

SNF-Report No 13/11

Enhancing National Participation in the Oil and Gas Industry in Uganda

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SNF-project No 1286: "Local Content in Uganda"

The National Content Study in the Oil and Gas Sector in Uganda

The study is financed by the Norwegian Petroleum Directorate and the Norwegian-funded project "Strengthening the management of Oil and Gas Sector" in Uganda



MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

INSTITUTE FOR RESEARCH IN ECONOMICS AND BUSINESS ADMINISTRATION
BERGEN, SEPTEMBER 2011

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ISBN 978-82-491-0775-9

Printed version

ISBN 978-82-491-0776-6

Electronic version

ISSN 0803-4036

PREFACE

The study leading to this report was undertaken by two groups of consultants, one Ugandan team and one foreign team. Professor Jackson A. Mwakali (jmwakali@gmail.com) at Makerere University has been in charge of the Ugandan team, while Per Heum (per.heum@snf.no) at the Institute for Research in Economics and Business Administration (SNF) and Ole Fredrik Ekern (ole.ekern@bridgeconsult.no) from Bridge Consult have formed the foreign team.

The project could not have been realized without the help of many stakeholders outside the team of consultants. The consultants have had constructive discussions with PEPD throughout the different stages of the study, in particular with Robert Kasande, Alex Nyombi, Catherine Amusugut and Ernest Rubondo. The consultants are also grateful for discussions with representatives from more than 100 organizations. These are listed in Appendix 2.

The consultants highly appreciate the time people have spent to answer questionnaires and to participate in the focus group discussions and workshops on behalf of business enterprises, schools, universities, private sector apex organizations, communities, local governments and municipalities.

Finally, the consultants are grateful to comments and suggestions put forward in two national validation workshops for the national content study report in May 2011. The workshops were attended by over 130 participants from Government Ministries and Institutions, Oil exploration companies and their service providers, Universities and Tertiary Institutions, Private Business and Trade Associations and Local Governments leaders of some districts in the Albertine Graben. Discussions were extensive (see MEMD, 2011) and proved very useful when finalizing the report.

The consultants assume full responsibility for the contents of this report. We hope that the report will serve as a constructive input in making national content, or national participation in the oil and gas activities work as a progressive measure to expand value generation capabilities and to strengthen private sector development, which are needed to ensure economic growth and sustainable welfare for the Ugandan society.

Kampala, 19 September 2011

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EXECUTIVE SUMMARY

In realization of the petroleum industry potential, Uganda's Oil and Gas policy seeks to optimize wealth creation from the industry to enhance the welfare of the citizens. This study has examined how Uganda may benefit from the participation of Ugandans and Ugandan firms in the petroleum activities. In the literature this is frequently referred to by applying the term *local content*. Local in this sense, however, refers to national as opposed to international or foreign contributions. Thus, we apply the concept *national content* to avoid any misunderstanding. Focus of our study has been on identifying the opportunities, gaps and challenges posed by the petroleum industry to recommend necessary measures to *maximize the benefits of national content* otherwise defined as national participation.

The study has examined lessons Uganda may draw on from other countries and from the economic literature on industrial growth and national wealth. Furthermore, the specific point of departure for Uganda with regard to expected petroleum activities, Uganda's industrial base and its human resource base, has been investigated. On this basis, the study has made its recommendations.

General lessons for Uganda

Whether oil discovery becomes a curse or blessing to a country depends on how institutions, regulations and politics are constructed and operated. For national content ambitions in the petroleum industry to become a success, capacity building and industrial diversity are prerequisites. Thus, it is crucial for Uganda to pursue long term political commitment for capacity building to reap the benefits of national participation. Further, it is important to keep in mind that maximizing the benefits of national content is not the same as to maximize national content.

The study advocates that Uganda's industrial base can best be expanded by a combination of revenue maximization and realistic ambitions for national content development. This hybrid of approaches engenders tax funded building of physical and economic infrastructure while giving advantage of the opportunity to link Ugandans and Ugandan firms with leading international companies. The latter contributes to training, transfer of technology and competencies, and in turn capacity building, which ought to be more efficient than trying to build capacity purely through enabling infrastructure programs alone.

The study defines national content in terms of value addition in Uganda, by Ugandans in the oil industry, by the use of Ugandan materials, services produced by Ugandans and Ugandan firms, and the use of facilities in Uganda rather than in terms of ownership of the supplier, which, though important, should not be a precondition for national content especially in the short term. Still, as industrial capacity in indigenous firms may be considered more attached to the national economy than industrial capacity in foreign-owned firms, the study recommends to keep track of how value addition due to national content requirements are distributed between these two types of firm. The ultimate goal is after all to contribute to a sustainable industrial base for value generation in Uganda.

There are several pitfalls that Uganda should avoid when promoting a policy on local content, namely consuming wealth rather than creating value, crowding out of non-petroleum activities, attracting high cost investors, inferior industry development, red tape and corruption. To create an enabling

context for capacity building national content development should be an integrated, transparent participatory process involving decision makers of all stakeholders.

The collaboration between the government of Uganda and the major players in the petroleum activities should focus on facilitating participation of firms with an infrastructure in Uganda and employment of Ugandans in petroleum activities without compromising quality, health, safety and environmental standards. An enabling environment for investments requires that four key areas function well: (i) price stability and a sound macroeconomic environment; (ii) credibility and reliability of institutions and legislation concerning business; (iii) socio-economic infrastructure for business development; and (iv) an inclusive social infrastructure.

Uganda's point of departure

Petroleum Activities in Uganda

As of 2011, the activities in the Albertine Graben have been focusing on exploration. Hydrocarbons have been discovered in almost every well that has been drilled. Plans are considered with regard to refinery and pipelines to ensure a market outlet for the oil. It is now apparent that petroleum is likely to be commercially produced in the country.

The share of national content during the phase of exploration so far, is presumably low: probably around 15%. It is, however, recommended that a project is established to examine in specific detail the relevant information to establish the base line for national content.

To realize current plans for field development, refinery and infrastructure, investments at the level of 10 billion USD, and the need for 10,000 jobs, are expected over the coming years. More precise information on types of demand, and on skill requirements to fulfill the different types of demand, has unfortunately not been available for the study.

It is a known fact that oil companies depend on massive outsourcing from the non-oil sector (predominantly international corporations). This means, therefore, that the latter to a large extent controls the former's national content component. It is in this direction that a large part of the attention must be directed if the national content should be developed.

The core oil industry is high tech and capital intensive with formidable entrance barriers for new companies which require technology transfer and ability to absorb the technology. The process is likely to take 15-20 years and requires high focus on education and skills development as well as on institutional capacity building. Moving away from the core of upstream petroleum activities, services are in general technologically simpler functions and are also less demanding organizationally. So is also the case for midstream operations. Such services should be the initial focus for national content development. The petroleum industry has very rigorous and non negotiable requirements with respect to health, safety and environment. The development of a competitive supply industry locally, must therefore take into account those requirements.

Uganda's Industrial Base and Competitiveness

Whereas some manufacturing industries are crucial for national content development, as mechanical and electrical engineering, manufacturing does not play any significant role in the Ugandan economy. Agriculture, forestry and fishing are the dominant industries in Uganda, but these have no direct relevance to the core of petroleum activities. Informal small scale production dominates industrial and business activities, resulting in a fragmented industrial capacity only exceptionally organized in larger, sustainable enterprises.

This means that national content development and industrial capacity building will have to build on a rather weak industrial base. Furthermore, when comparing Uganda with other oil producing countries as Nigeria, Malaysia, Indonesia, Mexico and Brazil, Uganda scores low when considering basic requirements for capacity building as well as when considering efficiency enhancing variables. In other words; capacity building to expand national content is a huge and challenging industry task, closely linked to the challenges facing private sector development in general.

The human resource base

The human resource base of Uganda consists of a large number of rather young people. Only just above 20 per cent of the population is older than 30 years. School enrollment is high and the literacy rate is high and improving. Still, the quality of the school system is considered as rather poor in many areas when compared to other countries.

More severe is, however, the situation for vocational training, which is essential in industrial capacity building and for businesses to develop. In-firm training is very low in Ugandan industry. The Ugandan system seems to lack appropriate equipment, tools and adequate supply of training materials, adequately trained instructors and no harmonized certification system, resulting in low quality of vocational training. In addition, vocational training suffers severely from negative social perception and stigma, as vocational training is considered to be fit for only the academically less endowed.

A little less than 10 per cent of Uganda's labour force can be expected to be in jobs which produce work experience of some relevance for the oil industry directly. These encompass plant and machinery operators, crafts and related workers, legislators, managers, professionals and associate professionals. This could be sufficient for a start to expand local content without crowding out non-petroleum related industries.

Recommended measures to increase local content

It is necessary to establish a legal framework as reflected through the laws, regulations and license agreements to ensure that national content receives the necessary attention and to enforce national content ambitions. When enacted, the Petroleum Bill of May 2010 should provide this legal basis. It is important however, to emphasize that successful national content development cannot be achieved by regulation and legislation alone. An extensive framework often tends to lead to rules that are too ambitiously and strictly enforced, which easily leads to consumption of wealth, inferior industry development, violation of international obligations and corruption. National content should be achieved through capacity building. It is a side-track if the focus of national content is on to what extent the oil companies adhere to strict quantified ambitions set by law or regulation. Real

contributions to capacity building, by creating a credible atmosphere for industrial collaboration as well as for the transfer of competence and technology, are the only route to create lasting value to society.

It is generally recognized that the infrastructure to enable business and private sector development in Uganda is rather poor, and that the financial system in many respects does not serve its purpose for the funding of business development, and in particular with regard to small and medium sized enterprises. Poor infrastructure and a financial system that lags behind will obviously affect efforts to expand national content negatively. This is, however, an obstacle for business development in general, and not something that is specific for the oil and gas industry, nor for the aspiration to increase national participation in Uganda's oil and gas sector. Thus, when giving recommendations to increase national content, the study has focused on measures that will affect national content in the petroleum industry rather directly instead of discussing challenges for private sector development as a whole.

The study recommends altogether 20 measures which cover different areas: to establish an *institutional framework* for the implementation of national content policies, to ensure *capacity building in people*, capacity building in firms as *enterprise development* and to *facilitate national participation* in Uganda's oil and gas sector, and finally how the *monitoring* of progress with regard to national content ought to be conducted.

Institutional framework

1. Establish a government body for national content enhancement
2. Regulate procedures for procurement
3. Define and operationalize how national content shall be measured
4. Have the oil companies commit to local content development
5. Have an Oil and Gas Industry Suppliers Association established
6. The national content policy should be an integrated part of the National Development Plan
7. The corruption perception should be reduced

Capacity building in people

8. Capacity of vocational training has to be strengthened
9. Training centers should be established by the international oil companies
10. Uganda should establish institutions of excellence for higher level of education

Enterprise development

11. An adequate capacity building program for the industry should be developed
12. Teaming between Ugandan and foreign firms should be encouraged
13. An SME program for the petroleum sector should be established
14. Industry projects with a large market potential should be identified
15. Restructuring of the industry should be encouraged

Facilitating national participation

16. Contracts should be structured to align with local capacity
17. A central information office for national content should be established
18. A national register for prequalified companies should be established

Monitoring national content achievements

19. Apply a holistic approach to measure and monitor national content
20. Establish a system for how to evaluate national content performance

All the suggested measures are needed in one way or another to fulfill the ambitions with regard to national participation in the oil and gas industry. They cannot, however, be implemented all at once. As field development in the Albertine Graben already is about to start, the most urgent matter is to have a government body established within the Ministry of Energy and Mineral Development, which is dedicated to the task of enhancing national content, and which will take the responsibility of defining and enforcing a policy in that respect.

1 INTRODUCTION

1.1 Background

The intensified exploration work taking place in the Albertine Graben since 2006 has proven commercial quantities of oil and gas in Uganda. Hydrocarbons have been discovered in almost every well that has been drilled. Plans are considered with regard to refinery and pipelines to ensure a market outlet for the oil. It is now apparent that petroleum is likely to be commercially produced in the country.

This encouraging development forms the background for this study which has examined how Uganda may benefit from an increased national participation in the petroleum activities that will take place in the years to come. Focus has been on documenting the potential benefits of Ugandan participation in the oil and gas industry, and on coming up with suggestions as to how Uganda should go about to reap these benefits. Such national participation is in the literature generally referred to as *local content*, where the term local is used to refer to contributions from people and firms of the country hosting the oil and gas resources in contrast to international or foreign contributions. Thus, a more precise concept is *national content*.

The study has been undertaken in accordance with the objective set forward in the national oil and gas policy for Uganda from 2008 (Ministry of Energy and Mineral Development, 2008):

To use the country's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society.

Thus, the question underlying this report is shortly: ***How can Uganda maximize the benefits from national content?***

1.2 Organizing the work

The study has been executed jointly by a Ugandan and foreign Consultant study team under the Norwegian-funded project: "Strengthening the Management of Oil and Gas Sector". This project is currently running at the Petroleum Exploration and Production Department (PEPD). The Ministry of Energy and Mineral Development is the Client and principal beneficiary of the outcome of the study.

In the terms of reference for the study the overall objective was formulated in the following way:

To assess the capabilities of the Ugandan supply and service industry, the market potential and the constraints and based on international practices to propose measures to enhance private sector participation in the petroleum activities.

This task responds directly to two of the ten objectives of the National oil and gas policy for Uganda: Objective vii) To ensure optimum national participation in oil and gas activities, and objective viii) To support the development and maintenance of national skills and expertise.

The local Consultant, Professor Jackson A. Mwakali at Makerere University and his team consisting of Jackson N. M. Byaruhanga, Napthali K. Bigirwenkya and Charles A. Koojo, was engaged in June 2010. The local team presented an inception report in July 2010.

The international Consultant, Per Heum of the Institute for Research in Economics and Business Administration (SNF) and Ole Fr. Ekern of Bridge Consult, was engaged in August 2010.

The local and international Consultant had their first meeting in September 2010. A joint inception report of September 30, 2010 was presented and approved by the Client.

During the eight months of work, the teams have met physically on five occasions. They have divided the work between themselves to elaborate on the various aspects of the study, namely international best practices and experiences for national content development, capacity building for oil and gas industry management, petroleum activities in Uganda, Uganda's economic framework, and national content development strategy for Uganda.

The local and international Consultant have worked as a team, where the prime responsibility of the local Consultant has been to assess the capabilities of suppliers of goods and services in Uganda to participate in the oil and gas industry in the country. The prime responsibility of the international Consultant has been to contribute with the international experience with regard to national content policies. It has been a joint responsibility for the local and international Consultant to assess the demand prospects within the oil and gas industry in Uganda, as well as to suggest a strategy for Uganda to pursue in order to enhance national participation in a way that will benefit the society.

1.3 Outline of the report

The purpose of the report is to come up with suggestions as to how Uganda can go about to maximize the benefits of national content. To do so, we address three main questions:

- *What is the experience of other countries?* This is briefly dealt with in chapter 2, where the main message is that the experiences of other countries are quite mixed, and that capacity building and diversification of the economy, including the industrial sector, is crucial for Uganda, as for any country, to benefit from rich endowments of natural resources. That is the case regardless of what ambitions the government may have with regard to national content.
- *What are the general lessons that Uganda can build on when designing a policy to enhance national content?* This is dealt with in chapter 3 where we address lessons to be learnt from the experience of other countries that have been engaged in efforts to enhance national content, and from the literature on industrial development and economic growth. The key to success is to create a dynamic setting which allows for broad based capacity building in people and firms, i.e. to enhance capacity and industrial diversity.
- *What is the specific situation of Uganda which a policy to enhance national content has to assess?* This is dealt with in four chapters. In chapter 4 we examine demand from the petroleum activities in Uganda, as it has been, what it is expected to be, the current share of national content, and how the oil industry undertakes procurement. In chapter 5 the intent is to establish the point of departure for Uganda as far as Uganda's industrial and economic

base is concerned. We focus on current capacity and capabilities among Ugandan supply and service providers, and more specifically within Uganda's industrial base. In chapter 6 focus is on the human resource base in Uganda, assessing capabilities, education and vocational training. Chapter 7 summarizes the previous chapters in an overall description of the industrial opportunities connected to the oil and gas activities in Uganda, and by identifying what we consider as severe gaps and key challenges with respect to the participation of Ugandans and Ugandan firms in the local oil and gas industry.

The purpose of addressing these questions is to provide relevant information to discuss how Uganda ought to go about to enhance national content in the oil and gas sector. This is dealt with in chapters 8 and 9, where we present our recommendations as to the build-up of institutions and of mechanisms for capacity building, as well as suggesting measures to bridge the gaps and to overcome challenges with regard to the participation of Ugandans and firms with an infrastructure in Uganda in the oil and gas activities of the country.

In this report our discussions are kept pinpointed and short. More extensive considerations are found in underlying documents referred to in Appendix 1.

2 OIL DISCOVERY AND NATIONAL WEALTH

2.1 Mixed experience around the world

The main lesson to be drawn from countries that have discovered rich natural resources, such as oil and gas, is that such endowments are no guarantee that the country's economy and business life will prosper. This does not prevent huge expectations from rising. It is easily assumed that large endowments of valuable natural resources will provide the country with revenues which will ease financial constraints on public budgets, and that the efforts to extract these resources will allow national entrepreneurs and business enterprises to prosper and the domestic economy to grow. Uganda also faces such expectations.

Such expectations arise despite the fact that several studies indicate that countries with an abundance of natural resources on average seem to experience less economic growth and worse development of outcomes than countries with fewer natural resources. When comparing countries at the same income level, countries that are highly dependent on revenues from natural resources, generally score lower on the UN Human Development Index and on economic growth, exhibit greater corruption, have a greater probability of internal violent conflicts, and have a larger share of the population in poverty than countries with diverse sources of wealth (Sachs and Warner, 1995; Leite and Weidmann, 1999; Papyrakis and Gerlagh, 2004).

This is what is referred to as the *resource curse* (Sachs and Warner, 2001), or the paradox of plenty. It may be explained in many different ways. Extraction of non-renewable natural resources with a significant resource rent often represents a windfall gain of great magnitude for the host country. Huge and sudden revenues of this kind are likely to cause the real exchange rate of the national currency to appreciate, which will weaken the competitiveness of non-resource based sectors of the economy. They furthermore tend to bring high volatility in government revenues due to oil price fluctuations, which easily imply disastrous stop-and-go policies. Thus, revenues and economic activities related to oil and gas pose specific challenges to policy that generally are demanding to deal with, and in some cases may lead to poorer performance than if the natural resources had not been discovered.

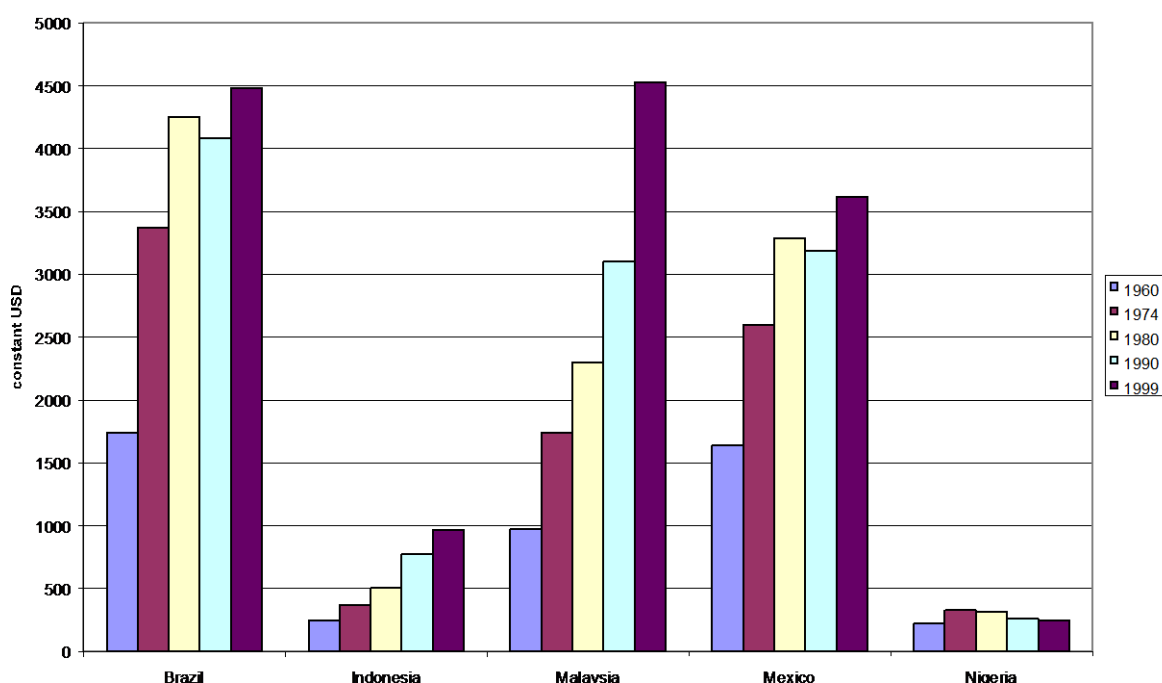
Although the empirical studies referred to above document that huge exports of natural resources seem to correlate with poor social and economic performance, causation is not really analyzed. In fact, there is no convincing theoretical argument that huge endowments of natural resources are bound to lead to poor social and economic performance. Some countries with large natural resources perform well; others do not. It is reasonable to assume that bad policies and social conflicts easily result in heavy dependence on exports of the natural resources, and in turn poor performance of the society and in the economy. The way forward should be to focus on the factors associated with good performance and build on them.

Thus, rich endowments of natural resources are not necessarily a curse to the social and economic development of Uganda, neither is it automatically a blessing. That will depend on how Uganda deals with the challenges and opportunities which follow from possessing such resources (Gylfason, 2001; Iimi, 2007). It is how institutions, regulations and politics are constructed and operated, that will

decide. Thus, being in the planning stages of petroleum development before production starts, Uganda has the opportunity to address and handle these challenges in a sensible way.

2.2 GDP growth in some selected countries

The general observations highlighted above are documented more specifically by Nordås et.al. (2003) through the examination of six oil-producing countries from 1960 to 1999. The experience of these countries differs, as is clearly seen when considering a measure as GDP per capita (figure 2.1). It is no surprise that the GDP levels differ between countries. It is, however, striking that Brazil, Malaysia and Mexico have enjoyed relative high GDP growth, while on the other hand Nigeria's economy has stagnated and Indonesia only registered weak growth.



Source: World Bank: World Development Indicators (2001)

Figure 2.1: GDP per capita, 1960-1999

The most successful story is Norway, which is not included in the figure because the level of GDP is so much higher than the top of the vertical axis, and GDP growth has been good on average over the whole period¹. In Norway local content has materialized in the development of industrial capacity within firms, which now serve the oil and gas industry all around the world. The Norwegian experience is, however, almost impossible to replicate (Heum, 2008). When oil and gas were discovered, Norway was an industrialized economy with a highly educated population, and with well functioning democratic institutions. Industrial capacity was already broadly developed in areas which

¹ GDP per capita in Norway in 1999 according to World Development Indicators (2001) was USD 32,541.

rather easily could be transformed and extended into the oil and gas industry, and which in addition could make an entry at a time when there was a technological window of opportunity for newcomers.

The experience from Nigeria represents the other end of the scale. GDP per capita did not increase for the last four decades of the previous century. Even though oil and gas activities in Nigeria started ten years before they started in Norway, firms in Nigeria only to a limited extent participate in the oil industry on a competitive basis. The government has not lacked ambitions for national content. These expectations have, however, been unrealistically high, which accompanied by lack of transparency has been a factor behind corruption and profit opportunities for a few. This contributed negatively to the development of the Nigerian economy because traditional industries have been crowded out while a significant share of the earnings has been transferred to savings and consumption abroad (Nordås et.al., 2003 and Heum et.al., 2003).

Indonesia has, as Nigeria, been subject to rather extensive corruption in connection with the oil and gas activities. Unlike Nigeria, however, these revenues have to a much larger extent been reinvested in the domestic economy, contributing to industrial development, both in connection with oil and gas and in other areas. This development has taken place while Indonesia has been rather open to foreign investors. Growth has, however, only been moderate from low levels.

Malaysia has been able to increase national content and to achieve significant GDP growth while oil and gas activities have taken place. The national oil company, Petronas, has played a key role, and the domestic activities have increasingly been exposed to foreign competition. The success is partly attributed to a policy of consistent and balanced economic diversification.

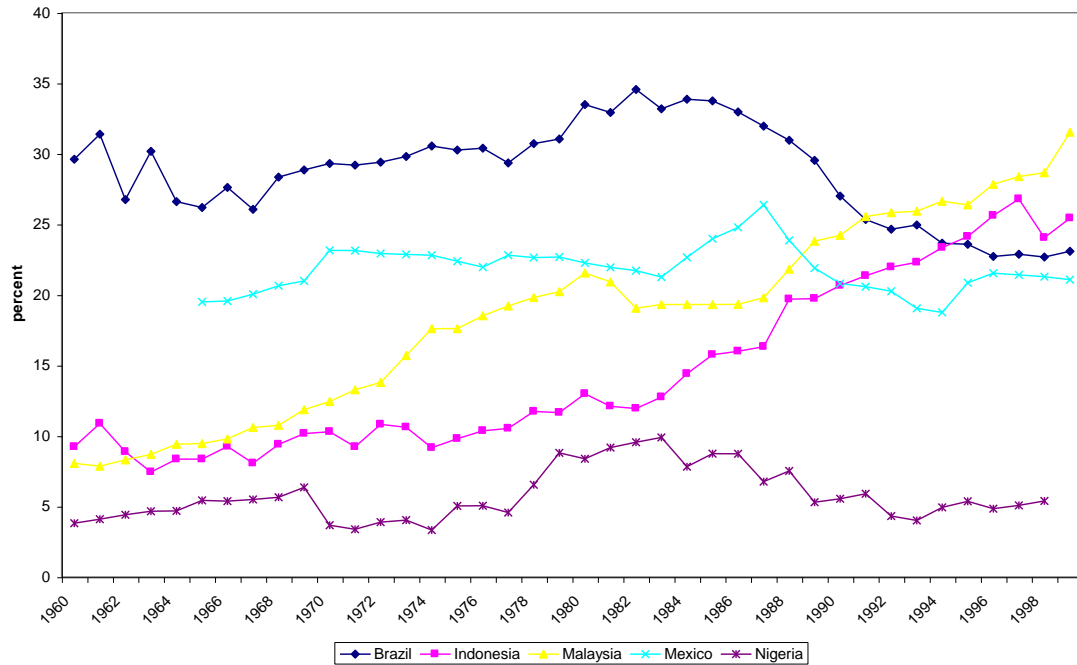
Mexico and Brazil both have strong national oil companies, Pemex and Petrobras respectively. National content has been quite high in both countries, and has to a large extent been achieved by shutting out foreign investors. Until the early 2000s, however, neither really succeeded in building industrial capacity that proved competitive by international standards, and probably consumed instead of generating wealth. GDP growth was also rather low from 1980 to 1999. Since then, Brazil has worked quite systematically to strengthen industrial capacity among local firms, while allowing foreign competition in the domestic market. This seems to be very promising, while Mexico still is lagging behind.

2.3 Capacity building and industrial diversity is a must

There are, of course, several factors that explain differences in GDP and GDP-growth. Good or bad enforcement of local content policies is only one. Good or bad policy enforcement in this area, however, is likely to correlate with good or bad enforcement of policies in other areas, as with policies to handle huge oil revenues.

There is, however, one striking difference which occurs and cuts through all other explanations. Capacity building and industrial diversity is essential if Uganda is to reap the benefits from huge endowments of oil and gas. The need for capacity building and private sector development is well in accordance with theories on industrial development and economic growth. A competitive, creative

and expanding industrial base is a must for a country to prosper and an economy to generate sustainable national wealth.



Source: World Bank: World Development Indicators (2001)

Figure 2.2: Manufacturing share of GDP, 1960-1999

It is also clearly indicated when considering Figure 2.2 showing the GDP-share of manufacturing in five oil and gas producing countries. Manufacturing is more or less bound to play a key role in private sector development. Thus, it is interesting to notice the differences in manufacturing development between Nigeria, Brazil, Mexico, Indonesia and Malaysia. Nigeria, which experienced no real GDP-growth from 1960-1999, was not able to expand industrial activities in manufacturing over the period at all. The countries that performed better, either have had a significant manufacturing sector over the whole period, or have been able to expand it.

3 PRINCIPAL CONSIDERATIONS ON CAPACITY BUILDING AND OIL

3.1 Two different policy approaches to capacity building

From economic theory and the literature on industrial growth it is possible to extract two principally different approaches as to how the extraction of oil and gas may expand the local industrial base. In practice, they should be combined. But for the sake of the argument, we may start by treating them separately.

- One approach is what may be labeled **revenue maximization** on the part of government. This approach aims at giving the highest priority to economic efficiency when dealing with how to explore for oil and gas, how to develop these resources and how to distribute and realize their value in energy markets. The purpose is to maximize tax revenues from the oil and gas activities. Efficiency will maximize profits in the oil industry. As oil industry profits become part of the government's tax base, tax revenues that the government can have at its disposal are maximized. The idea behind this approach is to that the government will have more revenues to invest in infrastructures and other efforts that enable business and private sector to develop. This will expand value added capacity in the economy in general, which is crucial in creating an industrial base which, in turn, may generate sustainable national wealth.
- The other approach is what is known as **national content**. This approach implies that higher priority is given to the employment of Ugandans and firms with an infrastructure in Uganda. The host government will require the share of national content to exceed what will result from the procurement of goods and services in an open market. The idea behind is to take advantage of the opportunity to pair Ugandans and Ugandan firms with leading international companies. As many leading international firms are interested in participating in the oil and gas activities in Uganda, they will also be inclined to team up with Ugandans and Ugandan firms for their own purpose. This will contribute to training, transfer of technology and competences, and in turn capacity building, which may be more efficient than trying to build capacity purely through enabling infrastructure programs alone.

It is important to recognize that national content requirements in excess of what would be the result of pure short term efficiency considerations will generate lower tax revenues from the oil industry, at least in the beginning. When national content is given higher priority, goods and services will partly be provided at higher costs than necessary. Profits, in consequence, fall, and so do tax revenues to the government of Uganda. This means that at least in the short and medium term there will be less money available for the government to invest in infrastructure and other efforts to stimulate the development of business and private sector. How much will depend on what extent the national content requirements violate pure efficiency considerations in the market.

In order to succeed with national content requirements, it is important for Uganda to recognize that national content requirements do not imply severe violation of efficiency considerations in the industry. Ambitions need to be realistic, and may be increased along with expansion of capabilities and capacity within Uganda's industrial base. In that way, Uganda should be able to combine the two approaches, as industrial development is enhanced through national content requirements, while the oil industry is sufficiently taxed to provide more resources to support private sector development

in general. Government should therefore appreciate the attainment of national content will be a gradual process.

3.2 How to define national content

It is important to notice that local industrial development requires the use of domestic resources, mainly domestic labour and skills. It may take place in indigenous companies, or companies that are owned by foreigners. This is important, because research from other industries concludes that national content requirements are not very successful in developing an indigenous industrial base, but somewhat more successful in bringing in the primary foreign investors' international suppliers to the host country (Belderbos et.al., 2001)². Thus, we suggest that it is necessary to encourage collaboration with local companies to generate dynamic industrial processes which in turn should benefit local business development and have positive impacts on the development of indigenous companies.

We expect that Uganda will experience the same. Thus it is sensible to define **national content in terms of value addition in Uganda**, by Ugandans in the oil industry, by the use of Ugandan materials, services produced by Ugandans and Ugandan firms, and the use of facilities in Uganda. This means that the ownership of the company performing the value added activities should not matter. In a globalized industry a local subsidiary of a multinational company can be just as effective in using domestic inputs and developing capacity and competence in Uganda as a company in which Ugandans hold a majority of the shares. This has clearly been the case in Norway and Malaysia where national content has been high and national content has been defined as value added in the host country rather than defined in terms of ownership of the supplier.

In every country there is a concern that industrial capacity that is built in foreign-owned firms only will operate locally as long as oil and gas activities take place. This is a legitimate concern. The answer, however, is not to neglect the importance of value generation taking place in such firms. Countries that only have been willing to acknowledge value adding activities in indigenous firms have not succeeded with their national content ambitions.

The lesson that can be drawn is that national content, measured as value added, should cover value generation in both indigenous and foreign-owned firms. Still, as industrial capacity in indigenous firms in general may be considered more attached to the national economy than industrial capacity in foreign-owned firms, it makes sense to keep track of how value addition due to national content requirements is distributed between these two types of firms. After all, the ultimate goal is to contribute to a sustainable industrial base for value generation in Uganda, and foreign firms are more likely to disappear than indigenous firms when the local oil activities decline.

² This is a study of national content in Japanese multinational electronics firms. The study covers 272 Japanese electronics manufacturing affiliates in 24 countries. The electronics sector has in common with the petroleum sector that it is a relatively high technology, capital- and skills-intensive industry, and that multinational firms with established international supply chains dominate the industry. The study finds that national content requirements have a modest positive impact on national content, but not on procurement from locally owned firms. This means that national content regulations either induce the foreign investor to bring its supply chain suppliers to the host country, or the foreign investor will produce the inputs themselves in the host country.

This does not mean that value generation in foreign-owned firms has to disappear with declining oil activities. If for example the oil activities in Uganda could develop to become a knowledge hub for the petroleum industry in the region, foreign firms may continue to use Uganda as an industrial base also when they engage in petroleum activities other places in East Africa.

Regardless of the long term ambitions of foreign-owned firms, such firms represent important arenas for training and capacity building for people working in those firms. Thus, one should also keep track of to what extent Ugandans work in such firms, and in what positions they work: Supervisory positions, skilled jobs, semi-skilled jobs and non-skilled jobs. Industrial capacity deriving from foreign-owned firms may be maintained and developed further for the benefit of the national economy by people moving between firms and industries. Employment of Ugandan citizens will be another way of measuring national value added in foreign-owned firms, and when measured, they should be considered as drivers for sustainable value generating capabilities.

3.3 Pitfalls

There is no guarantee that policies to enhance national content will achieve the ambitions that are spelt out, and the positive development that we have described as an opportunity. There are several pitfalls that Uganda should be aware of when promoting a policy on local content. Altogether, the following pitfalls are observed:

- **Consuming wealth rather than creating value.** When national content is required, it means that domestic suppliers do not make it in ordinary market competition. This further means that the cost of local technology is higher than what it would have been from foreign firms. The only reason to accept higher costs from an economic point of view is to consider it as investments that will pay off in the future. If it is possible to acquire industrial capabilities that will generate more value in the future, higher costs at present may be justified, and Uganda should benefit. However, if more value added in the future does not compensate for higher cost at present, the domestic supply and service providers will eat from the oil wealth instead of adding value to it.
- **Crowding out of non-petroleum activities.** There is always a real risk that enhancement of national content may crowd out other industries, which even may have larger potential for employment creation than the upstream petroleum industry and its midstream and downstream supply industry. This is particularly the case when industries compete for the same scarce resources and the national content policy implies that the domestic supply and service providers, or the oil industry itself, can overbid other industries. Thus, it is important for Uganda to pay due regard to cost efficiency and economic diversification, even in a context where national content is in focus.
- **Attracting high cost investors.** National content requirements identified in other industries seem to create a business environment that is most attractive to less efficient, high-cost investors. This is because the less efficient have the lowest switching costs, i.e. they have less to lose from choosing more expensive suppliers than more efficient producers. Thus, it must be

important to assure that the leading international firms choose to participate in the oil industry in Uganda.

- **Inferior industry development.** The experience from national content requirements in the upstream petroleum sector as well as from other industries indicates that developing a domestic supply chain may be successful if combined with exposing the local suppliers to the discipline of market competition after a relatively short period of protection. Lack of competition, insufficient competence and/or weak regulation and supervision on the other hand have led to high costs, the use of sub-standard technology, and brought environmental damage.
- **Red tape and corruption.** In the case of minimum national content requirements, if the minimum level is beyond the actual capacity of the local industry, waivers will be necessary. This may easily create a situation of bureaucratic delays of operations as applications for exemptions are being processed. It may also prepare the ground for increased corruption aiming at avoiding such delays. If ambitions for national content are targeted far beyond what is achievable, economic performance is perverted. It prepares the ground for continuous, and may be increasing delays and corruption, no matter how good the intentions behind over-ambitious proposals are. Thus, Uganda ought to avoid absolute minimum levels of national content, and in particular to set such targets way above levels that can realistically be achieved.

The lesson to be drawn from this pool of pitfalls is that national content does not necessarily promote industrial growth or increase national wealth. It will only benefit Uganda if the industrial development turns out to become competitive by international standards, which means that participating firms will have to pass the test of the market after temporary protection. If not, national content requirements will only benefit some Ugandans at the expense of the society.

3.4 Creating an enabling context for capacity building

There is no clear cut, or one simple answer, as to how Uganda ought to outline a policy to enhance industrial development in connection with oil and gas activities. It does, however, have to translate into the employment of Ugandans and Ugandan firms. It is not sufficient to enter into contracts with firms in Uganda. These firms also need to operate in a way that directly contributes to the generation of value added in Uganda.

A prerequisite to succeed with a policy to enhance industrial development by increasing national content in Uganda's petroleum activities is to ensure that decision makers at all levels in Uganda share the goal of pursuing a policy which will contribute to national wealth through industrial growth. This means that policy-makers as well as the executive power should be aware of trade-offs and pitfalls that a policy to increase national content may entail. Transparency is an important mechanism in this respect.

If Uganda is able to establish broad acceptance for the genuine task of staying dedicated to industrial development to benefit economic wealth in Uganda, and a conceptual framework within which such a development should be encouraged, then a base is constituted from which a constructive dialogue can take place between all parties involved. Therefore expectations can be clearly expressed to the other parties as well. Oil companies, directly and through their major contractors, should be

expected to contribute to the development of capacity among Ugandans and in Ugandan firms that are able to meet the requirement of international competitiveness. On the other hand, local firms should be expected to improve their performance and gradually reach international standards.

The collaboration between the government of Uganda and the major players in the petroleum activities should have its focus on how to involve firms with an infrastructure in Uganda and the employment of Ugandans. Attention should be on how to facilitate their participation in Uganda's petroleum activities without compromising quality, health, safety and environmental standards.

3.5 A comprehensive perspective on national content and national wealth

In essence, any discussion regarding industrial growth in Uganda, including efforts to generate growth by increasing national content in goods and services that are needed to extract oil and gas, concerns the issue of attracting investments. Investments are needed to expand capacity and capabilities that are essential in the generation of industrial growth. So it is in the petroleum sector, as in the non-petroleum sector of the Ugandan economy. And, so it is for Ugandan firms to expand, as it is for foreign companies to establish facilities for manufacturing and service provision in Uganda.

Money is not sufficient to undertake investments that will contribute to capacity building and growth. The critical issue for any country is to attract investors who possess industrial competence in addition to money. Industrial competence is essential to develop projects and business which in turn will expand industrial capacity. This is where the control of access to highly demanded petroleum resources may be an advantage.

In a market based economy investments are made when investors find it profitable to invest. It is not obvious how a project may generate profit and attract investors. Investors may consider the same project differently. There are, however, some key areas that constitute framework conditions, which are decisive for the level of investments in Uganda, as in any country, i.e. what determines the magnitude of investments made by domestic as well as foreign investors. This holds true for investments in general, both in the petroleum sector and the private non-petroleum sector.

An enabling environment for investments requires that four key areas function well:

- **The macroeconomic environment** is decisive for development of domestic prices, the exchange rates for the local currency, and the interest rates. These are all factors that are crucial for any investment decision. The key concern of investors is not macroeconomic stability, but rather that the macroeconomic development is predictable.
- **Institutions and legislation concerning business** constitute local factor markets, i.e. the allocation of labour and capital. Furthermore, they concern the regulation of business and taxation. These areas provide incentives for how investors, the business community and local authorities will act. The key concern for investors is credibility and reliability.
- **Infrastructure for business development.** Public utilities as roads, railways and air transport, telecommunications, electricity and water supply will in general constitute an environment, which is more or less enabling for business development and productivity. The standard of this infrastructure will affect profitability considerations for investors when considering investments.

So will the educational system, which influences the quality of labour, as well as the health system.

- **Social infrastructure** captures how inclusive the society is towards different social groups. Social cohesion reduces the chances of social disorder and violent conflicts. In case of the latter, neither investments nor technology transfers from attracting foreigners will be induced.

These key areas are illustrated in Figure 3.1 as framework conditions influencing investments in value generating activities of a country. The figure also illustrates that national wealth depends on value generating activities in all sectors of the economy, and that national content ambitions in the petroleum sector alone are unlikely to meet the challenge of economic welfare and growth.

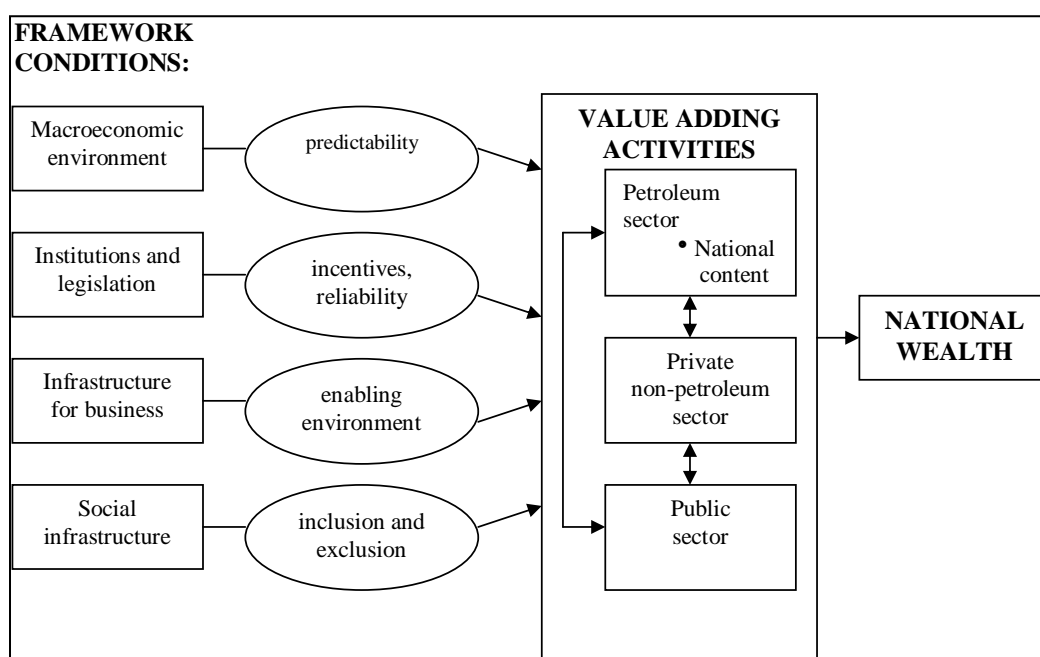


Figure 3.1: A comprehensive perspective on industrial growth and national wealth

It has already been pointed out that national content requirements do not necessarily have to add value to the contributions from the petroleum sector. In extreme cases, wealth creation may be lower from the society's point of view, in particular if the policy to enhance national content is implemented so that business in the non-petroleum sector of the economy is crowded out. This may also be the case if the petroleum activities generate revenues for the public sector, which are spent so that the competitiveness for producers of tradables in the non-petroleum sector deteriorates. Thus, it is important for Uganda to keep such a comprehensive perspective in mind, and to ensure that national content policies and public spending are outlined and enforced with caution to avoid the danger of damaging opportunities for business development outside the petroleum sector as well. It is after all broad based private sector development that is needed to ensure sustainable economic progress.

3.6 Yardsticks for policy formulation

There is definitely a potential for industrial capacity building and growth in educating and teaming Ugandans and Ugandan firms with internationally leading firms. However, to reap the benefits of national content, it is crucial for any country to create a political context that is supportive to the task of building industrial capacity. This requires a broadly shared understanding of some basic lessons from other countries across different political sectors and levels of governance, across social groups, and across geographic regions. We have tried to summarize these insights into ten general lessons which emerging petroleum nations may build on:

1. National content will contribute positively to the host country economy to the extent it proves to be a means to create and develop value addition activities domestically which become competitive by international standards. Thus, national content represents an industrial opportunity for the host country government to strengthen the industrial base to ensure economic progress and domestic wealth.
2. The only way to succeed with a policy to enhance national content is for all stakeholders to stay focused on and dedicated to capacity building in domestic firms and in people (local labour). It should be appreciated that capacity building is a deliberate undertaking. Capacity is something that is created through training, exercises and knowledge transfer, and capacity building requires a dedicated and committed engagement from politicians and civil servants at the national and local level, from oil companies and their global supply and service providers, and from industrial associations, schools and institutions for vocational training, universities and NGOs.
3. Within this perspective where national content means capacity building to meet international standards, national content is also an industrial task that offers opportunities for the oil industry to strengthen profitability from its operations in host countries with commercially viable oil and gas resources. In such cases, investors in the oil industry should be expected to consider national content development as a strategic means to improve efficiency in the oil and gas activities that are conducted over the life time of the host country's petroleum resources. This implies that national content is commercially justified and not a matter of corporate social responsibility (CSR).
4. The mechanism to achieve national capacity building is to take advantage of the interest of foreign firms to participate in the oil and gas activities of the host country. The key determinant is to have foreign firms and investors to agree to the task of national capacity building, to have them come up with measures to build local capacity, and to ensure that they will collaborate with domestic business, education, training and research institutions to achieve the task.
5. Oil companies are not likely to engage in national capacity building unless it is required by the host country government. Thus, the government needs a legal basis for such initiatives and a strong government body to engage in efforts to achieve such collaboration. This government body should have adequate capacity and be equipped with executive power to engage in discussions regarding field development plans from the oil companies, the contracting plan of the oil companies, and to ensure fair opportunities for domestic firms to compete for jobs.
6. The ultimate purpose of the interaction between the government body for national content and the oil companies is to have the oil companies come up with plans and schemes for industrial capacity building in Uganda, which they expect to work, which they can commit themselves to and for which they can be held responsible. The oil companies are in this respect also expected

to be a gateway to global supply and service providers which they engage in their operations in Uganda.

7. Conditions and objectives with regard to national content and national capacity building should be formulated in a clear, realistic and transparent way and be written into the licenses which the oil companies are awarded. The government body should then have the authority to consider the performance of the oil companies with regard to national capacity building, and to let good performance in this respect be one factor to be rewarded when new licenses are awarded, or when it is a matter of extending old ones.
8. Progress with regard to national content should be measured and evaluated by considering the magnitude of value added in companies with an infrastructure in the host country that serves the operations of the domestic oil and gas industry. It is the use of domestic resources that is of importance. The ownership of firms is not a panacea for value addition. However, as the ultimate goal is to stimulate value generating capabilities in the indigenous industrial base, it is of particular relevance that value added in indigenous firms expand.
9. A successful policy with regard to national content is not sufficient to generate sustainable wealth and prosperity in any country. Thus, due regard must be paid to how a policy to enhance national content may impact non-petroleum sectors of the economy. Furthermore, capacity building to increase national content should be considered a means to enhance private sector development in general, which means that capacity building in areas with potential large positive spillovers to non-petroleum sectors, and infrastructure investments that enable business development in general, should be given priority.
10. Oil and gas activities will not really generate any immediate benefits of great significance at the national level. As long as they expand, a large share of the revenues will be reinvested in getting new oil and gas fields on stream. Thus, it is bound to take time until oil revenues really show up in government budgets. Similarly, industrial capacity building is not done overnight. It takes years to build industrial capacity that may be competitive by international standards. In addition, opportunities for newcomers are more promising when petroleum fields are in operation than during the earlier stages of petroleum activities with exploration and field development. If this is not properly and broadly understood, expectations will easily rise to levels that only can lead to disappointment and distress.

We suggest that these ten messages may serve as yardsticks when considering how to go about to formulate a viable policy to enhance national content. They should hold for any country. The exact formulation of policies, however, as specific measures and ambitions, will have to vary significantly between countries, depending on the current status of their economic, political and social development. Thus, in the next three chapters we elaborate on the demand side with regard to the petroleum activities in Uganda, the supply side as the industrial base of Uganda is composed, and on the specific challenges that Uganda must handle to enhance local content. This does not mean that there is only one answer as to how Uganda ought to go about it. Industrial development is a challenging task, and agencies, facilitators and politicians should be encouraged to learn as they experience how things work, and to strive for continuous and incremental improvements. The only thing that is crucial is to stay dedicated to the task of capacity building. Maximizing the benefits of national content is not the same as to maximize national content.

4 PETROLEUM ACTIVITIES IN UGANDA

4.1 Historical perspective on petroleum activities

The petroleum potential of the Albertine Graben was recognized early in the previous century from a series of oil seeps in the area. The graben constitutes the northern most part of the western arm of the East African Rift system. It runs along Uganda's western border with Democratic Republic of Congo (DRC) and is about 500 km long, averaging 45 km width and with 23,000 sqkm in Uganda. The fact that a significant area with additional petroleum potential is located in DRC is an important aspect to consider when the total future market for goods and services is assessed.

The first well, Waki B1, was drilled by the Anglo European Investment Company of South Africa in 1938 near Butiaba. The well drilled to 1227 m, showed some prospectivity, but was not considered to have commercial potential. For the next 45 years no exploration activity took place in the region. The exploration regained momentum in 1983 with acquisition of the aeromagnetic data. After being formed in 1991 out of a petroleum unit in the Geological Survey and Mines Department, the Petroleum Exploration and Production Department (PEPD) embarked on a consistent campaign of data acquisition, processing and interpretation, capacity building and promotion of the country's petroleum potential to attract investment in the sector. The story of petroleum exploration in Uganda over the 25 years from the 1980s is interestingly described in Kashambuzi (2010). A legal and institutional framework was established and new promotional efforts were made. A new sequence of licensing started in 1997 with the award of Exploration Area 3 (EA3) to Heritage in the Semliki area. While the first wells drilled were not fully up to expectations, the situation changed by the discovery of the Mputa oil field by Hardman Resources in 2006. During the following 5 years, the success has been unparalleled with discovery of 18 oil and gas fields and a discovery rate of 95% of the 55 wells drilled in the region.

Proper resource accounts are still being developed to establish reliable estimates for the total oil and gas potential in Uganda. According to Tullow Oil the discovered resources today exceed 1 billion bbl and an additional potential of 1.5 billion bbl is estimated (Glover, 2011). While this estimate can be a realistic assessment, it is still the situation that the region is rather immature with respect to exploration. Hence, an additional 50 prospects have been identified and only 30% of the area has been subject to drilling activities (Kabagambe-Kaliisa, 2010).

As pointed out above, the Albertine Graben is located both on the Ugandan and DRC side of the border. It is structurally a half-graben with the deepest part to the west. Hence, it may be the situation that a large share of the hydrocarbons generated have migrated to the east and been trapped on the Ugandan side. Still, there are prospects identified that straddle the border between the two countries and an additional petroleum potential in DRC is evident.

So far the activities in the Albertine Graben have been focusing on exploration. The total foreign investments have been rapidly increasing from USD 46 million in 2006 to USD 352 million for 2010 as shown in Figure 4.1 The accumulated total is estimated at USD 1,128 million (Kabagambe-Kaliisa, 2011). This investment level is expected to rise sharply when the sector moves into the development phase.

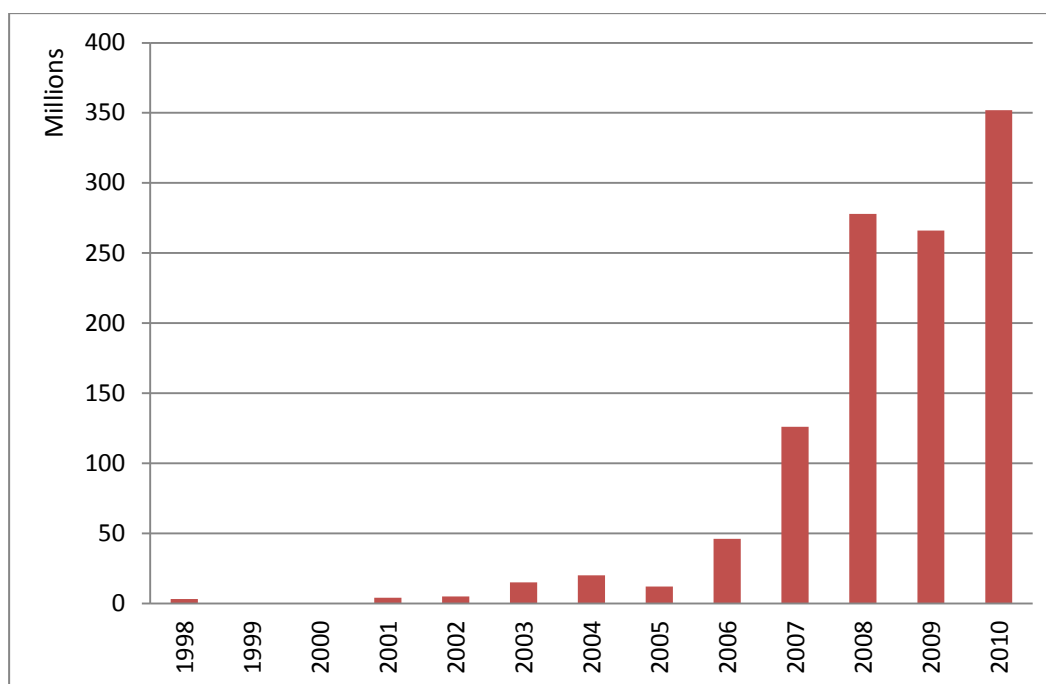


Figure 4.1: Annual foreign investments in Uganda's oil and gas upstream activity. Million USD

The petroleum industry is dynamic by nature and acquisitions and mergers of companies and assets is a part of the normal business in particular in an emerging petroleum province. Hence, the licenses EA1 and EA3 were initially awarded to Heritage Oil and Gas Ltd and Energy Africa while EA2 was awarded to Hardman Resources Ltd and Energy Africa. Tullow Oil entered as a key player in the region first through the acquisition of Energy Africa, then through the purchase of Hardman Resources assets and finally by exercising their pre-emptive rights when the license interests of Heritage came up for sale. The Government however, has requested a back-to-back farm-down of Tullow's interests as a condition to grant approval for the acquisition of Heritage's interests. To meet this condition a transfer of 1/3 of the license interests to each of Total and CNOOC is soon to be concluded. Bringing in larger international companies will also imply access to global experience on national content development and will improve the possibility of a stronger national participation.

4.2 Current share of national content

As pointed out in previous chapters it is the recommendation from this study to base the understanding of national content on the concept of value added in Uganda. It is essential for monitoring the national content development and to determine if the industry commitments are met to have a best possible and consistent calculation of Ugandan share. In order to achieve this, the Ugandan and foreign share of each contract must be determined. This should also be done for any subcontractors to the main contract.

We see it as important that a value for the current share of national content in Uganda is determined. Even though the required data has not been readily available for this study, it is obvious that this share so far has been low. MEMD has conducted a preliminary examination of contracts

entered into between the oil companies and the service providers up to 2009. On this basis the share of investment retained in Uganda of the total foreign investments made, can be estimated to 14% (see information in Kabagambe-Kaliisa, 2010). It is, however, recommended that a separate project is established to review existing data and information to conclude on a baseline.

According to Tullow Oil a total of 550 Ugandan suppliers have been providing goods and services to the operations. Tullow has stated a Ugandan share in terms of contract value of 38%. It is our understanding that this share is established based on the nationality of the contract holder. We will strongly recommend against this principle for national content calculation. This will imply that a contract with a 'shell-company' acting as an agent for foreign company will be categorized as national content. This unfortunate situation has been seen in other countries like Nigeria, and generally works counter-productively and may harm the objectives that a sound national content policy shall fulfill.

4.3 Petroleum outlook

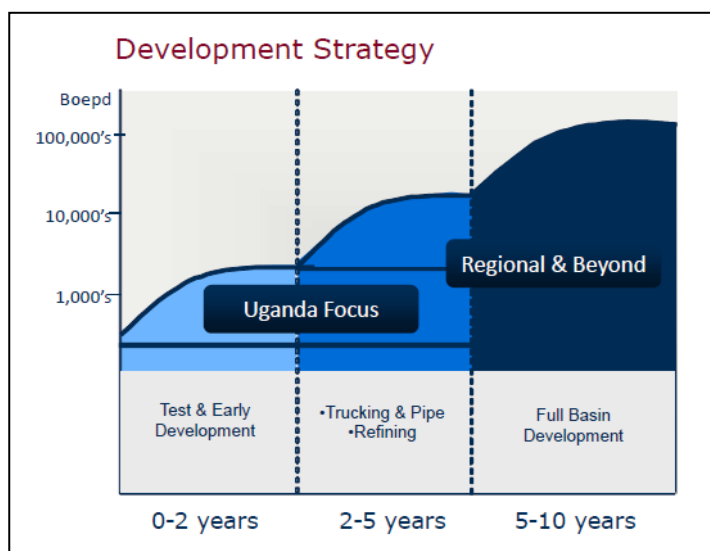
The Albertine Graben is still in an early exploration phase and no proper assessment of the total resource potential has been made. However, field development plans for individual discoveries have been presented and concepts for the basin development are being discussed. Based on a possible resource potential of 2.5 billion bbl a basin production potential in excess of 200,000 bbl/day has been estimated (Glover, 2011). A basin development is likely to see to following elements:

- **Field Development:** 18 oil and gas fields have been discovered so far. A large number of an additional 50 prospects is also likely to contain producible petroleum. So far all activities have taken place onshore with prospects in an offshore location tested by deviated wells. A number of future discoveries, however, are likely to be located within the lake and also have to be developed with offshore installations. The fields are likely to be developed as clusters linked into a number of central processing facilities. The fields will require a substantial number of production and injection wells to be developed. We assume that one offshore and approximately five onshore drilling rigs will be required to carry out the drilling and well work-over operations.
- **Gathering system:** The crude oil from the Central Processing Facilities (CPFs) will be transported to a central storage facility which is likely to be located close to Hoima. The facilities will have the required storage capacity and ability to receive and load the required crude oil volumes.
- **Distribution:** The Albertine Graben is a long way from the international markets, and from its landlocked position it is a distance of 1325 km from Hoima to a potential export point in Mombasa in Kenya. The general high pour point of the crude oil caused by a high wax content causes special requirements and extra costs for the operation of a pipeline system, which most likely have to be considered.

To start with the Government has recently completed a feasibility study of a regional refinery. The capacity of a refinery is suggested to be 29,000 bbl/day at the beginning upgrading to 60,000 bbl/day with a potential for further expansion to 120,000 bbl/day (Kasande, 2011). However, the feasible production potential from the Albertine Graben may

very well exceed these volumes. Thus, means to export excess crude oil to the international market has to be considered as well.

Tullow Oil foresees a phased development to take place: a first period up to 5 years with a focus on getting the infrastructure developed along a careful increase in production followed by a full basin development over the following 5 year period (Figure 4.2).



Source: Tullow Oil

Figure 4.2: Development strategy for the Albertine Graben

This stepwise development will have a set of advantages. It will ensure that the development takes place minimizing the negative impact on a vulnerable environment. It will also allow national institutions to gain the required experience. Further, it may reduce the peak demand for labour and transfer some of the demand out in time.

The total investments required to develop the petroleum resources is not known. However, Tullow Oil has suggested USD 6 billion for the exploration and field development. It is believed that this estimate is based on the expected resource base within Tullow's licenses of 2.5 billion bbl. If discoveries should be made in EA5 to the north or EA4 to the south, this would increase the investments required. The refinery feasibility study estimates USD 2,045 million for a 60,000 bbl/day refinery. Further, a pipeline with transportation capacity of 120,000 bbl/day is estimated at USD 1,867 million (Kasande, 2011).

A total investment level for the Albertine Graben development of USD 10 million has been suggested (Glover, 2011). These investments are assumed to translate into 10,000 full time jobs. This cannot be an accurate estimate, and the number of jobs on a permanent basis is lower. On the other hand, more people may also be involved as all the jobs are not necessarily full time positions.

It is hard to make predictions. Some indications may, however, be provided by considering petroleum activities in countries with similar resource endowment as Uganda and an equivalent industrial environment for local content development.

The development of the fields in Chad by ExxonMobil should serve as a relevant comparison for the Albertine Graben³. The reserves to be developed are of about the same magnitude, the stages of industrial development are quite similar, and the petroleum fields in Chad were connected to the international markets by a 1000 km pipeline running through Cameroon. More than 35,000 Chadians and Cameroonians gained employment with the project for varying lengths of time during the course of construction.

At the peak of the construction phase in Q4 2002 about 13,000 people were employed by the project (Figure 4.3). Over the next 8 years the number of Cameroonian employees has gone down from almost 4,900 to 1,000. The peak number was related to the construction of the pipeline. This may indicate that the estimate of 10,000 jobs in Uganda may be in the lower end of the employment that can be expected.

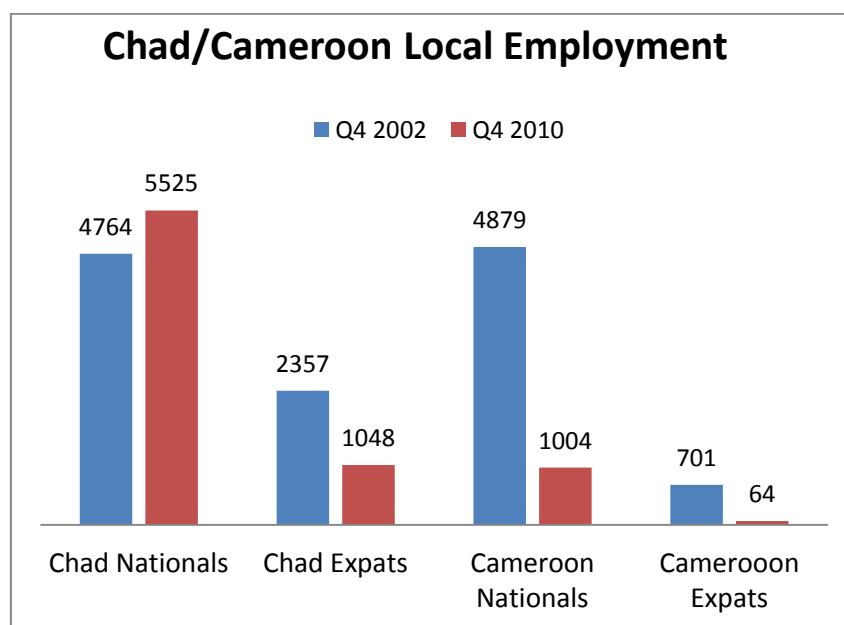


Figure 4.3: Chad/Cameroon local employment

Over 71% of the Chadians and Cameroonians working for the project held skilled or semi-skilled positions as of the end of 2010. More than 6% held supervisory positions. Skilled jobs include such positions as control room operators, technicians for oilfields, construction, machinery, electrical and instrumentation; EMP monitors and welders. Examples of semi-skilled jobs include food service assistants, security guards and welder helpers.

³ ExxonMobil: Chad/Cameroon Development Project, update no 1 & 29.

As evident both from Tullow's forecasts and the data from the Chad /Cameroon, the development of the Albertine Graben petroleum province is expected to go through a peak demand for labour during the construction phase and be facing a lower demand during the operational period. This means that employment will be significantly lower during the phase of production.

According to our information, a power plant will have 40-60 people on full-time permanent employment, an offshore installation 250-300, a central processing facility 200-230, and a refinery 200-300. We expect that to develop the petroleum fields in Uganda, there is a need of two offshore installations, four central processing facilities, a refinery and a power plant, which will generate in the order of +/- 1,700 permanent jobs in the oil industry. The activities they undertake will require a wide specter of input from other firms, and they will last for several decades.

4.4 Services to the Petroleum Sector

The petroleum value chain serves as an illustration both with regards to the variety of services which are required to transform natural resources to revenues, as well as for the long time horizon involved from the onset of exploration to the end of production. It is essential to understand these two dimensions when the required services are analyzed and the potential for national participation assessed.

Many different services

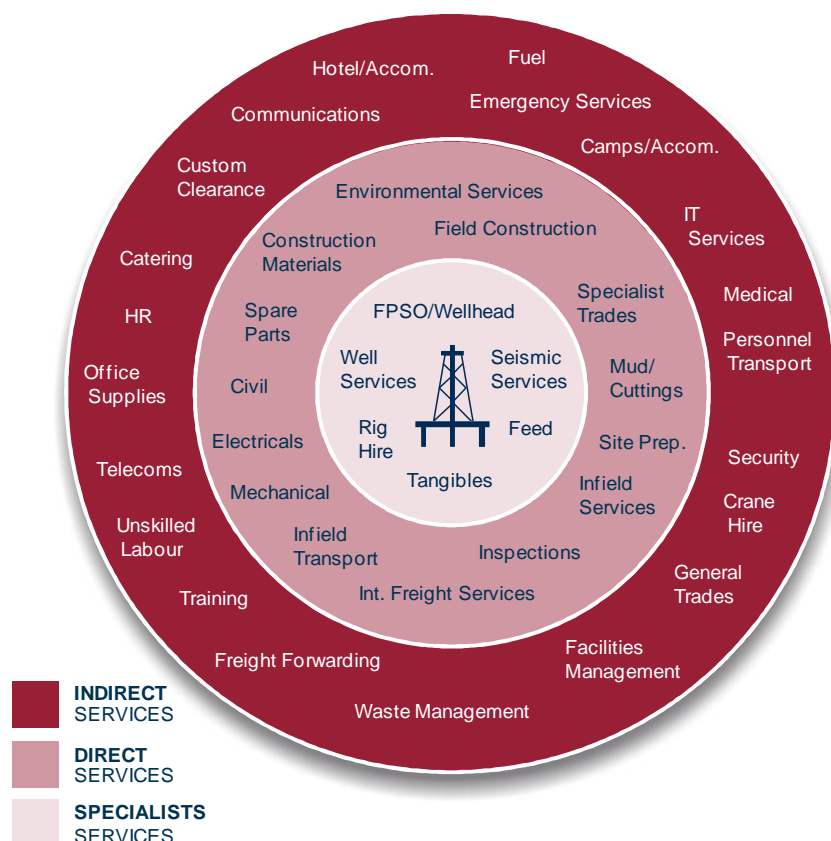
The petroleum sector is generally associated with high technology and specialized services which also has become more advanced over the years. This technology development has to a large extent taken place within the supply industry, which means that the entry barriers for new companies have increased substantially. National content discussions frequently assume that the ambition is to get to this core of the activities. This can, however, only be achieved by a long-term and systematic focus on education and skill development as well as institutional capacity building. This can well be a process requiring a horizon of 15-20 years.

However, while this core technology area and specialist services are essential for the petroleum activities to take place, it is important to recognize that a large specter of additional services are required for the petroleum operations to be successful. Hence, several direct services are required as support to specialist services. Such direct services are to a large extent technologically and organizationally advanced, but can still be developed within a substantially shorter time-frame than core technology functions.

Further, a large set of indirect services will be required. These are in general technologically simpler functions and are also less demanding organizationally. These services should be the short-term focus for national content development where adequate capacity to a large extent already will be available in the host country or can easily be developed.

To undertake these direct and indirect services a wide variety of skills are required. Technicians of many types, as for oilfields, construction, machinery, electrical and instrumentation, as well as welders are needed, and so are skills in food service, logistics and truck driving, to mention some.

This classification of the value chain in core activities and direct and indirect services is illustrated in Figure 4.4 where the different services are classified according to their centrality for the activities undertaken by the oil and gas industry.



Source: Tullow Oil

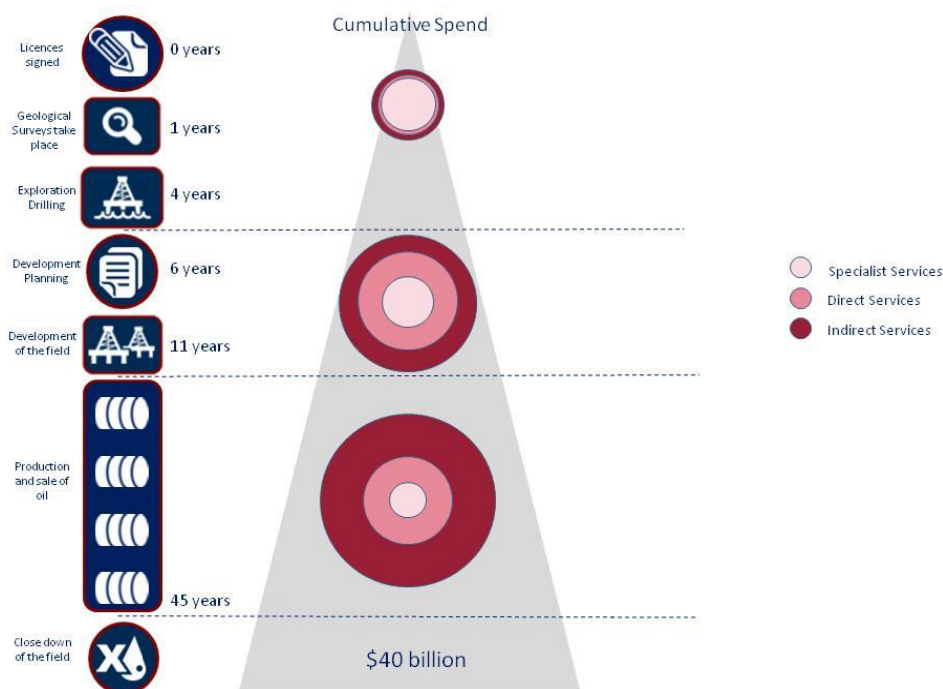
Figure 4.4: Services demanded in upstream petroleum activities

The composition of services demanded changes with the phases of oil development

The demand for different services will develop over time as the project moves from exploration through investments in production facilities and during the period of production. The demand for core services is most extensive during the phase of exploration. However, as the project develops the demand for core services is decreasing compared to the demand for direct and indirect services (Figure 4.5). This means that the potential for national participation in connection with the activities in the oil industry increases over time.

The initial exploration phase has a short duration, typically up to 5 years. In this phase a high proportion of specialist services will be required from seismic acquisition, drilling operations and well services. These are more likely to be sourced from international suppliers.

If the exploration phase concludes positively, a field development phase will start. This phase will also have a compressed time horizon, but will generate substantial employment when the construction phase is ongoing. In addition this phase will generate growth in direct and indirect services and in general provide good opportunities for a sharp increase in national participation.



Source: Tullow Oil

Figure 4.5: The share of different services demanded from exploration, development and production of petroleum

Upon completion of field development, the production period will commence which may continue for more than 30 years. Although the total workforce demand will be lower than during the construction phase, the relative share of direct and indirect services is high and makes up the majority of the spend. The majority of goods and services will be provided in the host country. This is an important phase for national content with high, stable and long-term demand.

The annual volume of demand differs significantly between these phases. It is rather low during the period of exploration. It rises sharply when field development starts and stays very high for a couple of years when demand volumes fall fast. Then comes the period with production when installations will need maintenance, and modifications will take place. The annual volume of demand is much lower than during the peak of field development. As already mentioned, however, it is more stable, long lasting and to a much larger extent directed towards domestic supplies.

4.5 Procurement practices and supply chains

Outsourcing and the implication to national content

The oil industry is well-established on the global scene. It consists of a few major oil companies which are present almost all over the world, and a large number of mainly nationally based oil companies. In addition, there are several supply and services providers, of which many operates on the global scene.

The roles of the oil companies and the service providers have changed substantially over the last three decades. While the oil companies used to have capacity and carried out most of the steps in the value chain, they have over the years constantly redefined and narrowed their core competence. Today their core competence is often restricted to the exploration process combined with the ability to manage risk and raise financing.

The consequence of this strategic shift has been massive outsourcing from the oil companies to the service providers and contractors. The oil companies now have numerous suppliers with contracts frequently organised as a hierarchy of subcontractors, or a supply chain.

This development has a large impact on national content issues and how this topic can be approached. While the oil companies earlier had full control with contracts and hence also the national content component, this power is to a large extent transferred to suppliers which commonly are major international corporations. It is towards these suppliers attention increasingly has to be directed for national content to be developed. Governments, however, only interact with them indirectly through the oil companies. Thus, it is important to assure that the oil companies have the ultimate responsibility for national content efforts all through their supply chains.

Another aspect of relevance for national content is that the oil companies, while being dependent upon a large number of products and services from the supply industry, have the ultimate responsibility for how the entire operations affect health, safety and environment. Thus, the oil and gas companies have set high objectives and require high standards with regard to commercial, environmental and social sustainability, which they transfer to all different parts and levels in their supply chains. It is of utmost importance that all suppliers perform their work in a way which meets these standards. The development of a competent and competitive supply industry, also domestically, must therefore take into account that requirements are established in order to ensure that such standards are met by the supply industry.

The procurement process

Due to the relative importance of supply and service providers, procurement of products and services has a significant impact on the competitive edge of the oil and gas companies. The procurement process can be divided into three phases: (1) strategic planning, (2) contract establishment and (3) contract management. Strategic planning includes demand management, coordinated at a corporate level, on the basis of verified requirements and strategic make/buy evaluations as well as the development and updating of sourcing strategies based on updated market

intelligence related to products and services in demand. Contract establishment includes prequalification and establishment of bidders' list, tender solicitation, receipt and evaluation of tenders and contract award. Contract management includes general contract administration, handling of change orders, amendments, exercise of options (if any), and handling of claims and warranties.

It is obvious that procurement is an advanced process both for the buyer and supplier. In the oil companies procurement is a specialised function generally managed by a central unit at the headquarters (corporate office). This unit will for the larger and global contracts take decisions for the whole corporation. Local offices in single oil producing countries have a limited saying. This will form a major barrier for domestic companies with ambitions to compete. In general, a domestic company will have to link into one of the supply chains to be able to be a part of the global supply contracts.

The services and products required by the oil companies are not all within the high technology segments. Neither are they all served by global contracts. There are also goods and services which have to be developed based on site specific requirements. This offers domestic opportunities because international suppliers and engineering companies primarily offer well-tested concepts from areas where they have experiences. Neither are they very likely to invest resources in competing for small contracts.

For those goods and services where the procurement process and key specifications are worked out locally, it is still possible for domestic stakeholders to have impact on the process and to facilitate solutions and technologies which can be served from domestic suppliers. It will be highly beneficial for national content if there are dedicated persons in the oil company's local branch who are familiar with the capacity and structure of the industry of the host country.

5 UGANDA'S INDUSTRIAL BASE

Industrial capacity is the major factor that explains the level of gross domestic product (GDP) in a country. Uganda's GDP per capita is low compared to other countries. According to the World Bank, Uganda is currently ranked well down in the lower half of African countries. This is a clear indication that the industrial capacity of Uganda is rather weak. A promising sign, however, is that GDP growth has been steady and strong for two decades. Over the previous 5 years Uganda has experienced 4.7% growth as an annual average, which places it at 11th position, i.e. in the upper quartile of the fastest growing African countries.

5.1 Industrial capacity and capabilities

Agriculture

The industrial activities that take place in Uganda are presented in Table 5.1 showing the industry in which the working population of Uganda works. Agriculture, including forestry and fishing is by far the most important industry in Uganda. Almost three out of four Ugandans earn their living from this industry.

Table 5.1: Percentage distribution of working population by industry

	2005/06
Agriculture, forestry and fishing	73.3
Sale, maintenance, repair of vehicles and personal goods	8.1
Manufacturing	4.2
Education	2.6
Transport, storage and communication	2.0
Hotels and restaurants	1.6
Others	7.6
TOTAL	100

Source: Uganda Bureau of Statistics "2010 Statistical abstracts"

When considering national content in connection with the petroleum activities, manufacturing generally stands out as an important industrial activity to build on. At the aggregate level, however, manufacturing does not play any significant role in the Ugandan economy.

Small scale and loosely organized production

The overall picture of industrial activities in Uganda is one of small scale production. One indication is to consider what kind of employment the working population actually has. According to Table 5.2 only one of six are paid employees, i.e. they are employed by a firm or an organization. The majority of the working population work on their own, or in a family type of business. This is quite typical in

an agrarian society. Thus, urban areas should be different, which also is clearly reflected by the fact that almost half of the working population in Greater Kampala are paid employees.

Table 5.2: Percentage distribution of working population by status in employment

	2005/06	Great Kampala 2009
Employer	0.5	6.9
Own account worker	45.3	35.1
Contribution family worker	37.9	5.0
Paid employees	16.3	49.3
Working on household farm	-	3.7
TOTAL	100	100

Source: Uganda Bureau of Statistics "2010 Statistical abstracts"

The dominance of small scale business is also confirmed when considering the number of employees in formally registered firms. There is no information on firms with less than 5 employees, which most likely capture most of the industrial activities that take place. But even when considering firms with 5 employees and more, as in Table 5.3, small firms dominate. Of these almost two of three have 5-9 employees, and more than 85 per cent have 5-19 employees.

Table 5.3: Size distribution of firms, 2006/07

Size Categories	Share of firm population, %
5-9 employees	64%
10-19 employees	23%
20-49 employees	9%
50-99 employees	2%
100 and more employees	2%
NUMBER OF FIRMS	17,084

Source: Uganda Bureau of Statistics Uganda Business Register 2006/7

There are, of course, variations in the average size of firms between industries. In Table 5.4 firms with 5 or more employees are distributed by industry. By international standards, small scale production dominates all industries. However, the average firm size for firms with 5 employees or more is larger in Utilities, in Agriculture and to some extent also in Mining and in Construction.

Table 5.4: Employment in businesses with 5 or more employees by economic sectors, 2006/07

Sector	# of firms	Total employment	Average per business
Agriculture	412	28,407	69
Fishing	124	1,012	8
Mining and Quarrying	39	1,493	38
Manufacturing	3,280	72,189	22
Utilities	29	2,738	94
Construction	282	8,993	32
Trade	5,269	46,776	9
Hotels and restaurants	3,411	32,796	10
Transport	772	14,914	19
Posts and telecommunications	156	2,751	18
Financial Intermediation	993	12,678	13
Insurance	165	1,226	7
Business Services	1,738	27,540	16
Education	2,415	20,675	9
Health and Social Work	5,341	30,943	6
Community and Personal Services	1,041	13,003	12
TOTAL	17,064	317,795	18

Source: Uganda Bureau of Statistics Uganda Business Register 2006/7

Firms with 5 or more employees in Uganda employ less than 320,000 people altogether. This is only a fraction of the working population, which according to Uganda Bureau of Statistics amounts to roughly 10 million. Even though firms may be formally registered with less than 5 employees, this nevertheless indicates very clearly that small scale production dominates industrial activities in Uganda, and that the bulk of these are engaged in the informal part of the economy. Taken together, this means that current industrial capacity is fragmented and only exceptionally organized in larger, sustainable enterprises.

Details on manufacturing

Manufacturing is in broad sense a key industry to support national content ambitions. Partly national content is about goods that are manufactured; partly it is about industrial services which are closely linked to manufacturing production, as engineering.

We have seen that just above 4 per cent of the working population in Uganda works in manufacturing (Table 5.1). That could be roughly 400,000 people. Of these, less than 20 per cent work in firms with 5 or more employees, which confirm our interpretation that current industrial capacity is very fragmented and only loosely organized. Furthermore, most of this capacity is in industries that really have no direct relevance for the core of petroleum activities. The food industry dominates (Table 5.5).

Table 5.5: Manufacturing employment by industry in firms with 5 or more employees, 2006/07

Manufacturing industries	# of firms	Employment	Average firm size
Food industry - <i>Processing of Meat, Fish and Dairy products</i> - <i>Coffee Processing</i> - <i>Grain Milling</i> - <i>Tea Processing</i> - <i>Bakery and Manufacture of other food products</i>	1,117	34,976	31
Beverages and tobacco	83	4,811	58
Textiles and leather products	220	5,493	25
Sawmilling, printing and publishing	285	6,149	22
Chemicals and chemical products	83	2,611	31
Plastics	178	5,115	29
Metal products	484	6,791	14
Furniture and other manufacturing	730	6,343	9
Manufacturing	3,280	72,189	22

Source: Uganda Bureau of Statistics Uganda Business Register 2006/7

5.2 Uganda's position in global competitiveness

When considering the strength and weaknesses of the industrial base in Uganda, comparisons have to be made to other countries. This is no easy task. Industrial capacity is by no means a one-dimensional phenomenon. It is multifaceted, complex, and the result of interacting factors at the macro, meso and micro level of the economy. Comparable data are hard to come by. Nevertheless, there are many attempts to make such comparisons, of which The World Economic Forum's Executive Opinion Survey (2010) is one. This survey tries to capture timely and vital information that is not easily available. The data gathered provide a source of insight and a qualitative portrait of each nation's economic and business environment, as well as how it compares with the situation in other countries. The 2010 survey was conducted between January and May 2010 and covered 139 countries. The data on Uganda are based on responses from 88 persons in Uganda's business, of which two thirds (65%) represented firms in Uganda with less than 100 employees. The information gathered is based on the perception of the respondents. Thus, neither the level nor the comparison with other countries should be interpreted too firmly. The data, however, are indicative and surely provide some relevance when we are to examine the current situation and challenges of different countries.

The World Economic Forum (WEF) organizes the information in Basic requirements to achieve industrial competitiveness and in Efficiency enhancers which drives industrial dynamics. Information on several aspects is used to construct these indexes. Scores are given from 1 to 7, with 7 as the best.

Basic requirements

Table 5.6 shows how Uganda scored on the basic requirements in 2010. Basic requirements for industrial competitiveness are essentially the same as those for industrial capacity building. Uganda is ranked quite low on the global list, as #123 of 139 countries in the study. Of the oil producing countries referred to in Chapter 2, only the poorest performer, Nigeria, is ranked behind Uganda, and the difference is quite small.

Uganda gets its highest score on macroeconomic environment, but is still ranked lower than the other five oil producing countries on this measure. The lowest score is on infrastructure, where Uganda and Nigeria score significantly lower than the other oil producing countries. As for law and institutions, the relative position of Uganda is somewhat better. But it is a rather low score, meaning that there is a huge potential for improvements.

Table 5.6: Basic requirements in WEF's Global Competitiveness Index, 2010: Selected pillars

Country	Basic requirements		Pillars					
			Law and institutions		Infrastructure		Macroeconomic environment	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
UGANDA	123	3.53	104	3.42	127	2.40	114	3.89
Nigeria	136	3.11	121	3.18	135	2.02	97	4.25
Malaysia	33	5.19	42	4.62	30	4.97	41	5.01
Indonesia	60	4.62	61	3.98	82	3.56	35	5.15
Mexico	66	4.51	106	3.36	75	3.74	28	5.24
Brazil	86	4.26	93	3.58	62	4.02	111	4.00

Source: *The Global Competitiveness Report 2010-2011, World Economic Forum*

Table 5.7 shows some of the variables from which the Law and institution pillar have been constructed. In addition to how Uganda ranks on these variables, and the score ascribed to Uganda, we have calculated the Ugandan score relative to the country that has been listed as #30 on each variable. #30 is chosen because it ought to be considered a satisfactory and achievable performance. Uganda's share of #30 is chosen as a measure to indicate the extent of improvements that need to be achieved to reach this level of performance. The closer this share is 100, the less the improvement is needed to perform as #30.

The interpretation of these measures should not be exaggerated. It is, however, worth noticing, that when it comes to Diversion of public funds and Irregular payments and bribes, which both directly concern the issue of corruption, the respondents' perception of Uganda is quite low. So is also Public trust of politicians, which at least indirectly could be related to the same topic.

Table 5.7: Law and institutions in Uganda relative to other countries according to WEF's Global Competitiveness Index, 2010: Rank, Score and Share of #30⁴

Variables to map law and institutions	Rank	Score	Share of #30
Property rights	94	3.8	63
Judicial independence	84	3.4	57
Efficiency of legal framework in settling disputes	63	3.7	75
Diversion of public funds	136	2.0	24
Irregular payments and bribes	122	2.9	42
Public trust of politicians	92	2,2	40
Transparency of government policymaking	69	4.3	84
Burden of government regulation	24	3.9	Is in Top 30
Ethical behavior of firms	104	3.4	57
Strength of auditing and reporting standards	105	4.0	68

Source: *The Global Competitiveness Report 2010-2011, World Economic Forum*

The perception of infrastructure in Uganda (Table 5.8) seems to match the general considerations of Ugandan roads, transport and communication. Uganda ranks low on all the variables from which the infrastructure pillar is constructed. The score is also low, with the exception for air transport and access to port infrastructure in Kenya. Even in these areas there seem to be a significant potential for improvements. Improvements are, however, even more essential when it comes to roads and electricity supply, and in particular in railways if that should be considered a means of transportation that should be prioritized.

Table 5.8: Infrastructure in Uganda relative to other countries according to WEF's Global Competitiveness Index, 2010: Rank, Score and Share of #30⁵

Variables to map infrastructure	Rank	Score	Share of #30
Quality of overall infrastructure	105	3.4	68
Quality of roads	119	2.7	40
Quality of railroad infrastructure	111	1.2	6
Accessibility of port infrastructure	101	3.5	57
Quality of air transport infrastructure	100	3.9	60
Quality of electricity supply	117	2.8	36
Mobile telephone subscriptions, # per 100 population (2009)	129	28.7	23

Source: *The Global Competitiveness Report 2010-2011, World Economic Forum*

⁴ Share of #30 is calculated as how Uganda scores in per cent of the score achieved in the country that is ranked as number 30 for that variable. Scores given in the executive opinion survey are reduced with one as these are measures on a scale from 1 to 7.

⁵ Share of #30 is calculated as how Uganda scores in per cent of the score achieved in the country that is ranked as number 30 for that variable. Scores given in the executive opinion survey are reduced with one as these are measures on a scale from 1 to 7.

At the time of the study, there were 23 mobile telephones per 100 inhabitants in Uganda. This type of communication infrastructure has developed quite quickly over the last 10 years in Uganda and in the rest of the world. The penetration of cellular phones in Uganda is, however, significantly lower than what we see in other parts of the world.

Efficiency enhancers

Uganda also ranks low when the drivers of industrial dynamics, efficiency enhancers, are considered. The score is about the same as what Uganda achieved when basic requirements were considered. That is, however, due to the score on Financial market development, which the respondents seem to perceive much better than what is generally expressed when discussing with industry and government in Uganda. Thus, Uganda's score on the Financial market development index is most likely misleading.

Uganda's score on Technological readiness is not impressive. Neither is the score on Higher education and training. The latter is discussed in Chapter 6. On the other hand, Technological readiness is directly related to the industrial base, and is an important aspect to consider when striving to build industrial capacity.

Table 5.9: Efficiency enhancers in WEF's Global Competitiveness Index, 2010. Selected pillars

Country	Efficiency enhancers		Pillars					
			Higher education and training		Financial market development		Technological readiness	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
UGANDA	102	3.56	127	2.76	72	4.11	112	2.92
Nigeria	84	3.83	118	2.99	84	3.99	104	3.04
Malaysia	24	4.72	49	4.55	7	5.34	40	4.19
Indonesia	51	4.24	66	4.18	62	4.23	91	3.25
Mexico	61	4.09	79	3.94	96	3.82	71	3.55
Brazil	44	4.35	58	4.29	50	4.44	54	3.92

Source: The Global Competitiveness Report 2010-2011, World Economic Forum

In Table 5.10 we have listed variables which are of relevance for the topic of technological readiness. WEF has not included them all in the basis for constructing the pillar in the previous table. They nevertheless shed light on the issue under discussion.

Table 5.10: Technological readiness in Uganda relative to other countries according to WEF's Global Competitiveness Index, 2010: Rank, Score and Share of #30⁶

Variables to map technological readiness	Rank	Score	Share of #30
Availability of latest technologies	93	4.4	68
Firm-level technology absorption	104	4.3	73
FDI as a key source for technology transfer	39	5.0	97
Internet users, # per 100 population (2009)	104	9.8	15
State of cluster development ⁷	118	2.8	58
Quality of scientific research institutions ⁸	99	3.0	54
University-industry collaboration in R&D	78	3.4	68
Availability of scientists and engineers	102	3.6	70

Source: *The Global Competitiveness Report 2010-2011, World Economic Forum*

Uganda scores quite low on all variables with the exception of FDI as a key source for technology transfer. It is, however, so that the more important FDI is as a source for technology adaptation, the poorer is the quality of indigenous factors that can contribute to the absorption and adoption of new technology. Given the industrial structure of Uganda, there is no surprise that cluster development, research institutions and research collaboration does not play any important role as efficiency enhancers in the Ugandan economy. The low ranking on the availability of scientists and engineers should be of greater concern. This affects the ability of technology absorption at the firm level. The latest technologies are generally available in Uganda as in other countries, but the ability to absorb and apply these technologies differs significantly between countries.

For Uganda the low level of internet penetration is quite peculiar. Internet use is far more wide spread in other countries. It is not internet as such, that ought to be of concern. It is the use of internet as a proxy for the application of ICT in work processes in firms, in management routines, and in interactions with customers, suppliers and the financial system that really matters. Firms will most likely have to apply this technology if great ambitions with regard to national content are to be met.

5.3 Constraints for business development

It is evident from the previous discussion that there are a lot of challenges that businesses in Uganda have to face, and which a policy to enhance industrial capacity building has to assess. Constraints are partly to be found at the institutional level and partly at the firm level.

⁶ Share of #30 is calculated as how Uganda scores in per cent of the score achieved in the country that is ranked as number 30 for that variable. Scores given in the executive opinion survey are reduced with one as these are measures on a scale from 1 to 7.

⁷ This is a variable which WEF classifies under the pillar Business sophistication. It is, however, of relevance when discussing Technological readiness, as cluster mechanisms encourage the application of new and adequate technology.

⁸ WEF classifies this variable under the pillar of Innovation. It is, however, also justified to consider it when evaluating Technological readiness.

Constraints at the macro and institutional level

At the macro and institutional level constraints are well described in the National Development Plan of the Government of Uganda, which pinpoints:

- Poor institutional support network
- Access to credit
- Lack of necessary skills
- Low level of technology and lack of indigenous capability for technological mastery
- Inadequate physical infrastructure
- Low Science, Technology and Innovation (STI) capabilities
- Lack of serviced industrial parks
- Poor (unreliable) supply of inputs

Byaruhanga and Mwakali (2011) explains *poor institutional support network* with a challenge to have the institutions that are supposed to support industrial development, to provide basic services and inputs into the enterprise technological activity. Whereas the National Oil and Gas Policy clearly articulates the roles of the private sector, central government, local government traditional and cultural institutions, and civil society, the study found out that local government, traditional and cultural institutions, and civil society, have so far been largely kept out of the oil and gas industry development processes. This problem is further exacerbated by lack of streamlined and adequate coordination between government ministries, agencies and the private sector. The result is an absence of an effective and well managed private public sector partnership (PPP) framework to promote local content in the petroleum industry. For example, a largely redundant, underfunded Uganda Development Corporation (UDC) should be the major investment arm of government in a PPP framework. Difficulties with *access to credit* are explained by the fact that even if there is access, lending interest rates are prohibitively high. As for *lack of necessary skills*, they argue that enterprises still suffer shortage of critical skills; financial, production, material and project management, as well as technical capability. Furthermore, the low level of technology and technological mastery implies that Uganda is grossly deficient in technology and lacks indigenous capacity to copy, adapt and develop technology. *Poor infrastructure* renders the industrial sector in general inefficient, while *low STI capabilities* may not be considered a major obstacle given the current stage of industrial development in Uganda.

Another input to constraints at the institutional level, is to consider the World Economic Forum's Executive Opinion Survey (2010). From a list of 15 factors the respondents were asked to select the five most problematic factors for doing business in their country and to rank them from 1 (most problematic) to 5. These responses have been weighted according to their ranking in order to identify the most problematic factors for doing business in each country. The higher score a factor gets, the more problematic it is. The score for the 15 factors adds to 100 for all countries.

As for Uganda, the respondents really highlight obstacles in three areas: Corruption, Access to financing, and inadequate supply of infrastructure. Tax rates, Poor work ethics, Inefficient government, Inflation, and Inadequate educated workforce are also perceived as problematic when doing business in Uganda, but by far not as severe as the first three areas mentioned.

There seem to be rather broad consensus that Uganda's challenges are in the areas spelt out in the National Development Plan and the World Economic forum's Executive Opinion Survey. At least Private Sector Foundation Uganda (2010) identifies a combination of the two as key challenges for private sector growth.

Constraints at the micro level

Byaruhanga and Mwakali (2011) have surveyed 55 firms, which have either supplied the petroleum activities in Uganda with goods and services or which potentially will do so in the future. Even among these firms, industrial activities to a large extent take place in the informal sector of the economy. Only 35% were registered with Uganda Revenue Authority.

The informal character of industrial activities also affects the governance of firms. The vast majority of the firms surveyed (85%) did not have accounts with formal auditing. Byaruhanga and Mwakali (2011) explain that this is due to poor records and booking culture and/or unwillingness to disclose economic results. This practice will not comply with what is required to work with the oil industry.

Formal requirements are quite strict when working with the oil industry, which also means that capabilities have to be documented. Thus, it is of concern that Byaruhanga and Mwakali (2011) find that two of three firms they surveyed did not have one full time employee with formal training in HSE (Health, Security and Environment). Three of four did not have any professional engineers in their staff, and only a few had some certification of their business of relevance for the oil industry.

In their survey Byaruhanga and Mwakali (2011) asked the companies to list qualifications that were needed to do business with the oil industry, which they experienced not to be available. The companies listed engineering skills for the oil and gas industry, skills in ICT, in mechanical engineering and fittings, as well as quality chefs, qualified hospitality staff and environmental skills. Skills in these areas can be improved and strengthened through training programs of people and in firms. Such skills are essential for industrial capacity building. To the extent there is shortage of such skills, national content development will suffer.

These skill shortages are not identical, but in line with shortcomings for business development as identified by the Business Health Checks of small and medium sized companies in Uganda conducted by Enterprise Uganda⁹:

- Lack of proper financial management systems and controls
- Lack of business plans
- Lack of strategic management
- Inadequate customer follow-up systems
- Lack of credit and debt collection policies
- Lack of pricing policies
- Failure to separate business activities from personal ones

⁹ Enterprise Uganda Foundation Limited is a Public/Private sector national character institution to promote the development of a professional and globally competitive private sector. It was founded by the Government of Uganda and United Nations Development Program.

- Lack of proper human resource management
- Short-term outlook
- Low capitalization
- Limited access to credit

It all boils down to ensure that business is conducted and firms are run according to sound and fundamental principles for good governance, commercial considerations and service friendly attitudes. This is essential when doing business with the oil industry, and also a prerequisite to succeed with private sector development and capacity building in general.

5.4 Capacity building schemes and institutions

There are obvious needs for capacity building in firms, ranking from training in fundamental skills for operating business, calculating costs, keeping of proper accounting systems, certification of skills, procedures and systems, etc. This seems to be well recognized in Uganda, and there are many Private Sector Apex Institutions (PSAIs), which are aware of these needs and engaged in tasks to overcome them. Byaruhanga and Mwakali (2011) refer to interviews they conducted in several PSAIs. They found that even though the PSAIs have a clear mandate, mainly to promote the interests of their members, educate their members in skills and market trends, and play the policy advocacy roles within the private sector and at various levels of government, their power base is weak. For example, they lack adequate and affordable financial capacity as they tend to depend on unpredictable funding from and donations and government. Many also lack the necessary skills and have no appropriate strategies to broaden and sustain their operations and cannot respond to emerging market trends in a timely, accurate and cost effective way.

Nevertheless, PSAIs ought to have a role to play in promoting and educating best practices among their members. In that way PSAIs could be a potent weapon to increase private sector efficiency, particularly customer service, enforcement of anti-trust laws and upholding of internationally recognized procurement practices. Furthermore, PSAIs can be a useful avenue through which establishment and enforcement of standards can germinate and grow. This holds for private sector development in general, as they also may serve as a partner for oil companies and their global service providers in channeling technical assistance to improve their members' productivity and exposure to competitive business practices. PSAIs can be promoted to networking members with venture capitalists; arranging franchises; and assisting members to attain certification of their enterprises, products, processes and employees. They can also link them to training, academic and research institutions.

According to the perspective sketched out, PSAIs could be considered as suitable instruments to support and promote national content development. There are, however, many PSAIs, and in some instances the membership and their mandates may overlap. In others the roles of different PSAIs seem to be duplicated, and unproductive rivalry may lead to patronization in managerial appointments. Thus, to function as efficient instruments in national content development, relevant PSAIs need to agree to the task of national capacity building, and work together in collaboration with oil companies, their global service providers and government to achieve the overall task. Therefore it is important that an appropriate regulatory framework be established for PSAIs.

6 THE HUMAN RESOURCE BASE OF UGANDA

Uganda's population growth rate is one of the highest in the world. The population almost doubled between 1990 and 2010, reaching 31.8 million people, with 85 per cent living in rural areas. The rapid population growth means that there is a large group of young people. In the census of 2002, almost half the population was younger than 15 years. Only just above 20 per cent were older than 30 years.

6.1 School enrollment

Almost all Ugandans enroll in primary education, and in this respect Uganda scores high relative to other countries (Table 6.1).

Table 6.1: School enrollment in Uganda relative to other countries according to WEF's Global Competitiveness Index, 2010: Rank, Score and Share of #30¹⁰

	Rank	Score	Share of #30
Primary education enrollment rate (2008)	38	97.1%	99
Gross secondary education enrollment rate (2008)	132	25.3%	25
Gross tertiary education enrollment rate (2008)	127	3.7%	6

Source: *The Global Competitiveness Report 2010-2011, World Economic Forum*

The high share of attendance in primary education means that literacy is quite widespread, and that the literacy rate in the population is steadily increasing. The literacy rate is 70 per cent for the population as a whole (Table 6.2). The national average is higher for men than for women. There is, however, really no difference according to gender in urban areas. It is the gender difference in rural areas that explain higher literacy among men than women in the society as a whole.

Table 6.2: Literacy rates for population aged 10 and above by gender, 1999/00 and 2005/06

	1999/2000	2005/2006
Males	74	76
Females	57	63
UGANDA	65	69

Source: *Uganda Bureau of Statistics 2010 Statistical abstract*

As Table 6.1 shows, however, the share of enrollment for secondary education is much lower than for primary education, and in this respect Uganda ranks low compared to other countries. So is also

¹⁰ Share of #30 is calculated as how Uganda scores in per cent of the score achieved in the country that is ranked as number 30 for that variable. Scores given in the executive opinion survey are reduced with one as these are measures on a scale from 1 to 7.

the case with enrollment to tertiary education, where the difference to Top 30 is substantial. However, both for enrollment to secondary and tertiary education, there is a relatively even gender balance.

Table 6.3 shows how enrollment rates differ between the oil producing countries the study has focused on in previous chapters. It is quite clear that attendance in secondary and tertiary education is low in Uganda.

Table 6.3: Enrollment rates in primary, secondary and tertiary education in selected countries

Country	Primary		Secondary		Tertiary	
	Rank	Net enrollment	Rank	Gross enrollment	Rank	Gross enrollment
UGANDA	38	97.1	132	25.3	127	3.7
Nigeria	133	61.4	127	30.5	107	10.1
Malaysia	47	96.1	99	68.2	73	32.1
Indonesia	52	95.7	95	74.4	89	21.3
Mexico	28	98.1	61	89.9	80	27.2
Brazil	68	94.2	22	100.8	65	34.5

Source: World Economic Forum. The Global Competitiveness Report 2010-2001

Table 6.4 shows enrollment to tertiary schools in 2007. Almost all enrollment in tertiary education is in universities, university colleges and commercial colleges. The low enrollment in Technical colleges may, however, be of concern if high ambitions with regard to national content in the oil and gas sector are to be fulfilled.

Table 6.4: Enrollment in tertiary education, 2007. Number of students

	2007
Universities	97,049
University colleges	20,033
Technical colleges	1,960
Commercial colleges	17,183
Management	3,835
Health/medical	3,283
Agriculture and forestry	1,712
Theology	1,088
Law Development Centre	800
TOTAL	146,843
- Male	83,404
- Female	63,539

Source: Uganda Bureau of Statistics 2010 Statistical abstract

6.2 Quality of education

Even though enrollment in primary education is high, the learning conditions for primary school pupils may be challenging. According to Uganda Bureau of Statistics (2010 Statistical abstract) the pupil teacher ratio was 49 in 2009, i.e. the national average was 49 pupils for each teacher. The pupil classroom ratio was 68, while 35 per cent of primary school pupils were reported to have inadequate sitting and writing space.

At secondary school the student teacher ratio was 18, which is very good, and 90 per cent of the secondary students are reported to have adequate working conditions in the class room.

When considering different aspects of quality with reference to the educational system in general, the World Economic Forum's Executive Opinion Survey, provides some useful information. According to Table 6.5 internet access is obviously a shortage when Ugandan education is compared to that in other countries. Uganda also scores relatively low on the quality of math and science education. The same holds for the availability of specialized research and training services. When it comes to the quality of the educational system in general, and management of schools in particular, Uganda is considered to perform relatively better.

Table 6.5: Education in Uganda relative to other countries according to WEF's Global Competitiveness Index, 2010: Rank, Score and Share of #30¹¹

Variables to map education	Rank	Score	Share of #30
Quality of the educational system	72	3.6	72
Quality of math and science education	102	3.3	60
Quality of management of schools	84	3.9	74
Internet access in schools	115	2.8	41
Local availability of specialized research and training services	101	3.4	61

Source: World Economic Forum. The Global Competitiveness Report 2010-2011

Byaruhanga and Mwakali (2011) argue that higher education is facing major challenges due to increased emphasis on primary and post primary education in Uganda. They claim that most public universities are characterized by over-crowded lecture rooms, dilapidated physical infrastructures, meager education facilities, and inability to attract the best academic and administrative staff. About 47 per cent of the academic staff work part-time, which is inconsistent with what is required to maintain high quality education and training standards. Despite the rush to attain university education, student enrollment in science and technology in both private and public universities was less than 27 percent of the total enrollment in 2006. This is below what is assumed to be the internationally accepted minimum standard of 40 per cent registration in science and technology in order for a country to economically take off and participate in the global knowledge based economy (National Planning Authority, 2010).

¹¹ Share of #30 is calculated as how Uganda scores in per cent of the score achieved in the country that is ranked as number 30 for that variable. Scores given in the executive opinion survey are reduced with one as these are measures on a scale from 1 to 7.

6.3 Shortage of skills development education

Vocational training is essential in industrial capacity building and for businesses to develop. In-firm training is, however, very low in Ugandan industry. The Vocational Training Centres that should provide technical training for shop floor workers lack financial resources, and enterprises do not attach importance to the diplomas issued by the centres. There are only three vocational training schools in Uganda, and the number of technicians produced is very small in relation to industrial needs. This should be of particular concern if national content ambitions are to be fulfilled. The Uganda Petroleum Institute in Kigumba, which was licensed 2 years ago, is meant to compensate for this. However, it too is yet to fully develop its strategic plan and acquire a management system to guide its growth path.

The shortage of skills development education is acknowledged, and in the National Development Plan (National Planning Authority, 2010) several constraints are listed which contribute to the weak performance in this respect. The most severe is the low quality of vocational training. There is a lack of adequately trained instructors, as there also is a lack of appropriate training equipment. Training of high quality requires appropriate equipment, tools and adequate supply of training materials. The Ugandan system apparently faces a shortage of these inputs (see United Nations, 2003).

Furthermore, the curricula and training programs for skills development institutions are not standardized. There is no uniformity in the courses being offered, the quality of the training as well as the standards to be complied with by all providers. The unstructured nature of non formal training institutions makes coordination of training very difficult. The quality also suffers from an inadequate certification system. There are many certifications being awarded by various bodies in the public sector, private sector and non-governmental organizations without necessary harmonization to ensure proper maintenance of quality and standards. There is a need for benchmarking the system of certification and qualification against set standards by a legally and organizationally competent institution. In addition, vocational training suffers severely from negative social perception and stigma, as vocational training is considered to fit for only the academically less endowed.

6.4 Industrial experience in the human resource base

Skills are not only developed through formal training, but through on-the-job experience in general. When considering the occupations within the working population of Uganda, as shown in Table 6.6, there are mainly plant and machinery operators, crafts and related workers, and legislators, managers, professions and associate professionals that can be expected to produce work experience of direct relevance for the core activities of the oil industry. These make up less than 10 per cent of Uganda's working population. Most industrial experience is from occupations as in agriculture and fishery workers.

Table 6.6: Percentage distribution of working population by occupation

	2005/2006
Agriculture and fishery workers	70.0
Service workers and shop and market workers	9.3
Elementary occupation	9.6
Crafts and related workers	3.5
Legislators, managers, professionals and associate professionals	3.6
Plant and machinery operators	2.2
Others	1.1
TOTAL	100

Source: Uganda Bureau of Statistics 2010 Statistical abstracts

With a working population estimated at 10.9 million Ugandans as at 2005/2006, 10 per cent may still mean a lot of people. That is, close to 1 million people in the labour force of Uganda may be expected to have industrial experience of at least some potential relevance for national content development. This potential of national content ought to be sufficient for both the petroleum and non-petroleum related industries without crowding out either.

7 CONTEXT AND VISION FOR NATIONAL CONTENT IN UGANDA

The issue of national content should be approached with a realistic understanding of what is the potential and what are the requirements to achieve this potential. The development of natural resources will not be **the** answer to the challenges Uganda is facing. On the other hand, the oil and gas resource represents an opportunity both with regards to the creation of jobs and business activities. This is actually what national content is about. Properly implemented a policy to enhance national content may function as a positive catalyst in the overall task of transforming the natural resources into sustainable assets for the country as a whole, and for private sector development in general. In short, it may become one important factor for Uganda when dealing with the challenges of generating economic growth to eradicate poverty and to create lasting value to society. Actually, it ought to be Uganda's vision that the petroleum age of the country shall become an époque in the development of Uganda into a prosperous society. It shall not be allowed to end only as an episode.

7.1 Opportunities

We have in previous chapters argued that the number of permanent jobs in the oil and gas sector is not likely to exceed 10,000, when the activities peak, and may be only 20 per cent of that during the phase of production. In addition, indirect jobs may be 3-5 times as high when production takes place. Comparing this to the total workforce in Uganda, this is a rather marginal contribution. The total workforce was in 2005/2006 estimated at 10.9 million. With increase in population this number is today likely to have passed 14 million. Hence, the oil and gas activity will probably not provide more than about 0.2% of the total number of jobs required in the country.

The economic impact, however, is larger. The average monthly salary in Kampala in 2009 was stipulated at UGX 150,000 and substantially lower in the country in general. The wages in the petroleum sector should be expected to be well above the country average. Further, the direct payments made for local labour, goods and services, will generate additional demand.

The development and subsequent production from the oil fields found so far in Uganda will have a time horizon of about 30 years. This is only a spike in a historic perspective, but also limited in a more current setting. There are a couple of comments, however, that can be made to this. First, additional discoveries may be made that can prolong this time horizon significantly. This can be new fields in Uganda, but also in the DRC part of the Albertine Graben. The market potential for capacity building in this area should also be considered in a wider perspective. Hence, the whole East African region can be a market to be served by capacity developed in Uganda. Furthermore, competence developed to serve the petroleum sector will also have relevance for other sectors. Hence, the benefits of the capacity building and national participation lie well outside a narrow view of the petroleum activities in Uganda.

It is also logical to take this reasoning one step further and suggest that Uganda can serve as a competence center for the oil and gas sector in the East African region. There already exist a BSc in petroleum geosciences at Makerere University, the diploma at the Uganda Petroleum Institute in

Kigumba, and a MSc degree for petroleum geosciences at Makerere University that will also serve neighbouring countries. Such initiatives within education can be extended and high level curriculums can be developed also within other disciplines of the sector. This could be within petroleum engineering, economics and law.

Another aspect of building Uganda to become the petroleum center of East Africa is to become the location for the regional offices of key service companies and technology providers internationally. As Uganda now is in the forefront of oil and gas exploration and development in the region, this is a logical idea to pursue. The establishment of international companies will require an attractive business environment. But also the development of high level petroleum education will be an asset of interest to high-technology companies. A longer term ambition should be to develop cooperation between international industry and educational institutions through which Uganda could become a centre of excellence for R&D activities.

While these visions can serve to give ideas for the long term perspective, the shorter term challenges should not be underestimated. Hence, the existing capacity both within the domestic industry and the educational system is limited and takes time to be developed. Realizing the time required for a more general private sector development to take place and not at least for educational systems to develop and deliver trained individuals, it is obvious that the short-term national participation only can be achieved through close cooperation with the oil companies and their contractors. This will be further elaborated when the recommended strategies are discussed.

We also expect that most of national content in the short term will be achieved through employment of Ugandans in foreign-owned firms, simply because there are few Ugandan-owned firms of relevance. Over time national content hopefully trigger entrepreneurs to establish firms, which will mean that national participation in the oil industry increasingly should consist of Ugandan owned firms, which gradually will move into more advanced services.

7.2 Limitations for policy design and implementation

Uganda is a member of organizations whose objectives are to stimulate trade and remove technical barriers between the countries in this respect. The most important are the East African Community (EAC) and the World Trade Organization (WTO).

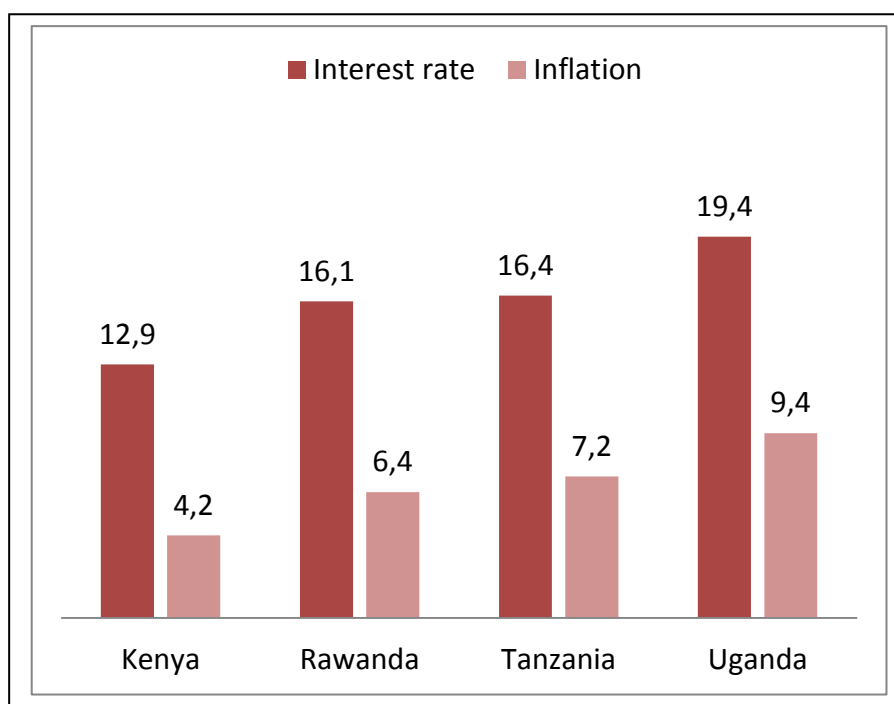
The EAC was in the start focusing on the establishment of a common market with free flow of labour, goods, services and capital. The ambitions are apparently developing rapidly, and a monetary union and political integration are moving closer. It is apparent that the preference of national providers of goods and services will be contrary to the basic principles of a common market. Hence, it is likely that a legal framework stipulating that a national preference should be given will be challenged.

The same is the situation with WTO. It is our understanding, however, that a case only can be raised by a company with a claim that improper national preference has been exercised. For moderate contracts relating to indirect or supporting services to the petroleum operations, this is not likely to take place. Hence, these international obligations will not apply to capacity building measures, and the selective attendance to these can be carried out without violating them.

7.3 Gaps

There is an obvious gap between the capabilities which today can be offered by the industry in Uganda and the requirements of the oil companies. The exploration, development and production of oil and gas are complex operations, which also have inherent risks both to the personnel involved and the environment. Hence, there are several formal requirements established by oil companies to qualify both companies and personnel to provide services. Certificates to document a specified skill level may be required, and HSE capabilities and systems are mandatory. A set of measures will have to be implemented both with regards to vocational training and certification processes for individuals and companies. The challenge of meeting the required capabilities in the short term has already been pointed out, and the need for cooperation with the international companies to meet skills and standards required is evident.

The access to finance is a major barrier for the development of Ugandan industry. The interest rate, although on a declining trend, is still very high also by an East African standard (Figure 7.1).



Source: Private Sector Foundation Uganda (2010)

Figure 7.1: Interest and inflation rates within the East African countries as of March 2010

An even greater challenge for many companies will be to have access to the financial market at all. In reality a financial market to support long-term investments appears to be almost non-existent. For the majority of companies the use of short-term grey-market loan with skyrocketing terms seems to be the only available possibility. The lack of acceptable collaterals is one of the main hurdles.

Apparently the problem has to be addressed both on a macro and micro level. There is obviously a need to enforce measures that can lead to general market rates that are acceptable to the industry. In addition it will be required to initiate active private sector development programs where finance

should be an integrated part and where appropriate guarantees can be provided for financing to take place.

Uganda is characterized by a large informal sector. A large part of the total industrial capabilities is associated with these small and unregistered enterprises. The enterprises will not be qualified to deliver services to the petroleum sector. They need to be formalized and to become larger in size. In this way, challenges to become future players in the petroleum sector in Uganda resemble the challenges of private sector development in general. In both areas it is needed to formalize business operations and to generate larger companies.

The infrastructure in Uganda needs further major development. The electrical grid is poorly developed and the black-outs are frequent. The road system needs expansion and the railway system is practically non-existent. This puts business in Uganda at a disadvantage.

7.4 Capacity building to expand value adding capabilities

Uganda faces a huge challenge confronted with the task to transform its business and economy to meet the aspirations of its people. This is the issue for the National Development Plan, and in this study we have advocated that national participation in the petroleum industry can be pursued in a way that should give substantial contributions to this overall task. If efforts to increase national participation are properly conducted, i.e. without violating efficiency in the oil industry in any severe way, and without compromising the standards to ensure health, security and environment, it should be possible to develop positive interactive relations between capacity building and national participation of Ugandans and Ugandan firms in the petroleum activities.

This is a huge and challenging task, as the industrial base of Uganda at present is weak. The task is essentially about industrial transformation where national participation in the petroleum activities may be organized in a way that offers opportunities for industrial growth and national wealth. Attention has to be focused on how skills and capacity in people, in firms and institutions link to the building of value generation capacity and expansion of value added activities. This is nicely illustrated in the value added triangle in Figure 7.2. This value added triangle is used by Anthony E. Paul to illustrate Trinidad & Tobago's approach to capacity building and value-added expansion (see e.g. Paul, 2009).¹²

¹² Trinidad and Tobago is one of few countries which can document some success in developing industrial capacity in connection with petroleum activities. Until the early 1990s growth rates were at 2 per cent on an annual basis. Then the government took action and implemented industrial development programs while opening up for foreign investments. Since then the annual average growth rate has tripled. Growth is, however, still led by the petroleum sector, as natural gas has substituted oil, while the non-petroleum tradable sector has been declining (Artana et.al., 2007).



Source :A. E. Paul © 2003

Figure 7.2: Capacity building and value added expansion

When value added capabilities have to be developed from a weak industrial base, the initial focus has to be on skills at lower levels of the pyramid. Skills that are needed to operate business, and which have to be developed and carried in people, are fundamental. In the figure it is mentioned basic technical, managerial and operational skills, which partly are achieved through formal education, partly are based on experience. These basic skills also need to be transferred to firms, which means formal registration and appropriate accounting and management systems. This is actually where Uganda has to start. Skills need to be built in people and employed in firms which operate in the formal sector of the economy.

At the second level there are strategic skills. These are partly inherent in people and achieved through experience and formal education. In that sense it is about human capabilities linked to commercial attitudes, analytical capacity and leadership. This is also part of the challenge concerning capacity building in people, which is has to addressed to transform the economy of Uganda.

Strategic skills are also reflected in the organization of firms in the earliest stages of enterprise development. However, as enterprises and the economy mature and become more advanced, there are two more stages in the value added pyramid. Paul refers to ownership and control where firms accumulate technology and competence through innovative activities, and through mergers and acquisitions or alliances and collaboration. This expands into the accumulation of local capital and eventually public trading of stocks. This is not only enterprise development, but also the development of well-functioning local capital markets.

Altogether this illustrates the direction in which the Ugandan economy should be heading, and which may be fostered by proper national participation in the oil and gas industry. As Paul (2009) puts it, it is not a question as to value added that is achievable within existing national capacity, but how

domestic capacity can be developed through national participation in serving existing and projected demand from Uganda's oil and gas industry?

To summarize; the value added pyramid in Figure 7.2 nicely illustrates the necessity for national content efforts to maintain focus on capacity building in people and in firms, and that these capacity building processes have a potential to deepen and expand. If so, the value generating capabilities within Uganda's industrial base will strengthen over time and contribute to the aspirations of eradicating poverty as well as to generate sustainable growth and national wealth. This is a nice vision and a real opportunity. But it is a long way to go to realize it.

It should also be noted that the development of national content and strengthening of national participation is not something which can be left for the oil companies and the oil industry alone to be responsible for. A successful national content policy requires the coordinated participation of several stakeholders including government on central and local level, educational institutions, NGO etc. It is a matter of identifying the right measures to get people, entrepreneurs and business moving.

Furthermore, a policy to expand national content have to recognize the risk of crowding-out other sectors if major resources are refocused to serve the petroleum sector. It is essential to counter-act such a development. Hence, also the non-petroleum sector has to be closely monitored and proper measures put in place if trends of concern are detected.

7.5 Expectations

There is a long way to go for national participation in the oil industry to develop according to the vision of entering a track of sustainable wealth. Capacity building is needed in a number of areas, and it is bound to take time. Besides the business structure has to be modernized through the building of larger and more professional enterprises which operate in the registered part of the economy. This process will benefit from an active financial sector, which is currently not in a position to make capital available at competitive terms and act as an agent in the consolidation process.

It is impossible to predict how long it will take for such processes materialize, but it will definitely be long, and much longer than generally is expected when countries discover huge resources of oil and gas. In any new petroleum province, expectations are likely to arise among the citizens of the country and its business. These expectations easily rise to become unrealistic with regard to how much and how soon the petroleum activities will benefit the welfare of people in general, and generate business opportunities and jobs for local firms and people. Thus, there is a great risk that what should be considered as normal progress and pace of improvements will lead to disappointment and distress. It is challenging to establish a true and convincing picture of the time that is needed to make real achievements in capacity building, as well as the time that generally is needed from investments take place until the society in general can benefit from the revenues. Hence, it is a huge an important challenge to manage expectations in connection with the development of the petroleum sector¹³.

¹³ The Government of Uganda is aware of this as the handling of expectations is listed as one of the challenges in the National Oil and Gas Policy for Uganda (MEMD, 2008) A Communications strategy for the petroleum sector has also been developed.

8 THE LEGAL BASE FOR NATIONAL CONTENT ENHANCEMENT

8.1 Overall strategic intent

We recommend that Uganda shall take advantage of the unique opportunity that the discovery of oil and gas offers by attracting leading international firms to invest and operate in the country. The overall strategic idea is to use this opportunity to create promising training environments for Ugandans and Ugandan firms by teaming them with foreign firms. This allows people and firms in Uganda's industrial base to participate in solving industrial tasks in connection with the petroleum activities, while having access to advanced competence and technology. One crucial task is to have the international oil companies and other foreign firms to share this idea, and to actively collaborate to its realization.

The general lesson from other countries is that policy and legislation have a great bearing on the processes that are needed to achieve the intended capacity building in people and firms and industry. However, capacity building cannot be legislated, politically decided or achieved overnight. It has to be developed through participating in industrial processes as described above, and through education and formal training. It is the responsibility of the government to offer good and relevant educational programs, but in certain areas it may take place in collaboration with the oil industry. Cooperation with the oil industry, and with the private sector, is even more applicable when it comes to setting up and offer good and relevant business development schemes, as training in management systems, ICT, HSE etc.

It is important to establish a legal framework as reflected through the laws, regulations and license agreements to ensure that national content receives the necessary attention and to enforce national content ambitions. It has to be emphasized, however, that successful national content development cannot be achieved by regulation and legislation alone. An extensive framework often tends to lead to rules that are too ambitiously and strictly enforced, which easily leads to consumption of wealth, inferior industry development, violation of international obligations and corruption. National content should be achieved through capacity building. It is a side-track if the focus of national content is on to what extent the oil companies adhere to strict quantified ambitions set by law or regulation. Real contributions to capacity building, by creating a credible atmosphere for industrial collaboration as well as for the transfer of competence and technology, are the only route to create lasting value to society.

8.2 Legal basis for government involvement

Attention shall be paid to national content

The draft Petroleum Bill from May 2010 is in the final process of being enacted to law. It includes a section addressing the 'State Participation and National Content', which is directly relevant for our discussion.

Article 128 reads

- *The licensee, its contractors and subcontractors shall give priority to competent citizens of Uganda and registered entities owned by Ugandans in the provision of goods and services.*
- *The licensee, and the contractors and subcontractors of the licensees shall give priority to the purchase of local products and services from Ugandans wherever they are competitive in terms of price, quality and timely availability.*

These paragraphs are not consistent. The first one is stricter than the second unless “competent” in the first paragraph are interpreted as to mean the same as being “competitive in terms of price, quality and timely availability” in the second paragraph. It is the formulation in the second paragraph that is most in line with the ideas put forward in this report on national content.

There may also be an inconsistency between the Bill’s preference to “entities owned by Ugandans” and our recommendation that national content should be measured as value added from the use of Ugandan resources in all companies with an infrastructure in Uganda, i.e. also those which are foreign owned. It does not, however, have to be an inconsistency. Value added in firms owned by Ugandans is decided to be the final target through the political system of Uganda. Still, value added by using Ugandan resources in foreign owned firms with an infrastructure in Uganda, should be appreciated as the means we recommend to build industrial capacity. Then such value added in foreign owned firms should be considered as a driver to achieve the final target of creating an indigenous industrial base. This will, however, require that the criteria for awarding national preferences are according to the second paragraph of Article 128.

It is in line with these criteria also Article 130 (6) is formulated:

The licensee shall give preference to the employment of Ugandans with the requisite qualifications, competence and experience required to perform the work.

The Bill also requires the oil companies to train local people either in Uganda or abroad through scholarships and other financial support for education, which is well in line with the perspective of this report.

Monitoring national content

It is the challenge for the government to have the oil companies and their supply chains to collaborate to employ Ugandans and partner with Ugandan firms. Different mechanisms will be applied, which yet has to be decided and put into regulations. It is, however, clear that the Petroleum Bill in Article 128:4 provides a legal basis for monitoring the oil companies with regard to national participation. The oil companies are required to report on achievements in the field of national content on an annual basis:

Within sixty days after the end of each calendar year, the licensee shall provide the Authority with a report of its achievements and its contractors and sub contractors’ achievement in utilizing Ugandan goods and services during that calendar year.

8.3 National content preferences and international obligations

Uganda has entered international treaties regulating the aspects of international trade. The most important are WTO (World Trade Organization) and EAC (East African Community). In principle both of these organizations reflect the principle of free and open trade, and when committing Uganda to this principle, the possibility of preferential treatment of domestic goods and services will be restricted. The WTO agreement on Trade Related Investment Measures (TRIM) explicitly forbids national content requirements with reference to GATT Article III.4 that reads:

The products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.

Read in isolation the first paragraph in Article 128 in the proposed Petroleum Bill will not meet the WTO requirements. The second paragraph however, reflects a much milder discrimination proposing the domestic alternative where the offered goods or services are considered equal. This national preference will hardly be challenged by WTO.

Some countries opt for rules allowing the domestic alternative to be allocated a price preference if within a certain percentage above the competing bid. This rule will, to our understanding, most likely violate the WTO principles.

Preferential treatment is reflected in the legal framework when it comes to training and capacity building and the adherence of the license to the ambitions of Uganda to use the oil activities as a means to build industrial capacity and enhance private sector development. While not necessarily in line with the intent of the free trade agreement, we do not consider it as a violation against international obligations for the government to express expectations as to the share of national content it considers realistically achievable and let the oil companies know it.

8.4 Enactment of the Petroleum Bill

It follows from this discussion that the legal basis that is needed for the government to enforce a national content policy, both to pay political attention to the issue and to enforce it with regard to the oil industry, will be in place when the Petroleum Bill is enacted by the Parliament of Uganda. It should, however, be recalled that neither an enacted law, nor the government, will generate necessary capacity building, which is the essence of the approach we suggest. That will depend on the extent to which the government, the oil companies, their global supply and service providers, local employees and local firms are able to create an atmosphere that encourages industrial collaboration and the sharing of access to relevant competence and technology.

9 RECOMMENDED MEASURES TO INCREASE NATIONAL CONTENT

It is generally recognized that the infrastructure which is supposed to enable business and private sector development in Uganda, is rather poor, and that the financial system in many respects does not serve its purpose for the funding of business development, and in particular with regard to small and medium sized enterprises. Poor infrastructure and a financial system that lags behind will obviously affect efforts to expand national content negatively. Although poor transport may generate a lock-in that can favour domestic production vs. imports, poor transport conditions are in general a disadvantage. Good ICT solutions, including broadband internet access, and stable power connection are regarded as the most essential infrastructure elements, in addition to the need for improving the financial system. These are all obstacles for business development in general, and improvements in these areas will benefit efforts to increase national participation in Uganda's oil and gas sector. However, when recommendations are given as to how national content may be increased, the study has focused on measures that will affect national content in the petroleum industry rather directly instead of discussing challenges for private sector development as a whole.

The recommendations are structured to cover different areas: The establishment of an *institutional framework* to implement national content policies, to ensure *capacity building in people*, capacity building in firms as *enterprise development*, and to *facilitate national participation*, and finally how the *monitoring* of progress with regard to national content will be conducted. These are all recommendations that we advise to be implemented in the short and medium term future.

9.1 Institutional framework

1. Establish a government body for national content enhancement. National content requires the active participation by several ministries, institutions and private sector to be successfully developed. The functional responsibility for national content enhancement, however, should be delegated to one institution, and the Ministry of Energy and Mineral Development ought to be most suitable. To emphasize the importance of national content and to facilitate the communication, we suggest that the national content function is organized as a separate office with adequate capacity within the Ministry. The office should have good relations to other key areas as education and private sector development in general, as well as the oil companies. It may be that an inter-ministerial body should be established as a reference board for national content issues. The processing of applications and requirements, however, should follow normal procedures to avoid red-tape and ensure that transparent and correct principles are followed.

2. Regulate procedures for procurement: The legal base for the government body to engage in the enhancement of national content is in the law (Petroleum Bill). The law should be supported by regulations providing procedures for the dissemination of information on field development plans and future demand, on how oil companies and their supply chains shall adhere to national participation, and what the process of procurement has to respond to. This means that the regulations issued should describe procedures regarding the presentation of field development plans and their approval. Procedures also need to be described regarding contracting plans and contract awards. Inspired from how it was done in Norway, the government should be given the right to suggest that domestic firms are included on the bidders list, but not the right to exclude any that the

oil companies want to invite. The oil companies shall further be required to present and discuss plans regarding contracting strategies and contract design with the government body. Furthermore, the government body shall receive information on who a contract is awarded to, and why this company was chosen if there were domestic bidders that did not succeed. We do not, however, recommend that the government shall have the right to change the decision of the oil company.¹⁴

3. Define and operationalize how national content shall be measured. National content enhancement refers to efforts to replace imports to the oil industry with goods and services which are produced in Uganda by using Ugandan resources (labour, skills, materials, capital). Hence, focus is on value added in firms with an infrastructure in Uganda. Such value added contributions will come from both Ugandan owned and foreign owned firms. As the ultimate goal is to build an indigenous industrial base in Uganda, it is recommended to keep track of to what extent Ugandan controlled firms contribute. Local value added in foreign owned firms should be appreciated and considered a driver for future capacity expansion in indigenous firms.

The definition of value added needs to be operationalized in a way that is clear and easily applicable. It concerns value added through the use of Ugandan resources. This means that contracts awarded to firms registered abroad will not be considered as national content, even though some of the work may have to be done in Uganda. For each contract to a firm registered in Uganda, however, national content in this first level of the supply chain can be calculated by deducting imports, purchases from other firms in Uganda and profits distributed abroad from the contract value. Then, the firms in Uganda which have supplied the goods and services that were purchased locally from the first level in the supply chain, have to be approached to get information on the role of imports in their supplies, and to what extent profits are distributed abroad. National value added at this second level of the supply chain will then be the sales value of the goods and services supplied less imports and profits to foreigners. It should not be necessary to go further down the supply chain. It is, however, necessary to distinguish national value added between Ugandan controlled and foreign controlled firms, and to track how national content differs between different types of services. Foreign controlled firms are firms with more than 50% foreign ownership or more than 50% foreigners on the board of directors.

4. Have the oil companies commit to national content development. The ambitions with regard to national content shall be agreed upon with the oil companies. The agreements with oil companies should reflect the goals for how national participation shall develop. These goals should be realistic and reflect a progressive development over time. The oil companies shall further be challenged to describe how they want to contribute to national content enhancement directly, and through the involvement of their foreign suppliers, by measures to

- Train Ugandan citizens
- Keep Ugandan firms informed about future demand and what it requires to supply
- Team Ugandan firms with foreign supply and service providers
- Train local firms
- Design contracts and contracting strategies with regard to Ugandan firms

¹⁴ In Norway, the government had the right to award the contract to another company than the oil companies in the license wanted. This was only executed at one occasion, but caused a lot of problems because politicians were expected to influence decisions in the petroleum sector more than what is suitable. If executed more, the whole governance system around the petroleum sector would also easily pervert. Thus, we do not recommend Uganda to do the same.

This may apply to the PSA, work plan for exploration, field development plans, and plans for maintenance and operations. Descriptions shall be according to what the oil companies expect to work, what they can commit themselves to and what they are to be held accountable for. The companies shall report on performance with regard to national content to the Government at least on an annual basis.

5. Have an Oil and Gas Industry Suppliers Association established. The private sector should be encouraged to establish an association of oil and gas suppliers. This will provide a platform for advocating the challenges of Ugandan supply and service providers to oil companies and government. In addition this enables government and other stakeholders to channel support to right beneficiaries.

6. The national content policy should be an integrated part of the National Development Plan (NDP). It is important that national participation and national content in the petroleum sector is not regarded as an isolated effort. The policy is fundamentally a general policy for industrial development that should be logically linked to the NDP. The NDP provides a properly diagnosed presentation of the macroeconomic environment, the advantages of enabling infrastructures and the challenges which business development in Uganda has to deal with. National content enhancement in the oil industry has to be considered in this context, and as a means which can contribute to change it for the better.

7. The corruption perception should be reduced. A high corruption perception is likely to act as a main barrier for international companies to establish themselves in the country. Uganda has presently a rating that puts the country on par with Nigeria. The Government should keep focus on this area to strengthen good governance principles. It is recommended that Uganda subscribes to the principles of Extractive Industries Transparency Initiative (EITI) and that all oil companies operating in the country do the same. This will also mean that Uganda complies with the principle of “Free and informed consent” for people affected by petroleum projects.

9.2 Capacity building in people

8. Capacity of vocational training has to be strengthened. A large part of the work force needed by the oil companies and their subcontractors will be skilled and semi-skilled with a vocational training background. The capacity and competence of these institutions will have to be prioritized and improved. Building educational capacity is primarily a responsibility of the Government. It is recognized however, that the development is unlikely to meet the demand if left only for the Government. Hence, it is recommended that the Government seeks the active cooperation with international institutions under potential bilateral support as well as the oil companies to accelerate the development. The Government on its part should make BTNET and education in general a key budget priority.

9. Training centers should be established by the international oil companies (IOCs). Even with the strengthening of the public vocational training as recommended above, this educational channel will only meet a minor part of the demand, in particular in the beginning of the development phase. To be able to ensure that a larger part of the workforce are local, it will be required that training centers

are established by the oil companies and their contractors to qualify larger number of Ugandans for positions required for the development phase in particular. These training centers are meant to be a measure to accelerate the development of relevant capacity compared to what will be achievable if it only should be done through the public educational system. The oil companies will have the motive to work actively on this issue based on agreed goals for national content in the PSAs. This should however, be balanced by the recognition of costs for these training centers as cost recoverable.

10. Uganda should establish institutions of excellence for higher level of education. Uganda should play a leading role in the East African region from the present positive momentum in the petroleum sector for the development of higher level education. Makerere University has already established a BSc in petroleum geosciences and is in the process of establishing a MSc curriculum for geosciences education. It is recommended that this is expanded to cover areas such as petroleum engineering, petroleum economics and petroleum law. We see higher level education of international standards as an important catalyst for the overall development of the sector. An internationally recognized petroleum focused university will ease the establishment of regional (East African) headquarters for international private sector companies in Uganda.

9.3 Enterprise development

11. An adequate capacity building program for the industry should be developed. The present capacity status of the potential suppliers to the petroleum sector should be subject to a Training Needs Assessment (TNA) to identify the major present gaps. This may be within areas as accounting, ICT and HSE. A priority capacity building program should be designed based on these findings. The program should be organized as private-public cooperation and implemented by an appropriate institution, such as the Private Sector Foundation Uganda.

12. Teaming between Ugandan and foreign firms should be encouraged. Capacity building both on individual and company basis will need external support to be developed in time for national participation to take advantage of the fast development of the sector. We propose that this teaming up is achieved both using incentives and regulations. The requirement of a Ugandan partner may be introduced in the PSA as a condition for the procurement. It is essential however, that this teaming should be clearly linked to industrial development and monitored on value added. Shell companies should be strongly discouraged.

13. An SME program for the petroleum sector should be established. Uganda's industrial enterprises are facing several barriers to become qualified suppliers to the petroleum sector. A SME program should be put in place to address these barriers. The program should support projects which are focusing on national capacity and technology development to meet the demand from the petroleum sector. The program should be structured as a co-operation between the government, oil companies, financial institutions and other key players in the real sector. The program should bring in international companies in a sponsorship role and provide access to finance.

14. Industrial projects with a large market potential should be identified. It is of importance that any products that on a short-term basis can be produced in Uganda and serve larger markets are identified. This will serve as important reference cases and can identify barriers linked to the product

qualification and supply chain structure of the oil companies that has to be addressed. The production of high-grade cement has been identified as one project possibility. Developing a production line for this purpose however, will require a larger regional market or a market in additional sectors. So may also be the case with bentonite, which has been launched as another opportunity. Such industrial projects do not really have to be directly linked to core oil activities. If food supply to the oil industry, for example, could be used as a means to establish systems for quality assurance in the production of agricultural products, larger markets could open for an industry that makes up the most of Uganda's economy. Another area to consider is if the oil activities actually may offer opportunities for banking and insurance in Uganda, which in turn also may improve the functioning of Uganda's financial system.

15. Restructuring of the industry should be encouraged. It is a requirement for any company to be a candidate for serving the petroleum sector that it belongs to the formal economy. Further, larger units will be needed to be qualified for more advanced deliveries to the sector. A restructuring of the sector is important both for the national participation in the petroleum sector as for the industrial development in general. A program to stimulate this development should be put in place. The program should combine a financial support program for mergers and acquisitions to take place and to build capacity in companies to prepare them for operations in the formal economy.

9.4 Facilitating national participation

16. Contracts should be structured to align with domestic capacity. The industry in Uganda will at this stage typically have limited capacity and constraints with respect to both human and financial resources. The contracts offered by the oil companies should as far as possible be structured to meet this situation. This implies that the required area of supply should be assessed with the perspective of structuring procurement into smaller packages that can be served by the industry of Uganda. Also the contract should allow a payment structure minimizing the need for working capital with the supplier. Preferably an up-front payment should be offered. The Government has the means to enforce the appropriate contract structures through the PSAs which stipulate that purchase procedures shall ensure that domestic suppliers have adequate opportunities to compete.

17. A central information office for national content should be established. The office for national content enhancement should act as the focal point for all information needed by the local industry to be a participant in the supply to the sector, including all information on required certificates and standards. The office should have full access to all information from the oil companies on their procurement plans. Target groups are Ugandan firms with the ambition to serve the oil industry, and local communities where the oil activities physically take place. The office should also arrange for training and seminars on procurement procedures and related issues. The oil companies will be required to cooperate fully with the office and should support it both with capacity and financial support.

18. A national register for prequalified companies should be established. The qualifications required to become an eligible supplier to the petroleum sector should be agreed upon with the oil companies and harmonized across the different companies. This register should serve as a means for foreign companies to find well qualified Ugandan suppliers to team with, either in joint-ventures or

through ordinary contracting. The register should be developed strictly matching these agreed requirements. Procedures to approve qualifications that are transparent and broadly accepted should be put in place. The operation of the register should be closely followed by representatives of the Government and the industry. A web based solution for access and search should be developed.

9.5 Monitoring national content achievements

19. Apply a holistic approach to monitor national content. Even though national content is defined as value added in Uganda, it is important to monitor national content according to the holistic approach we have applied on national content enhancement. This means that value added in oil related firms in Uganda is only one aspect to be monitored, and where national value added in foreign controlled firms is separated and considered a driver for the ultimate goal of generating value added capacity in an indigenous industrial base.

It is further required to measure and monitor other drivers for this ultimate goal as the number of Ugandans permanently employed in foreign companies in the petroleum industry in Uganda, and their position and remuneration in these companies. It is also important to keep track of initiatives taken to build relevant capacity in Ugandan citizens and Ugandan controlled firms, and the outcomes of such capacity building programs.

In addition, monitoring should be concerned with the ambition to generate sustainable economic growth and to ensure high quality collaboration with foreign firms. Thus, it is essential that national participation in the oil sector is not developed at the expense of other sectors, which means that the development of non-petroleum sectors, and in particular the parts exposed to foreign competition, is monitored as well. It is also necessary to assure that national content enhancement is conducted in a way that continues to attract the interest of leading international firms to participate in the Ugandan oil industry.

20. Establish a system for how to evaluate national content performance. When evaluating the achievements of the policy to enhance national content, focus should be on progress. Targets ought to be set in a realistic, but still ambitious way, with regard to national value added as well as the drivers which are expected to have a positive impact on the ultimate goal of expanding value adding capabilities in the indigenous industrial base. Then, targets should be increased and become more ambitious over time as capacity is expanded and a diversified industrial structure is assured. The first task should be to establish the point of departure with regard to the different variables we have suggested to be measured and monitored. This will require a detailed operationalization of all variables to be considered: the current level of national content, to what extent there is an indigenous industrial base, the current situation with regard to employment of Ugandans in foreign owned firms in the petroleum sector, how to consider capacity building programs for Ugandans and Ugandan firms, and the size of the non-petroleum tradable sector. In essence, this will be a test of how easy applicable the suggested measures are, and give the oil companies, their suppliers and the government office for national content enhancement an opportunity to design and implement systems to ease information gathering for the future. It is essential that evaluations of national content achievements are undertaken in an open and transparent way, as this will be a means to guide public expectations in a direction that actually may be achievable.

9.6 The way forward

The twenty measures we have suggested that Uganda should implement to reap the benefits of national content, will enhance national content in Uganda's oil and gas industry in different ways. Some affect the governance of petroleum activities with regard to establishing a framework for procurement, how national participation can be facilitated, and how achievements with regard to national content should be measured and monitored. Others are directed towards capacity building to strengthen capabilities in people and in firms so that they can be employed in the petroleum industry and provide goods and services in a competitive way.

These measures, and the discussion preceding our recommendations, point out the direction we suggest that Uganda should follow to enhance national content. They need to be detailed before they are implemented. And as experience is made and new insight is won, they need to be reconsidered and improved.

It will definitely be a long way to go until the petroleum activities have served as a means to create sustainable and strong value adding capabilities in Uganda. The way ahead will not be straight forward. It will be bumpy and demanding. It is nevertheless to be regarded as a viable option which has to be grasped if the petroleum activities are to create lasting value for the entire society of Uganda.

We think all the suggested measures are needed in one way or another, and that they all need to be implemented in the short and medium term future. They cannot, however, be implemented all at once. As field development in the Albertine Graben already is about to start, the most urgent matter is to have a government body established which is dedicated to the task of enhancing national content and national participation, and which will take the responsibility of defining and enforcing a policy in that respect. This means to implement procedures and means to enhance national content as described above, to define and measure national content, and to monitor progress with regard to national content. It means to cooperate with the oil companies and the oil industry to have them share ambitions and take responsibility with regard to national content development in Uganda, and to cooperate with institutions in other sectors of the economy to assure efficient cross-sector engagement. This government body needs to be adequately manned and equipped so that it rather soon can take a lead in enhancing national participation in the petroleum activities in Uganda. Then, as lessons are drawn and new opportunities arise, it should be in a position to enforce actions which will improve performance and achievements in Uganda's oil related industries with regard to capacity building and value generating capabilities.

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APPENDIX 1: Other publications from the national content study

The following publications are submitted as a separate volume:

Byaruhanga, J. N. M. and Mwakali, J. A. (2011), Local Content Status in Uganda's Oil and Gas Industry. Unpublished Study Report, Kampala.

Heum, P.; R. Kasande, O.F. Ekern and A. Nyombi (2011), "Policy and Regulatory Framework to Enhance Local Content: Yardsticks and Best Practice", Paper for the 5th Conference and Exhibition on the Petroleum Potential and Investment Opportunities in East Africa, Kampala, Uganda, February 2011. Available as SNF-Work Report No. 2/2011. Also available as Power Point presentation from the conference.

Mwakali, J.A. and J.N.M. Byaruhanga (2011), "Local Content in the Oil and Gas Industry: Implications for Uganda", In J.A. Mwakali and H.M Alinaitwe (eds.), *Proceedings of the 2nd Conference on Advances in Engineering and Technology*, Entebbe, Uganda, 31 January-1 February 2011, Macmillan Uganda (Publishers) Ltd. Kampala, pp. 517-522. Also available as Power Point Presentation from the conference.

APPENDIX 2: Organizations consulted during the work

- Airtel (formerly Zain)
- Architects Registration Board
- Auditor General
- Balma College of Commerce
- Bank of Uganda
- Barclays Bank Uganda Limited
- Buliisa District Local Government
- Bunyoro Kingdom
- Capital Markets Authority
- Centenary Rural Development Bank Uganda Limited
- Chartis Insurance
- Civil Aviation Authority
- East African Development Bank
- Easy Logistics Uganda Limited
- Electricity Regulatory Authority
- Engineers Registration Board
- Enterprise Uganda
- Environmental Consultants (ECO)
- Equator Catering Limited
- Federation of Uganda Employers
- FINA Bank Uganda Limited
- GKK Group of Companies
- Gulu District Local Government
- Gulu Youth Development Association
- HASS Petroleum
- Hoima District Local Government
- Hoima District Farmers Association
- Hoima Town Council Local Government
- Institute of Banking and Financial Services
- INTSOK (Norway)
- IRIS (Norway)
- Kampala City Traders Association
- Kampala International University
- Kitara Institute of Commerce, Media and Vocational Studies
- Kyambogo University
- Law Development Centre
- Makerere University
- Makerere University Business School
- Mbale District Local Government
- Mbale Municipal Council Local Government
- Millennium

- Ministry of Energy and Mineral Development
- Ministry of Finance, Planning and Economic Development
- Ministry of Gender, Labour and Social Development
- Ministry of Information and Communication Technology
- Ministry of Tourism, Trade and Industry
- Mobile Telecommunications Network
- National Agricultural Research Organization
- National Environment Management Authority
- National Housing
- National Organisation of Trade Unions
- National Planning Authority
- National Water and Sewerage Corporation
- Neptune Petroleum Uganda Limited
- NHO (Norway)
- Norwegian Agency for Development Cooperation (Norad), Oil for Development section
- Norwegian Petroleum Directorate (NPD)
- Plan for Modernization of Agriculture Secretariat
- Private Sector Foundation Uganda
- Public Procurement and Disposal of Public Assets
- Public Service Commission
- PVJ Fleet Management Limited
- RKK
- Shell Uganda
- Stanbic Bank Uganda Limited
- Statoil (Norway)
- Surveyors Registration Board
- Total Uganda Limited
- Total E & P Uganda Limited
- Tracesoft Uganda Limited
- Tullow Oil Uganda Limited
- Uganda Association of Consulting Engineers
- Uganda Bankers Association
- Uganda Broadcasting Corporation
- Uganda Bureau of Statistics
- Uganda Clearing and Forwarding Association
- Uganda Communications Commission
- Uganda Cooperative College, Kigumba
- Uganda Development Corporation
- Uganda Electricity Transmission Company Limited
- Uganda Export Promotion Board
- Uganda Industrial Research Institute
- Uganda Institute of Banking and Finance
- Uganda Institution of Professional Engineers

- Uganda Insurance Commission
- Uganda Investment Authority
- Uganda Judicial Service Commission
- Uganda Law Reform Commission
- Uganda Manufacturers Association
- Uganda Meat Producers Cooperative Union
- Uganda Media Council
- Uganda National Association of Building and Civil Engineering Contractors
- Uganda National Bureau of Standards
- Uganda National Chamber of Commerce and Industry
- Uganda National Farmers Federation
- Uganda National Roads Authority
- Uganda Petroleum Institute, Kigumba
- Uganda Revenue Authority
- Uganda Road Fund
- Uganda Small Scale Industries Association
- Uganda Society of Architects
- Uganda Stock Exchange
- Uganda Telecom
- Uganda Tourist Board
- Uganda Transport Licencing Board
- UMEME Uganda Limited
- Uganda Veterinary Association

APPENDIX 3: Acronyms and abbreviations

AMFIU	:	Association of Microfinance Institutions in Uganda
Bbl	:	Billion Barrels
BTVET	:	Business, Technical, Vocational Education Training
CNOOC	:	China National Offshore Oil Company
CPF	:	Central Processing Facility
CSO	:	Civil Society Organisation
CSR	:	Corporate Social Responsibility
DRC	:	Democratic Republic of Congo
EA1	:	Exploration Area 1, etc
EAC	:	East African Community
EIA	:	Environmental Impact Assessment
EMP	:	Engineering Machine Product
FSA	:	Financial Services Associations
GDP	:	Gross Domestic Product
HSE	:	Health, Safety and Environment
ICT	:	Information and Communication Technology
IOC	:	International Oil Company
JLOS	:	Justice, Law and Order Sector
MEMD	:	Ministry of Energy and Mineral Development
MPED	:	Ministry of Planning and Economic Development
MTTI	:	Ministry of Tourism, Trade and Industry
NDP	:	National Development Plan
NEMA	:	National Environment Management Authority
NGO	:	Non-Governmental Organisation
NOC	:	National Oil Company
NPA	:	National Development Authority
OHS	:	Occupation, Health and Safety
OPM	:	Office of the Prime Minister
PAP	:	Project Affected People
PEPD	:	Petroleum Exploration and Production Department
PPDA	:	The Public Procurement Disposal of Public Assets Authority
PPP	:	Private Public Partnership
PSA	:	Production Sharing Agreement
PSAIs	:	Private Sector Apex Institutions
R&D	:	Research and Development
ROSCA	:	Rotating Savings and Credit Association
SACCO	:	Savings and Credit Corporative Society
SEA	:	Strategic Environmental Assessment
SME	:	Small and Medium Scale Enterprise
STI	:	Science, Technology and Innovation
TNA	:	Training Needs Assessment
TRIM	:	Trade Related Investment Measures
UBOS	:	Uganda Bureau of Statistics
UDC	:	Uganda Development Corporation
UGX	:	Uganda Shillings
USD	:	United States Dollars
WEF	:	World Economic Forum
WTO	:	World Trade Organisation