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From enclave to linkage economies? A review of the literature on linkages between extractive multinational corporations and local industry in Africa

Michael W. Hansen

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MICHAEL W. HANSEN
Copenhagen Business School,
Center for Business and Development Studies
mwh.ikl@cbs.dk

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Danish Institute for International Studies, DIIS
Østbanegade 117, DK-2100, Copenhagen, Denmark
Ph: +45 32 69 87 87
Fax: +45 32 69 87 00
E-mail: diis@diis.dk
Web: www.diis.dk

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LIST OF ABBREVIATIONS

ADB	African Development Bank
BRIC	Brazil, Russia, India, China
BSR	Business for Social Responsibility
CSR	Corporate Social Responsibility
EH&S standards	Environment, Health and Safety standards
EITI	Extractives Industries Transparency Initiative
FDI	Foreign Direct Investment
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GIZ	Deutsche Gessellschaft für International Zusammenarbeit
GVC	Global Value Chain
IB	International Business
ICMM	International Council on Mining and Metals
IRR	Internal Rate of Return
LDC	Least Developed Country
MMCP	Making the Most of the Commodities Programme
MNC	Multinational Corporation
NGO	Non-Governmental Organisation
NPV	Net Present Value
OECD	Organisation for Economic
SME	Small- and Medium Sized Enterprise
SSA	Sub Saharan Africa
TNC	Transnational Corporation
TRIM	Trade Related Investment Measures
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Comission for Africa
UNIDO	United Nations Industrial Development Organization
WTO	World Trade Organization

ABSTRACT

If African developing countries are to benefit fully from the current boom in foreign direct investment (FDI) in extractives (i.e. mining and oil/gas), it is essential that the foreign investors foster linkages to the local economy. Traditionally, extractive FDI in Africa has been seen as the enclave economy par excellence, moving in with fully integrated value chains, extracting resources and exporting them as commodities having virtually no linkages to the local economy. However, new opportunities for promoting linkages are offered by changing business strategies of local African enterprises as well as foreign multinational corporations (MNCs). MNCs in extractives are increasingly seeking local linkages as part of their efficiency, risk, and asset-seeking strategies, and linkage programmes are becoming integral elements in many MNCs' corporate social responsibility (CSR) activities. At the same time, local African enterprises are eager to, and increasingly capable of, linking up to the foreign investors in order to expand their activities and acquire technology, skills and market access. The changing strategies of MNCs and the improving capabilities of African enterprises offer new opportunities for governments and donors to mobilize extractive FDI for development goals. This paper seeks to take stock of what we know about the state of and driving forces of linkage formation in South Sahel Africa extractives based on a review of the extant literature. The paper argues that while MNCs and local enterprises by themselves will indeed produce linkages, the scope, depth and development impacts of linkages eventually depend on government intervention. Resource-rich African countries' governments are aware of this and linkage promotion is increasingly becoming a key element in their industrialization strategies. A main point of the paper is that the choice between different linkage policies and approaches should be informed by a firm understanding of the workings of the private sector as well as the political and institutional capacity of host governments to adopt and implement linkage policies and approaches.

1. INTRODUCTION

Foreign direct investment (FDI) by multinational corporations (MNCs) is increasingly involving developing countries and more than half of global FDI currently goes to developing countries (UNCTAD, 2013). Although these flows are concentrated in the more advanced developing countries, they also play a pivotal role in less developed countries (LDCs) when measured in relation to the size of economies. These investments may have huge implications for development. Potentially, MNCs impact host countries not only through their financial contribution, but also through technology transfer and upgrading, creation of market-linkages, and through impacting the competitive environment of host countries (Dunning, 1993; Caves, 1996; Lall, 2002; UNCTAD, 1999; Narula, 2012). While FDI potentially brings development benefits for host countries, there are difficult trade-offs related to accessing these benefits:

- FDI is 'crowding in' investments and jobs by creating new activities and fostering linkages to local industries but may be 'crowding out' other investments and jobs in the process (Caves, 1996).
- FDI opens new avenues for economic development that hitherto have been inaccessible due to lacking capabilities, but also forces developing countries to surrender important aspects of their economy to decision making at corporate headquarters in faraway countries (Dicken, 2007).
- FDI offers opportunities for developing country firms to become integrated into global value chains and embark on export-oriented development strategies, but often developing country firms are placed in inferior and low value added functions of global value chains (UNCTAD, 2013);
- FDI may create large technology, productivity and market access spillovers on host countries, but on the other hand, foreign investors will adamantly resist leakage of core technology and skills to local firms (Rugraff & Hansen, 2011).

Given these trade-offs, it is not surprising that there is widespread dispute about whether FDI is boon or bane for economic development. Some conclude that, on balance, FDI contributes positively to economic and social development, mainly because FDI typically represents an inflow of efficiency and advanced technology that would otherwise not have been available to the host economy (Rugman, 1981; Forsgren, 2002). Others conclude that, on balance, development impacts are negative due to crowding out effects and dissemination of restrictive business practices (Herkenrath & Bonschier, 2003; Cypher & Diez, 2004) or that the positive impacts are exaggerated (Narula, 2012; Nunnenkamp, 2002). It is notable that the assessments of the impact of FDI on development dimensions have changed significantly over time, from the scepticism of the past to the 'obsession' with FDI of the 1990s and early 2000s.

However, this debate seems rather futile, as obviously, the assessment of FDI impacts depends on many factors. A more fruitful avenue of enquiry is to ask under which conditions FDI is boon or bane for host countries (Nunnenkamp, 2002; Rugraff & Hansen, 2011). The literature points to a number of such conditions and determinants of FDI impacts. First, MNCs have different strategies, organizations and owners and this may have huge implications for how they impact host countries: Some MNCs may be asset-exploiting while others are asset-augmenting. Some MNCs will control everything from headquarters while others decentralize large parts

of their decision making. Some MNCs may integrate parts of their home country's development strategies, while others may be subdued strong financial performance mandates of equity funds. Second, host countries may more or less skillfully craft frameworks for foreign investors. Some may have the ability to attract the right kind of FDI and un-bundle the FDI package to benefit local economic development, while others may adopt policies and strategies that leave few development benefits from FDI. Third, local industry may have more or less capacity to partner up to MNCs and learn from the foreign investors, and/or may be pursuing strategies that are more or less effective in benefitting from FDI.

Measuring FDI impacts

Level of FDI impacts host countries on multiple dimensions – sometimes contributing to development goals (however defined), at other times jeopardizing them – and the literature far from agrees on how to measure and aggregate the impacts of FDI. Perusing through the literature, various ways to classify impacts can be identified:

- impact: This is the distinction between macro-economic effects (balance of payments, productivity of economy), meso-level effects (industry structure and competition) and micro level effects (resources and skills of firms) (see e.g. Dicken, 2007);
- Dimension of impact: This is the distinction between different dimensions of impact, e.g. effects on employment, on capital formation, on growth, on poverty alleviation, on industry structure, on environment, on competiveness, etc. (see e.g. Lall, 2002 or UNCTAD, 1999).
- Intentionality of impact: This is the distinction between impacts based on whether or not they are an intended outcome of a business transaction. Here, a distinction between direct, indirect and spillover effects is made. Direct effects are effects deriving from the MNC subsidiary, e.g. job creation, exports, investment, etc. Indirect effects are effects that derive from a contract between the investor and a local operator. Spillovers are effects that are un-intentional seen from the perspective of the investor. This is for instance demonstration effects or competition effects (IFC, 2013; Rugraff & Hansen, 2011).

1.1 The importance of linkages

Among the factors shaping FDI's impacts are linkages to local firms. As part of their entry strategies, MNCs will foster collaborations and alliances with local firms in order to reduce costs, get greater efficiency, reduce risks, and/or acquire local knowledge and skills. Such linkages offer huge potential for job creation and export promotion as well as migration of skills and technologies (see e.g. UNCTAD, 2001, 2010a, 2013). Linkages potentially are key engines of industrial development and economic transformation in host countries: As stated by UNCTAD (2010a: 15) *"TNC-SME business linkages are potentially one of the fastest and most effective ways of upgrading domestic enterprises, facilitating the transfer of technology, knowledge and skills, improving business and management practices, and facilitating access to finance and markets. Strong linkages can also promote production efficiency, productivity growth, technological and managerial capabilities and market diversification in local firms"*.

This paper will focus on linkages and their role in industrial development. After a brief exposition of the various perspectives on linkages, we will move on to review the literature on linkages in African extractives.

1.2 Perspectives on linkages

Linkages between foreign investors are of crucial interest both from a business perspective and from a development perspective. From a business perspective, linkages play an

important strategic and organizational role in firms' pursuit of sustainable competitive advantage. Forming linkages – or what is sometimes referred to as networks, outsourcing, subcontracting, strategic alliances, licencing and franchising etc. – is a way for MNCs to collaborate with other firms in order to be able to focus on core competencies (Phrahalad & Doz, 1987); reduce costs (Doh, 2005; Sako, 2006); share risks (and opportunities) with other firms (Altenburg, 2001); and/or complement own resources and capabilities (Barney, 1991). The International Business (IB) literature argues that linkages are key aspects of firm internationalization strategies. Hence, internationalization rarely is a stand-alone endeavour (Johansson & Vahlne, 2009). Linkages to local firms in host countries are needed in order to overcome liabilities of foreignness and effectively tap into local knowledge and capabilities. Seen from the perspective of a local firm in host countries, linkages to foreign investors may be a way to expand business, facilitate foreign market access, learn new skills and acquire new technologies that will allow them to move into higher value added activities (Humphrey & Schmidth, 2001).

From a development perspective, linkages may enhance economic welfare e.g. by facilitating the spread of technology and skills, increasing capital formation, and producing economies-of-scale and specialization. Almost 60 years ago, the American development economist Albert O. Hirschman (1958) noted that sectoral, temporal and geographical linkages are key sources of economic development and that lack of linkages is one of the main causes of lack of industrial development in developing countries. Hirschman argued that there are three types of linkages. The first type of linkages is 'fiscal linkages', i.e. linkages between financial and productive sectors. To spur development, developing countries must be able to transform rents into productive investments The second type of linkages is 'consumption linkages', i.e. between consumers and productive sectors. These tend to be limited in many developing countries as the needs of local consumers are met by imports. The third type of linkages is 'direct linkages', i.e. forward and backward linkages to other firms in the productive sectors. Such linkages could spur manufacturing development and the diversification of industry, thus offering huge development potential.

Hirschman also took up the issue of linkages in an international context (1981): Because foreign investors have better access to markets, capital and skills, linkages to MNCs can potentially lead to upgrading of local firms. Moreover, linkages may produce 'snow ball' effects, where MNCs initially create backward linkages to local firms which in turn demand more products and inputs thus spurring a second round of FDI (Hobday, 1995; Unido, 2012).

Of course, there are other ways in which local industry can benefit from MNCs than through linkages. As pointed out by several authors, MNCs may have spillover effects on local firms without there being any direct linkages (see e.g. Caves, 1996; Blomström & Kokko, 2000); Meyer & Sinan, 2009; or Rugraff & Hansen, 2011 for reviews of the spillover literature) e.g. by demonstrating more advanced ways of producing to local firms or by introducing more competition into the host economy. Moreover, the skills developed at the MNC subsidiaries may migrate to other firms including local entrepreneurial firms as MNC employees seek new jobs. But most authors argue that the presence of direct linkages greatly enhances the possibilities of impacts on local industry, both directly through collaboration, but also indirectly through in-

creasing the likelihood of spillovers (Markusen & Venables, 1999; Blomström & Kokko, 2000; Javorcik, 2004; Günther, 2005; Hansen & Schaumburg-Müller, 2006; Hansen et al., 2009; UNIDO, 2012; Amendolaigne et al., 2013). Especially for local SMEs, linkages are crucial as these often will have disproportionate difficulties accessing technology and skills, raising capital for investments, and getting foreign market access.

It should be noted that the development literature also points out that linkages are not always beneficial to host countries. Thus, the literature makes a distinction between 'developmental' linkages (linkages that create jobs, develop skills and upgrade capabilities in the local economy) and 'dependent' linkages (linkages that keep host economies specialized in low value added functions and offer no possibilities for upgrading (Dicken, 2007)). However, generally, linkages are described in positive terms.

2. LINKAGES AND EXTRACTIVES: CONCEPTS AND DEBATES

In recent years there has been renewed focus on extractives as an engine of development in Africa. In this connection, a key issue relates to linkages between extractive investors and the broader economy. In the following we will briefly recapitulate the debates on extractives-based development, focusing on the debates on the role played by linkages. Then we will move on to review the literature on linkages in resource extraction in Africa. Throughout the report, extractive sectors will be understood as precious minerals and metals extractions and extraction of hydrocarbons (oil, coal, gas).

2.1 The potential offered by extractives-based development

Extractives-based development strategies have had a somewhat ambiguous reputation due to allegations that they lead to inflation, diversion of resources away from productive activities, rent seeking, etc. It has even been argued that for many African countries, extractive endowments have become a 'curse' (see e.g. Sachs & Warner, 1995; Gylfason, 2001; UNCTAD, 2013). The resource curse argument holds that many of the developing countries rich on oil and minerals have failed to transform the income from these resources into sustainable economic growth, improvements on development indicators, and industrial development. On the contrary, the resource abundance has created negative effects. This is because the foreign currency income from extractives may lead to appreciation of the currency, reduced competitiveness of manufacturing sectors, diversion of talent and resources away from productive sectors, and eventually, increased aid dependence. In line with this, UNECA (2013) argues that extractive-based development potentially causes 'deindustrialization', as rents from extractives are used to pay for imports and as extractive-related industries attract most of the country's talent and resources. A related problem of resource-based development concerns the relative prices of extractives. Hence, it is argued that terms of trade for natural resource commodities are consistently declining vis-à-vis manufacturing (Singer, 1950). A 2013 report from UNCTAD echoes this socalled Singer-Prebish hypothesis, arguing that the problems related to commodity-based development is *"perennial"* and that drastic restructuring of global commodity trade regimes are needed in order for commodity-dependent developing countries to benefit. UNCTAD (2013) similarly argues

that the arrival of China as a major importer of extractive commodities and a highly efficient exporter of manufactured products, may further "*entrench African developing countries in the low end of the international division of labour*" (UNCTAD, 2013; xv).

However, recently a number of reports and authors have challenged the resource curse and terms of trade arguments theoretically and empirically. The cause of commodity dependence is, it is argued, weak institutions rather than the other way around. Hence, it is the way in which the resource rents are managed rather than the rents in themselves that creates problems for resource-rich countries (Brunnschweiler & Bulte, 2008; UNCTAD, 2013). Morris et al. (2011a) argue that the apparent correlation between extractive development and weak industrial development is a consequence of weak manufacturing capacity in resource-rich countries rather than crowding out effects from extractives. The 'curse' can be "*neutralized or ameliorated … through appropriate policies and strategies*" and can "become a "*blessing" through deployment of the resource rents for enhancing productive capacities and economic diversification*" (UNCTAD, 2012: 13). This 'revisionist' position holds that there are numerous examples of countries that have used extractives to spur industrial development; some of the world's leading economies are in fact strongly resource-driven (Canada, Norway, and Australia). Moreover, the leading industrial nations based their early industrialization on close linkages to the extractive sector (USA, Sweden, Germany, UK) and several developing countries have benefited from resource-based development (South Africa, Malaysia, and Argentina). Moreover, concerning the terms of trade argument, while there historically is evidence of worsening terms of trade for commodity-producing nations, it is argued that the arrival of China as the major consumer of resources, has fundamentally changed the commodity/manufacturing terms of trade by lowering prices on manufacturing products and increasing demand for resources (Kaplinsky & Farooki, 2011).

While there remains disagreement about the causes and effects of resource-based development, a number of recent reports have called for greater emphasis on extractive-based development in Africa. A 2013 report by the African Development Bank argues that Africa has huge untapped potential in extractives (ADB, 2013). The report notes that extractives (here including agricultural commodities) have accounted for 35 percent of resource-dependent African countries' growth since 2000; 80 percent of export products in 2011; more than 60 percent of greenfield FDI; and 50-60 percent of employment. For minerals such as PGMs, cobalt and diamonds, Africa is accounting for the majority of the World's production, for minerals such as chromite, manganese, gold and uranium, Africa is a very significant player, and for oil and gas, Africa has recently discovered huge reserves. A 2013 report from the United Nations Economic Commission on Africa (UNECA 2013) argues that with the right policies, linkages and skills base in place, resource-based development can lead to positive development impacts, including a diversification of the industrial base (UNECA2013). Hence, according to UNECA, the question "*is not whether Africa can industrialize by 'ignoring' its commodities, but rather how the latter can be used to promote value addition, new service industries and technological capabilities that span the sub regions of the continent.*" (UNECA 2013: 95). UNIDO's 'Promoting Industrial Diversification in Resource Intensive Economies' report (2012) examines experiences and options for using extractive sectors to promote manufacturing and industrial development

Figure 1. African resource endowments

	2000			2010					
	Africa's share of global production in %	Value of Africa's production (2010 USD million)	Number of countries 2000	Africa's share of global production in %	Value of Africa's production (2010 USD million)	Number of countries 2010	Real output growth 2000-10 in %	Difference in countries	Future potential
PGMs	55	10 588	2	74	14 191	4	34	2	By 2017 33% output inrease
Cobalt	43	490	6	62	1 775	8	262	2	By 2017 87% output increase
Diamonds	45	4 265	16	54	4 967	17	16	1	By 2017 14% output increase
Chromite	51	1 578	4	42	2 442	4	55	0	
Manganese	32	493	4	30	3 131	8	535	4	
Phosphates	28	4 607	10	26	5 662	10	23	0	
Gold	24	25 568	36	19	19 947	39	-22	3	By 2017 53% output increase
Uranium	17	111	3	19	1 013	4	813	1	
Copper	3	2 871	11	8	7 806	12	172	1	By 2017 86% output increase
Nickel	5	1 225	5	5	1 535	5	25	0	
Iron ore	5	4 637	10	4	6 404	9	38	-1	By 2017 466% output increase
Mining total	14	59 592	44	12	73 286	44	23	0	
Oil	10	216 001	18	11	284 875	19	32	1	
Gas	5	39 036	14	7	68 423	18	75	4	15-20% growth additional to normal expansion from new fields in Mozambique and Tanzania
Coal	6	21 266	15	4	23 759	13	12	-2	
Energy total	10	276 303	11		377 056	36			
Food	8	195 082	54	9	260 910	54	34	0	
Non food	8	5 618	54	6	5 729	54	2	0	
Agriculture total	8	200 675	54	9	266 605	54	33	0	
Timber	12	77 267	46	13	87 229	54	13	8	

Note: Agriculture total does not include timber. Natural gas valued at average European price.

Source: ADB, 2013. Authors' calculations based on BRG (Bundesanstalt für Geowissenschaften und Rohstoffe) (n.d.), Data on mining production provided for this report, FAO(2012), FAOSTAT, (database), http://faostat.fao.org/, (data on soft resources), EIA (2012), "International Energy Statistic", www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm (data on energy) World Bank (2013c), "Commodity Price Data - Pink Sheet", http://go.worldbank.org/4ROCCIEQ50.

in Africa and Asia and argues that the boom in extractives offers 'a new development opportunity' for Africa, not only in terms of fiscal revenues and direct jobs, but also in terms of diversification and development of manufacturing industries through linkages and spillovers. Even UNCTAD's 2013 Commodities and Development report, which is otherwise very critical of the current global private and public governance structure for commodities, agrees that commodity-based development, given the right institutions, offers an opportunity for resource-dependent developing countries to embark on "*sustainable growth paths*" and that it is potentially an "*essential source of employment, income and government revenues for most developing countries*" (UNCTAD, 2013).

2.2 The role of FDI in extractives

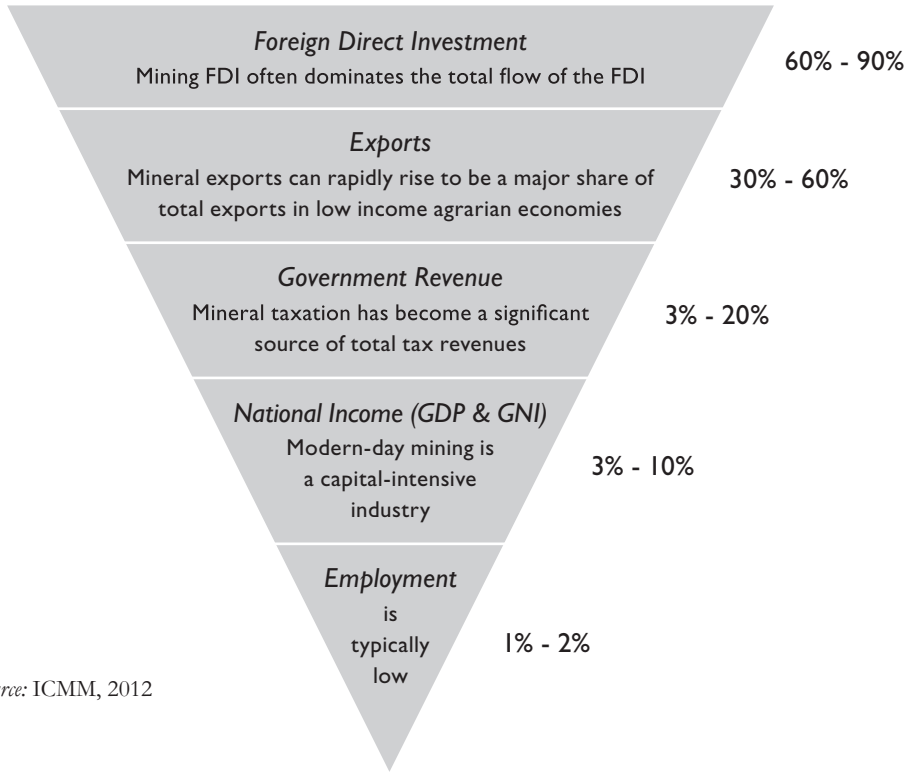
FDI typically plays a vital role in the development of the extractive sector. Due to the technological complexity of most extractive

activities; due to the need for integration into global value chains in order to market extractive commodities; and due to the capital intensity of most extractive operations, developing countries typically will need foreign investors to exploit their extractive endowments. Hence, extractives in Africa is dominated by MNCs.

Extractive FDIs potentially have huge impacts on host countries. Some of these effects will be related to capital formation and exports, others to government revenues, technology and skill transfer, and direct and indirect employment.

The impacts can be depicted as a turned pyramid (ICMM, 2012). In terms of contribution to FDI inflows, extractives (here mining) typically will be the main source (in excess of 60%). As the African economies typically are little diversified, the contribution to exports will tend to be very high (in excess of 30%). The contribution to government revenues is typically smaller (3-20%) although still very substantial. The GDP contribution is relatively low compared to the role played in FDI and exports, mainly due to the lack of spillover and linkage effects from much extraction. Also employment effects are typically low, although this picture may change if all linkage and spillover job effects are included in the measurement. However, it is widely held that FDI in extractives in Africa has failed to produce the expected development benefits (UNCTAD, 2013) and it is intensely debated how it can be ensured that extractive FDI in the future leaves more lasting development benefits on Africa. As agued by Bourgouin (2011), "*the lack of visible development outcomes has highlighted the tensions between the significant financial success of*

Figure 2. The contribution of extractive FDI to development



Source: ICMM, 2012

the mining companies on the one hand and the questionable socio-economic impact of mining activities on the other, and has made the sector unsurprisingly controversial. In recent years, the extractive industries have taken centre stage in public fora in response to the latest round of mounting public pressure". The debates on extractive FDI center around two issues: 1) How to ensure that rents (tax income, fees, levies, royalties etc.) are extracted from extractive operations and distributed fairly; 2) How to ensure that the foreign extractive investors produce jobs, skills and technology benefits for the host economy through linkages and spillovers. The former issue has received most attention in the literature (see e.g. Lundstøl et al., 2013 for a review), however in recent years the issue of linkages and spillovers has moved to the fore of the extractive debates in Africa. We will in this paper focus on the latter.

2.3 Linkages and extractives

Traditionally, linkages within the extractive sector have been seen as miniscule. Indeed, numerous authors have referred to FDI in extractives as 'enclaves' (Prebish, 1950; Singer, 1950; Morrissey, 2012). The enclave argument essentially holds that natural resource seeking FDI, contrary to what is the case with market and efficiency seeking FDI, will tend to create isolated enclaves in the host economy with few linkages to local products, financial and labour markets and with only small contributions to economic growth (Nunnenkamp & Spatz, 2003). The apparent enclave nature of extractive FDI derives from several factors, e.g. that extractive operations typically are located in remote areas where there are weak infrastructures and weak industrial capacity; that the comparative advantages sought by extractive investors typically are unrelated to the industrial capabilities of the host country; or that the technology gap to local industry is too large to bridge due to the technological, organizational and capabilities superiority of extractive MNCs.

Setting aside the fact that the enclave hypothesis probably never was entirely correct (Wilkins, 1998), a recent revisionist literature argues that the dynamics of extractive FDI have changed fundamentally in recent years, rendering the enclave concern, if not obsolete, then less germane: First, Western extractive MNCs are altering their strategies toward greater outsourcing of non-core activities, offering opportunities for local firms to link up to the MNCs (Morris et al., 2011a). Second, MNCs are increasingly adopting CSR and community-oriented strategies to reduce risks and obtain a 'social license to operate'. A key component in such strategies is to foster linkages to local industries and firms (ICMM, 2011). Third, the 'old' extractives players – the western MNCs – are increasingly challenged, not only from state-promoted new-comer extractive MNCs from Asia (Kaplinsky & Morris, 2009), but also from increasingly competent local African extractive 'champions'. This, in combination with the increased demand for extractives, has meant that the bargaining relation between MNCs and host governments has been altered in favour of the latter and that governments now are much better positioned to push MNCs to foster local linkages. Fourth, improved competencies and skills in African manufacturing and service sectors (McKinsey, 2011; Hansen et al., 2013) have incited MNCs to increasingly utilize local skills and capabilities through linkages. Finally, many donors and international financial institutions have revised their thinking about extractives and industrial development and are now contemplating how to use linkages and spillovers from extractives more actively in industrial development

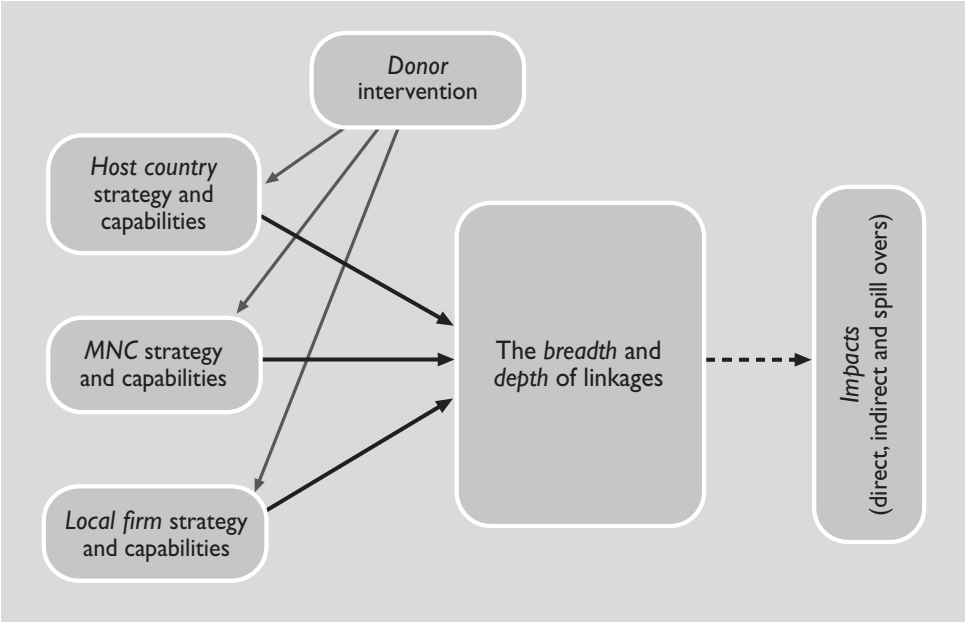
strategies (see e.g. ADB, 2013; UNCTAD, 2013; UNIDO, 2012). In the following, we will review the literature on linkages and extractives in Africa to get an impression of the current state and dynamics of linkage formation in African extractive industries. The aim is to assess the extent to which the high hopes recently invested in linkages are well founded.

3. A REVIEW OF THE LITERATURE ON LINKAGES IN AFRICAN EXTRACTIVE INDUSTRIES

As a point of departure it should be noted that the literature on linkages in African extractives is relatively embryonic, and scattered theoretically and methodologically. However in recent years, a number of studies have emerged that try to understand linkages in African extractives from a macro, meso and micro perspective. Some of these studies are economic studies that based on econometric methodology analyze linkages and spillovers at the aggregated level. Other econometric studies use input-output models to measure impacts such as multiplier effects at the meso level. At the meso level, Global Value Chain theory inspired studies map extractive value chains and the factors shaping firm relations within those chains. Finally, we have business economics inspired firm level studies which typically conduct case studies of linkage and CSR strategies of MNCs.

To organize the review of the literature on linkages in extractives, we propose a simple analytical framework (see Figure 3). The framework makes a distinction between the breadth of linkages (how many linkages are formed, what is the volume, how many jobs are created) and the depth of linkages (how advanced are the activities subject to linkage collaboration and how much local value is added through the linkages). The breadth and depth of linkages are seen as shaped

Figure 3. Analytical framework



by four sets of factors and their interaction, namely governments, MNCs, local firms and donors (see e.g. Altenburg (2001) for a similar model). In the following, we will first assess what the literature tells us about the state of linkages and then move on to understand what the literature tells us about the factors shaping these linkages (see Annex Table 1 for a resume of some of the key studies of African extractives).

3.1 What is the state of linkages?

3.1.1 Overall, linkages are few and shallow

Several recent reports and studies have assessed the state of linkages and spillovers based on econometric methodology. Generally, this literature reaches rather pessimistic conclusions regarding linkages and spillovers from extractive FDI in Africa. Based on a cross-sectional review of the linkage and spillover literature on Africa, Morrissey (2012) concludes that the contribution of FDI to African economic growth has been limited. This is because the dominant FDI in Africa is extractive FDI which tends to foster few linkages. Moreover, where linkages are formed, they will tend to produce few spillovers on the wider local economy. Hence, African FDI *"is often of the wrong type because investors are more interested in extraction than production"* (Morrissey, 2012: 28). As a consequence of the lack of linkages, FDI is leaving few benefits on host countries other than direct employment, (a share of) export earnings and some revenues. Other econometric studies confirm that linkages in African extractives are few and shallow and that spillovers on the broader economy are miniscule (Bwalya, 2006; Akinlo, 2004).

From a value chain perspective, a number of studies similarly point to limited linkage formation in African extractives. UNCTAD (2013) concludes that lack of linkages and limited absorptive capacity in local industries has combined to render FDI in extractives of limited use to host countries' development. Fessehaie (2011) in a case study of copper mining in Zambia found that while mining companies in Zambia directed a significant share of their expenditures to the local procurement, the depth of local linkages was low, i.e. added value was low. As skills availability was poor due to low public investment and low propensity of firms to invest in in-house training, there were only few examples of suppliers succeeding to expand their markets and upgrade into highly-skilled activities. Mjimba (2011) in a case study of Tanzanian gold mining found that local goods and service linkages remained limited and restricted to low complexity and low criticality goods and services (mainly food and beverages and security). Critical supplies (critical to the buyer) were largely imported, with virtually no local value adding. According to Mjimba in particular two factors limited the linkage formation, namely the skills deficit in Tanzanian industry and the incoherent policy measures adopted by the Tanzanian government. In a case study of Ghanaian gold mining Larsen et al. (2009) found that liberalization of FDI in this industry led to insourcing of previously outsourced activities, causing a reduction in local linkages. In areas where outsourcing was maintained, it mainly took place to foreign suppliers represented in Ghana. Moreover, all advanced inputs such as machinery and equipment were imported.

3.1.2 But there is evidence of linkage potential

In spite of the overall pessimistic view of linkages, recent research has produced evidence of

linkage potential in extractives. In the major Open University/University of Cape Town research project 'Making most of the Commodities' (MMCP), the breadth and depth of extractive linkages in eight African countries were analysed from a Global Value Chain perspective (see Morris et al. (2011b) for an overview of findings). The project concluded that of the eight African countries studied, extractive linkages in two of them were of increasing breadth and depth (Ghana and Nigeria); in two of them of increasing depth only (Angola and Botswana); in three of them 'shallowing' (decreasing depth) (Gabon, South Africa and Zambia); and in one, Tanzania, 'static'. Overall, the project produced mixed evidence of linkages in African extractives. Hence, it was concluded that linkage formation in African extractives remains limited and that where linkages existed, their depth was 'thinner' than their breadth. Nevertheless, the study displayed a number of success stories and concluded that there is a large untapped potential for spurring development through linkage formation in African extractives.

Linkages are often discussed under the heading of local content or local procurement. ADB (2013) reports that in the Zambian mining industry between 60 percent and 86 percent of goods and services are procured locally in Zambia. However, at closer inspection, the 'local' firms were often import firms creating little local value added. More encouraging evidence is found from the Nigerian oil industry where it is reported that local content has gradually increased over time, from a level of around 5 percent before 2000, over 14 percent in 2003 and 20 percent in 2004, to around 35 percent in 2010 (UNCTAD/CALAG, 2006; Ovadia, 2013). The majority of local firms involved in those activities were controlled by local interests (Oyejide & Adewuyi, 2011). However, even if Nigeria – in an African context – has made huge strides forward, local content in Nigeria is still significantly below local content in countries like Brazil, Malaysia and Venezuela (Morris et al., 2011b).

In general, the literature suggests that time is of essence in the development of local content. Hence, several authors (Amendolaigne et al., 2013; Merlevede et al., 2011) argue that as Africa is relatively new to extractive FDI-based development, it is likely that the lack of linkages detected could be related to the recent nature of the development of this industry, rather than inherent structural deficiencies.

There are a handful of studies reporting that skills obtained by local firms through linkage collaboration with MNCs have been used to move into new industries. For instance, Lorentzen (2008) provides an example of a South African firm which transposed skills regarding X-ray technology obtained in the diamond industry to develop a new business in the medical industry. ADB (2013) reports that as many of the skills acquired by African engineering firms engaged in linkage collaborations with MNCs are 'generic', they have been used to generate new businesses in other industries. Perkins & Robbins (2011) report that providers of infrastructure services have developed skills that can be used in other infrastructure projects. This is particularly the case for 'high volume mineral resources' (e.g. coal or iron), whereas the potential is less for low volume extraction (e.g. gold and diamonds), which tend to promote enclave-type effects.

A number of studies assess so-called multiplier effects of FDI based on input-output models (for a review of methodologies to measure multiplier effects, see Tordo et al., 2013). Among these multiplier effects are job creation at local linkage partners. ADB (2013) assesses that job creation at local link-

age partners in extractives oscillates between one and three jobs. Lundstøl et al. (2013) estimates multiplier effects in mining to range from a factor one to a factor six. A study of mining in Zambia (McMahon & Tracy, 2012) suggests that each direct job in mining firms generated 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. A study from the Ghana gold sector (Kapstein & Kim, 2011) found that 2.8 jobs were created at suppliers for each job created at the mining operation proper. This study moreover suggests that for each direct mining job created, 28 indirect and induced jobs, formal as well as informal, were created.

Overall, these studies suggest that linkages in extractives may be in the process of becoming more widespread and that these linkages may lead to significant indirect job creation as well as skills upgrading and other spillovers on the local economy. However, it is also clear that these deviations from the enclave situation only occur under certain conditions. Below in section 4 we will examine these conditions in more detail.

3.1.3 Linkages are often to local representations of foreign suppliers

As argued above, there is evidence that MNCs increasingly are sourcing activities and functions to suppliers and service providers in the African host countries. However, numerous studies suggest that these 'local' partners typically are foreign controlled firms (Morrissey, 2012; UNCTAD, 2013). In other words, it appears that MNCs in extractives to a large extent are transposing their global value chains to developing countries. For instance, a study of gold mining in Ghana concluded that foreign investors in this industry fostered few local linkages and that those linkages mainly were to local representations of foreign supplier firms (Larsen et al., 2009). Similarly, Mjimba (2011) argued that the 'local' procurement made by gold mines in Tanzania overwhelmingly was made from foreign suppliers and that only low value-added and low critical tasks were performed by locally controlled companies. Even the locally controlled firms often had significant foreign interests involved. More generally, Morris et al. (2011c) report that many linkages between MNCs and local firms in African extractives seem to be simple 'window dressing' activities, transferring the efficient imports of supplies by the MNC with less efficient imports by local entrepreneurs.

3.1.4 Inter industry spillovers are larger than intra industry spillovers

Generally, econometric studies of aggregated FDI data conclude that the potential for learning and spillovers is higher between industries than within industries (Nunnenkamp, 2002; Rugraff & Hansen, 2011) which is also the impression from the literature on African extractives. Hence, Bwalya (2006) in a cross-sectoral econometric study based on panel data from the World Bank Regional Program on Enterprise Development found that there were no significant intra-industry spillovers, while there were significant inter-industry technology spillovers from foreign firms to local firms. Focusing specifically on the African extractive industry from a value chain perspective, Morris et al. (2011a) argue that backward linkages have larger development potential than horizontal linkages. In their study of extractive industries in eight African countries they found that in four of these no horizontal linkages were identified, in two they were 'probable' (but not identi-

fied) and in one (South Africa) there were substantial horizontal linkages (Morris et al., 2011b). In contrast, there was much broader evidence of backward linkages.

Unfortunately, given the mediocre results of horizontal linkage promotion, African governments have almost exclusively focused on fostering horizontal linkages at the expense of backward linkages (Morris et al., 2011c). The reason why spillovers are more likely between industries than within industries is that MNCs are more willing to share technology and knowhow with linkage partners upstream and downstream in their value chains than they are with firms in their own industry which potentially can become competitors.

The most common type of horizontal linkage is to state-owned extractive firms. The limited research on such extractive joint ventures tends to conclude that spillovers and learning effects have been limited. The state owned enterprises typically become 'sleeping partners' and minimal technology transfer and skills upgrading take place. For instance, from Tanzanian mining Kweka (2009) reports that little learning has taken place in Tanzanian joint ventures and that none of the Tanzanian joint venture partners created through mandatory ownership programmes reached skills and technology levels where they could undertake mining operations alone.

A number of studies examine intra industry linkages and spillovers to artisanal and small-scale mines. This relationship is for instance analyzed by several economic and political economy studies of mining (see e.g. Lange, 2006; Curtis & Lissu, 2008; Kweka, 2009; Bourgouin, 2011; Therkildsen & Bourgouin, 2012; Pedro, 2006). Mainly, the relationship is described as hostile and adversarial: artisanal miners are frequently crowded out by the technologically and financially superior and politically well-connected MNCs, and MNCs are often forced to shut down operations due to illegal actions by artisanal miners. Kweka (2009) reports that there is very little evidence of actual linkage collaborations between MNCs and artisanal miners in Tanzania, and although there in theory may exist spillovers in the form of demonstration and competition effects on local miners from MNC investments, the evidence is scarce. Likewise, a study of gold mining in Ghana found that there were no linkages between large-scale foreign mining operations and the local small-scale mining industry, maintaining the large-scale gold mines' status as enclaves (Larsen et al., 2009).

3.1.5 Backward linkages may have higher potential than forward linkages

The literature hypothesizes that backward linkages to suppliers and service providers are more common and have higher development potential than forward linkages to processors and distributors. Hence, Korinek (2013) and ADB (2013) argue that as extractive processing industries (forward linkages) are capital intensive and offer relatively low returns, their linkage potential is limited, whereas there are more opportunities (and more multiplier effects) involved in developing backward linkages. Indeed, most of the evidence of linkage broadening and deepening from African extractives comes from backward linkages although there also are examples of successful forward linkage formation, the prime example being Botswana's diamond-polishing industry (Mbayi, 2011). However, the evidence on this matter seems too limited and scattered to arrive at firm conclusions regarding the strengths of backward and forward linkages, respectively.

3.1.6 Summary

Overall, the literature finds few and relatively shallow linkages in African extractives. However there are exceptions where successful linkages have been fostered, especially backward in the MNC value chain. What do we make of this mixed evidence? First, the finding could be ascribed to the different methodological and theoretical lenses adopted by the various studies (Rugraff & Hansen, 2011). Hence, there seems to be a tendency that econometric studies which look at aggregated data, find little evidence of positive effects, whereas firm-level studies and studies of multiplier effects tend to produce more evidence of spillovers and linkages (see Morrissey, 2012 or Rugraff & Hansen, 2011 for similar arguments). Second, the mixed evidence is most likely caused by the fact that linkage formation is studied in different contexts, that is, in different countries, in different sectors, and involving different firms. Hence, certain contexts are more conducive of linkage formation than others. In the following we will examine how the literature accounts for the influence of context on linkage formation.

3.2 The factors promoting and constraining linkage formation

As mentioned in connection with the presentation of the analytical framework, we argue that linkages are shaped by the strategies and capabilities of four actors, namely, governments, MNCs, local firms, and donors.

3.2.1 Government strategies and capabilities

In the following we will analyse how African governments are promoting likage formation, starting with the most generic discussion of linkage promotion activities' role in industrial development strategies and moving on to examine specific linkage promotion activities.

Industrial policies and linkage promotion

Forming local linkages is part of MNCs' strategies to reduce costs, increase efficiency, access resources and capabilities, and reduce risks. However, the market optimum for linkages may be different from the social optimum. Linkages may be undersupplied due to various market failures such as lack of information about linkage opportunities or lack of availability of linkage support services. Or they can be caused by governance failures, e.g. lack of coordination between different areas of public policy. Hence, theoretically there may be good reasons for governments to intervene in linkage formation.

Linkage formation seems to be in the process of becoming a key aspect of industrial policy in South Sahel Africa. As argued by Morrissey (2012), without a coherent industrial policy, SSA economies will be unable to identify the important linkages to be promoted through FDI, and even less able to provide the incentives and capabilities for spillovers to occur. Similarly, Mjimba (2011) argues that the main public policy problem is government failure to translate and implement long-term macro policy visions to sectoral policies with appropriate sanctions and incentives.

The question is what type of industrial policy should be adopted to effectively promote linkages. Here, a distinction between four generic approaches or industrial policies has been made, namely 'passive open door', 'active open door', 'strategic target and guide', and 'strategic restrict and exploit' policies (Lall, 1995; Altenburg, 2001). Most current linkage policies oscillate between active open-door policies and strategic target and

guide policies (Altenburg, 2001). The two positions can be seen as reflections of different orthodoxies in relation to industrial policies: On the one hand we have the 'neo-liberal perspective' focusing on getting policies, institutions and governance 'right'. On the other hand we have the 'heterodox developmentalist perspective' focusing on strategic intervention, establishment of appropriate institutions, and taking into consideration the political processes and power relations when devising strategies (Lauridsen, 2013).

Where passive and active open-door policies employ mainly 'horizontal' measures aimed at strengthening capacity in local industry and linkages across industries, strategic policies employ 'vertical' measures aimed at carefully selecting and promoting the development of particular industries (Lall, 1995). The passive open-door strategy is based on the premise that attracting FDI and providing a stable and conducive business environment will more or less automatically lead to linkages, and hence there will be no need for specific linkage formation measures; indeed, trade- and investment-related performance measures may prevent or limit linkages and spillovers on the host economy (see e.g. Moran et al. 2005). This approach is related to the so-called Washington Consensus of the 1980s and 1990s which held that macro-economic stabilization, liberalization of factor markets, and opening of economies will spur private sector development. The active open-door policy in contrast, prescribes some intervention in linkage formation, e.g. through development of supplier capacity and infrastructure, however across industries.

On the other hand, advocates of strategic target and guide policies hold that local

Figure 4. Approaches to FDI policy in developing countries

Passive open-door policy with limited and only horizontal interventions to improve supply conditions	Open-door policy with active and sometimes selective support measures to improve supply conditions	Strategic *target and guide*-policy with selective interventions to develop advanced factors	Strategic *restrict and exploit*-policy with strong selective interventions
No industrial policy targets defined, no restrictions to FDI; Wholesale liberalization of trade and investment policies; Few and only horizontal policies to improve national supply conditions; FDI promotion focussing on given factor endowment rather than dynamic potential	Liberalization of trade and investment policies, no restrictions to FDI; Some, mainly horizontal, measures to improve relevant infrastructure, manpower training, and to promote the location abroad	Strategic vision and targets formulated; Selective targeting of "developmental" FDI; Support measures to encourage and induce (rather than trying to impose) technological spillovers; Selective support to foster innovations, develop skills for the future and help promising SMEs	Strategic vision and targets formulated; Import and FDI restrictions, mandatory technology licensing; Technological development driven by local firms: market reservation policies, export promotion, picking winners and selective subsidies for local companies

Source: Altenburg, 2001

content requirements as well as various performance measures related to export performance and technology transfer are required if the potential of FDI is to be unleashed and local industrial upgrading is to be promoted (Lall & Narula, 2004; Chang, 2002; Altenburg, 2011). Local content rules, if implemented in a competitive environment, will allow infant local supplier industries to gradually develop capabilities to meet the standards of the foreign buyers. And preferential treatment of local suppliers may assist in curbing the market power of foreign firms. In line with this, UNCTAD (2013) argues that it is insufficient simply to rely on markets to create extractive linkages. This will only "*entrench the burgeoning bargaining power of the TNCs at the expense of often diverse and fragmented commodity producers*" and will force local industries into 'races to the bottom' where they compete on low costs and low standards. The solution is to assist local firms in moving into functions and activities that generate higher value (Sigam & Garcia, 2012). This will require "*effective public-private partnerships and an industrial policy flexible enough to respond to a rapidly changing global economy*" (UNCTAD, 2013). This position on linkage formation is in accordance with the 'development state' argument which holds that strong coordination and collaboration between government/bureaucracy and private sector is a pre-requisite for effective growth and economic development (Amsden, 1989; Evans, 1995; UNIDO, 2012).

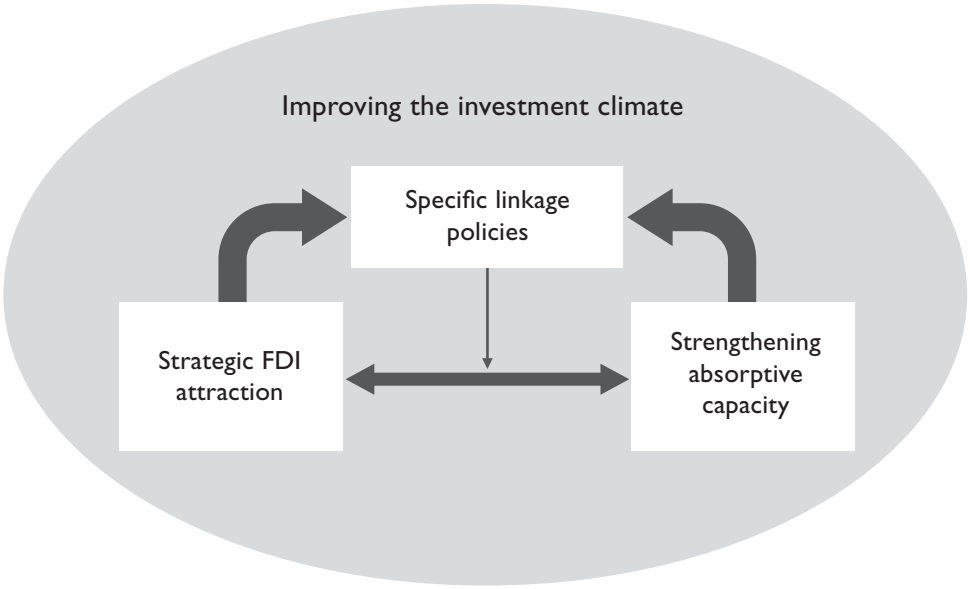
During the 1990s and 2000s, African governments have intervened extensively in extractive sectors, mainly through attraction of FDI, privatization, and through developing a stable, transparent and private sector friendly business environment. Only to a limited extent did these interventions consider how linkages could be formed and how benefits to the wider economy promoted (Bourgouin, 2011). This passive open-door approach to extractives was to a large extent encouraged – if not induced – by international finance institutions (in particular the World Bank and the IMF) and other donors (Bourgouin, 2011).

Several authors argue that African governments recently have become more assertive in relation to foreign investors and have moved from passive open-door approaches toward more selective and targeted approaches, e.g. targeted programmes to develop local supplier capacity, mandatory local content programmes, renegotiation of concessions, and investor screening (BSR, 2011). The aim is not only to spur development of extractive-related industries, but more generally, to promote development of the ailing African manufacturing sector (UNIDO, 2012). The more assertive approach is reflected in the evolution of FDI legislation. According to UNCTAD (2012), the number of restrictive interventions relative to the number of favourable interventions has been on the rise in Africa during the 2000s.

Specific linkage interventions

A host of instruments and strategies are employed by African governments to promote linkages in extractives, e.g. ownership requirements, local content requirements, local processing standards, hiring requirements, mandatory CSR programmes, supplier development programmes etc. (UNCTAD, 2010a). These linkage promotion activities can be clustered into essentially four types of intervention that are more or less interrelated: Specific linkage policies; strategic FDI attraction; improving the general investment climate; and building absorptive capacity in local industry (UNCTAD, 2010a) (see Figure 5).

Figure 5. Components in a linkage promotion policy



Source: UNCTAD, 2010

Strategic FDI attraction

The first step in linkage promotion is to target those investors that have the largest potential for linkages and spillovers (Amendolaigne et al., 2013). Due to scarce resources in most developing countries, it is argued that it is essential that efforts are concentrated on investors with large linkage potential (Amendolaigne et al., 2013). Governments can select investors with high linkage potential and/or provide specific incentives for those MNCs that have the best linkage package to offer. Where developed countries typically attract preferred types of investors through subsidies, the constrained budgetary situation in many developing countries means that tax exemptions and regulatory exemptions are the preferred methods to attract the right kind of investors (Blomström et al., 2003).

Specific linkage policies

A second step in linkage promotion is to introduce measures that force or encourage MNCs to link up to local firms. The two most common types of measures are ownership requirements and local content requirements:

Concerning ownership requirements, African governments have historically relied extensively on ownership requirements to promote linkages and spillovers from extractive FDI. Hence, African governments have required extractive MNCs to have local ownership, typically state ownership, in their operations. The philosophy behind local ownership requirements was that as extractive operations are enclaves, learning and upgrading opportunities will more effectively be promoted through joint ventures with local enterprises (Morris et al., 2011a).

Morris et al. (2011a) argue that African governments in their pursuit of horizontal linkages have ignored potentials of forward and in particular backward linkages. A host of instruments are employed to promote vertical linkages in extractives, e.g. local content requirements, local processing standards, local hiring, the creation of mandatory CSR programmes, supplier develop-

ment programmes etc. (UNCTAD, 2010a). The most common (and controversial) measure is local content requirements. Ado (2013) reports that resource-rich developing countries have seen a tide of local content requirements and rules adopted in recent years. A bourgeoning literature has emerged that focuses on the conditions and effects of local content (see e.g. Kazzazi & Nouri (2012) or Ado (2013) for overviews). Local content has long been practiced e.g. in the defence industry, the wind turbine industry, the automobile industry and especially in the oil and gas industry. Also in Africa, local content rules have been a driver of linkage formation: From Angola, Teka (2011) reports that manufacturing linkages in the Angolan oil and gas sector have expanded since the early 2000s and that local content policy pressure has been the main driver of this process. From Nigeria it is reported that local content measures have gradually increased local content in the oil industry from a level of around 5 percent before 2000, over 14 percent in 2003, 20 percent in 2004, and 35 percent in 2010 (UNCTAD, 2006; Ovadia, 2013). This level is however still well below levels achieved in more advanced resource-rich economies (45-75%).

The literature is somewhat ambiguous as to the merits of local content policies: The developmentalist literature (see e.g. Wade 1990; Amsden, 1989; Evans, 1995) tends to argue that local content can assist development of weak local industries, facilitate technology transfer and increase domestic production and job-creation. Ado argues that there are four arguments in favour of local content: 1. Protecting infant industry; 2. Curbing market power of foreign industry vis-à-vis local industry; 3. Providing social compensation to and harmony with local communities suffering the environmental and social costs of exploitation; 4. Protection of strategic sectors. The neoliberal literature on the other hand fears that local content rules may be subject to capture from bureaucrats and entrenched local industry interests; lead to the promotion of the wrong industries; lead to inflated prices; and/or reduce the overall FDI level in the country (see Warner (2010) for an overview). Hence, Warner (2010) argues that local content rules may significantly affect MNCs' net present value (NPV) calculation and internal rate of return (IRR) and that overzealous local content requirements eventually may scare away FDI. Moreover, sudden changes in local content requirements may be extremely harmful to the local investment climate; indeed, it is argued that changes in local content requirements are more worrying to foreign investors than changes in financial requirements such as taxes and royalties. This is because whereas changes in taxation and royalty requirements generally are subject to quite formalized arbitration procedures in 'financial stabilization clauses' and international investment agreements, changes to local content rules are largely in a legal grey zone.

A middle position (see e.g. Tordo et al., 2013; UNECA, 2013; Altenburg, 2001) holds that local content requirements are acceptable under certain conditions.

- A cost benefit analysis must be conducted: Warner (2011) argues that governments, when designing local content policies, should observe the core principle called 'the golden thread', that is that contracts should be awarded based on international competiveness in terms of price, quality and delivery. If this principle is not observed there is, Warner argues, a danger of 'double market failure', that is that governments in the pursuit of correcting market failures related to infant industry and mar-

ket power of foreign buyers create production inefficiencies and inflated prices.

- Local industrial capacity must be taken into account: UNECA (2013) argues that if governments intend to increase the depth of linkages, they need to target local industry skills development, technological capabilities, and access to capital, etc. Likewise, the ADB (2013) argues that if mandatory measures are to be implemented, some relationship to world market prices must be established and the requirements should take into account the absorptive capacity of local suppliers. As a starting point, the ADB argues, any linkage promotion intervention must assess which types of inputs can realistically be sourced locally and which types of inputs must be sourced internationally because they are not available locally.
- The strategies and capabilities of MNCs are understood: Morris et al. (2011a) argue that if governments pressure MNCs to local content against the MNCs' inherent strategies, they may in fact experience a 'shallowing' (meaning that less advanced activities will be made subject to linkages) and/or a 'slowing down' (meaning a slower implementation of linkage activities) (Morris et al., 2011a).
- Local institutional capacity must be considered: The more ambitious the local content measures are, the greater demands are on the capacity of government to set targets, devise supportive measures, and establish monitoring and evaluation systems. The problem in many African less-developed countries is that "*while the need to correct market failure is much greater than it is in rich and institutionally advanced societies, the ability of the public sector to tackle such failure is also much more limited*" (Altenburg 2011; 3). Several studies confirm that institutional capacity to manage linkages in extractives is lacking in African countries (see e.g. BSR (2011) or Wyse & Shtylla (2007)). Mjimba (2011) reports how Tanzanian legislation in fact is imposing a penalty on prospective local supplier firms because they, unlike foreign investors, will have to pay import tariffs. Lack of coordination and rivalry between different administrative units (between ministries or between local and central administrative levels) may further undermine the institutional underpinnings of local content (BSR, 2011).

One thing is whether local content measures are desirable, another is whether they are permitted by international trade and investment law. Hence, local content rules are restricted by international trade agreements, especially the WTO TRIMs (Trade Related Investment Measures) agreement which restricts performance measures related to trade. Mandatory requirements to source locally can be seen as a subset of such performance requirements. How much local content rules are prohibited is however disputed. Chang (2002) refers to the WTO rules and other trade rules as 'kicking away the ladder', as they prohibit the kind of performance measures and protective policies that were the basis for western countries' industrialization. Warner (2011) and Ado (2013) argue that if a purchase is legally mandated to be from a local firm, it is clearly prohibited under WTO/GATT non-discrimination clauses. Others argue that considerable scope remains for developing countries to introduce local content measures, partly by referring to developing countries' exemptions to the non-discrimination and national treatment clauses of international trade law, partly by introducing such measures in a non-binding manner (UNCTAD, 2010a; BSR, 2011; Tordo et al., 2013; Ado, 2013).

Strenghening absorptive capacity

A third step in linkage promotion, according to UNCTAD (2010a), is to strengthen the capacity of local supply industries to absorb the opportunities offered by MNCs. Government measures to develop local absorptive capacity can span from policies targeted specific firms and industries that have the potential to link up to foreign investors, to cross-the-board capacity development policies. To develop local linkages in Africa, it is essential that governments invest in the development of local technological capabilities and national innovation systems (see e.g. Mjimba, 2011; Narula & Portelli, 2004). Fessehaie (2011) reports that with low public investment in building technological capabilities, African supplier firms are caught in a trap of no access to investment capital, low technological capabilities to start with, low incentives to adopt new technologies, and high risk that the market will not reward such investment. An example of an apparently successful local supplier development programme is the Nigerian Content Support Fund which was dedicated financial support for Nigerian supplier development in the oil and gas industry. Otti (2011) reports that this scheme, together with other local content measures, raised Nigerian local content from 5 percent in 2004 to 35 percent in 2010.

Improving the investment climate

The final element in linkage promotion is according to UNCTAD (2010a) to establish an investment environment that is conducive of linkages. As argued by UNCTAD (2013), many opportunities for spillovers and linkages can be missed due to weaknesses in infrastructure, education, research and development support, extension systems, and legal and regulatory environments. Similarly, ADB (2013) argues that host governments need investment in fundamentals – high-quality public service, institutional and regulatory environment, capable government and access to finance and markets. In his study of Zambia, Haglund (2008) finds that the nature of the regulatory environment is key to maximizing benefits to society from foreign investment. Also, UNIDO (2012) argues that MNCs' and local firms' decisions as to whether they will engage in contractual relations with each other depend on the likelihood that contracts can be enforced by the legal system. If the business environment is non-conducive of contracts, MNCs will be less inclined to engage in linkages (UNIDO, 2012).

3.2.2 MNC strategies and capabilities

Our second driver and shaper of linkage practices in extractives are the MNCs' strategies and capabilities. Generally, the literature looks at macro- and meso-level determinants of linkages and little has been written about firm-level determinants (Mjimba, 2011; Rugraff & Hansen, 2011). In the following we will argue that recent developments in MNCs' strategies and capabilities have opened new opportunities for linkage formation in African extractives. These developments are: 1. Growing competition among the extractive MNCs; 2. Growing disintegration of lead MNCs' value chains; and 3. Growing MNC engagement in development and CSR-related activities.

Growing competition

Extraction is typically a highly capital-intensive activity that demands economies-of-scale to be viable. Hence there is a pressure toward concentration. Indeed, we have in recent years seen a strong consolidation of this sector through mergers and acquisitions (UNCTAD, 2013). This consolidation pro-

cess has made some observers fear that the market and bargaining power of lead extractive MNCs will increase and that powerful MNCs will be able to dictate supplier firms and governments their terms (Hoekman & Martin, 2012). Paradoxically however – in light of the consolidation process – other observers point toward growing competition and rivalry within extractives. This is because the inherent oligopolistic nature of extractives is countered by the arrival of new players from emerging markets such as China, South Africa, India and Brazil as well as increasingly competent national champions from Africa. The growing competition for extractive concessions created by these new players will, *ceteris paribus*, strengthen the bargaining power of host governments vis-à-vis MNCs and allow governments to put more pressure on prospective investors to produce local linkages and spillovers (BSR, 2011).

Growing value chain disintegration

In recent decades, there has been a clear movement toward international disintegration of firm value chains within services and manufacturing. This disintegration - what some refer to as 'outsourcing' - takes place to reduce costs, spread risks, obtain benefits of specialization, and tap into the resources and capabilities of other firms. Value chain disintegration is typically a carefully planned and strategic process where significant resources are invested in identifying, negotiating with, upgrading and monitoring prospective suppliers and service providers. Hence, firms are developing shortlists of competent suppliers, they are organizing competitive bids for contracts, they are devising supplier development and training programmes, and they are working with authorities to facilitate education, training and local technological capacity (Hansen & Schaumburg-Müller, 2006).

Traditionally, lead extractive MNCs were depicted as large, integrated firms characterized by strong, centralized coordination from headquarters in western capitals. The hierarchical MNC offered few opportunities for host country suppliers and service providers to break into the value chain and obtain contracts. However, as is the case in manufacturing and services, also extractives have in recent decades witnessed a profound international disintegration of value chains (Morris et al. 2011b). Hence we have seen a significant restructuring of the extractive MNCs, where non-core activities are being outsourced and where the boundaries for outsourcing constantly are moved forward (UNCTAD, 2005; Urzua, 2007; Mjimba, 2011). This value chain reconfiguration provides new opportunities for local firms to break into the value chains of large extractive MNCs and is the basis for much of the growing optimism with regard to the creation of developmental linkages in African extractives. As argued by Morris et al. (2011a), "*perhaps the most important lesson to be learned from the development of outsourcing strategies by lead firms in global value chains is that the enclave mentality to diversification in low economies is an anachronism. There is extensive scope for governments and the private sector – both firms directly involved in the commodities sector and those with the potential to develop linkages in the commodities sector – to work together to identify the range of win-win outcomes available in promoting diversification".*

However, the tendency towards disintegration of value chains is countered by risks and costs of disintegration: First, the specific decision to outsource activities depends on the transaction costs of the outsourcing compared to the internal (or coordination) costs of maintaining the activity in-house. As pointed out by the transaction cost literature (Williamson 1975; Hennart, 1982), engaging with third par-

ties in contractual agreements imply additional costs in terms of information, bargaining and monitoring that may override the benefits of outsourcing. Hence, if the transaction costs of contracting with a linkage partner become too high, the linkage will not come off the ground. The transaction costs are determined by the quality of market support institutions (e.g. contract enforcement and information provision) as well as the quality and reliability of potential linkage partners. As institutional environments surrounding extractives in African countries often is weak and underdeveloped and as local industrial capacity is lacking, the transaction costs of local linkage formation will be high. Consequently, MNCs will opt either for internalization, or for partnerships with foreign partners which have known capabilities and proven track records. This is the reason why most of the opportunities offered by the outsourcing strategies of lead firms are picked up by foreign suppliers.

Second, outsourcing depends on the degree to which MNCs fear leakage of core competencies. MNCs may have no problem sharing non-core technology and skills with local firms; however they will be unwilling to risk contributing to the development of future competitors. As a consequence, MNCs are more willing to engage in vertical (inter-industry) linkages than horizontal (intra-industry) linkages (Altenburg, 2001; Nunnenkamp, 2002; Meyer & Sinan, 2009). In line with this Morris et al. (2011a) in their study of African linkages find that there are fast and large opportunities for linkage formation where linkages are outside the core competencies of the MNCs, whereas the opportunities for linkages are significantly constrained when MNCs are asked to diffuse their core competencies in joint ventures. The unwillingness to engage in horizontal partnerships is further confounded by the weak legal protection of propriety technology and skills in some African developing countries.

Third, there are limits to how advanced functions MNCs will be willing to place in linkage collaborations. As pointed out by Porter (1986), MNCs are increasingly configuring their value chains at a global scale, placing value chain functions according to comparative advantage of the various locations. Hence, higher value added functions such as those related to sales and marketing and R&D are increasingly located in global centers of excellence in countries offering optimal conditions for such activities. Lower value added functions are located in countries with less conducive conditions (Mudambi, 2007). The consequence is that while more activities related to extractives may be outsourced to local producers in Africa, these will tend to be lower value added activities (UNCTAD, 2013; Morris et al., 2011b). Another consequence of the global configuration of extractive value chains is that as MNCs demand increasingly specialized inputs, the entry barriers for less specialized and less efficient developing country firms become higher (Sigam & Garcia, 2012; Jourdan, 2008; UNCTAD, 2013). Moreover, as MNCs need to coordinate the increasingly global value chain configuration in order to obtain scale advantages and synergies, global integration mandates will increasingly conflict with mandates to create local linkages: Hence, the BSR (2011) argues that local procurement is constrained by MNCs' quest for strategic, technical and operational alignment and scale within the global organization.

Finally, it is well known from the IB literature that MNCs from different home countries have different propensities to outsource. These differences can be related to culture, business networks, ownership structure, or relationship to the state. In line with this, several authors point out that linkage prac-

tices in African extractives depend on the home country of the MNC: The Chinese MNCs appear to have extensive local linkages in Africa, however, as seen in Sudan oil or Zambia copper mining, the linkages are predominantly to other Chinese firms (Haglund, 2008; Fessehaie, 2011; Morris et al., 2011a). Similarly, Morrissey (2012) argues that Chinese MNCs only marginally involve themselves in developing local linkages and that linkages are limited. Instead, Chinese firms bring more or less everything with them from China; equipment, supplies, employees and suppliers (UNIDO, 2012).

Developmental activities and CSR programmes

Many extractive MNCs today view linkage development as a key part of their business strategy, and linkage development programmes are becoming an institutionalized corporate practice, especially in the oil and gas industry (Tordo et al., 2013). Morris et al. (2011b) report that a survey from Nigerian oil industry found that 75 percent of MNCs have supplier development programmes, e.g. training and information exchange aimed at improving quality, lead time and technological capabilities of local suppliers. Such linkage development programmes provide MNCs with substantial commercial and strategic benefits. First, developing local suppliers may eventually transform into cheaper, more reliable and higher-quality inputs. Second, linkage programmes may become a 'license to operate' in countries increasingly concerned with the (lack of) development effects of MNCs; indeed a proven track record on linkages may be an increasingly important differentiator in bids for concessions in African extractives. Third, strong linkage formation may be seen as a key ingredient of risk management as it may reduce the risk of local-community-caused stops-of-operations and other forms of politicization (BSR, 2011).

Where some MNCs adopt linkage development programmes as a strategic tool to differentiate themselves against competitors or handle risks, others are adopting linkage development activities as part of their CSR programmes (Hilson, 2012). Due to extractive industries' often huge social, environmental and cultural impacts, MNCs in these industries are increasingly forced to consider how they can mitigate their negative impacts and increase their local goodwill through various forms of outreach and support for local communities. Consequently, most large extractive MNCs have adopted – at least formally – CSR programmes and activities. Linkage formation as part of CSR programmes can take the form of local procurement policies, training and education activities related to local service providers and suppliers, or programmes to involve locals in building infrastructures etc. (ICMM, 2011; BSR, 2011).

3.2.3 Local industry strategies and capabilities

A third key driver and shaper of linkage practices relates to the capabilities and strategies of local firms. Local firms are not automatically and passively responding to regulatory initiatives and/or strategies of MNCs. Local firms have different capabilities and interests in linkage formation and use different strategies to pursue these interests. In general however, there are strong incentives for most local firms to link up with foreign investors, partly to increase sales and volume, partly to learn and upgrade.

As discussed above, several recent developments enhance the opportunities for local firms to engage in linkages with extractive MNCs, including MNCs' growing engagement in local linkage development as well

as government-promoted local procurement programmes. Moreover, the financial, strategic and technological capabilities of African industries have improved significantly in recent years (McKinsey, 2011), thus making linkage formation more feasible.

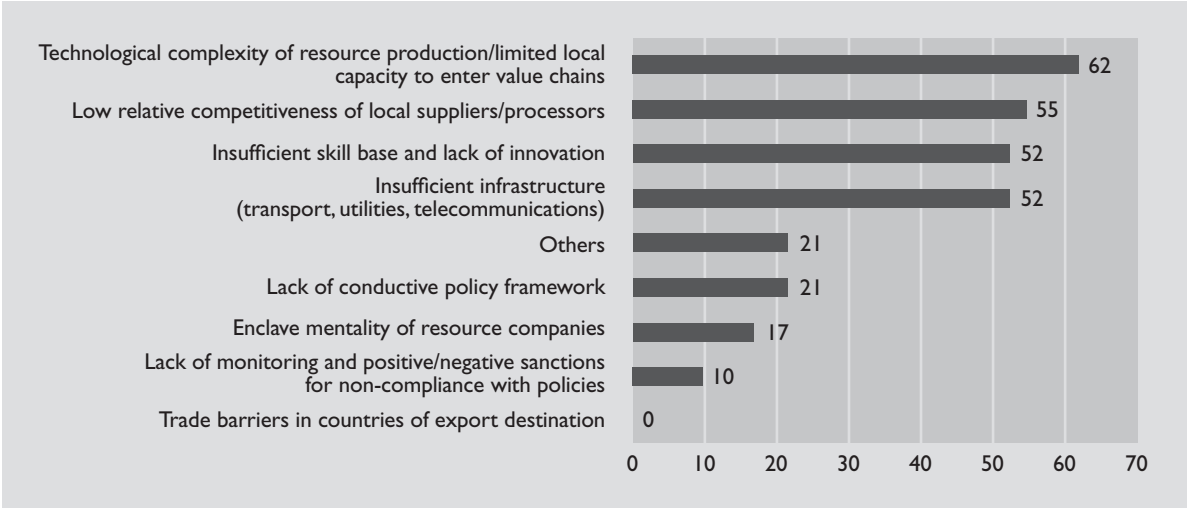
However, there remain huge problems with the abilities of African firms to link up to foreign investors and benefit from such linkages, among those weak capacities and transactional risks of linkages:

Capacity barriers to linkage formation

Several studies find that a main cause of lack of linkages in African extractives is the capability gap between MNCs and local industry (Diyamett et al., 2012; Robbins et al., 2009; Morrissey, 2012). The gap is partly related to technology, partly to scale and productivity (Robbins et al., 2009). Based on an expert survey, the African Development Bank finds that technological complexity and lack of skills in local industry are among the main obstacles to linkage development in African extractives (ADB, 2013) (see Figure 6). It is argued that the technology gap in fact may be widening as extractive supply and service industries increasingly specialize and as lead MNCs, pressured by governments and NGOs, raise environment, health and safety standards (Sigam & Garcia, 2012; Jourdan, 2008; UNCTAD, 2013). Hence, while, as argued before, CSR programmes by MNCs may create new opportunities for inclusion of local suppliers in the lead MNC value chain, these CSR programmes may also raise the entry barriers and costs for local suppliers. Not only does the introduction of CSR programmes raise the bar in terms of standards, auditing and reporting requirements, these are also difficult to work with for local firms because different MNCs impose different and sometimes conflicting standards and requirements.

An aspect related to technology gap concerns the ability of local firms to learn and develop new competencies based on the linkage collaboration, what some refer to as 'absorptive capacity'. The absorptive capacity in extractive industries in Africa is generally considered very low (Osabutey & Debrah, 2012; Narula & Portelli, 2004: Morris et al., 2011c) and is seen as a key factor why host

Figure 6. Obstacles to linkages



Source: ADB, 2013

countries fail to benefit from linkages (UNCTAD, 2013). Nevertheless, there are exceptions where it has been possible to build local industries with some level of absorptive capacity; Ghana gold mining or Botswana diamond mining are the usually cited examples (Morris et al., 2011b).

Finally, the weak financial position of many African supplier firms may impede linkage formation. Especially SME suppliers will have limited working capital and will therefore be unable to undertake the necessary investments to service foreign buyers. Moreover, as discussed, linkage formation, regulation and tariff policies may sometimes disfavour local supplier firms. For instance, many African countries grant tax and other exemptions to foreign firms in order to attract FDI. However, as local firms do not get such exemptions they will have a competitive disadvantage (Mjimba, 2011). Also currency fluctuations may hit the competitive position of local supplier firms hard. Supplier contracts are often denominated in USD. If and when the currency appreciates – as is often the case in resource-rich developing countries – input prices will grow, thus undermining the competitiveness of local suppliers (ADB, 2013).

Transactional risks of linkages

It should be noted that while there may be huge commercial and strategic benefits from linking up to MNCs, linkages may also intail substantial risks for local firms. Linkages impose transactional risks for local firms which may explain why local firms sometimes may be reluctant to enter linkages: First, lack of contract enforcement, instability of institutions, and general regulatory uncertainty in many African countries may discourage MNCs and local firms from engaging in contractual relations. Second, as extractive investments typically are large-scale, one-off investments, the asset specificity of the MNC transaction may become too high for the local firm. Only if the assets dedicated to the MNC linkage can be used in linkages with other MNCs in the country or region, or if the assets can be put in use in other industries, will the linkage make sense (Robbins et al., 2009).

The diversity of 'local firms'

One of the weaknesses of much of the literature on FDI and linkages in extractives is that local supplier firms generally are seen as a coherent group, reacting more or less passively and similarly to opportunities and constraints. However, the potential local supplier firms have widely differing interests and capabilities. Some firms will see foreign investors as a threat and adopt 'shelter strategies', while others will embrace the arrival of foreign investors as an opportunity to acquire skills and gain market access. To simplify, it can be argued that we have at least four categories of local firms with differing interests in linkages, 'the national champions', 'the artisanal extractive firms', 'the local conglomerates', and 'the entrepreneurial challenger' firms (Hansen et al., 2013). The two former categories have the potential of engaging with extractive MNCs in horizontal linkages, while the two latter will focus on vertical linkages: The 'national champions' are engaging in horizontal linkages with foreign investors, partly as joint venture partners, partly as technology partners. The relationships will in early stages of the joint venture be shallow and one-directional, but as national champions gain knowledge and experience from the partnership, the relationship may become more reciprocal. In African countries like South Africa, Ghana and Nigeria there is evidence that increasingly competent local players evolve from

joint venture collaborations with MNCs in the mining and oil sectors, although there also is evidence countering this (Kweka, 2009). 'Artisanal extractive firms' are small mining operators with low technology and skill level. Such companies often have very significant job-creation and income-generating potential (Pedro, 2006). However, their relationship to MNCs is strained, at best, as MNCs due to their better access to governments and their superior technology and finance, frequently crowd out artisanal mining. Linkages to such firms do exists (Kweka, 2009) but are very hard to establish due to the huge technology gap and due to the fact that they essentially are potential competitors to the MNCs. 'Local conglomerates' are typically highly diversified firms that have evolved and thrived due to lack of competition in the home market and due to privileged access to government. In theory, they have a certain level of organizational and technological capability that could allow them to embark on collaborative ventures with MNCs. Moreover, being politically well connected, they will be well positioned to obtain contracts with the foreign investors. However, having evolved behind protective tariff and regulatory walls, these conglomerates may not have the mindset, nor the effectiveness and dynamic capabilities required to engage with foreign investors in linkage collaborations. In contrast, 'the entrepreneurial firm' – basically firms that are seeking to operate on commercial terms and adopt competitive market-oriented strategies – will tend to see the arrival of foreign investors in extractives as an opportunity for generating more activities and acquire new capabilities and skills. The limited growth opportunities in a home market dominated by state-protected conglomerates and an informal industry may make the foreign linkage strategy even more attractive to these entrepreneurial firms.

3.2.4 Donor strategies and influence

The final force driving and shaping linkages is the donor community, which plays a key role in large parts of Africa. With the growing prices for extractives and the intensifying race to access African extractives, donors have become more engaged in the extractive industry. Extractives may be the most potent development engine in many African countries and donors are seeking for ways in which they can link up to this development. Moreover, the arrival of large extractive foreign investors in Africa fundamentally changes the landscape of African development assistance by introducing a – to development assistance – major competing source of development finance (Jensen & Wantchekon, 2004).

Historically, the role of donors in extractives in Africa has been related to the liberalization and structural adjustment agendas of the 1980s and 1990s. Hence, one outcome of structural adjustment programmes were widespread privatization of state-owned natural resource extraction operations and liberalization of FDI regimes to allow for greater foreign involvement in extractives. These reforms were to a large extent conceived and promoted by the World Bank and the IMF (Bourgouin, 2011). On the one hand, these reforms provided new opportunities for development of the sector by facilitating inflow of foreign investors and technology. On the other hand, as the reforms were largely designed to correct the problems created by the highly dirigiste approaches to extractives management of the 60s and 70s, they went to great lengths to reduce states' leverage in the sector (Killick, 2004). During the 2000s, mounting critique of the lack of development

contribution and negative side effects of FDI in African extractives prompted donors to revisit their strategies in the sector. In a report from 2003 – the Extractive Industries Review – the World Bank formulated a new vision for extractive governance with more focus on transparency, institutional capacity, control of environmental and social side effects, and stakeholder involvement (World Bank, 2003). The priciples laid out in this report provided the basis for the World Bank's broad engagement in extractives across the African continent in subsequent years.

Most recently, extractives are receiving renewed attention from donors due to growing interests in African natural resources, but now the configurations shaping the donor engagement are radically different from those existing just 10 years ago. Hence, donors are now facing much more assertive governments, and donors no longer have the leverage they had before, when African governments faced severe macro-economic imbalances.

As a consequence of the huge commercial and developmental potential of extractive FDI, we see donors throughout the African continent gear up to engage in this sector. Among the activities of donors are 1. Providing technical assistance and dissemination of experiences with best practices across developing countries; 2. Building infrastructural, institutional and absorptive capacity; 3. Facilitating specific extractive investment projects; 4. Mediating between extractive MNCs and local governments. One of the key thematic areas of donor involvement in extractives relates to taxation and distribution of rents. Hence, the World Bank has in several African countries conditioned its project loans to development of extractive industries and infrastructures on the establishment of transparent mechanisms for distribution of revenues (Morrison, 2007; Lundstøl et al., 2013). Moreover, donors have eagerly supported initiatives such as the UK-sponsored Extractive Industries Transparency Initiative (EITI) which is aimed at improving extractives management institutions, prevent fraud, and increase transparency. Another initiative is the IMF's 'Multi-donor Tropical Trust Fund on Managing Extractive Wealth' which provides techical assistance to resource-rich develping countries on how to avoid adverse macro-economic impacts of extractive rents. The growing use of budget support by donors in countries such as Ghana, Uganda, Mozambique and Tanzania has furthermore prompted donors to take a more direct interest in the collection and allocation of rents from extractives (Morrison, 2007).

While donor involvement in extractives has focussed on taxation, donors have recently started gearing up for engagement in linkage formation. In line with this, Bourgouin (2011) calls for a more activist approach by donors and argues that "*interventions by donors (and NGOs) should be designed to improve the economic integration and to attract competitive investments that boost regional linkages between mining and other sectors. In order for donors and NGOs to help positive development gain a foothold, they should work to improve the growth and employment linkages of large-scale commercial mines with the surrounding societies as well as to improve their fiscal linkages with the host countries*". It is however widely disputed how and how much donors should involve themselves in linkage promotion, especially as linkage promotion easily becomes 'industrial policy', an area of donor intervention that has been shunned by donors for decades.

Donors are thus seeking ways in which they can intervene in linkage formation. The World Bank and other donors have undertaken scoping missions across African extractives, aimed at identifying local industry capabilities and gaps in these. These scoping

missions provide the basis for organizing vocational and tertiary training programmes related to extractives industries and for identifying linkage opportunities. Moreover, donors are involved in developing the physical and institutional infrastructure related to linkage formation in extractives. There are also examples of donor interventions aimed at promoting specific FDI-local industry linkages. To the latter category belongs home country measures to foster (the right kind of) linkages between foreign investors and local suppliers.

While donor intervention ideally should adhere to the Paris Declaration's principles of donor harmonization and local ownership, the realities on the ground are far from those ideals. In practice, donors each have their own national economic and political agendas to pursue, and donors may be tempted to promote their often substantial national economic interests in extractives. The arrival of new donor countries, such as those from Asia and Latin America which do not necessarily adhere to the Paris Declaration's letter or spirit (Alden & Davies, 2006; Luo et al., 2010), has introduced a new level of rivalry between donors in this field and has drastically altered the bargaining relationship between donors, MNCs and local governments.

4. CONCLUSION

Where FDI in extractives in Africa for many years was seen as being, at best, of limited benefit to host countries due to its enclave nature, at worst, being a curse due to its creation of macro-economic imbalances, there is now renewed hope invested in extractive FDI across Africa. A number of reports from international organizations such as the ADB, UNCTAD, UNIDO and UNECA have recently stressed how extractive FDI offers new development opportunities for Africa in terms of generation of rents and creation of linkages and spillovers. In particular the linkage issue has gained prominence on the development agenda. Through vertical linkages, extractive FDI may develop local industries upstream and downstream in the extractive value chain, and through horizontal linkages, it may assist in developing national champions. In an industrialization perspective, extractive FDI may spur development of manufacturing capacity in extractive-related industries and the development of these supply industries, may in turn create spillovers on other manufacturing sectors through migration of employees as well as through demonstration and competition effects. Given the huge developmental stakes related to linkages it is no wonder that linkages and spillovers from extractive FDI are becoming key aspects of industrial development strategies in Africa.

The question is if empirical evidence gives basis for the hopes invested in extractives linkages. In this paper we provided a literature review of what is known about linkages in African extractives. The overall impression is that there is indeed evidence suggesting that FDI in extractives does not necessarily lead to enclave economies. Hence there is evidence that linkages are being formed, that they sometimes are deepening, and that wider spillovers on the African economies are created. However, it is also clear that the evidence is scattered and limited and is produced from various theoretical and methodological perspectives. Hence, generalizations are difficult to make. Moreover, there are plenty of studies pointing to the limitations of linkage formation: that they in many sectors and countries are few and short-term, that they are mainly re-

lated to low value added activities, and that they offer few opportunities for learning and upgrading.

Based on this mixed evidence, the key question for policy makers in government, MNCs and the donor community becomes under which conditions developmental linkages between extractive MNCs and local firms are and can be formed. We argued that essentially four actors and their interrelationship shape and drive linkage formation in African extractives, namely governments, MNCs, local firms, and donors. While MNCs and local firms through their strategies and programmes may have a large impact on the breadth and depth of linkages in African extractives, it is our view that linkage formation, at the end of the day, is a result of the institutions, governance mechanisms and policies provided by governments, often in collaboration with donors. But also that the actions by governments and donors should be informed by a firm understanding of the strategies, interests and capabilities of the private sector, domestic as well as foreign. We suggested that modern extractive MNCs in fact may be interested in developing local linkages, partly as part of their commercial agenda and partly as part of their CSR agenda. By drawing on the strategic interest of MNCs to form linkages, governments and donors may create more effective and durable linkage policies. Governments and donors should also base interventions in linkages on a firm understanding of the limits of MNC involvement in linkage formation: MNCs cannot compromise their core competencies when partnering with local firms, nor can they risk that salient safety, quality and environmental standards are compromised. Moreover, in contexts with low absorptive capacity of local industry, local content requirements may lead to price hikes and eventually undermine the profitability of investments thus reducing overall FDI. Likewise, we suggested that local firms, especially those that are not too entrenched in collusive relationships with government, may have capacity to engage with foreign investors in developmental linkage collaborations. But we also cautioned that local firms face significant constraints, partly related to their inability to meet MNCs' technical, quality and EH&S standards and partly related to the often extremely hostile business environments of African resource-rich countries. In short, governments, assisted by donors, are in the drivers' seat, but they need to understand that imposing heavy handed linkage measures without providing the conditions for domestic private sector development will at best lead to symbolic linkages with few or no spillovers on the local economy, at worst lead to foregone investments.

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Annex 1. Literature review

Author and year	*Country*	*Sector*	*Firm*	*Theory*	*Method*	*Main findings concerning linkages and spillovers*	*Main findings concerning conditions of linkages and spillovers*
UNECA 2013	Nigeria, Ghana and Zambia	Soft commodities (cocoa, coffee, tea, agro-products) & Industrial commodities (cotton, textile, clothing, leather, oil, copper and gold)	Lead firms and local firms	Global value chain Extractive curse	Country case study analysis	Local sourcing by oil companies in Nigeria is seen to be broad across goods and services – deep local supply chain. Efforts seen by oil companies addressing weak local capabilities in upstream industries. Deep linkages and upgrading. Strong local content policy. Few forward linkages found in Zambia's copper mining industry. Investments seen by companies in Human Resources. Local manufacturers lack technological capability to enter capital- and technology-intensive links of the supply chain. Policy has failed to encourage companies to increase local content or to upgrade local suppliers' capabilities. Broad but shallow linkages and no real upgrading. No policy framework. Heavy local sourcing seen in Ghana's gold industry (yet not indicative of local value addition or domestic ownership). Local suppliers often import products due to local products rarely meeting industry requirements. Growing linkages, but from a low basis. New local content policy.	Development of forward and backward linkages and opportunities for upgrading are determined by technical characteristics and the structure of the industry. Policy and domestic capabilities are critical determinants. Policies such as local content measures can be successful in increasing the breadth of backward linkages. To increase the depth of linkages, the value added of local activities, measures are essential to target skills development, technological capabilities, access to capital, etc. Forward linkage policy needs to be supported by complementary policies targeting competencies of processing industries and of local suppliers.
UNCTAD Commodities and Development Report 2013	Developing countries in general	Commodities	Lead TNCs and local firms	Global Value Chain The 'poverty trap'	Review of empirical literature and analysis of data set	TNCs are less likely to develop local supplier linkages. TNCs tend to locate technological innovation systems and high-level human resource development in OECD countries, reducing local capacity-building opportunities. Tend to leave few opportunities for local downward linkages due to optimization. Technological spillovers in resources are rare, given the limited scope for productivity improvement of labour- intensive products or a wide technological gap with the host economy. The number of high-quality jobs created through resource-seeking investment remains limited.	Few spillover opportunities and limited absorptive capabilities due to low levels of economic development. Transparency, fiscal regime, and institutional regulation have an impact. GVC structure – TNC and buyer-driven chains capture most of the value added, leaving fewer spillovers and linkages for developing country firms in the chains. Resource-seeking investments tend to have fewer development benefits as they typically do not seek to introduce or develop new technologies unlike investments in manufacturing. Opportunities for spillovers can be missed due to weaknesses in infrastructure, education, research and development support, extension systems, legal and regulatory environments. Resource-seeking investments lack an 'appropriate' level of technology for spillovers to occur.

African Economic Outlook 2013	53 African countries	Extractives	MNCs	Structural transformation FDI theory Linkage theory	Statistical analysis, case studies	Linkages and transfer of know how are taken as a given from foreign investment. More and more countries are signing up to initiatives that promote transparency of resource revenues to ensure citizen control and responsible spending. The expansion of natural-resource production has created a large number of jobs (estimated 600,000 jobs between 2003 and 2012 from greenfield FDI into extractives in Africa).	Needs investment in fundamentals – high-quality public service, institutional and regulatory environment, capable government and access to finance and markets. Specific requirements for natural-resource sectors are extensions of the fundamental conditions which all sectors need to thrive. After necessary conditions are fulfilled, managing extractives depends on ownership, policy, transparency and accountability.
Amendolaigne et al. 2013	19 countries in SSA	All sectors of the economy	MNCs and domestic suppliers	Linkage theory	Econometric analysis of original firm-level panel data from the UNIDO Africa Investor Survey 2010	Foreign businesses in Africa increase their linkages with local firms over time. Foreign firms with a local partner and a final-market orientation have a higher degree of interactions with local firms. Local linkages are higher when the local management is more autonomous from the headquarters. Foreign firms with knowledge base which is too advanced with respect to the absorptive capacity of the domestic economy are less conducive to interactions with domestic agents. Diaspora investments tend to generate larger backward linkages.	Time since entry of foreign firms, presence of a local partner in the ownership structure and final market orientation are associated with higher local linkages. Good institutions and a reliable legal system are pre-conditions for boosting linkages.
Morris et al. 2011	8 African countries	Gold, diamonds	Numerous western and Chinese MNCs	Global value chain Linkage theory	Qualitative case studies	In 4 countries growing breadth and/or depth of linkages, in two reduced breadth, while one static.	Depends on ownership, infrastructure and absorptive capacity (national system of innovation). Most important factor, though, is policy of host country.
Wise and Shtylla 2007	Global	Extractives	Multinational extractive companies	CSR	Qualitative case studies	Extractive industries are capital-intensive and rely heavily on imported goods. Extractive industries are not labour-intensive, although employment in the industry offers significantly higher income than in other sectors. Extractive industries are limited in their ability to generate large-scale impact through employment. Extractive industries are seen to use strategic philanthropy creating local economic opportunity and generating medium-term benefits for the extractive companies by developing suppliers and buyers. Expanded economic opportunity can be seen as risk mitigation by extractive companies. Investments by extractive companies in human capital development tend to focus on specific skill areas.	Governance, transparency, accountability and weak administrative capacity of local governments often lead to local benefits of extractive flows being lower than revenues generated. Extractive companies can have a greater impact if they develop inclusive business models integrating local SMEs into their value chains.

Author and year	*Country*	*Sector*	*Firm*	*Theory*	*Method*	*Main findings concerning linkages and spillovers*	*Main findings concerning conditions of linkages and spillovers*
Hanlin 2011	Africa	Mining sector	MNCs	Linkage theory	Observations as a practitioner in the mining sector of East Africa	The direct impact of Africa's mining operations on the regional and local economies appear disproportionately low.	Procurement decisions on operational mines are often pre-determined in the design or construction phase by decision makers who are detached from the local procurement environment, creating barriers that exclude procurement from local sources, also inhibiting the development of local capacity. Barriers are often created by the companies' risk aversion strategies choosing suppliers that they know and trust over local suppliers.
Morrissey 2012	SSA	All sectors of the economy	MNCs and domestic firms	Linkage theory Industrial Policy Spillover		In SSA linkages are rarely associated with spillover, as there is no learning or knowledge transfer, and often even the linkages are modest. Manufacturing tends to provide the strongest linkages in SSA. However, FDI in manufacturing is quite low, and the mechanisms to promote and support linkages between firms and sectors are underdeveloped. The resource extractions sectors – the most important sectors for FDI in SSA – provide few benefits other than direct employment and (a share of) export earnings. Meaningful spillovers imply learning (knowledge transfer occurs and the beneficiaries are able to apply this knowledge).	Linkages may exist without the spillover occurring, either because the foreign firm does not support the transfer or because the local firms do not have the capabilities to 'extract' or learn from the transfer. FDI spillovers require that there is technology and know-how embodied in the foreign firm that could be of use to local firms, that the MNC is willing to transfer some of this (implicit/explicit) and that the domestic firm wants to learn. Effective spillovers also require that there is some mechanism to facilitate the transfer to and utilization by the local firms (government support). Without a coherent industrial policy, SSA economies are unable to identify the important linkages to promote through FDI, and even less able to provide the incentives and capabilities for spillovers to occur. The problem of Chinese FDI, from the host country perspective, is that Chinese firms typically bring their own machinery, equipment and even workers – there are minimal linkages. A proper understanding of the failure of FDI to truly benefit SSA economies lies in exploring the failure to develop a coherent industrial policy.
Bourgouin 2011	Developing countries	Mining sector	Commercial mining compaies	Spillover theory	Policy brief (Recommendations based on observations)	Any large-scale commercial mining activity in a developing society always provides great potential for linkages into the small-scale manufacturing, agricultural, and service sectors. Large-scale commercial mining activities can diversify regional economies in ways that sustain regional growth even after an eventual mine closure.	Interventions by donors and NGOs should be designed to improve the economic integration and to attract competitive investments that boost regional linkages between mining and other sectors. In order for donors and NGOs to help positive development gain a foothold, they should work to improve the growth and employment linkages of large-scale commercial mines with the surrounding societies as well as to improve their fiscal linkages with the host countries.

Robbins et al. 2009	Mozambique, Lesotho and South Africa	Gas	TNCs	Linkage theory between TNCs and domestic SMEs Spillover theory FDI Inter-firm networks Industrial policy framework	Qualitative case studies	Facilitated networking activities between TNCs and domestic SMEs can increase the competitiveness of firm and government-led linkage programs can be successful (case of Mozambique). Inter-firm networks can offer a forum for sharing ideas and experiences pertaining to contracts with large TNCs in Mozambique. MNC-SME linkages have an impact on job creation (through direct and indirect jobs) Linkages can also have positive effects on MNCs (e.g. Mozal's efficiency and productivity is due to positive linkages with local firms. A part of the success is the people).	Upgrading of generic manufacturing-related capabilities of the SMEs is required. The main challenge to improving linkages is the sheer gap between the production technology, scale, and efficiency that was required by mega contractors (like Mozal) and those that could be offered by local SMEs. Access to finance, management capacity of SMEs, transparency are key. Linkage activity between TNCs and local firms requires active facilitation processes, the support of a range of institutional parties, and the involvement of all parties in the conceptualization, design and implementation of linkage programmes ensures that activities respond to the varied needs of the stakeholders. Encouraging forms of inter-firm networking amongst prospective host country suppliers provides a solid platform for programmes and critically allows for a more effective learning and upgrading dynamic to be encouraged. The context in which TNCs invest in host countries is also important to the promotion of linkages (a country's level of economic activity, the density and capabilities of local firms, levels of trust between major role players and many other factors). Challenges for linkages: • Domestic SMEs may not have the technical capacity and skilled labour needed for big contracts (poor standards, quality ad delivery may be constraints. • Language (written contracts in English) • A lack of access to finance • Uncertain policy and regulatory climate • Poor infrastructure
Perkins and Robbins 2011	Tanzania and Mozambique	Provision and management of infrastructure for mining	Tanzania's central corridor and Mozambique's Zambezi Valley projects	Linkage theory	Case study analysis	The character of the mining activity in Tanzania generated only limited linkages with domestic enterprises, although this was growing at the time of research. Despite limited linkage dynamics in Mozambique, the project was more promising in terms of establishing the types of connections envisaged between mining investment and infrastructure development.	The type of mineral being mined has impacts in terms of related linkage opportunities. Policy integration and political will is necessary to maximise the opportunities around the mining sector and its potential impacts. Bad business environment for SMEs damages prospects for linkages. Shortcomings in infrastructure affected the domestic enterprise sector, further undermining linkage opportunities. Ownership matters.

Author and year	*Country*	*Sector*	*Firm*	*Theory*	*Method*	*Main findings concerning linkages and spillovers*	*Main findings concerning conditions of linkages and spillovers*
Ledesma 2013	Mozambique and Tanzania	Gas	Anadarko, ENI, BG/Ophir, Statoil	Regulatory framework Institutional setting FDI attractiveness Extractive curse	Qualitative case study	Mozambique: profits can be used to promote value-added manufacturing that increases local employment, promotes local businesses, and creates potentially broader benefits across the country. Tanzania: Companies that are investing in the natural gas sector must undertake community development programmes and the promotion of Public Private Partnerships to enable investments in the natural gas industry.	The extraction of gas in Mozambique must be used in such a way as to maximize employment, training, infrastructure development and the growth of institutional capacities. A multi-centre development of the gas sector would bring the greatest economic growth prospects to the various regions in Mozambique, and contribute most to employment and poverty reduction, but it would take the longest time to achieve the required outcomes. Tanzania has a shortage of the necessary human resources with the required skills and knowledge in the natural gas industry. And natural gas infrastructure needs to be developed. Both countries are considering the establishment of sovereign wealth funds.
Narula and Portelli 2004	Tanzania	Manufacturing	MNCs	Global value chain theory Technological upgrading OLI framework	Empirical case study analysis Privatisation of state-owned enterprises through FDI	FDI through acquisition has led to industrial upgrading and technology transfer within the acquired firms. Evidence of technology transfer both in "hard" and "soft" forms. FDI through acquisition has led to more backward linkages – however, sourcing from local firms was only for simple manufacturing input whereas sourcing for medium technology inputs was from other foreign firms.	Absorptive capabilities, particularly human capital, are vital. Backward linkages and types of locally sourced inputs are determined by the technological capability of the linked firms.
Haglund 2008	Zambia	Copper mining	Chinese copper mining firms	Institutional theory	Case study Political and economic analysis	Zambia's regulatory environment for extractives is weak and lacks inspectors and resources to physically inspect the mining sector. There is an industry-wide skill shortage and legislation is outdated with fines amounting to pennies for the mining companies. One example underlines the potential for unchecked profit seeking to undermine local regulations, another emphasizes fiscal regulation and tax evasion issues.	Regulatory environment is key to maximizing benefits to society from foreign investment. The economic and political context surrounding Chinese investment risks undermining the effectiveness of local environmental, social and fiscal regulation. Within a weak regulatory setting, Chinese investment may pose significant challenges for effective business regulation. Suggests more civil society reporting.
Mjimba 2011	Tanzania	Minerals, Gold	MNCs	Global value chain Linkage theory	Qualitative case studies Policy analysis	Local goods and services linkages remain limited and restricted to low complexity and low criticality goods and services (food and beverages). Highly critical supplies (critical to the buyers) of goods and services are largely imported with virtually no local value addition. The skills deficit in Tanzania has limited the opportunities of spillovers in skills from the mining sector to other sectors of the economy. Incoherent policy has failed to spur the development of domestic niche industries of high cost manufacture and service inputs.	Policy is the main driver of linkages in Tanzania's gold mining sector. Skills, infrastructure, national system of innovation and ownership are also important. Linkages are determined by both public and private sector policy. The main public policy problem is government failure to translate and implement long-term macro policy visions into sectorial policies with appropriate sanctions and incentives. The main private policy problem is the external suppliers' outsourcing strategy.

Mbayi 2011	Botswana	Diamond cutting and polishing	MNCs in the diamond cutting and polishing industry	Linkage theory GVC	Qualitative primary and secondary data analysis	The cutting and polishing industry does have significant linkages with the local economy in most activities of the value chain. In some activities with the most potential for employment, such as the provision of consumables, maintenance and repair services there are limited linkages taking place, as goods and services are largely beig imported. The most significant local linkages are through local employment directly in 16 cutting and polishing factories. Consumption linkages resulting from employment in the cutting and polishing industry are more valuable than in the supply chain. However currently, the consumption linkages taking place from local job creation are significantly less than the consumption linkages for expatriate job creation.	Forward linkages from diamond mining are policy driven and their progress is held up by skills. Ownership and Infrastructure are also seen to be quite important in driving linkages, whereas national systems of innovation and regional factors are moderately important.
Corkin 2011	Angola	Construction	Chinese construction companies	GVC Linkage theory	Primary empirical research	Chinese construction companies' local linkages in Angola are very weak. So little is produced in-country in Angola that often only "locally procured" materials, rather than "locally produced" materials are available. However, more of the basic materials are becoming available in Angola due to increased localised production and an increased network of importers (e.g. cement). More value-added inputs such as finishings and specialities have yet to be produced locally. Studies have shown that Chinese companies, especially those with more experience in African markets, are becoming more willing to 'localise'. It is unclear whether any kind of skills transfer has taken place in the way of developing local value chain linkages.	The nature of ownership is one of the most important drivers of local linkages in this case (ownership of project financing). One of the main barriers to increased local employment is lack of training. The Angolan NSI is extremely weak, skilled and trained local labour is too expensive except for the largest Chinese firms, regional networks are limited and infrastructure remains a key constraint to Chinese companies. Policy remains the most important means for encouraging local content development in Angola.
Teka 2011	Angola	Manufacturing sector in the oil and gas value chain	Oil and gas companies	GVC Linkage theory	Primary empirical qualitative research and secondary research	Manufacturing linkages in the Angolan oil and gas sector have expanded since the early 2000s. Intermediate linkages between the manufacturing function and the local economy remain limited. Limited local content in the localised manufacturing function. High volume of local content in terms of human capital at basic and semi-skilled levels driven by local content policy. However, there is limited local content in human capital at higher technical levels. The foremost local linkage is occurring in supply of basic general products which have no direct input in the manufacturing function.	Policy and local capabilities are the main determinants of linkages. Local content policy pressure is the main driver of localisation of manufacturing activity in Angola, of the high volumes of intangible intermediate inputs at basic and mid-technical levels and of the high volume of supply of basic general products. Incoherent local policy is skewed towards forward linkages. The most relevant factors determining the extent and nature of linkages in the oil and gas sector in Angola are policy, skills, NSI and ownership. Regional dimensions do not appear to have much influence on the depth and breadth of linkages.

Author and year	*Country*	*Sector*	*Firm*	*Theory*	*Method*	*Main findings concerning linkages and spillovers*	*Main findings concerning conditions of linkages and spillovers*
Bloch and Owusu 2011	Ghana	Gold mining	Companies in the gold mining value chain (MNCs and local firms)	GVC Linkage theory	Literature review, qualitative and statistical analysis	There is little evidence of forward linkages in the gold processing industry in Ghana. There has been a strengthening of the fiscal linkages in the past 10 years, with up to 20% tax revenue from the mining industry. Little evidence of consumption linkages due to methodological difficulties. 27 different kinds of backward linkages have been identified in Ghana's gold mining industry, and are increasing. Several CSR initiatives have been implemented to promote mining-company designed linkage programmes. All in all, there has been an improvement in the breadth and even the depth of linkages stemming from gold mining in the last 20 years.	Backward linkages are driven by ownership, policy, NSI, infrastructure, skills and regional factors. Forward linkages are driven by policy, NSI and skills in the mining industry. Consumption and fiscal linkages are more driven by ownership, policy and infrastructure and consumption linkages are further driven by skills as well. Sector-specific policies and legislation as well as the broader policy framework relevant to gold mining have been the strongest factor, and critical to the development of fiscal, backward and consumption linkages. Following policy, causal factors are ownership, skills and infrastructure. The NSI and regional dimension appear to be weaker.
Diyamett et al. 2012	Tanzania	Manufacturing	MNCs and local firms	Technological capabilities theory Linkage theory Motives of MNCs	Policy brief	Only 8% of surveyed firms entered Tanzania through merger and acquisition. MNCs were mainly market-seeking. Local firms have limited backward linkages with MNCs. MNEs import 75% of their inputs but more than half of the MNEs buy material from local sources, implying prospects for more local sourcing. Only about 16% of local firms acquired product technological capabilities from MNEs while about 84% acquired them from other sources. Only about 13% of local firms acquired process technological capabilities from MNEs.	Tanzania must improve its environment for efficient production as there will be a shift from market-seeking to efficiency-seeking MNEs.
Oyejide and Adewuyi 2011	Nigeria	Oil and gas industry	MNCs and local firms	Linkage theory	Primary (survey) and secondary data analysis Descriptive and inferential analysis	The degree of local sourcing of input (local suppliers) in the control system and ICT sub-sector is less than other sub-sectors. Linkages between first-tier and second-tier suppliers are weak, though information exchange is relatively higher. Service firms and oil companies differ in their opinion of linkages between the two, with oil companies rating them higher. Most servicing firms are national but the control system and ICT sub-sector has the highest MNC presence. MNCs dominate the oil sector followed by joint ventures, and few national firms.	Availability of skilled labour, policies and NSI stand out as the major drivers. Infrastructure comes after and ownership, regional dimensions and other factors follow after.

Osabutey and Debrah 2012	Ghana	All sectors of the economy	MNCs in general	FDI policy Spillover theory Technology and knowledge transfer Absorptive capacity	Secondary data analysis	Policies and incentives appear to be geared towards attracting FDI but lack incentives that encourage foreign-local collaborations.	Policy and investment incentives, absorptive capacity/human capital – tertiary education is key. Ghana must enhance the science and technology knowledge base to attract more FDI and technology transfer – the minimum human capital threshold
Fessehaie 2011	Zambia	Copper mining	Mining companies	Vc upgrading/ downgrading Supply chain/ value chain/ gvc Linkages theory National innovation system	Qualitative case study	Mining companies in Zambia directed a significant share of their expenditures to the local supply chain. However, the depth of local linkages was low. Skills availability was poor due to low public investment and low propensity from firms to invest in in-house training, with the exception of original equipment manufactures (OEMs) subsidiaries, constraining the possibility for suppliers to expand their markets and to upgrade into highly-skilled activities. Skills spillovers from the mines to the supply chain provided firms with technical skills and knowledge about the internal process. However, this was not critical for growth and upgrading processes. Reducing transaction costs for Zambian suppliers, and linking them to mines in DRC and second-tier suppliers in South Africa and overseas gave the project potential to expand and deepen local linkages.	China's entry into the Zambia copper value chain had a distinctive impact on the localisation of upstream linkages. The weakness of the NSI also contributed negatively to the deepening of local linkages. With low public investment in building technological capabilities, firms were caught in a trap of no access to investment capital, low technological capabilities to start with, low incentives to adopt new technologies and risk that the market would not reward such investment A minimum size and some level of specialization on critical supply links were required in order to accommodate upgrading processes. The absence of effective public policies or strong cooperation with buyers or foreign GVCs has led to a 'squeezing' out of some firms of the supply chains. Weak policy and NSI were found to have a negative impact on the localisation of upstream linkages.
Bwalya 2006	Zambia	Manufacturing sector (food, textiles, wood and metal industries)	Foreign firms	Technology and productivity spillover theory	Panel data analysis of nature and occurrence of technology spillovers from annual data collected by the World Bank through the Regional Program on Enterprise Development from 1993-1995	No significant intra-industry (horizontal) spillovers exist, while significant inter-industry (vertical) technology spillovers from foreign firms in upstream sector to local firms in downstream sectors are found.	Technology spillovers may be regional rather than sectorial.