

Flagship Report Paper Series

Paper 6: Creating local content for human development in Africa's new natural resource-rich countries



AFRICAN DEVELOPMENT BANK GROUP

BILL & MELINDA
GATES foundation

Preface

History shows that an abundance of natural resources does not necessarily improve a country's human development. How can governments turn new discoveries of natural resources into outcomes that matter for their citizens – including better health, better education, and access to quality social services?

Most governments have expressed a commitment to turn revenues from new natural resource discoveries into outcomes that matter for their citizens: better health, better education, and access to quality social services. They also want to make sure the discovery of extractives translates into more and better jobs and business opportunities. Yet they are also aware that delivering on those commitments demands tough and sometimes complex policy choices, including balancing the need for social sector investments with the needs of other sectors across the economy, being transparent and carefully managing citizen expectations, and adequately distributing benefits both between extractives and non-extractives communities and between current and future generations.

In light of these challenges, the African Development Bank (AfDB) and the Bill and Melinda Gates Foundation (BMGF) came together to produce a joint Flagship Report: *'Delivering on the promise: Leveraging natural resources to accelerate human development in Africa'*.

This paper is one of a series of eight in-depth technical background papers which supported the development of the flagship publication. While each background paper can stand alone, they also build on each other. Paper 1 sets out a framework for understanding four key channels through which natural resources can translate into improved human development: 1# public spending on health, education, and social protection; 2# public spending aimed at fostering growth and economic diversification; 3# industry spending on infrastructure, procurement, skills, and employment; and 4# companies' spending on social investments. Paper 2 estimates the likely timing and magnitude of revenue from new discoveries of oil, gas or minerals in six African countries: Ghana, Liberia, Mozambique, Sierra Leone, Tanzania, and Uganda.

The next three papers examine the public spending channels described in the first paper. Paper 3 discusses the macroeconomic risks and policy choices associated with an influx of new revenues from natural resources. Paper 4 explores the potential of new revenues to improve health and education services, comparing the expected scale of revenues to financing needs in the six featured African countries and introducing a diagnostic framework for policy choices. Paper 5 looks at the case for using new revenues to fund basic social protection programs, including the potential to boost demand for health and education services.

The final three papers examine the industry activity channels described in Paper 1. Paper 6 looks at how policies on local content can leverage spending on extractives industry projects to create more broad-based economic growth. Relatedly, Paper 7 explores the policy choices involved in leveraging extractives projects to build skills and human capital. Finally, Paper 8 asks how governments and industry can maximize the human development impact of companies' social investment, a relatively small but potentially important part of company spending in extractives industry projects.

To access the Flagship Report and the other seven background papers presenting complementary in-depth discussions of the policy choices described in this paper, readers are encouraged to consult the dedicated website at: www.NaturalResourcesForHumanDev.org.

Paper 1 – A framework: Human development and the links to natural resources

Paper 2 – Timing and magnitude of new natural resource revenues in Africa

Paper 3 – Natural resource revenues and macroeconomic policy choices

Paper 4 – How to use natural resource revenues to improve health and education in Africa

Paper 5 – How to use natural resource revenues to enhance demand for public services through social protection

Paper 6 – Creating local content for human development in Africa's new natural resource-rich countries

Paper 7 – Leveraging extractive industries for skills development to maximize sustainable growth and employment

Paper 8 – Extractive industries and social investments: Principles for sustainability and options for support

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Disclaimer

This series of papers focuses on one part of the extractives debate and reflects research gaps identified by the contributors within their areas of expertise. The contributors are not held responsible for the views expressed in this report. This paper is based on research, analytics, and expert consultations completed during the writing of the eight background papers. However, this paper should not be considered as an alternative to in-depth technical expertise. Any mention of specific entities, individuals, source materials, trade names, or commercial processes in this publication does not constitute endorsement by the AfDB or the BMGF.

Key messages

- **Extractives companies spend at least as much on employment, procurement, and infrastructure as governments receive in revenue from extractives projects.** Policies to support an increased domestic share of inputs (goods, services, and employment) can generate a meaningful contribution to growth and human development.
- **Opportunities for local content policies are greater in the mining sector than the oil and gas sector, as the former uses more lower-skilled labor and dual-use technology.** While both industries use some unskilled or semi-skilled labor for tasks such as catering or security, mining also uses such labor for construction work and operations. Moreover, mining technology is often ‘dual purpose’ and has lower entry barriers. In oil and gas, technology and jobs both tend to be more highly specialized.
- **Extractives companies stand to gain from using local suppliers – but six main constraints mean the potential for local content is often not realized.** First, local firms may lack the capabilities to produce goods and services at the required quality. Second, they may lack access to credit. Third, local firms and extractives firms may lack the mutual information to begin relationships. Fourth, the regulatory and institutional environment may be inadequate. Fifth, workers may lack the appropriate skills. Finally, infrastructure, such as power, water, or transport facilities, may be substandard.
- **Whilst policies to mandate highly prescriptive local content requirements may seem tempting, the risk of unintended consequences is high.** Such policies are often economically inefficient and can create opportunities for rent-seeking and capture by special interests. Extractives companies view the costs they add as the equivalent of additional taxes and will seek other concessions to offset the cost, potentially lowering the revenues that will accrue to government through taxation, profit shares, or royalties.
- **Nonetheless, if mandatory local content policies are applied, transparency and standardization are crucial.** The requirements must be public and the scope for discretionary decision-making curtailed, while all companies have to be treated equally and companies’ performance relative to targets has to be audited equitably by third-party auditors.
- **An alternative approach is to focus instead on developing the enabling environment – institutional, regulatory, political, and attitudinal – for local firms.** This can involve market-supporting policies such as conducting a gap analysis, training local businesses, and acting as a knowledge broker – making local firms aware of the opportunities that exist and extractives companies aware of local firms’ capabilities. Collaboration among stakeholders, including in business clusters, should be encouraged, in particular to build capacity.
- **Regardless of the policy approach, a clear legal and regulatory framework has to define extractives industry obligations.** For the purposes of monitoring and evaluating performance in meeting local content targets, measures of local content have to be standardized.
- **Local content policies need to be introduced by government early on, once investor interest manifests itself and well before any actual projects have started to harness the benefits of such policies.** Early introduction of local content policy interventions helps to avoid misalignment of project development timelines, timelines set by local content regulations, and timelines required for building local capability. Such policies should reflect

the wider industrial and skills development objectives of the country, in order to focus on areas where capabilities are of use beyond the extractive industries.

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List of abbreviations

AfDB	African Development Bank
BMGF	Bill and Melinda Gates Foundation
CCM	<i>Consejo de Competencias Mineras</i> (Mining Skills Council, Chile)
CSR	Corporate Social Responsibility
ECOWAS	Economic Community of West African States
GDP	Gross Domestic Product
ICMM	International Council on Mining and Metals
IOCs	International Oil Companies
PROMINP	Mobilization Program for the Oil and Gas National Industry (Brazil)
NGO	Non-Government Organization
R&D	Research and Development
TRIMs	Trade Related Investment Measures
WTO	World Trade Organization

1 Introduction

How can public policy decisions leverage extractive industry activities – in areas such as employment, procurement, and infrastructure – to further human development? This is a key challenge facing the governments of natural resource-rich countries. By implementing policies that increase the ‘local content’ of activities in the oil, gas, and mining sectors, governments aim to increase the opportunities for local businesses and individuals in the extractive industry value chain, thereby increasing growth, incomes, and ultimately human development.

Such policies usually aim to create an environment – through regulation or otherwise – that will drive structural change and industrial transformation. Not only does greater participation in extractive industry supply chains create employment and industrial development, but since local firms and their employees pay taxes, fiscal revenues are also positively affected. The following quotation from the African Mining Vision is illustrative:

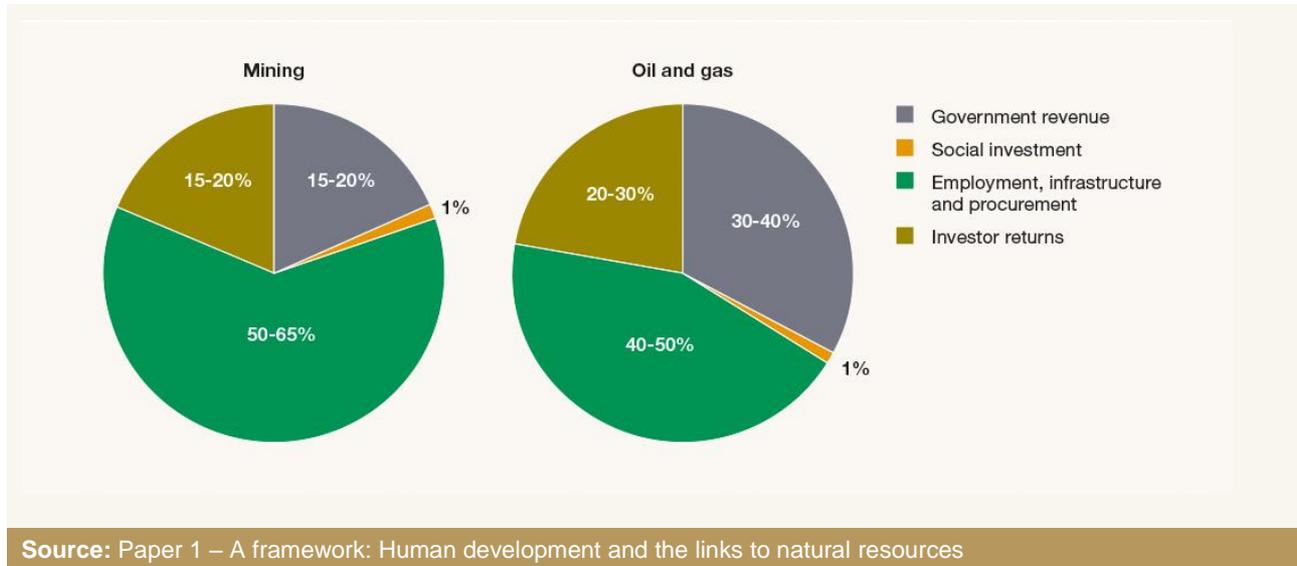
A resource-based African industrialisation and development strategy must be rooted in the utilisation of Africa’s significant resource assets to catalyse diversified industrial development, as was successfully implemented by several erstwhile resource-based economies in the developed world such as in Finland, Sweden, Germany (especially in the Ruhr region), and the US over a century ago and to some extent more recently in middle income countries Malaysia, Brazil and South Africa. (African Union, 2009)

The focus among governments on local content is understandable, for the prize for getting this right is great: as is explored in more detail in Paper 1 of this series, international oil, gas, and mining companies’ direct spending on employment, procurement, and infrastructure tends to be at least comparable to direct government revenue from extractives projects. As shown in Figure 1, the potential is greatest in the mining sector, where a large share of total spend is on employment and on procuring goods and services. This means that increasing the share that is captured locally by even a marginal factor can be economically significant.

The potential gains from increased local content in oil or gas production are smaller as a proportion of total spending, although the larger absolute size of most oil and gas operations means that the amounts involved can be equally significant.

Although the potential prize is great, so is the challenge of getting policies right. Lessons can be learned from elsewhere, but there are no hard-and-fast rules for policy-makers to apply. Policy approaches have varied, as have their relative successes and failures, and as this paper makes clear the risk of unintended consequences is great. By reviewing the available evidence and key issues, this paper presents a set of initial policy implications and considerations to inform the more detailed discussions necessary to arrive at a policy framework for local content that achieves the goal of maximizing long-term contributions from extractives to human development.

Figure 1: Average distribution of spending in extractive projects



The remainder of this paper is organized as follows:

- Section 2 discuss the definition of local content;
- Section 3 reviews the scope for local content and discusses the reasons why it is not higher;
- Section 4 looks at the policy options for the governments of natural resource-rich countries, and the choices between more mandatory and/or prescriptive regulation and a focus on creating an enabling environment;
- Section 5 draws conclusions and sets out some of the policy implications for governments faced with extractive industries and the opportunity to create local content for human development;
- Annex A supplements the other sections and presents a selection of experiences from countries already harnessing their natural resources.

2 Definitions of local content

Although the term 'local content' is now widely used, no common definition exists. Definitions range from defining local content narrowly as local procurement of goods and services to more broad definitions referring to the total extent of investor involvement with the host economy. Four potential types of local content can be distinguished:

1. Purchases from national suppliers of goods and services. This constitutes the narrowest and most common definition of local content, although further definitional questions around how 'national supplier' is defined arise (e.g. location of company registration, extent of value addition in country, or equity ownership).
2. Employment of local staff. The employment of staff considered local, which in turn could be defined as nationals or those from the immediate surroundings of the extractives operation.
3. Support to local economic development through local enterprise development or social investment.
4. Effects on induced employment: this includes people who are employed as a result of the spending of wages by employees of the operation in question concerned and, usually, also by the employees of suppliers and customers. Induced employment cannot be directly influenced by the company but could be a maximization objective for the government. In practice, however, most governments ignore this area's potential for human development, in spite of it usually accounting for most of the employment generated as a result of extractive industry investment.¹

The present paper focuses on the procurement of goods and services and on employment. It covers issues around skills development, as this is critical when it comes to generating opportunities for local employment. Skills development more generally is treated in more detail in Paper 7 of this series, and social investment in Paper 8.

¹ See, for instance: Aroca, 2001; McMahon and Tracy, 2012; Östensson, 2014; Schodde and Hronsky, 2006; Amoako-Tuffour et al., 2015.

3 The challenge of increasing local content

As noted above, the potential benefits to host governments from increasing local content are great. At the same time, investors in large-scale oil, gas, and mining projects generally have clear incentives for procuring and recruiting locally. Having suppliers nearby reduces lead times and facilitates a closer relationship to shape the development of products, services, and processes. Recruiting from the domestic market would similarly be in the company's interests, as the cost of such labor is likely to be lower than that of foreign workers, who need to be enticed to move and who may require various kinds of special benefits to compensate for their expatriate situation.

At the same time, the empirical evidence is that local content in the extractive industries is typically low. This presents a conundrum: why are current levels of local content not higher? Exploring this conundrum reveals a set of structural issues that prevent increased participation from domestic firms and individuals, and helps to identify policy options for addressing specific issues. In discussing the challenges to increasing local content, however, it is important to distinguish between mining and oil and gas (Box 1).

Box 1: Differences between the mining and the oil and gas industries

Several differences between the mining and the oil and gas industries have a bearing on opportunities for local content. These have to do with cost structures and the organization of production, and are dictated by technical and economic factors:

- Differences in cost structure. In the oil industry, exploration or finding costs constitute between half and three-quarters of total production costs;² in the non-fuel mining industry, the corresponding figure is 2–3 per cent (Metals Economics Group, 2012).
- In large-scale mining, capital costs – where local content opportunities may be more limited – are typically a quarter to half of production costs; in the oil and gas industry they are usually at least three-quarters.
- While both industries use a certain amount of unskilled labor for non-industry-specific tasks such as catering or security, non-fuel mining also uses unskilled labor for construction work and similar tasks, which vary over time but are often an important part of total employment. Moreover, local content is often very high in services delivered to non-fuel mining.³
- In non-fuel mining, specialized equipment is supplied by a small number of companies but the mining company is the user of the technology; in fossil fuel extraction, a service company (rather than the lead oil and gas company itself) may be the user and sometimes owner of the technology. Much of the actual exploration and extraction work is carried out by service companies rather than the oil or gas company holding the concession or contract.
- Oil and gas extraction technology is specialized, has high entry barriers and has few applications outside the industry itself. Mining technology, on the other hand, is often 'dual purpose' and has lower entry barriers. It is possible for companies to follow a graduation process from acting as agents for equipment suppliers to undertaking repairs and maintenance, to producing spare parts, to becoming equipment suppliers themselves (Haglund et al., 2014).⁴

Source: Metals Economics Group (2012); Haglund et al. (2014)

² According to the United States Energy Information Administration (2011), 'finding costs' account for 41 per cent of total production costs in the Middle East and vary from 49 per cent (Canada) to 77 per cent (Africa) in the rest of the world.

³ According to one estimate, close to 100 per cent of services bought by mining companies in Zambia are supplied by local companies (Chamber of Mines of Zambia, 2014).

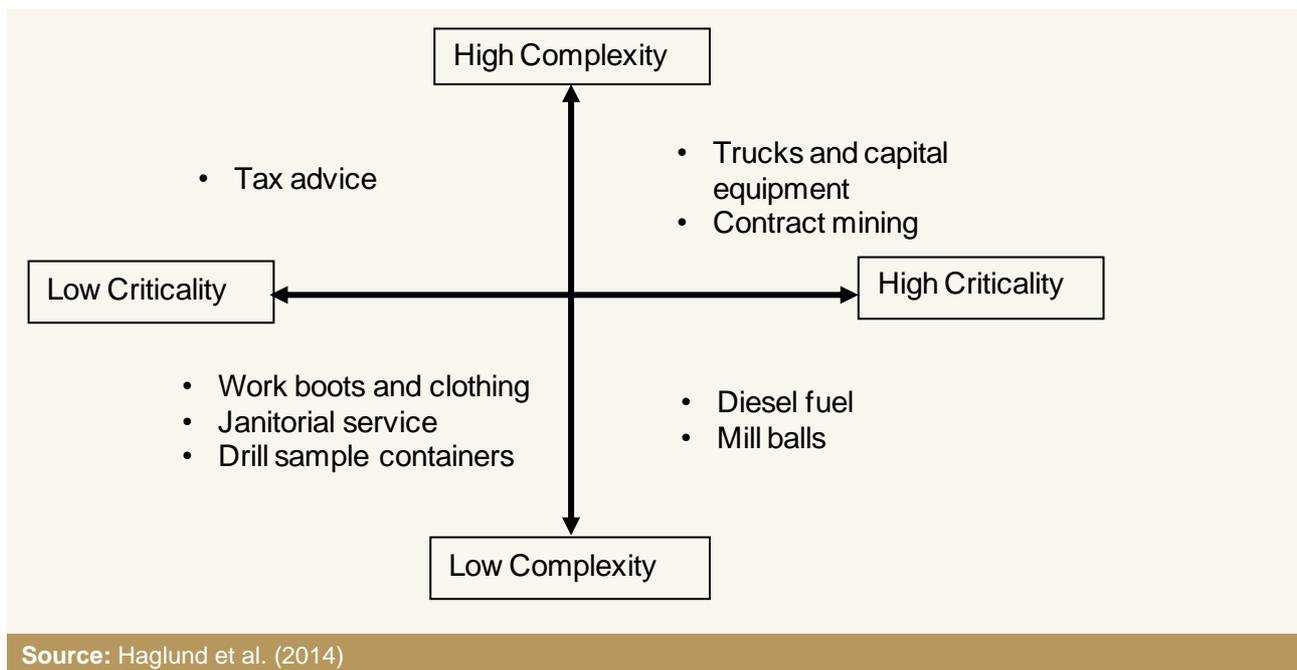
⁴ The experience from Zimbabwe suggests that firms active in the small-scale mining sector may develop various kinds of horizontal linkages. For example, firms operating as miners have – over time – developed capabilities in sourcing and maintaining equipment for their own operations that allow them to diversify into servicing other companies (Haglund et al., 2014).

3.1 The industry perspective

Looking first at local procurement from the extractive industry company's point of view, when evaluating suppliers firms consider a series of critical success factors, representing the particular features of a good or service that is required by the company. Increasingly, a broader range of factors are being taken into consideration, reflecting the greater outsourcing of critical inputs (Kaplinsky and Morris, 2001). Many of these critical success factors are reflected in a growing number of process and product standards, including technical, quality, and safety standards. They include price, quality, ability to provide to scale, flexibility, speed of delivery, reliability of delivery, trustworthiness, and innovation.

The critical success factors of relevance for a particular good or service depend, in part, on the intrinsic characteristics of the good or service. For example, for inputs that are critical to the production process, timely supply and to adequate standards will be relatively more important than price – and such products will command higher margins. Similarly, more complex products typically require higher product and process standards, will face higher barriers to entry, and will command higher margins for the supplier. Mining procurement can therefore usefully be described in terms of the degree to which inputs are seen as critical to the operation of the mine, and their complexity (see Figure 2).

Figure 2: Supplier matrix and selected supplies



In an increasingly globalized world, market forces dictate that local suppliers (goods, services, labor) will be chosen if they are perceived to be competitive in terms of a firm's critical success factors. Understanding the constraints that prevent them from reaching the standards demanded by the large-scale oil, gas, and mining industries is therefore key, and can help to inform the targeting of policy.

3.2 Key constraints preventing local businesses from competing effectively

We identify the key constraints facing local suppliers that fall under six categories: capacity, funding, information, skills, regulatory and institutional, and infrastructure.

Capacity – Developing countries, particularly natural resource-rich countries in Africa, often lack the industrial and technological capacity to produce goods and services at the quality standards required by international natural resource companies. First, in terms of technical standards, the challenges facing the manufacturing sector in Africa are well documented.⁵ In the case of technologically demanding sectors such as deep-water exploration and extraction there are often no practical alternatives to importing both equipment and services. Second, even where appropriate technical capacity exists, standards may not be met. International natural resource companies often prefer international suppliers because of concerns regarding quality and safety, and are hesitant to source from a local firm that has not been granted international certification, such as ISO, API, or ASME. Insurance requirements and concerns for the environmental integrity of the work are among other motivations facing oil, gas, and mining companies that lead to a preference for sourcing from internationally certified suppliers (Domjan, 2004). Lastly, other non-technical capacity issues include complex procurement systems and the challenges of delivering at the scale required by large contracts from the extractive industries.

Funding – Lack of access to credit on reasonable terms has made it difficult for local businesses to expand to meet the demands of international oil, gas, and mining companies. Local companies often lack a track record and with no credit history they are virtually shut out from accessing more affordable lines of credit on international markets.⁶

Information – Information asymmetries on both sides – purchaser and supplier – are major constraints on increasing local content. It is often difficult and costly for extractives companies to identify and evaluate the suitability of local suppliers. It is also difficult for suppliers to know about opportunities to supply goods and services to international extractives companies. This lack of information on both sides prevents suppliers from identifying projects for which they might bid, and in some cases goods and services that could have been sourced more cheaply on the local market can end up being imported (Domjan, 2004).

Skills – The World Bank (2014) has identified the extractive industries as one of the six key sectors in Africa with a critical shortage of skills. The extractives sector has a wide range of skills requirements such as mining engineers, metallurgists, quarry and mine workers, heavy truck or tanker drivers, and general laborers. In most African countries, however, even the basic crucial skills are in short supply.⁷ Given this, lower-skilled activities in the service sector – such as in trucking and transportation, waste disposal, storage, catering, water management, machinery and vehicle maintenance, and electricity installation – offer more immediate opportunities for local communities to benefit from extractive industry investment.

⁵ The manufacturing sector contributes an average of less than 10 per cent to GDP in Africa and its value added fell by almost 40 per cent between 2001 and 2012 (averages calculated from the World Bank Development Indicators Database 2013). The manufacturing sector remains dominated by low-level processing of natural resources and the manufacture of simple consumer goods aimed at domestic markets.

⁶ For example, the average lending rate in Africa in 2010 was 17.5 per cent compared to 4.6 per cent in OECD countries (averages calculated using data from the World Bank Development Indicators Database 2013).

⁷ This includes gaps relating to vocational and trade skills such as electricians, carpenters, mechanics, metal fitters and machinists, structural steel and welding specialists, and other building and engineering technicians.

The shortage of skilled labor hurts local companies in two ways. On the one hand, they may have difficulty finding local engineers who are qualified in the technical disciplines needed to supply the sector. On the other hand, it raises the price of skilled labor. When a particular skill is in short demand, workers with this skill will demand higher wages and are more likely to be poached by firms looking for the skill. In such a situation, training workers has a high cost to firms, as they may have difficulty retaining these workers, potentially providing a perverse incentive for firms not to train workers (Domjan, 2004).

Regulatory and institutional – Specific issues aside from a lack of local capacity can also block local companies from benefitting from international oil, gas, and mining companies' procurement strategies. There is often a high cost of doing business, including costs associated with setting up a formal sector enterprise. In places with weak or unclear property rights, entrepreneurs cannot use their land titles as collateral to access loans. Alternatively, under traditional land property systems it may be very difficult for a small or medium-sized company to acquire the land necessary for an industrial plant. As a result of these factors, many entrepreneurs operate in the informal economy, which makes transactions with international extractive industry companies nearly impossible.

Infrastructure – Infrastructure, such as power, water, or transport facilities, is critical to the capabilities of local would-be suppliers and their ability to compete. In most African countries, particularly lower-income ones, infrastructure is a major constraint on doing business. Africa's largest infrastructure deficit is to be found in the power sector, whether measured in terms of generation capacity, electricity consumption, cost, or security of supply.⁸ Lack of reliable power can reduce opportunities for local businesses, for example due to additional operating costs that result when back-up power/diesel generators are needed (IPIECA, 2011), or because unreliable power supply has adverse impacts on the ability to maintain consistent quality standards. Transport infrastructure challenges include lack of roads and rail lines, lack of links between them and ports, and the poor quality of roads. As a result, African transport costs are generally up to four times higher than those in the developed world, complicating imports of equipment and materials (McKinsey and Company, 2010). High transport costs for several different inputs negatively affect local companies' competitiveness.

3.3 Varying opportunities for local content across the project life cycle

Given the high capital intensity of oil and gas operations in particular, there are more limited opportunities for local content at the production stage compared to in mining. However, at the construction stage of oil and gas projects, which typically lasts several years, there may be a larger number of opportunities in semi-skilled trades, such as electrical work, welding, transportation, and light engineering.

This means that early planning is needed by policy-makers and industry, well ahead of the beginning of production, to identify when training should begin and how many people should be trained. Fortunately, the typically long lead time between discovery and exploitation of resources allows in principle for skills gaps in the local economy to be identified and appropriate training programs to be put in place.

⁸ Africa's power infrastructure delivers only a fraction of the service found in the developed world: the 48 countries of sub-Saharan Africa (with a combined population of 800 million) generate roughly the same amount of power as Spain (with a population of 45 million) (Agénor, 2012).

Due to the lack of specialized training institutions in Africa, in some cases there is a time lag between the investment required to create functional training institutions and enrollment to train for specialized skills. Companies can bridge this gap through providing scholarships to promising and talented students. Scholarships are also a valuable social investment, especially where they are targeted at the historically disadvantaged groups in society.

4 Policy options facing governments of resource-rich countries

The call for policies to strengthen local content reflects the widespread impression that policies aimed at attracting investment in extractive industries, with a view to raising government revenue through taxation, have yielded meager results. The African Mining Vision illustrates this common view:

...critics started to argue that the resource boom and the ensuing efficiency gain and rise in export earnings in many mineral economies in Africa were producing questionable welfare gains and development outcomes. They considered most reforms narrow minded and more geared towards attracting foreign investment and promoting exports and less towards fostering local development ... There is also the argument that mining has not fulfilled its poverty reduction role and poverty reduction has not been mainstreamed into mining policies, often due to weak linkages into the local, regional and national economies. (African Union, 2009)

In order to focus these policies, an overarching objective should be to promote adding value or economic diversification, by strengthening various types of linkages and by positioning industries along the value chain (see Box 2).⁹ Importantly, different interventions are required to support different parts of the value chain, at different stages of the project life cycle, calling for a mix of policy interventions to support the incentives for the market-driven process by reducing the constraints described in Section 3.3.

Box 2: The global value chain literature

The research on global value chains points to the need for a managed relationship between lead firms and suppliers to meet standards specific to production processes that can be unique (Gereffi et al., 2005; Kaplinsky and Morris, 2001). It highlights the incentives for lead firms to support suppliers to upgrade their capabilities, ensuring a reliable and suitable supply of inputs. This process of upgrading can take a variety of forms, including product diversification, process upgrading, or assistance with financing or training. These incentives mean that the process of developing links between suppliers and lead firms can be market-driven (Morris et al. 2012)

Source: Gereffi et al. (2005); Kaplinsky and Morris (2001); Morris et al. (2012)

Another key policy objective should be to address market and coordination failures (e.g. due to information asymmetries, as mentioned above) and to promote employment and other social objectives (see Tordo et al., 2013).

The approaches to achieving these policy objectives vary widely, ranging from more prescriptive approaches to those that rely on incentives, consultation, and wider support for strengthening the enabling environment of local businesses. We discuss these in turn, noting that in practice many countries combine features of each.

4.1 Policies emphasizing mandated and/or prescriptive requirements

Many countries have found that they prefer strong measures to encourage local content. The reason may be that they do not trust companies to actively look for and nurture local suppliers on their own initiative, possibly because of the existence of characteristics such as binding

⁹ A good overview of experiences, including several case studies, can be found in Morris et al. (2012).

agreements with equipment suppliers and the centralized procurement policies of transnational enterprises. Alternatively, governments may believe that a policy based on consultation and government support would carry too high financial or political costs and they then prefer requiring extractives sector companies to undertake the required actions. These countries have more specific requirements stated in legislation and/or regulatory instruments, including agreements with investors.

In some countries, the regulations provide overall targets. For example, Kazakhstan requires mining investors to negotiate a binding agreement with the government establishing a certain percentage of local content, based on a detailed register of goods and services, the 'Uniform Method of Kazakh Content Calculation' (Government Decree No. 367/2010). This country also requires that companies issuing tenders reduce the price in bids by local suppliers by 20 per cent and that targets are set for the employment of local people (Esteves et al., 2013). If the targets contained in the agreement with the government are not met, the company faces serious consequences, possibly losing its license.

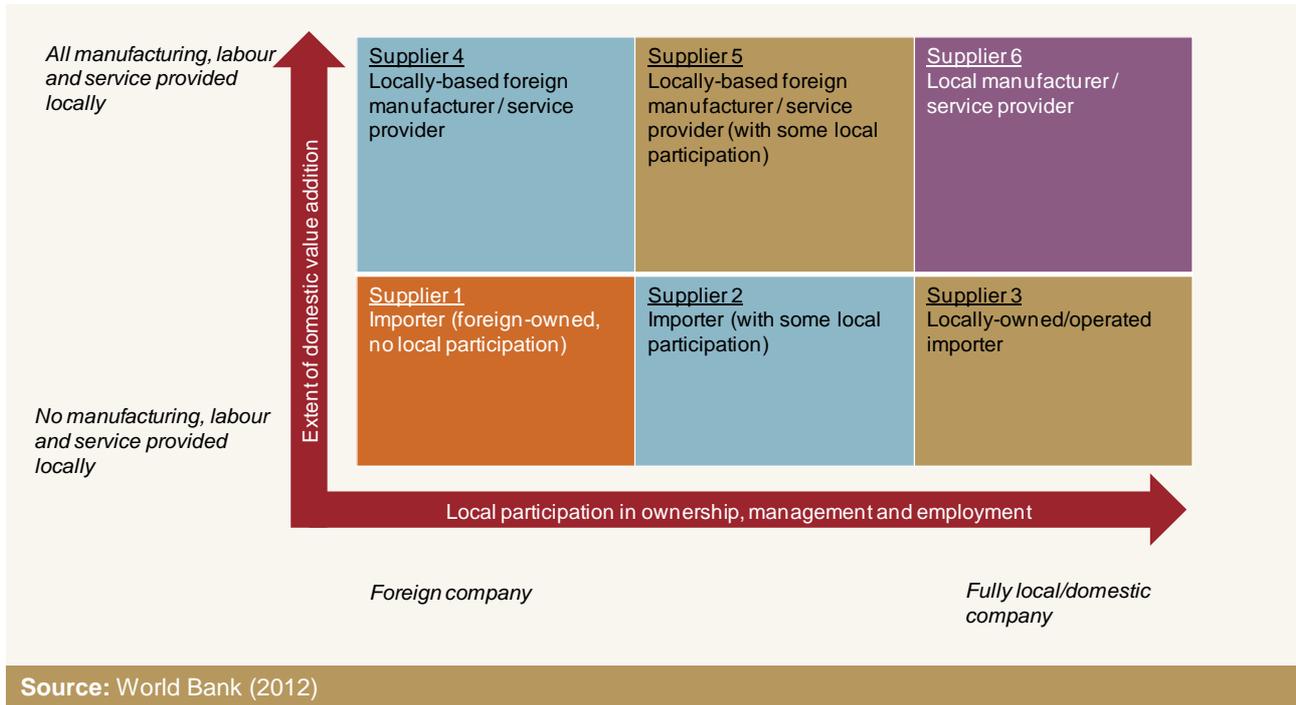
In other countries, regulations or agreements may identify certain products or services that have to be sourced locally. Such requirements may evolve over time, with targets becoming more comprehensive as the local industry acquires capacity.

The effectiveness of such ambitious policies with respect to economic diversification is strongly influenced by the level of development of a country's industrial and skills base, and the systems in place for responding to increased demand (e.g. vocational training institutions).

It also depends on how local content is defined. Whereas this is normally uncontroversial in the case of employment, it may be considerably more complicated for goods and services procurement, as suppliers may be classified into different categories (see Figure 3).

1. The weakest definition of local content is that a supplier of local content is a company that is registered nationally, irrespective of ownership or type of activity. Under this definition, agents of foreign equipment suppliers qualify as providers of local content, even if they merely import and re-sell, without adding any value.
2. A slightly stricter definition would require owners of the company in question to be host country nationals. Requirements of this kind can, however, be circumvented relatively easily by those who so wish and, again, the contribution to diversification is not likely to be significant.
3. Finally, a third definition determines local content on the basis of local/national value added in the product or service. This ensures that there is substantial engagement on the part of local companies. Of course, this definition is also the most demanding on the regulatory authorities. In order to apply it effectively, authorities would need something like the Kazakh register of goods and services, and sufficient administrative capacity to be able to monitor and enforce the requirements.

Figure 3: Example classification of domestic suppliers



The overall legal framework for the extractive industries also has a bearing on the feasibility of adopting mandatory and/or prescriptive local content policies. For example, oil and gas production almost always takes place under contracts between the host country government and the operator, usually in the form of production sharing agreements. Mining contracts are more often regulated by laws with provisions that apply to all operators, although some countries retain legal regimes with individual contracts (so-called mineral development agreements).

Where these contracts include provisions on local content, a larger number of mining or oil and gas operations may make it difficult to monitor and enforce any local content commitments effectively. This is particularly the case for large-scale mining operations, which tend to have a very large number of suppliers (often running into the thousands). In such situations the actual status of any suppliers with respect to their 'localness' may be difficult for operators to verify and even more difficult for government authorities to enforce.

There is also a risk of unintended consequences. From the point of view of extractives companies, requirements placed on company spending that lead to added costs are perceived as the equivalent of additional taxes. Accordingly, in a negotiating situation, significant requirements concerning company spending may have to be paid for by concessions in other areas, lowering the revenues that will accrue to government through taxation, profit shares, or royalties.

Mandatory local content requirements are often economically inefficient. There is a growing body of literature which argues that local content policies are harmful to the economy (WBSCD, 2012; Kuntze and Moerenhout, 2013). They can create opportunities for rent-seeking – especially in the oil and gas sector, where expenditure tends to be more concentrated than in the mining sector on plant equipment ahead of production. The recent example of Petrobras, where press reports have

indicated that local companies were asked for political contributions in order to become suppliers, illustrates this risk.¹⁰

Finally, most countries are, in principle, constrained by World Trade Organization (WTO) commitments in terms of the requirements they can impose with respect to local content. Members of the WTO are bound by the national treatment obligation clause under which foreign companies cannot be forced to buy goods¹¹ from local suppliers or hire suppliers of certain services¹² if a better alternative in terms of price or quality exists abroad. Legislation can still require investors not to discriminate against local suppliers and (under one interpretation) legislation can also require investors to accord local suppliers preference if their prices and quality are equal to those of foreign suppliers. The relevance of this provision in practice is questionable, given that – as noted above – the key issue is domestic SMEs lacking competitiveness on a range of critical success factors.

Some low-income countries have been subject to exemptions from these WTO rules, but those exemptions have now all expired except the blanket exemption that applies to least developed countries and that will expire in 2020. It may also be added that no developing country has signed the Agreement on Government Procurement, which is intended to open up government-transacted business to international competition.

Based on this assessment, key questions that should be asked by policy-makers considering mandatory and/or prescriptive local content requirements include:

- **How and by whom will targets be measured and monitored?** Clarity on definitions, baselines, administrative procedures, feedback mechanisms, and the enforcement power of regulatory bodies is likely to minimize the risk of unintended consequences.
- **Can the approach be phased?** In many cases, significant levels of local content may become realistic only in time and with forward planning, so future targets could incentivize that planning. This will give international oil, gas, and mining companies time to work with government to identify and build the capabilities of domestic suppliers.
- **Can the approach be flexible?** It may be difficult to anticipate how project needs will evolve between the bidding phase and production phase and how quickly local firms may become able to meet the needs. This presents the case for more flexible incentive mechanisms, such as indicative targets, loans, tax breaks, and co-investments.

¹⁰ It could be argued that the problems at Petrobras had nothing to do with local content requirements but rather illustrate the risks of state-owned companies being used for political ends. On the other hand, however, in the absence of stringent local content requirements, local suppliers would have had to compete with international companies, many of which would have been reluctant to enter into the same arrangements, particularly in view of several recent high profile bribery cases where large companies have had to pay very substantial fines.

¹¹ All WTO members must adopt and abide by the obligations of the Trade Related Investment Measures (TRIMs). The TRIMs Agreement clarifies existing rules contained in Articles III (National Treatment Obligation) and XI (Prohibition on Quantitative Restrictions) of the General Agreement on Tariffs and Trade, 1994. The following types of local content requirements are covered by TRIMs: requiring a company to purchase or use products of domestic origin – TRIMs prohibits discrimination between goods of domestic and imported origin; limiting the amount of imported products that an enterprise may purchase or use depending on the volume or value of local products that the enterprise exports; restricting foreign exchange necessary to import (e.g. restricting the importation by an enterprise of products used in local production by restricting its access to foreign exchange); and restricting exports.

¹² A separate WTO agreement, the General Agreement on Trade in Services, covers investment measures related to services (in Article XVI). This agreement only applies to those service sectors that the country chooses to include in its Schedule of Commitments.

4.2 Creating an enabling environment

Some countries use legislation in a more limited way than described above, to express a general preference for local content but without mandating specific requirements. This includes several successful mining countries, such as Chile, Peru, and Australia. In these countries, government policy to support local content typically combines (1) broader support to strengthening the domestic enabling environment – institutional, regulatory, political and attitudinal – for local and national firms, with (2) a focus on consensual solutions through consultations to understand why firms are not sourcing more domestically.

A more holistic policy approach recognizes that there are a number of channels through which skills and technology can be transferred in the extractives sector.

- The imitation channel, whereby local firms imitate foreign extractive firm technologies or management practices.
- The labor mobility channel, whereby local firm productivity increases as a result of local firms hiring workers that were trained by foreign extractives companies, or when these trained workers start their own businesses.
- The backward linkage channel, whereby foreign extractives companies transfer knowledge and technology to local suppliers in order to enhance the quality of supply.
- The export channel, whereby local suppliers use the international network of the international extractive industry to access new markets abroad.

Evidence shows that countries which have focused on the enabling approach instead of setting targets have been at least as successful in increasing levels of local content as those relying on mandated or prescriptive requirements. The example of Chile (see Box 3) illustrates this.

Box 3: Developing local content and skills in Chile

Chile has succeeded in using its extractives industry to develop the local economy, without explicitly mandating local content requirements. It has done this by creating a strong enabling environment and a culture of public–private collaboration. For example, the Consejo de Competencias Mineras (CCM: Mining Skills Council) – an industry association – recently surveyed 23 projects in the feasibility study stage in the copper, gold, and silver mining sectors to identify upcoming human capital gaps and harmonize job descriptions across the industry. The government then used the results of the survey to organize training programs for disadvantaged individuals, notably in maintenance and operations.

Source: Consejo de Competencias Mineras (2015)

To promote a more collaborative approach to working with the sector, policy-makers should engage those oil, gas, and mining companies that understand it is in their interest to demonstrate that they are ‘good corporate citizens’, assuming part of the responsibility for the development of the country by going beyond what is strictly required by law. Anglo American’s Zimele enterprise development program is a good example of such an initiative (see Box 4).

Box 4: Anglo American's Zimele, South Africa: Best-practice example in enterprise development

Anglo American's flagship Zimele (taken from the Zulu term for 'standing on one's own two feet') enterprise development program, a best-practice model, was established in South Africa in 1980 to empower black entrepreneurs through the creation of SMEs. The scheme provides financial, business, and implementation support to assist local SMEs, and helps them understand how the company's supply chain works. It is designed to take advantage of the benefits associated with the company's large supply chain (over US\$ 18 billion globally) and to develop long-term platforms for partnerships with governments, non-government organizations (NGOs) and private sector companies. In 2013, Zimele's funds concluded 2,358 transactions and provided US\$ 95 million (ZAR 921 million) in funding for businesses that employed 30,092 people, with a combined turnover of US\$ 466 million (ZAR 4,500 million). In 2013, Zimele launched the Sebenza fund, in partnership with the Development Bank of South Africa. The fund plans to create 30 new business hubs across South Africa and create 8,000 new jobs through sustainable employment in areas with high unemployment. Since 2008, the Zimele enterprise development program has supported 1,500 businesses employing 27,500 people. In addition, Anglo American-managed businesses spent US\$ 3.8 billion through contracts with historically disadvantaged South African owned businesses in 2013.

Based on the Zimele program, Anglo American has been running the 'Emerge' program in Chile since 2006 to support local enterprise development financially and through training. It partners with microcredit organization Fondo Esperanza and enterprise development NGO Technoserve. More than 50,000 entrepreneurs have been supported, 87 per cent of them women, supporting 18,546 jobs in 2013 alone and being awarded the 2013 Sello Más por Chile award.

Source: Anglo American (2013)

A focus on the enabling environment could lead to market-supporting policies such as:

- **Training local businesses.** Governments can work with industry to train local firms in understanding how to do business with extractives companies, e.g. how their bidding processes work, the standards of quality and safety required, and steps to acquire international certification.
- **Acting as a knowledge broker.** Either a specialized office or local chambers of commerce can act as a knowledge broker, informing local firms about opportunities to supply goods and services to extractives companies and compiling a registry of competent and qualified local vendors.
- **Conducting a gap analysis** (see Box 5). Once the most important gaps have been identified, government can take remedial action, most importantly in the area of reinforcing public regulatory and planning capacity at the subnational level but also in areas such as access to land and infrastructure.

Box 5: Essential elements when conducting a local content gap analysis

Any analysis of gaps to help develop improved policies ideally needs to start as soon as the natural resource has been discovered, to allow sufficient time for the identified gaps to be addressed. For each kind of skill-set, good, or service that will be required, policy-makers need to ask questions about the six constraints identified in Section 3.3 above:

- **Skills gap.** Do local workers have the necessary skills to be candidates for employment in extractives companies? Do local companies have the skills needed to navigate the complex tendering processes of international extractives companies?
- **Capacity gap.** Does the manufacturing sector have sufficient industrial and technological capacity to produce goods and services at the level of scale, complexity, and quality required by international natural resource companies?
- **Funding gap.** Do local businesses have access to the funding they will need to reach the scale of production necessary to enter the extractives project supply chain?
- **Information gap.** Are procedures in place to ensure that extractives companies can identify potential local suppliers and that local firms can find out about potential opportunities to supply goods and services to international extractives companies?
- **Infrastructure gap.** Is the local infrastructure – such as power, water, or transport facilities – adequate for local companies to supply the extractives project?
- **Regulatory and institutional gap.** Is there a coherent and supportive regulatory approach to attempts to increase levels of local content in extractives projects, with the agenda being driven by competent institutions?

Next, the need is to identify where bridging gaps is an achievable ambition. This may be easiest in opportunities such as catering, security, and transport, and unrealistic in areas such as highly specialized machinery.

Source: authors

Given the significant gap in skills often found in natural resource-rich developing countries, and the role of skills in contributing to improved human development outcomes,¹³ questions around policies to support skills development are particularly relevant. While some skills required by the extractives industry are unique to particular projects, such as geological analysis and the operation of specialized machinery, many other skills (e.g. IT, accounting, project management, construction, catering, security, and transport) can also be applied in other sectors of the economy. If local workers can be trained in these skills, enabling them to gain employment and experience with extractives projects or their suppliers, they can later apply them in other sectors, promoting long-term economic diversification and growth.

For example, multi-stakeholder partnerships involving government and extractives companies can fund research and development (R&D) programs at local institutions. The link between major companies and local universities and training institutes is key to designing programs with the proper syllabus that ensures that the skills developed are relevant to the industry as well as transferable to other sectors of the economy.

Key questions for policy-makers wanting to strengthen the enabling environment for skills generation include:

¹³ According to World Bank (2014), skills development is clearly linked to greater and more long-running gains from the extractive industries. The evidence from eight African countries—Angola, Botswana, Gabon, Ghana, Nigeria, South Africa, Tanzania, and Zambia—and six sectors (copper, diamonds, gold, oil and gas, mining services, and timber) shows that skills, and the institutions that affect firm- and sector-level capabilities, constitute the most important determinants of economic benefits.

- **Could the government offer tax deductions on skills training by companies, or impose compulsory levies?** Payroll levies on extractives firms at rates between 0.5 per cent and 5 per cent, to help finance pooled investment in training, are common.
- **Who should take the responsibility for defining a national skills development plan linked to the extractives industry?** While this is best done in collaboration with industry, academia, and civil society, the coordinating role could perhaps be assigned to a national natural resource company or a dedicated secretariat housed in the Ministry of Education, working with the Ministry of Labor and other stakeholders.
- **Could there be a role for regional organizations?** A regional, rather than national, skills market offers greater economies of scale in establishing and financing specialist training institutions. There is potentially a coordinating role for regional organizations such as ECOWAS (the Economic Community of West African States) and SADC (the Southern African Development Community) in working with members to harmonize curricula, ensure mutual recognition of vocational certifications, and promote labor mobility through ease of obtaining work permits.

Given the importance of skills generation to harnessing the extractives industry for local development, it is considered in greater detail in Paper 7.

5 Policy implications

This paper has argued that extractive industry companies' spending on employment and procuring goods and services from local firms can support economic growth and human development by stimulating local economies and raising incomes. While there are many reasons why international companies would prefer local suppliers, there are also clear reasons why domestic firms and individuals fail to be competitive. Most of these reasons can be classified as a gap of some kind: in capacity, access to funding, access to information, skills, institutions, and infrastructure. As a result, there are many missed opportunities for strengthening economic growth and diversification through local content.

Governments have a range of policy options available, many of which involve working with the industry to understand the reasons behind these gaps and addressing them in a consistent manner. Companies themselves can also make contributions, working alone or together as an industry.

Our review of policies and of country experiences points to some general conclusions and lessons from experience. Nevertheless, policy-makers should avoid being tempted by easy answers and 'best practice' from elsewhere. Institutions vary from one country to another, including with respect to the relationship between governments and foreign investors, as does the level of domestic industrial capabilities and skills and the stage of the extractives sector life cycle. The appropriate policy response will therefore depend on the specific country and industry context.

5.1 Lessons applicable to all legal regimes

Promoting an enabling environment

For local content policies to be successful it is essential that the environment surrounding local businesses supports their aspirations to become suppliers to the extractive industry rather than putting obstacles in their way. The government can create an enabling environment by removing barriers to entry such as poor infrastructure, promoting the development of skilled labor, strengthening institutional coordination, facilitating coordination of local suppliers, removing regulatory requirements, and supporting increased access to finance.

Strengthening and clarifying the legal and regulatory framework

Clear regulation, monitoring, and oversight are necessary for the effective and transparent implementation of local content policies. The rights and responsibilities of extractive industry companies need to be defined and must be known to the companies when they take investment decisions. This involves ensuring a well-resourced and accountable administrative system with clearly defined functional responsibilities.

The coherence of the regulatory framework is key to facilitating implementation of local content initiatives. Some countries, such as Angola, have multiple pieces of legislation requiring inclusion of local workers and local procurement of goods and services. The multiplicity of legal instruments leads to multiple institutions supervising the enforcement of local content rules, which can lead to conflicting responsibilities and poor coordination.

For example, one possible source of disadvantage for local suppliers is a lack of alignment between trade provisions in mining legislation and wider trade policy. In some countries, there is a practice of according extractive sector investors the right to import equipment free of duty. While this is not a significant problem for highly specialized equipment unlikely to be manufactured in the host country, much equipment, particularly in the non-fuel mining industry, is ‘dual use’ – that is, it is also used in other sectors. One example is road construction equipment. If suppliers of such equipment exist in the country, they often depend on imports of components that may be subjected to high import duties. They may therefore end up at a disadvantage when competing with foreign suppliers.

Encouraging collaboration among stakeholders

Collaboration among oil and gas and mining companies, their integrated service providers, and domestic suppliers in the development of a sustainable local industrial capabilities is key to increasing local content. Moreover, the country case studies show that the clustering of activities, as in the Antofagasta region of Chile, can enhance productivity and efficiency through knowledge spillovers, synergies, better coordination, and efficient access to public goods (see Annex A).

Building capacity

Successful policies to support local content have focused on building the capacity of local businesses and investing in human capital. Local businesses need to understand how to do business with firms in the extractive industries, for instance by producing goods to the required standard in terms of quality and safety, adapting themselves to international extractives companies’ bidding processes, and taking steps to acquire international certification.

Planning ahead to ensure sustainability

Local content policies should be introduced by government once investor interest manifests itself and well before any actual projects have started. Policy interventions that are introduced early help to avoid misalignment of project development timelines, timelines set by local content regulations, and timelines around the building of local capability.

Local content planning should be integrated with broader development planning. In terms of timing, the objective should be to have the development phase coincide with the end of the capacity-building exercise for local suppliers. Policies should also support the development of capabilities and skills that can increase productivity of the wider economy, even after sub-soil resources have been depleted – for example through certification systems that increase the portability of skills.

Information sharing and transparency

Local content policy will be more effective if local businesses are aware of the opportunities that exist in the extractive industry and also if extractives companies are aware of the capabilities of local companies. For all stakeholders to play their part, a skill and capability inventory of local suppliers and their areas of competence should also be made accessible to multinationals. Transparency in awarding tenders is also an important consideration. The criteria for award of contracts should be public and companies should also disclose the reasons for rejecting bids.

Targeting the sectors with the smallest ‘gaps’

Governments should work with industry to identify the parts of the value chain where local firms have capabilities for timely delivery of the required quality at a competitive price or where the potential to build capacity exists. Such an identification process allows for the design of capacity-building measures and the removal of institutional obstacles. The sectors identified need not be high technology industries; agriculture is often one of the sectors that should be targeted since additional demand, both from extractives companies and their employees, allows local farmers to invest in order to raise productivity. Even when the skills required are basic, as is often the case in mining projects, local suppliers to extractives projects typically employ more people than the projects themselves – and for the workers concerned, this is often their best chance to escape poverty.

5.2 Lessons learned: Mandatory local content policies

Although mandatory and/or prescriptive local content requirements may seem tempting – in order to ‘force’ companies to procure locally – such policies are associated with real risks of market distortions, economic inefficiencies and unintended consequences. Nevertheless, for governments that do pursue such policies, this section presents some reflections on how to strengthen their implementation.

Transparency, standardization, and accountability

Given the large sums involved relative to national economies, local content policies are vulnerable to rent-seeking and capture by special interest groups. This is particularly the case where mandatory and/or prescriptive policies are used. The recent Brazilian experience illustrates this, but it is not the only example. If governments consider that it is preferable to require mandatory local content then the requirements have to be public, the scope for discretionary decision-making by authorities needs to be minimal, all companies have to be treated equally, and companies’ procurement processes have to be audited by third-party auditors in order to ensure the equitable treatment of all companies.

Maintaining flexibility over time

Experience from case studies shows that local content targets may be more effective if they are implemented in a phased approach. As capacity increases, local content targets can be adjusted. This also helps to avoid setting unrealistic targets at the outset. The policy should also recognize that there may be some areas of operations where local capacity is not available in the short term.

Establishing a unified method of local content measurement

For the purposes of monitoring and evaluating performance in meeting local content targets, it is important to introduce a standardized method of measuring local content. Different measures can produce different results, and the lack of clearly defined metrics can lead to overstated local content achievements. The experience of countries like Brazil and Kazakhstan shows that standardized measurement and reporting on local content makes it easier to monitor and evaluate performance and can lead to increased compliance, although attention must be given to keeping a check on the implied high administrative costs. A ‘simple’ measure of, for example, local value added may not satisfy the relevant economic policy objectives of the local content policy, which may require a more nuanced approach (see Box 6).

Box 6: South Africa's scorecard approach to monitoring local content

South Africa's scorecard to monitor compliance with the Broad-Based Black Economic Empowerment (B-BBEE) policy allocates 40 out of 105 points to 'Enterprise and Supplier Development'. To score points on this criterion, firms need to demonstrate that they buy goods and services from suppliers with strong B-BBEE recognition levels. This element also measures the degree to which enterprises carry out supplier development initiatives intended to accelerate the sustainable growth of black enterprises.

Element	Weighting (max score)	Ref. code (subsidiary legislation)
Ownership	25 points	100
Management control	15 points	200
Skills development	20 points	300
Enterprise and supplier development	40 points	400
Socio-economic development	5 points	500
Total	105 points	

Source: Government of South Africa (2013)

Local content policy needs to have the force of law

If a mandatory local content policy is pursued it needs to place clear and enforceable legal obligations on companies. The experience of Nigeria shows that, prior to the enactment of the Nigeria Local Content Development Act, local content policies were negotiated in individual contracts but were largely ignored by international extractives companies because they lacked the force of law. However, the introduction of local content law with appropriate sanctions has led to better compliance. Furthermore, monitoring efforts by civil society organizations and other interest groups are simplified by establishing a company's obligations in law, rather than in individually negotiated contracts.¹⁴

Creation of well-resourced and specialized institutions

Effective local content policies need to be implemented by dedicated and independent government authorities staffed with qualified personnel who are knowledgeable regarding industry practices. Such authorities can be responsible for monitoring local content and ensuring that local suppliers are guaranteed the opportunity to apply and compete for contracts. They should be tasked with establishing a registry of competent and qualified local vendors. They should also track opportunities in the value chain and on future projects and make the information available to local suppliers.

¹⁴ Individual contracts are more likely to contain confidentiality clauses that make it difficult to access information on the local content requirements of companies, especially in the oil and gas sector.

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Annex A Country experiences with local content policies

To explore the challenges and opportunities in greater detail, this annex examines the experiences of a selection of countries: Angola, Brazil, Chile, Ghana, Nigeria, and Norway. It presents salient points summarized from more detailed case study work undertaken by the authors, under three headings: employment and training, local procurement, and local enterprise development (including technology transfer).

Together these country case studies present a mixed picture, highlighting the need for a supportive enabling environment in the implementation of local content strategies and policies. Some further details relating to examples in these areas are presented in country-specific tables at the end of the annex.

A.1 Employment and training

In **Brazil's** oil and gas industry, local employment and training is one of the three determinant factors in the bidding process. In presenting their offers, bidders indicate a specific percentage of local content, which is turned into a number of points used to rank bidders' offers along with other parameters.¹⁵

In **Chile**, the government does not apply any mandated or prescriptive local content policies. Instead, a combination of good governance, an improved environment for business creation, and the presence of a strong government-owned national company in the mining sector (Codelco) have been the basis for the development increased local supply chain linkages in the extractive industry (Sigam and Garcia, 2012).

In Chile there are several examples of mining companies and the government cooperating on training and education projects. The most important is the Mining Skills Council (CCM), in which all mining enterprises provide information on their needs in relation to skilled manpower. This information allows the technical and professional training supply to be adjusted to the demands of the Chilean mining labor market. This has generated three products: (a) studies projecting demand, supply, and human capital gaps with data on every mining enterprise and industry suppliers; (b) a qualification framework that explains the requirements of training for different occupational profiles; and (c) training packages providing concrete curricular solutions.

Norway has a highly skilled and internationally competitive petroleum-related service and supply industry, developed over more than 40 years of petroleum activities. This is a result of a deliberate policy, anchored on targeted regulation, leveraging of existing capabilities, investing in education and R&D, and partnering with the private sector. In 2012, the specialized and high-tech service and supply industry employed about 125,000 people all over the country.

Norway does not apply preferential hiring either but license terms for the international oil companies made it mandatory to transfer skills and competence to the Norwegian companies. Personnel from Statoil, Norsk Hydro, and Saga participated initially in the oil majors' training courses and received on-the-job training schemes in their overseas operations. The oil majors recruited young Norwegian engineers and trained them overseas for a significant period before

¹⁵ The other relevant factors are the value that the firm agrees to pay to the federal government (signature bonus) and the minimum work obligation that the firm undertakes to do in the region in its bid (minimum exploratory program).

they were posted in Norwegian operations. The operators' commitment and strategies for technology transfers were made a crucial and determining factor in the licensing processes.

The other three countries explored in this annex regulate employment. In **Angola**, international oil companies (IOCs) are authorized to hire foreigners only when they cannot recruit qualified Angolan workers in a sufficient number. Since 1982 Angolan law has mandated foreign companies to submit an annual plan for Angolan personnel recruitment and training agreed on with national oil company Sonangol for approval to the Ministry of Petroleum. The companies were also required to submit every quarter to both the Ministry of Petroleum and Sonangol a detailed report on the accomplishment of the plans for recruitment training and assistance for training of the Angolan workers, highlighting the difficulties met and suggesting solutions for those difficulties.

Angola also introduced a training fund in which foreign companies have the obligation to contribute, every year, 15 cents on the dollar per produced barrel during the year for companies with petroleum production activities and US\$ 200,000 for companies involved in prospecting and exploration activities.

In 2002, the government declared that, by 2010, oil companies would be required to increase Angolan staffing from 70 per cent to 90 per cent of their workforce operating in Angola, but to date none of the companies operating in the country has reached this target.

In **Ghana**, the Minerals and Mining Act 2006 (Act 703) and the Minerals and Mining (General) Regulations 2012 (LI 2173) set out employment, training, and procurement requirements as well as monitoring and enforcement mechanisms. Companies are required to give preference in employment to citizens 'to the maximum extent possible and consistent with safety, efficiency and economy'; percentages are prescribed for the maximum number of expatriate staff relative to the total number of senior staff. Oil companies have to submit an Annual Recruitment and Training Program and the share of Ghanaians has to increase over a period with target levels differing according to position. For instance, the share of Ghanaians in management positions has to increase from 50 per cent to 80 per cent within five years.

With respect to training and employment, companies are required by regulations to give preference in employment to citizens 'to the maximum extent possible and consistent with safety, efficiency and economy'; percentages are prescribed for the maximum number of expatriate staff to the total number of senior staff permitted, at the reconnaissance, prospecting, and mining stages as well as for providers of mine support services and exporters of minerals. Furthermore, companies must apply for an immigration quota for expatriates, with the ability to adjust the quota in certain circumstances (see Table 1).

Table 1: Ghana local content development in petroleum: Employment targets

Position	Target
Management staff	5 per cent of management staff are Ghanaians from start of activities and this should increase to 80 per cent within five years
Core technical staff	30 per cent of staff should be Ghanaians from the start and this should increase to 90 per cent within 10 years
Other staff	100 per cent Ghanaians

Source: Republic of Ghana (2010)

Nigeria requires operators to submit an employment plan that includes the hiring and training needs of the operator and its contractors, a breakdown of required skills, and the anticipated training requirements and expenditure for such training. Reports on the progress of the implementation of the plan are to be submitted on a quarterly basis. A maximum of 5 per cent of expatriates may be maintained by an operator for management positions in respect of each project and where foreign workers are hired, a succession plan for the 'Nigerianization' of expatriate positions must be approved by the authorities.

A.2 Local procurement

Among the case study countries, **Chile** relies least on mandatory local content rules. There is a strong culture of public–private collaboration in supporting skills development, local procurement, and supplier development. In the public sector, this is led by CORFO, working with individual mining companies or regional associations such as the Antofagasta Industry Association (AIA) and the Corporation for the Development of the Atacama Region (CORPROA). Various partnerships that involve collaboration across the Chilean government and the private sector have been undertaken. Key examples are:

- Program to Develop Suppliers for the Industrial Growth of Region II (1995) – An initiative jointly supported by ten large companies and the government, where financial subsidies were granted to large companies prepared to participate in 'supplier development'—this required companies to take responsibility for training and integration of suppliers.
- Partnership between AIA and Service for Technical Cooperation—an arm of CORFO—to assist SMEs to meet the evaluation criteria of mining companies, by providing credit, technical consultancy, subcontracting exchange, and management training.
- Commitment by large corporations (including Codelco, Anglo American, and BHP Billiton) to support SME suppliers to adopt technologies and practices to increase efficiency, such as electronic billing (Svensson, 2012).
- CCM – the first initiative in the country in which every mining enterprise works in collaboration as an industry to provide publicly information never before elaborated. This information allows the technical and professional training supply to reflect the demands of the Chilean mining labor market, in order to strengthen education and human capital.

In **Brazil**, local content is one of the three determinant factors in the bidding process. In presenting their offers, bidders indicate a specific percentage of local content, which is turned into a number of points used to rank bidders' offers along with other parameters. Operators are required to obtain local content certificates from an independent accredited firm.

In 2007, the Ministry of Mines and Energy passed a resolution which introduced local content certification rules. These rules established a methodology to calculate the percentage of local content in goods and services acquired in Brazil.¹⁶ Operators are required to obtain local content certificates from an independent firm accredited with the regulator. This certificate must be attached to invoices as proof of meeting local content requirements.

In **Norway**, like Brazil, IOCs are required to announce their tender schedule and the list of companies to be invited. The Ministry is able to add Norwegian-based firms to the list. The

¹⁶ Local content in goods will be measured according to the following formula: $LC = (1 - X/Y) \times 100$ where: X = Value of the imported components Y = Total value of the project, excluding internal tax. Local content in workforce will be measured using the following formula: $LC = (X/Y) \times 100$ where Y = salaries of local people X = total salaries.

operators are also required to report the award of all contracts exceeding US\$ 15,000 to the Ministry of Petroleum and Energy.

A practice started by Statoil and other Norwegian oil companies was adopted by foreign companies – informing domestic suppliers on plans and solutions for future development projects, allowing domestic firms to prepare themselves for future work. Upstream companies are also required to submit annual reports to the Ministry of Petroleum, giving details of their projects and the amount of Norwegian content utilized.

In **Angola**, the law gives preference to Angolan companies¹⁷ provided that (i) their services and goods are equivalent to those available in the international market, and (ii) their fee quotes are not 10 per cent higher than the fee quotes of the others. Under the legislation, Angolan companies are given exclusive rights for goods and services for which they already have capacity.

In addition, Decree 48/06, dated September 1, 2006, requires contracts for supplying goods and services in the oil sector to be awarded following a competitive public tender. Oil companies may only resort to direct hiring for urgent technical reasons or if the relevant services and/or goods are not available on the domestic market, provided always that prior authorization from the Ministry of Petroleum has been granted. This decree also requires the Ministry of Petroleum to keep an updated list of Angolan entities that provide services and goods to the oil sector, which must be consulted by the operators whenever a public bid is released.

Despite these efforts, Angola has struggled. Only two significant linkages have been developed. These relate to cables that enable communication between subsea production systems and rigs and flow lines to enable two-way flow of crude from subsea to surface. Other basic goods and services, including accommodation, catering, cleaning, and stationery, are procured locally while the rest is still imported (Ramdoo, 2014).

Ghana applies different rules for oil and non-fuel mining. For mining, the regulations stipulate that preference must be given to materials and products made in Ghana and service agencies located in Ghana and owned by Ghanaians (or companies registered in Ghana), ‘to the maximum extent possible and consistent with safety, efficiency and economy’. Bids with the highest level of Ghanaian participation must be selected, where bids are within 2 per cent of each other on price. For oil, operators, contractors, and sub-contractors must comply with specified minimum local content levels for goods and services. The targets are 10 per cent at the start, 50 per cent at five years and 60–90 per cent at 10 years. The operators are also required to give priority to local products and services that are competitive in terms of quality and timely availability, even if they are up to 10 per cent more expensive. Where a foreign entity is to provide goods and services for the licensee, the foreign entity shall operate from Ghana and partner with a Ghanaian owned and registered company.

Regarding procuring goods and services in the mining sector, the regulations stipulate that: preference must be given to materials and products made in Ghana and service agencies located in Ghana and owned by Ghanaians or companies registered in Ghana, ‘to the maximum extent possible and consistent with safety, efficiency and economy’; the Mining Commission must maintain a local procurement list specifying goods and services to be procured in Ghana, which is

¹⁷ An Angolan company is defined as one where no less than 51 per cent of the capital is held by Angolan individuals or entities.

updated annually; and bids with the highest level of Ghanaian participation must be selected, where bids are within 2 per cent of each other on price.

In Ghana's oil and gas sector, companies must have a plan for technology transfer. The 'technology transfer sub-plan' submitted by a contractor, subcontractor, licensee, or other allied entity should include a program of planned initiatives aimed at promoting the effective transfer of technologies from the contractor, subcontractor, licensee, or other allied entity to a Ghanaian indigenous company or citizen. Contractors and sub-contractors are also required to support and facilitate technology transfer through joint ventures, partnering or license agreements between indigenous Ghanaian companies and citizens and foreign companies.

In **Nigeria**, the Nigerian Content Development Act (2010) provides for minimum percentage specifications of Nigerian content in any project to be executed in the Nigerian oil and gas industry. These range from 45 to 100 per cent for the majority of service categories

Where bids are within 1 per cent of each other, the bid containing the highest level of Nigeria content should be selected provided it is at least 5 per cent higher than its closest competitor in terms of its Nigerian content provisions. Additionally, the operator shall also provide for approval by the authorities all proposed projects, contracts and subcontracts, and purchase orders estimated by the operator to be in excess of US\$ 1 million.

The first significant measure brought about by the new law is the establishment of the Nigerian Content Monitoring Board to manage the coordination, monitoring, and implementation of the local content provisions. The Act also establishes the Nigerian Content Development Fund, to fund the implementation of Nigerian content development in the Nigerian oil and gas industry. Every operator, contractor, subcontractor, alliance partner, or any other entity involved in upstream activity is required to contribute 1 per cent of the contract value to the Fund.

A.3 Local enterprise development

In **Angola**, the CAE–Business Support Center was established in 2005 by the Ministry of Petroleum, Sonangol, and four operators associated with Sonangol (BP, Chevron, Total, and Esso). It is managed by Citizens Development Corps, an NGO. CAE provides business training, financial and supply chain management, and other services to Angolan businesses hoping to strike contracts with international extractives companies. CAE also maintains a directory of certified suppliers that details the strengths of individual enterprises, including their current capacity in areas relating to the oil industry (Levett et al., 2012). This information is passed on to IOCs to help them locate qualified Angolan companies for competitive bids. In 2010, CAE created the program Access to Finance to help qualified SMEs gain access to capital, which is often vital to implement contracts they have captured and is one of their largest constraints to growth (Levett et al., 2012).

Brazil introduced the Mobilization Program for the Oil and Gas National Industry (PROMINP) in 2003 with the objective of developing domestic suppliers. It plays a major facilitating role by identifying gaps in capabilities and capacity and leading training programs that are targeted at creating skills to eliminate these gaps.¹⁸ The government, acting through Petrobras and BNDES

¹⁸ Since the inception of PROMINP, the level of participation of local suppliers in the oil and gas sector has significantly increased, from 57 per cent in 2003 to over 75 per cent in 2009. This represented an additional value of US\$ 17.8 billion for goods and services purchased in Brazil, and an estimated 755,000 new jobs.

(the National Bank for Social and Economic Development), has also introduced accessible and low-cost financial schemes for local suppliers.

Operators are also required to support R&D in the oil industry, through investing 1 per cent of each field's gross revenues on oil and gas-related R&D. Up to 0.5 per cent can be invested in the operator's research facilities in Brazil. The rest is to finance research to be carried out by local universities or research institutes accredited by the regulator ANP.

Chile has various partnerships that involve collaboration across the Chilean government and the private sector. These include:

- A program to assist SMEs to meet the evaluation criteria of mining companies, by providing credit, technical consultancy, subcontracting exchange, and management training.
- Commitments by large corporations to support SME suppliers to adopt technologies and practices to increase efficiency (such as electronic billing).
- A program to develop suppliers for the industrial growth of Region II (Antofagasta). An initiative jointly supported by ten large companies and the government, where financial subsidies are granted to suppliers of large companies prepared to participate in 'supplier development', this requires companies to take responsibility for training and integration of suppliers.

Although mining has a long history in **Ghana**, it was not until there were prospects for important oil production – and preparations began for local supplier development for the oil industry – that the Local Content Fund was established. The fund will also support local capacity development for mining suppliers, although it will be used primarily for education, training, and R&D in oil and gas. Sources of the fund will include contributions from licensed operators, oil and gas revenue, levies, grants, and other support from Ghana's development partners. Oil and gas companies must have a plan for technology transfer to Ghanaian indigenous companies or citizens, including from contractors and sub-contractors, for example through joint ventures, partnering, or license agreements. The Enterprise Development Center, established in May 2013, is a five-year project jointly sponsored by oil companies under the supervision of the Ministry of Energy and Petroleum and the Ministry of Trade and Industry to support Ghanaian SMEs to take advantage of business opportunities in the oil and gas sector.

In **Nigeria**, companies operating in the oil and gas industry are expected to develop a program for technology transfer and to actively encourage and facilitate strategic collaboration between Nigerian and foreign contractors and service or supplier companies. Operators are required to submit an annual plan for such activities.

Companies operating in the Nigerian oil and gas industry are expected to develop an acceptable program for the promotion of technology transfer and to actively encourage and facilitate strategic collaboration between Nigerian and foreign contractors and service or supplier companies. Operators are required to submit an annual plan for such activities. Operators are also required to submit an R&D Plan outlining a revolving three- to five-year plan for oil and gas-related R&D initiatives to be undertaken in Nigeria, together with a breakdown of the expected expenditures that will be made in implementing the R&D Plan. The operator should submit quarterly reports of R&D activities.

Table 2 summarizes the situation before and after the introduction of the Local Content Policy.

Table 2: Nigerian Local Content Policy – preliminary results

	Before the Local Content Policy	After the Local Content Policy
Average annual industry spend	US\$ 8 billion	US\$ 20 billion (US\$ 4 billion locally)
Contribution to national revenue	71 per cent	80 per cent
Contribution to export earnings	>90 per cent	96.60 per cent
Contribution to GDP	12 per cent	25 per cent
Local value addition (local content)	10–15 per cent	>40 per cent
Local refining capacity	445,000 bpd	445,000 bpd
Workforce use	Increased use of expatriate workforce	Increased use of local workforce

In **Norway**, R&D and transfer of technology were made key components of Norway's local content policy. The operators' commitment and strategies for technology transfers were made a crucial and determining factor in the licensing processes. By the late 1970s the government also required the international majors to fund research and technology development at Norwegian institutions. Companies were required to conduct at least 50 per cent of the research for technology needed to develop prospects in Norway at local institutions.

In Norway, the government focused on developing capacity in areas where Norway already had some industrial capabilities. One of those areas was the shipping industry, where synergies were built with offshore drilling companies. The steel industry, on the other hand, was not considered as an area of competence and products were sourced from where they were shown to be competitive in terms of price, quality, schedule, and service.

A.4 Overview of initiatives in selected natural resource-rich countries

Table 3: Evidence from Angola

Employment, training, skills development, and technology transfer		
Local content in the quantity and quality of employment	Local training, skills/capacity development, and education	Technology transfer
<p>Number of jobs created through CAE program: 4,809.</p> <p>70 per cent of BP's employees are Angolans.</p> <p>78 per cent of Exxon Mobil personnel are Angolan, 24 per cent of whom are women. 75 Angolans in leadership positions, including 16 offshore supervisors as at the end of 2013.</p> <p>More than 88 per cent of Chevron workforce in the country is Angolan.</p> <p>Overall, of 77,000 people working directly in the oil industry, some 60,000 are Angolans.</p>	<p>BP is funding a fully accredited postgraduate program, in partnership with the Faculty of Law of Agostinho Neto University, leading to the award of a Masters of Law Degree (LLM) in Oil and Gas. Launched in April 2007, over 100 have graduated from the program. The engineering and science faculties at Agostinho Neto University also receive support from BP.</p> <p>Chevron invested more than US\$ 16 million in workforce training programs in 2013.</p> <p>500 scholarships were awarded for the attendance of university abroad in the areas of Geosciences, Engineering and Technology by Sonangol in 2013.</p>	<p>In 2013, the Chevron scholarship program provided support for 14 Chevron employees to attend universities in the USA.</p> <p>Chevron's Horizons program, a five-year program implemented in 2008, to accelerate the technical competencies of employees in the beginning of their careers with the company, has had 202 employees in career development training. 35 employees have graduated and 20 more were expected to graduate in 2014.</p>

Local supply development and expenditure with suppliers of goods and services		
Development of local suppliers' capabilities and skills	Local supply chain investments	Procurement of local goods and services
<p>224 courses were delivered to 2,151 companies and 3,386 participants through the CAE suppliers' development program.</p> <p>Number of certified suppliers: 122.</p> <p>From November 2008 to December 2009, 78 local suppliers were trained at CAE facilities and received technical assistance on accessing ExxonMobil's e-RFX electronic procurement system.</p>		<p>Total value of contracts won by Angolan firms participating in the CAE program: US\$ 241.63 million</p> <p>Number of contracts: 348</p> <p>Number of SMEs in suppliers' database: 1,490</p> <p>Number of certified suppliers: 122</p> <p>In 2013, Chevron spent approximately US\$ 1.26 billion with more than 240 Angolan-owned businesses.</p>
Technology transfer, promotion of R&D, and competency development		
Technology transfer, promotion of R&D, and competency development.	Promotion of forward and backward linkages.	Strategic partnerships with local firms.
<p>A US\$ 30 million local content development scheme –Projecto De Desenvolvimento da Participação Nacional (PDPN) – was created by major stakeholders in the national oil industry in 2002 to help build the manufacturing and fabrication base for after-sales service and support for oil operations.</p>		<p>In 2008, a US\$ 1.1 billion contract for subsea development awarded to French company Technip was executed in partnership with Angloflex.</p>

Table 4: Evidence from Brazil

Employment, training, skills development, and technology transfer		
Local content in the quantity and quality of employment	Local training, skills/capacity development, and education	Technology transfer
<p>875,000 new positions created.</p> <p>Average local content ratio has increased from 57 per cent to 75 per cent since PROMINP was launched.</p> <p>Employment in ship building industry increased from 2,000 jobs in the year 2000 to around 60,000 jobs in 2012.</p>	<p>101,000 scholarships at a cost of US\$ 2 billion (75,000 Brazilian government, 26,000 private sector) in five years from 2012 through the 'Science Without Frontiers Program'.</p> <p>Participation of 80 educational institutions in 17 states of Brazil. 78,000 workers graduated in early 2011.</p>	<p>The National Professional Qualification Plan, a component of PROMINP, offers free professional qualifications in 185 categories considered of importance to the oil and gas industry, in particular in the engineering segment. 97,509 qualifications achieved by 2013.</p>
Local supply development and expenditure with suppliers of goods and services		
Development of local suppliers' capabilities and skills	Local supply chain investments	Procurement of local goods and services
	<p>Eight financial schemes to support local content.</p> <p>PROGREDIR: 10 banks involved in financing local supply chain. Over US\$ 3.6 billion granted in loans. Over 1,600 transactions involving 600 companies in 21 states in all regions of Brazil. Reduction of 20 per cent to 50 per cent in interest rates.</p> <p>FIDCS: 10 funds participating in the PROMINP receivables program, with 2,600 contracts awarded. There are over 450 financed suppliers, with US\$ 2.1 billion in anticipation of receivables.</p> <p>BNDES's annual lending portfolio is around US\$ 100 billion, which is larger than that of the World Bank.</p>	<p>Local content in exploration and production increased from 48.1 per cent in 2003 to 61.4 per cent in 2010.</p> <p>Local content in supply and refining increased from 82 per cent in 2003 to 93.7 per cent in 2010.</p> <p>Average local content ratio has increased from 57 per cent to 75 per cent since PROMINP was launched.</p> <p>More than 25,000 local content certificates issued by the first quarter of 2013, representing about US\$ 13 billion of local content.</p>

Local enterprise development		
Technology transfer, promotion of R&D, and competency development	Promotion of forward and backward linkages	Strategic partnerships with local firms
<p>Obligation of investments in R&D</p> <p>(1998–2011): US\$ 3.7 billion. Investment cumulative forecast ~ US\$ 8.9 billion by 2020.</p> <p>US\$ 1.5 billion has been invested in universities' infrastructure (labs, equipment, computers) and more than 100,000 people have been trained since 2007.</p> <p>Petrobras's partnerships with Brazil's 120 universities and R&D institutions represent 29 per cent of R&D. Since 2008, Petrobras has invested US\$ 232 million per year on these partnerships.</p>	<p>Local content in the manufacturing of drill ships between 55 per cent and 60 per cent.</p>	<p>Petrobras's partnerships with Brazilian companies account for 19 per cent of the company's technological innovations. Since 2008, Petrobras has invested US\$ 152 million per year in these partnerships.</p> <p>An agreement between Petrobras and SEBRAE—a national small business support association—has generated US\$ 113 million in transactions for local materials and equipment supplies.</p>

Table 5: Evidence from Ghana

Employment, training, skills development, and technology transfer		
Local content in the quantity and quality of employment	Local training, skills/capacity development and education	Technology transfer
<p>87 per cent of Tullow Oil employees are locals.</p>	<p>Tullow has sponsored eight technicians to achieve International Vocational Qualification Level 2. These technicians are now working as production technicians.</p> <p>Four graduate trainees from Tullow have been sponsored to undertake Master's degrees in petroleum engineering at Heriot-Watt University (UK).</p> <p>US\$ 23 million invested in training and development by Tullow in 2013.</p> <p>In 2013, the Jubilee Partners invested over US\$ 5 million in the Jubilee Technical Training Centre. The center is the first vocational training polytechnic in West Africa to offer National Vocational Qualification-accredited courses in technical subjects such as instrumentation, process, and mechanical and electrical engineering. 16 students were studying full-time courses in 2014.</p> <p>Expro, an international well services company, has invested US\$ 140,000 in national capacity development programs since 2011. Over half of their employees are Ghanaian nationals.</p> <p>Tullow established its Group Scholarship Scheme in 2011. The scheme sponsors postgraduate students on courses at universities in the UK, France, and Ireland, which are related to the oil and gas industry and other sectors that will help promote economic diversification. The scheme, now entering its fourth year, has invested US\$ 7.7 million in sponsoring 121 Ghanaian scholars.</p>	<p>14 GNPC staff were placed on a two-year secondment to Tullow's Ghana and international offices. 10 of these secondees were sponsored as part of a scholarship scheme, to achieve Master's degrees. The remaining four were coached by experts, who provided on-the-job training.</p> <p>Other GNPC secondees are being trained on the TEN project so that they can develop the required skills to fully participate in their country's oil and gas industry.</p>

Local supply development and expenditure with suppliers of goods and services

Local supply development and expenditure with suppliers of goods and services	Local supply development and expenditure with suppliers of goods and services	Local supply development and expenditure with suppliers of goods and services
<p>253 out of 402 registered service companies in the oil and gas industry have at least 50 per cent Ghanaian ownership.</p> <p>The Jubilee Partners invested US\$ 600,000 in 2013 and have committed US\$ 5 million in total to the Government-led Enterprise Development Center (EDC). The center supports small and medium-sized Ghanaian enterprises. It offers a range of services including business training, advisory services, and access to information about local markets.</p> <p>Sixty five SMEs have been trained at the EDC since inception in May 2013.</p>	<p>A US\$ 70 million loan is being provided by HFC Bank to enable them to take on contracts from majors in the oil and gas industry. Companies can apply for a minimum of US\$ 500,000 and a maximum of US\$ 20 million out of the revolving facility. Interest on the loan is 4.5 per cent.</p> <p>A fund solely dedicated to supporting companies in the oil and gas sector launched in June 2014, and seeks to raise about US\$ 15 million. The fund will target companies that provide services such as engineering, transportation, and catering to oil producers as well as refiners and oil-marketing companies.</p>	<p>Spend by Tullow Oil with local suppliers increased by 85 per cent to US\$ 128 million in 2013 (2012: US\$ 69million)</p> <p>Procurement in the local market by Eni represents more than 50 per cent of total spend.</p>
<h3>Local enterprise development</h3>		
Technology transfer, promotion of R&D, and competency development	Promotion of forward and backward linkages	Strategic partnerships with local firms

Seaweld Engineering, a wholly owned Ghanaian company, is one of two Ghanaian companies contracted by MODEC to fabricate 'stools' for the TEN FPSO (Floating Production, Storage and Offloading) vessel. The company employs 80 Ghanaians. 223 stools are being fabricated.

A further 138 module supporting the stools required later in the FPSO construction program are being built at Orsam, another local Ghanaian company.

A consortium between Technip and Subsea 7 is providing the equivalent of 95 months of training in Europe for Ghanaian sub-contractors.

Kosmos arranged for Zeal Waste Management to travel to Louisiana for training on vessel and tank cleaning. As a result, Zeal invested in new equipment and has since provided tank cleaning services to all the operators in Ghana's Western Region. Zeal employs approximately 180 Ghanaians.

In 2013, Tullow awarded six international suppliers contracts for the delivery of the FPSO, subsea production system, subsea umbilicals, risers and flowlines, connectors and engineering components of the project.

Each supplier included local content plans as part of their proposals.

Hydra Offshore, a Ghanaian SME, signed a memorandum of understanding with Wood Group in December 2013 to explore opportunities to provide subsea engineering services to local operators.

Table 6: Evidence from Nigeria

Employment, training, skills development, and technology transfer		
Local content in the quantity and quality of employment	Local training, skills/capacity development and education	Technology transfer
<p>92 per cent of Exxon Mobil employees are local, 14 per cent of whom are women; 17 per cent of local staff are in supervisory and managerial positions.</p> <p>30,862 jobs created. The number of Nigerians occupying managerial positions in operating companies was put at 2,143.</p>	<p>Over 6,000 candidates captured on JQS Platform. Over 1,500 attached to oil and gas projects.</p> <p>More than 12,400 students have benefited from Chevron's Agbami Medical and Engineering Professionals Scholarship since 2009.</p> <p>Annual scholarships from other oil companies include: Agip Oil Company, Mobil, Shell, Nigeria LNG, Total and Addax Petroleum, focusing on the Engineering and Sciences sectors in Nigeria and outside Nigeria.</p>	<p>In 2012, Exxon Mobil completed the first of three floating platforms developed entirely in Nigeria. To complete the project, 30 locals were trained to NCDMB standards in technical skills like welding and fitting.</p> <p>49 students graduated from the pilot geosciences training program in 2014.</p> <p>By the end of 2013 the number of Chevron Nigeria employees on foreign assignment was 110.</p>

Local supply development and expenditure with suppliers of goods and services		
Development of local suppliers' capabilities and skills	Local supply chain investments	Procurement of local goods and services
<p>Addax Petroleum Development Nigeria trained 190 indigenous vendors in the country in 2013.</p> <p>Chevron facilitated the attendance of marine vendors at a supplier development program during the 2013 Offshore Technology Conference at the Chevron office in Houston.</p>	<p>Exxon Mobil's Contractors' Finance Scheme was launched in 2013. Partnering with 12 banks, it is expected that US\$ 8.6 billion will be made available on the scheme to ExxonMobil contractors nationwide. Since the scheme was introduced in November 2013, 24 different contractors have been able to access the funds on the scheme.</p> <p>Nigeria Liquefied Natural Gas Limited has launched a US\$ 1 billion local vendors financing scheme.</p> <p>TOTAL Nigeria launched its suppliers financing scheme, which is valued at US\$ 7.5 billion.</p> <p>Shell introduced a new scheme supported by five local banks to assist Nigerian contractors in accessing finance. Contractors who win tenders with Shell are offered favorable funding terms from the participating Nigerian banks. In 2013, the funding scheme enabled 39 contractors to access loans worth over US\$ 700 million.</p>	<p>Engineering – 10 per cent; Topside module fabrication (tonnage) – 20 per cent; Accommodation modules (tonnage) – 40 per cent; Subsea systems fabrication/Construction (tonnage) – 20 per cent; Pipeline systems fabrication/Construction – 60 per cent; Risers fabrication/Construction (tonnage) – 60 per cent;</p> <p>Utilities module/ packages fabrication (tonnage) – 20 per cent; Umbilicals fabrication and construction (tonnage) – 30 per cent; Steel pipes procurement (tonnage) – 20 per cent; Steel plates and sections procurement (tonnage) – 0 per cent; All fabrication and welding to be in-country – 20 per cent; Cranes/Crane Barges/Heavy Lift vessels (man-hours) – 30 per cent; Accommodation vessels (spend) – 30 per cent.</p> <p>Average local content based on proportion of value of contracts awarded to Nigerian companies: 70–85 per cent. Based on proportion of contract sums spent on Nigerian-made goods: 12–18 per cent.</p> <p>US\$ 1.8 billion has been retained in the Nigerian economy due to indigenous companies operating certain specialized marine vessels.</p> <p>US\$ 4.69 billion total spend on Nigerian Content and Local Community Contracts by Chevron in 2013.</p>
Local enterprise development		
Technology transfer, promotion of R&D, and competency development	Promotion of forward and backward linkages	Strategic partnerships with local firms

<p>A Fabrication Training Center was opened in Lagos in 2009. It includes classrooms and welding workshops.</p> <p>The Content Development Fund has been used for guaranteeing lending to Nigerian service companies and for infrastructure and training investment by the NCDMB, reaching US\$ 350 million in 2014.</p> <p>West Africa's first Offshore Simulation and Innovation Center (POSAIC) opened in Lagos in 2014.</p>	<p>Over 2 million jobs created in linkage industries (manufacturing and services).</p> <p>FPSO Topside Integration Facility set up by 2014: Cost is US\$ 150 million to US\$ 200 million and it will generate 30,000 jobs. Three new pipe mills start production by 2015: cost of US\$ 150 million each and will generate 15,000 jobs and 3,000 training opportunities.</p> <p>LNG carrier size Dockyard to be completed by 2015: cost is US\$ 250 million and will generate 55,000 jobs and 20,000 training opportunities.</p>	<p>PEM Offshore has secured a five-year commitment from Chevron Nigeria Limited (CNL) and Agip Energy to utilize its POSAIC facility in actualizing CNL and Agip annual scholarship award program to train Nigerian seafarers.</p> <p>The CNL and Agip program is expected to commit an annual sum of US\$ 200,000 that will amount to US\$ 1 million within the first five years</p> <p>Chevron Nigeria partnered with LUDA Flanges & Fitting Limited (first in-country manufacturer of pipe fittings and flanges) for the supply of flanges for Meren Gas Gathering and Compression Plant.</p>
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Table 7: Evidence from Norway

Employment, training, skills development, and technology transfer		
Local content in the quantity and quality of employment	Local training, skills/capacity development and education	Technology transfer
<p>Oil companies and companies that supply the petroleum industry currently employ about 250,000 people.</p> <p>79 per cent of Statoil's staff are Norwegians and 78 per cent of management staff are Norwegians.</p>	<p>Norway educates approx. 7.5 per cent of its graduates in engineering and an equivalent percentage in sciences.</p> <p>The annual growth rate in the number of university students studying oil and gas-related subjects averages about 8 per cent per year.</p>	<p>Statoil took on 53 new apprentices in 2011 from Norway's three northernmost counties.</p> <p>A research and expertise center focusing on Arctic challenges was established at the University of Tromsø in 2013.</p> <p>A research center for improved recovery has also been established at the University of Stavanger.</p>

Local supply development and expenditure with suppliers of goods and services

Development of local suppliers' capabilities and skills	Local supply chain investments	Procurement of local goods and services
<p>There are about 2,500 petroleum-related firms involved in the Norwegian oil and gas industry.</p> <p>The exports of Norwegian oil and gas suppliers represent a 15 per cent share of total exports, excluding sales of oil and gas.</p> <p>About 40 per cent of the revenues in the Norwegian service and supply industry originate in international markets, i.e. about US\$ 28 billion. International revenues have grown by about 11 per cent annually since 2006.</p> <p>The 20 largest companies had international revenues totaling slightly more than US\$ 21 billion in 2012. These 20 companies had 68 per cent of their revenues originate from international activities. The remaining companies' Norwegian revenues totaled US\$ 31 billion and their international revenues amount to 17 per cent.</p> <p>At its peak in 2008 the Norwegian-based supplier industry share of GDP reached 27 per cent. Its share was only 7 per cent in 1988.</p> <p>The oil service industry employs the most number of people in the oil and gas industry. This sector employed about 57 per cent of the total number of people employed in the gas industry as a whole.</p> <p>Measured by employment, petroleum-related supply and service providers make up 3.5 per cent of the total Norwegian economy and 5 per cent of the private sector in Norway.</p>	<p>More than 40 local companies participate in Sasoil and Innovation Norway's industry incubator program, LUNN. The program entails health, safety and environment inspections, mentoring and classroom courses.</p>	<p>Contracts amounting to US\$ 150 million have been awarded to local businesses in Helgeland by Shell.</p> <p>In-country procurement by Sasoil is more than 75 per cent.</p> <p>Eni's percentage of local procurement is between 26 per cent and 49 per cent.</p> <p>BP's local procurement for 2013 was US\$ 487 million (93.8 per cent).</p> <p>General estimates put the level of local content in terms of investment for the exploration and development of the fields between 50 per cent and 60 per cent (measured by value added) and maintenance and operations stand at about 80 per cent.</p>