



Extractives Hub
Deepening Knowledge about Oil, Gas and Mining



Centre for Energy, Petroleum
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**Understanding Linkages in the Extractive Industries – Insight, December 2019;
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Oil, gas and mineral resources – ‘extractives’ – can be used to drive public investments in infrastructure, health, education (for example, please see the above school grounds image, photographed in Lilongwe, Malawi, in 2014) and other amenities. The key idea for policy-makers is ‘linkage’. Instead of viewing the extractives industry (EI) in isolation from the rest of the economy, an awareness of links, potential as well as actual, can lead to exciting opportunities for the policy-maker to enhance the benefits to the country.

This article explains how linkage works, drawing on the latest research into this important subject. In this context, ‘linkage’ means more than simple links but rather the relationship between EI and its impact on the development of the rest of the economy of the resource-rich State. In a number of countries such as Botswana, South Africa, Indonesia, Norway and Ghana linkages in the extractives sector are employed – assertively - to foster economic diversification and – defensively - to offset shortfalls such as commodity price shocks and volatile revenues to which the EI sector is vulnerable. As Figure 1 illustrates, linkages come in many forms too, ranging from fiscal, production, upstream, downstream linkages, to structural ones.

More and more governments are paying close attention to potential economic linkages and exploring ways of developing them. For instance, even before the start of petroleum production, Uganda’s Petroleum Authority (PAU) is already looking into the development of

potential linkages between its oil and gas industry and the other economic sectors. Other frontier States like Kenya and Tanzania are also leveraging their oil and gas sectors for wide economic development through advancing policies aligned with the creation of linkages.

The idea of linkages in the EI is closely aligned to the notion of Sustainable Development, which is currently at the centre of many international discussions, and recognises that development must take into consideration social, economic, environmental and governmental aspects. However, it is difficult to apply the same principles of sustainable extraction and utilisation which apply to living natural resources to the non-living natural resources like oil and gas. The extractives industry deals with inherently exhaustible resources with benefits that are likely to be limited in time to a few decades in most cases. It is therefore essential that their extraction is largely treated as a catalyst to longer-term development.

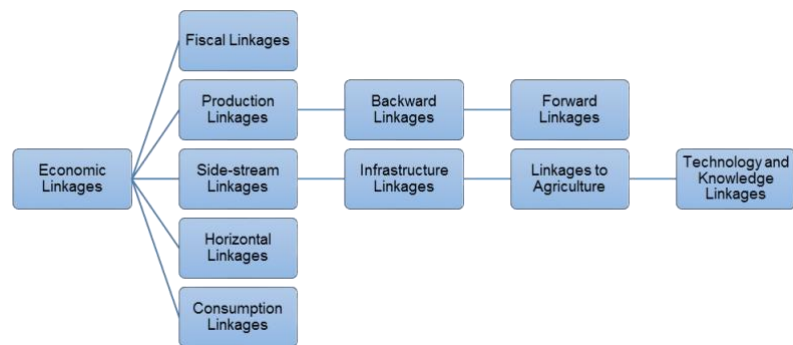
The economic dimension of sustainable development involves the management of economic impacts as well as building linkages with other activities. Excess capacity could be built into a new grid, for example, to benefit industry and other users. Grasping the links in the chain of resource management, however, calls for a deep knowledge of the interrelations ranging from streamlining the law, economics and governance. Knowledge of these links and their potential is crucial if a government is to meet the challenges of managing extractive resources in a long-term sustainable manner and avoid the kind of adverse outcomes that figure in the many writings on the ‘resource curse’.

Ideally, for resource-rich countries, the rents from resources could be utilised to drive public investments in sectors like infrastructure, health, education and other amenities to foster the achievement of the Sustainable Development Goals (SDGs). Governments therefore have an opportunity to facilitate investments by the private sector to diversify the economy as well as to use resource revenues for public spending at both national and sub-national levels. Citizens, and the wider public generally, are also increasingly aware that the EIs can promote economic growth and development beyond the direct contribution of the resultant revenues. Importantly, policies that incorporate linkages act to counter the enclave status of many extractives projects, allowing the benefits to be felt more widely than a project’s limited geographical space to the rest of the country.

A number of studies have underlined the benefits. An early study noted the *forward* linkages – supporting local or national small or medium sized enterprises in building a role in the investors’ supply chains and developing non-resource dependent clusters of industrial activity (Liebenthal, Michelitsch and Tarazona), and *backward* linkages – taking measures that process or use resources to build a local industry. This is not the same as an argument for state intervention. Instead, it supports a targeted approach for interventions informed by an understanding of the benefits of linkages.

In a sense, governments can ‘piggyback’ on any large infrastructure investments made by EI companies to fill capacity gaps and save on their overall capital spending. Developing one linkage will – ideally - lead to the development of another sectoral linkage. Figure 1 below shows the nature, scope and relationship between the linkages in the EI which are further discussed thereunder.

Figure 1: The nature of economic linkages in the Extractive Industry



(Source: <https://www.extractiveshub.org>)

1. *Fiscal linkages* deal with the management of payments made to the host countries by the EI companies. There are many fiscal instruments employed by States to realise revenue throughout the different sectors of the economy such as employment taxes, import and export duties, withholding taxes, profit taxes, income taxes and value added taxes. However, there are those instruments which are unique to the extractives industry and these include oil production sharing, mining royalties, cost recovery provisions, fiscal pricing, State participation, service contracts and bonus payments among others. The guiding principle is that a fiscal regime should enable the State to maximise economic returns from its natural wealth. After being collected, the resulting revenues are generally used by the States to support budgetary demands and may also be utilised to diversify the economy. This requires effective economic and fiscal policies through streamlining the way in which the resource revenues are captured, collected and utilised by the State.
2. *Production Linkages* are those goods and services which can be developed from the EI activities. These include the backward and forward linkages which are explained below.
 - a) *Forward/ downstream production linkages* are mainly concerned with adding value to the extracted natural resources through processing and refining them locally. This ensures that the country produces finished goods rather than export them in a raw state. Downstream linkages have for instance successfully been carried out in Botswana with the De Beers Mining Company being tasked to move the sales and sorting operations of its diamond resources from London to Botswana; and in South Africa with the establishment of the Rand Refinery within the mining District of Johannesburg for gold processing. Similarly, in Trinidad and Tobago, the National Oil Company and The Petroleum Company of Trinidad and Tobago Limited own the sole refinery. Caution should however be exercised regarding the economic viability of the linkages which varies from commodity to commodity.
 - b) *Backward/ Upstream production linkages* on the other hand relate to the procurement of goods and services which are necessary for the EI sector to operate. This is through the connection of local suppliers of goods and services to the EIs which

in turn leads to the growth and development of other sectors of the economy like local industries. The goods include local inputs such as consumables, machinery while services encompass insurance, financing, security, transport, and geological mapping. The procurement process involves contracting, subcontracting and collaborations which can all foster the growth of domestic manufacturing. It is worth noting that the opportunities for the upstream linkages do vary according to the production stage and type of company. Local content policies also largely emerged and are taking root in many countries including frontier States like Kenya and Uganda in a bid to support the linkages between the local economy and EIs. Local content is basically the value from EI projects to the local, regional or national economy beyond the revenue from the extractive resources. These policies and linkages are however affected by low skills, limited access to investment capital and low technological capacities of the local workforce among others.

3. *Side-stream linkages* on the other hand relate to the economic links which support the functioning of the EI chain of operation, and they include infrastructure, agriculture and skills/knowledge and technology as discussed below.
 - a) The *infrastructure linkages* relate to the benefits accruing from the infrastructure developed for an EI project to the wider economy. These can range from construction and development of roads, railways, airports/fields, water, power and communication grids. This infrastructure brings benefits through shared use of the infrastructure which in turn promotes development. Investors are increasingly setting up infrastructure in their areas of operation in order to obtain the 'social-licence to operate'. There must nonetheless be measures in place to ensure that the developed infrastructure will be available for use by the wider population.
 - b) *Agriculture linkages in contrast are mainly a result of the infrastructure linkages largely due to opportunities arising from improved infrastructure.*
 - c) *Knowledge/ technological linkages* refer to the technical know-how and skills transfer along the extractives value chain. This is one of the major reasons why host States open doors for foreign direct investment (FDI) since it enables them to gain knowledge, skills and technology from the foreign investors. The linkages comprise transfer of non-sector skills such as information technology, civil engineering, finance and sector-specific skills like petroleum engineering.
4. *Horizontal/ Lateral linkages* relate to development of new industries or other sectors using the skills and knowledge acquired from the EI-related supply chain. This can include creation of small and medium-sized enterprises, industry-based cooperation through joint ventures, skills and technology transfers basing on the ability to adapt.
5. **Lastly, *consumption linkages* are associated with increased demand for goods and services due to the favourable earnings from the EI sector. This is through the multiplier effect of EI wages and revenues being spent locally. The rationale is that increased incomes facilitate increased spending and just like backward linkages, this can directly or indirectly lead to the development of other sectors of the economy**

like construction, agriculture, local transport and hospitality where the monies earned from the EI projects are spent.

All the above discussed economic linkages in the EIs offer several benefits for the host State. This is because the linkages support diversification of the economy, flow of benefits to the local population especially through the local content policies, direct employment, indirect employment, induced employment (by consumption linkages), technology transfer and development of infrastructure among others. In conclusion, economic linkages are a great tool for driving sustainable development in the EI sector and in the long run, the countries can escape the 'resource curse' and ensure wide-country economic diversification, development and continuity way after the resources are depleted.

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