



Fossils fuels and job creation in Africa

Rachel Cooper

GSDRC, University of Birmingham

15 November 2019

Question

Please provide an overview of the evidence on how many jobs are supported by fossil fuel development directly and indirectly in African countries? What are the types and gender distribution of these jobs?

Contents

1. Summary
2. The links between fossil fuels and employment
3. Country case studies
4. References

The K4D helpdesk service provides brief summaries of current research, evidence, and lessons learned. Helpdesk reports are not rigorous or systematic reviews; they are intended to provide an introduction to the most important evidence related to a research question. They draw on a rapid desk-based review of published literature and consultation with subject specialists.

Helpdesk reports are commissioned by the UK Department for International Development and other Government departments, but the views and opinions expressed do not necessarily reflect those of DFID, the UK Government, K4D or any other contributing organisation. For further information, please contact helpdesk@k4d.info.

1. Summary

Fossil fuel development, including oil, gas and coal, can provide or support employment in a number of different ways¹. Estimates for Africa's extractive sector as a whole put it as employing less than 1% of Africa's workforce (Fine et al., 2012). However, it is hard to determine the number of jobs supported directly or indirectly by the fossil fuels industry in different African countries due to a paucity of publicly available data and a lack of robust data.

This rapid review includes case studies of five African countries (Angola, Ghana, Nigeria, Sudan and Uganda) including information on their local content policies and government requirements for employing locals and procuring goods and services from local companies. A number of developing countries in Africa with fossil fuel industries have developed local content policies to stimulate local employment and backwards linkages. These policies have had mixed success (Ackah & Mohammed, 2018). Information on whether local content policy requirements are being followed or implemented is limited for the countries included in this review. For example, it is difficult to assess the success of Angola's local content policy due to a lack of openness and inadequate monitoring and evaluation (Ovadia, 2014).

Information related to gender was extremely difficult to locate². Gender specific information was only found for Sudan, where 6% of people employed in the extractive sector are women (UNCTAD, 2016). Information on the types of jobs supported was also difficult to locate, aside from Ghana, where a 2015 government estimate suggests that targets for direct local employment were met for management and other staff, but gaps remain for technical staff.

Within the literature consulted for this review, there is a sense that the **fossil fuels industry creates few jobs and is an enclave industry**, delinked from national economies and the communities in which it operates (Ovadia, 2014; Ablo, 2019). However, multinational oil companies, national governments and development partners have argued that well governed fossil fuel sectors can contribute to development in developing countries in a number of ways including stimulating employment directly and through backwards linkages (Gamou, Le Billion & Spiegel, 2015).

Whilst exploration and production creates 'very little employment', which may favour foreigners due to the skills and expertise needed, the fossil fuels industry's impact goes beyond these upstream activities (Ovadia, 2014; Africa Centre for Energy Policy, 2017). Through their operations and capital investment, oil and gas companies buy goods and services from suppliers and contractors, who in turn employ people and buy goods and services of their own (Africa Centre for Energy Policy, 2017). As such, backward linkages, through purchasing

¹ Direct jobs (employed by the project itself); indirect jobs (employed supplying inputs to the project); and, induced (employed to provide goods and services to meet the consumption demands of those employed directly and indirectly) (Bacon & Kojima, 2011). It is also possible to distinguish between employment for construction, installation and manufacture, and employment for operation and maintenance (Bacon & Kojima, 2011). This review focuses on direct and indirect jobs.

² UNCTAD (2016) argues that women face a number of employment challenges in the oil, gas and mining sectors, which are generally seen as male. The African Development Bank has released guidelines for improving women's economic empowerment in the oil and gas sector. The guidelines can be accessed here: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/anrc/AfDB_WomenEconomicsEmpowerment_V15.pdf (accessed 15/11/2019).

goods and services from local companies may be more important than direct employment (Ovadia, 2014). This review located a number of examples of local companies providing services to the industry, but scant estimates of the size of indirect employment in the industry. Two estimates were found for Nigeria (38,000 and 200,000 respectively). However, it was not possible to assess the validity of these estimates.

A number of potential countries for inclusion were identified including Nigeria, South Sudan, Sudan, Ghana, Angola, Kenya, Mauritania, Uganda, Cameroon, Tanzania, and, Mozambique. Due to the limited timeframe for this review it was not possible to include all 11 countries. Hence, Angola, Ghana, Nigeria, Sudan and Uganda were selected to provide a range of examples from a long-established fossil fuel sector to more recent sectors that have come online. An additional consideration was the paucity of publicly available information. Estimates for different countries suggest that the number of jobs supported is small in comparison to the size of the labour force:

- **Angola:** TOTAL Angola employed 2,200 people in 2013/14, 74% were Angolan; TOTAL and BP created 5,300 indirect jobs through local content initiatives. However, in 2018 the estimated labour force was 12.7 million.
- **Ghana:** estimates include 5,590 people directly employed in 2015, and 7,000 directly employed in 2014-16. The estimated labour force in 2018 was 12.5 million people.
- **Nigeria:** 38,000 jobs created since 2009 (2013 estimate) with Shell Nigeria employing 2,790 people directly at the end of 2018 (96% Nigerian) and Chevron employing 5,377 Nigerian employees and contractors at the end of 2017. The estimated labour force in 2018 was 60.7 million.
- **Sudan:** Sudapet had 1,349 direct employees in 2015 with 23% being women. A 2009 CNPC estimate argues 80,000 job opportunities have been created over time. The estimated labour force in 2018 was 11.7 million.
- **Uganda:** The Government of Uganda estimates 11-13,000 direct jobs, and 100,000-150,000 direct and indirect jobs during construction. The estimated labour force in 2018 was 16 million.

The evidence base for this review was extremely limited. The following sections include a mix of academic studies assessing the local content policies of different countries, and oil and gas companies' annual reviews and corporate social responsibility reports. Little information could be found for the employment impacts of coal mining in the case study countries. Common themes in the evidence base include:

- **The number of direct jobs is usually larger during the construction than the operation phase.** For example, the company Anadarko stated in 2018 that they expect to employ 3,500 Mozambicans at the peak of their construction phase and 1,500 over the 30-year production period. There will also be opportunities for local companies in catering, construction materials, electronics, and other equipment³.
- A number of oil and gas companies present their information in terms of % for employment with no break down by number or job type. For example, the Italian oil

³ <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2019/01/OEF-117.pdf?v=7516fd43adaa> (accessed 9/11/2019).

company Eni states that in 2018 it employed 10,374 people outside of Italy, 82.6% of them local⁴.

- **Local companies face a number of challenges in providing goods and services** for the industry, and capacity building initiatives have been established by both national governments and multinational oil and gas companies.
- Development of renewable energy sources has the potential to create more jobs than fossil fuels (UN, 2018).

2. The links between fossil fuels and employment

A 2012 McKinsey Global Institute report finds that whilst the natural resource sector (mining, oil and gas) makes a crucial contribution to Africa's GDP, government revenue and export earnings, it employs less than 1% of Africa's workforce (Fine et al., 2012, p. 2). Resource extraction is an enclave industry that will never be a significant employer in its own right due to the small number of jobs (Ovadia, 2014). There is a sense within the literature related to the extractives industries in Africa that they are delinked from national economies and the local communities where resources are found and extracted (see for example, Ablo, 2019). For example, writing at the general level, Gamu, Le Billion and Spiegel, (2015: 168) state that industrial mining produces relatively few jobs as this "high-skill, capital intensive mode of resource exploitation tends to operate in communities with limited relevant skills".

Ovadia (2014) argues that despite the small number of jobs available in oil and gas, the large number of goods and services needed for oil exploration and production offer numerous possibilities for employment. A number of African countries, including the case studies outlined in this report, have adopted local content policies. These policies encourage both direct employment by multinational companies, but also mandate the use of local companies to supply goods and services, increasing linkages to different local sectors including, but not limited to, equipment, manufacturing, and services (from water to financial) (Ovadia, 2014). Local content policies can also mandate that multinational companies invest in facilities for local manufacturing and service provision, and in capacity building for local workers (Ovadia, 2014). Ackah and Mohammed (2018: 1) argue that whilst local content policies and legislation have the potential to stimulate broad-based economic development, their use has often achieved mixed results in many extractive developing countries⁵.

Multinational oil and gas companies have argued that local companies have challenges in meeting required international standards, for example, local small and medium enterprises (SMEs) are often not International Organization for Standardization (ISO) certified (Ackah & Mohammed, 2018). For example, in the case of Ghana, there is a body of literature that argues local companies are poorly structured and have limited capacity to do business in the oil and gas sector (Ackah & Mohammed, 2018). Other challenges include the long lag time as domestic

⁴ Eni mainly operates outside of Italy in Algeria, Angola, Congo, the United Arab Emirates, Egypt, Ghana, Libya, Mozambique, Nigeria, Norway, Oman, Kazakhstan, the UK, and the United States.
https://www.eni.com/docs/en_IT/enicom/publications-archive/publications/reports/reports-2018/Annual-Report-2018.pdf (accessed 9/11/2019).

⁵ There are debates around local content policies and their links to elite capture, rent seeking, and conflict (see for example, Ovadia, 2014).

companies wait for international extractive companies to settle invoices which can strain domestic SMEs working capital (Mendoza, 2016). A needs assessment conducted by Ghana's Petroleum Commission in 2015, found that although Ghanaians possessed academic qualifications, they lacked practical skills and competencies to fill engineering and technical roles in the industry (Africa Centre for Energy Policy, 2017). As such, local skills training is needed in order to realise local content initiatives (Mendoza, 2016).

A small subset of the literature argues that renewable energy creates more jobs than the fossil fuels industry (UN, 2018). For example, a 2014 UNEP study found that 500,000 jobs could be created in the Economic Community of West African States through solar lighting technologies for people living off-the grid. Within the global fossil fuels sector current dynamics including mechanisation, overcapacities and industry consolidation are being translated into job losses (UN, 2018).

A 2018 ILO study found that for African countries additional electricity generation from renewable sources was related to higher job creation than additional generation from fossil-fuel based technologies (Montt et al., 2018). In terms of indirect local employment, Montt et al. (2018) estimate that the employment multiplier effects per additional EUR 1 million of increased demand. For Africa, they estimate that for every additional EUR 1 million of increased demand: Montt et al. (2018):

- Wind power has the highest multiplier: 155 jobs.
- Coal and natural gas create 129.8 and 68.9 jobs respectively.
- Hydropower (59.9), biomass (105.8), and solar photovoltaic (116.8).

3. Country case studies

Angola

The Angolan government has been pursuing local content since 2002, coordinated by the national oil company, Sonangol (Ovadia, 2014). **Companies are required to have a 70% Angolan workforce.**⁶ All foreign oil and oil service companies are required to submit human resources plans to increase the number of Angolans working for them (Ovadia, 2014). **However, it is very difficult to measure the success of Angola's local content in creating jobs** and adding value due to a lack of openness and the inadequacy of monitoring and evaluation (Ovadia, 2014). No information related to gender could be found during this review.

A book released by TOTAL Angola to celebrate 60 years in the country (1953-2013) states that the company hires over 100 Angolan employees a year⁷. **In 2013/2014, TOTAL Angola employed 2,200 people, 74% of them Angolan**⁸. The book states that the company plans to

⁶ <https://www.kwm.com/en/uk/knowledge/insights/a-review-of-local-content-regulations-in-the-upstream-oil-and-gas-sector-in-africa-20160101> (accessed 9/11/2019).

⁷ <https://wiki.total/sites/default/files/2019-01/TOTALMENTE%20COM%20ANGOLA%2060%20years%20ENGLISH.pdf> (accessed 15/11/2019).

⁸ <https://wiki.total/sites/default/files/2019-01/TOTALMENTE%20COM%20ANGOLA%2060%20years%20ENGLISH.pdf> (accessed 15/11/2019).

continue to recruit 100-150 Angolan managers and technicians every year, with the goals of achieving 80% Angolan employment by 2016⁹. It was not possible during the course of this review to verify whether or not TOTAL had achieved its goal.

BP Angola employs 669 staff and 20 contractors in Angola and the UK according to its website. Approximately 87% of the workforce based in Angola are Angolan¹⁰. However, the total number of staff employed in Angola could not be found during the course of this review, and neither could the types of jobs Angolans are employed in by BP.

Examples of local content initiatives by international oil companies include (Ovadia, 2014):

- The Zimbo Fund, a microfinance initiative: TOTAL in partnership with BancoTotta de Angola created a joint guarantee fund for SMEs in 2005. The programme is estimated to have created 300 jobs via dozens of local companies.
- TOTAL hired a local shipyard to fabricate and install a new module for a deep sea oil installation, creating the equivalent of 1,000 jobs over a four year period¹¹
- Centro de ApoioEmpresarial (CAE), a business support centre: Launched by BP in 2005 the centre has helped Angolan firms win 289 contracts worth USD206 million and creating over 4,000 jobs.

The government of Angola has also supported the establishment of 73 factories in the Viana Special Economic Zone, largely producing products which are of use to the oil sector, although it is not clear if the oil sector and the multinational service companies are placing orders (Ovadia, 2014). In partnership with a Nigerian logistics company, Sonangol has established a logistics base and oil service centre where many local and multinational companies are basing their new manufacturing activities (Ovadia, 2014). For example, Cameron Angola opened a new plant producing subsea wellheads and other products employing 95 Angolans out of a total workforce of 144 (Ovadia, 2014).

Ghana

Oil and gas were discovered in 2007 and extraction began in 2010 (Ackah & Mohammed, 2018). There are three fields onstream: Jubilee (operated by Tullow Ghana Limited); Tweneboa-Enyira-Ntomme (TEN) (operated by Tullow Ghana Limited), and, Offshore Cape Three Points (operated by Eni Ghana Exploration and Production Limited) (Africa Centre for Energy Policy, 2017).

Ghana's 2010 local content policy and 2013 *Petroleum (Local Content and Local Participation in Petroleum Activities) Regulations* seek to maximise value addition and job creation by maximising the use of local expertise, goods and services, job creation for people, businesses and financing in all aspects of the value chain and retention of the benefit within Ghana (Ackah & Mohammed, 2018). The 2010 policy sets a target of achieving at least 90% local content and

⁹ <https://wiki.total/sites/default/files/2019-01/TOTALMENTE%20COM%20ANGOLA%2060%20years%20ENGLISH.pdf> (accessed 15/11/2019).

¹⁰ https://www.bp.com/en_ao/angola/home/who-we-are/bp-in-angola.html (accessed 15/11/2019).

¹¹ <https://wiki.total/sites/default/files/2019-01/TOTALMENTE%20COM%20ANGOLA%2060%20years%20ENGLISH.pdf> (accessed 15/11/2019).

local participation in all aspects of the oil and gas industry value chain within a decade (2020) (Ackah & Mohammed, 2018; Mendoza, 2016). The Government hoped Ghanaian participation in value added would be 10% initially and grow by 10% each year (Ackah & Mohammed, 2018).

In terms of job creation, the 2013 *Regulations* require all middle and junior level positions, including foreman and supervisor, to be filled by Ghanaians and set targets for employment:¹²

- Management staff: 10% at the start, 50-60% after 5 years and 70-80% after 10 years;
- Technical core staff: 20% at the start, 50-60% after 5 years and 70-80% after 10 years;
- Other staff: 80% at the start, 90% after 5 years and 100% after 10 years.

The 2010 policy mandates that all operators should ensure opportunities are given as far as possible to Ghanaians that have the required expertise and qualifications; and, they should submit a recruitment and training programme 12 months after a license has been granted covering the recruitment and training of Ghanaian citizens in all aspects of petroleum activities (Ackah & Mohammed, 2018).

The 2010 policy also makes provision for equal opportunities for men and women in the industry and states that the Government intends to support local training and technical institutions to develop the requisite capacity amongst Ghanaians in drilling, catering, housekeeping and other support services (Ackah & Mohammed, 2018). However, it is unclear if equal opportunities have been provided for men and women as no information on women's employment could be found during the course of this review.

Direct employment

The Africa Centre for Energy Policy (2017) quoting from the President's 2016 State of the Nation address, states that at the end of 2015:

- **Total number of people employed in the upstream sector: 6,940**
- **5,590 were Ghanaians (81%)**
- **1,359 were expatriates (19%)**

Targets were met for management and other staff but there is a huge gap in the Technical Core Staff (Africa Centre for Energy Policy, 2017). It is also worth noting that both Kosmos Energy and Tullow Oil now have Ghanaians managing their Ghana offices in fulfilment of their local content commitments (Africa Centre for Energy Policy, 2017). However, it was not possible to confirm the figures quoted in the President's address.

Ablo's (2018) study of Ghanaian employment in the oil and gas industry found that Ghanaians dominate onshore administrative positions and low rating/skilled positions offshore. **Ghana's Petroleum Commission estimate that over 7,000 Ghanaians are directly employed in the oil and gas industry between 2014 and 2016, with 60-70% employed onshore in non-technical positions and 30% employed in core technical areas mostly offshore** (Ablo, 2018).

¹² https://www.petrocom.gov.gh/wp-content/uploads/2018/12/13-Local-Content-and-Local-Participation-Regulations-L_I-2204.pdf (accessed 15/11/2019).

There is also significant salary disparity between Ghanaians and expatriates for a number of reasons including poor regulation, corruption and undercutting by local recruitment agencies (Ablo, 2018). In terms of conditions, there has been discontent and some strikes among Ghanaian workers about low pay and salaries in the offshore industry, including wage discrimination against local employees as opposed to expatriates (Africa Centre for Energy Policy, 2017).

Goods and services

The 2013 *Regulations* mandate that all operators in the oil and gas field should use as practicable goods and services produced by or provided in Ghana for their operations in preference to foreign goods and services (Ackah & Mohammed, 2018). Ghana's Petroleum Commission regulates the country's oil and gas sector. The Commission has reserved provision of a number of direct and indirect services for local Ghanaian companies only, including vehicle rentals, supply of drinking and industrial water, insurance, manpower, waste management, security services and supply of petroleum products amongst others (Africa Centre for Energy Policy, 2017). As such local content seeks to create backward linkages and potentially job creation through increasing the use of local companies.

Within the policy and regulations, an indigenous (local) Ghanaian company is one with at least 51% Ghanaian equity ownership (Ackah & Mohammed, 2018). A non-indigenous company must enter into joint venture agreements with an indigenous Ghanaian company with at least 10% equity participation in the execution of contracts for the provision of goods and services (Africa Centre for Energy Policy, 2017).¹³ The 2016 *Petroleum (Exploration and Production) Act* obligates licensees, contractors, or sub-contractors to acquire materials, equipment, machinery and goods from local companies, provided they are of good quality and available for sale or can be delivered in good time, and at a price of not more than 10% higher than the price of imported items (Africa Centre for Energy Policy, 2017: 13).

A 2017 Africa Centre for Energy Policy report estimates that Ghanaian participation in the award of contracts is currently over 20% in both Tullow Ghana Limited and Eni Ghana Exploration and Production Limited. Value of contracts awarded across the oil and gas sector is (Africa Centre for Energy Policy, 2017):

- In 2016, the Jubilee/TEN Field Partners (Tullow Ghana Limited, Kosmos Energy, Anadarko, GNPC, and Petro SA) awarded about USD1.37 billion worth of contracts, out of which indigenous Ghanaian companies were awarded contracts worth USD489 million (35%) and non-indigenous Ghanaian companies USD884 million (65%). Between 2014 and 2016, there was a significant and progressive increase in contracts awarded to indigenous companies: USD152 million in 2014 to USD489 million in 2016.
- Between 2014 and 2016 Eni Ghana Exploration and Production Limited spent a total of USD6.3 billion in developing the Offshore Cape Three Points (OCTP) Field. Contracts worth about USD1.76 billion (28%) during this development process were awarded to indigenous Ghanaian companies, while contracts worth USD4.54 billion (72%) were

¹³ 10% local participation requirement for mid-stream contracts does not necessarily lead to capacity building of, and technology transfer to, local companies. The requirement has rather led to fronting for foreign companies (Africa Centre for Energy Policy, 2017).

awarded to international companies. In total, about 250 indigenous Ghanaian companies benefitted from these contracts.

Indigenous Ghanaian companies have provided fabrication of equipment, subsea installation, supply of vessels, machine shop services, pipe coating, waste management, and aviation services (Africa Centre for Energy Policy, 2017). However, **no estimates of the number of people employed in these activities could be found, thus it is not possible to quantify the number of indirect jobs in the fossil fuels sector in Ghana.**

Nigeria

In November 2013, the Chairman of Nigeria's Content Development and Monitoring Board, publicly stated that 38,000 jobs for Nigerians had been created in the oil and gas sector since 2009 (IFRI Centre for Energy, 2015). A 2014 article in African Business Magazine states that around 250,000 direct and indirect jobs have been created, although the source of this information is not cited, meaning its validity cannot be assessed.¹⁴

A number of oil and gas companies have released information about the number/% of local content in their Nigerian operations, including:

- **Shell Nigeria:**¹⁵ At the end of December 2018, **2,790 people were directly employed by Shell Companies in Nigeria, 96% of whom are Nigerians.**¹⁶ In 2018, 92% of the total number of contracts was awarded to Nigerian companies, worth USD1.3 billion.¹⁷ Shell Nigeria argue that using locally manufactured goods and Nigerian service companies creates jobs within the communities they operate in.
- **ExxonMobil:** an undated estimate, produced after 2014, states that **92% of the workforce is comprised of Nigerians.**¹⁸ The Nigeria National petroleum Corporation/Mobil Producing Nigeria Joint Venture employs 1,700 people in Akwa Ibom State, mostly Nigerians.¹⁹

¹⁴ <https://africanbusinessmagazine.com/region/west-africa/making-hydrocarbons-work/> (accessed 12/11/2019).

¹⁵ https://www.shell.com.ng/media/nigeria-reports-and-publications-briefing-notes/nigerian-content-development/_jcr_content/par/toptasks.stream/1554121807367/ec9902b54d3e2e5bb325f034edca42edbc9e2c4b/nigerian-content-development-2019.pdf (accessed 12/11/2019).

¹⁶ https://www.shell.com.ng/media/nigeria-reports-and-publications-briefing-notes/nigerian-content-development/_jcr_content/par/toptasks.stream/1554121807367/ec9902b54d3e2e5bb325f034edca42edbc9e2c4b/nigerian-content-development-2019.pdf (accessed 12/11/2019).

¹⁷ https://www.shell.com.ng/media/nigeria-reports-and-publications-briefing-notes/nigerian-content-development/_jcr_content/par/toptasks.stream/1554121807367/ec9902b54d3e2e5bb325f034edca42edbc9e2c4b/nigerian-content-development-2019.pdf (accessed 12/11/2019).

¹⁸ <https://corporate.exxonmobil.com/-/media/Global/Files/locations/Nigeria-operations/publications/ExxonMobil-in-Nigeria-coffee-table-book.pdf> (accessed 13/11/2019).

¹⁹ https://corporate.exxonmobil.com/-/media/Global/Files/locations/Nigeria-operations/social-investment-projects/NNPC_MPN-JV--55-Years-of-Delivering-Value-to-Akwa-Ibom-State.pdf (accessed 13/11/2019).

- **Chevron: 5,377 employees** and contractors at the end of 2017 were Nigerian.²⁰
- **TOTAL Nigeria: no figures** for the number of Nigerians employed could be found during the course of this review. TOTAL Nigeria's 2018 corporate social responsibility report states that over **250 Nigerian engineers** worked on construction of the new Egina ultra-deep offshore oil project; some of the equipment was fabricated in country; and, various materials were procured in country, including paint.²¹
- No information could be found for Equinor, Eni or Addax Petroleum who operate various assets in Nigeria.

Employment rules in Nigeria's 2010 *Oil and Gas Industry Content Development Act* and related regulations include: all junior and intermediate posts must be held by Nigerians; and, any post held by a non-Nigerian can only be held for four years maximum, after which it must be filled by a Nigerian (Weiss, 2016). A maximum of 5% of management posts may be filled by non-Nigerians (Weiss, 2016). IISD (2016) argue that **women are under-represented in influential decision-making roles in the energy sector**. Despite reforms in the petroleum sector, the Nigerian National Petroleum Company (NNPC, the national oil company) currently still has all-male leadership (IISD, 2016).

The 2010 Act also seeks to increase backwards linkages in terms of procurement and utilisation of locally produced input materials, creating more employment opportunities for locals (Adedeji et al., 2016). Local content targets include: 45% local content in 2007, 70% in 2010 and more than 80% by 2020 (Adedeji et al., 2016). In contract bidding preference shall be given to indigenous Nigerian companies if the lowest bid does not exceed more than 10% (Weiss, 2016). The Act also sets minimum targets for Nigerian participation in 280 categories of oil services (Ovadia, 2014).

Weiss (2016: 21) argues that onshore oil fields represent an easier entry point for Nigeria's domestic industry, as these fields are less capital intensive and require less management expertise in comparison to offshore, deep-water wells. In contrast offshore deep water wells are usually dominated by multinational firms and international supply chains.

The Nigerian Content Development and Monitoring Board has also been working to support local content through establishing pipe mills, dockyards, a subsea equipment manufacturing complex, and a topside integration facility for floating production, storage, and offloading: the board estimate these activities will create 100,000 jobs (Ovadia, 2014). International oil companies have also undertaken a range of capacity development initiatives, including, for example, ExxonMobil committed to supporting projects on welding qualification and developing a local plant for producing umbilicals (Ovadia, 2014). The Nigerian Content Development and Monitoring argues that local content amounted to 90% in engineering design, 60% in the manufacture of valves and fabrication of subsea systems and 45% in the manufacture of high voltage cables (Ovadia, 2016 quoted in Weiss, 2016). However, **progress in Nigeria is difficult to measure due to the difficulties of measuring local content** (Ovadia, 2016 cited in Weiss, 2016).

²⁰ <https://www.chevron.com/-/media/shared-media/documents/chevron-nigeria-cr-report-2017.pdf> (accessed 13/11/2019).

²¹ https://nigeria.total.com/sites/g/files/wompond871/f/atoms/files/2018csr_report_nigeria.pdf (accessed 13/11/2019).

Adedeji et al.'s (2016) study uses survey data to model the relationship between the local content policy and value creation variables: indigenous oil firms' participation, backwards linkages, and job creation. Local firms in Nigeria were found to be engaged in a number of services including fabrication and construction, exploration and production goods and services supply, drilling and well completion, and design and engineering services (Adedeji et al., 2016). Their modelling work suggests that local content in the oil and gas sector has had a positive effect on increasing local firms' participation and backwards linkages, which have positive effects on job creation (Adedeji et al., 2016). However, the size of these effects in terms of the number of jobs was not outlined in the study.

Sudan

The conference report for UNCTAD's 17th African Oil, Gas and Minerals Trade and Finance Conference and Exhibition states that the **Sudan National Petroleum Corporation (Sudapet), the state owned oil company, has 1,349 employees and 23% are women**: a higher proportion than is found in many developed country's oil and gas sectors (UNCTAD, 2016). However, for Sudan's extractive sector as a whole, **women only comprise 6% of employees** (UNCTAD, 2016). UNCTAD (2016) states that jobs created in the extractive sector generally, not just in Sudan, favour men and women face difficulties finding decent jobs in these industries because the sectors are perceived as suitable mainly for men (UNCTAD, 2016). Other challenges include the limited or lack of career path and low job satisfaction, and cultural and social norms mean that women seldom work at extractive sites (UNCTAD, 2016).

Sudapet's subsidiary companies provide a number of oil field services to the industry (UNCTAD, 2016). Around 67% of jobs available to local workers in these highly specialised subsidiary companies are technical, requiring expertise in a wide range of fields from geology to hydrocarbon processing to marketing (UNCTAD, 2016). As such, UNCTAD (2016) argues that they offer an avenue for economic diversification in Sudan.

The only estimate of the number of jobs created by fossil fuel sectors in Sudan was from CNPC. The company states: "by the end of 2009, the proportion of local people working in CNPC engineering construction and oilfield services in Sudan reached 75%, and was even higher at 95% in CNPC upstream projects."²² Further the company argue that "All told, we have provided over 80,000 job opportunities in Sudan."²³ During this review no current estimates of the number of people employed directly or indirectly could be found.

Uganda

To date, **commercial oil production has not taken place in Uganda**, although it is anticipated that joint venture partners Total E&P, CNOOC, and Tullow Oil (who are leading the development of oilfields already discovered) will commence production by 2020–21 (Sen, 2018). The government anticipates that the country's proven oil and gas resources will last for 20-30 years

²²

<https://www.cnpc.com.cn/en/eninsudan/201704/a367bd17ba4c42f5bf9284dfd000499c/files/f6f60481eb214bf78c5f7ff763cb8014.pdf> (accessed 13/11/2019).

²³

<https://www.cnpc.com.cn/en/eninsudan/201704/a367bd17ba4c42f5bf9284dfd000499c/files/f6f60481eb214bf78c5f7ff763cb8014.pdf> (accessed 13/11/2019).

(Sen, 2018). No information on gender or gender considerations in local content regulations could be found during this review.

Whilst this represents a critical opportunity for local businesses, their integration into the supply chain is unlikely to be automatic (Sen, 2018). A 2013 Industrial Baseline Survey conducted by CNOOC Uganda Limited, TOTAL E&P Uganda, and Tullow Uganda Operations argues that only two sectors, security services and cement manufacturing, meet the quantity and quality requirements of the oil industry (Sen, 2018). Opportunities for supply linkages vary over the life cycle of petroleum projects—typically peaking at the engineering, procurement, and construction phase, and plateauing thereafter through production, operations, and maintenance (Sen, 2018). It was anticipated that opportunities in construction activities would commence in late 2018, with the peak period of activities around 2020–21 (Sen, 2018). However, there are examples from large infrastructure development projects of local firms 'losing out' due to their inability to meet standards (Sen, 2018).

The 2013 Industrial Baseline Survey argues that the oil industry in Uganda could create between 11,000 and 13,000 direct jobs, and between 100,000 and 150,000 jobs (including indirect) during the construction phase (IFRI Centre for Energy, 2015). The higher level of job creation depends on realising domestic supplier integration into the value chain (Sen, 2018). It also found that there are shortages of Uganda manpower for certain positions including civil craftsmen, drivers and mechanical technicians (IFRI Centre for Energy, 2015). The survey draws attention to the fact that 80% of the jobs will only be during the construction phase (IFRI Centre for Energy, 2015).

Uganda's 2008 National Oil and Gas Policy, and related laws and regulations, emphasises the deliberate implementation of national participation in oil and gas activities including: the expansion of employment opportunities; support for the development of competencies for national entrepreneurs and the workforce to competitively supply goods and services to the sector; and, the use of Ugandan goods, services, companies, businesses and financing (Sen, 2018). Contractual clauses in production sharing agreements provide for the training and employment of suitably qualified Ugandans, in addition to the payment of annual training fees to the government (Sen, 2018). In terms of procurement by international oil companies, mandated local content requirements include: preferential treatment for local suppliers; minimum participating interests in joint ventures; and, contracts with a value in excess of USD1 million must contain a labour clause mandating the use of Ugandan labour in specific categories (Sen, 2018).

A 2011 study by the Ministry of Energy and Mineral Development states that Tullow Oil reports a total of 550 Ugandan suppliers providing goods and services and winning 38% of all contracts by value (Ovadia, 2016). A Ugandan company is defined as one incorporated under the Companies Act (2012) provides value addition to Uganda, uses available local raw materials, employs at least 70% Ugandans, and is approved by the Petroleum Authority of Uganda (Sen, 2018). Consequently, a foreign-owned company or a subsidiary of a foreign firm that is registered in Uganda and satisfies the remaining conditions can lawfully be regarded as a Ugandan company, whilst simultaneously, a Ugandan-owned company which employs only Ugandan nationals and specialises in the assembly of imported parts may or may not be considered 'Ugandan', depending on the availability of locally produced input substitutes (Sen, 2018).

4. References

- Ablo, A. D. (2019). Enterprise development? Local content, corporate social responsibility and disjunctive linkages in Ghana's oil and gas industry. *The Extractive Industry and Society*, <https://doi.org/10.1016/j.exis.2019.09.003>
- Ablo, A. D. (2018). Scale, local content and the challenges of Ghanaians employment in the oil and gas industry. *Geoforum*, 96, pp. 181-189, <https://doi.org/10.1016/j.geoforum.2018.08.014>
- Adedeji, A.N., Sidique, S.F., Rahman, A.A. and Law, S.H. (2016) 'The role of local content policy in local value creation in Nigeria's oil industry: A structural equation modelling (SEM) approach', *Resources Policy* 49: 61–73.
- Africa Centre for Energy Policy. (2017). *The Implementation of Ghana's Local Content Regulations in the Upstream Sector: Achievements, Challenges and Way Forward*. Africa Centre for Energy Policy. <https://s3.amazonaws.com/new-acep-static1/reports/LOCAL+CONTENT+PAPER.pdf>
- Bacon, R. & Kojima, M. (2011). *Issues in estimating the employment generated by energy sector activities*. Sustainable Energy Department. World Bank. http://siteresources.worldbank.org/INTOGMC/Resources/Measuring_the_employment_impact_of_energy_sector1.pdf
- Fine, D., van Wamelen, A., Lund, S., Cabral, A., Taoufik, M., Dorr, N., Leke, A., Roxburgh, C., Schubert, J., & Cook, P. (2012). *Africa at work: Job creation and inclusive growth*. McKinsey Global Institute. https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/strategy/pdfs/mgi_africa_at_work_august_2012_executive_summary.ashx [retrieved 7/11/19].
- Gamu, J., Le Billion, P. & Spiegel, S. (2015). Extractive industries and poverty: A review of recent findings and linkage mechanisms. *The Extractive Industries and Society*, 2(1), pp. 162-176, <https://doi.org/10.1016/j.exis.2014.11.001>
- IFRI Centre for Energy. (2015). *Local Content Strategies in the Oil and Gas Sector: How to Maximise Benefits to Host Communities*. Theme Paper. https://www.clingendaelenergy.com/inc/upload/files/IGU-2015_Local_Content_TF3_IGU_Final_May_2015.pdf
- International Institute for Sustainable Development. (IISD). (2016). *Gender and Fossil Fuel Subsidy Reform: Current status of research*. Canada: IISD. <https://www.iisd.org/sites/default/files/publications/gender-fossil-fuel-subsidy-reform-current-status-research.pdf>
- Mendoza, N. (2016). A look at local content rules and the case of Ghana. *Devex Impact: Private Sector Engagement*. <https://www.devex.com/news/a-look-at-local-content-rules-and-the-case-of-ghana-87841>
- Montt, G., Maitre, N., & Amo-Agyei, S. (2018). *The transition in play: Worldwide employment trends in the electricity sector*. Research Department Working Paper No. 28. International Labour Office: International Labour Organisation (ILO). http://www.oit.org/wcms5/groups/public/---dgreports/---inst/documents/publication/wcms_625865.pdf [retrieved 7/11/19].

Ovadia, J. S. (2014). Local content and natural resource governance: The cases of Angola and Nigeria. *The Extractive Industry and Society*, 1.2, pp. 137-146, <https://doi.org/10.1016/j.exis.2014.08.002>

Ovadia, J. S. (2016). Local content policies and petro-development in Sub-Saharan Africa: a comparative analysis. *Resources Policy*, 49, pp.20-30, <https://doi.org/10.1016/j.resourpol.2016.04.003>

Sen, R. (2018). *Enhancing local content in Uganda's oil and gas industry*. WIDER Working Paper 2018/110. <https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2018-110.pdf>

UN. (2018). *Policy Brief 13: Interlinkages between energy and jobs*. Accelerating SDG 7 Achievement: Policy Briefs in support of the first SDG 7 review at the UN High-Level Political Forum 2018. Division for Sustainable Development Goals Department of Economic and Social Affairs United Nations. <https://sustainabledevelopment.un.org/content/documents/17495PB13.pdf>

UNEP. (2014). *Light and Livelihood: A Bright Outlook for Employment in the Transition from Fuel-Based Lighting to Electrical Alternatives*. UNEP. http://www.ecreee.org/sites/default/files/documents/news/light_and_livelihood_-_a_bright_outlook_for_employment_0.pdf

UNCTAD. (2016). *Extractive Industries and Sustainable Job Creation: Report of the Conference*. Geneva: UNCTAD. https://unctad.org/en/PublicationsLibrary/suc2016d1_en.pdf

Weiss, M. (2016). *The role of local content policies in manufacturing and mining in low- and middle-income countries*. Department of Policy, Research and Statistics, Working Paper 19/2016. UNIDO. https://www.unido.org/sites/default/files/2017-01/UNIDO_Working_paper_Local_content_policies_FINAL_15803__0.pdf

Suggested citation

Cooper, R. (2019). *Fossils fuels and job creation in Africa*. K4D Helpdesk Report 697. Brighton, UK: Institute of Development Studies.

About this report

This report is based on 6 days of desk-based research. The K4D research helpdesk provides rapid syntheses of a selection of recent relevant literature and international expert thinking in response to specific questions relating to international development. For any enquiries, contact helpdesk@k4d.info.

K4D services are provided by a consortium of leading organisations working in international development, led by the Institute of Development Studies (IDS), with Education Development Trust, Itad, University of Leeds Nuffield Centre for International Health and Development, Liverpool School of Tropical Medicine (LSTM), University of Birmingham International Development Department (IDD) and the University of Manchester Humanitarian and Conflict Response Institute (HCRI).

This report was prepared for the UK Government's Department for International Development (DFID) and its partners in support of pro-poor programmes. It is licensed for non-commercial purposes only. K4D cannot be held responsible for errors or any consequences arising from the use of information contained in this report. Any views and opinions expressed do not necessarily reflect those of DFID, K4D or any other contributing organisation. © DFID - Crown copyright 2019.

