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Enhancing local content in Uganda's oil and gas industry

Ritwika Sen*

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Abstract: This paper analyses policy options to promote local content in Uganda as it transitions into an oil-producing country. It contends that productive linkages between oil and gas exporters and domestic suppliers in a range of ‘connected’ goods and services sectors can be a source of broad-based economic growth. However, the success of policy initiatives or extensive regulatory requirements will ultimately hinge on domestic supplier capabilities to overcome barriers to entry into the global industry. The analysis comprises an evaluation of existing local content policies in Uganda, a mapping of the natural resource value chain, and an assessment of domestic firm capabilities to supply the anticipated demand for goods and services from the oil and gas industry.

Keywords: firm capabilities, local content, oil and gas, tax administration data, Uganda

JEL classification: O13, O14, O25, O55

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1 Introduction

The recent confirmation and ongoing development of commercial oil and gas resources in Uganda has given rise to two complementary effects. The first refers to the active engagement and accompanying investment decisions of international oil companies (IOCs), global service providers, and other experienced international oil industry actors. The second effect consists of an urgent national interest to participate in, and maximize the benefits from, anticipated capital investments in the burgeoning industry. In preparation, the government of Uganda has developed an extensive policy and regulatory framework with the aim to extend the growth benefits of the petroleum sector beyond its direct (and exhaustible) contribution to the economy. An important component of these policy efforts is ‘local content policies’ (LCPs), specifically targeted at enhancing national participation through opportunities for employment and productive linkages. LCPs comprise varied measures ranging from mandating, negotiating, or incentivizing the use of national labour and industry.

Natural resource discoveries offer countries a unique learning opportunity to develop the institutional capabilities required to promote local content. Sutton (2017) argues that a local content management programme is more likely to succeed if it starts with a narrow area of operation, such as extractive industries, and expands horizontally to a wider range of sectors. Features specific to the oil and gas industry also favour the implementation of LCPs, such as: the greater bargaining power of host governments relative to multinational corporations; a clear sequencing of work plans and engagement opportunities; and largely formal operations which entail the upkeep of regular procurement and tax records. However, international experience also cautions against a set of ‘pitfalls’ that often contribute to missed opportunities in this area. These include inflated government expectations regarding domestic workforce and industrial capabilities; over-reliance on regulatory mandates for local content use (or ‘x per cent’ local content requirements); delays in the timing of policy interventions relative to industrial activities; and, attempting to ‘do everything at once’ (Steenbergen and Sutton 2017).

This paper analyses policy options to promote local content in Uganda as it transitions into an oil-producing country.¹ As new entrants into a global industry, prospective domestic suppliers have limited (if any) competencies to provide exploration and production-related services or specialized ‘core’ industry operations in the short term. However, they can deploy (and upgrade) existing capabilities to competitively supply a range of ‘non-core’ or ancillary services to the oil industry, such as construction, food and beverages, accounting and legal services, to name a few. Although LCPs typically seek to foster employment linkages, in addition to backward and forward productive linkages at the firm level, this paper focuses solely on domestic supplier development aspirations. The analysis comprises an evaluation of existing LCPs in Uganda, a mapping of the natural resource value chain, and an assessment of domestic firm capabilities to supply the anticipated demand for goods and services from oil and gas exporters. This exercise is informed by industry interviews, secondary sources, and administrative data, including transaction-level value-added tax data from the Uganda Revenue Authority. The concluding section proposes policy initiatives to promote a feasible pattern of domestic integration in Uganda’s resource value chain.

2 Prospects for local supplier development

Oil and gas exploration in Uganda was first initiated by the British colonial administration in the 1920s. However, consistent efforts to investigate the country’s petroleum potential only began in earnest after

¹ It is anticipated that commercial oil production will commence in the year 2020–21.

the restoration of stability in an independent Republic of Uganda. The existence of commercializable oil resources was confirmed as recently as January 2006. At present, Uganda's oil resources are estimated at 6.5 billion barrels of oil equivalent, of which around 1.4 billion barrels are recoverable.² In addition, Uganda's gas resources comprise 170 billion cubic feet (bcf) of associated gas (found within the oil) and 500 bcf of non-associated or independent natural gas (MEMD 2017).³ 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.

Prospects for the development of a competitive local supplier base for the oil industry in Uganda depend on various factors, not least of which is the magnitude of the resource discovery itself. To put the scale of Uganda's newfound oil resources into perspective, Table 1 displays the recoverable oil reserves of selected oil-producing countries in the world (column 2). This is presented along with rates of daily production (column 4) and reserve-to-production or R/P ratios (column 5) as recorded at the end of 2016. The R/P ratio roughly indicates how long recoverable reserves will last for each country, assuming that the current rate of daily production is maintained.⁴ For example, Nigeria is reported to have 37.1 billion barrels of commercially recoverable oil reserves remaining, which will last for over 49 years at the observed daily production rate of 2,053 thousand barrels of oil per day (BoPD). Column 3 further indicates that Nigeria's recoverable reserves were approximately 27 times that of Uganda's proven oil resources as of the end of 2016.

Table 1: Uganda's oil resources compared to selected oil-producing countries

Country	Recoverable reserves (billions of barrels)	Reserves comparison (versus Uganda)	Daily production (‘000's BoPD)	R/P ratio
[1]	[2]	[3]	[4]	[5]
Saudi Arabia	266.5	190.36	12,349	59
Libya	48.4	34.57	426	310.1
Nigeria	37.1	26.50	2,053	49.3
Brazil	12.6	9.0	2,605	13.3
Angola	11.6	8.29	1,807	17.5
Mexico	8	5.71	2,456	8.9
Norway	7.6	5.43	1,995	10.4
South Sudan	3.5	2.50	118	80.9
Colombia	2	1.43	924	5.9
Rep. of Congo	1.6	1.14	238	18.4
Chad	1.5	1.07	73	56.1
Uganda	1.4	1.00	200	19.2

Source: author's calculations based on data from BP (2017) and PAU (2017).

For the case of Uganda, the use of the estimated peak rate of daily production (200,000 BoPD) for the calculation of the R/P ratio is indicative that 19–20 years is the *minimum* anticipated duration for which the country will be able to produce oil for commercial purposes. The government anticipates that the country's proven oil and gas resources (to date) will last for 20–30 years. As additional exploration and appraisal activities planned may lead to further resource discoveries, the estimated production period may in fact be prolonged. The area currently explored in the Albertine Graben, where Uganda's exploration activities are concentrated, represents less than 40 per cent of the total area with the potential for

² These estimates are measured in terms of *stock tank original oil in place*, which refers to the volume of oil estimated at reservoir temperature and pressure conditions.

³ Wolf and Potluri (2018) provide a detailed account of the timeline of past oil exploration and anticipated development and production activities in Uganda.

⁴ Although rates of daily production typically correspond to a bell curve distribution rather than a linear trend.

production (MEMD 2017). Put together, Uganda’s current resource scale and the potential for further discoveries suggest the following:

- The development of supplier capabilities in non-core or ancillary operations to service the oil and gas industry needs to be prioritized in the short term. This encompasses several less skill- and capital-intensive goods and service industries that are *not specific* to the oil industry (e.g., catering, construction, transport, and logistics). However, prospective suppliers are required to meet demanding industry-specific standards to qualify as approved vendors. This will require broad-based public, donor, or corporate initiatives to provide business and technical training to local suppliers.
- Specialization in technologically sophisticated ‘core’ exploration and production operations may be useful in the medium to long term. For this purpose, targeted training programmes (e.g. shadowing schemes) led by international industry actors will be needed to build requisite expertise among local firms and the workforce.

Uganda’s oil industry has received cumulative foreign direct investment (FDI) inflows worth US\$3.4 billion between 2001 and 2016 (Namubiru 2018). Going forward, it is anticipated that additional investments of over *six times* this magnitude (i.e. US\$ 20 billion) will be made over the next 3–5 years (Ssekatawa 2017). Although this represents a critical opportunity for local businesses, their integration in the supply chains of multinational corporations (MNCs) is unlikely to be automatic. An Industrial Baseline Survey commissioned jointly by IOCs in Uganda noted that only two sectors (security services and cement manufacturing) met the quantity *and* quality requirements of the oil industry as of 2013 (SBC 2013). Furthermore, 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. It is anticipated that opportunities in construction activities will commence in late 2018, with the peak period of activities around 2020–21. This implies that *urgent* policy action is needed to bolster domestic supplier preparedness. Otherwise, the possibility of missed opportunities in Uganda (as in many countries before) looms large.

3 The local content management framework

Legal structures governing resource extraction can aid the transformation of resource wealth into development. In the context of LCPs, the legal and regulatory framework serves to establish the formal ‘rules of the game’ by clarifying policy intent and scope, and (in some countries) by establishing targets, metrics, and institutional responsibilities for its assessment. Cross-country comparisons of local content outcomes in seven Latin American oil- and gas-producing countries by Herrera et al. (2016) suggest that a higher level of specificity in legal provisions may be associated with better local content outcomes. However, the authors observe that this is not a sufficient condition to guarantee desired policy outcomes, as countries (namely Ecuador and Colombia) with similar legal ‘specificity scores’ were reported to have vastly different performance.⁵ With that caveat in mind, this section describes and evaluates existing legal and regulatory requirements for local content faced by companies operating in Uganda’s oil and gas industry. The principles used for the assessment are threefold: (1) clarity of scope, including provisions for measurement; (2) presence of monitoring mechanisms; and (3) feasibility of implementation. Evidence for the third (admittedly subjective) criterion has been compiled on the basis

⁵ The authors attribute these findings to differences in the business climate between the two countries

of industry interviews and a comprehensive audit of the implementation of national content in Uganda's oil and gas sector by OAG (2015).⁶

3.1 Overview of local content requirements in Uganda's oil industry

The oil and gas sector in Uganda is guided by the National Oil and Gas Policy of 2008, whose goal is 'to use the country's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society'. In particular, the policy emphasizes the deliberate implementation of national participation in oil and gas activities through its objectives (vii) and (viii). These relate to optimum state and industrial participation in sectoral activities, the expansion of employment opportunities for citizens, and support for the development of competencies for national entrepreneurs and the workforce to competitively supply goods and services to the sector. In addition, a National Local Content Policy for the Oil & Gas Sector was ratified by the cabinet on 25 June 2018.⁷ The general principles laid out in the policy are further elaborated through the following laws and regulations:⁸

- Petroleum Exploration, Development and Production Act, 2013 (henceforth PEDP Act);
- Petroleum Refining, Conversion, Transmission and Midstream Storage Act, 2013 (henceforth PRCTMS Act);
- Petroleum Exploration, Development and Production Regulations, 2016;
- Petroleum Exploration, Development and Production National Content Regulations 2016 (referred to as PEDP NC Reg. in Table 2);
- Petroleum Refining, Conversion, Transmission and Midstream Storage Regulations 2016;
- Petroleum Refining, Conversion, Transmission and Midstream Storage National Content Regulations, 2016 (referred to as PRCTMS NC Reg. in Table 2).

These regulations are augmented through binding provisions incorporated within production sharing agreements (PSAs) with licensed operators. These contractual clauses provide for the training and employment of *suitably qualified* Ugandans, in addition to the payment of annual training fees to the government ActionAid (2017). However, as all PSAs with industry operators have not been made available publicly, these have not been included as part of the review of local content requirements.

The PEDP Act(2013) and PRCTMS Act(2013) guide the current institutional and regulatory framework for the governance of Uganda's oil and gas sector: the Directorate of Petroleum under the Ministry of Energy and Mineral Development (MEMD) is responsible for policy formulation and the licensing of petroleum activities. The Petroleum Authority of Uganda (PAU), established in 2013, is the regulatory body responsible for monitoring compliance in the petroleum sector. Finally, the Uganda National Oil Company was set up (also in 2013) to manage the state's commercial interests in the petroleum sector. Both the MEMD Directorate and PAU consist of 'National Content Units', with the former leading on aspects related to policy formulation, training, and enterprise development, whereas the latter

⁶ The first two criteria conform to the benchmarks used in the comprehensive catalogue of LCP frameworks compiled by the ELLA project (Herrera et al. 2016).

⁷ Albeit this document is not yet available in the public domain (Ampurire 2018).

⁸ The petroleum sector is also subject to laws and regulations such as the Health, Safety, and Environmental Regulations (2016), the Public Finance Management Act (2015), and the Income Tax Act (2015). These have been omitted as they do not directly pertain to the review of local content requirements.

primarily focuses on monitoring compliance. However, industry interviews indicate that in practice the two institutions encounter some overlap in their functions related to the enhancement of national participation (as PAU also undertakes initiatives for national content promotion from time to time). For the purposes of coordination and effective implementation, it may be advisable to clarify institutional responsibilities for local content promotion.

Table 2 provides an overview of regulations to enhance local content through requirements for local sourcing and supplier development activities.⁹ Laws and regulations (column 1) have been categorized according to instruments employed (in column 2) and their main provisions, which are outlined in column 3. These have broadly been classified on the basis of instruments employed, such as preferential treatment for Ugandan goods and service providers or joint venture provisions, among others. The upstream and midstream regulations (PEDP NC Reg. and PRCTMS NC Reg.) define ‘national content’ as:

- ‘The level of use of Ugandan local expertise, goods and services, Ugandan companies, Ugandan citizens, registered entities, businesses and financing in petroleum activities’; and
- ‘The substantial combined value added or created in the Ugandan economy through the utilisation of Ugandan human and material resources for the provision of goods and services to the petroleum industry in Uganda.’

The above definitions clarify two aspects of policy intent: (1) the scope of *local* content pertains to value created in the *national* economy as a consequence of petroleum activities; and (2) the contribution to value creation within the national economy is conditioned on the nationality of individuals, and the ownership of companies concerned (in spirit). Notably, the regulations define ‘Ugandan companies’ as those that are incorporated under the Companies Act (2012), provide value addition to Uganda, use available local raw materials, employ at least 70 per cent Ugandans, and are approved by the PAU.¹⁰

⁹ This is not a comprehensive overview of local content requirements as provisions related to direct employment and the training of Ugandan citizens have been omitted.

¹⁰ ‘Registered Entities’ are further defined as businesses owned by Ugandan citizens registered under the Business Names Registration Act or Partnership Act 2010.

Table 2: Overview of legal requirements for local sourcing and supplier development

Relevant act or regulation [1]	Instrument [2]	Detailed requirements [3]
Part II Sec. 8 PEDP NC Reg. Part II Sec. 8 PRCTMS NC Reg.	Preparation of National Content Plans (Qualitative specifications)	Licensees are required to submit plans detailing the prioritization of: (a) Goods produced or available in Uganda, subject to quality standards and timeline requirements; (b) Services offered by Ugandan companies, registered entities, and citizens during the evaluation of bids.
Part VIII Sec. 125 PEDP Act Part II Sec. 9(1) PEDP NC Reg. Part VII Sec. 53 PRCTMS Act Part II Sec. 10(1) PRCTMS NC Reg.	Preferential treatment (Qualitative specifications)	First consideration required for: (a) Goods and services produced <i>and</i> available in Uganda; (b) Services rendered by Ugandan citizens and companies.
Part II Sec. 9(2–4) PEDP NC Reg. Part II Sec. 10(2–3) PRCTMS NC Reg.	Joint venture provision (Quantitative restriction)	(a) Where goods and services required are not available, procurement permitted from a company involved in a joint venture with a Ugandan Company; (b) Ugandan company must have 48 per cent participating interest (upstream reg.); (c) Ugandan company must be approved by the PAU, based on technical and financial competence, experience, active participation, etc.
Part II Sec. 9(6–7) PEDP NC Reg. Part II Sec. 10(4) PRCTMS NC Reg.	Express authorization requirement	Where Ugandan citizens and firms do not meet required quality/competence: (a) Licensee may use another company with permission from the PAU; (b) This must be within a period specified by the PAU (c) Licensee <i>may</i> develop a supplier development programme (upstream reg.).
Part II Sec. 11(1–4) PEDP NC Reg. Part II Sec. 10(4) PRCTMS NC Reg.	Reserved schedule of goods and services (Import restrictions)	(a) Specified list of goods and services to be exclusively provided by Ugandan companies, registered entities, and citizens (b) Recommendation for unbundling of contracts to reduce the size, complexity, and scope of works for domestic producers (c) Where required quality of reserved goods and services is not available, licensee may procure from another company (with permission from PAU).
Part II Sec. 12–13 PEDP NC Reg., Part II Sec. 12–13 PRCTMS NC Reg.	Procurement principles (Quantitative restrictions)	(a) Mandatory inclusion of national content in bid evaluation criteria (b) Must account for at least 10 per cent of total evaluation score based on: – employment and training of Ugandan citizens; – utilization of local goods and services; – proposals for technology transfer; (c) When bids are within 5 per cent of each other based on financial evaluation the bid with highest national content will be chosen. (d) Contracts with a value in excess of US\$1,000,000 must contain

Part II Sec. 12–13 PEDP NC Reg., Part IV Sec. 30 PRCTMS NC Reg.	Enhancing supplier–buyer linkages (National Suppliers Database)	a labour clause mandating the use of Ugandan labour in specific categories. (a) The PAU shall develop a National Suppliers Database (b) All oil and gas industry suppliers are required to register (c) PAU (along with licensees) shall develop qualification criteria (d) PAU shall undertake qualification of suppliers on an annual basis and invite applications through national and international advertisements (e) PAU is required to publish the list of qualified suppliers on 31 December.
Part II Sec. 23 PEDP NC Reg. Part II Sec. 23 PRCTMS NC Reg.	Technology transfer and training Requirements (Qualitative)	(a) Licensees must submit annual plans detailing initiatives for transfer of technology, know-how, and skills (b) They must also submit annual reports of accomplishments (c) Licensees shall support technology transfer by encouraging joint ventures (d) Further, licensees are required to organize in-country events to connect international companies, Ugandan companies, citizens, and registered entities
Part III Sec. 25 PEDP NC Reg. Part III Sec. 25 PRCTMS NC Reg.	Reporting requirements	(a) Licensees must submit quarterly and annual NC performance reports (b) A national content performance report must specify: – national content expenditure levels – employment of Ugandan citizens and foreign workers in hours or days worked – training and employment of Ugandan citizens (name, job, level) – procurement of locally manufactured materials versus imports – details of Ugandan companies, citizens, and registered entities contracted – technology transfer, R&D, and training programmes undertaken.

Source: author's summary based on acts and regulations cited in Column 1.

3.2 Evaluation of local content requirements

Table 2 highlights the use of mandatory local content requirements implemented through preferential treatment for local suppliers, minimum participating interests in joint ventures, import restrictions, and procurement provisions. Additional procurement principles (not listed in the above summary) related to the unbundling of contracts, establishment of tender information offices, and requirements to provide feedback to unsuccessful bidders are targeted towards improving the likelihood of successful bids by local suppliers. The compilation of a National Suppliers Database by the PAU is also intended for this purpose. International experience suggests that an assertive (rather than aspirational) goal-setting approach to local content regulation is more likely to succeed only where there is pre-existing capacity among local firms and individuals to supply the industry (Tordo et al. 2013). In Uganda's case, a focus on implementable outcomes, combined with supplier development initiatives, is more likely to yield positive results. This section assesses the various LCPs on the basis of this criteria.

Clarity of scope and provisions for measurement

The upstream and midstream national content regulations make explicit provisions to foster national industrial participation in the oil and gas sector. While there are no mandatory minimum levels specified in relation to this objective, provisions related to minimum joint venture participating interests (48 per cent), the reserved schedule of goods and services, and bid evaluation criteria regarding national content (10 per cent of the total evaluation score, and a 5 per cent cost margin) establish a lower bound. However, there are points of ambiguity in the regulations which stem from the definition of 'Ugandan companies' and local goods.

As stated earlier, a Ugandan company is defined as one that is incorporated under the Companies Act (2012), provides value addition to Uganda, uses available local raw materials, employs at least 70 per cent Ugandans, and is approved by the PAU. This stringent definition encompasses only a subset of companies registered in Uganda, regardless of ownership or control. In other words, 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. At the same time, a Ugandan-owned company which employs only Ugandan nationals and specializes in the assembly of imported parts may or may not be considered 'Ugandan', depending on the availability of locally produced input substitutes. In relation to the primary intent of LCPs—that is, value creation that is retained within the national economy, employment generation, and the deepening of domestic industrial capabilities—both companies should ideally qualify as 'local'. The definition further complicates the reporting and measurement of local content through the procurement records of licensees, contractors, and subcontractors. While it may be feasible for the procurement departments of IOCs to report on purchases from domestically registered companies or even domestically owned companies, the administrative costs of discerning whether each supplier is indeed 'Ugandan' as per the law (in the case of reporting companies and the evaluating authority) may be unreasonably high.

The second point of ambiguity, as also noted by OAG (2015), stems from the lack of clarity regarding what constitutes a local good or service. For instance, part II section 9 of the upstream national content regulations requires that licensees accord first preference to the procurement of goods produced and readily available in Uganda, and services rendered by Ugandan citizens and companies. However, the more quantitative (and specific) bid evaluation criteria under section 13(b) of the same regulations provides for the evaluation of national content (accounting for no less than 10 per cent of the evaluation score) based on utilization of 'local goods and services', among other criteria. Without clarity on what constitutes 'local' in this regard, there is no guarantee that even Ugandan companies will provide goods that are produced in-country. The OAG (2015) report consequently recommends that procurement

reports reflect whether goods purchased (regardless of company classification) are indeed imported or domestically produced. This recommendation has since been incorporated under reporting requirements for licensees under section 25 of both the upstream and midstream regulations. However, the definitions continue to remain unclear.

Presence of monitoring mechanisms

Monitoring processes related to the implementation of national content regulations are well established. Licensees are required to submit quarterly and annual reports detailing their performance in this regard (see Table 2 for further details). These reports are evaluated by the PAU in relation to national content programmes prepared and submitted by licensees within 12 months after the granting of a license. As a result, even though there are no established ‘annual targets’ related to the participation of national industry, performance can be evaluated against company-specific plans that are ratified by the PAU.¹¹ However, neither the company-specific plans for the use of national content, nor the reports of their achievements in this respect are made available to the public. The public release of documents detailing planned and achieved procurement of locally produced goods and services by IOCs (and their subcontractors) could enhance transparency, while providing an information resource for aspiring suppliers.

Feasibility of implementation

The ability to implement the regulations outlined above ultimately hinges on the preparedness of domestic firms to supply goods and services of the quality and scale required by the oil industry. Anecdotal evidence from industry interviews and national supplier information workshops suggests that international companies are committed to finding solutions that involve local content. This could involve the unbundling of supply contracts and process innovation in project design to facilitate local sourcing. However, IOCs and their contractors are also very clear about their expectations from suppliers. This consists of requirements for health, safety, and environmental standards, business conduct and ethics, and financial and operational controls, among other provisions.¹² These expectations, currently beyond the reach of several domestic suppliers, are considered necessary for firms to pre-qualify for competitive tendering processes. Ugandan oil and gas suppliers interviewed by SBC (2013) indicate that key obstacles to development encountered by them include: visibility over demand, required infrastructure improvements, high borrowing costs, workforce skills deficit, demanding quality standards, and the capacity of suppliers. Although concerted policy efforts to address the first two issues have been made (or are planned), there are limited capability development interventions and supplier credit-facilitation initiatives in place. In this regard, it is critical for the government to expedite its plans for an Industry Enhancement Centre to provide training, matching, and financial advisory services to domestic suppliers. Box 1 describes an ongoing donor-funded initiative in Uganda (the E4D/SOGA programme) that provides health, safety, and environment (HSE) and bid management training to local suppliers.

¹¹However, there are annual targets laid out by the regulations related to the direct employment and training of Ugandan citizens. For instance, at least 30 per cent of management staff should consist of Ugandans at the start of petroleum activities. This should increase to at least 70 per cent within five years after the start of activities (part II, section 17 PEDP NC Reg.).

¹²For example, Fluor (2018) outlines business conduct and ethics expectations for suppliers by Fluor Corporation, which is a prospective EPC contractor for the Tilenga project.

Box 1: Employment and Skills for Eastern Africa (E4D/SOGA)^a

The E4D/SOGA project aims to promote local skills development and enterprise capabilities to enable participation in natural resource-based industries. The project is funded jointly by BMZ, UKAID, NORAD, and Shell, and implemented by GIZ GmbH. E4D/SOGA is supporting local suppliers in Uganda's oil industry through HSE training (phase I) and bid management training (phase II).

Phase I was implemented through 2016–17 in partnership with E360 (a Ugandan firm specialized in HSE training), Astutis (a leading international HSE training provider), and the Association of Ugandan Oil and Gas Service Providers (AUGOS). This project phase was implemented in three stages to enable 30 local companies to successfully adopt industry-compliant HSE practices. In the first stage, 30 companies and 60 participants were selected in consultation with AUGOS, and firm-level training needs were assessed. In the following stages, participants underwent two weeks of in-house tailored HSE training, and two months of coaching at the firm level to implement company-specific HSE changes. Preliminary results suggest that 24 companies perceive that they are better equipped to win tenders, and 128 supplier agreements have been made. A total of 462 jobs have been created as a result of the increase in contracts awarded to these companies.

Following the positive impact from phase I, E4D/SOGA (in conjunction with E360) is implementing a second phase aimed at improving the competitiveness of Ugandan enterprises in bidding processes. Over 230 companies applied to participate in the training, of which 40 companies and 80 decision-makers were selected through a competitive process. This ongoing initiative (launched in January 2018) plans to train the 40 selected enterprises in market research, the development of sales master plans, pricing strategies, financial planning, and the setting up of strategic partnerships. Twenty of the participating enterprises will further receive support through individual mentoring and coaching.

^a Compiled by the author based on information shared by the E4D/SOGA Project.

4 Assessing domestic supplier capabilities in Uganda

The overview and assessment of local content requirements in Uganda's oil and gas sector underscores the importance of 'bridging the gap' between existing supplier capabilities and the requirements of the industry. Estimates from a baseline survey (SBC 2013) suggest that the natural resource sector in Uganda can generate up to 150,000 indirect and induced jobs (at its peak) if domestic supplier integration in natural resource value chains is realized. This section aims to collate evidence on existing domestic supply linkages to the natural resource sector, and the capabilities of prospective oil and gas suppliers to inform the policy process. In particular, the analysis is structured to answer two key questions: (1) How are local firms integrated into the natural resource value chain in Uganda? (2) What capabilities do domestic firms have to enter the resource value chain?¹³

¹³The latter is with a specific focus on the oil and gas sector.

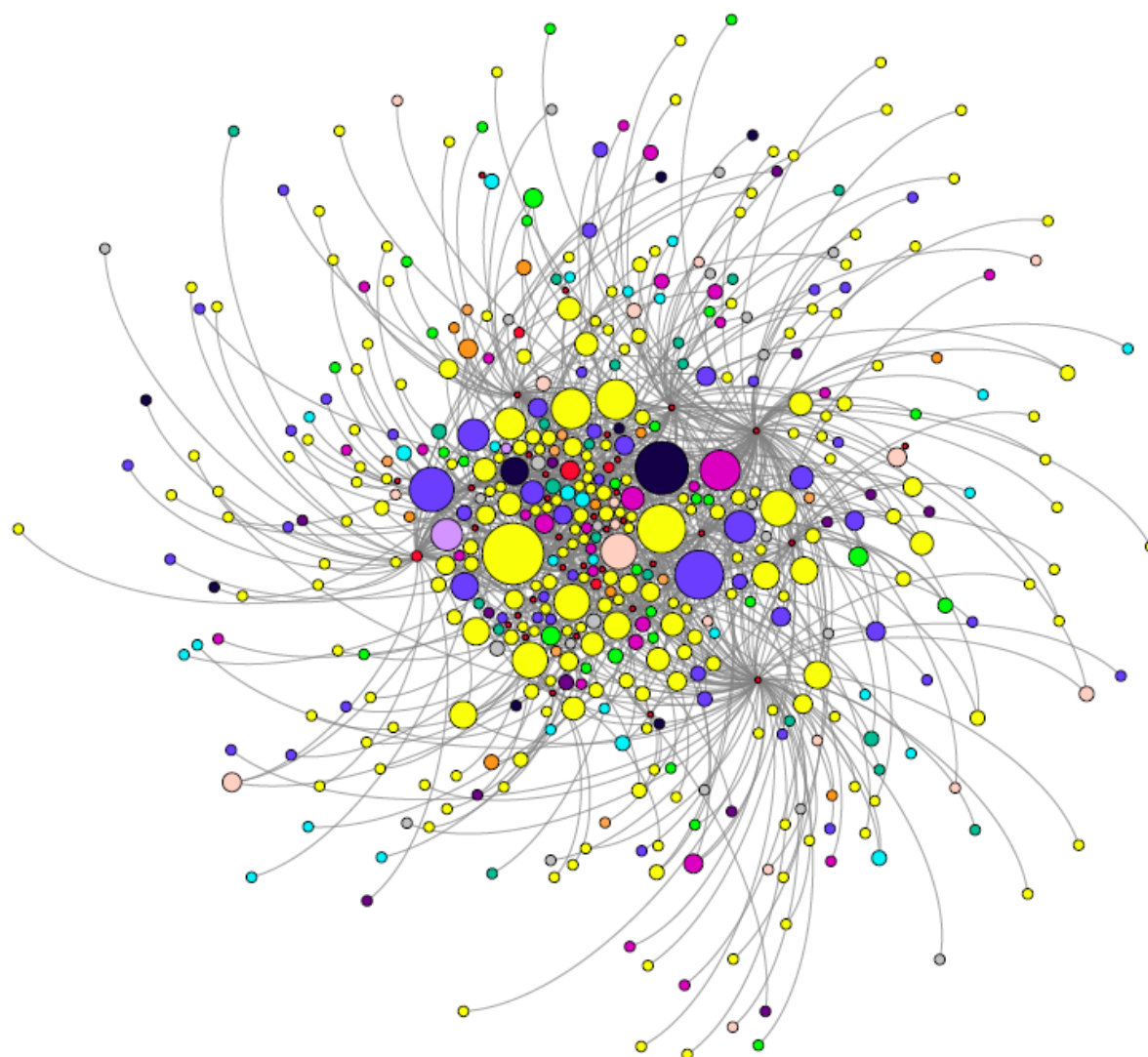
4.1 How are local firms integrated into the natural resource value chain?

To ascertain the extent and nature of domestic supplies to the natural resource sector, I examine transaction-level value-added tax (VAT) declarations in Uganda. These returns include all reported purchase transactions by the natural resource sector (i.e. oil, gas, and mining), which are listed along with the (anonymized) tax identification numbers of sellers. This feature of the dataset allows me to identify the sectors which firms that sell to the natural resource sector correspond to. VAT in Uganda is payable by individuals, businesses, and corporate entities with business sales over 150,000,000 Ugandan shillings (UGX; approximately US\$40,000) per annum. Notably, this threshold was raised from 50,000,000 UGX (US\$13,000) by the VAT Amendment Act (2015) that came into force in the fiscal year 2015/16. The dataset utilized for the purposes of this study corresponds to the period 2010–14/15 (as more recent periods were not available due to data access limitations). Consequently, the analysis pertains to the universe of reported purchase transactions by the natural resource sector, from tax-paying domestic firms with annual turnover above US\$13,000. While this would typically constitute an important limitation for the analysis of nationally representative firm capabilities in Uganda, our focus is limited to the subset of firms with the potential to supply an international industry. Therefore, tax compliance and earnings above minimum-income thresholds (for taxation purposes) amount to prerequisites for the identification of these firms. The largely formal nature of procurement within the natural resource sector (especially oil and gas operators) also lends itself to this analysis.

Figure 1 presents a mapping of input supply relationships in Uganda’s natural resource sector corresponding to the fiscal year 2014/15. Each node (or circle) represents a firm, and each connecting edge represents the presence of a supply relationship between two firms in the fiscal year 2014/15. Nodes have been coloured according to their sector of operation, where red nodes (categorized under ‘mining and quarrying’) represent purchasing firms from the natural resource sector. These also include firms from the oil and gas sector. Due to the limited number of oil and gas operators in the economy, the analysis has been conducted at the aggregate natural resource sector level in order to prevent the identification of any one firm. The layout of the network has been adjusted to concentrate more-connected firms (ones with a higher number of supply relationships observed) at the centre, and isolate less-connected firms at the periphery.¹⁴ The size of nodes has further been scaled in proportion with the number of firms that a given firm has a supply relationship with (note that this is distinguished from buyer relationships, as a result of which natural resource firms are typically smaller in size unless they also sell to other natural resource firms). The fan-like structures emanating from natural resource firms in this graph is a result of representing only direct-purchase relationships. In other words, Figure 1 does *not* depict the suppliers of suppliers, and so on.

¹⁴The Force Atlas2 layout was used for purposes of spatialization using Gephi network visualization software. This is a force-directed layout wherein nodes repulse each other like charged particles, and edges counteract this by attracting their nodes like springs. The position of nodes in the resulting layout is dependent on the position of other nodes and the connections between them. See Jacomy et al. (2014) for further details.

Figure 1: Domestic suppliers in Uganda's natural resource value chain, FY 2014/15



Legend:

Yellow	Wholesale & retail (43.97%)
Blue	Manufacturing (10.22%)
Red	Mining & quarrying (7.98%)
Green	Construction (5.93%)
Magenta	Transportation & storage (5.73%)
Cyan	Professional, scientific & technical activities (5.52%)
Teal	Administrative & support activities (4.09%)
Orange	Financial & insurance activities, and other services (3.68%)
Light orange	Information & communication (3.48%)
Dark purple	Accommodation & food service activities (2.66%)
Dark blue/black	Electricity, gas, steam and air conditioning supply (1.84%)
Light purple	Water supply (0.41%)
Grey	Other (4.49%)

Source: author's illustration based on data from the Uganda Revenue Authority.

The mapping of domestic suppliers in Uganda's natural resource value chain illustrates that there is indeed a population of local goods and service providers that sell to the sector. However, these supply transactions are dominated by trades with the retail and wholesale sector, which account for almost half of the supply connections in the graph. This includes the purchase of largely imported products such as motor vehicle parts and accessories, motor vehicles, machinery, and equipment, among others. The manufacturing sector ranks second among suppliers in terms of connections in the network (estimated at 10 per cent of the whole). A handful of manufacturing firms (shown in blue) dominate the supplier network, trading with the majority of natural resource firms. These include manufacturers of plastic products, fabricated metal products, batteries and accumulators, and cement, plaster, and lime, to name a few. A small population of manufacturers is also observed at the periphery of the network. These firms only trade with a subset of natural resource sector buyers, and include manufacturers from a variety of sub-sectors such as manufacturers of basic iron and steel, soft drinks, pulp, paper, and paper-board. The construction sector (in neon green), which accounts for 6 per cent of connections in the network, appears to be fairly well spread out across the core and the periphery, with no evidence of any one dominant supplier. The transportation and storage sector (in pink) supplies a variety of services to the natural resource sector, including cargo handling, warehousing and storage, freight, and land transport. Of these, the cargo-handling sub-sector is observed to be the most 'connected' and consists of a few key suppliers that most buyers are dependent on. Other less-connected sectors that demonstrate the presence of 'lead firms' in the supplier network include information and communications (light pink), water supply (light purple), and electricity, gas, steam, and air-conditioning supply (navy blue).

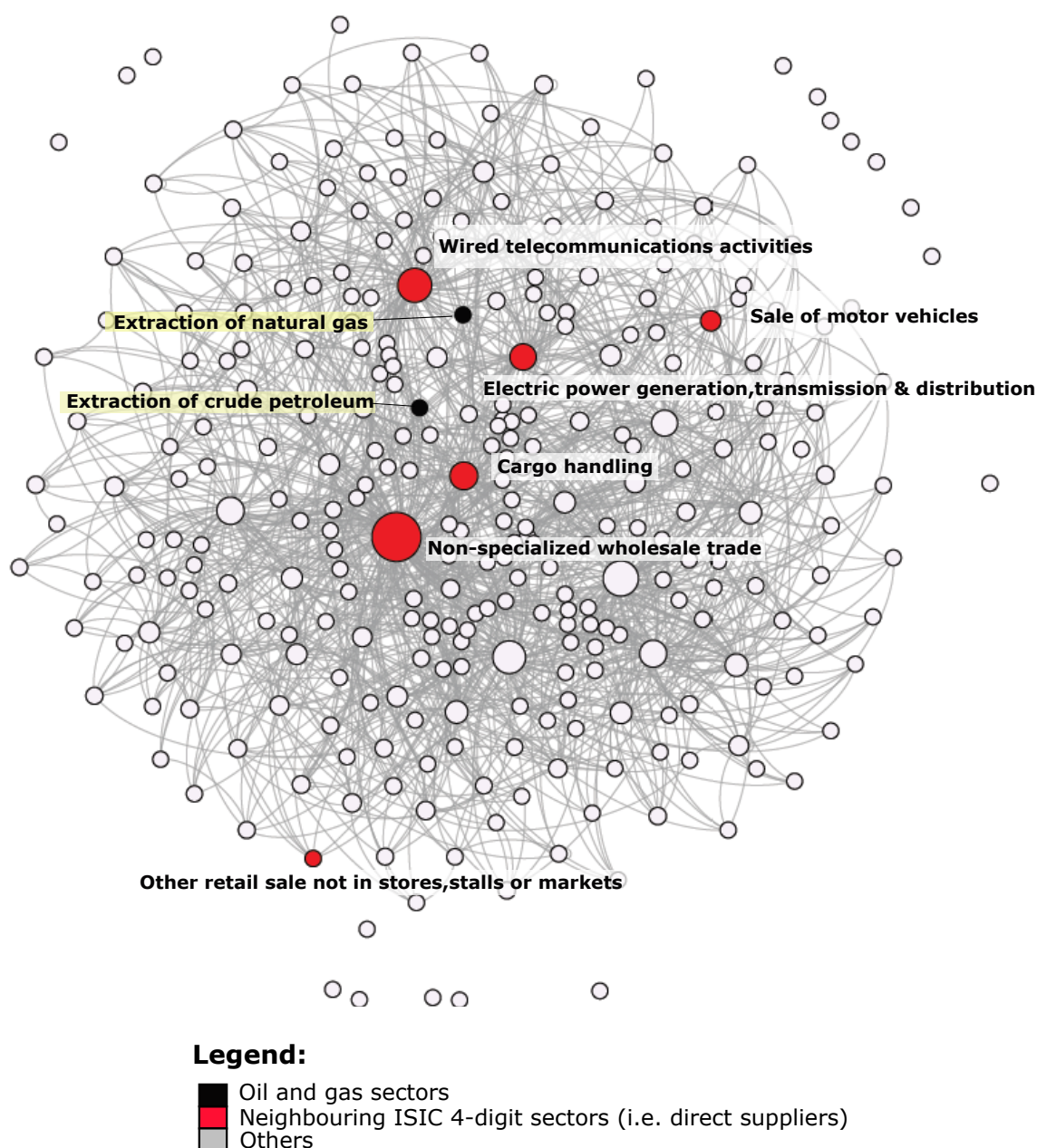
The limited purchase of domestically manufactured goods and services by the natural resource sector (as a whole) depicted in Figure 1 calls into question the growth policy relevance of fostering supply linkages to the (more narrowly defined) oil and gas industry. In fact, Tordo et al. (2013: 7) find that direct-purchase linkages from the oil and gas industry, across 48 countries, is lower than that of other sectors. The authors note that few, if any, industries display a lower level of direct backward linkages. Utilizing actual input purchase transactions recorded in Uganda's VAT dataset (rather than estimates based on input-output tables), I confirm that this may also be the case for the current country context.

Figure 2 depicts input-supply relationships across industries in the entire (formal) Ugandan economy in FY 2014/15. Each node now represents an industry (defined at the ISIC Rev. four-digit level). Edges represent the presence of supply relationships across industries. Supply relationships (or edges) have only been depicted for industries if the number of transactions between a given buyer-supplier industry pair exceeds 5 per cent of the buyer's total purchase transactions over the period. Other aspects of the graph's layout correspond to that of Figure 1—that is, more connected industries are positioned at the core, and nodes have been scaled up on the basis of supplier 'connectedness'. However, the colour scheme has now been used to highlight the *direct* backward linkages from the oil and gas industry (coloured in black) to other supplier industries (coloured in red). Corresponding to the purchases observed at the firm level from the natural resource value chain, I find that the oil and gas industry (while still in its exploration and appraisal phase) purchased goods and services from the wholesale and retail trade, transport and storage, electric power generation, transmission and distribution, and information and communications sectors. However, the number of grey-coloured nodes underscores the numerous domestic industries that oil and gas companies were *not* making significant purchases from. While it is anticipated that the number of direct supply linkages to the oil and gas industry will increase with the commencement of the engineering, procurement, and construction phase (followed by production and operations and maintenance), the extent of these incremental linkages will be limited by the capabilities of domestic suppliers relative to the barriers to entry into the industry.

The network graph in Figure 3 extends the notion of productive linkages to encompass not only direct suppliers to the oil and gas industry, but also *indirect* linkages through the industries which (in turn) sell inputs to supplying industries. This broader definition of backward linkages conforms to the approach first proposed by Chenery and Watanabe (1958) using input-output tables as discussed by Tordo et al.

(2013: 164–65). Using actual purchase transactions recorded between the oil and gas industry (depicted in black), its direct suppliers (in red), and the suppliers of suppliers (yellow nodes), the economic reach and potential impact of the industry becomes much more apparent. Indirect suppliers that will be affected by the anticipated increase in demand from oil and gas companies include industries as diverse as short-term accommodation providers, plastic product manufacturers, and manufacturers of fabricated metal products.¹⁵ Notably, as the oil industry establishes further direct supply linkages (with the construction sector, for example), the network of indirect suppliers reached will grow exponentially.

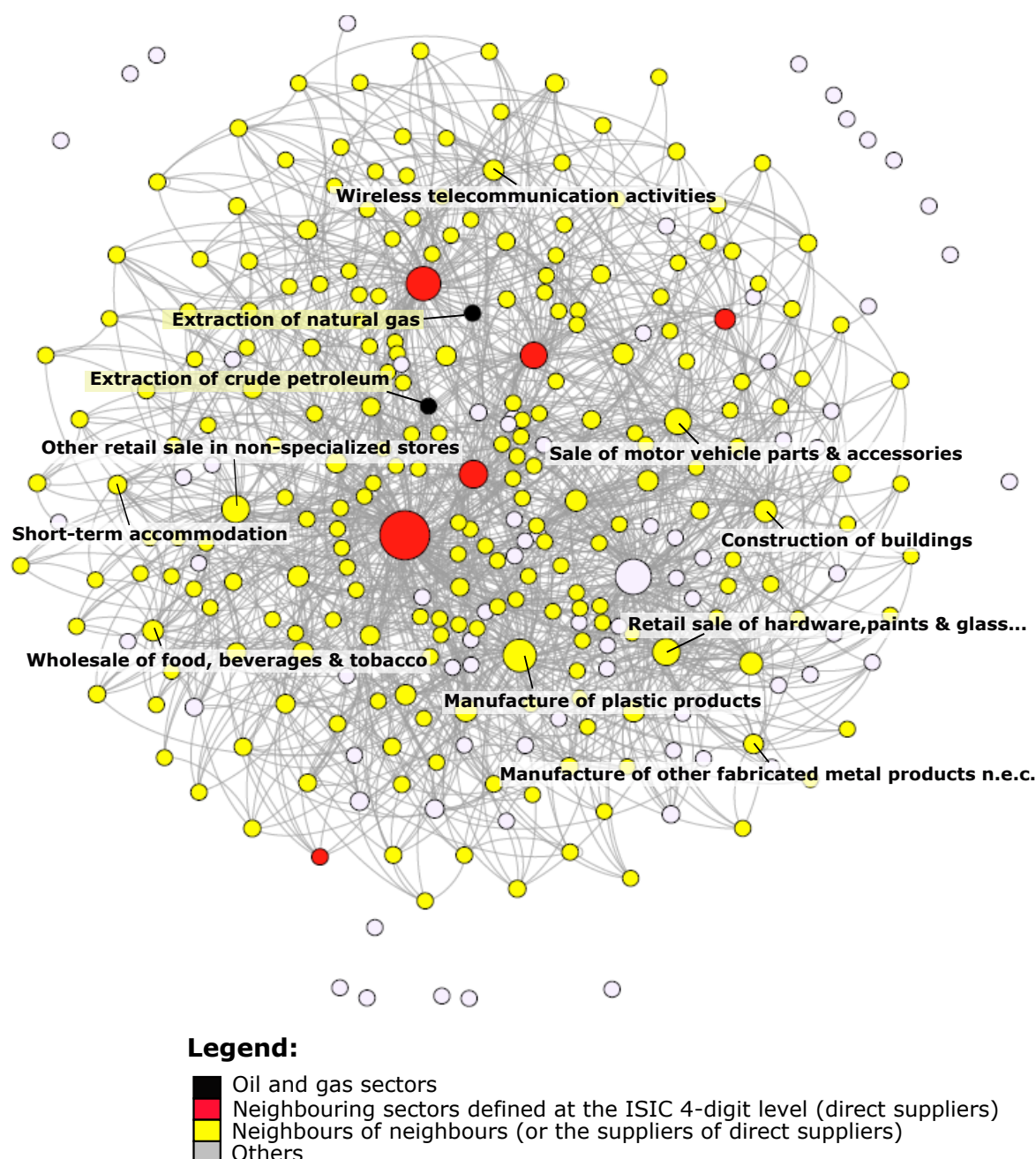
Figure 2: Direct backward linkages from the oil and gas sector, FY 2014–15



Source: author's illustration based on data from the Uganda Revenue Authority.

¹⁵For purposes of concise presentation, only select industries have been labelled in Figure 3.

Figure 3: Direct and indirect backward linkages from the oil and gas sector, FY 2014–15



Source: author's illustration based on data from the Uganda Revenue Authority.

The analysis of linkages through purchase transactions has important implications for the study of local content, and interventions required to support domestic preparedness for the upcoming increase in supply opportunities. Direct suppliers to oil and gas companies will need to ensure that their own supply chains (including domestically produced and imported input suppliers) are equipped to service the increase in production required to meet contractual obligations. To this end, the government of Uganda has access to an invaluable resource through its VAT transaction records (filed on a monthly basis) and ASYCUDA customs data (recorded at the transaction level). The analysis of these records, in conjunction with industry consultations, can help to create an evidence base to inform the design of targeted supplier development and support initiatives. This can be attained at little incremental cost to the government.

4.2 What capabilities do domestic firms have to enter the resource value chain?

Despite heightened public interest (and an elaborate regulatory framework) to enhance national participation in the oil sector, there is still limited evidence on supplier capabilities to service the industry. Available information sources include a slightly dated Industrial Baseline Survey commissioned by IOCs (SBC 2013), and a National Suppliers Database maintained by the PAU. The National Suppliers Database is a useful tool to provide basic information on registered suppliers, as sectoral regulations require all prospective suppliers (whether domestic or foreign) to be registered on the database.¹⁶ This includes data on company names, business type, sector of operation, business category, country of registration, physical address, and additional information (if any). As of 28 February 2018, 1,277 suppliers were registered on the National Suppliers Database, of which 75 per cent were companies incorporated in Uganda. However, the National Suppliers Database does not convey *any* information on supplier capabilities in its current form.¹⁷ This subsection consequently draws on novel administrative data sources (e.g. VAT and PAYE datasets maintained by the revenue authority) to augment the publicly available information on domestic supplier capabilities.

Table 3 examines the composition of the National Suppliers Database at the broad sector level. The table presents the number of domestic and foreign suppliers, classified on the basis of country of registration, in columns 2 and 3 respectively. Rows corresponding to sectors (listed in column 1) which feature in the schedule of goods and services reserved for domestic supply are highlighted in maroon. The darker shade of maroon implies that the whole sector has been reserved for domestic suppliers, whereas the lighter shade indicates that only specific sub-sectors have been reserved. For example, the transportation and clearing and forwarding sub-sectors have been reserved for purposes of domestic supply. However, this does not include all the sub-sectors that feature under ‘transport and storage’, such as warehousing and storage. Column 4 displays a representative measure of the capabilities of domestic firms under each sector. This indicator measures the number of domestic firms from each sector that feature in the top 5 per cent (i.e. above the 95th percentile) of most ‘productive’ firms in Uganda. The measure of productivity utilized here corresponds to sales or revenue earned per worker, and has been constructed by combining firm-level sales information from monthly VAT returns with employment information from monthly PAYE tax returns.

A few limitations of the data in Table 3 should be noted. The measure of revenue per worker was constructed using yearly averages for firms corresponding to each sector over the period 2010–14/15. However, the number of suppliers registered on the National Suppliers Database corresponds to a single point in time (suppliers registered in Uganda as of 28 February 2018). There is also no reason to suppose that the sample of domestic firms listed in the National Suppliers Database corresponds (wholly) to the sample of firms which filed PAYE and VAT returns between 2010–14/15, although these are all tax-paying firms. In spite of these limitations, the summary indicator in Column 4 conveys useful information for two reasons:

- For any given sector the presence of non-zero firms among the most productive firms in the economy is indicative that it is indeed a competitive sector with high growth potential. This suggests the sector’s importance from an economic policy perspective, and should feature in the prioritization of any supplier development initiatives rolled out by the government.

¹⁶Requirements for inclusion in the database include: evidence of business registration, social security provisions for employees, tax compliance, and possession of a bank account.

¹⁷Future phases of the National Suppliers Database may include a joint qualification system, and an e-market for the procurement of goods and services.

- Information on the number of firms in a sector that are above the productivity threshold relative to the total number of firms assessed is indicative of the presence (and probability) of a small or mid-sized population of highly productive domestic firms in a particular sector. This can help the government and IOCs to identify sectors in which supplier integration may be feasible and targeted in the short term.¹⁸

Table 3: Oil and gas suppliers in Uganda: by sector and selected variables

Sector	Registered suppliers		Domestic firms in top 5 per cent
	in Uganda	abroad	above 95th percentile/total assessed
[1]	[2]	[3]	[4]
Accommodation and food service	36	2	0/1059
Administrative and support activities	35	6	1/977
Agriculture, forestry, and fishing	5	0	9/369
Arts, entertainment, and recreation	1	0	0/172
Construction	158	42	7/3119
Education	10	1	0/78
Electricity, gas and air-conditioning supply	23	6	12/203
Financial and insurance activities	37	1	8/265
Human health and social work activities	27	3	1/155
Information and communication	59	12	9/841
Manufacturing	52	79	44/1673
Mining and quarrying	26	32	3/123
Other service activities	138	26	0/1005
Professional, scientific, and technical activities	173	69	2/1208
Public administration and defence	1	0	1/799
Real estate activities	12	0	7/654
Transportation and storage	99	20	7/1015
Water supply, sewerage, waste management	16	10	0/85
Wholesale and retail trade	53	7	202/8058

Source: author's calculations based on data from the PAU and the Uganda Revenue Authority.

Overall, the data presented in Table 3 highlight a number of notable features. Columns 2 and 3 indicate that foreign suppliers outnumber domestic suppliers in the manufacturing and mining sectors. A closer look at the data reveals that foreign manufacturers typically dominate more technologically complex sub-sectors such as the manufacture of other electrical equipment, special-purpose machinery, and chemical products. This pattern conforms to expectations, as these industries are currently beyond the reach of Uganda's domestic industrial capabilities and have limited potential for local content development.

Column 4 further confirms the results of Spray and Wolf (2017), that high-productivity sectors in Uganda primarily consist of services (including information and communications, construction, transport and storage, wholesale and retail trade) and manufacturing sectors. Narrowly defined industries within these aggregate high-productivity categories (e.g., cargo handling, wireless telecommunication activities) that have the potential to supply the oil and gas industry along with a wider range of economic sectors may be relevant candidates for targeted supplier development initiatives. Fostering these 'connected' and high-productivity industries can result in broad-based and sustainable economic gains. Notably, Spray and Wolf (2017) also find that the growth of productivity and output in these industries is a strong indicator of overall economic growth. However, it is worth emphasizing that even in the case of more productive and connected manufacturing and service industries (where a stronger economic case for local content can be argued), it is imperative to consider the costs and benefits of various policy options to foster local content. Mandating local content requirements in these sectors can risk exacerbating supply bottlenecks

¹⁸Ideally this analysis should be conducted at the sub-sector level to guide policy action.

(while raising input costs), not only in the oil industry, but all other industries that are connected through backward linkages.

The row-colour scheme identifying reserved goods and services, coupled with the productivity measure (column 4) highlight concerns that the accommodation and food service sector and water supply, sewerage, and waste management sector may be under-prepared to service the industry. Detailed assessments by the oil industry in SBC (2013) observed that the catering of camp facilities, food supply, and hazardous waste management industries were below required standards in 2012. Indeed, due to the lack of internationally recognized standard certification in occupational health and safety (ISO 45001) and quality management systems (ISO 9001:2008), no domestic catering firms were awarded contracts during the oil exploration phase in Uganda (Atuhairwe 2018). A more optimistic picture has emerged in the treatment of hazardous wastes sector, where the country has evolved from having non-existent capabilities (in 2013) to state-of-the-art facilities, such as a US\$20 million oil waste treatment plant in Nyamasoga (Box 2).

Box 2: From zero to excess capacity in Uganda's hazardous waste management industry^a

An Industrial Baseline Survey conducted in 2013 noted that no Ugandan companies were equipped for hazardous waste management. Firms engaged in this area typically handle the collection, transportation, and storage of hazardous waste, and the collection of oil-based mud cuttings from drilling activities. However, the capabilities of local firms were limited to only local transportation and waste disposal at the time (SBC 2013).

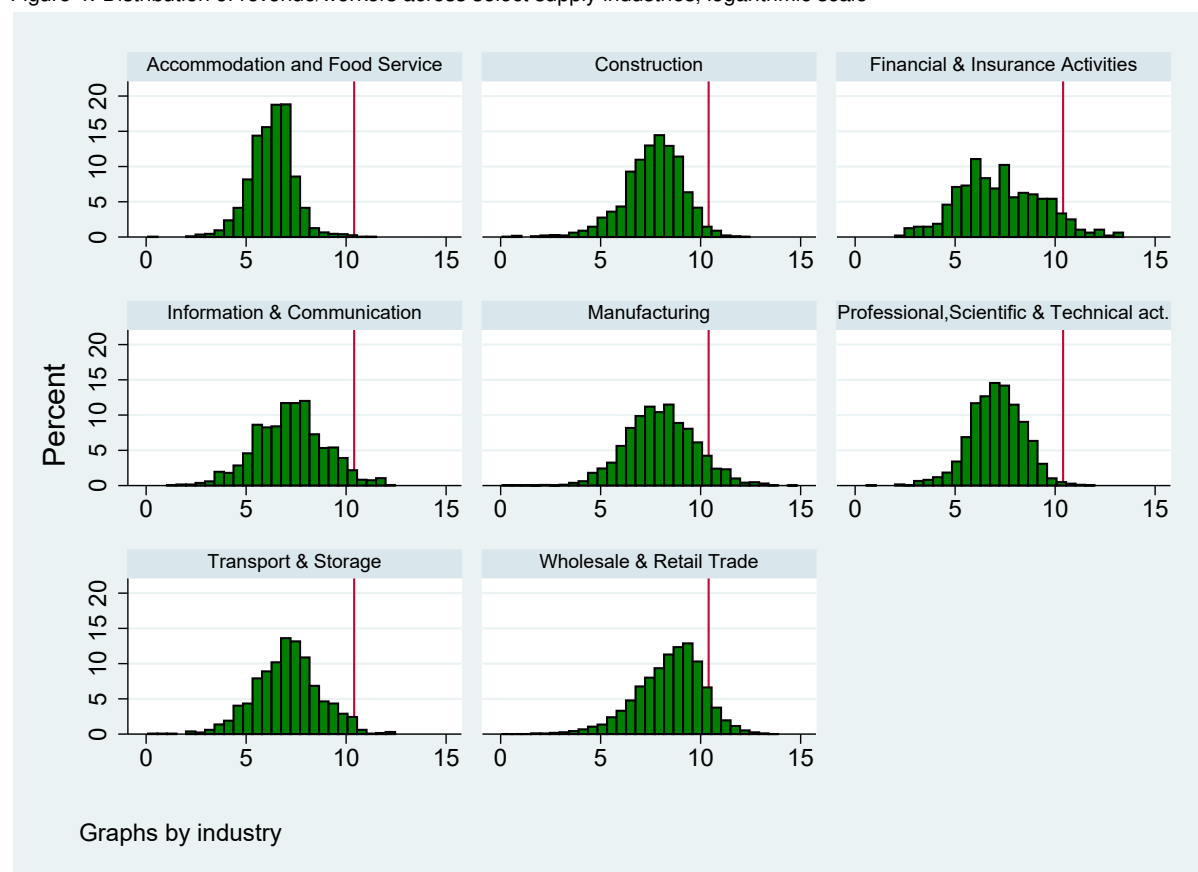
In 2015, the Nyamasoga Waste Treatment Facility was set up by EnviroServ (South Africa's largest waste management company, which has over 39 years of experience across African markets) in partnership with Green Albertine Limited from Uganda. It has the capacity to treat and dispose of one million tonnes of oil waste per day, in addition to 500 litres of wastewater. Although the plant was principally set up to service Uganda's oil industry, it is also equipped to treat other industrial wastes from Uganda and the region (ActionAid 2015a). This may be especially relevant as the country's newly acquired waste management capabilities are reportedly being under-utilized due to the slow progress towards oil production. To date, the Nyamasoga plant has treated and disposed of 'legacy wastes' from exploration activities, but must wait for further progress on oil production for a renewed supply of oil wastes (ActionAid 2015b; Kwesiga 2018). Other emerging domestic actors in the waste management industry include White Nile Consults Limited and the government-owned Luwero Industries Limited.

^a Compiled by the author based on secondary sources cited.

Figure 4 further presents the distribution of average labour productivity in (selected) sectors discussed above. These are presented in a logarithmic scale to facilitate cross-sector comparison. This implies that the histograms, although apparently normally distributed, are significantly skewed to the right in absolute terms. In other words, there is a consistent pattern across sectors where a large number of low-productivity firms are observed, and only a few high-productivity firms feature in the right tail of the distribution.¹⁹ The significant heterogeneity in firm productivity observed *within* sectors highlights another important consideration for the design of potential supplier development interventions: within a target sector, should interventions focus on the right tail of the productivity distribution to include only high-capability firms, or encompass the whole distribution of firms? This is an especially relevant consideration given the tight time frame for industrial supply opportunities in Uganda.

¹⁹The vertical red line in the diagram corresponds to the 95th percentile of the economy-wide labour productivity distribution. It is used to identify the number of firms in the top 5 per cent, as described in Table 3.

Figure 4: Distribution of revenue/workers across select supply industries, logarithmic scale



Source: author's illustration based on data from the Uganda Revenue Authority.

To approach the question posed above, it is useful to consider the capabilities of the median firm (in targeted sectors) relative to the requirements of the oil industry. Table 4 summarizes performance indicators of median firms from (a few) priority industries for local content development identified by SBC (2013). The study identifies 25 industries based on potential benefits to the economy (in terms of job creation potential and skill development) and feasibility—that is, investment intensity and time required for quality upgrading to industry standards.²⁰ Columns 2, 3, and 4 present information on the number of employees hired, monthly revenue earned per worker, and monthly value added per worker (in 2015 US dollars) observed for the median firm in each supplier industry. These data correspond to the period 2010–14/15. For instance, the median cargo-handling firm has seven employees, earns US\$719 in revenues per worker, and adds value worth US\$454 per worker in a given month. Column 5 further provides information on the quality of goods and service provision in each of these industries, relative to the oil and gas industry's standards, as per SBC (2013).²¹ We observe that only one industry—the treatment and disposal of non-hazardous waste—conformed to the industry quality standard (in this list). As of 2013, oil and gas operators also perceived that five industries among the reserved schedule (corresponding to transport of goods and people, catering, and civil works) were *far* below industry standards.

²⁰For succinct presentation, only selected manufacturing and service industries from the list of 25 industries have been included.

²¹These assessments correspond to the year 2013, and may consequently be a little dated.

Table 4: Median firm by supply category and indicator, in 2015 US dollars

Prospective suppliers [1]	Employees [2]	Revenue/worker [3]	Value-added/worker [4]	Industry standard [5]
Manufacture of structural metal products	7	4,022	1,621	Below
Manufacture of furniture	7	3,599	708	Far below
Treatment and disposal of non-hazardous waste	9	253	142	Meets standard
Construction of roads and railways	19	702	0	Below
Construction of other civil engineering projects	19	1,336	1,028	Far below
Urban and suburban passenger land transport	9	282	65	Far below
Freight transport by road	10	1,801	976	Far below
Cargo handling	7	719	454	Far below
Restaurants and mobile food service activities	13	600	167	Far below

Note: Revenue/worker and value-added/worker are reported on a monthly basis in 2015 US dollars.

Source: author's calculations based on data from the Uganda Revenue Authority and SBC (2013).

An example from the transport industry may help to illustrate what it means to be ‘far below’ the industry standard in practice. SBC (2013) interviewed 33 companies in the transportation sector, and found that a total fleet of 2,500 trucks operated in 2012. Of these, only companies supplying 200 trucks met required oil and gas producers’ land transportation safety recommended practices and ISO 9001 quality management standards. Relative to the estimated increment in demand for trucks during oilfield development and production, the study estimated a supply gap of 700 per cent. Recent reports suggest that the transport and logistics industry may still be under-prepared to service the demands from the oil industry, although a handful of indigenous firms (such as Bemuga Holdings and Globe Trotters Ltd.) have acquired international standards certification (Rwothungeyo 2018).

5 Conclusion

Extant empirical evidence indicates that supply linkages to the external sector (whether direct or indirect) is an important driver of productivity improvements at the firm level (Atkin et al. 2017; Spray 2017; Spray and Wolf 2017). This paper consequently focuses on LCPs as a means to leverage the anticipated demand pull from oil and gas exporters to foster supplier capabilities in a wide range of ‘connected’ goods and service sectors. The summary of extensive (and fairly ‘specific’) local content requirements in Uganda’s oil industry, however, suggests that the government has thus far leaned principally on legal and regulatory instruments to force productive linkages to national industry. Instead, market-enabling policies that support domestic firms to overcome the sizeable barriers to entry into these global value chains are more likely to yield an implementable and durable pattern of supplier integration. The importance of a collaborative approach to local content (as opposed to a ‘command and control’ approach) is already becoming apparent on large infrastructure development projects in Uganda, where local firms are losing out due to their inability to meet standards, in spite of legal directives to source locally (Kasemire 2018). Indeed, the key contention of this paper is that the combination of limited supplier capabilities and insufficient capability development interventions requires urgent remedial policy action.

A wide range of policy options are available to the government of Uganda to pursue a collaborative approach to local content management. This may include the establishment of an independent Local Content Unit to foster buyer–supplier linkages through information provision, matchmaking, and networking (Steenbergen and Sutton 2017). A review of the existing institutional framework to promote local content in Uganda’s oil and gas sub-sector suggests that it may be important to distinguish responsibilities for this function from the sector regulator and the line ministry in charge of energy and mineral development. Instead, this chapter recommends the adoption of a long-term view in which institutions are developed to foster buyer–supplier linkages in the oil and gas sector, which can gradually

be expanded horizontally to other sectors. This follows from the view that sub-sector-level LCPs are ultimately linked to national industrial development and employment-generation objectives.

The paper further assesses oil and gas supplier capabilities by examining input-sourcing patterns from the natural resource value chain, and indicators of firm performance from tax administration datasets. The analysis underscores the need for capability-raising innovations or policies to support aspiring domestic suppliers. However, the design of appropriate supplier development interventions, including their scope (targeted or broad-based), funding modalities, and effectiveness within a limited time frame require further investigation. The current analysis offers an approach towards the identification of programme scope—that is, (1) the prioritization of high-potential productive and ‘connected’ sectors; and (2) consideration of the within-sector distribution of firm capabilities (compared to industry standards) to assess whether a programme should only target high-capability firms or the sector more broadly.

I conclude with policy recommendations to ultimately refocus the government’s approach to local content promotion to much-needed supplier development initiatives. These are as follows:

- Establishment of the Industry Enhancement Centre (IEC) jointly planned by the government and IOCs to impart business and technical training to domestic firms, as a priority.
- Scaling up of existing business development training programmes (in the interim, prior to the establishment of the IEC) for domestic suppliers. This could include, for example, the E4D/SOGA programmes related to bid management and HSE compliance (see Box 1), which have demonstrated their effectiveness at a small scale.
- Design of policy interventions targeted at alleviating supply-side constraints (e.g., access to finance, standards certification) faced by priority supply industries.
- Extension of the National Suppliers Database using updated information on supplier capabilities (e.g., firm performance, markets served, transaction history). This could help to guide prospective buyers, while enhancing the visibility of domestic suppliers.

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