supporting networking and building mutually beneficial relationships with other firms, suppliers, consumers and governments amongst others (Low and Tijaja: 2013). Industrial policies through ITI are therefore conducted through support to science and technology and R&D and other initiatives such as industry-specific dialogues, internships or staff exchanges, science parks and business incubators. Although these policies may seem horizontal in nature, the specific nature of technology requires sector-specific interventions, in particular when they are embedded in high-tech or capital goods. These require targeted government support for successful upgrading.

The ***approach*** to industrial policy however, varies significantly between developed and developing economies. Developed economies view industrial policies through a much broader lens, as a catalyst to drive innovation, productivity and competition (see for e.g. WEF: 2013; Mckinsey: 2012). By contrast, developing countries find such policies as a basic pathway to higher living standards, as a necessity to broaden their economic landscape, which is often highly dependent on primary commodities, or as a vehicle to create more and better jobs (see for example Hausmann and Rodrik: 2003).

Given all this, one can conclude that industrial policies involve ***multi-dimensional processes*** and need to be implemented as a package, if they are to be made successful.

First, they need to involve *soft* or *macro-level* policies that are inter-disciplinary and cut across various sectors of the economy. These include *economic* policies such as macro-economic, financial, fiscal, trade, investment, infrastructure (including utilities) policies, *social* policies such as education, health or land policies. These are sector-neutral and are generic to all sectors (UNIDO: 2013).

Second, they may contain a set of *sector-specific* measures that are tailor-made to stimulate the development of particular industrial sectors or industries. Such policies, in the form of government incentives and support, are intended to complement sector-neutral policies, which are, in themselves, not sufficient to promote industrial development. Such policies are meant to address some inherent market failures (notably with respect to skills and capabilities development and infrastructure) that are necessary to the development of industries.

Finally, they may comprise of specific measures to support *firms' level* initiatives, deemed necessary to maintain the competitiveness of the industry. Those measures are often strongly supported by governments, in the form of incentives to R&D, tax incentives on innovation. Successful firms' initiative may in turn drive the re-engineering of hard and soft industrial polices mentioned above.

The **advocates** (Rodrik 2004; 2007); Stiglitz et. al (2013a; 2013. b), Chang (2009), Lin (2010)) of active industrial policies argue that the latter plays a critical role in generating economic growth, ensuring job creation and in supporting improvement in standards of living. Arguments are based around three complementary key arguments, that together can justify a good case for industrial policy namely (i) the need to address market failures (such as industry-level externalities, dynamic increasing returns, the presence of a public good, etc.); (ii) the sector to be supported has genuine potential to be competitive in the international markets; and (iii) the discounted future benefits of intervention exceed the costs of the distortion (Harrison and Rodríguez-Clare 2010).

Critics of industrial policies argue that governments are not capable of making good choices about industries even in the presence of highly imperfect markets. Since government information is necessarily limited, good selectivity is impossible, which implies that the "picking winners" strategy is doomed to fail (see, for e.g., Pack and Saggi 2007). A second argument concerns rent-seeking and corruption (see, e.g., Krueger 1974; 1990). Since some government measures (e.g., import licences, investment permits, etc.) may create rents, firms would find it more profitable to (legally or not) invest their resources in order to capture such rents therefore distorting the

allocation of resources. More fundamentally, sceptics deny that the industrial sector may create different dynamics from other activities in the economy, or that any kind of industries could be more valuable than any other. This was famously expressed by the former director of the Office of Management and Budget in the first Bush administration in the US, who said: "*Potato chips or silicon chips—who cares? They are both chips*."

1.3. Industrialisation in the African context: where do we stand?

1.3.1. Salient features of Africa's industrial performance

Many African economies have had higher growth performances in the last decade than they had in the last forty years. Statistics (e.g. IMF: 2013) concur to show that six of the world's ten fastest growing economies in the last decade are in SSA. However, a closer look at their economic performances reveal that their economic structures have remained largely similar to what they were forty years ago, that is, production and exports continued to be highly dependent on primary commodities, the share of manufacturing in production and in exports remained low, as did the level of technology and productivity across countries. Furthermore, with the exception of commodities, African economies find it difficult to compete on global markets and are only integrated at the lower rung of the ladder with respect to global value chains (GVCs) (ACET: 2013; AOE: 2014).

In recent years, like other countries, African countries have put forward a renewed commitment to develop their industrial base. This is part of a wider transformation agenda to broaden the economic base beyond commodity production and move factors of production from low- to high-productivity activities, to become more resilient to external shocks, to develop their productive capacity, to create more and better employment opportunities and to address the decades long challenges of poverty and inequality. This endeavour is no longer a choice, it is a timely imperative, in particular, in the aftermath of the triple shock, namely the sharp rise in food prices, in energy prices (until 2014) and the global financial and economic crisis, whose economic and social costs have been quite significant. The crisis had put to the fore once again, Africa's high vulnerability to such external shocks and therefore called for policymakers to address the structural economic weaknesses, this time with home-grown solutions that were in line with the realities of African economies.

What is clear is that the current economic structures of many African economies, in particular of those that have been growing very fast in the last decade, will not meet development aspirations without profound and sustainable changes. Efforts will require going beyond exporting untransformed commodities, towards diversification and the development of other sectors of the economy. Such a transformation is absolutely crucial to generate sufficient productive employment to absorb approximately 7 to 10 million young people that are expected to enter the labour market annually[9], to create a resilient economy and to address other economic and social challenges on a sustainable basis.

Statistical evidence illustrates the gap that needs to be filled. Compared to the rest of the developing world, Africa is not only the least diversified continent. Some countries have made slower progress than others elsewhere to catch up on industrial development and others have even regressed, as shown by the weak and declining industrial[10] sector whose share of GDP fell from 32% to 27.8% between 2005 and 2013 (figure 1) and weakening manufacturing sector (figure 2), whose share of GDP declined from 17.7% in 1975 to 11% in 2013. It is therefore not surprising to observe that on average, the share of SSA in *global* manufacturing value added is almost

[9] UNIDO: 2013.

[10] *Industry* corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions 15-37). It comprises value added in mining, manufacturing, construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources (source World Bank database).

insignificant. The latter's share in global manufacturing value added decreased from 5% in 1992 to 3% in 2012 (UNIDO: 2013, p. 9). This contrasts sharply with developing Asia for instance, which saw its share bounce from 13% to 25% over the same period.

Figure 1: Manufacturing sector as a percentage of GDP

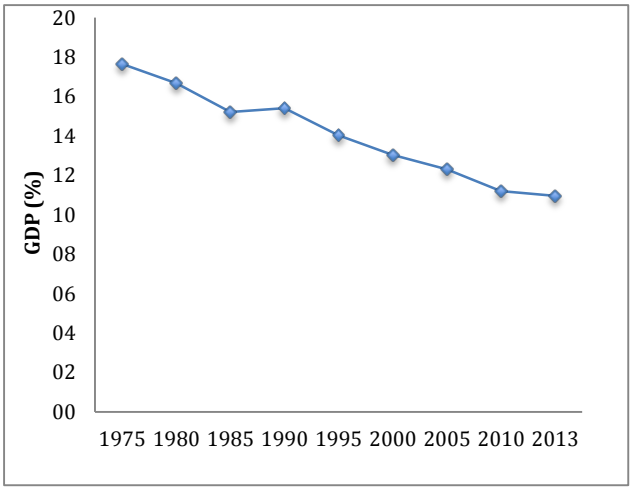
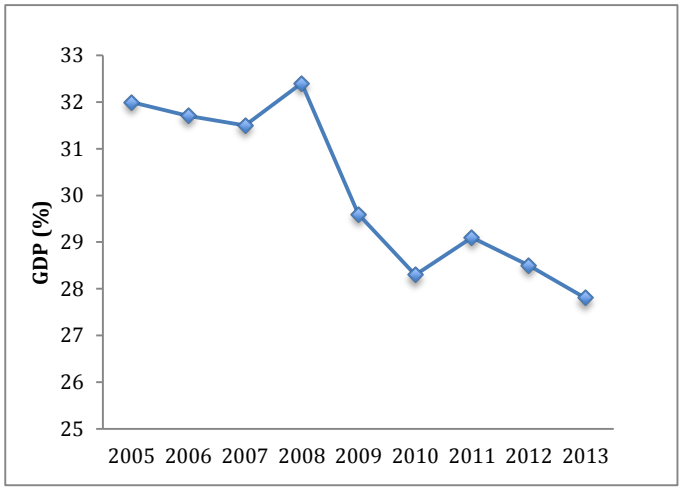


Figure 2: Industry value added as a percentage of GDP



Source: World Bank database.

The African Development Bank (AfDB) argues that *natural resources* have accounted for 35% of the African continent's growth since 2000, 80% of African export products in 2011 and more than 60% of greenfield FDI (AEO 2013).

In addition, compared to the rest of the world, SSA economies have, on average, shown the least change in their manufacturing *base* in terms of *technological complexity* of products over 2002–2011 (UNIDO: 2013). In 2012, *resource-based manufacturing* accounted for about 49% of total manufacturing value added in the region, compared with 24.9% for low-technology manufacturing and 26.1% for medium- and high-technology manufacturing (UNIDO: 2013). The share of low-tech and resource-based sectors combined accounted for about three-quarters of manufacturing value addition, compared to an average of about 50% for East Asia and Pacific (except China) for example. The picture is more skewed if South Africa is discounted. Indeed, only 8.3% of total value added were accounted for in the medium- to high-tech manufacturing sector in the rest of SSA, while the resources sector accounted for as much as 66.2% of manufacturing value added.

Table 1: Technological composition of manufacturing value added (%), per region

	2002			2005			2008			2012		
	RB	LT	MTH	RB	LT	MTH	RB	LT	MTH	RB	LT	MTH
World	31,5	25,3	43,2	29,6	25,3	45,1	28,8	25,2	47	26,8	25,4	47,4
By region												
East Asia and Pacific	36,6	23,9	39,6	32,4	26,6	41	29,7	28,4	41,9	27,3	31,1	41,6
- Excluding China	48	19,8	32,2	43,7	19,7	36,7	42,1	17,3	40,6	42,9	17,2	39,9
Europe	45,5	32,9	21,7	42,9	32,5	24,6	40,2	32,1	27,7	38,4	31,4	30,1
Latin America and Pacific	41,4	27	31,6	40,5	27,4	32,1	40,1	26,8	33,1	40,6	25,3	34,1
Middle East and North Africa	47	27,7	25,3	41,8	29	29,2	39,6	29,3	31,2	40,3	27,1	32,7
South and Central Asia	31,1	37,3	31,6	29,3	35,2	35,5	25,3	33	41,7	24,6	32,8	42,7
- Excl. India	44,4	31,2	24,3	41,9	30,6	27,5	41	30,1	28	39,7	30,9	29,4
Sub Saharan Africa	50,8	23,5	25,7	50,4	23,6	26	48,9	24,6	26,6	49	24,9	26,1
- Excl South Africa	*72,2*	*17,9*	*9,7*	*68,4*	*21,7*	*9,8*	*66,4*	*24,1*	*9,5*	*66,2*	*25,5*	*8,3*

Source: UNIDO, 2013.
Note: RB = resource based; LT = low technology; MTH = medium to high technology.

The share of medium and high-tech manufacturing slightly increased to 26.1% in 2012 from 25.7% in 2002, compared to 41.6% in 2012 in East Asia against 39.6% for instance. Although a very slight progress, it needs nevertheless to be underscored because technology-intensive manufacturing sectors generally grow faster and have greater learning prospects. They are therefore expected to have more *spillover* effects on the rest of the economy. In contrast, resource-based and low technology manufacturing generate fewer and less-sustainable margins. Africa's medium- and high-technology manufacturing activities are highly concentrated in the chemical industry.

The same pattern is observed in terms of ***exports***. SSA is highly dependent on resource-based manufactures, whose share in total manufacturing exports increased substantially from 35% in 2007 to reach 69% in 2011 (UNIDO: 2013, p. 216). While resource-based manufacturing exports have contributed to high growth rates in particular at the time where commodity prices were high, they however contain relatively low value addition, making over-dependent countries highly vulnerable to external price shocks. Moreover, natural-resource-based sectors in themselves present lower productivity growth and have few linkages with the rest of the economy and have led to very limited product differentiation. The ratio is even higher for the top eight oil exporters, which account for 80% despite declining trends in a number of big producers such as Nigeria, but drops to about 35% for other countries, including those that export commodities other than oil (IMF: 2015).

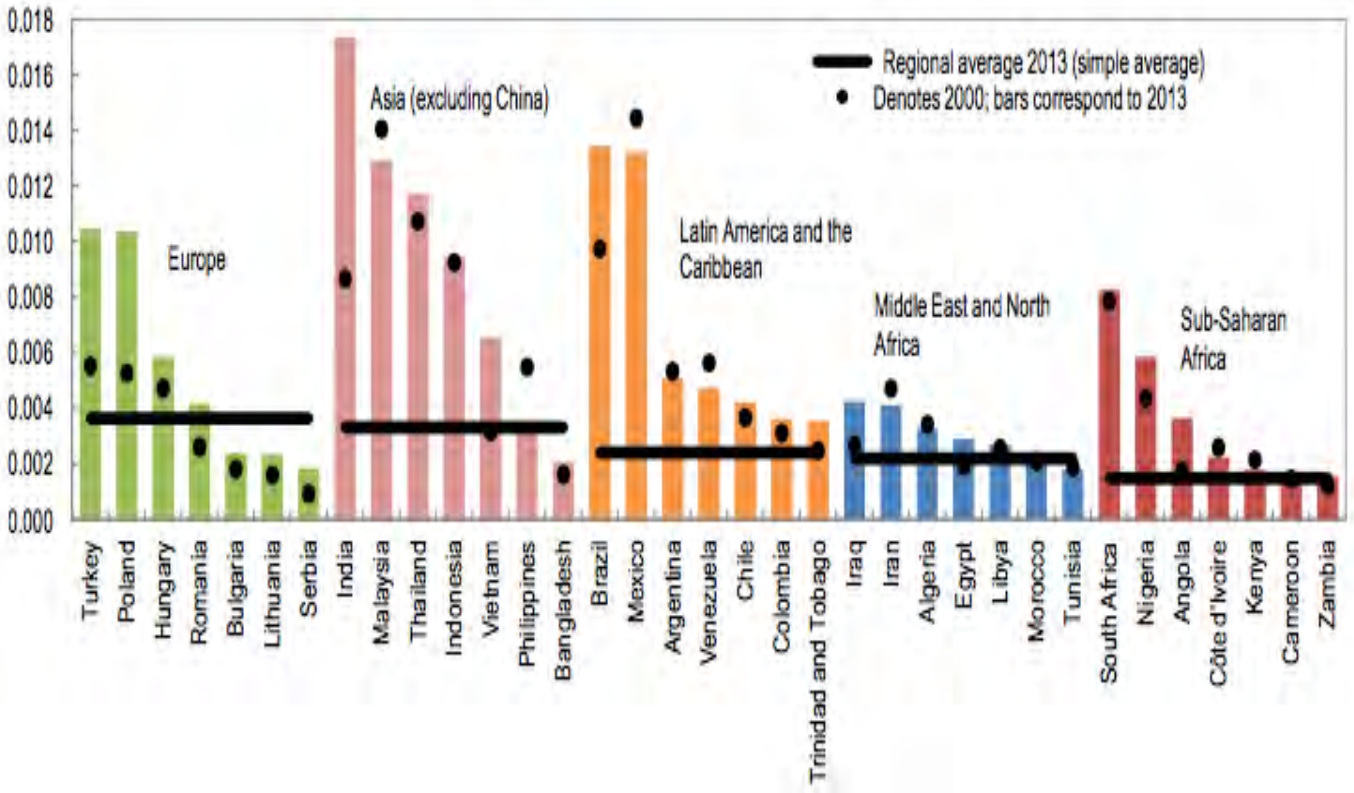
A closer look at the *composition and direction* of Africa's ***trade*** however shows that countries that have started to export extractive resources only recently, such as Chad and Sierra Leone, have seen a substantial increase in their exports, driven by essentially growing emerging markets' demand for commodities[11] (IMF: 2015). On the other hand, export shares of traditional resource exporters, such as Angola, Equatorial Guinea, or Zambia, have deteriorated in recent years, highlighting more structural difficulties, such as lack of supply diversity in their export base. Nevertheless, on average, SSA's export diversification index improved only marginally from 0.61 in 1995 to

[11] SSA's overall progress in trade integration also needs to be put into perspective. Global trade witnessed a significant increased following the implementation of the Uruguay Round, the creation of the WTO in 1995, and China's subsequent entry into the WTO in 2001. This led to the emergence of new trade giants and the decline in advanced economies' contribution to world trade. In fact, it is only to the extent that sub-Saharan Africa was able to redirect trade toward these new trade players, particularly China, that it managed to keep its place in world trade - a place that however remains small globally.

0.58 in 2009, while in Asia, the latter improved from 0.32 to 0.26 and in Latin America, the index improved from 0.36 to 0.33 during the same period.[12]

A 2015 IMF report makes a more in-depth analysis of Africa's ***integration into global trade***, by looking at the latter's ***centrality*** in the global trade network. This measure looks at the size of exports for a given country, the number of its trade partners and the relative weight of these trade partners in world trade. It gives a picture of the country's interconnectedness within global trade (IMF: 2015). As illustrated in figures 3 and 4, it is confirmed that SSA remains the least integrated region in the world, with an *average centrality* of only about half of other regions of the world, despite the emergence of regional hubs such as Cote d'Ivoire, and to a lesser extent Senegal and Kenya, for instance. South Africa is measured as the most interconnected SSA country but has a much lower position compared to other emerging markets such as Brazil or Indonesia. Angola and Nigeria are well positioned within SSA, but are driven by the large share of oil exports. Others remain rather weak, compared to countries such as India, Poland, Turkey, or Vietnam, which saw their relative centrality score double over the period (IMF: 2015).

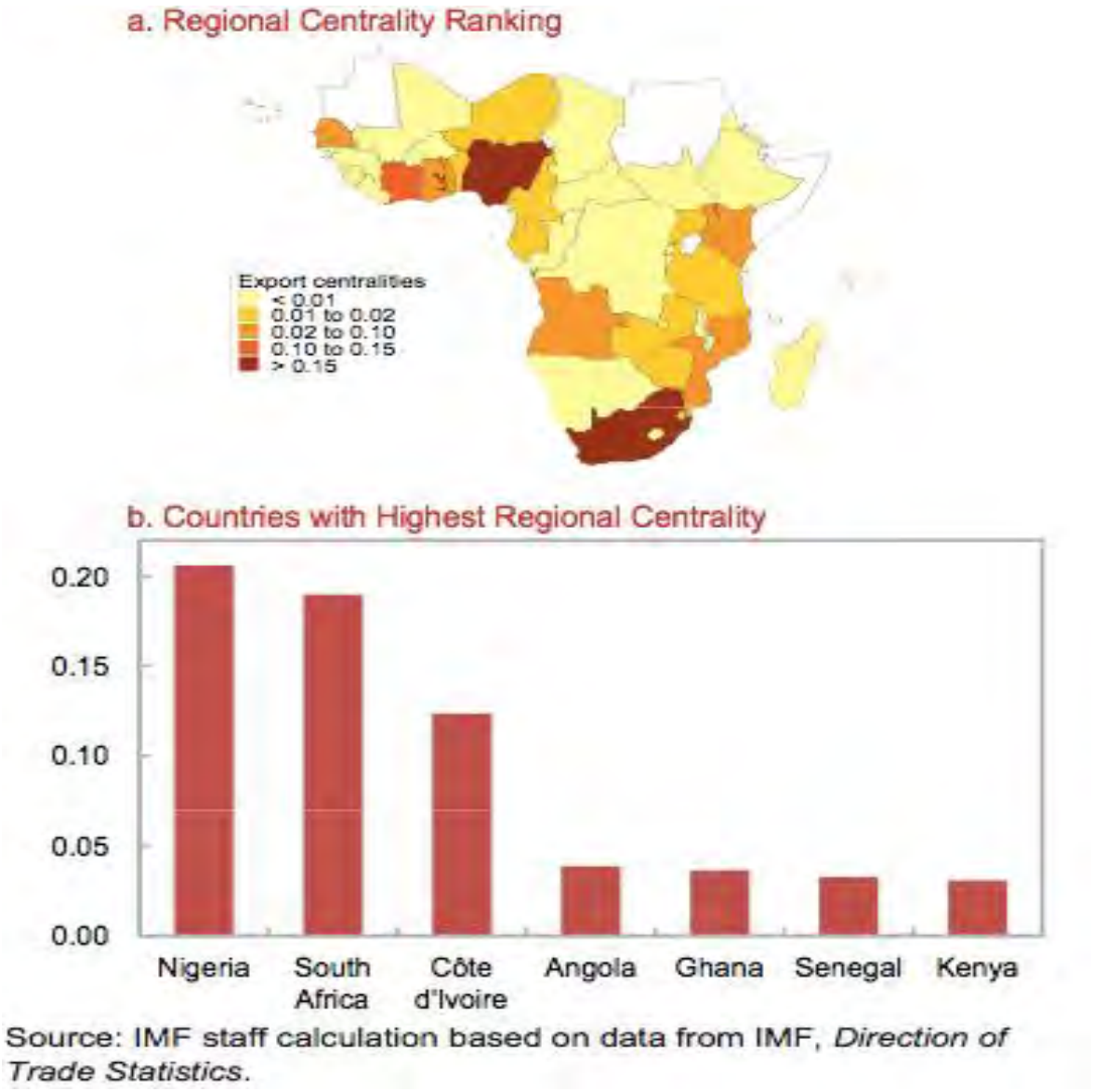
Figure 3: World Trade Centrality per region, 2000-13



Source: IMF, 2015.

[12] Source: UNCTAD: 2013

Figure 4: SSA's Regional centrality



Source: IMF staff calculation based on data from IMF, *Direction of Trade Statistics*.

Another key feature of African industries relate to the ***small number and average size of firms***. While differences exist across countries, most domestic firms are small (and often informal[13]) and operate side by side with a few large-scale (often foreign or State-owned) firms found mostly in the agricultural or extractive sectors. There is a significant gap in the presence of medium-sized firms. The small, average size of African firms can be a challenge from the perspective of long-term industrial growth given that the size of firms may affect their capacity to produce on scale basis and to supply extractive industries with certain goods and services as well as their export potential.

[13] Recent estimates suggest that for sub Saharan Africa, the informal economy accounts for about 38% of GDP compared to 18% for East Asia and the Pacific, 27% for the Middle East and North Africa, 25% for South Asia and 35% for Latin America and the Caribbean (UNIDO: 2013).

1.3.2. Challenges facing industrialisation in Sub-Saharan Africa

Of the 54 African economies, 26 are low-income[14], 17 are lower middle-income[15], 10 are upper middle-income[16] and only 1 is a high-income country (Eq. Guinea[17]), which is paradoxically considered as a least developed country (LDC), as a result of its very high income equality.[18] Although countries (and regions) have their own specificities and economic and political realities, many African economies (in particular low income and lower middle-income countries) share a number of common characteristics that pose certain challenges to their industrial development. As latecomers, many countries are largely under-industrialised, have undiversified economic bases and are characterised by significant productivity gaps. Labour is largely unskilled and unemployed; poverty and inequality are major challenges.

The local private sector, if not informal, is weak, small and not embedded in national, regional and global supply chains. They face demand-side constraints as a result of the low purchasing power and levels of income at home. They also face supply-side constraints due to weak productivity. They often do not benefit from the same incentives as large firms. This in turn affects their capacity to upgrade and expand production.

The conditions in which business operate is often fraught: (i) the business climate is stiff, as observed by the poor ranking of many African countries in the World Bank Ease of Doing Business Indices, (ii) costs of transportation are high, in particular across borders; (iii) infrastructure and other utilities are insufficient and unreliable; (iv) technology and skills are not adequate; and (iv) access to finance is limited.

While the need to correct market failures is high[19], the ability of the public sector to address such failures is however very limited in a number of countries, in particular in low-income countries (Altenburg: 2011). The twin effect of market *and* government failures has generally created a recipe for disaster in designing industrial policies.

Although industrial policies were initially put in place by national governments, they have largely been influenced by external actors, either because African economies have been advised by international institutions (e.g. during structural adjustment programmes) or because their policies were donor-funded, in which case the poor alignment of strategies between donors and governments has lead to policy fragmentation rather than coordination.

Many countries face several domestic constraints, like lack of sufficiently skilled labour, inadequate infrastructure, institutional challenges, and bureaucratic and fiscal capacity, which affect the chances of success of many industrial policy instruments, hinder technological upgrading, and affect firms' investment decisions.

Over the past decade, some countries have made substantial economic progress and can now be considered *in transition*. However, some seem to be stuck in the middle-income trap (Mauritius, South Africa, Botswana, Nigeria) and therefore seem to face more difficulties to make it to the next level of development. Compared to

[14] These countries have a GDP per capita of USD 1,045 or less and are: Benin, Burkina Faso, Burundi, Central African Rep, Chad, Comoros, DR Congo, Eritrea, Ethiopia, Gambia, Guinea, Guinea Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Tanzania, Togo, Uganda and Zimbabwe.

[15] These countries have a GDP per capita in the range of USD 1,046 to USD 4,125 and are Cabo Verde, Cameroun, Congo Rep, Cote D'Ivoire, Djibouti, Egypt, Ghana, Lesotho, Mauritania, Morocco, Nigeria, Sao Tome et Ppe, Senegal, South Sudan, Sudan, Swaziland and Zambia.

[16] There countries have a GDP per capita in the range of USD 4,126 to USD 12, 795 and are Algeria, Angola, Botswana, Gabon, Libya, Mauritius, Namibia, Seychelles, South Africa and Tunisia.

[17] With a GDP per capita of USD 14,320 in 2013.

[18] Source: World Bank list of economies, January 2015.

[19] Often because market failures are more pervasive and/or their impacts have a more damaging effect due to structural weaknesses in low income countries.

most low-income countries, they have managed to undertake some structural changes from agriculture to manufacturing and services even though at different degrees and with different levels of successes. Within manufacturing, some have specialised in low-tech labour-intensive or natural resource-intensive industries. However, as shown by evidence above, medium and high-tech manufacturing industries play a minor but increasingly larger role.

The *space* available for certain types of industrial policies, such as ISIs has shrunk considerably. As Chang (2002) explains, successful early industrial development in northern economies occurred in an environment that significantly protected domestic industries from external competition. Much of this protection arose as a result of the high cost of transport, which provided natural barriers of protection for domestic production. Since then however, the global economic landscape has mutated fundamentally. Improvements in product design and logistics as well as reduction in transport costs have eroded many of these natural barriers.

Certain types of polices, such as ISI policies are more complicated to implement today as a result of the wave of trade liberalisation policies that followed the structural adjustment programmes in many African economies in the 1980s. In addition, when countries joined the World Trade Organization (WTO) in 1995, they became subject to disciplines that constrained their ability to use certain trade policy instruments such as export restrictions or certain types of subsidies (see section 3.1.3).

In addition to the above, countries aspiring to develop their industries also encounter a number of challenges in developing competitive export oriented industries. The fact that many countries have similar production structures means that unless they develop their niche in very specialised markets, they are likely to compete fiercely among each other to attain the same markets (in which they all have similar trade preferences – AGOA in the United States (U.S); EPAs or EBA in the European Union (EU) for almost similar products.

Finally, industrial development takes time and is expensive. For example, Japanese carmakers (established in the early 1930s) took four decades to become internationally competitive, while Nokia electronics (founded in 1960) started to make a profit only after 17 years (Chang: 2012). That said, in the short-term, the extractive sector can provide avenues for supply linkages, hence providing jobs and creating value domestically. In addition, export earnings can provide revenues to finance imports of machinery and technologies for the other industries that need to be accompanied in the medium term.

1.4. Lessons learnt from past industrial development efforts in Africa

The manner in which domestic policies are conducted and implemented is critical. Failures to design and implement policies in a coordinated and coherent manner have contributed to poor industrial performance. During ISI in the 1960s and 1970s, government policies were essentially focused on providing assistance to local businesses. However, there was little performance monitoring and there were no measures to address capabilities challenges or obstacles in order to make firms competitive. The removal of government support and trade liberalisation later during the structural adjustment period contributed to the collapse of industries as resources shifted away from the productive sectors in the absence of policies to support firms' capabilities.

Structural constraints have to be addressed. Poor industrial performance in Africa is not only the result of policy failures and exogenous shocks. They have been largely shaped by inherent structural factors such as weak economies, low purchasing power, poor and costly infrastructure, low skills level, lack of technology, small size of domestic markets, fragmented regional markets and a weak indigenous private sector, amongst others.

Domestic firms need to be supported to develop innovative and technological capabilities. This is essential to move up the value chain and to compete in export markets for medium and high technology manufactures. Another lesson learnt from past attempts to promote industrialisation is that governments should pay more attention to support technological capabilities of domestic firms in order to enhance their ability to produce medium- and high-technology goods.

Countries must drive their industrial development process. African economies have been over-dependent on overseas development finance, in the form of aid, concessional loans or poverty reduction programmes. As a result, external actors have had significant influence on the choice of policies and development paths by imposing conditionalities that had limited Governments' policy space to define their own economic trajectories.

Industrial policy is not a domestic policy only, but needs to take into account the global dimension. Past experience with ISI showed that policy choices should not be limited only to the domestic economy. External markets also provide significant market opportunities and linkages must be developed with global buyers and suppliers. Therefore, industrial policies must be carefully designed to be part of an overall process of integration into the regional and global economy.

Collaborative partnerships between government and private sector are essential. While the role of the government is important to design, implement and monitor industrial policies, the private sector needs to be constantly part of the process. Having such functional partnerships will help improve policy efficiency and allow governments to tailor support to the needs of industries and recalibrate policies when the latter do not deliver results.

1.5. Where does policy debate stand? A Mapping of recent studies

The significant natural resource wealth possessed by many African countries creates sizable opportunities for the acceleration of their economic transformation and to sustainably address their poverty challenges. This can be made possible notably through (i) the promotion of linkages within the extractive sector and between the extractive sector and the rest of the economy; (ii) increased revenues that can be spent in productive and social sectors; and (iii) governments' initiatives to take greater policy ownership as aid dependency becomes less important. The renewed impetus to make use of active industrial policies has led to numerous debates in the policy circles.

A number of reports and research papers in the last few years have put forward different perspectives and policy options regarding resource-based industrial development and Africa's integration into global value chains (GVC). This section highlights the key tenets from several key reports. *Annex 2* gives a detailed mapping of recent reports regarding resource-based industrialisation in Africa, highlighting the key objectives, the main focus and the recommendations.

A major research project, '***Making most of the commodities'***, was conducted by the Open University/University of Cape Town. The Study[20] analysed 'the breadth and depth' of extractive linkages in eight African countries from a Global Value Chain perspective (see Morris et al. 2011 for an overview of findings). The project concluded that the *breadth[21] and depth[22]* of linkages were increasing in two of the countries (Ghana and Nigeria) studies, in two

[20] Morris et al. 2012. One Thing Leads to Another. Promoting Industrialization by Making the Most of the Commodity Boom in Sub-Saharan Africa. University of Cape Town.

[21] On the input side, the breadth of linkages refers to the share of inputs that the commodity producer acquires locally. On the output side, it refers to what proportion of commodity production is processed by local firms.

[22] This refers to the extent of domestic value that is added to locally acquired inputs or locally processed/beneficiated outputs.

others (Angola and Botswana) linkages were only *deepening*, in three of them (Gabon, South Africa and Zambia) linkages were, on the contrary, '*shallowing*', and in one (Tanzania) linkages were at best, '*static*'. Overall, the project showed mixed evidence of linkages in African natural resources and therefore concluded that linkages formation remains quite limited. Where linkages existed, their *depth was shallower* than their breadth. Nevertheless, the study argued that there is a large untapped potential for stimulating development through linkage formation in African extractives.

Looking at the types of linkages, the Study indicated that *backward* linkages have a greater development potential than *horizontal* linkages (see section 2.1 for definitions). For instance, it was found that in four countries, no horizontal linkages were identified, in two they were 'probable' (but not identified) and in one (South Africa) there were substantial horizontal linkages. In contrast, there was much broader evidence of backward linkages. However, the Study concluded that many African governments have paid more attention to fostering horizontal linkages (largely because they were missing) while almost neglecting more promising backward linkages.

The ***2013 UNECA Economic Report on Africa*** argues that commodity-based industrialisation provides the leverage to drive growth on the continent and enhance its participation in the global economy. The Report makes a strong call for countries to make the maximum use of their resource endowments to reverse the trends of deindustrialisation of the last decades, and puts particular emphasis on the development of *backward and forward* linkages in the resource sector. In this regard, it recommends that countries put in place effective development plans and industrial strategies to boost linkages and address constraints such as skills shortages and mismatches, infrastructure and technological capabilities. Countries are recommended to foster regional integration and deepen intra-Africa trade. Based on countries evidence and experiences, the Report supports the argument that Africa cannot industrialise by "ignoring" its commodities and therefore must make the most of its commodities to promote value addition, new service industries and technological capabilities that span the sub-regions of the continent (UNECA: 2013).

Building on the 2013 Report, UNECA (2014)[23] further called for active **s*upport to dynamic industrial policies*** to address market failures. Governments are encouraged to put in place industrial policies and to build institutions that will lead to and support industrialisation. They are encouraged to collaborate with non-state actors and to support in particular indigenous firms to allow them to compete in regional and global value chains and to create linkages between commodity sectors and other industries.

The ***2015 UNECA Report***, which focuses on ***industrialisation through trade (***UNECA: 2015b), deepens the analysis by focusing on the role and importance of trade for industrialisation in order to reverse the marginalisation trend of the continent. It is estimated that Africa's share in global exports increased only marginally from 5% in 1970 to 6% in 1980 and has been on a downward trend since then. In 2010 and in 2013 respectively, the share of exports stagnated at 3.3%, with little diversification as many resource-rich countries continued to specialise in the export of unprocessed commodities. The Report analyses the opportunities for African economies to join GVCs and to engage in trade at a specific stage of the production process. It recommends countries to adopt coherent and well-sequenced trade policies, to give priority to intra-African trade and regional markets, while maintaining policy space and flexibilities to continue to promote industrialisation. Like in previous reports, the importance of skills development and capabilities is underscored.

The **2013 African Economic Outlook** published by the OECD and the African Development Bank on the theme ***Structural Transformation and Natural Resources*** acknowledges that the African continent still faces a major challenge of providing meaningful jobs to a growing population and that structural transformation is essential for these to materialise. It posits that the continent must capitalise on its abundant natural resources to achieve its

[23] UNECA, 2014: Dynamic Industrial Policy in Africa: Economic Report on Africa. Addis Ababa.

objectives. The Report further argues that given Africa's comparatively low skill-to-labour ratio, it needs mainly low-skilled jobs. Basic manufacturing rather than high-tech services would therefore provide the basis for low-skilled jobs. Recognising that the continent has a strong comparative advantage in natural resources, either in the form of energy, minerals or agriculture, it further argues that these can be the drivers of structural transformation through linkages, employment, revenue and foreign investment, provided adequate business environment and supporting policies are in place. Large-scale agricultural transformation needs to be encouraged. Concerning mineral wealth, the Report lays much emphasis on the potential of upstream linkages, arguing that downstream linkages may be more challenging given its capital and knowledge intensive nature and Africa's weaknesses in these requirements. The Report recommends a four-layer approach to harness structural transformation from natural resources. These layers are (i) putting in place the right conditions for structural transformation; (ii) meeting the specific requirements of the primary sectors to fuel transformation; (iii) optimising the revenue from natural resources and investing it wisely; and (iv) promoting structural transformation with active policies, focusing on increasing agricultural productivity and building linkages to and from the extractive industries (with a specific focus on *backward* linkages).

UNIDO has published a number of reports to support the cause of industrialisation in developing countries, and in particular in Africa. In its 2012 Report themed ***Promoting Industrial Diversification in Resource Intensive Economies: The Experiences of Sub-Saharan Africa and Central Asia Regions***, experiences and options are considered to make the most of natural resource sectors to promote manufacturing and industrial development in Africa and Asia. It is argued that the boom in natural resources resulting from high commodity prices might offer 'a new development opportunity' for Africa not only in terms of fiscal revenues and direct employment, but also for the diversification and development of manufacturing industries, notably through linkages and spillovers. These are largely in line with the recommendations made by UNECA regarding industrial policies. The Report suggests that a major challenge to industrialisation in SSA is the absence of a match between the skills created and the local economy. The current skills that come out into the economy are more suited for industrialised countries as opposed to the needs of the local economy. Challenges to industrialisation are further compounded by the weak implementation of policies that are already in place. Generally, industrial policies have a high failure rate and might even produce a negative impact than what policy maker expected. Thus, for industrial policies to work, the government (preferably a dedicated ministry) must have a two-fold strategy. First, the skills created must match the needs of the local economy. Second, the dedicated ministry, realising that policies might have different effects compared to what was anticipated, must be flexible enough to change or revise implementation strategy when necessary.

In its **Industrial Development Report (2013)**, UNIDO similarly argues that resource wealth can act as a catalyst for industrialisation and that the presence of natural resource wealth has had a positive effect on most industries especially in the electrical machinery, heavy vehicle, and the chemical industry. Strong institutions that can collect and manage revenues effectively are necessary conditions for industrialisation policies to succeed. The role of industrial policies in support of GVCs is underscored. To create better-paid jobs, countries need to move from lower-tech to higher tech sectors, from lower value added to higher value added sectors and from low to high productivity sectors. Moreover, to benefit from GVCs, developing countries must not only rely on trade liberalisation to attract firms into their markets. It is argued that trade liberalisation for the purpose of joining GVCs is not, on its own, an effective policy. The Report showed that countries that have succeeded with GVCs only liberalised their trade after successfully implementing industrial policies thus leading to structural transformation of their economies. This in turn, enabled them to compete successfully in global markets. Critical drivers of structural change and industrial development are linked to the cost of manufacturing, technology and innovation, skills development, and resource efficiency.

In another Report, **Economic diversification strategies: A key driver in Africa's new industrial revolution,** UNIDO (2012) further suggests that focusing on *downstream industries* within the extractive sector is *not* a lucrative economic model. The "non-tradability of a range of differentiated, intermediate inputs used in the 'advanced sector' of the economy" constitutes a major challenge faced my most African countries. Either they cannot afford to import inputs they need, which are not available domestically, or the technical absorption of sophisticated inputs is difficult mostly because of the pre-existing technological knowledge required. While governance is seen as a key condition for creating a developmental state, the type of government in place determines the quality and efficiency of industrial policies to be adopted. Accountable and open governments are more likely to create industrial policies that can be implemented. Moreover, the success of industrial polices depends on the participation of non-government actors. Since governments cannot create sufficient jobs to address high unemployment[24], the opinion of industry must take first priority. The opinion of other stakeholders like trade unions, civil societies, and foreign investors must equally be taken into account in the formulation and implementation of industrial policies.

UNCTAD's **2013 Commodities and Development report** also supports the view that resource-based industrial development, on the condition that appropriate and functioning institutions are in place, offers an opportunity for resource-dependent developing countries to embark on 'sustainable growth paths' and that it is an 'essential source of employment, income and government revenues for most developing countries'.

ACET's **2014 Africa Transformation Report** points to the fact that so far, growth has not been sufficient to transform African economies. It highlights the lack of DEPTH i.e. **D**iversification, **E**xport competitiveness, **P**roductivity, **T**echnological capabilities and **H**uman well-being. To achieve resource-based industrialisation, the governments in these countries must adopt a development state model. The role of the state is pivotal if these countries want to be able to build skills that are suited for the local economy. This can be done by collaborating with the companies involved in the extractives industry by creating learning-on-the-job programmes as was the case in Botswana or in Ghana.

The debate around Africa's integration in GVCs also captured much attention. The **2014 African Economic Outlook** had a special theme on ***Global Value Chains and Africa's Industrialisation*** in particular on how Africa can make the most of GVCs to implement its industrialisation agenda, while at the same time avoiding getting stuck at the lowest end of value chains. Not surprisingly, while the Report points to the weak role played by SSA in GVCs, with a share of global trade that only grew from 1.4% in 1995 to 2.2% in 2011, it nevertheless points to the opportunities that GVCs offer to late comers, namely that the latter are no longer obliged to create entire industries to participate in competitive markets. They can now access GVCs directly by providing specific skills or products to international production networks. The Report however, highlights the fact that Africa's participation in GVCs is currently limited to lower value activities, although opportunities exist for upgrading to higher ones, notably by opening to trade, targeting regional and emerging markets, modernising infrastructure, promoting local entrepreneurship, and investing in education. The Report looks at perspectives in agriculture, manufacturing (excluding the extractive sector) and services.

UNCTAD (2013a) published a ***Global Value Chain in Development Report*** to build on the efforts of the international community to map the distribution of value added in global trade. The main thrust of the Report can be summarised in three main findings: (i) confirming what was already observed by others, global investment and trade are closely linked through the international production networks of firms investing in productive assets worldwide and trading inputs and outputs in cross-border value chains of various degrees of complexity; (ii) the majority of developing countries, including the poorest, are increasingly participating in GVCs. The share of

[24] Although in many countries Governments still remain one of the largest employers, with significant opportunities in public utilities, public infrastructure, national post offices and so on

developing countries in global value added trade increased from 20% in 1990 to 30% in 2000 to over 40% today. The role of multinationals is critical, as countries with a higher presence of FDI relative to the size of their economies tend to have a higher level of participation in GVCs and a greater relative share in global value added trade compared to their share in global exports; (iii) there appears to be a number of distinct GVC development paths for developing countries, including "*engaging*" in GVCs, "*upgrading*" along GVCs, "*leapfrogging*" and "*competing*" via GVCs. The best outcomes were found to be from increasing GVC participation and upgrading along GVCs *at the same time*. Countries that, over the last 20 years, managed to grow both their participation in GVCs and their domestic value added in exports experienced GDP per capita growth of 3.4% on average, compared to 2.2% for countries that only increased their participation in GVCs without "upgrading" their domestic value addition. These findings have important policy implications, in particular, for the manner in which countries define their investment and trade policies.

Again, **UNCTAD's World Investment Report** (2013c) also featured a theme on ***Global Value Chains: Investment and Trade for Development***. Building on the conclusions of the previous Report on GVCs in Development, the latter suggests that countries need to make a strategic choice to promote (or not) their participation in GVCs. In this regard, they must carefully balance the pros and cons of GVC participation as well as the costs and benefits of proactive policies to promote GVCs or GVC-led development strategies, in line with their specific situation and factor endowments. To do so, countries need to select and target specific GVC segments, bearing in mind that GVC participation is only one aspect of a country's overall development strategy. The Report further argues that when countries decide whether to actively support GVC participation or not, trade profiles and industrial capabilities should be evaluated. Then development paths must be strategically designed. This requires a structured approach that includes inserting GVCs in industrial development policies and facilitating GVC growth within a conducive for trade and investment environment. Some pre-requisites are however necessary, such as a solid and reliable infrastructure network, sufficient productive capacities in local firms and skills in the labour force. To mitigate the risks involved in GVC participation, the Report suggests that these efforts should take place within a strong environmental, social and governance framework, with strengthened and implementable regulations and capacity-building support to domestic industries for compliance.

2. Resource-based industrialisation: Optimising backward and forward linkages

The paradox that natural resource wealth can create real opportunities for development but often fails to breed anything else but under-development, corruption and war has become a conventional wisdom in academic debates[25]. This is based on observations that while exports of raw materials generate large fiscal revenues and cause high growth rates when commodity prices are high, large foreign exchange inflows and the unpredictable and volatile nature of commodity prices often leads to serious fiscal and macroeconomic challenges. As was observed during the global financial and economic crisis of 2008-09, resource-rich (developing) countries were more severely affected by commodity price fluctuations (partly as a result of the burst of the speculation bubble on financial markets). On average, they experienced a drop of 7 percentage points, from an average growth rate of 5% in 2008 to a negative 2% growth in 2009, which was more significant than what was observed in resource-poor emerging economies (Esanov: 2012). But evidence of the correlation between poor economic performance and natural resources is not conclusive. Recent research[26] has pointed to the fact that the challenge is not about the resources *themselves*, but rather the result of their mismanagement. Experiences of countries such as Australia, Canada, Botswana, Norway, Malaysia, the U.S or South Africa suggest that resources can be leveraged for better development outcomes.

That said, the sudden economic downfall observed in resource-rich economies during the crisis confirmed the observation that over-reliance on commodities, which are themselves highly vulnerable to various external (exogenous) shocks, need to be overcome if resource-rich economies want to be on the path of sustainable development. While rigorous fiscal management and savings (through savings funds such as sovereign wealth funds) are essential to provide a safeguard against fiscal fluctuations, it is however not sufficient to fully preserve these countries from the negative impacts of commodity price fluctuations. Diversification is therefore an imperative to overcome such challenges.

As highlighted in part one of this Study, most resource-rich economies in Africa have not benefited sufficiently from the potential economic *spillovers* that the extractive sector can create. In an attempt to change this state of affairs, recent years have witnessed a series of reforms with a view to capture more gains from extractive resources and to redistribute them in an equitable and sustainable manner. Among the numerous reforms undertaken, the *optimisation of economic linkages* has gained increasing attention and traction. Countries are focusing essentially on the development of backward, forward and lateral industrial linkages *within* the extractive sector. There is also more attention to focus on the linkages between the extractive sector and other sectors of the economy, such as agriculture and services (AEO: 2013). The question of *local content* has gained particular attention as a means to develop domestic supply chains for the mining industry by maximizing the use of local factors of production. The challenge is to determine which industrial and service sectors provide the greatest possibilities for development.

[25] The term 'resource curse' was used for the first time by R. Auty in 1993. He observed that countries with large natural resources endowments performed worse in terms of economic development and governance than countries with less resources. Sachs and Warner (1995; 2001) observed similar trends where economic dependence on oil and minerals was correlated with slow growth. Other studies found negative impacts of oil on economic performance (Smith: 2001; Kaldor, Karl and Said: 2007); civil war (Collier and Hoeffler (1998, 2000, 2002) and democratic development (Ross: 2001).

[26] Haber and Menaldo (2011), Lederman and Maloney (2007) and Dunning (2008) for instance found that natural resource wealth is contingent to other factors such as institutions and governance; Humphreys (2005) find no correlation between natural resources and civil war; Robinson et. al (2006) found that countries with accountable governments have benefited from the boom.

This section will attempt to assess policies put in place to foster the use of such linkages and to what extent these have been successful (or not). It will unpack the breadth of linkages and assess the conditions, instruments, and challenges affecting the relatively low success rate so far. Finally it will explore areas of opportunities.

2.1. Understanding linkages: definition and scope

In his seminal work on linkages, Hirschman (1981) distinguishes among three types of linkages in the extractive sector. These are:

- ***Fiscal linkages,*** which relate to resource rents collected by governments from the commodities sectors in the form of corporate and income taxes and royalties. These fiscal revenues have often been used for budgetary purposes but can potentially serve to promote industrial development in other sectors of the economy. However, Hirschman remarked that while fiscal linkages was necessary, they were not sufficient *in themselves* to be transformative as they did not provide any direction as to which sectors should receive more financial support or should be developed. He therefore proposed that fiscal linkages should be combined with *production* linkages.
- ***Production*** linkages, which include *forward or upstream* (that is, processing and transforming extractive produce into manufacturing products) and *backward or downstream* (that is, producing inputs that will be utilised in commodity production) linkages. Hirschman (1981) believed that by having a direct impact on the output structure of the extractive sector, production linkages were therefore more likely to stimulate to the development of a more diversified economy; and
- ***Consumption linkages,*** which are associated with the demand for outputs produced by other economic sectors resulting from the expenditures incurred by the extractive sector. Here again, Hirschman (1981) argued that in countries that had a weak industrial sector, the domestic economy would be unable to respond and therefore the country would need to resort to imports to meet the demand.

The structure of the petroleum and mining industries, as illustrated in figures 5 and 6, suggests the industry provides many types of linkages opportunities at various stages of industries' development and operation activities. ***Forward or downstream linkages*** offer substantial prospects to develop clusters of manufacturing and services activities around the extractive sector to bridge the industrial gap. To benefit from such linkages, supporting incentives are however necessary to create a conducive business environment and empower the private sector with the capacity to compete with other suppliers.

Figure 5: Structure of the petroleum industry

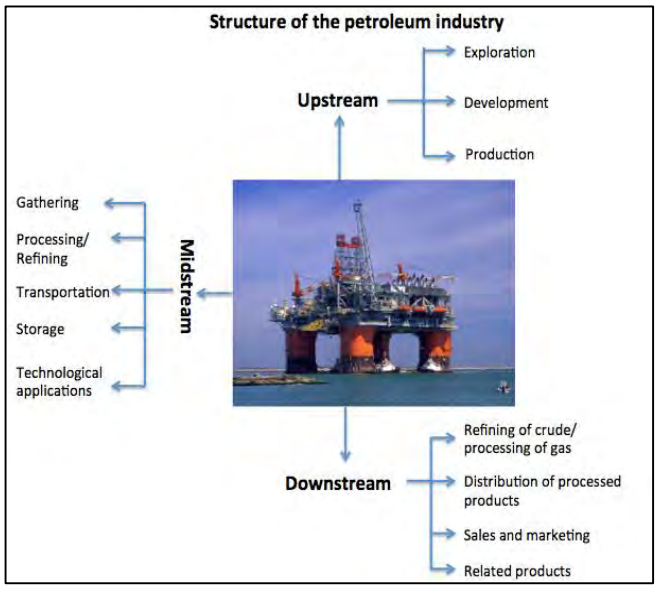
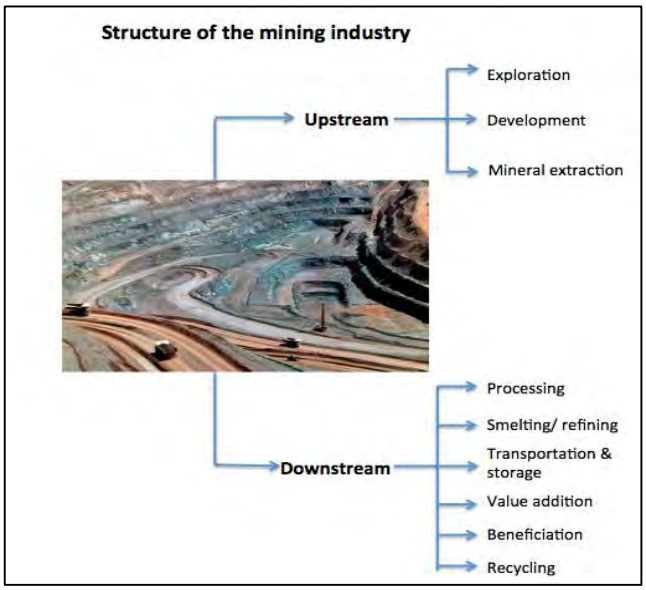


Figure 6: Structure of the mining industry



Source: Author

Backward or upstream linkages emerge as a consequence of vertical, horizontal and technological demand-supply interactions between mining producers, specialised manufacturers, input providers, agents and distributors, and service suppliers. Examples include industries that produce equipment, machinery or services for the extractive sector or industries that operate at the exploration stage. These types of linkages generally require sophisticated technologies, specific standards, technical skills and knowledge. Backward linkages present a location-specific advantage to local suppliers. Many inputs and solutions that serve the demand of the mining industry are context-specific and therefore have to be tailor-made to fit the requirements of industry. Locally based suppliers therefore have an advantage over global suppliers (Ramdoo: 2013). In South Africa, backward linkages have played a significant role in the country's industrial development. The clustering of firms involved in metal products, machinery and equipment, electrical equipment, and construction activities, the majority of which are geographically concentrated in Ekurhuleni, Gauteng, is the most tangible manifestation of this effect (Walker: 2005).

Morris et al. (2012) deepen Hirschman's analysis by broadening the scope of *production* linkages. First, within ***forward* linkages**, they make a clear distinction between the ***processing*** of commodities on the one hand and the ***beneficiation*** of commodities on the other hand. According to Morris et al., *processing* involves an *intensification of value added*, as a commodity is refined or processed before being used in other industries. The raw commodity and the end product remain however, technologically connected. By contrast, *beneficiation* is a process by which the commodity is transformed into a totally different product, generally in an unrelated manufacturing activity and technologically unrelated to the mineral sector. For example, aluminium may be transformed into sheets and plates for buses or truck fabrication or cylinder heads for car manufacturing.

Second, they add a new category of production linkages, namely ***horizontal*** linkages, understood to be a multifaceted set of linkages consisting of a network of suppliers and users in the chain, who develop capabilities to contribute to other industrial and service sectors (not necessarily related to the extractive sector). For instance, synergies can be created in services sector in the field of logistics, distribution or the transport sector. Similarly, activities in the agricultural sector can be developed or further supported to supply the mining industries' needs as well as those of the local population living around the mines.

To Hirschman and Morris' typology, this Study highlights three other types of linkages. Firstly, ***spatial linkages***, which relate to strategic use of inclusive, multi-modal and multi-functional infrastructure corridors[27]. These can become important vehicles to dis-enclave the extractive sectors and to leverage investment opportunities related to resource-based infrastructure projects to catalyse private sector investments in other economic sectors along those corridors. The objective is to promote the development of inter-related infrastructure necessary for the extractive industry in a way that the latter gives third parties access at non-discriminatory prices and therefore serves other sectors of the economy by lowering transportation and logistics costs for other businesses.

Secondly, ***knowledge linkages***, which cover skills development, R&D and technological spillovers derived from the extractive sector. Extractive industries are knowledge-intensive and accordingly need 'priming' through investment in human resource development and R&D (Jourdan et al.: 2012). Although some knowledge or technologies are specific to the mining sector, other skills (such as engineers and scientists) are more 'neutral' and can therefore be used elsewhere in other non-resource markets. Extensive support to human resource development, R&D, innovation, technological development and training are a pre-requisite to take advantage of the other minerals economic linkages opportunities in order to generate innovation, creativity and capabilities, as drivers of development. Experience in Norway and Finland has shown that there is a very strong correlation between establishing the mineral linkages sectors and strategic investment into skills and technology development.

Thirdly, ***market linkages***, which are essential to enhance access to national, regional, inter-regional and global markets. In this regard, regional integration should be further pursued, in particular, by facilitating trade across borders and by reducing the cost of transportation for landlocked countries. Similarly, access to international markets should be secured. As will be seen later in the Report, GVCs have significantly downplayed the relevance of the geographical proximity of raw materials to the place of manufacture, as a potential comparative advantage for the development of local industries. What matters today is the capacity to be cost-effective and efficient, to create a niche market and to be able to expedite products in the least time. It is equally important to identify and develop close ties to lead-firms in the network, a key determinant of the country-level position within the chain. This requires enhanced capacity to play a decisive role in international trade and multilateral agreements.

This Study focuses on ***production linkages***, building on the typology used by Morris et al. (2012). We make a distinction *within* **backward** linkages between *local content policies*, understood to be policies to stimulate the use of local factors of production or inputs for specific mines in operation and *other types of backward linkages* that may be more technologically complex to develop and/ or more capital intensive. The objective of this distinction is to find opportunities and areas of support for small and medium local enterprises that can supply certain types of goods and services. This next section is in three parts. It will analyse the question of:

1. *Local content policies*, as specific policy focus to stimulate the use of local factors of production with a view to capture maximum value from mineral production;
2. (Broader) *backward* and (other) *forward* linkages within the extractive sector, as a means to encourage *any kind* of economic activities that can be related to the extractive sector and which are likely to have spillover effects on local market growth, development of local businesses, job creation and value redistribution. These may include the (i) development of an indigenous extractive industry; (ii) the creation of domestic supply chain providers that produce capital goods and services for the mining industry (upstream linkages); and (iii) broader diversification, such as beneficiation or value addition to unprocessed minerals.

[27] See Ramdoo, I. 2015c (forthcoming)

3. *Horizontal linkages* between the mining industry and other productive sectors, notably through the optimisation of the use of resource corridors or where financial resources from the mining sector could be used to improve productivity in agriculture.

2.2. Stylized facts about the extractive sector in (African) resource-rich economies

Extractive resources have particular characteristics that differentiate them from other economic sectors Ramdoo: 2014). They are non-renewable, finite, location-specific and highly concentrated in few countries. Projects last for 15 to 25 years on average. They are highly capital-intensive, are costly to develop and involve long time lags between initial investments and actual production (see Annex 2 for life-cycle of a mine). Uses of minerals also vary widely (see Annex 3 for a taxonomy of mineral resources): some are considered as critical or strategic for industrial use (Ramdoo: 2011). Criticality is defined in economic terms, where the "supply risk" is measured, taking into account the political and economic stability of the producing country, the level of concentration of production, the potential for substitution and the recycling rate. Concentration is generally compounded by low substitutability and low recycling rates.

In addition, as Table 2 shows, the industries themselves vary in size and in activities coverage. This has a major impact on the extent to which local firms can connect to them. For instance, global giants (that is the large multinationals that have operations in several countries), which are highly vertically integrated, might offer less opportunities for local suppliers. Also, the type of industries that are involved might offer different types of opportunities.

Table 2: Global structure of the extractive industry

Type of industries	Characteristics and areas of activities	Examples of services and equipment needed
Global giants	Diversified portfolio, highly integrated	Insurance, trading services, consumables, transport services, employment agencies, market consultants, media relations, mining equipment, explosive and accessories
Senior companies	Vertical; Strategy (controllers); Commodity focus; Acquisitional	Insurance, consumables, employment agencies
Intermediate and national companies	Commodity focus; Acquisitional; Production; Investor/ controller	Insurance, mining equipment, consumables, engineering contractors, consultancies
Expansionary junior companies (large firms: assets worth > $ 100 million)	Production; Development; Investment; Exploration	Risk assessors, camp services, consultancies, computer software, metal analysis, lab services, geophysics, drill contractors, mining equipment, environmental services
Exploration junior companies (small firms: assets worth < $ 100 million)	Production; Development; Investment; Exploration	Same as above
Prospectors, private firms	Exploration	Regional promotion, legal and fiscal infrastructure consultants, airborne surveyors, mapping services pegging records

Source: Author.

The mining value chain has two main stages, as illustrated in figure 7: mining activities, composed of 3 steps, namely acquisition of licence and exploration phase, the construction phase and the mineral extraction phase. Mining companies are generally involved in this stage of the value chain, although junior and mid-scale

companies perform exploration as well while global giants and large mining companies generally concentrate on construction and extraction.

Figure 7: The mining value chain

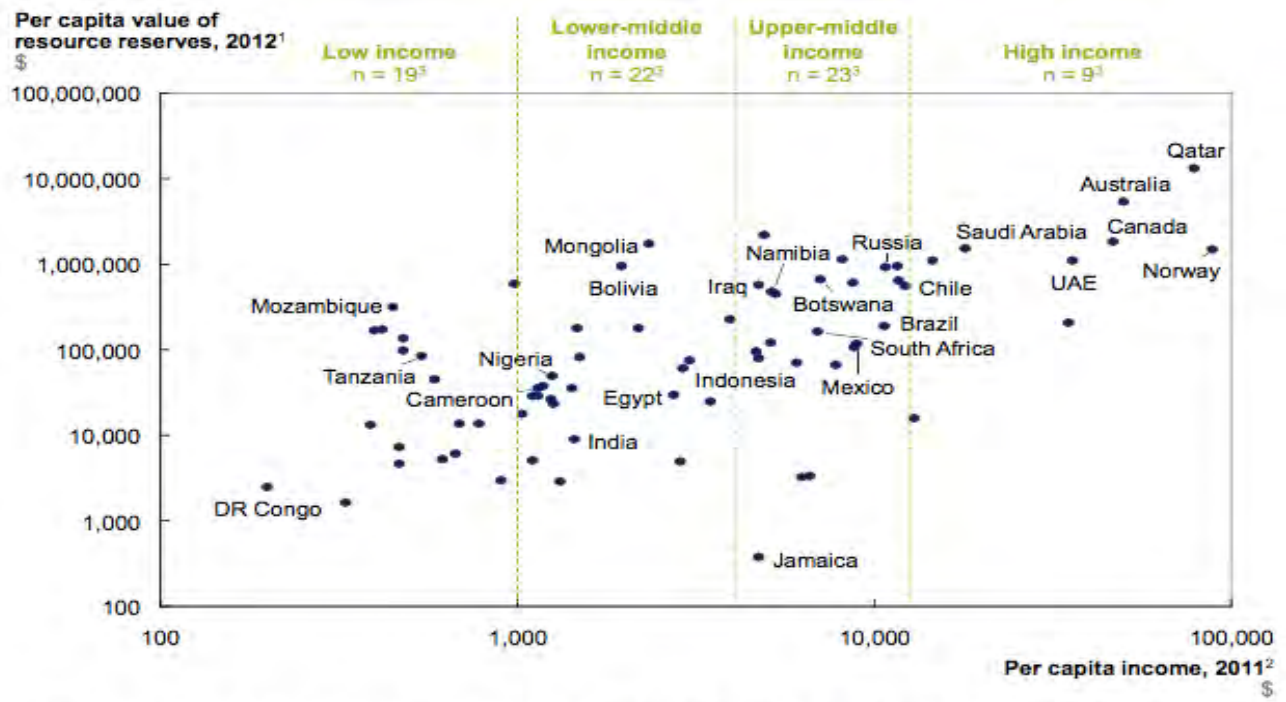
Source: Author

In terms of further *value addition*, extractive industries are generally involved in basic processing, but rarely in the further processing of intermediate products appropriate for other industrial use. This means that from the perspective of the extractive *industry*, prospects for spillovers linked to downstream linkages may be limited. For this reason, any downstream linkage strategy needs to involve other (non-extractive) industries whose core business is to beneficiate or add value. For the perspective of the country however, downstream linkages can be stimulated through well-defined industrial policies to attract other industries to use minerals as inputs for further value addition.

The governance structure of the mining value chain is essentially *producer* driven. They have carved their niche as lead firms by controlling the production know-how and by setting standards for other players in the value chain. The role of host countries' governments in the governance structure also needs to be underscored. Policy (and political) decisions are often guided by the rents they can extract from the sector.

In Africa, from an economic perspective, with only few exceptions, resource-rich economies fall under the category of low-income and lower-middle income countries as shown in Figure 8. Despite fast growth rates over the past decade, mainly as a result of the commodity price boom (see for e.g. The Economist (2011; 2013), Africa Pulse 2013), resource-rich African countries have however, generally underperformed the economies of countries that do not rely on resources to the same extent (IMF: 2015; McKinsey: 2013). This shows the structural weaknesses of resource-rich economies (as explained in section 1.2 earlier).

Figure 8: Most resource rich countries in Africa are low or lower-middle income countries



1 Includes reserves of oil, gas, iron ore, coal, copper, gold, nickel, silver, potash, and phosphate rocks (valued in current prices).
2 Per capita GNI in current prices; 2011 World Bank thresholds for categorization are $1,026 for lower-middle income, $4,036 for upper-middle income, and $12,476 for high income.
3 The sample size includes future resource-driven countries identified by the IMF (Afghanistan, Guatemala, Madagascar, São Tomé and Príncipe, Togo, and Uganda); 14 countries were excluded due to lack of data.

Source: Mckinsey 2013.

2.3. Backward linkages and local content policies in Africa

In most African *resource-based* economies, there is an increasing concern of the lack of local sourcing on the part of extractive industries. To correct this, in recent years, countries have put in place new local content policies (LCPs), with a view to stimulate the use domestically available factors of production (such as labour, locally sourced goods and services etc.) by the mining industry in order to create more value in the economy.[28]

The rationale behind the use of LCPs is two-fold. First, there is an ***economic imperative*** to address some fundamental challenges that have held back resource-rich countries for several decades. These include the necessity to overcome (i) the over-reliance on natural resources with respect to their contributions to national income, foreign exchange and exports; and (ii) to address the 'paradox of plenty', i.e. the unacceptably high prevalence of poverty and inequality amidst the prevalent resource riches. Second, there is a ***political rationale*** that is informed by the fact that governments, in resource-rich countries are increasingly put under pressure to mitigate and manage social and political risks due to rising expectations domestically for a better and more equitable distribution of wealth, in particular as these resources are non-renewable, finite and with relatively short project lifespan (15 – 25 years). It is therefore important to find an economic and political balance in seeking to increase the benefits derived from the extractive sector, while maintaining incentives for investment and competitiveness of the sector, overall.

[28] See Ramdoo I. 2015b.

While there is less and less disagreement over the rationale for using local content policies, there is however, no agreed definition of what *local* actually covers, nor is there a full consensus on what *content* should be. It is therefore necessary to unpack the concept to understand the current debate in resource-rich countries. As countries' experiences suggest, policy implications are likely to deliver different outcomes, depending on the scope and depth of the definition.

2.3.1. Local content: definition and coverage

As mentioned, there is no universal definition of what constitutes *local content.*[29] For this reason, local content is a multi-dimensional issue and the *scope and depth* of LCPs used by countries vary substantially.

LCPs necessarily entail a ***spatial dimension***[30], whose scope is different from country to country. Narrowly defined, they are generally understood as the value created in the immediate surrounding of the extractive industry in operation. In Ghana for example, Newmont gives more priority to "*local local*" companies, which are businesses situated in the vicinity of its mining operations. Similarly, in Nigeria, the Local Community Content refers to Nigeria-owned firms located in the Niger Delta region. However, more broadly defined, it refers to any stakeholder of the nationality of the resource-rich country. In many countries, 'local' partners are in reality foreign-controlled firms (Morrisey 2012; UNCTAD 2013). In other countries, linkages between multinationals and 'local firms' seem to be simple 'window-dressing' activities which, in fact, only replace the efficient imports of supplies by the MNC with less efficient imports from local entrepreneurs (Morris et al. 2011), without passing through domestic supply chains. For instance, a study of gold mining in Ghana found that foreign investors fostered few local linkages and that those linkages were mainly with local representatives of foreign supplier firms (Larsen et al. 2009). Similarly, in Tanzania it was found that 'local' procurement made by gold mines largely involved foreign suppliers and that only low value-added, low critical tasks were performed by locally controlled companies (Mjimba: 2011). Similar evidence was found in Zambia (Fessehaie: 2011), where suitcase 'local' businessmen were merely involved in importing inputs required by copper industries.

Other common characteristics have been found in countries' regulatory policies include the following:

1. Minimum ***ownership*** requirements, notably through equity participation. Ownership and management criteria also vary across countries. Companies may be considered *local* if (a) they are locally based but foreign-owned, (b) locally based and locally owned; or (c) locally owned but foreign based. In Norway for instance, ownership of a company is not considered a determining factor. Brazil today accepts foreign ownership[31], but in practice still encourages partnerships between foreign and local businesses. In Nigeria, Angola, Ghana and Uganda ownership by nationals is considered as a determinant factor to allocate licences.
2. ***Maximization of local procurement and preferences*** for local companies, through the acquisition of (a) core[32] goods and services and (b) non-core[33] goods and services. It is estimated that there are significant opportunities to *localise* supply chains through the procurement of goods and services at different stages of

[29] The World Bank has defined local content as the percentage of ownership; the African Development Bank has focused on the place of registration and the presence of nationals on the company's board and among its shareholders.

[30] Essentially for two reasons: (i) the *nature* of the industry causes the concentration of mineral extraction in a particular location; (ii) the distribution of socio-economic benefits (such as the concentration of clusters) tends to be closely linked to the geographical location of mines.

[31] The ownership requirements have evolved over time in Brazil. The Constitution of 1988 (Art. 171) classified companies as "Brazilian companies" or "Brazilian companies of national capital" and a clear distinction was made between companies incorporated in Brazil but controlled by foreign capital and companies incorporated in Brazil owned by Brazilian capital. This was however amended in the Constitutional Amendment of 1995 (No. 6), where any company incorporated in Brazil is considered as a Brazilian company, irrespective of the origin of the capital and of the nationality of shareholders. In the Mining sector however, mineral rights may only be granted to Brazilian nationals or Brazilian companies that have at least 51% equity ownership held by Brazilian companies.

[32] These refer to the goods and services that are essential for the running of mining operations.

[33] Non-core goods and services refer to products and labour that are not directly utilised by the mining industry operations. Examples include laundry services, catering services etc.

the value chain, where varying technologies and inputs are needed and used. If local companies can become competitive in providing such goods and services, this may have a significant impact for mining companies themselves, as it can reduce their operational costs. At the same time, it can provide significant business and employment opportunities for the local economy, increasing the value that can be captured locally. The experience of Norway and Malaysia, for instance show the impact of such policies. Countries like Uganda and Ghana are now following this track.

3. Local content policies may take the form of a percentage of (compulsory) ***value addition or beneficiation.*** These policies are used notably in Australia, Mongolia, Brazil, Nigeria, Zambia and more recently South Africa***.***
4. ***Local employment*** at different stages of the value chain and of different levels of competencies is another objective of LCPs. Some countries also require in addition, that mining companies support the enhancement of local capabilities, through training, skills and expertise development and transfer of know-how and technology. It is estimated that backward linkages into the supply chain have significant employment creation potential. Lundstøl et al. (2013) for instance, estimate employment effects in mining to range from a factor of one to a factor of six. In Zambia each direct job in mining firms is said to generate approximately 0.7 additional jobs at first-tier mining suppliers. In addition, five times as many jobs were created outside the mining sector through 'induced' effects (McMahon and Tracy 2012). Similar trends have been observed in Ghana, where Kapstein and Kim (2011) estimate that, for each direct mining job created, 28 indirect and induced jobs, formal as well as informal, were created in gold mining.
5. In addition to jobs, ***skills and technological transfers*** are another important dimension of local content policies. This has been particularly sought in countries like Norway in their initial stage of petroleum development. A few studies report that skills obtained by local firms through linkage collaboration with foreign mining companies have been used to enter into other industries. For example, Lorentzen (2008) cites a South African firm, which transferred skills regarding X-ray technology in the diamond industry to develop a new business in the medical industry. Similarly, AEO (2013) pointed to skills acquired by African engineering firms engaged in linkages with the mining industry that have been later used to generate new businesses in other industries.
6. Finally, given the insufficient infrastructure provision in most African countries, multi-purpose and multi-modal ***use of resource corridors*** is increasingly seen as a catalyst in support of local content development. In countries where the poor state of physical infrastructure coincides with the need for large mineral infrastructure projects, it is important to have a coherent and coordinated approach to the use of such infrastructure. In the past, mineral infrastructure was essentially uni-modal (e.g. one rail track for bulk transport with no possibility to service passengers or other cargos) unidirectional (from pit to port) and unusable by the rest of the economy. This is changing and new projects are taking into consideration the fact that this is a tremendous opportunity to address the large infrastructure deficit of resource-rich countries and to connect countries, when infrastructure have to cross borders.[34]

2.3.2. Where are the opportunities?

Before setting up an industrial strategy to capture value locally, it is necessary to have an in-depth and detailed knowledge of the resources supply chain in order to understand where the value is in terms of revenue, opportunities for businesses and potential for employment creation. This is fundamental to inform the strategic orientation a government wants to take. This can help to determine what share of that value could realistically be captured locally without harming the competitiveness of the resources sector (McKinsey: 2013).

From a *supply-side* perspective, as observed in figures 9 and 10, between 75 and 80% of opportunities to develop linkages are in the production stage (McKinsey: 2013). The two graphs highlight the activities where the extractive sectors spend the most. It illustrates where possibilities exist for local companies to capture the

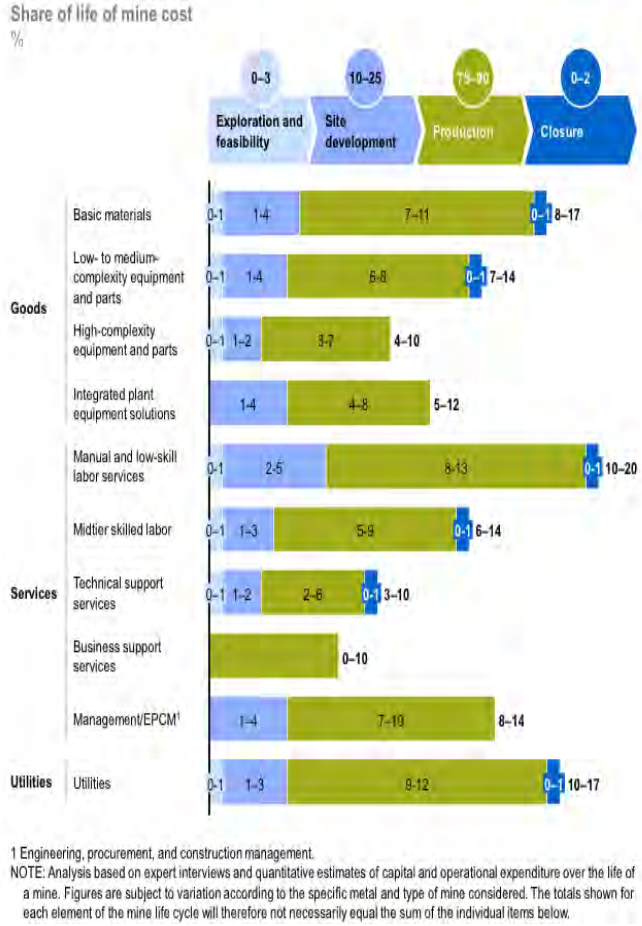
[34] See Ramdoo. I (2015c). Forthcoming.

business and to provide those goods and services, at different stages of the life of a mine from the early stage of exploration, till the mine closure.

Patterns of spending and potential opportunities in the case of oil and gas sector are different from those in the mining sector. Oil and gas are more highly capital intensive and require higher skilled labour compared to mining operations. For example, in the hydrocarbon sector, a much larger share of procurement is spent on integrated plant equipment solutions and a much lower share on manual and low-skilled labour.

A profound understanding of the phase in which extractive operations are in as well as the structure of the industry is determinant to inform businesses and governments of potential opportunities for linkages and local content development. Different types of opportunities for specific types of goods and services exist at various stages of the life-cycle of the industry. As shown in figure 9 below, the production stage offers the largest opportunities for upstream linkages and local content development as companies employ between 75 and 90% of their total spending during this phase.

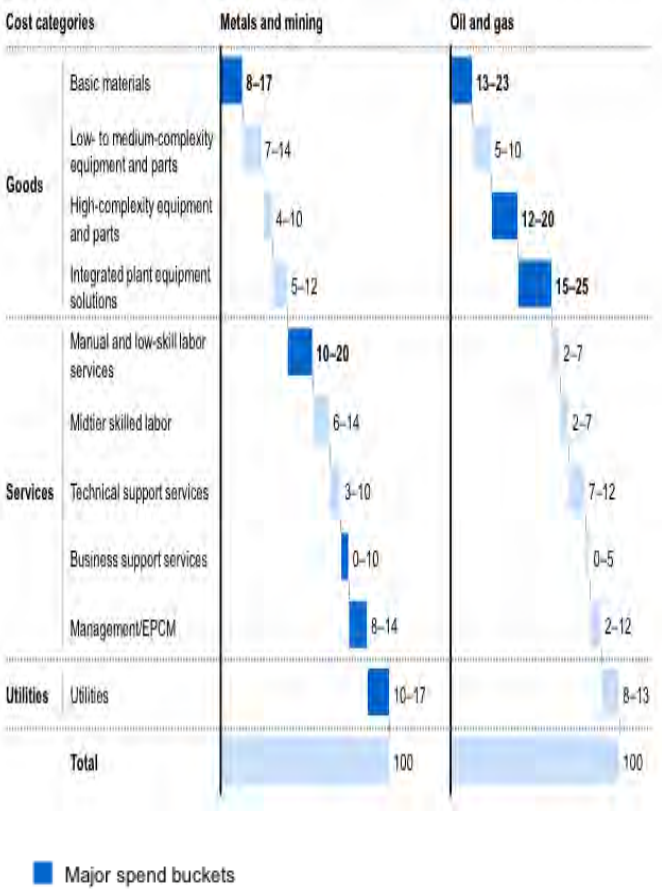
Figure 9: Percentage of mining spending by stage of production



1 Engineering, procurement, and construction management.
NOTE: Analysis based on expert interviews and quantitative estimates of capital and operational expenditure over the life of a mine. Figures are subject to variation according to the specific metal and type of mine considered. The totals shown for each element of the mine life cycle will therefore not necessarily equal the sum of the individual items below.

Source: McKinsey Global Institute Analysis 2013

Figure 10: Percentage cost breakdown by cost type



To give a specific example, table 3 illustrates how much a gold mining industry that has an estimated mine lifecycle of 50 years and produces an average of 300,000 ounces of gold per year during the operational phase may spend at each phase of its life cycle.

Table 3: Estimated gold mining life cycle expenditure over a period of 50 years

Mining life-cycle stage	No. of years	Av. expenditure	Revenue
Exploration phase	10	US$ 10 million per year	n/a
Site design and construction phase	5	US$ 200 million per year	n/a
Operation phase	20	US$ 80 million all-in costs per ounce	$1,300 per ounce
Final closure and decommissioning	5	US$ 5 per year	n/a
Post mine closure	10	US$ 1 million per year	n/a

Source: WGC, 2014.

On this basis therefore, governments can assess whether absorptive capacities exist at the domestic level and to what extent it can support companies in building their capabilities to join the supply chain. Of course, the amount of expenditure that can be captured at the domestic level varies significantly across countries as a result of a number of factors such as the type of resource, the level of industrialisation, availability of skills and the country's unique aspects such as location or proximity to international markets. It is however, observed that in countries with low levels of development and a weak industrial base, expenditure has not been captured locally. Even basic amenities are imported and outsourced.

2.3.3. Experiences in selected African resource-rich economies

It is difficult to make an overall assessment of the impact of LCPs in resource-rich countries, in part due to a lack of clear understanding of what is meant by *local content* due to insufficient empirical evidence but also because there are as many experiences as there are resource-rich countries. However, the success of LCPs depend on two fundamental conditions:

1. Local supply chain providers must be commercially viable and capable of providing competitive, quality and timely goods and services;
2. They need to create substantial value domestically, by creating employment opportunities and produce their goods and services domestically (and not simply indigenise import functions).

This section attempts to look at experiences in selected resource-rich countries in the oil and gas and the mining sectors respectively.

While policy and regulatory frameworks have defined the extent to which the extractive sector has contributed to development objectives, the combination of certain *domestic conditions*[35] and *external factors*[36] have been determinant in shaping the ultimate outcomes of local content policies. The case studies highlight the main measures taken, in what circumstances they were taken and whether these measures have lived up to the expectations or not.

[35] Domestic conditions affect the policy orientation and the mix of policies that a particular country can take at a given point in time. They are essentially a factor, *inter alia*, of (i) the economic *context* and the levels of development in the country at the time the measures are taken; (ii) the economic structure in the country, for instance more diversified economies with better integrated supply chains may have a better starting point; (iii) the consistency in monitoring the implementation of regulatory measures and the capacity to adjust in a flexible manner to the evolving reality of the sector; and (iv) the domestic political climate.

[36] External factors related to the international trade frameworks in which countries at different levels of development evolve, and the related flexibilities available to conduct certain types of policies. They determine the policy space to conduct certain policies and the capacity to respond to externally driven reforms. They are a factor of (i) the extent to which economies are resilient to the volatility of commodity prices and their capacity to respond accordingly; and (ii) the level of dependency on international financial and development partners.

Nigeria's initial *economic and political conditions*[37] at the start of its oil production[38] largely shaped the pace at which the country undertook policies to foster increased linkages with the petroleum sector. Linkages between the oil sector and the rest of the economy remain a key development challenge. Among the factors hampering the development of linkages are the scarcity of capital, skills mismatches, political tensions in the Niger Delta and insufficient policy coherence. However, Nigeria has gradually localised some important upstream industries such as fabrication and construction, well construction and completion and communications technology, where local content is relatively well developed (Oyejide and Adewuyi: 2011).

Local content policies slowly started in 1971 with the setting up of the Nigerian National Oil Corporation, which became the Nigerian National Petroleum Corporation in 1977, to promote the indigenization of the oil sector. Key initiatives were confined to the acquisition of interests in foreign oil companies and the control of acreages. Renewed impetus to boost local content however came about in the late 2000s. Main policy objectives had a broad focus on industrial development in general, with the expansion of the upstream and downstream sectors, the diversification of the sources of investment, in particular from domestic sources, the promotion of local participation and technological transfer (Gbegi D and Adebisi J: 2013). Other objectives include exploration of new oil fields, increased production and refining capacities and the mainstreaming of the oil and gas sector with other sectors of the economy. Local procurement in the oil and gas sector was particularly emphasised, with specific regulatory instruments for implementation. The other objectives are expected to be reached with the implementation of other industrial policies.

LC policies are contained in the Local Content Act of 2010[39], which sets the regulatory framework regarding local procurement in bidding and contracting processes in the oil and gas sector. In particular, the Act requires "*all regulatory authorities, operators, contractors, subcontractors, alliance partners and other entities involved in any project, operation, activity or transaction in the Nigerian oil and gas sector*" to incorporate local content as a key element of their projects. The Act is geared towards developing and improving local indigenous capacity and participation in the oil industry. Key elements of Nigeria's local content policy are:

1. Specific policies to boost *local procurement*. Companies are required to contribute 1% of the value of energy awarded contracts to a Content Development Fund to support training and business support services for Nigerians. Furthermore, a list of 23 categories of activities have been identified, which should be conducted in Nigeria with targets set at 45% by 2006 and 70% in 2010. In 2014, these were however not realised (World Bank: 2015). Finally, a Nigerian Content Monitoring Board was established in 2010 to follow the implementation of LCPs as set in the 2010 Act;

2. Tendering processes require *preferential* considerations to be given to local suppliers, when the latter have the requisite capacity to do so and provided the value of their bids does not exceed 10% of that of the lowest bidder;

[37] Despite the growing importance of the petroleum sector in Nigeria over the years, and several development policy plans, there has been little coherence and consistency in policy orientations towards harnessing the benefits of the hydrocarbon sector, beyond revenues from exports, royalties and rents. Political instability in the 1990s led to increased corruption and internal conflicts, in particular in oil rich sub-regions, constraining the capacity of the sector to contribute meaningfully to economic development. Nigeria became a member of OPEC in 1971, and subsequently one of the world leaders in oil production Today it is the third largest exporter after Algeria and more recently Angola. The sector accounts for 13.5% of GDP in 2013 and 70% of government revenue in 2011 (World Bank: 2015).

[38] Oil production began in Nigeria in 1953, a long time after an oil exploitation license had been granted to Shell/BP in 1938.

[39] Nigerian content is defined as "the quantum of composite value added to or created in the Nigerian economy by a systematic development of capacity and capabilities through the deliberate utilization of Nigerian human, material resources and services in the Nigerian oil and gas industry". A Nigerian company is defined as "a company registered under the Companies and Allied Matters Act and having not less than 51% of Nigerian shareholding".

3. *Employment* conditions, where all companies are required to employ only Nigerians in junior and intermediate positions and where they are not in a capacity to do so, are requested to submit an "employment succession plan" demonstrating how the company is expected to '*nigerianise*' such positions, within a four-year period. An exception is however contained for the retention of a maximum of 5% for management positions. Over 5,000 jobs were created for Nigerian engineers from the on-the-job training scheme.

While it is too early to assess to what extent LCPs have deepened linkages between primary sectors and industry, and have created competitive supply chain activities, evidence shows that the local supply chain is growing and expanding. Since 2010, the implementation of LCPs is estimated to have attracted $5 billion investments in the local economy, creating around 38,000 jobs (World Bank: 2015) and the share of local content in the oil industry is reported to have increased, from 3 to 5% in 1970s, to around 20% in 2004 and 39% in 2010, although below the 70% planned target for 2010 (UNCTAD: 2013). Examples include local Nigerian companies operating in upstream oil and gas assets and providing high-end drilling and engineering services to multinational oil companies. Similarly, it is estimated that out of a total contract value of $95.57 million processed between January and June 2014 alone, Nigerian content commitments represented 94.8% of total content commitments. Contracts evaluated (worth $5 billion) in the same period indicate that 61% Nigerian content levels were retained. Local assets ownership of rigs owned by Nigerians amounted to 40% of total rig count in 2014, compared to 10% before the Act (TrustAfrica: 2015).

In ***Mozambique***, significant mineral and hydrocarbon reserves present substantial opportunities wealth and prosperity opportunities, beyond fiscal revenue. The rapid growth of the extractive sector, driven by coal exports and natural gas discoveries led to the development of megaprojects. Local content is therefore seen as one key priority to provide access to employment, increase income generation and improve livelihoods of the local population. However, so far, local participation in the mining supply chain has been limited to service providers, such as engineering, civil works, environmental assessments, laboratory services, maintenance and repair, transport and logistics, and catering; and input suppliers, such as explosives and building materials (World Bank 2014). The proximity of (competitive) South Africa, where a number of large firms have their strategic operational hubs, limits to some extent the development of locally owned suppliers.

Strategies are being conceived to target *local-local*[40] and *local national*[41] populations. One of the pressing priorities is employment. Currently 81.5% of the population is employed in agriculture and 8.1% are self employed outside agriculture. The capital-intensive nature of the extractive sector provides limited scope to absorb a large share of the population. There is also limited opportunity in indirect employment in the short-term given the few existing linkages, as highlighted by the recent large investments projects. For instance, Sasol's $1.2 billion investment resulted in fewer than 700 long-term jobs and Vale's $1.7 billion investment created 900 jobs. In 2010, all megaprojects together accounted for only 3,800 jobs (Columbia: 2013).

Regarding local procurement of 'core' goods and services, such as fully assembled rigs, heavy machinery and other sophisticated monitoring equipment, the current situation is that Mozambique imports most of its inputs, due to the lack of local capacity to supply large contracts, to produce technologically complex goods, and deliver against high quality and safety standards. Non-core goods have higher prospects in the short-term. Key challenges such as access to finance for SMEs at manageable interest rates need also to be addressed.

[40] '*Local-local'* population refers to individuals who lived in the community impacted by the extractive project prior to the entry of the extractive industry.

[41] Local national refers to Mozambicans who are not from the impacted community.

Box 1: Mozambique: The case of Soradio, an SME supplier

Soradio is an SME specialised in electrical contracting, that works with the mining and agricultural value chains in Mozambique. The owner of the company built his experience of working with large international companies, his reputation and network by working in the SADC region. The company was one of the first to work with Mozal, the aluminium smelter. Over time, it made significant efforts to become certified, to comply with quality, health, and safety requirements and to work with tendering processes. Relationships with primary contractors were particularly important elements of success. Thanks to its experience with Mozal, Soradio now supplies other international companies. However, the growth of the company is limited by lack of finance, as local banks do not offer affordable credit to SMEs.

Source: World Bank, 2014.

The provisions to encourage local content have evolved as the mining and hydrocarbon sectors became more prominent. Although there is no unified *definition* of local content, the 2014 Petroleum Law and Mining Law[42] contain general provisions with rather stringent requirements to foster increasing local participation (i.e State, private sector and natural persons) in the sector. This is a departure from the previous legal framework, which contained *softer* instruments. Specific requirements regarding local employment and sourcing from local suppliers remain within the dispositions of individual contracts for mining, oil and gas exploration, extraction and production.

One of the prominent features of the Petroleum and Mining Laws of 2014 are the increasing participation of Mozambique (i.e. State, private sector and natural persons) in the extractive sector. In the *petroleum* sector, reforms are focused on the upstream and LNG sectors for companies. A greater role is foreseen for the state-owned company, ENH, with higher participation in concessions and across the value chain, notably in refining, transportation and marketing of oil and gas over time and a legal requirement for investors in exploration and production to partner with ENH. No specific target stake is mentioned. In the *mining* sector, the 2014 law focuses on downstream mineral processing in Mozambique. The state company is also required to increase its participation across the value chain, notably in refining, transportation and marketing of oil and gas. In the *mining* sector, the 2014 law also focuses on downstream mineral processing in Mozambique if economically viable[43] but it is not clear how this will be implemented or whether there will be any prohibition (like in Indonesia for example).

More stringent procurement requirements for goods and services from local suppliers were also introduced in 2014. Amongst others, they require *foreign suppliers* of services to petroleum operations to partner with local suppliers and *operators* to give preference to local goods and services, provided the latter are internationally competitive with respect to quality, delivery and price and that their costs do not exceed imports by more than 10%. This threshold however applies only to the oil and gas sector and not to the mining sector. The development of local know-how is required, through employment and technical training, with a preference for the population living in the immediate surrounding of the mines. The Laws do not, however, provide any details of the number of Mozambican workers required to be trained and employed in order to comply with this requirement.

While the extractive sectors require goods and services in the short-term, the current limitations in terms of skills and capacity of the local private sector to deliver on time, quality and competitive price is a major challenge to local content policies in Mozambique. The level of vocation and academic training remain too low[44] to achieve high quality job creation. Under these conditions, immediate prospects exist in the construction phase but limited scope in the production phase due to the shortage of appropriate and adequate industrial skills.

[42] The essence of the legal reform of 2014 was (i) to develop a clear and comprehensive legal framework to facilitate large investments in the hydrocarbon and coal sectors; (ii) to facilitate the financing of gas discoveries; (iii) to increase the benefits of its natural resources for Mozambicans; and (iv) to safeguard national interests.

[43] It is not clear how this will be implemented or whether there will be any prohibition (like in Indonesia for example).

[44] Approximately 80% of the workforce has not completed the first level of primary school. In the private sector, only 31% of the workforce has completed at least second level of primary school (Columbia: 2013).

Zambia has a long tradition of mineral production. The mining industry in Zambia attracted the bulk of investment inflows in the country, although over the years, an increasing share of FDI has accrued to the manufacturing sector (OECD: 2012), in part as a result of the privatisation of the mining industry since the 1990s. However, mining input clusters have witnessed a de-industrialisation process as a result of competition from imports and receding government support to supply chains. Indeed, the government ceased granting preferences to local suppliers in public procurements and reduced its interventions on the labour and capital markets (Fessehaie: 2012).

As a result, the copper industry contributes insufficiently to local economic development, technological innovation and skilled employment. Zambia gave a new orientation to its mining sector in 2013, when it adopted the Mineral Resources Development Policy (which is yet to be translated into a legislation). The main objectives are to integrate the mining sector in the domestic economy, notably through the promotion of local entrepreneurship, local employment, local sourcing of goods and services and higher value addition downstream and to attract domestic and foreign investment in the sector.

This is seen as important because of the current situation today. In Zambia, mining companies are reported to spend between 60 and 86% (AOE: 2013) of their expenditures on local procurement. But as shown in *figure 11*, while most of the *services*[45] from the mining companies are procured from Zambian businesses and provided by local entrepreneurs, the majority of the *goods*[46] supplied by local agents are not manufactured in Zambia, but largely imported from elsewhere indicating that local firms do not manage to take advantage of opportunities. In addition, most suppliers of goods and services (representing 80% of local procurement) are locally-based international firms, while Zambian-owned suppliers[47] represent only 4% of the value of procurement (ICMM: 2014).

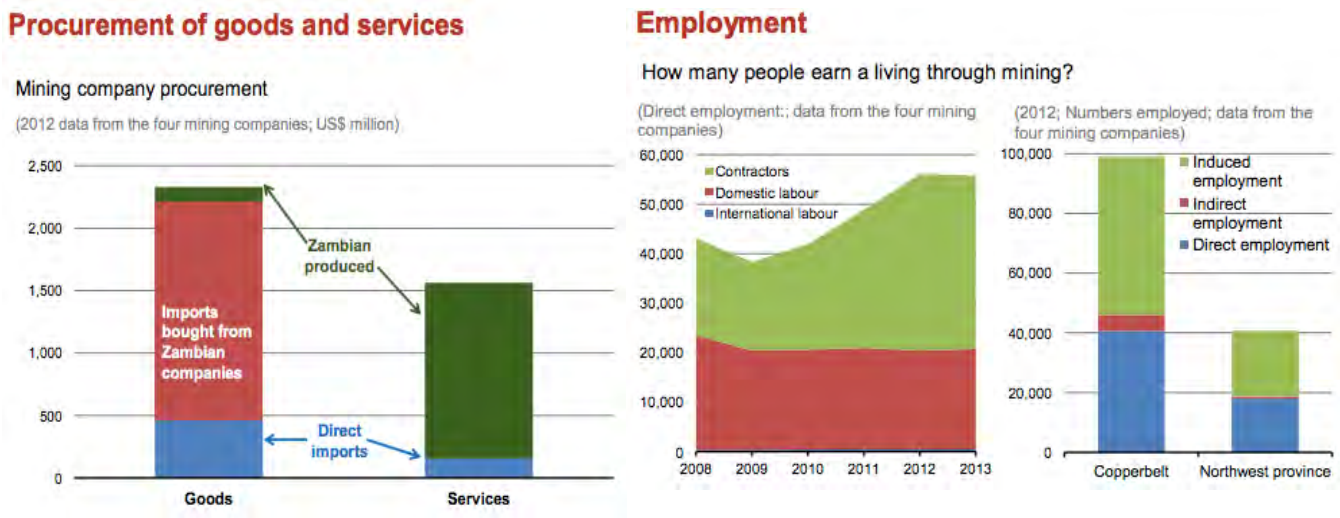
This is the result of the continuously declining competitiveness of Zambia's local supply chain over time, crippled by high costs (transport, energy, taxes), weak labour competitiveness, difficult access to credit, appreciation of the exchange rate, insufficient skills and capacity availability and inadequate government support to local entrepreneurs, etc. The weak manufacturing base in Zambia is a significant hurdle to the development of local content at present, which requires complementary policy instruments to improve business conditions. It is not clear how Zambia's overall industrial policy fits with the new mineral development policy to support efforts of the mining sector in developing local supply chains.

[45] A recent study by ICMM (2014) estimates that close to 100% of the services procured by the mining sector is of local origin since services are provided on-site, which confers a significant advantage to local suppliers.

[46] The ICMM study (2014) however estimates that in terms of goods, although the mining companies report very high figures for "domestic" procurement (around 80%), much of this (estimated at 95%) represents goods that are not manufactured in Zambia.

[47] The latter supply a variety of goods ranging from metallurgical plastic, rubber products, paint to cement, explosives and electrical cables (Mopani: 2014).

Figure 11: Zambia: procurement of goods and services and employment in the copper sector



Source: ICMM: 2014.

The new policy does not give a specific definition of local content. While specific legislation is yet to be enacted following the 2013 Policy, targeted local content legislation is however in place[48]. This requires that 'maximum preferences' be given to materials and goods made in Zambia but do not give any prescriptive targets, or clear details of what 'maximum' or 'preferences' mean. A Citizens Economic Empowerment Commission was created to promote local procurement and business linkages, including joint ventures and partnerships with Zambian companies. Similarly, regarding employment requirements, companies are expected to submit a plan, with indications of estimated staff requirements (both local and expatriates), training and the creation of a local business development programme. Again, this is not prescriptive, and it is not clear how these are being monitored and how far companies are meeting the requirements.

South Africa has a long experience in the mineral sector and has developed, over time, significant expertise in mining and mining related supply industries (upstream linkages). It counts today a number of globally competitive suppliers and has developed clusters of firms to provide world-class goods and services (Kaplan: 2011). It is estimated that 89% of spending is local. Additionally, local content of exports of mining equipment is estimated at 90% as a result of South Africa's dense network of suppliers, which are global leaders in a number of activities, such as underground locomotives, mining fans or submersible pumps as well as a number of services such as geological services, shaft sinking and turnkey new mine design and operation services (UNECA: 2013).

South Africa has placed increased focus on local content by laying out specific requirements for local content, employment, and company ownership to historically disadvantaged individuals, which companies need to report annually through a scorecard. A maturing mining sector and rising unemployment were among the main factors driving policies towards finding new economic activities to reinvigorating the economy's growth. The legal framework is quite prescriptive as non-compliance may lead to license suspension or cancellation.

The scope of local content in South Africa covers participation, in the form of ownership and employment, with a specific focus on historically disadvantaged groups. This is done through a mix of general legal instruments and specific regulations with procurement targets specifying the need for black economic empowerment, including local procurement expenditure of 40%, local consumable goods of 50%, local services of 70%, and where a

[48] They are contained in the Mines and Mineral Development Act of 2008, the Citizens Economic Empowerment Act of 2006 and Statutory Instruments of 2008.

supplier is a foreign company, the latter is required to contribute 0.5% of the amount paid by the local company to a social contribution fund.

Recent years have seen a dual policy orientation, with measures to continue to support upstream supply chains while at the same time stimulating downstream beneficiation. Downstream beneficiation policies are featured in the broader industrial policy framework, with an identified ten commodities[49] and five value chains[50]. This requires other complementary efforts to address other challenges, such infrastructure, high energy prices, skills shortages and declining research-industry linkages.

2.3.4. Experience in non-African resource rich countries

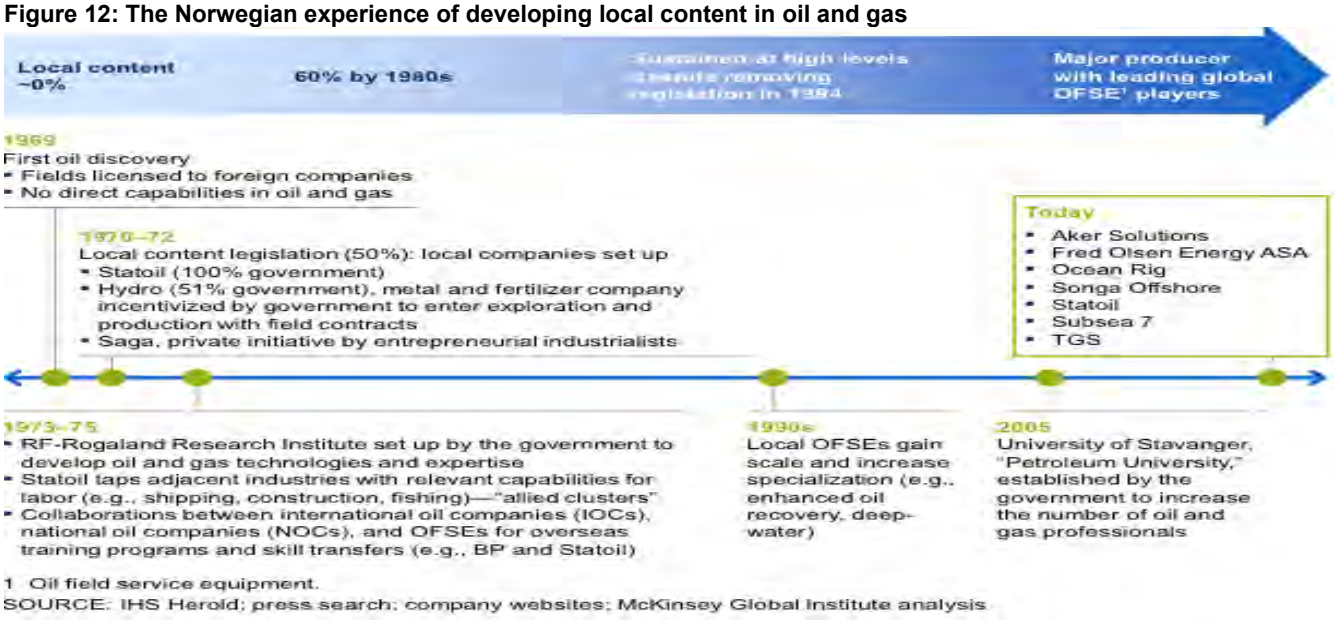
Increasing economic benefits from the extractive industry has been a key priority in a number of developed countries that built their economies on the back of natural resources. For instance, in the 1970's, the UK set up an innovative monitoring system for local content under the Offshore Suppliers Office and introduced reporting and auditing procedures to monitor purchases made by oil companies (Klueh et al: 2007). Local content policies ranged from the stricter (see case of Norway below), to the most liberal as in Australia where no local content policy is in place (and this is explicitly mentioned by the authorities), to systems in Brazil and Malaysia where state interventions largely shaped the development of the industry.

Norway is often cited as the poster boy of best practice when it comes to the overall management of its hydrocarbon resources. Well-designed and implemented local content policies have transformed the economy from a fisheries-based economy, with no expertise in the petroleum sector and insignificant local content, to a highly competitive producer of various types of oil-field services and equipment. It managed to stimulate the creation of a number of world-class global companies that are today operating worldwide (McKinsey: 2013). Today, the domestic supply chain provides between 50% to 60% of capital inputs and 80% operational and maintenance inputs. It employs 5% of labour and exports 46% of its sales abroad (Word Bank: 2012). The *economic and political preconditions* (well governed economy, strong institutions, good macroeconomic conditions) in Norway at the time of oil discoveries in the 1960s and the *policy orientation* (outward oriented economy, services oriented, creation of fiscal buffers to address cyclicality) taken by the Government were central to the success of its policies (figure 12).

[49] There are chromium, coal and uranium, nickel, manganese, diamonds, platinum, gold, titanium, iron-ore and vanadium

[50] These are energy, iron and steel, pigment and titanium, autocatalytic converters and diesel particulate filters and jewellery fabrication.

Figure 12: The Norwegian experience of developing local content in oil and gas



Source: McKinsey: 2013.

Norway undertook a *four-pronged* approach to foster local content, all supported by specific industrial policies and intensive knowledge and capabilities building:

1. *Setting up clear regulations, specific focus on upstream supply chain linkages with clear targets and sunset clauses*. At the beginning of exploitation, multinational companies were required to give preferences to Norwegian firms, provided they were competitive on the basis of price, quality and delivery. This measure was temporary and based on performance of companies. It was later relaxed, when companies attained the objective of being competitive enough to be able to thrive on their own.
2. *Building capability and developing knowledge* was a key priority. This was intensively supported by public investment and government subsidies in research and development (R&D) to upgrade the capabilities of local service suppliers and support industrial clusters. Statoil trained over 80,000 people since it was established in the 1970s (Jourdan et al. 2012).
3. *Diversification* to encourage linkages[51] to the petroleum industry. Today, Norwegian oil field services companies are among world-class industries in the global oil and gas sector.
4. *Strategic collaborative partnerships* with private companies, in particular multinationals, to develop technology and acquire skills[52]. Despite the fact that the sector was essentially developed by the state-owned company Statoil, Norway encouraged strong partnerships to allow Statoil and other Norwegian private service suppliers to extend their operations abroad and become global companies and suppliers of high-tech services.

Since oil extraction started in the late 1960s, ***Brazil*** has put in place a series of policies to develop its hydrocarbon sector. The *economic and political conditions* as well as its previous *industrial experience* had given Brazil a basis on which to define the structure of this new sector[53]. The Brazilian approach to foster the development of local suppliers and to establish itself as a world-class hydrocarbon sector include:

51 Sectors such as construction and shipping emerged.
52 Technology transfer and the requirement to conduct at least 50% of the research for technology in partnership with local institutions were legal obligations.
53 Like other Latin American economies, Brazil conducted import substitution industrialisation (ISI) policies with strong emphasis on self-sufficiency (a goal which was never fully met) in petroleum products. The ISI strategy met with numerous obstacles and was subsequently reversed. However, it has set the base and created strong local content capacity.

1. *Targeted regulatory approach*, where a specific percentage of state participation is required to obtain production licences. Explicit local content targets are set for onshore projects (70 %), for offshore in shallow water (51 %) and for deep water (37 %) (WTI: 2013). Foreign companies are also required to contribute to R&D and to technological transfer in order to obtain their licences. Penalties are applied for non-compliance.
2. The creation of a *suppliers' development programme*, with a particular emphasis on small and medium enterprises (SMEs). Key elements included capacity support and training, identifying the requirements of the industry with the potential of SMEs and facilitating their interactions with the oil and gas sector (World Bank: 2015).
3. *Strategic collaborative partnerships*, through licensing agreements with multinationals to allow local firms to develop advanced technologies, promote national suppliers and diversify into other industrial activities such as petrochemicals, fertilizers and distribution. A database of local suppliers was created to facilitate business linkages.
4. *Successful restructuring,* which increased local supply from 57 % to 75 % between 2003 and 2008. (WB: 2012). After 1997, Petrobras[54] underwent a profound restructuring process to become a globally competitive player, moving from complete monopoly on the supply of goods and services to one where contractors were required to give preference to local suppliers *only if* the latter were able to compete on the basis of price and quality with foreign suppliers.

More generally, local content policies have encouraged specific phases of (global) production processes to be localised in Brazil, through strong linkages between international companies and local companies with a view to promote vertical business development. Foreign companies were not just 'allies' in local content policies. They became even springboards for economic and technological development for other parts of the supply chain.

Malaysia managed its economic transformation from a low-income country in the 1970s to an upper-middle income country, in part, thanks to its strategy to harness the benefits of its oil sector. Its strategy towards local content development in the oil sector was developed within the context of its overall export-oriented industrialisation (EOI) policy. Policies were supported by strong institutions and by its open market economy. The primary objective was to ensure a balance between the expansion of its petroleum sector with a focus on a global outreach given the small domestic market for petroleum, while maintaining the overall attractiveness of its export base, which was focused on non-oil industrialized products. LCPs were essentially conducted through the strong national champion, the state-owned oil company, Petronas. It built *strategic partnerships* with international firms such as ExxonMobil and Shell and secured sourcing of equipment, facilities and services locally and employment of suitable and qualified local personnel through contracts negotiated with production-sharing contract (PSC) holders in Malaysia. The partnerships also supported the development the technology, skills and capabilities.

Although it has not always been the case in the past, ***Chile*** today does not have a specific policy nor does it have set target regulations regarding local content. It has a long history in the mining sector and has established a world class and competitive suppliers base. Its mining sector is regulated by the Mining Law of 1990, which has changed little over time and whose objective is to guarantee the security and property rights of investors. Strong institutions and conditions of macroeconomic stability and fiscal prudence[55] were fundamental in the way the copper sector, including local content development, were managed over time. Chile's approach to local content

[54] Until the 1990s, the national oil company Petrobras benefited from substantial market protection under ISI policies and became the sole developer of all oil and gas in Brazil.

[55] Chile put in place two main policies to maintain fiscal prudence: (i) a budget structural surplus rule and (ii) the establishment of reserve funds. This objective is to make the evolution of public expenditure independent from the short-term copper price. The Ministry of Finance established the structural fiscal surplus of 1% of GDP in 2001, which was subsequently reduced to 0.5% in 2008.

evolved over time from a regulatory to a pragmatic one, with a focus on the development of world-class suppliers and the development of innovation capacity, through the following policies:

1. *Export-driven policy supported by incentives* for FDI, through favourable tax and fiscal incentives, with limited recourse to explicit market interventions.
2. *Addressing information asymmetry* through information sharing, suppliers' registration and certification, quality improvement and the development of world-class suppliers. The objective was to develop exporters' capabilities and to build strategic partnerships among mining companies.
3. *Strategic role for CODELCO and partnerships*: the state-owned company CODELCO played an important role in supporting local suppliers and creating mining clusters. It is estimated to purchase 90% of its required inputs in goods and services from national suppliers.
4. *Private-led initiatives*: Chile has encouraged company-driven policies, but based on location and competitiveness. To that effect, the private sector has played a crucial role in the development of local suppliers in GVCS, with financial support, to enable suppliers to compete. It encouraged collaborative efforts among mining companies and helped identify gaps in the local supply base and facilitated foreign investments to address these challenges. As a result, mining companies have increasingly sourced their supply of goods and services from local providers[56], as in the case of BHP Spence Mine reported to purchase 86% of its inputs locally in 2008, of which 35% originated from the geographical location of extraction (WB: 2012).

2.3.5. Private-led initiatives and collaborative partnerships

Over time, extractive industries have developed their own initiatives to upscale local sourcing, in part, because it makes business sense to ensure a reliable supply of skilled and local labour and to have cost effective and sustainable supply of inputs. Also, it is a way of building good relationships with local stakeholders and hence an effective way to obtain a social license to operate. Some successful case stories are highlighted in this section, pointing to initiatives that were either entirely private-led or part of a broader collaborative effort among several industries or led by industries in partnership with government institutions, research organisations or development partners.

In 2008, a world-class supplier programme[57] was set up[58] in *Chile* in an attempt to stimulate the emergence of reliable and competitive local suppliers and build a knowledge based mining sector, as it became necessary to innovate to stay globally competitive as a result of the increasing costs of production due to declining ore grades and high costs of utilities (namely water and energy). This programme is distinctive on several fronts. First, the company identified and presented an *operational challenge* to suppliers instead of simply requesting existing, standardised solutions. This created a *demand* for innovation, which built a better alignment with market needs and improved the use of resources. Secondly, since it was demand driven, it created a secure and tailor-made market for the suppliers. Then, it caused changes to procurement processes within the company to allow suppliers to join and provide various segments of the value chain.

In ***Ghana***, inspired by its experience in Peru, the Ahafo Linkages Programme was established by Newmont, a leading gold company in 2007, in partnership with the International Financial Corporation (IFC), a development

[56] However, it is important to highlight that due to inconsistency in measuring local procurement among companies and no legal definition, goods and services bought from local agents that imported them through sales, might at times be counted as locally sourced.

[57] Initially launched by BHP Billiton and later joined by CODELCO, the programme focuses on various segments of Chile's mining cluster, which includes more than 3000 companies, located in Central and Northern Chile. Eight large mining companies (Xstrata Copper, Barrick Zaldívar, Minera Meridian, Minera Esperanza, Minera El Tesoro, Escondida, Spence and Anglo American Chile) are involved together with COLDELCO. The Production Development Corporation (CORFO) joined the initiative in 2011.

[58] See http://sharedvalue.org/groups/bhp-billiton-and-codelco-foster-innovation-supply-chain#_edn3

partner[59] (*see Box 2 in Section 2.5*). The programme is seen as successful because it led to the creation an ecosystem of business opportunities around the mining area, not only for potential suppliers but also in non-mining activities, such as agriculture.

In ***Kyrgyz Republic***, the Centerra's Kumtor gold mine is the most important private sector purchaser of goods and services from local sources, with about $ 68 million procured domestically in 2013[60]. As far as possible, the company gives priority to Kyrgyz firms and in particular to those located in the surrounding areas of the mine. Local procurement includes food supplies for the mine camp, safety clothes and steel grinding balls for the processing the ore and extraction of the gold. All the food for the mine site is purchased from companies within the Kyrgyz Republic. For example, a farm producing eggs, started in 2001 with 7 workers, producing 400,000 eggs a year from 1,000 chickens. In 2013, the business had grown, and employs 20 workers, which produce over 3 million eggs a year from 12,000 chickens.[61] Similarly, a garment industry was set up by a female entrepreneur to supply safety clothes for the 2,700 miners. In 2014, the company employed 120 workers and had diversified its customer base beyond the mine, so that the mine only represent 30% of the business of the company.

In ***Madagascar***, the Ambatovy nickel and cobalt mine established a local supplier network through the Ambatovy Local Business Initiative, which follows a "buy locally, hire locally policy" with a view to maximise local content. Some 2,000 local suppliers are registered in a database, which are then used by the mining company and its suppliers (AOE: 2013). The initiative supports local companies by providing training regarding project management, accountability, leadership, health and safety and quality control amongst others. By 2010, Ambatovy had placed purchase orders from more than 500 SMEs, for an estimated $1.2 billion. The agriculture sector has also been linked to the mine, with purchases from local farmers to supply catering facilities and with the sharing of mining infrastructure (AOE: 2013).

Mozambique has some track record of collaborative partnerships with the private sector. Government has partnered with private companies and with international financial partners such as the IFC to experiment and scale-up business linkage programs. The Mozal Aluminium Smelter project launched in 2002 was designed and implemented in partnership with a range of stakeholders[62] to stimulate and strengthen local business capacities and enable small enterprises to compete for contracts at different stages of the Mozal's process, from construction to on-going operation. Similar initiatives are also being conduced with Vale, Rio Tinto, Anadarko, and ENI[63]. Regarding training of staff, Rio Tinto and Vale have financed the development of a vocational training school in Tete to fit the needs of the coal industry. Similarly, Anadarko has partnered with the University of Eduardo Mondlane to support engineering and geoscience programmes to build local capabilities for the hydrocarbon sector.

In ***Russia***, the gold company Kinross' Kupol supported the development of a skilled workforce as mining operations are located 200 kilometres from the nearest town in the North Eastern part of Russia. The mine runs an on-site training centre to help the local population acquire skills to work with modern technology. Successful trainees become accredited professionals and are recognised by Russian Department of Education. Currently, the centre provides 36 types of training in such careers as underground miner and haul truck driver. Since the centre opened in 2008, approximately 2,000 people have been trained and Kinross has issued more than 860 certificates to employees, including 67 local residents (WGC: 2014).

---

59 It was a three-year linkages programme.
60 Source: http://www.kumtor.kg/en/local-procurement-in-figures/
61 Ibid.
62 These are BHP Billiton, IFC's Africa Project Development Facility and the Mozambican Investment Promotion Centre.
63 USAID, Mozambique Business Linkages Review: An Overview of Key Experiences, Issues and Lessons. USAID SPEED. October 2012

In ***South Africa***, Anglo American launched a Small Business Initiative (Zimele) in 1989 to provide business opportunities to create commercially viable and sustainable SMEs in particular for historically disadvantaged population and hence contribute to the sustainable development of mining communities. The programme supports SMEs by providing finance, skills transfer and technical assistance. Regarding local content, Anglo's needs are identified and tenders are given to SMEs accompanied by training and rapid payments. It is reported that between 2008 and 2014, Zimele has concluded 2,358 transactions to support 1,619 companies and has provided 921 million Rands in funding for businesses that employed 30,092 people.[64]

2.3.6. Key lessons from experiences with local content policies

Firstly, local content policies have been more successful when the *objectives* of the policies were clearly defined and when they were implemented and monitored. In these cases, LCPs stimulated the creation of fully capable and competitive local suppliers, and avoided becoming obstacles to the development of the extractive sector. Pragmatic LCPs worked well in Norway, Chile, Malaysia or in upstream sectors in South Africa.

Secondly, while functioning and effective LCPs require a *holistic* approach to industrial policy, they also need *well-focused* strategies that can be realistically implemented by the extractive sector. They also require a good policy mix between regulations that are *flexible* enough and capable of being adaptive to changing situation (as in Norway or Brazil) and they need to be able to assume some potentially politically difficult trade-offs. For example, Petrobras in Brazil skimmed 20,000 jobs (one third of its headcounts during the restructuring process in 1997) but gained in efficiency and sophistication (WTI: 2013).

Thirdly, successful experiences suggest that it is important to ensure a *balance* between (mandatory) regulatory measures necessary to achieve certain policy objectives and the importance of safeguarding the competitiveness of the industry. Countries were particularly successful when local content policies were conducted through strategic collaborative partnerships with companies and where these addressed their core businesses.

Fourthly, while *protectionist policies* can work, but they should be temporary, performance-based and should phase out as industries become competitive. Further, horizontal supportive policies to address supply-side constraints are necessary. The case of Brazil, Malaysia, Chile and Norway illustrate the importance of adapting industrial and trade policies with competitiveness of industries.

Finally, the importance of innovation, research and development, upgrading capabilities and technological transfer should not be underestimated. These are essential complementary policies to build competitive local suppliers and efficient providers.

2.4. Downstream linkages: Africa's missing links

Research on the extent of downstream (or forward) linkages in Africa (Morrissey: 2012, Morris et al. 2012; UNCTAD. 2013) reveal that while the extractive sector has been a large receiver of FDI and has contributed to high growth rates, the latter has not been able to create sustainable downstream value chains or linkages with other sectors of the economy. Several reasons account for this. First, all minerals do not offer the same opportunities for downstream linkages. In some cases, value addition to the next stage of processing is not very high and proximity to the mine site is not a critical factor. Therefore, investors are guided by cost effectiveness of production (labour and energy for instance) and existing global capacity. In other cases, high costs of transport (for bulk ores for instance) may on the contrary, encourage local "concentration", through further processing.

[64] Source: http://southafrica.angloamerican.com/our-difference/zimele-enterprise-development.aspx

Second, the transformation of raw minerals is often a capital and knowledge intensive process: insufficient availability of complex technologies, skills deficits and/or mismatches and the limited absorptive capacity of local industries have been among the most important hurdles. Furthermore, processing industries are also intensive in energy and infrastructure use, which are often costly, unreliable and largely insufficient in many African countries. Finally, the business environment in many African resource-rich countries needs to be significantly improved to attract downstream processing activities.

Downstream linkages policies can be addressed from two angles: (i) a ***supply-side;*** and (ii) a ***demand-side*** angle. On the *supply side*, downstream strategies can be developed based on the mineral endowments that a particular countries has. The Government may decide to add value on its raw materials rather than export unprocessed products. Indonesia for example, is pursuing this strategy. The second approach, which takes a *demand-driven* perspective, identifies which mineral inputs the country needs to satisfy its economic transformation objectives, such as job creation, manufacturing, energy or infrastructure needs, and then develops its downstream linkages strategy, that is cost-effective and that can supply a domestic market for such products.

The supply-side strategy has caught a lot of (political) attention in recent years, fuelled by the frustration that African countries cannot continue to export raw materials forever, but needs instead to add value at home. Countries have used measures such as export restrictions, bans and other dis-incentives, in an attempt to stimulate or force companies to add value locally. This has led to mixed results, at best. Whether a country is guided by demand or supply objectives, this is likely to have significant implications on the shape of its industrialisation process.

Despite the low level of existing downstream linkages, evidence seems to suggest that there is significant (short-, medium- and long-term) ***potential*** to leverage different types of linkages in many extractive sectors (Morris et al., 2012). Recent studies and policy debates in Africa suggest that linkages in extractives may be in the process of becoming more important and, if well designed and implemented, may lead to significant business and employment opportunities, as well as potential for skills upgrading and technological transfer. However, it is understood that such policies will only occur under certain conditions, namely if institutions are strong, policies are adaptive, flexible, sustained and implemented. The section below highlights some experiences from selected countries that have succeeded or where potential exist to further develop downstream linkages. While these experiences have interesting lessons for other countries, they nevertheless remain country-specific.

2.4.1. Experiences from selected countries

After a first (failed) trial to develop a cutting and polishing diamond industry in the early 1980s[65], ***Botswana*** established a new policy in partnership with DeBeers in 2005 to create a viable and competitive cutting and polishing industry. Sixteen companies were selected to establish themselves in Botswana and in 2008, a Diamond Trading Company was established to sort and value diamond production and to supply diamonds to the cutting and polishing companies on the condition that they would hire and train local staff to perform the job. Three thousand jobs were created (See Grynberg: 2014).

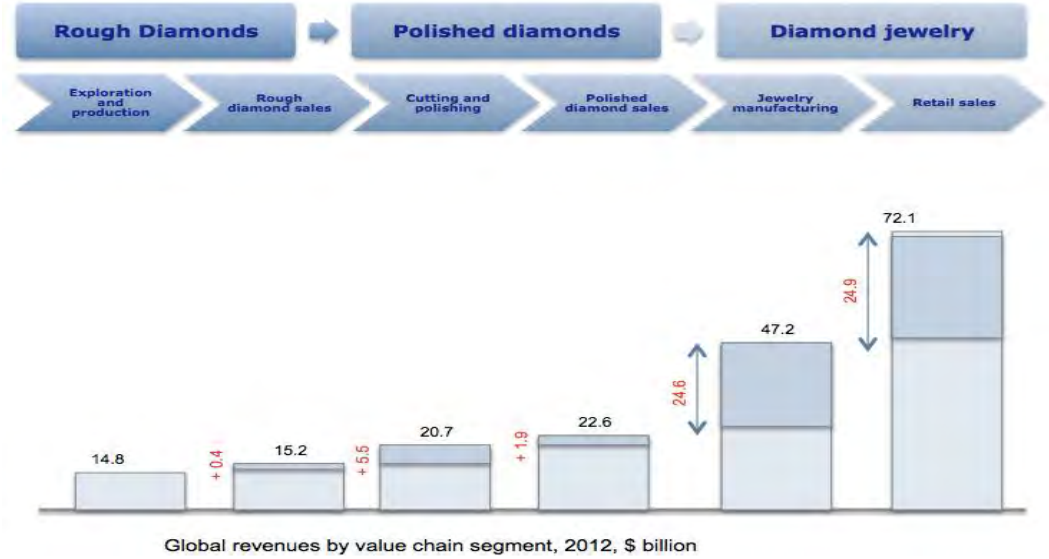
In a second step in its beneficiation strategy, Botswana convinced DeBeers to move its aggregation activities from London to Botswana in 2013, which involved the mixing of all of DeBeers supply of diamonds (regardless of

[65] In the 1980's the Government of Botswana wanted to promote the cutting and polishing of diamond in order to create more jobs and to diversify the economy. At the time, DeBeers did not support the policy and argued that this would not be a viable economic policy. Three companies were nevertheless set up between 1980 and 1990 but none of them managed to stay profitable. In 2005, when DeBeers' 25 years mining license was due to be renewed, the Government insisted that DeBeers would support Botswana in setting up cutting and polishing industries. The main bargaining power of the Government resided in the fact that DeBeers relied on its 50-50 joint venture with Debswana, the local supplier which provided 60% of DeBeers global supply of rough diamonds.

origin) into specific lots that met the demand of the latter's clients. The relocation of aggregation was expected to create additional spill over effects, notably in the financial services sector, transport and hotel industry as customers would have to move to Botswana to purchase their diamonds from DeBeers.

While the policy seems to be working quite well for the moment, it is still too early to assess to what extent the cutting and polishing industry matched the objectives of government to create more value and jobs locally and to stimulate other economic linkages. Higher-level value addition still takes place in other countries that are not even diamond mining countries (the world's major diamond cutters and polishers, India and Israel do not mine diamonds). However, over time, these countries have perfected diamond cutting and polishing skills and have built networks with producers and markets. They have become the centres of the high-end diamond value chain, are able to produce cut stones at the lowest cost (UNECA: 2015a). Nevertheless, one of the success factors resides in Botswana making a smart move to specialise in mid-level quality diamonds, compared to Belgium or Israel, that specialise in the up-market segment comprising large and more valuable stones or India and China that specialise in low-quality diamonds. The main challenge however remains labour costs, compared to China and India, which are cheaper (although they do not compete in the same market). But given the market specialisation (mid-value) this might not be a key factor after all.

Figure 13: Value addition in the diamond value chain



Source: Adapted from UNECA, 2015

As shown in figure 13, Botswana can still pursue its downstream linkages strategy as more significant value can still be captured by deepening the linkages, in particular in jewellery manufacturing and retail sales. The rising middle-class in many emerging African economies represent a significant potential market opportunity for jewellery.

Most of ***Zambia***'s copper is exported in refined forms. In recent years, Zambia attracted significant investments to increase its production capacity, notably in smelting.[66] Some downstream manufacturing linkages also exist in activities such as semi-fabricates[67] manufactures. Zambia produces copper wires, plates and sheets for the local and exports to regional markets, essentially to South Africa, the largest regional market, but also to East Africa, in particular to Kenya and Tanzania (Fessehaie: 2014). The competitiveness of downstream processing industries in

[66] Two new smelters were recently constructed by a Chinese and Indian firm respectively. A Swiss Canadian firm invested in an existing smelter to make it the largest copper smelter in Africa, and 5th largest worldwide.

[67] Semi-fabricates are the first stage of processing for refined copper and are used in the construction and manufacturing sectors.

the copper sector is determined by labour costs and access to infrastructure. High costs of transport are a key challenge to the sector.

The regional market presents important avenues for Zambia's industrial strategy. Zambia's internal market may be small, but the copper belt, and in particular, industries in DR Congo represent a potential market for Zambia to position itself as a regional hub to supply certain goods and services. South Africa is another key market for Zambia.

Nigeria is an interesting case. Now Sub-Saharan Africa's largest economy, the country is highly dependent on oil exports and on fiscal revenues derived from the sector (oil represents 90% of total exports and 75% fiscal revenues). Yet, as figures 14 and 15 show, 86% of its GDP is generated outside the hydrocarbon sector, notably in services and in agriculture, which is the single largest sector, with a share of 22% of GDP in 2013. Even when compared with other major oil-producing developing economies (figure 17), Nigeria's hydrocarbon sector represents a relatively small share of GDP – in fact when the economy was re-based, it was found that the share of resource sector fell from 33% to 14% of GDP (McKinsey: 2014).

Figure 14: Sectoral contribution to nominal GDP

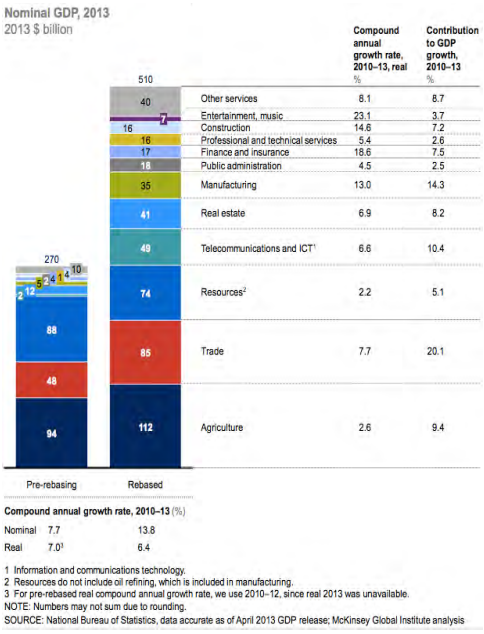
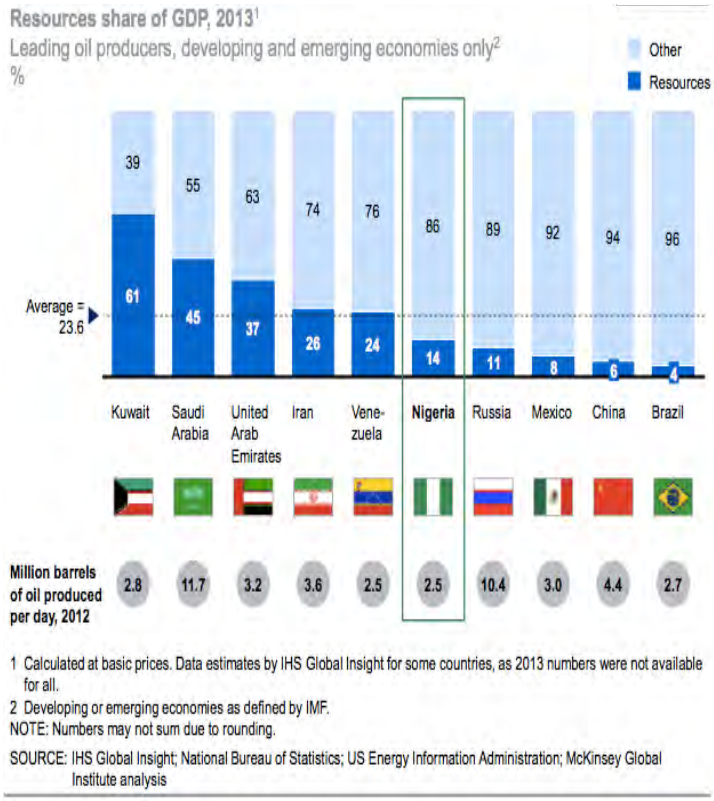


Figure 15: Nigeria's share of resources, compared



Source: McKinsey, 2014.

Nigeria's industrial sector is essentially driven by sectors involved in regional processing and in energy and resource-intensive sub-sectors, accounting in total for 92% of industries. These industries are however not labour intensive or innovative-driven (McKinsey, 2014). In addition, overall, the manufacturing sector is not very well developed (about 7% of GDP in 2013) despite high growth rates in the last few years (between 2010 and 2013, output rose by 13%).

To further diversify the economic base; in 2014, a National Industrial Revolution Plan (NIRP) was launched to accelerate growth in industries where Nigeria has comparative and competitive advantages. The NIRP identified

six priority areas, namely palm oil, automobile assembly, textiles, petrochemicals, plastics and rubber and basic metals. This type of policy was successful in the past to establish a strong cement industry (See box 2).

Box 2: How Nigeria built its cement industry with a regional focus

Given the increasing demand for cement resulting from rapid urbanisation, infrastructure development and industrialisation, and given the difficulty to match supply, in 2002, the Nigerian government adopted and implemented a 'backward integration policy'. This policy regulated imports of cement, by giving import licenses (for a limited period of time) only to importers who had the capacity and were able to demonstrate they would build factories to produce cement locally, with domestic inputs (Nigeria has large deposits of limestone and gypsum, the core inputs in cement manufacturing). Incentives were given to local companies, such as VAT and custom duty waiver for importation of cement production equipment.

The implementation of the policy resulted in the emergence of local players that also became important regional players in cement manufacturing in Africa. Example includes Dangote Cement company that even managed to overtake Lafarge in the region, to become the largest cement producer in Nigeria and in Africa. Furthermore, as a result, the capacity of cement production in Nigeria increased substantially, from five million metric tonnes in 2000 to 28.5 million metric tonnes in 2013. Imports of cement decreased from 77% of the market in 2003 to 10% in 2012 (McKinsey, 2014). Some challenges still need to be addressed. For instance, weaknesses in the power and transportation infrastructure have to some extent affected the competitiveness of the industry and therefore still making the sector very sensitive to foreign competition.

Source: McKinsey 2014; Elijah, 2014.

In addition to promoting those specific sectors, the NIRP has set up plans to improve the overall competitiveness of the manufacturing sector by improving industrial infrastructure and skills. In particular, the plan aims at increasing investment in technology and innovation, improved product standards, better access to finance, and the setting up of a more conducive investment climate.

With regards to the *oil sector*, Nigeria struggled to develop downstream linkages. Supply firms are concentrated in processing and marketing of petroleum products. Most companies are locally owned and foreign ownership is concentrated in the more capital and technology intensive activities such as manufacturing (UNECA: 2013). Oil processing and marketing companies source their inputs from a combination of local suppliers (30% of total procurement) and importing agents (40–45% of total procurement). The performance of downstream industries has however been quite erratic. The sector has been constrained by the underperformance of its three existing refineries, which have produced at minimal capacities, and suffered from governance challenges such as corruption, lack of transparency and direct government interference. As a result, Nigeria has imported a substantial amount of refined petroleum products for domestic consumption.

Nigeria's *gas resources* also offer significant investment opportunities for downstream linkages notably for domestic purposes and to supply the regional market. Opportunities exist in the energy sector, to significantly increase supply to power sector, in gas-based industrialisation, notably in the manufacturing of fertilizers and petrochemicals and to position Nigeria as regional hub for gas-based industry and for high value exports.

Over the last forty years, ***Malaysia*** managed successfully to diversify its economic base from an agricultural economy, primary commodities and dependent on exports of agricultural commodities and tin at the time of independence to an economy that is now more industrialised.[68] Manufactured exports constituted an important share of total exports, estimated at 30.7% of GDP in GDP in 2005, a sizeable increase from its 12.4% in 1971. (Yusof, 2012).

[68] Between 1957 and 2006 the Malaysian economy grew at about 6% per annum, and per capita income increased by slightly more than 24 times (Yusof: 2012). During the same period, absolute poverty went down from about 50% in 1970 to less than 4% in 2008.

The key tenets of Malaysia's success reside in two main factors. Firstly, its successful structural transformation was focused on diversification. Malaysia adopted a strong stance towards industrialisation, with a particular focus on heavy industries as from the second half of the 1980s. These were supported by large public investments and an active role of government to support affirmative action policies (Yusof, 2012). Malaysia developed a strong manufacturing sector that is both technologically advanced and well connected with the global market. It used revenues from oil and gas to develop the sector, for example to feed into the petrochemicals industry and ancillary services and to restructure the economy away from agriculture and toward more industrialisation. For instance, revenue from the hydrocarbon sector also helped finance the growth of education to meet the needs of an industrialising economy. Secondly, export-oriented industrialisation policies were a key priority. An Export Processing Zone was set up in Penang, which became a major industrial cluster for electronics. The provision of excellent infrastructure within the EPZ from natural resource revenues was at the core of government's intervention.

2.5. Some lessons learnt from downstream linkages

Moving from resource extraction to developing downstream linkages is a long-term process, which requires certain pre-requisites to be in place as well as structured policy designs that are realistic, pragmatic, flexible and adaptable.

Downstream linkages often entail capital and knowledge intensive activities and the use of reliable energy and infrastructure at affordable rates. In many African countries, these are significant handicaps. Successful countries have put particular emphasis in building their capabilities to be able to develop competitive industries.

Developing linkages does not always guarantee capturing the most value in the chain. The case of Botswana illustrates this. While *Botswana* made an important step to develop further processing activities, these activities were not the most important in terms of value addition. The diamond jewellery part of the value chain is by far the most lucrative one, as illustrate in figure 10, and Botswana is yet to develop these activities locally. Contrastingly, the case of *Zambia* shows that the country is already exporting refined ore, where much of the value has already been added in the concentration phase. Further downstream beneficiation strategies will have to take into account other considerations than the value that the country could get. These may be for example, establishing itself as a regional hub for the Copper belt to provide certain specific types of goods or services that are required by copper industries in the region.

Evidence from countries that have managed well shows that effective downstream linkages depends on a combination of at least three phases in mineral development (Mckinsey: 2013) that should all have succeeded:

1. The *conditions* around the initial development of the minerals should be conducive to business development. This means that the government must ensure effective institutions are in place, manage the governance of the sector and manage political risks that may arise from rent capture. It also requires putting in place the necessary hard and soft infrastructure. Extractive industries also have a key role to play in coordinating their investments with national plans and in obtaining their social license to operate;
2. Enhancing and capturing a fair share of value from resources is critical. *Value* is a broad concept. It relates, for example, to the fiscal contribution of the mining sector to government revenue and to the management of these resources, including for future generations. It also means striking a balance between fair contribution and ensuring that the sector remains competitive and attractive for investors by having predictable and stable legal frameworks in place. Moreover, capturing value also includes policies aimed at fostering local content, through employment, ownership, participation of local businesses etc.

3. Finally, countries that have succeeded in particular managed to *use* the value they receive from resources to build long-term prosperity. Here the question of how the revenues are spent in an effective way is important. Critical as well, is how to diversify away from the resource sector, to create an economic base that is broader and sustainable in the long term.

2.6. Linking the extractive sector to other productive sectors: The case of agriculture

In many resource-rich African economies, agriculture is the other major economic sector. While its share of GDP has decreased over the years, with wide variations across countries, agriculture nevertheless remains the backbone of many African economies with an average contribution of 30% of GDP (World Bank: 2012). Although principally dominated by large-scale agricultural commodities, which make up 40% of export earnings on average, small, rural and independent farmers constitute about 90% of rural workforce, employing around 65% of the total labour force, which in turn make up 50% of household incomes (UNCTAD: 2012; Ramdoo: 2013).

In many countries, agriculture and mining are the two most important sectors, one providing the bulk of rural employment and the other one the bulk of export (and fiscal) revenues. Mining has a *direct* impact on agriculture as it often competes for the same resources (grazing/ cultivation of land, water, labour), with at times, negative implications on farming land, food production, water quality and soil fertility. The sustainable management of this co-existence is therefore vital, in particular for the stability of rural regions. This does not only require ensuring that unbridled mining activities do not have detrimental effects on land, water, agriculture and people's livelihoods. More importantly, it requires broader and more coherent policies to ensure that both sectors work together to achieve sustainable developmental objectives.

There are different ways that the mining sector can support agriculture. First, mining revenues can be used by governments to promote agricultural research and development, to help halt soil degradation, and restore degraded lands by reforestation. Second, where both sectors co-exist, they can be *connected*, notably through astute sharing of infrastructure, through the supply of food on-site for workers or through support to farmers that live in areas situated close to mines sites.

Sharing of infrastructure is particularly important. In effect, mining development requires the construction of large infrastructure, often across borders. This provides a clear opportunity to create dynamic agricultural growth corridors and hence improve the efficiency of agricultural production (and other economic activities). It provides the scope to penetrate into areas where agriculture has been constrained by remoteness and lack of access to markets or provide outlets to ports and therefore unleash the expansion of arable food (or other) crops in areas where agriculture is a key economic feature. These corridors can indeed be determinant to fix settlement patterns to avoid rural migration to mining regions (or elsewhere), improve rural land use and increase agricultural supply chain efficiencies.

The potential to link extraction of mineral production to agriculture has been successfully explored in many countries and are now increasingly being recognised as a real opportunity in many African countries. Linking the agricultural and extractive sector is important. ***Australia***[69] is one country that has succeeded in using the extractive sector to boost the agricultural sector. ***Chile*** is another case in point. It managed to develop a well-diversified economy, as illustrated by the growth of other export industries, notably wine and fruit production, and salmon farming, where Chile is now the world's second largest exporter (Havro). G and J. Santiso, 2008).

In Africa, growth corridors associated with mines for iron ore, copper, coal, nickel, and gold for instance are already planned in Tanzania, Mozambique, Namibia, Botswana, Zambia, Ghana and to a lesser extent Liberia

[69] See Doepel D & Bolton G 2013.

and Sierra Leone (Robbins and Perkins, 2012). The case of Ghana, illustrated in Box 3, demonstrates efforts being made in two districts, where cocoa and food staples, interact with gold mining (both large-scale and artisanal and small scale mining).

Box 3: Ghana: a case where gold mining and agriculture co-exist

The extraction of gold and production of cocoa are two significant economic activities in Ghana that generate substantial revenues and jobs. In 2013, gold mining contributed about 8% of GDP and US$3,673 million in exports. The large-scale gold mining industry employs about 28,000 whilst about 1,100,000 people are directly engaged in artisanal and small-scale mining (ASM) (Hilson and McQuilken 2014). Ghana, the world's second largest producer, generated US$1,921 million of exports of *cocoa* in 2014 and more than 700,000 smallholder farmers directly depend on this cash crop for their livelihoods. However, the cocoa sector is said to operate well below potential with estimated yields of 50–80% (World Bank 2013).

As in other countries, Ghana has to manage the complex interaction between its largest cash crop and its largest mining sector. Mining is not without risks, for instance, the expansion of mining has caused substantial loss of farmland within mining concessions,[70] and widespread spillover effects as relocated farmers expand farmland into forests (Schueler et al. 2011). For instance, due to water pollution by ASM activities, producing vegetables during the dry seasons is extremely difficult, if not impossible, and no longer profitable. Moreover, it is even argued that 'large-scale surface mining industry has taken up large tracts of land from farmers' and at the same time 'failing to provide enough jobs to match the number of people laid off from agriculture' (Akabzaa and Darimani: 2001).

Drawing upon a qualitative research in the Amansie Central and Asutifi Districts of Ghana known for mining and agriculture activities (both are them are major cocoa producing areas), it is found that the interactions between mining and agriculture to a greater extent has a significant impact on the complex value chains of cocoa[71] and on food staples critical for food security in Ghana, like maize and plantain.[72]

In the Amansie Central District, there is a scramble for alternative sources of incomes to supplement insufficient revenue generated from agriculture. ASM, which is the dominant mining operation in the region, provides a good option because of its huge income-generating potential. Smallholder farmers also branch out into ASM because of the challenges facing cocoa production including poor and erratic rainfall, high cost of labour and expensive farm inputs like fertilizers and pesticides. The income that is generated from the mining is invested back into farming, because agriculture requires regular cash flows[73].

In Asutifi District, gold mining is mainly *large-scale*, operated by Newmont. In this region, the company has opened market opportunities for food staples like maize and plantain. It was found that support programmes undertaken by Newmont directly and indirectly contributed to the development of mostly the production and transportation of the whole value chain of cocoa, maize and plantain. The provision of roads and other infrastructure, agricultural inputs and training programmes for farmers undertaken by mining companies helped boost the value chain of crops (see Box 2).

[70] In both Amansie Central and Asutifi Districts, mining has emerged as an economic activity that disrupts the social and economic livelihood structures in rural communities. In both districts, the loss of agricultural lands and water as a result of mining affects the production of cocoa and other food staples like plantain and maize. According to Armstrong (2008), Newmont's Ahafo Mine, a surface gold mining project has already adversely impacted the local small-farming settlements with nearly 10,000 people already been displaced during the first phase of the project which began in 2000. In Amansie Central, the meteoric rise in activities of ASM has affected cocoa farming. In 2014, cocoa production increased at a decreasing rate.

[71] The global value chain of cocoa include the various complex process farming, buying, shipping, processing, manufacturing and distributing the end product of cocoa beans.

[72] The value chain of maize and plantain – the most important food staple in sub-Saharan Africa and critical to food security – consists of production, transportation, export and consumption.

[73] Interviews with small farmers relate that farmers "go into mining to get additional source of income to invest in cocoa farms" (Interview, Alex Okyere, 13/02/2014). Samuel Ofori Duodu, a cocoa farmer and miner, indicated that he earns about US$300 a month from artisanal mining as compared to an acre of cocoa farm that generates about US$170 per harvest within a year (Interview, 13/02/2014). Samuel potentially earns US$3,600 a year compared to roughly US$340 he gets from cocoa (there are normally two cocoa harvests per year).

While efforts are being made to link these two important economic sectors in Ghana, policies have nevertheless in greater part focused on the production and transportation of cocoa with little effort in the upgrading of cocoa beans through complex processing and manufacturing or to broaden the value chain. Similarly for food crops, where support programmes were driven to the production of food crops, with little upgrading or transformation. These two regions have not made explicit use of mineral infrastructure to support agricultural development. This is a prospect to be explored in the future.

Source: Yeboah, S. 2015 (forthcoming).

There are at least three ways[74] in which the mining sector can intersect positively with agriculture:

1. At the initiative of the mining industry, by supporting *programmes* to encourage value chain activities in existing farming activities, through support to integrated activities ranging from inputs to markets. As Box 4 illustrates, many companies, notably in Ghana, Peru, Uganda and Chile have taken initiatives to support local initiatives to develop agricultural value chains. However, the potential of developing agricultural value chains for strategic agricultural commodities, using fiscal or other linkages from the extractive sector, has not been sufficiently explored, at least in Africa.

Box 4: Existing initiatives to support agriculture

Case 1: two examples of initiatives in support of agriculture: Smallholder palm oil plantations, Ghana

The gold mining industry Golden Star operates two gold mines in Ghana. In support of economic development of local communities, the company invested $5 million in a large, sustainable oil palm plantation for smallholders on a total area of 800 hectares on land close to the operations. This initiative, which is well supported by local and broader communities and even obtained the first Nedbank Green Mining Award outside of South Africa. Following this first initiative as part of its rehabilitation programme, the company also established a trial oil palm plantation on a closed- out tailings storage facility. Fruit production from this trial plantation materialised in six years, showing that rehabilitation can contribute to the sustainability of the local economy.

The Newmont Ghana Gold company, in partnership with the NGO African Connections Ghana, launched an agribusiness growth initiative (AAGI) in the Brong Ahafo region. The programme supported capacity building of farmer-based organisations and SMEs to increase their productivity and product quality. These projects and programmes concentrate hugely on building the production part of the value of chain of both cocoa and food staples. The main objective is to create jobs, and develop value added economic activities that are independent of mining activities. The project contributed to:

1) Improve farmers' knowledge in production techniques and in new market demands;
2) Introduce farmers to new crops and varieties with high market potential;
3) Train farmers in business and commercial skills, on export requirements; on industrial procurement and on standards for the production of five crops with high productivity and market potentials, namely chilli pepper, soybean, ginger, maize, and plantain;
4) Link farmers associations to potential funding sources, such as local rural banks; and
5) Link associations to identified buyers including processors, exporters, commercial and institutional buyers (e.g. schools).

The project was successful in creating a network among suppliers of inputs, farmers and markets: several local companies supplied seeds and inputs to farmers and many others expressed interest to buy from the farmers, once their produce is ready. Likewise, the Grain and Legumes Development Board expressed interest to develop seed bank/seed growing units locally and at low costs to farmers. A processing and storage centre was set up to process, inter alia, chilli pepper into high quality chilli powder and process and store soybeans. The programme has benefited about 1,800 farmers in the production of chilli pepper, plantain, ginger, and soybeans to market specifications under AAGI (Kapstein and Kim 2011).

[74] McKinsey (2011).

Case 2: Agribusiness Development in Cuncashca Peru

In 2000, Barrick Gold initiated the Cuncashca Business Development Project in Peru in collaboration with a small community of 64 farming families. Building on existing agricultural practices and know-how, the objective was to improve the skills of local farmers by providing training and infrastructure to foster local entrepreneurship.

The project integrated farming, livestock and dairy practices:
1) In partnership with community leaders, a model farm was developed. Local farmers received training in modern agricultural methods and animal husbandry techniques. A new water management infrastructure was installed to improve irrigation and to help cultivate grasslands for cattle grazing. As a result, crop production increased significantly.
2) To strengthen the cattle herd, local dairy cows were cross-bred with Brown Swiss bulls. As a result, over 250 cattle have been genetically improved, resulting in significant increases in milk production. Corrals for livestock were installed to create a more conducive environment for animal breeding.
3) A new dairy plant was built for the manufacture of milk and dairy products, owned by families in the village, to produce milk, butter, cheese, yogurt and ice cream.
4) Entrepreneurial training courses and workshops were conducted for local residents, covering marketing and commercial production methods.

The project also created new markets in a variety of areas and supported a shift from subsistence farming towards income generating activities. For instance, the average monthly household income increased from $46 in 2002 to $166 in 2008. The dairy plant produced 4,200 litres of milk per month in 2008, and cheese production increased 400% between 2005 and 2007. Water usage declined by 40% thanks to conservation techniques, and the rate of chronic malnutrition amongst children under three decreased from 46% to 38% between 2002 and 2008.

Case 3: The Catemu Agricultural Farm, Chile

The Anglo American Chagres Copper Smelter, operating in the region of Catemu in Chile implemented a project in 2003 aimed at supporting self-sustaining techniques and skills for goat and bee honey producers in Catemu region. The company provided assistance to small goat producers by means of a breeding plan, which included cross-breeding to improve the genetic quality of the herd for improved production of meat and milk. In addition, a technical programme was implemented to improve the herdsmen's productive practices and the quality of the cheese. In two years, the programme trained 300 people, improving trainees' productive capacity and income levels. In 2005, the Lomas brand was launched to market farm products. The programme also focused on bee keeping, and helped to cut diseases in bees by 30%.

Case 4: Tullow's procurement strategy to procure from local agriculture, Uganda

In 2012, an agricultural supply chain initiative was launched by the oil company Tullow to provide technical assistance to farmers in Western Uganda, an area of immense agricultural potential and which produces large supplies of food for the country, and where the company has its operations. The programme aimed at linking local, small and medium-scale farmers with buyers. The project is developed in partnership with the district farmer's associations and Uganda's National Agricultural Advisory Services (NAADS) technicians to leverage resources and maximize impact.

Farmers in the region suffer from numerous challenges, such as of economies of scale, poor market linkages between suppliers and buyers and related low prices for their produce. As a result, food is purchased at the farm, transported to the capital (4 to 8 hours) and then brought back to Western Uganda. The agricultural supply chain initiative therefore aims at improving the quality and quantity of local produce, with the objective of supplying not only the catering companies contracted by Tullow but also other businesses (such as hotels, restaurants, etc.) locally and in other markets nationally. The initiative also aims at addressing challenges of economies of scale, reliability and consistency of supply to buyers and therefore reducing risks of market instability and revenue fluctuation. Finally, the initiative has set up a business skills and agricultural handling centre where farmers can engage in transactions with buyers and learn tools to improve their business skills, along with other local entrepreneurs. (Columbia: 2013).

Case 5: Improving market access of local farmers, Burkina Faso

In Burkina Faso, IAMGOLD's Essakane mine has contributed to building the capacity of local suppliers so they can

participate in the supply chain and more fully benefit from the presence of mining in the region. The market gardening project has been particularly successful. It involves over 400 producers of fruits and vegetables in the region in the surrounding area of the mine. Following the introduction of solar-powered wells and drip irrigation systems, the producers raised production by 30 % while reducing water use by 40 %. As a result, the mine has been able to purchase a significant portion of food directly from community markets. This not only increases household income and food security in the region, but also reduces inventory costs and strengthens relationships with host communities. The project was recognised with the 2013 Towards Sustainable Mining Community Engagement Award from the Mining Association of Canada (WGC: 2014)

Case 6: Rehabilitation of the Olympias Valley, Greece

In Greece, at Eldorado Gold's Olympias site, the company is managing one of the largest environmental rehabilitation projects of the country, by rehabilitating 26.5 hectares of land (an area equivalent to the size of about 35 football fields). Works include the removal and reprocessing of the old tailings, as well as soil restoration so that it can support vegetation. As part of this project, the mine is working with local universities to identify which native plants are best suited to the area. These native species are then grown in Eldorado's nursery with the view of being planted at the rehabilitation site. Once the project is complete, the valley area will be returned to a greenfield state (WGC: 2014).

Case 7: Mining and fish habitat co-exist in Alaska

Kinross' Fort Knox Mine is located on Fish Creek. It is one of the largest gold producing areas in Alaska. As a result of mining activities over time, water quality and fish habitats and fish population were seriously damaged by excessive sediment concentrations, uncontrolled run-off and erosion. The development of the Mine created opportunities to address the damage and revitalise the stream's fisheries, restoring a habitat where native fish populations could thrive. By 2013, Alaska's Department of Fish and Game showed that the fish population had been multiplied by more than six times the original target, some fish species are even self- sustaining and the habitat is supporting a variety of birds and wildlife. (WGC: 2014).

Source: Columbia 2013, WGC, 2014; Ramdoo I, 2013.

2. By using revenues from the mining industry, the Government can pursue a *breadbasket* approach in regions that have high agricultural potential by virtue of their natural endowment. In these cases, initiatives can focus on enhanced efforts to increase yields and crop productivity and market development strategies. The breadbasket strategy seeks to strengthen linkages between small farmers and the larger, market-oriented farming operations, encouraging small farmers to grow staple food and ensuring that they can sell their surpluses on the local/national/regional markets.

3. Through collaborative partnerships, by developing *spatial agricultural activities* along infrastructure corridors, generally used for the extractive sector (see for example Byiers and Rampa, 2013). This includes support to storage, warehousing and processing facilities around major infrastructures. The example of the Beira corridor in Box 5 illustrates this purpose. Potential here exist to connect markets, regions as well as countries and unlock value-chain potential in rural agricultural regions.

Box 5: Beira Agricultural Growth Corridor in Mozambique

The Beira Corridor in Mozambique[75] crosses the provinces of Tete, Sofala and Manica, regions where there are the biggest coal fields but also that are considered as a potential breadbasket area for food production for Mozambique and potentially for exports. Along this corridor, about 60% of the land has been earmarked for mining while the remaining land is suitable for agricultural production. The Beira Agricultural Growth Corridor (BAGC), a private public partnership between government, mining companies, farmers organisations and international agencies, was launched in 2010 to stimulate linkages between mining and agriculture by structuring demand from the mining companies and developing supply chains involving local

[75] The Beira Corridor is a transport corridor linking the port of Beira on the coast with other inland countries in the region, particularly Zimbabwe, Malawi and Zambia.

producers. In particular, it creates incentives for local sourcing and by promoting investments in commercial agriculture and agri-business along the Beira corridor.[76]

The BAGC is equally engaged in supply chain development: it identifies potential local supply opportunities, involves farmers organisations in capacity development of small farmers to improve production techniques and meet the standards and requirements of the mine. Through its catalytic fund, it provides access to finance at affordable rates to producers for inputs, such as high quality seeds and grain, animal feed etc. It is also engaged in setting up a logistics food hub to aggregate volume and cold storage facilities.

Source: Zhou, E. 2013; http://www.beiracorridor.com/

Effective implementation requires effective partnerships, which defines clear lines of responsibilities among different stakeholders not only to avoid over expectations, but also to ensure sustainability of the projects that will live well beyond the life of the mine and that such projects would become fully-fledged diversified economic activities.

2.7. Lessons learnt from lateral linkages

Broadening the economic base is essential to reduce the dependency on extractive resources. Countries such as Australia or Chile have opted to bet on their other key economic strength, that is, their agricultural sector and to support the sector on a large scale, in part with revenues from their mining industry.

The linkages between agriculture and mining worked when both sectors could find mutually supportive and cross-cutting interests, such as sharing infrastructure to service agriculture, or the production of mineral by-products (fertilisers for instance) as an input to the agriculture sector. It also worked well when the mining sector was committed to support local agricultural producers either to supply food to the mine or to accompany local smallholders in sustaining and upgrading their activities.

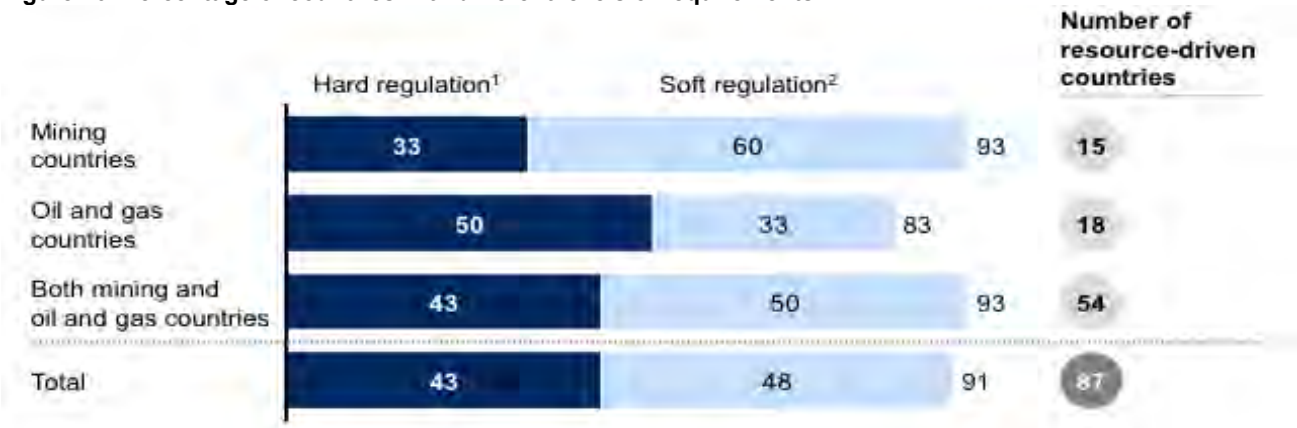
The case study of Ghana suggests that small-scale mining and large-scale mining have different impacts and offer different opportunities to agricultural producers. Small-scale mining tends to be an alternative job for agricultural producers during off-season or to complement their weak revenues. In that case, the impact of mining is generally more negative on agriculture as there is a competition for the same resources. Large-scale mining on the contrary, despite potential negative implications (on the environment, or on displacing people), have more financial means to counter the negative impacts or to support smallholders in sustaining their activities. While this is not automatic, linkages between mining and agriculture are however largely under explored but have a tremendous potential to unlock economic opportunities for the rural populations who may not find jobs in the mining industry. The case of Asutifi District in Ghana, where large-scale mining intersect with large-scale agriculture illustrates this point. There is thus scope for engagement between the mining industry and agricultural stakeholders to address the negative implications and create more synergies across the two sectors.

[76] See http://www.beiracorridor.com/

3. Instruments used to foster linkages

Linkages are generally implemented through policy frameworks[77] or codified in their related regulatory instruments. These can be categorised in hard and soft instruments. As illustrated in Figure 16, it is estimated that over 90% of resource-rich countries have some form of legal instrument to support linkages. These generally take the form of local content requirements (LCRs). Countries tend to have a mix of hard and soft requirements[78], the balance being determined by the policy orientation or objective fixed by the Government, the levels of development of the country as well as the capacity to implement and monitor measures put in place. Oil and gas companies tend to be subject to harder regulations than mining industries. Countries generally tend to relax stringent regulatory obligations as they move to higher levels of income and as their mineral sectors get more integrated with the rest of the economy.

Figure 16: Percentage of countries with different levels of requirements



1 Defined policies with set targets governing the extractive industry's sourcing and procurement of services and goods.
2 "Soft" targets that are not obligatory or are vaguely defined, loose requirements to set up subsidiaries, contractual agreements for technology transfer.
SOURCE: McKinsey Global Institute local content database; McKinsey Global Institute analysis

Hard instruments refer to policies that prescribe legally binding targets and quotas that companies need to achieve in terms of share of goods and services or employment to be sourced locally. They are generally defined in more detail in legislations, contracts, licensing agreements, conditions for tender qualifications[79] etc. According to a survey conducted by McKinsey (2013), half of the resource-rich countries had recourse to hard LCRs. For example, *Angola* requires that at least 70% of its *work force* be local and certain categories of procurement expenditures (e.g. logistics or catering) are reserved exclusively for Angolans. In *Indonesia*, companies are obliged to *procure locally* at least 35% of services for contracts above $100,000. In *Kazakhstan*, the law sets a 95% minimum requirement for employment of nationals and requires that for the purpose of contractor selection, procuring entities reduce the price of bids by 20% for local suppliers. *Nigeria*, has assigned specific content targets for certain products such as floating products, storage and offloading vessels and for the procurement of a number of inputs such as steel plates. Penalties are enforced for non-compliance.

[77] These include guiding principles, national development plans, policy statements, country vision documents etc. and set the broad orientation that governments want to take in governing the extractive sector.
[78] Local content requirements can alternatively be categorised in qualitative and quantitative requirements. For a detailed discussion, see Ramdoo. I (2015b).
[79] For a thorough review of different types of local content policies see Tordo S. et al. 2013. Local content policies in the oil and gas sector. World Bank.

Soft Requirements are found in policy tools, legislations and contractual agreements and are less constraining. They may have targets, but the latter are non-binding or may be more loosely defined. In *Mozambique*, LCRs in the Petroleum sector require contracts for procurement on the basis of international tendering process, but requires the operator to give preference to local suppliers only if the latter are competitive on the basis of quality, price and availability. They may sometimes form part of general regulations concerning health and safety to support local suppliers. Countries like *Norway* and *Chile* have mainly recourse to soft requirements.

In addition to hard and soft instruments, it is worth mentioning two other types of instruments used in support of LCRs namely:

1. Horizontal ***incentives*** such as tariff exemptions on imports of equipment or fiscal exemptions in support of the development of local industries or other measures to provide an enabling environment for local business development to prosper and to address constraints such as infrastructure deficits, stiff business climate, access to finance or skills and capabilities shortages.
2. Complementary sector-specific ***industrial policies*** to tackle key market failures[80] that inhibit the overall development of the local economy. In low-income countries for instance, where there are few buyers (large mining companies) and not enough suppliers (due to weak local enterprises), policies may target identified parts of the supply chain.

By their nature, LCRs emphasise more advantageous treatments reserved for local stakeholders vis-à-vis foreign goods and services providers or foreign products and are therefore viewed by many as protectionist measures (Hufbauer G. et al: 2013). From an international trade perspective, countries however need to be careful to ensure that their measures do not contravene commitments taken at the bilateral or multilateral level. The fact that there is no agreement on what local content is, suggests that measures are likely to be subject to a wide range of disciplines and take multiple forms.

In the multilateral trading system regulated by the World Trade Organization (WTO), the most relevant agreements regarding compliance of LCRs are the General Agreement on Tariffs and Trade (GATT), the Agreement on Trade-Related Investment Measures (TRIMs),[81] the General Agreement on Trade in Services (GATS), the Agreement on Subsidies and Countervailing Measures (ASCM) and the Agreement on Government Procurement (GPA). While the GATT, the TRIMs and the GATS apply to all WTO members the GPA is a plurilateral agreement, which binds only its 43 signatory members.[82]

3.1. Provisions regarding LCRs within WTO Agreements

The use of many of the classic tools of industrial policy have been either banned or significantly constrained by the WTO (Chang: 2012). Quantitative restrictions (such as quotas) are no longer permitted and tariffs have been

[80] These may take the form of market failures associated with exports and FDI (use of subsidies and tax breaks); coordination failures at the level of specific sectors (use of competitiveness strategies); asymmetry of information; insufficient local capacity in R&D and innovation (support to innovation incubators) etc.

[81] The TRIMs Agreement clarifies existing rules contained in Articles III (National Treatment) and XI (Prohibition on Quantitative Restrictions) of the General Agreement on Tariffs and Trade (GATT), 1994.

[82] The Agreement on Government Procurement (GPA) consists of 15 parties (Armenia, Canada, EU, Hong Kong, Iceland, Israel, Japan, Rep of Korea, Lichtenstein, Netherlands for Aruba, Norway, Singapore, Switzerland, Chinese Taipei and USA) covering 43 WTO members (counting the European Union and its 28 member states, all of which are covered by the Agreement, as one party). Another 28 WTO members and four international organizations participate in the GPA Committee as observers. Ten of these members (China, New Zealand, Montenegro, Albania, Georgia, Jordan, Kyrgyz Republic, Moldova, Oman and Ukraine) with observer status are in the process of acceding to the Agreement.

disciplined: countries have significantly reduced and "bound"[83] their tariff schedules. Export subsidies are also prohibited, except for LDCs. Most other forms of actionable subsidies are subject to countervailing duties and other retaliatory measures. Regulations that may affect FDI or intellectual property rights, have been brought under the jurisdiction of the WTO, resulting in difficulties for countries to "borrow" foreign technologies for free or to put performance requirements on transnational corporations. This is particularly constraining for latecomers or developing countries that need technology to catch up in their industrial development.

However, although the multilateral system has undoubtedly rendered industrial policy (and linkages development) more difficult, constraints imposed by the WTO should not be exaggerated because there are flexibilities for developing countries to derogate from some of these rules for development purposes. This section summarises the various legal provisions as contained in the WTO agreements that could potentially impact on the (legal) use of LCRs (*for a summary of relevant policy frameworks in selected African resource-rich countries, see Annex 4*).

3.1.1. GATT 1994 disciplines

The *national treatment* provision, as specified in Article III of the GATT establishes a strong legal basis regarding the treatment accorded to local *goods* providers compared to foreign producers. The consistency of local procurement requirements will therefore be defined according to the following three criteria, as laid down in *Article III:4* (i) whether the imported products are accorded *less favourable treatment* compared to local suppliers; (ii) whether the imported goods and the domestic products are considered as *like products*; and (iii) whether the measures are inscribed in *laws, regulations and requirements*.

Article III:5 of the GATT complements the above, by prohibiting *quantitative regulations* pertaining to the "processing or use of products in specified amounts or proportions which requires, directly or indirectly, that any specified amount or proportion of any product which is the subject of the regulation must be supplied from domestic sources". *Article III:8* however excludes government procurement from the application of the provision of national treatment, which is subject to the obligations under the GPA for countries that are parties to the Agreement. *Article XI.1* of the GATT prohibits the use of quantitative restrictions on imports and exports, through quotas, licenses and other measures.

In their recent reforms, several resource-rich (developing) countries have inscribed mandatory local purchasing and LCRs with regards to a range of activities, sometimes in the form of explicit threshold conditions of operation or as part of bidding evaluation guidelines with preferential considerations for local suppliers. An illustrative case is the Nigeria Content Act of 2010, which contains the following specific requirements:

1. A company must give "*exclusive consideration*" to Nigerian indigenous service companies,[84] provided the local company has the capacity to execute;
2. "*Preferential consideration*" to be given to services provided within Nigeria and for goods produced in Nigeria. Some specific manufacturing processes such as welding and fabrication should take place in Nigeria (equivalent to prohibiting imports of fabricated products); and
3. LCRs targets for some goods and services are set between 80% and 100%.[85] Companies may be subject to penalties for non-compliance, such as cancellation of projects and a fine equivalent to 5% of the project value.[86]

[83] While there is no specific threshold for countries to bind its tariffs, countries are however restricted to increase their tariffs within their bound rates. In other words, if countries want to raise their tariffs above the bound rates, this has to be negotiated against compensation to third parties who might be affected by such increases.

[84] Meaning Nigerian based which can demonstrate ownership of equipment and employs Nigeria personnel.

[85] Schedule A of the Nigerian Content Development Act specifies the level of Nigerian Content to be achieved per activity or input used by operators in the oil and gas sector. For goods and services such steel pipes and plates, cables, valves, cement, audit services and geographical survey services, local content requirement is 100%. (source" G/TRIMS/W/142)

Similar provisions can be found in local content regulations in Indonesia, South Africa and Brazil, though the scope and compliance enforcements vary.

Article XVII of the GATT 1994 relating to State Trading Enterprises requires state-owned company to operate in accordance with the principles of non-discrimination and requires that their purchases and sales be conducted "*in accordance with commercial considerations, including price, quality, availability, marketability, transportation and other conditions of purchase or sale, and shall afford the enterprises of the other contracting parties adequate opportunity... to compete for participation in such purchases or sales".* This is particularly relevant because in many resource-rich countries, state owned companies (SOEs) play a significant role by engaging in commercial operations. National or SOEs accounted for about a third of emerging countries' FDI between 2003 –2010, among which featured top oil and gas companies (IISD: 2014). A number of LCR provisions in particular in the oil sector, are relevant to SOEs and are therefore expected to fall within the provisions of Article XVII of GATT 1994. This provision however does not regulate the obligations of foreign companies to enter into joint ventures with SOEs, as required for example, in the 2014 Laws in Mozambique or in Angola.

3.1.2. Trade-related investment measures (TRIMs)

The TRIMs Agreement complements Article III of the GATT regarding treatment accorded to *investment*. Host countries are required to provide no less favourable treatment to their national investors compared to foreign investors. TRIMs provide an illustrative list of potential measures that may contravene the Agreement. These are assessed on two considerations:

- Investment measures must be *trade-related* (although *goods only*);
- Measures must fall within the *scope* of the illustrative list, must be *mandatory* in the domestic law, must be in the form of *performance requirements* (i.e mandatory local procurement of parts and components), and which are required in order to obtain an advantage.

TRIMs *prohibits* the use of LCRs that requires a specific percentage or quantitative target of local goods purchases by companies and trade-balancing requirements that restrict the volume or value that a company can import to an amount related to the level of products it exports. Finally, TRIMs proscribes any use of export restrictions or bans, such as those adopted by Indonesia in 2012 to implement a 2009 law to unprocessed metals and non-metallic minerals to ensure smelting and downstream beneficiation, unless mining companies submit their plans for smelter construction.

Developing countries[87] are permitted to retain TRIMs to the extent that the measures are consistent with the specific derogations permitted under Article XVIII of the GATT 1994 by virtue of economic development needs and subject to notification to the General Council.

3.1.3. Agreement on subsidies and countervailing measures

The ASCM is relevant to LCRs in two cases: (i) if measures to support local content are used as export subsidies; or (ii) if they are subject to the use of local products over imports, as provided by Article 3.1 (b) of the Agreement[88]. Government policies supporting R&D and innovation are however considered as non-actionable, as

[86] See G/TRIMS/W/89

[87] Article 4 of TRIMs allows developing countries to derogate temporarily from TRIMs obligations, as provided for by Article XVIII of GATT 1994 and related to WTO provisions of safeguard measures for balance of payments difficulties.

[88] Article 3.1 (b) of the ASCM Agreement in particular prohibits the use of "subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods".

provided by Article 8.2 of ASCM[89] and therefore active industrial policies can be designed to encourage companies to innovate in new products and new production processes. By permitting subsidies to cover up to 75% of industrial research costs, governments have considerable flexibility to influence on the technology development of companies.

3.1.4. Trade in services: Provisions under the GATS

LCRs are relevant for service providers. In this regard, the GATS contains provisions regarding market access and national treatment that may affect foreign suppliers (Article XVI).[90] For example, in 2010, in an effort to foster the development of its banking sector, Angola required oil companies operating onshore to use domestic banks to process their transactions. Other countries require foreign companies to give preference to employment of local staff, to limit employment of foreign staff or to submit plans on how they intend to increase local labour participation. Nigeria for example, requires that junior or intermediate positions be reserved exclusively for Nigerians. Similarly to the GATT, Government procurement (Article XIII) is excluded from the scope of the GATS.

One main limitation of the GATS however is that disciplines only apply to those services sectors that a country has included in its schedule of commitments. Most developing countries have made few commitments and therefore have more flexibility to apply LCRs to service suppliers.

3.1.5. Plurilateral Agreement on Government Procurement

The GPA entered into force in 1996 and schedules were revised in 2012.[91] It is a plurilateral agreement that applies only to the 43 signatories that have acceded to it, although all WTO members are eligible to join.[92] The objective of the GPA was to respond to political pressures to address discriminatory treatment in favour of local suppliers for government transacted businesses, in particular regarding tendering procedures for contracts above a certain financial threshold.[93] The major cornerstone is non-discrimination between local and foreign suppliers. The use of offsets is explicitly excluded from GPA but developing countries can benefit from certain flexibilities if they join the GPA.

---

89 Article 8.2 of ASCM states "Notwithstanding the provisions of Parts III and V, the following subsidies shall be non-actionable: (a) assistance for research activities conducted by firms or by higher education or research establishments on a contract basis with firms if: the assistance covers not more than 75% of the costs of industrial research or 50% of the costs of pre-competitive development activity; and provided that such assistance is limited exclusively; to (i) costs of personnel (researchers, technicians and other supporting staff employed exclusively in the research activity); (ii) costs of instruments, equipment, land and buildings used exclusively and permanently (except when disposed of on a commercial basis) for the research activity; (iii) costs of consultancy and equivalent services used exclusively for the research activity, including bought in research, technical knowledge, patents, etc.; (iv) additional overhead costs incurred directly as a result of the research activity; (v) other running costs (such as those of materials, supplies and the like), incurred directly as a result of the research activity".

90 Article XVI covers investment measures related to services relevant to local content, such as (i) requirements to use domestic service suppliers; (ii) limitations on the number of service suppliers; (iii) limitations on the total value of service transactions or assets; (iv) limitations on the total number of service operations or quantity of service output; (v) Limitations on the total number of natural persons permitted (vi) restrictions on or requirements for certain types of legal entities (e.g., joint venture requirements); and (vii) imposition of domestic equity.

91 The coverage Schedule of the Revised GPA can be found on http://www.wto.org/english/tratop_e/gproc_e/gp_app_agree_e.htm#revisedGPA

92 At present, ten WTO members are in the process of acceding. These are China, New Zealand, Montenegro, Albania, Georgia, Jordan, Kyrgyz Republic, Moldova, Oman and Ukraine. Five other WTO members have undertaken commitments, in their WTO accession protocols, to initiate accession to the GPA. They are the former Yugoslav Republic of Macedonia, Mongolia, the Russian Federation, Saudi Arabia and Tajikistan.

93 While the GATT and TRIMs are based on a positive list approach (i.e. countries agree to liberalize only those sectors that are put forward in their respective list of commitments, the GPA is based on a negative list approach, which means that rules apply to all sectors except those that the countries chose not to include in the Agreement, as reflected in their respective schedules of commitments).

3.2. Other trade and investment rules

Although the WTO allows some policy space to developing countries to use certain types of industrial policies to stimulate linkages, in reality, this space is highly constrained by other international obligations. In the case of LDCs, stringent conditions attached to bilateral and multilateral aid and loans have considerably reduced the space countries had to embark on specific industrial policies. In addition, many developing countries, including resource-rich African economies are signatories to bilateral and multilateral trade and investment agreements, which are often more constraining than WTO agreements. All these make the range of policies instruments, available to resource-rich countries and scope to take bold measures considerably less significant.

3.2.1. Bilateral Investment Treaties

Bilateral investment treaties (BITs) are international agreements between two or more countries that lay down the terms and conditions of foreign investment between parties to the agreement. It is estimated that there are some 3,000 BITs in force globally (IISD: 2014). While the TRIMs provide the general framework to discipline national treatment and local content, BITs are a response to the willingness on the part of investors to secure a higher level of protection and to the inability to agree on a more ambitious agenda regarding investment at the multilateral level.

In a nutshell, BITs confer rights to *investors* of contracting countries, such as the "*right of establishment"*, which prevents a government from imposing conditions on foreign investors that are not imposed on domestic investors. These treaties can contain provisions that prohibit, condition or discourage the use of LCRs, such as:
Establishment of joint ventures with domestic participation;

- Minimum level of domestic equity participation;
- Location of headquarters in a specific region;
- Employment conditions;
- Export conditions;
- Restrictions on sales of goods or services in the territory where they are produced or provided;
- Supply of goods produced or services provided to a specific region or territory; and
- Transfer of technology, production processes or other proprietary knowledge and R&D requirements.

Most African resource-rich countries have signed BITs with countries where multinationals originate and are therefore subject to obligations (*See Annex 5 for list of African resource rich countries having signed BITs*). Their scope and coverage vary widely: pre-WTO and pre-NAFTA agreements have lower levels of restrictions and US post-NAFTA BITs can go very far in prohibiting most forms of performance requirements.

One of the dominant features of most BITs is the special right granted to investors to have recourse to international arbitration to claim damage from the state in case they feel any measure is inconsistent with the treaty obligations (the so-called investor-state dispute). Contrary to the dispute mechanism at the WTO, arbitral award cannot be reversed. Today, investors-state disputes are the most widely used mechanisms in international trade law, with over 600 known cases, 25% of them in the mining, oil and gas sector (IISD: 2014). For this reason, many resource-rich countries are reviewing these agreements. Some countries, such as South Africa, have even taken steps to unilaterally denounce BITs to replace them with other forms legal frameworks that seek to provide similar levels of protection to investors, but diminish the risk of state-business disputes. One of the challenges though, is that some protections provided for in BITs may continue to exist even beyond the legal life of the agreements.

3.2.2. Bilateral FTAs

The frustration arising from the slow progress in achieving ambitious results within the framework of the WTO has, to some extent, encouraged the proliferation of BITs and other bilateral free FTAs. Countries are seeking other alternatives to establish new sets of rules that go deeper or broader than what the multilateral system is currently able to provide. The scope and coverage of FTAs vary widely and new generation agreements are generally[94] more ambitious with deeper commitments in a variety of issues that go beyond market access.

The mega regional trade negotiations among the key global trading partners, the US, EU and Asian emerging economies, are an illustration of the determination of advanced economies to operate in a new regulatory environment in order to remain competitive in an increasingly interconnected environment. In so doing, it reveals the urgency to reflect on the role and effectiveness of the multilateral trading system as the custodian of fair, equitable and transparency rules.

More ambitious FTAs, like those concluded in recent years by the US and the EU all contain market access and rules commitments regarding tariff, services and investment liberalisation, as well as TRIMs-plus rules on investment, government procurement. They also contain far-reaching obligations regarding non-tariff measures, regulatory measures, norms and other standards and issues such as human rights, labour standards, data protection etc. In the case of mega regionals, given the economic importance of negotiating partners, if successfully concluded, there is all likeliness that these will profoundly modify the trade and regulatory landscape.

While mega regionals and other RTAs may provide an alternative to solve immediate economic imperatives, in the longer term, there is a risk of creating permanent systemic challenges[95], in particular for non-members. For instance, China as well as emerging Latin American and African economies are not parties to the two most important mega regional trade negotiations, the Transatlantic Trade and Investment Partnership (TTIP) and the Trans-Pacific Partnership (TPP). Together, those left out account for more than half of global trade, represent significant future market opportunities and are home to a number of resource-rich economies. In reaction, there is all likeliness that the trend will continue among the '*excluded*', creating a confusing web of varying levels of rules and regulations, undermining all efforts of the WTO to level the playing field.

3.3. What space left for linkages development in African economies?

Unless resource-rich countries have made very strict commitments under BITs (in which case flexibilities in this section do not apply), the GATT, TRIMs and the GATS all contain various flexibilities for developing countries under special and differential treatment (SDT) provisions[96] and under other Agreements that make specific cases for developing countries and in particular for low income countries. In total, there are 139 SDT provisions in WTO Agreements for developing countries.[97] Table 4 summarises policy instruments that can still be used by developing countries in developing linkages.

[94] Notable exceptions are the recently concluded Economic Partnership Agreements (EPAs) between the EU and African regions/ countries. Most EPAs are trade in goods only agreements, with very shallow provisions on behind the border measures.

[95] They may undermine world trade governance, eroding WTO centricity as the forum for creating new trade rules, with worrisome consequences. See Baldwin (2014).

[96] For a comprehensive analysis of industrial disciplines and WTO see Report of the First Expert Group Meeting on Reinvigorating Manufacturing: New Industrial Policy and the Trading System.

[97] See Note by WTO Secretariat for the Committee on Trade and Development on Special and Differential Treatment in WTO Agreements and Decisions. 14 June 2013. WT/COMTD/W/196

Table 4: Policies measures and their relations to international trade rules

Measures	Remarks
Measures affecting imports	
Tariff measures	WTO does not prohibit tariffs. Countries must bind their tariffs and can modify their tariff rates within the range if bound tariffs are different to applied tariffs.
Non-tariff measures	Generally prohibited (QRs, licensing etc) but with one exception for imposition of import quotas for BOP purposes) Art. XVIII:B). This is temporary in nature
Export promotion measures	
Export taxes	Not prohibited
Export subsidy	Permitted for LDCs only as per Art. 27.2 (a) of ASCM (unless LDCs have reached export competitiveness[98]
Export promotion organisation	Not prohibited
Duty drawbacks	Allowed, provided they do not result in rebates in excess of what is actually levied on inputs consumed in the production of the export product
Indirect tax rebates (e.g VAT exemptions)	Allowed, as long as the exemption does not exceed the taxes levied on like products sold for domestic consumption
Measures to support to enterprises	
Exchange rates	No WTO agreement deals expressly with exchange rates, although GATT Art. XV concerns exchange arrangements
Government procurement	Permitted, except if a country is member of the GPA (see above)
Export finance/ insurance/ guarantees	Allowed but may be considered as export subsidy if they are granted at premium rates insufficient to cover long-terms operating costs and losses.
Production subsidies (such as inputs)	Allowed if non-specific
Trade finance	Not prohibited
Measures to promote technology	
Technology-related requirements for FDI (e.g. technological transfer)	Not prohibited
Support to R&D/ innovation	Unless specific, otherwise permitted
Human capital development	Not prohibited
Employment of local labour	Not prohibited
Regional assistance	Not prohibited
Investment incentives	
Export performance requirement as a condition for investment	Not prohibited
Equity requirement by FDI	Not prohibited
Measures subject to disciplines under specific circumstances	
Credit subsidies	Provided they are not product or sector specific
Tax subsidies/ holidays	Provides they are not product or sector specific
Clusters/ EPZ/SEZ	Not specially regulated by a particular WTO Agreement[99] but may be subject to disciplines when measures contravene other WTO disciplines (e.g. subsidies, NT, etc). Fiscal facilitation provided in SEZ are not prohibited.
Contingency measures	
Safeguard measures	These measures allow countries to apply import restrictions in particular circumstances, provided they can prove their economy/ economic actors are affected by (i) a surge in imports (safeguard); (ii) a product that is being sold below their normal price on the domestic market by an exporting country (dumping); and (iii) a distorting effect of a subsidy by a foreign government.
Anti-dumping measures	
Countervailing measures	

Source: Adapted from Angelini et al. 2010.

[98] Defined as "exports of certain products have reached a share of at least 3.5% in world trade" (Art. 27.5 ASCM)

[99] SEZ is mentioned in a footnote to GATT article XVI and in SCM, excluding from the definition of a subsidy one of the fiscal facilitation provided by SEZ, namely an exemption from import duties and taxes on goods exported from SEZ.

As shown in table 4, the GATT does not oblige countries to abolish tariffs and many developing countries have set tariff ceilings at very high levels. Countries have possibilities to raise their tariffs in case of surge in sectoral imports (through the activation of safeguard measures or for balance of payments reasons). Furthermore, developing countries have longer time periods to implement their commitments and there exist special provisions to allow countries to temporarily derogate from some commitments for development needs (Article 4 of the TRIMS have similar provisions).

In the same vein, WTO agreements do not constrain countries from *hiring local labour*, which is a good way to create technological spillover effect, technological transfer and the conduct of R&D, which are much more effective for long term and sustainable development of linkages in developing countries. This is clearly a missing link in poorer economies and WTO agreements do not prevent their uses.

Moreover, developing countries can still provide targeted subsidies, direct credit and specific infrastructure, such as measures used by Ireland and Singapore to attract FDI in specific sectors of their economies, as long as those measures are provided on an MFN basis (Chang: 2004). Subsidies are prohibited (red-light subsidies) when they are specific and they apply to import substitution[100] or exports[101] (in the later case, LDCs are exempted), regardless of their details. In other cases, specific subsidies are actionable but not prohibited altogether (yellow-light) and can be challenged at the WTO (or not) if they cause serious injury or serious prejudice and can be demonstrated through the ASCM (Lee et al. 2014). Non-specific subsidies (green-light) are non actionable and therefore allowed under ASCM. These subsidies are neutral, economic in natural and horizontal in application. There should be no predominant use by specific enterprises and eligibility is automatic. Until 1999, specific subsidies given to R&D, to disadvantaged regions and for environmental purposes were considered as non-actionable but these lapsed and governments may now be challenged for such types of subsidies.

There exists other flexible provisions in various WTO Agreements, which are pertinent to developing countries and in particular to low-income countries, granting them more policy space to undertake linkages development. For instance, foreign suppliers can be encouraged to assist technological transfers and training through offset transactions. As mentioned above, state contracts and procurement policies are not constrained for most developing countries, as these are regulated through the WTO's Agreement of Government Procurement (GPA) is a plurilateral agreement, to which developing countries and low income countries are not party. Government contracts can be used to support all sorts of ancillary activities, some of which may be the targets of linkages development.

Another policy domain not prohibited by WTO is the use of exchange rates policies, although Article XV of the GATT requires cooperation with the IMF regarding a broad range of exchange-rate questions such as monetary reserves, balance of payments or foreign exchange arrangements. Article XV has been narrowly interpreted to cover currency convertibility and liberalisation of payments and is ill-equipped to deal with issue such as "currency manipulations" or deliberate undervaluation of currencies (which can work as an import tax or an export subsidy from an economic perspective). The criticism of the Chinese exchange rate policy illustrates the weakness of the WTO regarding exchange rate policies.

LDCs benefit from added flexibilities and may be exempted from applying certain provisions due to their specific economic conditions. One of these relates to export subsidies. They also have longer transitional periods to implement commitments and can invoke numerous exceptions provided in various agreements as to address their development challenges.

[100] Import substitution subsidies are those contingent upon the use of domestic over imported goods
[101] Export subsidies are those tied to export performance

4. Extractives and global value chains: where does Africa stand?

Industrial realities and the nature of international trade have changed radically in the last twenty-five years. Production and trade are more and more structured around GVCs[102], defined as the "*full range of activities that firms and workers do to bring a product from its conception to its end use and beyond*" (Gereffi and Fernandez-Stark, 2011; De Backer and Miroudot, 2012). It is in particular reflected in the way companies organise their production structures into operations that are conducted across the globe and has led to a change in trade patterns, where firms specialise in *capabilities and tasks* rather than in entire products. This trend is observed through the rise in the share of trade in intermediate inputs, which is estimated to represent more than half of imported goods by OECD countries and almost 75% of imports of countries such as China and Brazil (WEF: 2012).

Several factors account for the changing nature of production. Technological progress has substantially lowered transport costs and improved information and communication technology, making the coordination of real-time production more efficient and therefore making geographical location much less relevant. Trade barriers among developed countries have been brought down and the rise of new poles of production in emerging economies like China and India has significantly changed the dynamics of economic convergence and integration. Companies, on their side, are increasingly internationalising their production chains across several countries to always move to the most cost-efficient production locations (see OECD 2014 for an overview of GVCs).

As the centre of gravity of GVCs shifts towards the East, we are likely to observe a reshaping in international trade strategies to capture more gains. Developed countries for instance, increasingly concerned about maintaining their share in global production and trade as well as their jobs, will undoubtedly continue to drive the GVC debate in a manner that they can maintain their competitive edge and their niche. As a result, emerging countries will advance policies to gain more space and improve their performance. Finally, those that are currently at the margin, notably the majority of low-income countries, most of them being in Africa, will step up efforts to finally insert themselves into GVCs and capture as much gains as possible (WEF: 2012).

4.1. Extractive industries and GVCs

As highlighted all throughout this paper, the extractive sector in many African countries has not contributed sufficiently to sustainable linkages development and therefore the industry remains largely '*enclaved*'. Compared to other types of economic sectors (such as manufacturing or services), a large number of companies in the extractive sector have been relatively latecomers in the move towards specialisation and outsourcing (Morris et al., 2012). For instance, the mining industry is generally structured around three types of firms: (i) small, informal miners, operating at domestic level, with no production capacity beyond "extracting" raw ores; (ii) medium-sized, formal mining companies with limited footprints at the international level; and (iii) global, highly capitalised companies that are vertically integrated (Bamber, 2014). It has been mostly the large and global firms that have participated more actively in GVCs.

[102] Key characteristics of GVCs can be summarized as follows: (i) increasing fragmentation of production across countries. It reflects the interconnectedness of economies; (ii) specialization of countries in tasks and functions rather than products. As such, goods and services are now "made in the world" and countries compete with each other on economic roles; (iii) the role of networks, that is global buyers and suppliers is critical. It defines the economic governance of GVCs and helps to understand who drives and coordinate activities in production networks. (De Backer and Miroudot: 2012).

However, in the past decade, the structure of the industry has undergone profound modifications, essentially driven by the need to cut down on costs and to focus on *core* activities. This trend is the result of a combination of factors, such as the fluctuation of commodity prices (with sharp falls for certain commodities in the last decade), an increased competition from new global players and a wave of mergers and acquisitions that led to industries restructuring, challenges accentuated by the 2008-2009 crisis. Low price of oil in the 1990s has led to the restructuring of oil and gas industry as well, that have even outsourced highly specialised exploration activities to independent firms (Bridge, 2008). As a result, global lead firms have therefore put in place leaner supply chain management operations including outsourcing of non-core activities to low cost and more efficient suppliers. They are also increasingly procuring from fewer but bigger suppliers with highly detailed and demanding standards. Today, key production functions are outsourced including engineering, design and project management and drilling operations (Urzúa, 2012). Competitive supplier firms responded to these opportunities by carving their niches in the supply chain. Today many enjoy dominant positions within the chain (Bridge, 2008; Farfan, 2005; Fessehaie, 2012).

In Africa, resource-rich countries are stepping up efforts to develop linkages at the national level to bridge their own linkages gap and in this regard, GVCs offer promising prospects to specialise in certain specific functions or tasks and join other international firms to meet the (new) requirements of the industry. High global demand for oil and gas and for hard commodities, largely driven by emerging economies in the South, offer some leverage to foster linkages between local suppliers and large foreign extractive industries, with potential spillover effects on skills, know-how and technological transfer (Morris et al., 2012).

In Africa, due to inherent weaknesses, the capital, knowledge and technology intensity of these sectors has put local firms at a disadvantage compared to specialised outsourced firms, accentuating the "*enclaveness*" of the extractive sector. While local firms are slowly joining the bandwagon, they remain nevertheless mostly engaged in lower value activities, site-specific operations such as construction, support services and non-productive functions, in part to meet local content requirements rather than leveraging comparative advantages. Though there are notable exceptions, such as South African equipment and services suppliers (Morris et al., 2012), most domestic firms in Africa have not yet achieved upgrading in this sector.

The key factors inhibiting the sustainable inclusion of extractive industries located in Africa in GVCs include:

1. Structural factors: the domestic industrial base is very weak in many countries. This is a result of the decades-long challenges of designing and implementing appropriate industrial policies;
2. Lack of financial instruments to support industrial development, in particular available and accessible to SMEs;
3. Insufficient availability (and incentives to retain) of high qualified labour at technical and professional level and limited expertise to develop specific industrial skills. As countries climb up the value chain, industries tend to become less labour but more skills intensive;
4. Insufficient investment in R&D, science and technology, and innovation is a major handicap to value chain upgrading;
5. The business climate, in particular heavy bureaucracy and excessive red tapes contribute to raise the cost of doing business and hence impact negatively on the competitiveness of companies; and
6. Poor, insufficient and inadequate public infrastructure, expensive electricity, unreliable transport networks and slow telecommunication and poor internet connectivity. To address this, mining companies are themselves engaged in building large infrastructure, which adds to the cost of projects. Furthermore, such infrastructure is not always available to other economic actors.

It matters where countries position themselves along the value chain: the dynamics differ considerably if countries sit closer to ***lower end*** of the value chain or to the ***more sophisticated end*** of the chain. It also matters to what extent local companies are able to connect to global suppliers or buyers.
Although companies are driven by the logic of outsourcing, the location-specific nature of the extractive industry confers nevertheless some advantages to resource-rich countries, to the extent that they can use their location to become an attractive hub for their region. Moreover, an efficient supplier based locally provides the capacity for flexible and tailored responses to the needs of the industry (Morris et al. 2012). South Africa for instance, carved its niche in certain specific service supplies, given its capacity to develop tailor-made responses for the mining industry. The latter's (relative) advantages in GVCs is a result of well established companies with leading products and competencies, public research linked to firms, relatively well-developed and dense networks of local supply industries and services and geographical clustering. However, skills shortages are a major challenge, particularly amongst engineers[103] and artisans. As highlighted in AEO (2014), in order to increase the depth of value chains, measures that target skills development, expansion of technological capabilities, R&D and access to capital are essential.

In most other countries however, integration in GVCs remains marginal. *Mozambique* for instance, mostly exports unprocessed products such as coal, tantalum and gold. However, the aluminium industry, while not integrated with industries at the domestic level, the industry is, however, integrated in GVCs through the Mozal megaproject. Established in 1999, the aluminium smelter plant is currently the second largest in Africa. Another project, signed in 2013 between Mozal and Midal Cabos, a subsidiary of the Bahrain-based Midal Cables, is expected to set up the first aluminium processing industry in the country to be built in an industrial park beside the Mozal plant (UNECA: 2015b).

Services are an important component of GVCs. It is estimated that services account for approximately 30% of total value added in manufacturing processes (OECD: 2014). Much of it is related to the software part of GVCs, that is, logistics, transport, insurance, banking, professional services, communications services and so on. Yet the linkages between the extractive sector and the services sector remain largely underexplored in most African economies.

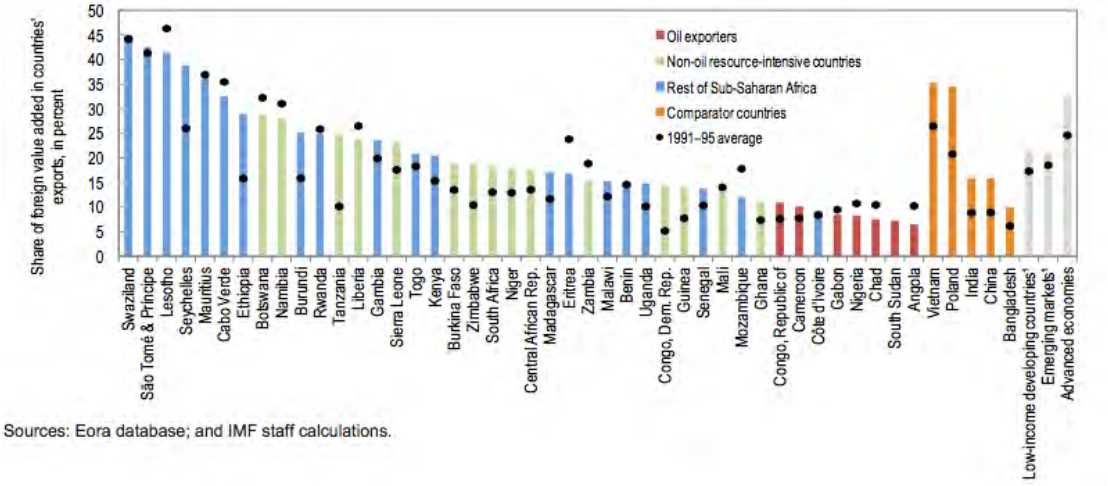
4.2. GVC upgrading in Africa: a necessary consideration

It is not true to say that African economies do not participate in GVCs. The 2013 Annual Report of the African Development Bank (AfDB) showed that more than 70% of Africa's exports are in intermediate inputs from the extractive industries, for global production of items such as copper wire, steel and petroleum. However, the *value added* participation remains very low and a large share of Africa's exports indeed serve as inputs for further processing elsewhere. In fact, Africa, on average, only adds value to 14% of its exports compared with 27% for emerging Asia and 31% for developed economies (AfDB: 2013a).

Moreover, the *complexity* of SSA exports, that is the diversity of products exported by SSA countries (Hausmann et al. 2013), has not improved over the last two decades. There are however, significant differences among countries, where non resource-rich countries have performed much better. Figure 17 illustrates this point.

[103] Currently in South Africa the ratio of engineers per capita is low at 1:3166 compared to 1:227 for Brazil, 1:130 for China and 1:157 for India (UNECA: 2015c).

Figure 17: Sub Saharan Africa and comparator countries, depth of integration in GVCs, av. 2008-2012



Source: IMF: 2015

Oil exports for instance, have lagged behind significantly, suggesting the inability to expand the value chain in the absence of a more diversified economic base. Those that have performed better are non-resource rich economies and have done so by upgrading their manufacturing (Ethiopia, Lesotho, Tanzania) or agri-business (Seychelles, Ethiopia, Kenya) value chains, or by expanding their services sector (Mauritius, Seychelles, Capo Verde).

Most successful countries are also those that are more integrated in their respective regions (like East African economies[104] or South African Customs Union[105] countries). This shows that regional coordination and deeper integration plays a vital role in deepening linkages and upgrading value chains. In the SADC region for instance, a regional industrial framework was developed and adopted in 2015, with a strong emphasis on value addition and beneficiation of mineral resources at country level (UNECA: 2015a). But regional concentration remains very modest in Africa, with only 2.2% share in GVC participation in 2011, as compared to Europe, with 51%, East Asia, 16.2% and North America, 11.8% of share of trade in GVCs in the same period (OECD: 2014)

The objective now is to surpass this stage, and ensure greater value addition or attract other processing/ manufacturing industries. The main question is therefore how to ***upgrade*** the current position in the production structure and have a more meaningful participation in terms of capturing a higher share of value in the global economy (Gereffi 2005). Economic upgrading can take at least four dimensions: product, process, functional, and chain upgrading (Humphrey and Schmitz 2002). *Product* upgrading involves producing higher quality and more sophisticated products. *Process* upgrading supposes that companies rearrange the production process to improve efficiency and productivity. *Functional* upgrading means acquiring new or broadening the range of functions in the stages of production. Finally, *chain* upgrading means diversifying activities into higher value sectors or end products (Goger A. et al. 2014).

These different dimensions offer a wide range of opportunities for countries and companies to participate in various aspects of GVCs. While for countries, the tendency is to foster essentially on the *hardware* part of GVCs, that is, on product or chain upgrading (probably because those can be measured through economic indicators), the *software* part of GVCs, that is, process and functions are often overlooked and underexplored. Yet, these are essential in positioning companies at certain level in GVCs (upstream or downstream) and in influencing their capacity to strengthen their positions.

[104] Burundi, Rwanda, Uganda, Kenya, Tanzania
[105] Botswana, Lesotho, Namibia, South Africa and Swaziland

As highlighted in case studies in previous sections, a number of African countries, such as Zambia and Botswana, have started to pursue efforts in this direction. As shown in figure 13, by cutting and polishing diamonds, Botswana gained some 7.5% in value over rough diamonds production. But more than 50% additional value could still be captured if the countries decided to move into jewellery and retail. However that requires acquiring new processes or attracting new industries with technology to develop those activities. Similarly, in East Africa, the discovery of oil and gas has led to a number of activities aimed at greater economic integration to capture as much value from these activities as possible in the region. For instance, Kenya has embarked on a new standard gauge railway line from Mombasa, expected to be extended later to Uganda and Rwanda. It has also started the construction of a new port at Lamu that will service the northern parts of the country, South Sudan and Ethiopian outlets to the sea (AfDB: 2013a). Nigeria is contemplating regionalising its cement industry to support the construction boom on the continent and fertilizer industries to feed into the agricultural value chains. However, efforts are insufficient to be reflected in the share of Africa in global production and trade.

One of Africa's main disadvantages is also paradoxically an advantage of the continent. While poor logistics and high transport costs significantly add to production costs and can be a major disincentive for time sensitive investment, it may provide some form of advantage for efficient local producers that would then be able to provide certain goods to extractive industries without the risk of unpredictable delays.

Entering GVCs is not an end in itself. Low-income countries, because of their capability challenges, almost *de facto* enter at the lower end of GVC. There is however a risk that local operations remain confined to that level if new capabilities are not accumulated. There is also a risk that low-end tasks may move elsewhere, causing downgrading (OECD: 2014).

Regional and continental frameworks to support GVC upgrading can be found in various new initiatives that proliferated across the continent in recent years. At the continental level, the African Union's Agenda 2063 provides the overarching policy guidance to push for Africa's socio-economic transformation through, amongst others, transformation, growth and industrialisation of African economies through beneficiation and value addition of natural resources. More specifically on the issue of mineral resources, the African Mining Vision places particular emphasis on sustainable resource-based industrialisation. Other complementary initiatives driving the industrialisation agenda include the Plan of Action for Accelerated Industrial Development of Africa, boosting of intra-African trade and the realisation of the Continental Free Trade Area. The post-2015 sustainable development goals also emphasise the need to step up efforts to promote sustainable industrialisation (Goal 9). This cannot be achieved if the extractive sector is ignored. However, implementation is of essence: all these plans, visions and goals need to be domesticated and implemented in line with national objectives and translated into concrete policy actions.

5. Policy recommendations

There is no blue print or one-size-fits-all solution to address the challenges of linkages development in resource-rich countries. The agenda to optimise linkages and upgrade resource-rich countries' participation in GVCs is a broad and ambitious one. It requires policy designs that will be implemented in a sequenced and phased manner. The extractive sector is a peculiar one and resource-rich countries have their own specificities. This section does not intend to be prescriptive but points at some key areas that can be addressed in a pragmatic way to stimulate linkages development and value chain upgrading.

5.1. Optimising the *use* of policy space

For most African resource-rich economies, there is no ***lack** of policy instruments* to address the challenges of developing linkages. The question is rather *how to make better use* of existing policy instruments and space, although it is true that developing countries operate in a much more regulated trading environment today than what was historically available to industrialised countries when they climbed the ladder of development. As highlighted already, developing countries and in particular LICs, maintain quite some degrees of *flexibility*, within the WTO, although bilateral investment treaties and FTAs have overtime significantly eroded some of that space, in particular by further regulating foreign investment. So, if (the lack of) policy space seems less of a problem, what matters for resource-rich countries therefore is:

1. *The capacity to broaden and deepen* the *use* existing policy instruments and space and combine them in an effective and creative manner, in a way to support their industrialisation strategies that fit the changing global challenges. As insights from countries that have been successful suggest, policies need to be holistic and encourage the transformation of economic structures and foster endogenous diversification strategies. This is necessary to develop a solid and sustainable industrial base, while at the same time, keeping pace with the exigencies of global production networks;

2. To have a good balance in the *policy mix*: how to find the appropriate balance between hard versus soft policy instruments as well as between vertical (i.e sector specific) and horizontal policies in a smart and flexible way to facilitate and guide strategies that favour the development of a sustainable industrial base;

3. The capacity to embrace *policy shifts* as the economic situation changes domestically and as international trade dynamics evolve. This requires constant re-engineering of domestic policies as well as policies aimed at fostering investment or boosting international trade as the global trade and industrial landscape evolves. Moreover, developing countries are expected to become richer over time. The challenge therefore is to put in place adaptive strategies and policy orientation that prepare countries to face more (intensive) competition as countries evolve to different stages of industrial and economic development. Policy space tends to get thinner with higher income levels and capacity to use certain types of policies instruments also change.

4. *The ability to develop sufficient incentives* to stimulate and facilitate the industrialisation process, building on market forces dynamics, while *avoiding to generate undue economic distortions*, at the domestic and international level. In this context, coherence with the multilateral framework is important. Similarly, the balance needs to be found in terms of international commitments, in particular in free trade agreements, between measures that help anchor regulatory reforms processes and facilitate trade (in particular import of inputs needed for industrialisation), investments, transfer of technology, and those commitments that may reduce too much policy space to pursue active industrial policies (e.g. on local contents, IPRs, etc.).

5. The ability to manage conflicting interests within the domestic economy (including from international actors), and avoid capture by vested interests. In this regard, the incentives of ruling and economic elites must be careful considered. Resource endowment is not a curse or blessing per se, but heavily depend on the governance structure and dynamics in place (Barma *et al.*, 2012). Similarly, industrial policy is easily prone to rent seeking and capture (Soludo and Ogbu, 2004). While the connection between governance and economic transformation is a complex one (Joseph: 2013a,b), sector linkages and diversification opportunities have the potential to modify the political economy dynamics at play (Bilal: 2013).

Drawing from the conditions of success of resource-rich economies, notably outside Africa, it seems important to match government support to linkages development against performance. Preferably, some forms of support should be time-bound to avoid feeding inefficient industries. The challenges that many African economies face as competition increases from outside point to the fact that inward looking policies are considered as successful only if they are used as *incubators* for more innovation-related activities that can develop their own niche markets where they would be competitive. But such policies need to be temporary and must evolve as conditions change. Lessons drawn from the conditions of success of joining GVCs also reveal that international firms generally base their choice of location (such as costs of inputs) on the criteria of production efficiency. Government support in these cases is essential to address bottlenecks such as infrastructure, access to finance or logistics. To maintain an edge and upgrade participation in GVCs, it entails constantly re-adjusting linkages policies in an active and creative manner to retain companies and requires a more forward-looking approach because of the roaming nature of production networks.

As the global trading landscape evolves, and in particular given the dynamics in the mega-regional negotiations, there is also a need for African economies to forge strategic responses, and where possible build strategic alliances, in order to avoid being in a situation where they have no choice but to adapt to new regulatory frameworks without prior adequate preparation (Ramdoo: 2014). In a situation where attempts may be made to multilateralise such rules, proactiveness at the WTO, with other like-minded countries, will be essential to ensure that the multilateral framework can help through its processes of ensuring transparency and maintaining the necessary flexibilities needed for their development (Ramdoo: 2015a).

5.2. Fixing structural weaknesses in the domestic economy

5.2.1. Building supply side capacity

There is a host of supply side constraints that impact negatively on the performance of domestic business and development of supply chains. These include limited access to credit, unavailability and mismatch of skills and competences, poor access to tender information and to advice to benefit from those advantages and insufficient technological availability to name a few. Addressing supply side constraints is a key condition to unlock industrial potential.

In addition, access to infrastructures is a major impediment to the development of business linkages. In this context, the extractive sector, which is a major consumer and provider of various types of infrastructures, can contribute to alleviate the challenges faced by other economic actors. There are several ways in which mineral infrastructures can contribute to achieve this objective. Where feasible and possible, mineral infrastructures should have inclusive, multi-modal, multi-purpose and multi-functional usages so as to trigger investment opportunities in other economic sectors. In the areas surrounding extractive operations, they can be an important driver to 'dis-enclave' mining communities, improve their quality of life and facilitate linkages that support different types of local economic activities. More broadly, sharing infrastructure with other economic actors has enormous

network effects and can be determinant to facilitate the development of other economic activities essential for long-term economic diversification.[106]

In developing countries (and in particular in LDCs), given the extent of the challenge, it may be necessary to concentrate initial efforts around existing clusters or particular activities where the potential already exist, but where companies are struggling to meet requirements or to take advantage of business opportunities. In this context, support programmes such as technological upgrading, quality enhancement, business management, training of staff can offer an effective way to support a larger number of firms in a related industry.

5.2.2. Enhancing Industrial Capacity

One of the main weaknesses of resource-based African economies is the quasi-inexistence of a vibrant industrial sector. Countries remain too dependent on the production and exports of commodities and have not succeeded in developing complementary industrial activities. Governments therefore need to step up efforts to create the conducive business environment and to remove the administrative thickness that block business development. The business climate needs to be improved substantially. A look at the World Bank Ease of Doing Business Index shows how poorly resource-rich African countries rank.

Besides a business-friendly climate, it is also important to support industries with other policies such as fiscal policies and other forms of support (including trade policies and financial support) to ensure new industries can take off without being hurt by too much competition. These policies are necessary and need to be temporary and performance-based.

Access to finance is a particular constraint to be addressed, in particular for SMEs. Governments can bridge this gap through public institutions that provide low-interest loans to local companies and by providing advice on how to develop their businesses. This was the case for instance in Brazil where the Program for the Mobilization of the Oil and Gas Industry (PROMINP) provided small-scale financing to local companies or in Kazakhstan, where local commodity producers were supported through co-financing of plants and provision of long-term orders for overhauling, servicing, and troubleshooting (McKinsey: 2013).

At the regional level, existing frameworks (such as regional industrial plans, vision documents and so on) need to be operationalized with clear guidelines and targets for countries to drive the domestication of these policies. A monitoring and evaluation tool is necessary to ensure that plans are on target. Beyond that, it is necessary to have in place a set of key performance indicators at the regional level to monitor how well countries are performing on different objectives related to industrialization. Currently, data is insufficiently available to measure progress.

5.2.3. Investing in R&D, Innovation and Technology Development

Technology, innovation and R&D are key ingredients for industrial development. However, R&D and technology acquisition is not cheap. Governments need to incentivise foreign companies to participate in technological transfer. In Malaysia, for instance, each production-sharing contractor is required to contribute to an annual research contribution for an amount equivalent to 0.5% of the sum of costs and the contractor's share of profits. Brazil has a similar mechanism. Operators have to invest 1% of each field's gross revenue on hydrocarbon-related R&D. Others require building local capabilities through pooling company resources and supporting "clustered allied industries" (McKinsey: 2013). Incentives are not sufficient. Governments also need to step up their efforts by allocating sufficient budgetary resources and national policies (through their training and education

[106] For an in-depth discussion on mineral infrastructures, see Ramdoo, I. (2015c), Forthcoming.

system) in R&D, innovation and technology development. These should be guided by national priorities, in line with national development plans.

5.2.4. Promoting skills development and human development

In addition, shortage of critical skills and weak human resource capacity in general and more specifically in science and technology are serious constraints to linkages development and innovative capacity of local entrepreneurs. A clear identification of the skills gap is required not only at the national level but perhaps more importantly at the regional level. Having a pool of human capital that can move across countries is necessary to help fill in the gap when competencies are not readily available at the national level. This requires a number of actions. First, at the national level, governments, in partnership with companies need to build capabilities. Secondly, there should be a database put in place, so that companies can match their demands. At the regional level, countries need to agree to allow and facilitate the movement of natural persons. For the moment, while some regions have made progress on visas (for tourism purposes), the movement of professionals to take up employment remains a politically sensitive issue.

Building industrial and vocational skills are critical to support industry's development. Countries like Brazil and Malaysia have put a lot of emphasis on improving the quality and quantity of technical skills in the hydrocarbon sector. This was done by identifying skills gaps in the local labour force and through partnerships to set up centres and networks of excellence with universities. Other potential strategies (Malaysia) include incentives for companies to provide on-the-job training. Tapping into skills already developed in other industries is another way of fostering skills development, as was done in Norway where skills and expertise were brought into the hydrocarbons sector from other industries such as shipbuilding.

Finally, governments must initiate skill development planning in early phases of the development of the extractive sector avoid competition over scarce and qualified labour. Otherwise it will have a perverse effect on the development of other economic sectors whose productivity depend on capable human capital.

5.2.5. Adopting a regional approach

Industrialisation will not be sustainable if policies are developed only by taking into account national interests. What is therefore required is coordination and collaboration across countries, among and across regional economic communities. The role of national governments would be to identify where they fit in the regional and global value chains based on resource endowments, capabilities and capacities and skills.

Deepening regional integration, in particular, with objective of developing regional linkages is critical if African economies want to fast track their transformation agenda. If commitments are implemented, it will enhance regional production capacities and help address other supply side constraints such as the high cost of services across region. It can also help address the limits of domestic capacity linked to small market size and weak production capabilities and therefore encourage the development of regional value chains.

For example, regions should pool their resources together to support the establishment of regional technology incubation centres or centres of excellence based on institutions that are already operational in some member states. These centres can in turn specialise on identified areas where opportunities exist to develop regional value chains, such as pharmaceutical products for example.

5.3. What companies can do

Extractive companies also have an important role to play in the development of linkages. In a number of country case studies highlighted in this Paper, companies often took the lead in developing local suppliers, not only to

comply with local content or other linkages regulations but also to improve the performance of local suppliers to meet their requirements. Extractive industries can map and publish their procurement requirements with availability of goods and services from local suppliers, as was done in Guinea for instance, where Rio Tinto compiled and mapped a detailed spending profile for its operations with the potential of the local supplier base. They support the development of local businesses by helping companies to meet quality standards. This should be done at different stages of production. Organising the demand can help companies in partnership with local authorities to identify partners to define development programs to support the development of local suppliers.

Extractive industries can play a major role in supporting capabilities development. In Chile, BHP Billiton financed mentoring and technical training for local SMEs in order to transform them into world-class suppliers. In Brazil, Petrobras invested a lot of resources in targeted skills and technical training since 1960 and has trained 2,800 qualified mining engineers. Companies can also help to finance the development of suppliers. In South Africa in 2011, Anglo American's Zimele program invested about $125 million to give opportunities to disadvantaged South Africans, focusing on aspects such as procurement and business development opportunities as well as the mitigation of environmental risks in the areas where Anglo American operate. Such programmes have worked well and where possible, companies must be encouraged to take similar initiatives.

The promotion of R&D is another enabling role companies should play. Large multinational companies can also help to develop a local supply chain by setting specific key performance indicators and pushing their suppliers to perform against them. BHP, as noted, successfully implemented a rating and certification system for local suppliers in Chile and offered operational support for small and medium-sized enterprises. As a result, the company's suppliers have been able to step up their activities with BHP and even with its competitors.

5.4. What collaborative partnerships can achieve

Successful local content and linkages policies require collaborative efforts between the government and the private sector to build long-term partnerships. The industry has a more realistic perspective of its spending profile over time, of the capabilities available locally and of the quality of suppliers. In this regard, companies must engage into regular dialogues with policy makes to inform them of the needs and requirements of the sector and to find joint solutions to address weaknesses in the supply market or in the labour market.

The industry should therefore adopt a proactive approach. In Chile, BHP Billiton helped the State to increase the ratio of exports to imports in the mining sector from 7% to 50% in just one decade (McKinsey: 2013). Collaborative partnership was at the heart of this success. BHP's objective was to raise and certify 250 local suppliers to the status "world-class" suppliers by 2020. Such an initiative creates a quality guarantee for suppliers who meet the requirements.

Companies can help governments to identify key sectors and hence target local suppliers for support accordingly. This should be linked but governments' industrial development plans. In Chile, BHP was able to benefit from the government's creation of industrial development zones.

5.5. What development partners can do

On the financing aspect and regarding the choice of projects for support, development partners and international institutions need to align and coordinate their development and financing strategies to prevent policy fragmentation and duplication of efforts. Importantly, financing for industrial development should target in particular SMEs.

Innovative financing mechanisms are also required to address the industrial capacity constraints caused by the lack of affordable finance or to finance over-sized infrastructure projects necessary to unlock the production capacity of many African economies.

Further, development partners, who are also home to foreign investments, should engage in responsible business partnerships with host countries. These include the promotion of responsible and sustainable sourcing or supply chains that are in line with the principles of governance and address the scourge of illicit financial flows through transfer (mis)pricing and profit shifting.

Further, the implementation of the Post-2015 SDGs will present an opportunity for the international community to work together to deliver on their commitments. Compared to the MDGs, SDGs is a universal agenda and therefore development partners will need to work with developing countries to ensure that this ambitious endeavour goes beyond the rhetoric. Goal 9 (and its targets) is of particular relevance in seeking to leverage the extractive sector for more transformative outcomes. Countries, companies and development partners should therefore define a very clear road map with realistic performance indicators to ensure that real progress is made in supporting resource-rich countries to move away from the current state of resource dependency towards more diversified economies.

Annex 1

Mapping of key reports on Africa's resource-based economic transformation

Report	Approach to industrial development	Key focus	Policy recommendations
Economic Report on Africa, UNECA			
Economic Report on Africa, 2013 *Theme:* *Making the most of Africa's commodities: Industrializing for Growth, Jobs and Economic Transformation*	Makes a strong case for resource-based industrialisation, value addition and diversification	Leveraging commodity-based industrialisation as an engine of growth and transformation, through value addition in all sectors Building and strengthening backward and forward linkages for commodity production Countries should design and implement effective industrial policies (inspired by Asian model) Reverse the trend of de-industrialisation by having strong government policies, through strategic and systematic interventions to support industrialisation (at all stages of the value chain) and indigenous firms (including to insert themselves and compete in RVCs and GVCs); Public investment necessary in infrastructure, skills development; technology and R&D Strong focus on regional markets, that may provide more opportunities than traditional international markets.	1. Countries and regions need to embrace a strategic approach to industrial development and adopt and implement a coherent industrial policy with all stakeholders. It should focus on value addition and linkages; 2. Decisions should be inclusive of all stakeholders. A transparent institutional mechanism should be put in place; 3. Effective policy coordination across government departments and with international partners are essential for policy implementation; 4. Local content policies should be emphasised and should focus on local value addition and the removal all barriers to business development; 5. Governments should adopt strategic and customised interventions to support domestic (indigenous) firms to join supply chains and remain competitive; 6. Local skills and technological capabilities should have priority. They should be supported and financed in coordination with development partners; 7. Infrastructure bottlenecks should be addressed; 8. Countries and regions should put more emphasis on intra-Africa trade and regional trade agreements; 9. Other African regional policy frameworks (AIDA; PIDA; AMV etc) should be domesticated and implemented. National strategies should also be coordinated at the regional level to promote synergies

Economic Report on Africa, 2014 *<u>Theme:</u>* *Dynamic Industrial Policy in Africa: Innovative institutions, effective processes and flexible mechanisms*	Reaffirm that State support is vital to address market failures and drive industrialisation. High-level political support needed; Strong call to institutionalise industrial policy in national and regional strategies at the highest levels of government. But Govts should not repeat errors of the past: interventions should be based on strong and inclusive institutions	How to build innovative, effective and flexible industrial policy organisations and mechanisms to enhance industrialisation and structural transformation in Africa. Intervention to address three main types of market failures: a. Self-discovery externalities (i.e. address the barrier of information on how new products can be produced profitably); b. Coordination externalities (regarding parallel investments needed in various sectors); c. Missing inputs from the public sector (sector specific legislations for e.g.) Report provides an institutional framework to design and implement effective industrial policy	1. IP should be organic and dynamic and should be adaptive and flexible. Blue prints to be avoided; 2. High level political support and top-level coordination needed; 3. Private public dialogue to be structured; 4. Bureaucracies should be autonomous (i.e. free of political or other vested interest pressures) and should understand the private sector needs; 5. Operational failures (i.e. poor targeting, poor monitoring process and insufficient incentives structures) should be addressed; 6. Pockets of efficiencies within governments should lead the way for successful IPs 7. Successful IPs require convergence of interests among elites; 8. Economic planning should be placed at the core of IPs 9. Technological transfer, innovation and competitiveness are essential and should be supported; 10. Pockets of infrastructure need to be created (through clusters or industrial parks for e.g.); 11. Climate change challenges should be addressed; 12. Growth poles (i.e. concentration of economic activities) should be actively supported; 13. Trade needs to be encouraged (by bringing down the high cost of trading across borders); 14. Countries need to find new sources of finance and make better use of existing once for industrialisation projects (e.g. through PPPs, better access to credit to SMEs etc)
Economic Report on Africa, 2015 *<u>Theme:</u>* *Industrialisation through trade*	The Report builds on the 2013 and 2014 report and deepens the debate by looking at the nexus between trade and industrialisation	Emphasises the role and place of trade and trade policy in the industrialisation process and under which conditions can trade promote industrialisation	1. Trade policy should therefore be selective and should be coherent with the national development strategy; 2. A critical factor for trade policy to promote industrialisation is the appropriate balancing between the promotion of relatively matured sectors and simultaneously protection

		Key message is that the trade-industrialisation virtuous link is not automatic. It requires appropriate policy. The Report places a particular emphasis on the value chain debate and in particular on the effective participation of African economies in GVCs. To this effect, intra-Africa trade and RVCs are identified as platforms for learning to facilitate GVC links. The pivotal role of services is particularly highlighted	and support of fragile sectors; 3. African countries should stop negotiating trade agreements as if industrialisation does not matter; 4. Sequencing of trade policy reforms is key: deeper and bolder regional integration should happen first, before opening up with the rest of the world; 5. Instead of industrialising bottom up, segmented value chains offer the scope to engage in international trade at the specific stage of the production process, thereby harnessing more efficiently one's comparative advantage; Services is therefore key to develop and production of intermediate goods are critical as well as the participation in one or two activities, rather than all activities in the chain; 6. Evidence show that while Africa shows high participation in GVCs, it remains at the low-end of the chains. Hence participation per se does not guarantee transformation
United Nations Industrial Development Organization			
Promoting Industrial Diversification in Resource-Intensive Economies: The Experiences in Sub Saharan Africa and Central Asia Regions, 2012 *<u>Theme</u>* *Moving away from resource dependence by promoting industrial diversification.*	Provides strategies for diversification from resource dependence borrowing from experiences in low and middle-income countries in Sub-Saharan Africa and Central Asia.	Creating linkages within the industrial, services, and commodities sectors. An analysis of the different types of commodity sector linkages. Discusses the extent of commodity dependence within resource rich economies in Sub-Saharan Africa and Central Asia. Provides the current state and drivers for developing economic linkages.	1. Resource rich countries must formulate solid strategies that must later be translated into policies. 2. For the policies to work, they must have incentives for compliance and sanctions for non-compliance. 3. Governments must be guided with realities when crafting policies taking into account their current economic, legal, and financial status. 4. To avoid conflicting polices, governments must consult with relevant stakeholders to draft policies with a higher probability for implementation.
Economic Diversification	Focuses on the challenges facing SSA	Discusses some key challenges facing	1. To diversify, SSA governments need to craft policies that

Strategies: A key driver in Africa's new industrial revolution, 2012 *Theme* *Challenges and strategies for Sub-Saharan Africa's economic diversification.*	economies and the need for strategies for economic diversification through industrialisation.	economic transformation efforts in SSA hampered by the lack of export diversification. There is need for industrialisation to curb economic reliance on export of commodities.	take into account the needs of key players in the economy. 2. Trade policies and trade negotiations must be in line with the industrial policies. 3. Regional industrial policies might contribute to further integration of SSA economies.
Industrial Development Report, 2013 *Theme:* *Sustaining employment growth: The role of manufacturing and structural change*	Since the industrial revolution, manufacturing has been at the core of structural change, leading to more output and jobs and to higher income levels.	The Report frames the debate on jobs and the role of manufacturing.	1. Countries need to move form low-tech to high-tech sectors; from low-value added to high-value added sectors, and from low-productivity to high productivity sectors. 2. State can use policy instruments to foster industrial development. Particular emphasis should be place on education and skills; competitive finance; technology and innovation.
Africa Economic Outlook, OECD – African Development Bank			
Africa Economic Outlook, 2013 *Theme:* *Structural transformation and natural resources*	Main assumption: given Africa's comparatively low skill-to-labour ratio, it needs mainly low-skills jobs to make structural transformation happen (at least in the short-term). Therefore, high skilled services as a vehicle of structural transformation may not work. Jumping straight to advanced manufacturing has failed in the past because of capabilities and technological challenges. The Report emphasises on the	Focus is on structural transformation, using natural resources as a leverage. The Report is based on the observation that productivity growth in Africa has been too slow and has not created enough jobs to reduce poverty.	Four layer approaches: 1. Putting in place right conditions, such as public services, infrastructure, skills development, large and competitive markets; efficient tax systems etc; 2. Establish specific framework conditions for extractive sector. E.g. Good land management; incentives; resource-specific capabilities; rules and regulations; etc. 3. Natural resource management, optimisation of revenue from natural resources and investing it widely (fiscal linkages); 4. Active policies should focus on agricultural productivity and promotion of viable (backward) linkages.

	promotion of agricultural productivity; and on building backward linkages in extractives sector.		
UNCTAD			
Global Value Chains in Development Report, 2013			
World Investment Report, 2013 *Theme: Global Value Chains: Investment and Trade for Development*	The report focuses on how resource rich SSA countries can join GVCs or move up the chain in the extractives industry.	The report discusses the challenges and strategies that resource rich SSA countries can use to move up the GVCs of commodities	1. The extractive industry should divest from overreliance on FDI as this creates a race to the bottom in attracting capital, with little impact on job creation. 2. Creating a stable economic, political, and social environment is the key to attracting FDI. 3. Economies within the GVCs should strive to move up the chain for economic growth. 4. There's need for policy coherence between trade and investment policies for a country to participate effectively in GVCs.
Economic Report on Africa, 2014 *Theme:* *Catalysing investment for transformative growth in Africa*	The report focuses on how to boost and use investment in support of economic transformation and sustained growth in Africa	The focus of the report on total investment reflects the fact that all components of investment matter for growth and development. The focus of policy should be on how to exploit the complementarities among the various components, rather than promoting one component at the expense of the other.	1. Sustained and transformative growth in Africa requires broadening the sources of growth, both on the demand and supply side of the economy. On the demand side, it requires balancing the relative contributions of consumption and investment to the growth process. On the supply side, this requires a shift from low- to high-productivity activities both across and within sectors and reducing the share of agriculture in GDP and increasing the shares of manufacturing and modern services. 2. Enhancing the contribution of investment to growth requires boosting investment rates, improving the productivity of existing and new investments, and ensuring that investment goes to strategic and priority sectors deemed crucial for economic transformation. In

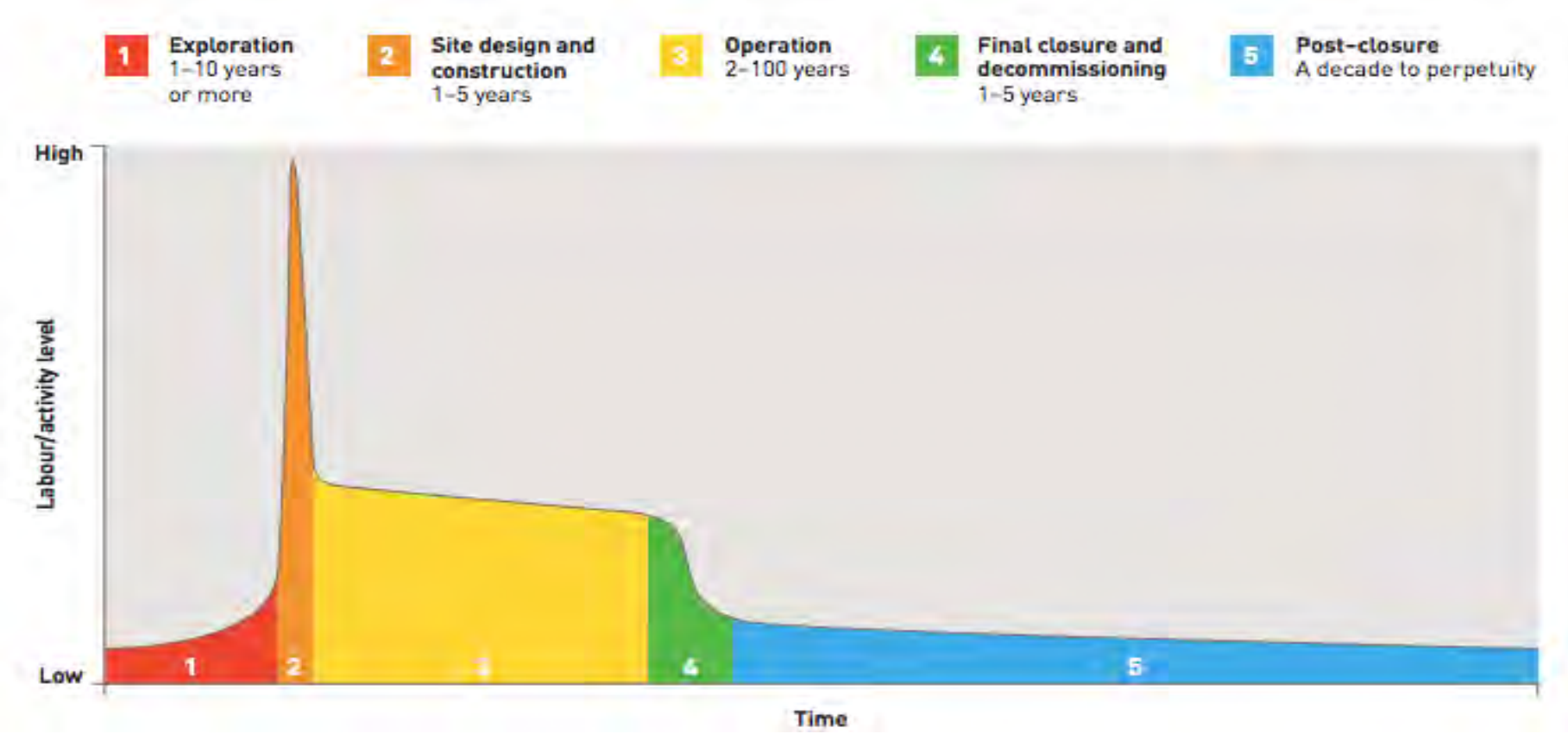
			this regard, countries need to address the main constraints to investment, notably the poor infrastructure, lack of access to affordable finance, and risk and uncertainty. Industrial policy should be used to direct investment to strategic production activities, such as agribusiness and manufacturing, which are critical for transformative growth. 3. More public investment, particularly in infrastructure, is needed to catalyse private investment in Africa. In this context, there is a need to direct policy focus on how to exploit the complementarities between public and private investments, rather than promoting one component at the expense of the other as has been the case in many countries on the continent. 4. African policymakers have to adopt a more coherent approach to the promotion investment. This should include macroeconomic and sectoral policies that are consistent with the objective of promoting investment. In addition, policies that promote FDI should not discriminate against local investors and reduce entrepreneurship. 5. It calls for the international community to make aid and trade more consistent with the objective of promoting investment in Africa, notably though support to risk guarantees Regarding trade, more coherence is required to grant African countries more market access and policy space to promote trade and investment. African countries also need to adopt a more strategic approach to trade negotiations at the bilateral and multilateral levels to ensure that the outcomes are mutually supportive of their national development goals.
Africa Centre for Economic Transformation			
2014 Africa Transformation	The Report is based on the premise	Key feature: the development of a	Key drivers of growth with DEPTH:

Report *Theme:* *Growth with Depth*	that African economies need more than growth. Transformation requires **DEPTH** – **D**iversification of production; **E**xport competitiveness; **P**roductivity of farms, firms and bureaucracies; **T**echnological upgrading and **H**uman well-being improvement.	Transformation index, assessing the performance of African economies on the five attributes (diversification, export competitiveness, productivity, technology and human development);	1. Role of State in (i) managing the economy, providing the vision, coordinating and implementing policies, and embarking on reforms; (ii) providing business climate (iii) fostering state-private sector partnership; (iv) facilitating technological upgrading and competitive capacities; 2. Promoting exports, through (i) formulating an explicit export strategy and enhancing profitability of exports; (ii) protecting producers; (iii) providing subsidies; (iv) requiring firms to hire local workers; (v) increasing access to technology; 3. Building technical knowledge and skills by (i) extending access to basic education and improving quality; (ii) expanding technical and vocational training; (iii) favouring science and technology; (iv) up skilling workers; (v) providing apprenticeship and training for informal sector; 4. Regional integration through (i) more integrated regional markets; (ii) regional infrastructure; (iii) cross-border and trade facilitation; political leadership and commitment.
Africa Progress Panel			
Africa Progress Report 2013 *Theme:* *Equity in extractives: Stewarding Africa's natural resources for all*	The Report explores the potential, problems and policy options associated with natural resources by focusing on oil, gas and mining. .	All countries should therefore develop national strategies that define the terms under which their natural resources should be developed, including fiscal policies, contractual arrangements and tax regimes	1. National strategies must give priority to extractive projects that can generate more jobs, by linking effectively to the local economy. 2. Countries need to process their natural resources before exporting them, as this creates extra value to a country's natural resource sector. Africa can only build dynamic growth and shared prosperity if the extractive sectors are dis-enclaved and resources are processed. 3. Leadership, transparency, and accountability are critical. Building in the Africa Mining vision, African governments should rise to the challenges posed by fiscal policy, tax reform and the development of industrial policies. They must manage their countries' oil, gas and mining resources efficiently and share revenues fairly. They must also adopt

			legislations for better transparency of revenues and institute transparent systems of auctions and competitive bidding for concessions and licenses. 4. The international community must also have shared responsibilities, in particular to address questions of transfer pricing, illicit capital flows, shell companies and tax havens. 5. Other countries must adopt and enforce the project- by-project disclosure standards, such as those embodied in the US Dodd-Frank Act and comparable EU legislation.
Report	**Approach to global value chain**	**Key focus**	**Policy recommendations**
Africa Economic Outlook, 2014 *Theme:* *Global value chains and Africa's industrial development*	The Report is based on the assumption that in an increasingly globally fragmented production process, developing countries are no longer obliged to create entire industries to participate in competitive markets. They can access GVCs directly by providing specific skills or products to international production networks.	African countries can further integrate into GVCs by opening up trade, targeting regional and emerging markets, modernising infrastructure, promoting local entrepreneurship, and investment in education Although Africa has important resource endowments, domestic productivity remains weak and infrastructure deficit is a major handicap; GVC integration is difficult because of transport and logistics costs that are high	1. Policies must be value-chain specific and countries must identify their best position in the VC; 2. Making the most of GVCs implies trade-offs given budget and resources constraints. Policies must ensure that no other sector or value chain is disadvantaged; 3. Entrepreneurship and private public dialogue are crucial. Business associations need to be strengthened; training and access to finance must be made available; 4. Power and ownership structure of GVCs can determine which pathways to increase domestic value added are available and which are not. Strategies must therefore take this into account and be developed accordingly; 5. GVCs are not the panacea to structural transformation, but form part of a wide range of complementary policy areas in particular in support for skills development and strong domestic capacity. 6. Trade and regional integration are important to remain competitive in GVCs 7. Putting in place good infrastructure and business environment is a necessary condition to participate competitively in GVCs 8. Partnerships with international lead firms are essential; 9. TO ensure inclusiveness and sustainability, strong social and environmental frameworks are needed.

Annex 2

Estimated mine project life cycle



Source: ICMM, 2014.

Annex 3

Taxonomy of extractive resources

Characteristics: They span the range of high and low technology sectors, large and small-scale enterprises, capital and labour intensive technologies, activities which depend to varying degrees on different types of infrastructure, and commodities which have short and long shelf lives.

Type of commodities	Examples	Characteristics	Main use	Factor intensity in extraction
Non-metallic minerals				
	Native sulfur, sulfur pyrite, borosilicates, nitrates, natural salt)	Divided into four groups on the basis of the field in which the y are used: (1) chemical raw materials	Mostly used to produce mineral fertilizers;	Low to medium capital and technological intensity
	E.g. of refractories: refractory clays, magnesite, quartzite etc E.g. Fluxes: limestones, dolomites, quartzites, and fluorite E.g. Of molding materials: molding clays and sands E.g. Of agglomeration: bentonite clays	(2) metallurgical raw materials, including nonmetallic miner als used to produce refractories, fluxes and molding materia ls and agglomerations of fine ore;	Wide industrial and construction use	
	Nonmetallic construction materials (granite, labradorite, diorite, limestone, dolomite, marble, quartzite, tuff, sandstone, and so on), ceramic and glass raw materials (high..melting clays, sands, kaolins, feldspar, wollastoite, and rhyolites), raw.material for the production of binders (low.melting clays, limestone, and marl), mineral dies (ochers and colcothar), and thermal and acoustic insulation materials (perlite and vermiculite)	3) construction materials;		
	Industrial crystals (diamond, piezo quartz, Iceland spar, muscovite, phlogopite, and agate) Precious and semiprecious stones (jewelry diamond, e merald, topaz, ruby, agate, malachite, turquoise, jasper, and amber)	4) Nonmetallic non..ore raw materials, represented by the in dustrial crystals and precious and semiprecious. Asbestos, talc, graphite, and abrasive materials (corundum a nd emery) are also ordinarily classed with this group.		
Metallic minerals				
Precious metals	Gold, silver, platinum group of metals	Also known as noble metals, they have high economic value, are	Input for industrial use	Capital and technology intensive;

		ductible		
Ferrous metals	Iron ore, steel, manganese, nickel	Mainly composed or iron and have magnetic properties	Infrastructure and construction	Capital and technology intensive; low intensity in labour
Non-ferrous metals	Copper, zinc, lead tin, bauxite	Any metal, including alloys, that does not contain iron in appreciable amounts. Properties: low-weight, high conductivity, non magnetic and resistant to corrosion	Input for industrial use	Capital and technology intensive; low intensity in labour
Rare earth and minerals	Tungsten, niobium, berrylium, lithium	A series of chemical elements found in the earth's crust. Vital to modern technologies, They have unique magnetic, luminescent, and electrochemical properties. Make technologies perform with reduced weight and emissions, and energy consumption; greater efficiency, performance, miniaturization, speed, durability, and thermal stability.	Input for industrial use	Capital and technology intensive; low intensity in labour
Energy minerals				
Petroleum products	Derived from crude oil	These fuels include or can be blended to give gasoline, jet fuel, diesel fuel, heating oil, and heavier fuel oils. Heavier (less volatile) fractions can also be used to produce asphalt, tar, paraffin wax, lubricating and other heavy oils.		
Natural/ shale gas	Natural Gas	Natural gas is a hydrocarbon gas mixture consisting primarily of methane but commonly includes varying amounts of other higher alkanes and sometimes a usually lesser percentage of carbon dioxide, nitrogen, and/or hydrogen sulphide.	Energy source often used for heating, cooking, and electricity generation. Used as fuel for vehicles and as a chemical feedstock in the manufacture of plastics and other commercially important organic chemicals	
Coal		Combustible sedimentary rock occurring in coal beds or coal seams. Coal is composed primarily of carbon along with variable quantities of other elements, chiefly hydrogen, sulfur, oxygen and nitrogen	Coal is the largest source of energy for the generation of electricity worldwide	

Author's compilation, adapted from: Farooki and Kaplinski: 2012 and Wikipedia.

Annex 4

Relevant Regulatory Frameworks regarding LCRs in selected mineral rich countries

	Key policies	Key legislations	Key regulations	Contracts
Mining Sector				
Chile	General Mining regulations in: The Constitution; Constitution organic law of Mining Code and regulation governing mining	*No specific legislation*	*No specific regulations*	Yes
Ghana	Minerals and Mining Act 2006 (Act 703).	*No specific legislation*	Minerals and Mining (General) Regulations 2012 (LI 2173) contains details for provisions in the Act dealing with local content	Yes
Mozambique	Mining Law 2014 (Law No. 20/2014 of 18 August)	Mining Law Regulations, Decree no 28/2003 to be amended as per Law 2014 Legal instruments for mega-projects: Mega-projects Law (Law 15/2011, of 10 August 2011)	Mega-projects Regulations (Decree 16/2002, of 4 June 2012)	Specific local content requirements in contracts.
South Africa	National Development Plan 2030, August 2012 Industrial Policy Action Plan, 2013 Minerals Beneficiation Strategy, 2011	South Africa Mining Charter 2004 Mineral and Petroleum Resources Development Act (26), 2002 Broad-Based Black Economic Empowerment Act, 2003	Specific acts regarding: Diamonds: Diamonds Amendment Acts 2005; Precious Metals Act 2005	Yes
Zambia	Mineral Resources Development Policy 2013. *The policy is yet to be adopted*	Mines and Minerals Development Act no 7 of 2008 ("Law 7/08") (granting and holding mining rights) Citizens Economic Empowerment Act of 2006 - Prioritizes granting of licences to investors who promote LCs.	Statutory Instrument no 84 of 2008 Sets specific reporting requirements for investors regarding LCs.	N/a
Oil and gas Sector				
Brazil	Petroleum Law 9.478/ 1997 Constitutional Amendment No. 6/ 1995	Resolution 36/07 of Ministry of Mines and Energy; Local Content Policy, 1999	Reporting requirements in Ordinance 180/2003	Contract Clause No. 2 (concessionaries to favour Brazilian suppliers if offer is competitive)
Ghana	Petroleum Commission Act 2011	Petroleum (Local content and Local Participation in Petroleum Activities) Regulations 2013	Local Content and Local Participation in Petroleum Activities Policy Framework 2011	***Model Petroleum Agreement 2003***
Mozambique	**Gas Master Plan** Petroleum Law 2014 (Law No. 21/2014 of 18 August 2014)	N/A covered in Petroleum Law 2014	N/A covered in Petroleum Law 2014	N/A covered in Petroleum Law 2014
Nigeria	Vision 20: 2020 A local content policy was issued in the early 2000's, which was used as a basis for the Act Petroleum Industry Bill	Nigerian Oil and Gas Industry Content Development Act, 2010	Other regulations deal to varying degrees with local content but the Act is the most significant instrument.	Yes
Norway	Act of 29 November 1996 No. 72 pertaining to petroleum activities (Petroleum Act)	Regulations to the Petroleum Act, laid down by Royal Decree 27 June 1997 (Petroleum Reg)	Technical regulations	

Source: Author's compilation

Annex 5

Selected resource-rich African countries that have signed bilateral investment treaties/Investment agreements

	Country	BITs		Other IIAs*	
		Signed	In force	Signed	In force
1.	Algeria	47	28	8	6
2	Angola	8	4	7	5
3	Botswana	9	2	7	6
4	Burkina Faso	16	6	10	8
5	Cameroon	17	9	7	6
6	Chad	16	3	6	6
7	Congo Rep	14	6	5	5
8	Eq. Guinea	9	2	5	5
9	Gabon	14	8	6	6
10	Ghana	26	8	8	6
11	Guinea	20	6	8	6
12	Liberia	4	3	8	6
13	Madagascar	9	8	5	4
14	Mozambique	25	20	7	6
15	Namibia	14	8	7	6
16	Niger	5	2	10	8
17	Nigeria	25	13	9	5
18	South Africa	40	17	10	8
19	Tanzania	19	11	7	6
20	Uganda	15	7	8	7
21	Zambia	11	5	8	6
22	Zimbabwe	30	6	8	6

* Stated number of BITs/Other IIAs does not include treaties that have been denounced, terminated by mutual consent or renegotiated.

References

Africa Center for Economic Transformation (2014). *Africa Transformation Report. Growth with Depth*. Accra.

African Development Bank (2013a). *Annual Report*. Tunis.

African Development Bank (2013b). *Africa and the Global Value Chain. Time to raise the bar*. Speech by Dr D. Kaberuka at the WTO Fourth Aid for Trade Global Review, Geneva, 8 July 2013.

African Development Bank (2014). *Tracking Africa's Progress in Figures*. Tunis

African Development Bank, OECD, UNDP and UNECA (2013). *African Economic Outlook. Structural Transformation and Natural Resources*. Tunis

African Development Bank, OECD and UNDP (2014). *African Economic Outlook. Global Value Chains and Africa's Industrialisation*. Tunis

Africa Progress Panel (2013). *Equity in Extractives. Stewarding Africa' Natural Resources for All*. Africa Progress Report 2016. Geneva.

Akabzaa, T. and A. Darimani. (2001). *Impact of Mining Sector Investment in Ghana: A Study of the Tarkwa Mining Region*. Washington DC: SAPRIN

Aigbedion, I and Iyayi S. E. (2007). Diversifying Nigeria's Petroleum Industry. A Historical Review. International Journal of Physical Sciences Vol. 2 (10), pp. 263-270, October 2007.

Allende J. (1988). *Historical Constraints to Privatization: The Case of the Nationalized Chilean Copper Industry*. Studies in Comparative International Development.

Ashe H. and P. Neuerburg (2013). *Promoting Industrial Diversification in Resource Intensive Economies. The Experience of Sub-Saharan Africa and Central Asia Regions*. UNIDO Working Paper 2/2012. Development Policy, Statistics and Research Branch. Vienna.

Altenburg T. (2011). *Industrial Policy in Developing Countries. Lessons from seven country cases*. DIE Discussion Paper 4/2011. Bonn.

Amendolaigne, V., A. Boly, N.D. Coniglio, and F. Prota. (2013). *FDI and Local Linkages in Developing Countries: Evidence from Sub-Saharan Africa*. World Development, 50: 41–56.

Armstrong, Albert T. (2008). *Gold strike in the breadbasket: Indigenous livelihoods, the World Bank and territorial restructuring in western Ghana*. Development Report 18, 25-48

Angelini A, R. C. Vidler and A. Xu. (2010). *Industrial policy and the WTO with special reference to LDCs exceptions*. Trade Law Clinic. The Graduate Institute. Geneva.

Auty R. (1993). *Sustaining Development in Mineral Economies: The Resource Curse Thesis*, London: Routledge

Bamber, P., K. Fernandez-Stark, G. Gereffi and A. Guinn (2014). *Connecting Local Producers in Developing Countries to Regional and Global Value Chains*. Update. OECD Trade Policy Papers. No. 160. OECD Publishing. Paris.

Barnett A. and M. Bell. (2011). *Is BHP Billiton's Cluster Programme in Chile relevant for Africa's Mining Industry?* Policy Practice Brief 7. The Policy and Practice, August 2011.

Berger, S. (2011). *Why manufacturing matters?* MIT Technology Review, 1 July 2011.

Bourgouin, F. (2011). *A Missed Opportunity: Mining for Sustainable Development*. Danish Institute for International Studies, Policy Brief. Copenhagen.

Bridge, G. (2008). *Global Production Networks and the Extractive Sector: Governing Resource-Based Development*. Journal of Economic Geography, 8(3): 389-419.

Bwalya, S. M. (2006). *Foreign Direct Investment and Technology Spillovers: Evidence from Panel Data Analysis of Manufacturing Firms in Zambia*. Journal of Development Economics, 81(2): 514-526

Burr L. et al. (2013). *Extractive Natural Resource Development: Governance, Linkages and Aid*. Danish Institute for International Studies Report. No. 28. Copenhagen.

Byiers, B., and Rampa, F. (2013). *Corridors of power or plenty? Lessons from Tanzania and Mozambique and implications for CAADP*. (ECDPM Discussion Paper 138).

Cattaneo O., G. Gereffi and C. Staritz Eds. (2010*). Global Value Chains in a Post Crisis World. A Development Perspective*. The World Bank. Washington D.C.

Chang H-J. (2001). *Intellectual Property Rights and Economic Development: Historical Lessons and Emerging Issues.* Journal of Human Development 2 (2): 287–309.

Chang, H-J. (2002). *Kicking Away the Ladder – Development Strategy in Historical Perspective*. Anthem Press, London.

Chang H-J. (2004). *Regulation of Foreign Investment in Historical Perspective*. European Journal of Development Research 16 (3): 687–715.

Chang H-J. (2005). *Why Developing Countries Need Tariffs: How WTO NAMA Negotiations Could Deny Developing Countries' Right to a Future*. Geneva: South Centre; Oxford: Oxfam International

Chang H-J. (2007). *Bad Samaritans: The Guilty Secrets of Rich Nations and the Threat to Global Prosperity*. Random House Business Books, London.

Chang H-J. (2009). *Under-explored Treasure Troves of Development Lessons – Lessons from the Histories of Small Rich European Countries*, in M. Kremer, P van Lieshout and R. Went (Eds.), Doing Good or Doing Better – Development Policies in a Globalising World, Amsterdam University Press, Amsterdam.

Chang, H-J. (2011). *Industrial Policy: Can we go beyond an unproductive confrontation?* Annual World Bank Conference on Economics 2010, Global. International Bank for Reconstruction and Development. The World Bank. Washington D.C.

Change H-J. (2012). *Industrial policy: Can Africa do it*? Paper presented at a roundtable on industrial policy in Africa. Pretoria. South Africa. 3 - 4 July 2012.

Cimino C et al. (2014). *A Proposed Code to Discipline Local Content Requirements*. Policy Brief. Peterson Institute for International Economics. February 2014.

Clifford C. (2014). *New Petroleum Law: The Future of Oil & Gas in Mozambique*. Briefing Note. October 2014.

Collier, P. and A. Hoeffler. (2005). *Resource Rents, Governance, and Conflict*. Journal of Conflict Resolution 49.4: 625–33

Collier, P. and A. Hoeffler. (2002). *The Political Economy of Secession*. 23 December, Development Research Group. The World Bank. Washington, D.C.

Collier, P. and A. Hoeffler. (2000). *Greed and Grievance in Civil War*. 26 April. The World Bank. Washington D.C.

Collier, P. and A. Hoeffler. (1998). On Economic Causes of Civil War. Oxford Economic Papers No 50: 563–73

Columbia School of International Public Affairs (2013). *Mozambique: Mobilizing Extractive Resources for Development.* Mozambique: Extractives for Prosperity Volume II. Capstone Report. Columbia University. New York.

Craig J. (2001). *Putting Privatization into Practice: The case of Zambian Consolidated Copper Mines Limited*. Journal of Modern African Studies, 39(3): pp. 389 – 410.

CSIRO Futures. (2014). *The Future of Mining in Chile*. Santiago, Chile.

Curtis, M., and T. Lissu. (2008). *A Golden Opportunity? How Tanzania is Failing to Benefit from Gold Mining*. Christian Council of Tanzania (CCT).

De Backer K., and S. Miroudot. (2012). *Mapping Global Value Chains*. Paper prepared for the final WIOD Conference: Causes and consequences of globalisation, Groningen, The Netherlands. April 24 - 26, 2012.

DCED (2014). *Industrial Policy*. Private Sector Development Synthesis Note.

Diongue A. et al. (2011). *Measuring the contribution of extractive industries to local development: the case of oil companies in Nigeria*. Research Center ESSEC Working Paper 1109. July 2011.

Draper P. and A. Freytag. 2014. *Who captures the value in the value chain? High level implications for the World Trade Organization.* E15 Expert Group on Global Value Chains: Development Challenges and Policy Options Think Piece. July 2014.

Draper P and M Dube. (2014). *Plurilaterals and the Multilateral Trading System*. E15 Expert Group on Regional Trade Agreements and Plurilateral Approaches Think Piece. December 2013.

Doepel, D., and Bolton, G. (2013). Extracting the value from the extractive industries: Insights from the Australian experience. GREAT Insights, Volume 2, Issue 2. February-March 2013. Maastricht: ECDPM

Dunning T. (2008). Crude Democracy. Natural Resource Wealth and Political Regimes. Cambridge Studies in Comparative Politics.

Ernst and Young. (2014). *Creating Shared Value in Africa: Local Content in the Oil and Gas Industry*.

Elijah I. O. (2014). *The Success of the Backward Integration Policy in the Nigerian Cement Sector. International Journal of Materials Science and Applications*. Vol. 3, No. 2, 2014, pp. 70-78.

Esanov A. (2012). *Diversification in Resource-Dependent Countries. Its dynamics and policy issues*. Revenue Watch Institute.

Farfan, O. (2005). *Understanding and Escaping Commodity-Dependency: A Global Value Chain Perspective*. The World Bank. Washington, D.C.

Fessehaie, J. (2011). *Development and Knowledge Intensification in Industries Upstream of Zambia's Copper Mining Sector.* MMCP Discussion Paper, University of Cape Town and the Open University.

Gbedi, D. O and J. F Adebisi (2013). *Managing Local Content Policies in the Extractive Industries*. Research Journal of Finance and Accounting. Vol.4, No.7, 2013.

Gereffi G. (2005). *The Global Economy. Organisation, Governance and Development* in N. J Smelser & R. Swedberg (Eds.) The Handbook of Economic Sociology. P. 160 - 182. Second Edition> Princeton and Oxford. Princeton University Press. New York.

Gereffi G., J. Humphrey and T. Sturgeon (2005). *The Governance of Global Value Chains. Review of International Political Economy*. Pp. 78 - 104.

Gereffi G., and K. Fernandez-Stark. (2011). *Global Value Chain Analysis. A Primer*. Centre on Globalisation, Governance and Competitiveness, Duke University, Durham, North Carolina.

Goger A., A. Hull, S. Barrientos, G. Gereffi and S. Godfrey (2014). *Capturing the Gains in Africa: Making the Most of Global Value Chain Participation.* Duke University Centre on Globalisation, Governance and Competitiveness and the Social Science Research Institute.

Grynberg, R. 2013. *Some Like Them Rough: The Future of Diamond Beneficiation in Botswana*. (ECDPM Discussion Paper 142). Maastricht.

Haber and V. Menaldo (2011). *Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse.* American Political Science Review. Volume 105. Issue 01, February 2011, pp. 1- 26.

Harrison, Ann, and Andrés Rodríguez-Clare (2010). *Trade, Foreign Investment, and Industrial Policy for Developing Countries* (NBER Working Paper No. 15261). Cambridge, MA: National Bureau of Economic Research (NBER).

Hausmann, R., and D. Rodrik (2003). *Economic Development as Self-Discovery*. Journal of Development Economics, 72(2): 414–50

Hausmann, R. and D. Rodrik. (2006). *Doomed to Choose: Industrial Policy as Predicament.* J. F. Kennedy School of Government. Cambridge.

Hausmann R., C. Hidalgo, S. Bustos, M. Coscia, A. Simoes and M. Yildirim (2013). *The Atlas of Economic Complexity: Mapping Paths to Prosperity*. Centre for International Development. Harvard University.

Havro, G. and J. Santiso (2008). *To Benefit from the Plenty. Lessons from Chile and Norway*. OECD Policy Brief. No. 37. Paris.

Hellinger D. (2004). *Chile, CIPEC and the Neoliberal Regime in the Production and Trade in Copper*.

Hilson, G. and C. Garforth. (2012). *'Agricultural Poverty' and the Expansion of Artisanal Mining in Sub-Saharan Africa: Experiences from Southwest Mali and Southeast Ghana*. Population Resources Policy 31, 435-464.

Hilson, G. and C. Garforth. (2013). '*Everyone Now is Concentrating on the Mining': Drivers and Implications of Rural Economic Transition in the Eastern Region of Ghana*. The Journal of Development Studies 49:3, 348-364.

Hilson, G. and J. McQuilken. 2014. *Four decades of support for artisanal and small-scale mining in Sub-Saharan Africa: a critical review*. Exec Ind and Soc 1 (1), 104–118.

Hirschman, A. O. (1981). *Essays in Trespassing: Economics to Politics and Beyond*. New York, NY: Cambridge University Press.

Hufbauer G et. Al. (2013). *Local Content Requirements" Report on a Global Problem*. Draft June 2013.

Humphreys, M. (2005). *Natural Resources, Conflict, and Conflict Resolution: Uncovering the Mechanisms*. Journal of Conflict Resolution 49.4: 508–37.

Ibrahim, M. J. (2007). *Growth Prospects of Oil and Gas Abundant Economies: the Nigerian experience (1970-2000).* [Online]. Available from: http://www.emeraldinsight.com/journals.htm?articleid=1724410&show=pdf

ICMM. (2014.*Enhancing Mining's Contribution to the Zambian Economy and Society*. Mining Partnership for Development Report jointly with Chamber of Mines of Zambia.

Ihua U. B et. Al. (2009). *Nigerian Content Policy in the Oil and Gas Industry: Implications for Small to Medium-Sized Oil-Service Companies*. In Repositioning African Business and Development for the 21st Century Simon Sigué (Ed.)

International Mining for Development Centre. (2013). *Mining and Development: An Overview of the Regulatory Framework and Policies*. IM4DC Action Research Report.

International Monetary Fund (2015). *Regional Economic Outlook. Sub-Saharan Africa: Navigating Headwinds*. World Economic and Financial Surveys. April 2015. Washington D.C.

International Institute for Sustainable Development (2014). *Bilateral Investment Treaties, Mining and National Champions: Making it Work*. Background paper for the Ad Hoc Expert Group Meeting: Bilateral Investment Treaties and National Champions. 18th Meeting of the Inter-Governmental Committee of Experts "National Champions, Foreign Direct Investment and Structural Transformation in Eastern Africa. Kinshasa, February 17 - 20, 2014.

Jackson J. (2006). *Sovereignty, the WTO and Changing Fundamentals of International Law*. New York. Cambridge University Press.

Jourdan, P., G. Chigumira, I. Kwesu, E. Chipumho. (2012). *Mining Sector Policy Study*. Zimbabwe Economic Policy Analysis and Research Unit. Harare.

Kaldor, M., T. L. Karl, and Y. Said eds. (2007). *Oil Wars*. London: Pluto Press.

Kaplan D. (2011). *South African mining equipment and related services: Growth, constraints and policy*. MMCP Discussion Paper No. 5 March 2011.

Kaplinsky R. (2011). *Commodities for Industrial Development. Making Linkages Work*. UNIDO Working Paper 01/2011. Development Policy, Statistics and Research Branch. Vienna.

Kapstein, E., and R. Kim. (2011). *The Socio-Economic Impact of Newmont Ghana Gold Limited*. Accra: Stratcomm Africa

Karl, T. L. (1997). *The Paradox of Plenty: Oil Booms and Petro-States*. Berkeley, Los Angeles and London: California University Press

Klueh, U., G. Pastor, A. Segura and W. Zarate (2007). *Inter-sectoral linkages and local content in extractive industries and beyond. The case of Sao Tomé and Principle*. IMF Working Paper. WP/07/213. Washington D.C.

Korinek, J. (2013). *Mineral Resource Trade in Chile: Contribution to Trade and Policy Implications*. OECD Trade Policy Paper no. 145, Paris: OECD.

Krueger, Anne O. (1974). *The Political Economy of the Rent-Seeking Society*. American Economic Review, 64(3): 291–303.

Krueger, Anne O (1990). *Government Failures in Economic Development*. Journal of Economic Perspectives, 4(3): 9–23.

Kumar, N. (2005). *Performance Requirements as Tools of Development Policy: Lessons from Developed and Developing Countries*. In Putting Development First, ed. Kevin Gallagher. London: Zed Books.

Kuntze JC and Moerenhout T. (2013). *Local Content Requirements and the Renewable Energy Industry - A Good Match?* Ad hoc Expert Group Meeting on Domestic Requirements and Support Measures in Green Sectors: Economic and Environmental Effectiveness and Implications for Trade. ICTSD.13−14 June 2013 Salle XXI, Palais des Nations Geneva

Kweka, J. (2009). *The role of TNCs in the Extractive Industry of the United Republic of Tanzania*. Transnational Corporations 18(1): 93.

Lange, S. (2006). *Benefit Streams from Mining in Tanzania: Case studies from Geita and Mererani. Bergen, Norway*: Chr. Michelsen Institute

Larsen, M. N., P. Yankson and N. Fold. (2009*). Does FDI Create Linkages in Mining? The Case of Gold Mining in Ghana*. Transnational corporations and development policy: Critical perspectives, 247-273.

Lawrence R. (2006). *Rules Making Amidst Growing Diversity. A Club of Club Approach to WTO Reform and New Issue Selection*. Journal of International Economic Law. Vol. 9. No. 4.

Lawrence R. (2008). *Towards a more Effective WTO: The Role of Variable Geometry*.

Lederman, D., and W. F. Maloney, eds. (2007). *Natural Resources: Neither Curse nor Destiny*. Washington, DC: World Bank; and Stanford, CA: Stanford University Press.

Lee K., W. Shin and H. Shin (2014). *How Large or Small is the Policy Space? WTO Regime and Industrial Policy*. Seoul Journal of Economics. 2014. Vol. 27. No. 3.

Lin J. and H-J. Chang. (2009). *Should Industrial Policy in Developing Countries Conform to Comparative Advantages or Defy it? A debate between Justin Lin and Ha-Joon Chang.* Development Policy Review, 2009, 27(5): 483 – 502.

Lin J. (2010). *Industrial Policy Comes out of the Cold.* The Project Syndicate.

Lorentzen, J. (Ed.). (2008). *Resource Intensity Knowledge and Development: Insights from Africa and South America*. Pretoria: HSRC Press.

Low P. and J. Tijaja. (2013). *Global Value Chains and Industrial Policies*. Think Piece for the E15 Expert Group on Global Value Chains. The E15 Initiative.

Luckey J. R. 2012. *Domestic Content Legislation: The Buy American Act and Complementary Little Buy American Provisions.* Congress Research Service Report for Congress.

Lundstøl, O., G. Raballand and F. Nyirongo (2013). *Low Government Revenue from the Mining Sector in Zambia and Tanzania: Fiscal Design, Technical Capacity or Political Will*? ICTD Working Paper 9, Sussex: IDS.

Maloney, William F. (2002). *Missed Opportunities: Innovation and Resource-Based Growth in Latin America*. World Bank Policy Research Working Paper 2935, December 2002, Washington.

Maloney, William F. and Lederman, Daniel (eds) (2007). *Natural Resources: Neither Curse nor Destiny*. Co-publication of Stanford University and World Bank, Palo Alto and Washington.

Mbayi, L. (2011). *Linkages in Botswana's Diamond Cutting and Polishing Industry*. MMCP Discussion Paper. The Open University and University of Cape Town.

McKinsey Global Institute. (2013). *Reversing the Curse: Maximizing the Potential of Resource-Driven Economies*. December 2013.

McKinsey Global Institute 2014. *Nigeria's Renewal. Delivering Inclusive Growth in Africa's largest economy*. McKinsey Global Institute. July 2014.

McMahon, G. and B. Tracy. (2012). *Firm and Sector-Level Mining Benefits in Zambia. Oil, Gas and Mining* (SEGOM) Publication May 2012. Washington, DC: The World Bank.

Meller P and A. Simpasa. (2010). *Role of Copper in the Chilean and Zambian Economies. Main Economic and Policy Issues*.

Merlevede, B., K. Schoors and M. Spatareanu. (2011). *FDI Spillovers and the Time since Foreign Entry*. Ghent University Faculty of Economics and Business Administration, Ghent University Working Paper, (2011/713)

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, The Open University and University of Cape Town.

Mopani (2014).

Morris M., R. Kaplinski and D. Kaplan. (2012). *One Thing Leads to Another. Promoting Industrialization by Making the Most of the Commodity Boom in Sub-Saharan Africa*. University of Cape Town.

Morris, M., R. Kaplinsky and D. Kaplan. (2011a). *One Thing Leads to Another – Commodities, Linkages and Industrial Development - A Conceptual Overview.* MMCP Discussion Paper. Milton Keynes and Cape Town, The Open University and University of Cape Town.

Morris, M., R. Kaplinsky and D. Kaplan. (2011b.) *Commodities and Linkages Industrialisation in Sub Saharan Africa*. MMCP Discussion Paper. Milton Keynes and Cape Town. The Open University and University of Cape Town.

Morris, M., R. Kaplinsky and D. Kaplan. (2011c). *Commodities and Linkages: Meeting the Policy Challenge*. MMCP Discussion Paper. Milton Keynes and Cape Town. The Open University and University of Cape Town.

Morrissey, O. (2010). *Impact of China and India on SSA countries: Opportunities, Challenges and Policies*. Commonwealth Trade Hot Topics, 80.

Morrissey, O. (2012). *FDI in Sub-Saharan Africa: Few Linkages, Fewer Spillovers*. European Journal of Development Research, 24: 26-31.

Morrissey, O. and E. Zgovu. (2011). *The Impact of China and India on Sub-Saharan Africa: Opportunities, Challenges and Policies.* London: Commonwealth Secretariat.

Morrisson, K.M. (2010). *What Can We Learn About the "Resource Curse" from Foreign Aid?* The World Bank Research Observer, 27: 52-73.

Nunnenkamp, P. (2002). *To What Extent Can Foreign Direct Investment Help Achieve International Development Goals?* The World Economy, 27(5): 657-677.

OECD. (2014). Latin American Economic Outlook 2014. *Logistics and Competitiveness for Development*. OECD, ECLAC and CAF.

Ovadia, J.S. (2013). *Local Content and the Emergence of the Petro-Developmental State in the Gulf of Guinea*. Ph.D. dissertation, Graduate Program in Political Science, York University Toronto, Ontario.

Oyejide, T. A., & A.O. Adewuyi. (2011). *Enhancing Linkages to the Oil and Gas Industry in the Nigerian Economy.* MMCP Discussion Paper. Open University and University of Cape Town. Discussion Paper No. 8. March 2011.

Pack H. and K. Saggi. (2006). *The Case of Industrial Policy. A Critical Survey*. Published by Oxford University Press on behalf of the International Bank for Reconstruction and Development, The World Bank.

Pangestu M (2002). *Industrial Policy and Developing Countries. In Development, Trade, and the WTO*: A Handbook, edited by B. Hoekman, A Mattoo and P. English. Washington, DC: World Bank.

Pedro, A. (2006). *Mainstreaming Mineral Wealth in Growth and Poverty Reduction Strategies*. Minerals & Energy-Raw Materials Report 21(1): 2-16.

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, The Open University and University of Cape Town.

Piore, Michael, and Charles Sabel. (1984). *The Second Industrial Divide*. New York: Basic Books.

Ramdoo. I. (2011). *Shopping for Raw Materials. Should Africa be worried about EU Raw Materials Initiative?* ECDPM Discussion Paper 105. Maastricht.

Ramdoo. I. (2012). *From Curse to Purse. Making Extractive Resources work for Development*. ECDPM Discussion Paper 136. Maastricht.

Ramdoo. I and S. Bilal (2013). *Extractive Resources for Development: Trade, Fiscal and Industrial* Consideration. ECDPM Discussion Paper 156. Maastricht.

Ramdoo, I. (2014). *New mega-trade deals: What implications for Africa*? (Briefing Note 73). Maastricht: ECDPM.

Ramdoo. I. (2015a). *Industrial Policies in a Changing World: What Prospects for Low-Income Countries?* Think Piece. E15 Expert Group on Reinvigorating Manufacturing: New Industrial Policy and the Trade System. Geneva.

Ramdoo. I. (2015b). *Unpacking local content requirements in the extractive sector: What implications for the global trade and investment framework*? Think Piece. E15 Expert Group on Trade and Investment in Extractive Industries. Geneva.

Ramdoo. I. (2015c forthcoming). *Synerging and optimizing mineral infrastructure in regional development strategies*. Think Piece. E15 Expert Group on Trade and Investment in Extractive Industries. Geneva.

Revenue Watch Institute. 2013. *Local Content Initiatives: Enhancing the Subnational Benefits of the Oil, Gas and Mining Sectors. Briefing*. July 2013.

Robinson J.A., R. Torvik and T. Verdier (2006). *Political Foundations of the Resource Curse*. Journal of Development Economics 79. Pp. 447 - 468. Elsevier. B.V.

Rodrik. D. (2004). *Industrial Policy for the Twenty-First Century*. Paper prepared for UNIDO, September.

Rodrik D. (2007). *Normalizing Industrial Policy*. Harvard University.

Ross, M. (2004a). *What Do We Know About Natural Resources and Civil War?* Journal of Peace Research 41.3: 337–56

Ross, M. (2004b). *How Do Natural Resources Influence Civil War? Evidence From 13 Cases*. International Organisation 58.1: 35–68

Ross, M. (2001a). *Does Oil Hinder Democracy?.* World Politics 53 (April): 297–322

Ross, M. (2001b). *Timber Booms and Institutional Breakdown in Southeast Asia*. Ann Arbor: University of Michigan

Rugraff, E., and M.W. Hansen (Eds.). (2011). *Multinational Corporations and Local Firms in Emerging Economies*. Amsterdam: Amsterdam University Press.

Sachs, J.D. and Warner, M. (1995). *Natural Resource Abundance and Economic Growth*. National Bureau of Economic Research Working Paper 6398 (December) Cambridge, MA: National Bureau of Economic Research

Sala-i-Martin, X. and Subramanian, A. (2003). *Addressing the Natural Resource Curse: An Illustration from Nigeria*. Washington, DC: International Monetary Fund

Schueler, V., T. Kuemmerle and H. Shroder. (2011). *Impacts of Surface Gold Mining on Land Systems in Western Ghana*. AMBOP 40: 528-539

Shearman and Sterling (2014). *Mozambique's New Petroleum Legislation: Are Investors Ready to Hit the Gas?* Project Development and Finance. Client Publication. 19 September 2014.

Shearman and Sterling (2014). *Mozambique's New Mining Law: A Re-Balancing Act.* Project Development and Finance. Client Publication. 27 October 2014.

Smith, B. (2004). 'Oil Wealth and Regime Survival in the Developing World: 1960–1999', American Journal of Political Science 28.2: 232–47

Stiglitz J. and J. Y. Lin (eds.) (2013a). *The Industrial Policy Revolution I. The Role of Government beyond Ideology*. Palgrave Macmillan.

Stiglitz J., J. Y. Lin and E. Patel (eds.) (2013b). *The Industrial Revolution II. Africa in the 21st Century*. Palgrave Macmillan.

Stiglitz J., J. Y. Lin and C. Monga (2013c). *The Rejuvenation of Industrial Policy*. World Bank Policy Research Working Paper 6628. Washington D.C.

Stoler A. (2013). *Will the WTO have Functional Value in Mega Regional World of FTAs?* E15 Expert Group Meeting on Regional Trade Agreements and Plurilaterals.

Suominen K. (2014). *RTA Exchange: Organizing the World's Information in Regional Trade Agreements*. E15 Expert Group on RTAs and Plurilaterals.

Syrquin, M. (2007). *Kuznets and Pasinetti on the Study of Structural Transformation: Never the Twain Shall Meet?* International Centre for Economic Research Working Paper, 46.

The Economist (2010). *The Global Revival of Industrial Policy. Picking Winners, Saving Losers*. 5th August 2010.

The Economist (2011). *Daily Chart: Africa's Impressive Growth*. 6th January 2011.

The Economist (2013). *The Hopeful Continent. Africa Rising*. 3rd December 2013.

Therkildsen. O. and F. Bourgouin. (2012), *Continuity and Change in Tanzania's Ruling Coalition: Legacies, Crises and Weak Productive Capacity.* DIIS Working Paper 2012:06.

Thrasher, Rachel, and Kevin Gallagher. (2008). *21st Century Trade Agreements: Implications for Long-Run Development Policy.* Pardee Papers 2, Frederick S. Pardee Center for the Study of the Longer-Range Future, Boston University, Boston, MA

Tordo, S., M. Warner, O. E. Manzano, and Y. Anouti. (eds.) (2013). *Local Content Policies in the Oil and Gas Sector*. World Bank Publications, 2013.

Tordo S et al. (2011). *National Oil Companies and Value Creation*. World Bank Working Paper 218.

Tordo S. et al. (2013). *Local Content Policies in the Oil and Gas Sector*. A World Bank Study.

TrustAfrica (2015). Nigeria: Country Fact sheet.

UNCTAD (2009): *The Relationship between Competition and Industrial Policies in Promoting Economic Development*. Report for the Trade and Development Commission. Intergovernmental Group of Experts in Competition Law and Policy

UNCTAD (2010). *Creating Business Linkages. A Policy Perspective*. Geneva.

UNCTAD (2012). *Extractive Industries: Optimizing Value Retention in Host Countries*. Report prepared in the framework of the 15th African Oil, Gas and Minerals Trade and Finance Conference, Congo 2012. Geneva.

UNCTAD (2013a). *Global Value Chains and Development. Investment and Value Added in the Global Economy*. Geneva

UNCTAD. (2013b). *The state of Industrial Development in Africa: Unexploited Opportunities amidst Growing Challenges.* Policy Brief. No. 27. August 2013.

UNCTAD (2013c): *World Investment Report. Global Value Chains: Investment and Trade for Development*. Geneva.

UNCTAD (2014). E*conomic Development in Africa Report. Catalysing Investment for Transformative Growth in Africa*. Geneva.

UNECA (2011). *Industrial Policies for the Structural Transformation of African Economies. Options and Best Practices*. Policy Research Paper. No. 2. Addis Ababa.

UNECA (2013). Economic Report on Africa. *Making the Most of Africa's Commodities. Industrialising for growth, Jobs and Economic Transformation.* Addis Ababa.

UNECA (2014). Economic Report on Africa. *Dynamic Industrial Policy in Africa*. Addis Ababa.

UNECA (2015a). *Accelerating Industrialization in Southern Africa through Beneficiation and Value Addition*. Twenty-first Meeting of the Intergovernmental Committee of Experts of Southern Africa, Victoria Falls, 12 - 13 March 2015.

UNECA (2015b). Economic Report on Africa. Industrializing through Trade. Addis Ababa.

UNECA (2015c): *Accelerating Industrialization in Southern Africa through Beneficiation and Value-Addition* -Twenty First Meeting of the Intergovernmental Committee of Experts of Southern Africa (ICE) 12-13 March 2015 Victoria Falls, Zimbabwe.

UNIDO (2009). Industrial Development Report. *Breaking in and Moving up. New Industrial Challenges for the Bottom Billion and the Middle-Income Countries*. Vienna.

UNIDO (2012a). *Economic Diversification Strategies: A Key Driver in Africa's New Industrial Revolution*. Vienna.

UNIDO (2012b). *Promoting Industrial Diversification in Resource Intensive Economies. The Experiences of Sub-Saharan Africa and Central Asia Regions*. Vienna.

UNIDO (2013). Industrial Development Report. *Sustaining Employment Growth. The Role of Manufacturing and Structural Change*. Vienna.

Urzúa, O. (2012). *Emergence and Development of Knowledge-Intensive Mining Services*. Working Papers in Technology, Governance and Economic Dynamics(41)

USAID. (2013). *Policy Options for Strengthening Local Content in Mozambique*. Draft Report for Review. A USAID and SPEED Publication.

Vaaland T. I et. Al. (2012). *Local Content and Struggling Suppliers: A Network Analysis of Nigerian oil and Gas Industry*. African Journal of Business Management. Vol. 6(15), pp. 5399-5413, 18 April 2012.

Walker M. (2005). *Unpacking the Nature of Demand and Supply Relationships in the Mining Capital Goods and Services Cluster. The case of PGMs*. Paper prepared for the Annual Forum 2005. Trade and uneven development. Opportunities and Challenges. South Africa.

Weng L., et al. (2013). *Mineral Industries, Growth Corridors and Agricultural Development in Africa*. Global Food Security. http://dx.doi.org/10.1016/j.gfs.2013.07.003

Wolfe R. (2013). *Letting the Sum Shine in at the WTO. How Transparency Brings the Trading System to Life.* WTO Economic Research and Statistics Division. Staff Working Paper.

World Bank (1993). *The East Asian Miracle*. Economic Growth and Public Policy. Washington D.C.

World Bank (2012). *Increasing Local Procurement by the Mining Industry in West Africa*. Road Test Version. January 2012. Washington D.C.

World Bank. (2013a). *Growing Africa: Unlocking the Potential of Agribusiness*. Washington DC: The World Bank.

World Bank (2013b). *Africa Pulse*. April 2013. Volume 7. Washington D.C.

World Bank (2015). *A Practical Guide to Increasing Local Procurement In West Africa*. World Bank and Kaiser Economic Development Partners. February 2015

World Economic Forum. (2012). *The Shifting Geography of Global Value Chains. Implications for Developing Countries and Trade Policy*. Global Agenda Council on the Global Trade System.

World Gold Council. (2014). *Responsible Gold Mining and Value Distribution*. A Global Assessment of the Economic Value Created and Distributed by Members of the World Gold Council. October 2014.

World Trade Institute Advisors. (2013). *Local Content Requirements and the Green Economy*. Ad hoc Expert Group Meeting on Domestic Requirements and Support Measures in Green Sectors: Economic and Environmental Effectiveness Implications for Trade, 13 – 14 June 2013. Geneva.

Yeboah S. (2015 forthcoming). *Using the extractive sector to leverage agricultural value chains: The case of gold mining and agricultural production in Ghana*.

Yusof Z. (2012). *Economic diversification. The case of Malaysia*. Revenue Watch Institute. National Economic Advisory Council. Malaysia.

Zhou E. (2013). *Agriculture and Mining in the Beira Corridor*. Paper presented at The Crawford Fund 2013 Annual Conference on Mining, Agriculture and Development: Bread from Stones? Perth, 23 - 28 August 2013.

About ECDPM

ECDPM was established in 1986 as an independent foundation to improve European cooperation with the group of African, Caribbean and Pacific countries (ACP). Its main goal today is to broker effective partnerships between the European Union and the developing world, especially Africa. ECDPM promotes inclusive forms of development and cooperates with public and private sector organisations to better manage international relations. It also supports the reform of policies and institutions in both Europe and the developing world. One of ECDPM's key strengths is its extensive network of relations in developing countries, including emerging economies. Among its partners are multilateral institutions, international centres of excellence and a broad range of state and non-state organisations.

Thematic priorities

ECDPM organises its work around four themes:

- Reconciling values and interests in the external action of the EU and other international players
- Promoting economic governance and trade for inclusive and sustainable growth
- Supporting societal dynamics of change related to democracy and governance in developing countries, particularly Africa
- Addressing food security as a global public good through information and support to regional integration, markets and agriculture

Approach

ECDPM is a "think and do tank". It links policies and practice using a mix of roles and methods. ECDPM organises and facilitates policy dialogues, provides tailor-made analysis and advice, participates in South-North networks and does policy-oriented research with partners from the South.

ECDPM also assists with the implementation of policies and has a strong track record in evaluating policy impact. ECDPM's activities are largely designed to support institutions in the developing world to define their own agendas. ECDPM brings a frank and independent perspective to its activities, entering partnerships with an open mind and a clear focus on results.

For more information please visit www.ecdpm.org

ECDPM Discussion Papers

ECDPM Discussion Papers present initial findings of work-in-progress at the Centre to facilitate meaningful and substantive exchange on key policy questions. The aim is to stimulate broader reflection and informed debate on EU external action, with a focus on relations with countries in the South.

This publication benefits from the generous support of ECDPM's core, institutional and programme funders: The Netherlands, Belgium, Finland, Denmark, Ireland, Luxemburg, Portugal, Sweden, Switzerland and Austria.

ISSN 1571-7577

European Centre for Development Policy Management

ecdpm

HEAD OFFICE
SIÈGE
Onze Lieve Vrouweplein 21
6211 HE Maastricht
The Netherlands *Pays Bas*
Tel +31 (0)43 350 29 00
Fax +31 (0)43 350 29 02

BRUSSELS OFFICE
BUREAU DE BRUXELLES
Rue Archimède 5
1000 Brussels *Bruxelles*
Belgium *Belgique*
Tel +32 (0)2 237 43 10
Fax +32 (0)2 237 43 19

info@ecdpm.org
www.ecdpm.org
KvK 41077447