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TRADE & FINANCE
CONFERENCE AND EXHIBITION
SUDAN 2015**

Extractive Industries and Sustainable Job Creation

23–26 November 2015
Friendship Hall, Khartoum

Report of the Conference



Note

This report summarizes discussions and outcomes of the 17th African Oil, Gas and Minerals Trade and Finance Conference and Exhibition (OILGASMINE). The report was drafted by Branko Milicevic, Economic Affairs Officer, UNCTAD's Special Unit on Commodities (SUC), under the direct supervision of Yanchun Zhang, Chief, Commodities Policy Implementation and Outreach Section. Samuel Gayi, Head of SUC, reviewed the report.

UNCTAD's 17th OILGASMINE was held in Khartoum, Sudan, from 23 to 26 November 2015. The conference, organized in collaboration with the Government of Sudan, focused on the role of the oil, gas and mining industries in sustainable job creation in the host country, in particular, and in Africa in general.

Annex 1 presents a detailed programme of the conference.

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I. Introduction

Context and brief history

Africa has a sizeable share of the global reserves of bauxite, chromite, platinum, tin, gold, gemstones, diamonds, manganese, uranium and iron ore. The continent also holds almost 8 per cent of proven world oil and gas reserves. However, Africa's participation in the global oil, gas and minerals value chain is, for the most part, limited to the provision of raw materials. Its extractive industries largely export crudes, ores, concentrates and metals, without significant value addition or creation of a sufficient number of decent, well-paid and sustainable jobs. As a result, many African economies are still highly dependent on the exploitation of their minerals, and fall into the group of commodity-dependent developing countries (CDDCs).¹

Over its 50-year history, UNCTAD has supported the integration of CDDCs into the global economy through its work programme on commodities. In this context, UNCTAD has, since 1996, organized an annual African Oil, Gas and Minerals Trade and Finance Conference and Exhibition (OILGASMINE) in different African countries. This event has provided a platform for an open and inclusive dialogue among all stakeholders – public, private, civil society and academia – relating to the challenges and benefits of the extractive industries in African CDDCs, and the policy options that would enable these countries to maximize the benefits from the sector.

The discussions and outcomes of previous OILGASMINE have contributed to assessing the challenges of Africa's extractive industries, and have also often helped identify investment opportunities. The debates and experiences shared at the conferences have influenced policymaking through a better understanding of the linkages between the extractive sector and other sectors of the economy. This in turn has contributed somewhat to mitigating the impact of price volatility, developing local content, improving access to finance, strengthening environmental protection, enhancing trade capacity, and designing appropriate legal and regulatory frameworks to stimulate investment inflows.

OILGASMINE conferences have also fostered intraregional partnerships, especially South-South cooperation. Furthermore, they have provided excellent networking opportunities for national and international experts and other stakeholders.

Participants and speakers

The 17th OILGASMINE was held in Khartoum, Sudan, from 23 to 26 November 2015. The central theme was **Extractive Industries and Sustainable Job Creation**.

¹ CDDCs are developing countries whose raw commodity exports represent 60 per cent or more of their total merchandise exports.

The largest ever United Nations conference held in Sudan, it attracted more than 700 participants and significant media attention both in the country and abroad.²



The conference featured about 70 speakers (eight of whom were at a ministerial level) and moderators, most of them from the host country. In addition, experts from China, Congo, Egypt, Ethiopia, Germany, Japan, Kenya, Malaysia, Namibia, Niger, Norway, Saudi Arabia, Sweden, Uganda and the United Arab Emirates shared their insights. Several international organizations and associations were also represented, including the African Petroleum Producers' Association, the International Labour Organization (ILO), the International Telecommunication Union (ITU), the United Nations Development Programme (UNDP), and UN-Women. Regional development banks, such as the African Export-Import Bank and the Islamic Development Bank, also participated.

More than 50 companies and institutions, mostly from Sudan, showcased their products and services at the exhibition that was held in parallel to the conference.

Central theme of the conference and four sub-themes

The year 2015 marked a watershed for global development, with the international community adopting the 2030 Agenda for Sustainable Development to end poverty, fight inequality and injustice, and tackle climate change by 2030. In particular, the Agenda's Goal 8 has identified job creation as an important global development priority. Its target 8.5 states: "By 2030 achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value".³

² In addition to Sudan, the conference was covered by the media from Egypt, Greece, Saudi Arabia, South Africa, the United Republic of Tanzania and several member countries of the Economic Commission of West African States (ECOWAS).

³ <https://sustainabledevelopment.un.org/sdg8>.

Even though the extractive industries bring many benefits to host countries, such as government revenues, export earnings and economic growth, through production-sharing arrangements, royalties and income taxes, as well as from field services, they employed less than 1 per cent of Africa's workforce in 2010, according to a 2012 report by McKinsey Global Institute.⁴

The report has also projected that by 2020 some 122 million additional workers will join Africa's workforce. However, only around 72 million new jobs are expected to be created by then, leaving a gap of around 50 million jobs. This signifies, on average, a deficit of around 6 million jobs every year between 2012 and 2020. Given this large projected shortfall, it is imperative that all avenues of job creation in the different sectors of African economies be explored.

The extractive industries could and should contribute to achieving the 2030 Agenda for Sustainable Development, in particular Goals 1 and 8, which aim to end poverty and promote full and productive employment and decent work for all.

The central question at the conference, therefore, was how the development of the extractive industries in African CDDCs could generate wider economic benefits and promote inclusive growth and sustainable development through the creation of productive employment opportunities.

The conference's focus on *sustainable job creation* refers to the process of generating stable, wage-paying, decent jobs in the extractive industries that would contribute to achieving the sustainable development goals. In other words, the job creation process should promote not only economic growth, but also social inclusion and environmental protection.

The discussion, elaborated over 12 sessions, can be divided into the following four sub-themes:

- (i) Investing in Sudan's, and Africa's, extractive industries;
- (ii) Fostering an enabling environment for sustainable job creation through institutional frameworks, finance, training and capacity-building, and technology transfer;
- (iii) Developing local content and promoting economic diversification; and
- (iv) Strengthening gender and intergenerational solidarity.

⁴ <http://www.mckinsey.com/global-themes/middle-east-and-africa/africa-at-work>.

II. Summary of discussions

(i) Investing in Sudan's and Africa's extractive industries

Given that Africa's potential mineral reserves remain largely underexplored, investing in new discoveries is an important step in harnessing the continent's resources. Moreover, this can serve as a basis for sustainable job creation. For this reason, the conference started by providing an overview of investment opportunities in the oil, gas and mineral sectors in Sudan and in other African countries, such as Ethiopia, Kenya, Namibia, Niger and Uganda. Stressing the role of artisanal and small-scale mining (ASM) in job creation, representatives of the Sudanese ministries of minerals and of oil and gas presented a detailed picture of the investment potential in the host country's oil and gas sector and its fast-growing artisanal and small-scale gold mining.

• Artisanal and small-scale mining

Artisanal and small-scale mining⁵ is a labour-intensive process widely conducted on an informal basis. Known to generate more direct and indirect jobs than large-scale mining, it offers significant potential for job creation. It is estimated that there are at least 25 million artisanal miners worldwide, and an additional 150 to 170 million people indirectly reliant on ASM for their livelihoods – a number that is expected to grow to 200 million by 2020. In Africa, ASM creates about 8 million direct jobs which support over 45 million dependents.⁶

A case study on Uganda⁷ indicated that ASM generates up to five times the income of other rural poverty-alleviating activities, while employing ten times more people than the large-scale mining sector. In this way, ASM can stimulate considerable local economic development. The case study further highlights some of the main determinants of future sustainable job creation in the extractive industries: an enabling environment, regional integration, improved monitoring and evaluation, social dialogue, education and reskilling.

• Sudan's metal and mineral resources

Sudan's metal and mineral resources include gold, silver, chrome, asbestos, manganese, gypsum, mica, zinc, iron, lead, uranium, copper, kaolin, cobalt, granite, nickel and tin. Many of these are exploited through ASM, with more than 350 concessions granted for the production of

⁵ Informal mining activities use low technology or minimal machinery (see: <http://www.miningfacts.org/communities/what-is-artisanal-and-small-scale-mining/#sthash.vAPfzUg.dpuf>).

⁶ See: http://www.africaminingvision.org/amv_resources/ISGbulletin4.pdf.

⁷ Siegel S and Viega M, Artisanal and small-scale mining as an extra-legal economy: De Soto and the redefinition of "formalisation", *Resources Policy*, 34: 51–56, 2009.

chromites, alluvial gold, manganese, iron, talc, gypsum, feldspar, fluorite, white sands, mica, salt and building materials. Opportunities for mining rare earth and trace elements are also being explored.

Gold production is particularly strong, with several national and joint-venture companies, such as Ariab Mining Company and Managem Mining Company. Rapid development of the Sudanese ASM gold mining operations has made this sector an important contributor to the country's GDP, generating the lion's share of its exports. ASM accounts for 85 per cent of the total gold extracted in the past five years. More importantly, the Sudanese ASM sector provides jobs for over 1 million miners, mostly engaged in gold mining and extraction. About 4 million dependents directly benefit from the mining activities.⁸ However, ASM has also given rise to many social and environmental challenges; for example, the environmental impact of the use of mercury in the ASM sector remains a serious concern.

To benefit fully from the country's rich mineral resources, the Ministry of Minerals of Sudan has embarked on a strategy to attract more investments with a view to creating more sustainable jobs. The strategy aims at easing procedures for the acquisition of concessions, improving transparency, ensuring equality of treatment for investors, and concluding several concession agreements for all of the country's mineral commodities. The strategy also takes into account environmental and social concerns, including raising awareness of the dangers of the improper use of mercury during extraction of gold. The Ministry of Minerals maintains a database on traditional mining. For its part, the Ministry of Labour of Sudan is also involved in improving occupational safety by providing protective equipment, such as masks and gloves.

• Oil and gas in Sudan

Sudan's hydrocarbon resources can be classified into producing basins (only one basin at this time), early exploration stage basins with proven petroleum systems through discoveries (with five such basins: Rawat, Red Sea, Blue Nile, Um Agaga and Khartoum basins), and proven basins where no notable oil discoveries have yet been made (e.g. Mourdi Basin).

• Investing in Africa's mineral resources

Thanks to its geographic position, Sudan can serve as an outlet for several landlocked African CDDCs, such as Chad, Ethiopia, South Sudan and Uganda, all of which rely on their extractive industries to foster economic growth and create jobs.

In the landlocked countries of the region, such as Uganda, the planned development of its extractive industries and related activities has raised expectations of employment

opportunities, tax revenues and overall economic development. But many challenges remain, such as a paucity of the relevant specialized skills and the limited financial capacity of African or indigenous enterprises to support the extractive industries. These challenges could be overcome through joint ventures and farm-in arrangements⁹ incorporated into existing and new licences, through geophysical surveys and through the development of local oil and gas field services.



Ethiopia has substantial oil, coal and shale gas reserves in its vast basin that are connected with other East African basins. There are four petroleum systems in the Ogaden basin: Bokh Shale, Urandab Shale, Adigrat Formation and the middle and lower Hamanlei area. Recently, a new petroleum system¹⁰ – Gumburo Sandstone – has been identified in Bokh Shale. Ethiopia also possesses significant non-conventional hydrocarbon potential. However, all these resources are yet to play a more prominent role in job creation in the country.

In Niger's petroleum sector, investment opportunities are concentrated in two principal petroleum basins. At present, eight blocks are actively being explored through exploration licences given for a period of 25 years, with a possibility of a 10-year extension. Exploration, production and transport of hydrocarbons are regulated by a new framework called Code Pétrolier, which provides a range of fiscal and customs benefits to potential investors.

Africa's investment potential extends beyond non-renewable minerals and oil and gas. The continent is endowed with a number of renewable energy resources, such as the hydro potential of the Nile, the Congo and

⁹ A farm-in agreement is a written agreement under which a company is entitled to acquire an interest in (but not full ownership of) a mining licence by carrying out exploration work, or contributing a proportion of the cost of exploration work to be carried out.

¹⁰ A petroleum system comprises a pod of mature source rock and all of the migration paths, reservoir rocks, caprocks, and traps that can be charged by that source rock to produce oil and gas accumulations (Allen P and Allen J, *Basin Analysis: Principles and Application to Petroleum Play Assessment*. Wiley-Blackwell, 2013)

⁸ Source: Ministry of Minerals, Republic of the Sudan.

other rivers, biomass in Uganda, and the potential for harnessing significant wind and solar energy throughout the continent.

(ii) Fostering an enabling environment for sustainable job creation

Sustainable job creation is a process of generating jobs that promote economic growth, social inclusion and environmental protection. The principal drivers of this process include, but are not limited to, a sound institutional and legal framework, improved access to finance, adequate training and capacity-building, and innovation and technology transfer.

• Institutional and policy framework

Sustainable job creation is a complex and challenging task, but policymakers have a number of tools at their disposal. These tools range from prudent macroeconomic policies that maintain macroeconomic stability to local content requirements aimed at stimulating broad-based economic development. While these policy tools create an enabling framework for sustainable job creation, it is important for countries to put in place, and continuously support, the institutions needed to implement the policies.

It has been increasingly recognized that a transparent policy framework, including the provision of enabling conditions for the participation of local businesses and workers in resource-related projects, can stimulate sustainable job creation in the extractive industries.

Although some jobs created in the extractive sector provide opportunities for poverty alleviation, the absence of a well-developed institutional framework for sustainable job creation could mean that the environmental and social costs of extraction may outweigh its economic benefits.

It is therefore important for governments to put in place environmental and social safeguards in close consultation and collaboration with the extractive industries. An example of these safeguards is the initiative of the United Nations Development Programme (UNDP) entitled Sustainable and Equitable Management of the Extractive Sector for Human Development. This initiative is based on four pillars: participatory legislation and a policy framework, people-centred exploration and extraction, prudent revenue collection and management, and investment in human, physical, and social capital to replenish depleting, non-renewable resources.

In Africa, various policy frameworks for developing the extractive industries have been developed. One of these frameworks, the African Mining Vision, adopted by the Heads of State at the African Union summit in 2009, advocates the better integration of mining into development policies at local, national and regional levels. For such integration to succeed in Africa, it is necessary to replace an economy based on production of a single

commodity, by a more diversified economy that takes into account the environment, access to affordable energy, and sustainable development in general. Some of the pressing questions that are being raised throughout Africa relate to how the population can benefit from extractive industries, and how local content can be promoted.

In Sudan, for example, recent economic policies and investment laws and regulations have been designed to provide incentives and investment guarantees to prospective investors.

Institutional and policy frameworks of countries from other continents may provide valuable lessons for African CDDCs. For example, Norway, through legislation, contractual regulation, economic incentives, and other measures that stimulate education, training, research and development, demonstrates how petroleum resources can provide long-term benefits to its society even after these resources are depleted.

• Access to finance

Access to finance is a major challenge confronting businesses, in particular, small and medium-sized enterprises (SMEs) in low-income countries. In the least developed countries (LDCs), for example, 41 per cent of SMEs cite a lack of access to finance as a major constraint on their growth and development, as compared to 30 per cent of SMEs in middle-income countries and only 15 per cent in high-income countries.¹¹ In Africa, 32 per cent of businesses cite access to finance as a major constraint on their growth.

In financing Africa's extractive industries, the role of banks and related financial institutions is particularly critical for developing capital-intensive extractive projects that may provide adequate direct and indirect job opportunities. Banks can also support local content in extractive industries through project-related financing programmes, guarantee programmes for obtaining large contracts, country and loan facilitation programmes and advisory services.

Various regional and development banks support job creation in the extractive industries through their financing of infrastructure projects and trade, facilitation of local content development, knowledge-sharing and mobilization of financing through leveraging. Banks, such as the Islamic Development Bank and the African Export-Import Bank, have provided financial and technical support to African entrepreneurs in order to enhance their participation in the continent's extractive industries.

• Training and capacity-building

The level of expertise required in the extractive industries varies in technical complexity and experience, from

¹¹ See: <http://www.worldbank.org/en/results/2013/04/05/msme-finance-expanding-opportunities-and-creating-jobs>.

unskilled labourers to skilled professionals, at different stages of the value chain. It may be difficult for an economy that is short of skilled workers, or has workers with only very limited technical capabilities, to fill job openings and provide services to the industry. It will also be difficult to create forward and backward linkages with the broader economy.

At the conference, national case studies on how local skills are developed through training were shared. In Namibia, for example, where mining has been the backbone of the national economy, the recent development of three new mines has resulted in significant economic gains and job creation. To take full advantage of these opportunities, Namibia has initiated a capacity-building programme for the oil and gas industry through its Petroleum Training and Education Fund (PETROFUND). The Centre for Oil and Gas, established in 2014 and financed by PETROFUND, coordinates research and development and professional development for the industry. Its capacity-building programme provides scholarships and institutional support. So far, PETROFUND has funded 245 Namibian graduates to specialize in engineering, geology, education, resource mapping and environmental management.

Another case study in developing local skills is the work of Rida Mining Group in Sudan. The company, with its three processing plants, is primarily engaged in the production of gold and associated metals from mine tailings. It provides both pre-employment and on-the-job training courses. Importantly, Rida also provides targeted and tailored health and safety courses – both in-class and on-site – on handling protective personal equipment and dangerous substances, and on monitoring of recycled water.

The activities of the Japan International Cooperation Agency (JICA) and the China National Logging Corporation (CNLC) in Sudan illustrate how international efforts can nurture training and capacity-building. JICA's assistance to Africa, which has for many years contributed to economic growth through the development of the mining sector, targets the investment climate, infrastructure and human resource development. JICA's strategy is to develop infrastructure, provide policy support, and help with mineral resource management, mine safety and environmental protection. CNLC offers a range of oil and gas services, such as well development and testing, drilling fluids, wireline logging and coring. The company focuses on providing training to Sudanese staff overseas, including in China. By 2015, 570 trainees had participated in various courses, while more than 60 CNLC personnel from China had joined Sudanese companies, such as GNPOC, PDOC, Petro Energy, WNPOC, Sudapak, Sudapet and OEPA, in order to conduct in-country training and directly transfer their knowledge and experiences.

Another example of developing technical training is the work of the Sudanese Petroleum Training Centre (PTC), a subsidiary of the Sudanese Petroleum Corporation. Since its inauguration in 2000, PTC has conducted about 520 training courses that have attracted over 23,000 participants. The courses cover various industrial, managerial, economic, information technology and financial aspects. PTC activities have contributed primarily to upgrading the performance of the existing workforce in the Sudanese oil and gas industry, which is a qualitative aspect of job creation. PTC plans to expand its services to meet the training needs of neighbouring countries as well.

- **Innovation and technology transfer**

Innovation and technology transfer in the extractive industries are crucial, not only for closing the technological gap in Africa, but also for creating more technical and better paid jobs. For the oil and gas industries in Algeria, Egypt, Mozambique, Nigeria and the United Republic of Tanzania, a possible technological path is the utilization of liquefied natural gas in small-scale power generation. In Sudan, innovations and the use of advanced materials are required for processing highly acidic crude oils at the Khartoum Refinery. These involve technically demanding jobs that provide an opportunity for building a better skilled and educated workforce.

Other possibilities for innovation in Africa include new waste management technologies and the deployment of advanced exploration technologies, such as 4D and advanced 3D mapping techniques, needed to discover unconventional potential reserves, improve well design and enhance oil recovery.

- (iii) **Local content and economic diversification**

- **Developing local content**

Policies to promote local content¹² aim at stimulating broad-based economic development by encouraging economic gains from the extractive industries to trickle down to local businesses and communities. In terms of employment, these policies promote local recruitment, training and career progression of the domestic workforce, gender mainstreaming, the development of local infrastructure and support to small and medium-sized service enterprises through purchase of local goods and services.

From the perspective of host-country governments, optimal local content policies aim at increasing value

¹² It is important to distinguish between "local content" and "domestic content." The latter refers to requirements to use local inputs in the production of goods, but such requirements are prohibited under the WTO Agreement on Trade-Related Investment Measures. By contrast, local content policies require investors to buy goods and services from local suppliers and employ local workers in their projects. In terms of employment, these policies can foster the recruitment, training and career progression of the local workforce.

added without deterring investments, balancing industry and government needs, building on existing capabilities, creating competitive, transparent – and thus sustainable – supply chains or industry, and ultimately encouraging the establishment of internationally competent companies. As such, transnational corporations increasingly seek to incorporate local content as part of their corporate social responsibility efforts.

Sudapet, with its 1,349 employees, illustrates how local content and gender mainstreaming could be nurtured. Sudapet builds competitive advantage by retaining the best talent and developing an advanced knowledge base in the Sudanese oil and gas industry. Women account for 23 per cent of Sudapet's workforce, which is a higher proportion than that found in many developed countries' oil and gas sectors. It is engaged in developing and bringing to market new discoveries in the Sudanese prospective blocks, and in providing oil field services to the industry through its subsidiary companies, such as Blue Nile Processing Company Ltd., Blue Nile Geophysical Company Ltd., Centroid Technical Services Co. Ltd, Petroleum Technical Center, Asawer Oil & Gas, Creative Solutions Co., Ltd., National Upstream Solutions Co. Ltd. and BAJRAWIA Factory. Around 67 per cent of jobs available to local workers in these highly specialized subsidiary companies are technical, requiring expertise in a wide range of fields: from geology to hydrocarbon processing to marketing. These specialized jobs contribute significantly to the economic diversification of the country.

A similar picture can be found in Sudan's mining sector. For example, the Ariab mining company demonstrates how to create sustainable jobs even in the most remote areas. The company is the only employer in a 200-km radius. Its on-site village accommodates 1,200 employees and their families. To make these jobs sustainable in the absence of basic services, the company works to improve the environment, health and safety conditions through corrective and preventive measures, and through the provision of decent medical services for its employees and their families.

• Promoting economic diversification

Without diversification and structural transformation, these resource-rich countries would not be able to achieve either sustainable growth and development or sustainable job creation.

Economic diversification in the extractive industries could be achieved by expanding activities either upstream or downstream. For example, the China National Petroleum Corporation (CNPC) promotes economic diversification in host countries by opening refineries and petrochemical plants that require a more specialized workforce and inputs from other sectors of the economy. CNPC is running 19 projects in seven countries of sub-Saharan

Africa. In Sudan, it is engaged in six different ventures, from upstream operations to trade in petrochemicals. The company also has a strong presence in Chad and Niger. Another, fully integrated Malaysian oil and gas company, Petronas, cooperates with the Ministry of Education of the Khartoum State to provide training to the local workforce in automotive and electrical maintenance, air conditioning and refrigeration, plumbing and building technologies. Petronas has also facilitated the establishment of the Khartoum Vocational Training Centre in collaboration with the Ministry of Education.

Diversification could also be achieved by going beyond a focus on the extractive industry sector, for example by investing in renewable energy. Extractive activities have given rise to several environmental and health concerns, but they also present some opportunities. The concerns could stimulate the creation of green jobs in technical fields such as environmental engineering and risk management. This is vital for the sustainability of the extractive industries as well as for the benefit of the broader economy.

Given its distributed nature, the development of renewable energy could create green and sustainable jobs, while at the same time bridging the urban-rural gap in access to energy. This may be particularly important because in Sudan, as in many other African countries, rural populations have limited access to electricity, which makes the creation of sustainable jobs nearly impossible. Sudan has considerable potential for renewable energy, in particular for solar energy and its hybrids (with diesel-fired generators) in remote areas. On- and off-grid areas (e.g. in the oil, gas and mining sectors) could profit from renewable energy technologies.

Biofuels have recently attracted considerable interest in some CDDCs. According to the Ministry of Petroleum and Gas of Sudan, there is significant potential for biofuel production for use in transportation owing to the country's favourable soil, water resources and climate. With more than 60 million hectares of idle land cultivable through modern or traditional irrigation, Sudan could advance biofuel production, for example by planting jatropha trees in deforested areas of the tropical forests, which in turn could create a significant number of jobs in agriculture and land management. According to the Sugar Sector Strategic Plan 2020, ethanol production is projected to increase from 50 million to 200 million litres by 2020. Sudan also offers good potential for biodiesel production.

(iv) Strengthening gender and intergenerational solidarity

• Women in the extractive industries

The jobs created in the extractive industries do not always contribute to reducing income and gender inequality or promoting social inclusion. Indeed, the job opportunities

created and the associated earning potential generally favour men. Women face difficulties in finding decent jobs in these industries, because these sectors are usually perceived as suitable mainly for men. Other challenges faced by the few women employed in the extractive industries are the limited or lack of a career path and low job satisfaction.

Owing to long-held cultural and social norms, women seldom work at the extractive sites. In Sudan, for example, women constitute only about 6 per cent of the workforce employed in the extractive industries. Moreover, women and children remain more exposed to environmental risks and negative social forces associated with the operations of such industries.

Discussions at the conference touched on many of the bottlenecks to closing the gender gap, including the low participation of women in decision-making, a lack of political will and capacity, gender stereotypes, embedded socio-cultural norms, disproportionate power relations between the genders in households and communities, and insufficient data to inform gender-related policies.



Possible policy responses to overcome the above-mentioned challenges include making financing mechanisms inclusive and gender responsive, promoting transparency and equity in the extractive industries, engaging women in community consultations and appointing them to decision-making positions. For example, UN-Women is engaged in country-level extractive industry initiatives in several African countries such as Malawi, Mozambique, Sudan, the United Republic of Tanzania and Zimbabwe.

At the local level, launching and ending extractive projects may affect women in an indirect, less obvious way. While opening a mine offers women new employment opportunities, it also creates structural shifts: men engaged in agricultural activities move to manual or skilled jobs in mining, while women take service jobs or leave the labour force. Because of these irreversible structural shifts, the effects of a mine closing are often asymmetrical for women. One effect is significantly

reduced jobs in services. The women who lose their jobs generally do not return to agricultural activities and may stay unemployed. For men, the effects are almost symmetrical. When the mines close, men tend to shift back to agricultural production to the same extent as they left it when the mines opened.

On the other hand, it is also reported that new mine operations may improve women's welfare and change the social fabric of the communities that rely on these extractive projects. For example, once a new extractive project is opened, women are 41 per cent more likely to work in services and 24 per cent less likely to tolerate domestic violence.¹³ Women also have better access to health care, while infant mortality decreases.

• Job opportunities for the youth

If job creation in the extractive industries is not inclusive of youth, this could be detrimental to social stability and inclusive growth, and even result in conflicts. Sustainable job creation could contribute to meeting social goals, such as creating more equal opportunities for youth, and therefore strengthening intergenerational solidarity.

At the conference, students and graduates of Khartoum-based universities were able to discuss job opportunities and the skill sets required to work in the extractive industries with representatives of the government and the private sector. Representatives of major employers in the extractive industries explained their human resources policies, workforce planning and mobilization, compensation packages and benefits, and training and development opportunities.

For example, the Ariab Mining Company's representative explained that the company's job creation and recruitment policy seeks to develop capable leaders through strong internal controls and continual performance improvement. For its part, the Greater Nile Petroleum Operating Company (GNPOC) has a training and development programme that aims to equip employees with the skills, knowledge and abilities to be successful both in their current roles and in future roles in the Company. And the GNPOC representative emphasized the critical role of talent planning, acquisition, growth and retention. To achieve this, in recruiting external candidates GNPOC has a rigorous recruiting process that involves 10 steps, between announcing a vacancy to the final placement.

III. Conclusions

The 2015 UNCTAD African OILGASMINE conference produced a plethora of ideas, suggestions and lessons on the role of the extractive industries in fostering inclusive growth and sustainable development in Africa through sustainable job creation and value addition.

¹³ Kotsadam A and Tolonen A, African mining, gender and local employment, *World Development*, forthcoming.

A number of case studies provided valuable insights into the upstream potential, investment climate and existing legal framework of Sudan's oil and gas and minerals industries. Developments in the extractive industries of other African countries, such as Congo, Ethiopia, Kenya, Namibia, Niger and Uganda, were also discussed. Industry representatives from China, Japan, Malaysia, Norway and the United Arab Emirates presented their experiences and views. International organizations and regional financial institutions also shared their views on how to finance investments in the extractive industries

As observed, the challenges facing the Sudanese and other African CDDCs are not unique. Lessons and experiences from other continents are relevant to Sudan and the rest of Africa, and thus deserve to be widely disseminated. They are especially useful when they demonstrate positive impacts of the extractive industries on other sectors of the economy and on job creation, and when they show how problems related to environmental degradation and social exclusion may be addressed.

In tackling the above-noted challenges, African countries may consider adopting the regional approach for engaging in cross-border dialogue in the exploration of resources, given the transboundary nature of the continent's vast oil, gas and mineral deposits. However, first of all, reliable data on Africa's oil, gas and mineral resources are needed in order to devise realistic programmes that foster transboundary cooperation.

Several speakers emphasized (supporting with ample evidence) the need for closing the gender gap in the extractive industries in order to achieve the Sustainable Development Goals.

It was also pointed out that South-South cooperation could complement, though not replace, North-South cooperation. Indeed, the positive outcomes of South-South cooperation are visible in Sudan, not just in oil and gas and mineral exploration (with China, India and Malaysia), but also in agriculture (with Brazil).

The most important lessons learned are related to the process of sustainable job creation and to the drivers of that process. The conference revealed the need for a number of policy initiatives that deserve attention, a major one being the development of local content through all means available. Such means include innovative finance, training and capacity-building, technology transfer, South-South cooperation and mainstreaming gender, while also involving the youth and civil societies in this process. This could contribute towards achieving the structural transformation necessary for sustainable economic growth and development, job creation and poverty reduction.

Although the conference was not intended to lead to formally agreed conclusions and recommendations, the discussions provided an important contribution to the

discourse on tackling the challenges of sustainable job creation in the extractive industries.

The following outcomes were achieved:

- General agreement that sustainable job creation promotes economic growth, social inclusion and environmental protection.
- Realization of the need for strengthening local, national and regional institutions, and developing a comprehensive policy framework to promote sustainable job creation.
- Realization of the urgent need to promote local content through innovative finance, training and capacity-building, technology transfer, and South-South cooperation to achieve sustainable job creation.
- A call for policymakers to mainstream gender and intergenerational considerations in the policy-making process and close the gender gap, in particular in the extractive industries.

Through its organization of this conference, the papers presented, and general support provided during the conference, Sudan demonstrated its commitment to achieving sustainable and decent job creation. The dialogue between governments and the private sector on translating all the good ideas presented at Khartoum into action will continue.

The event considerably increased UNCTAD's visibility in the Sudan, and elsewhere in Africa. It opened several avenues to explore for UNCTAD's future work on capacity-building in the commodities sector and for ensuring that the extractive industries contribute to fostering sustainable development throughout the continent. Many potential areas of cooperation and support were identified and discussed, such as improving the environmental performance of large- and small-scale mining operations, gender mainstreaming and capacity-building in the extractive industries, which require the competence of more than one institution.

UNCTAD, in collaboration with its fellow agencies such as the ILO, ITU, UNDP and UN-Women, along with Pan-African financial institutions (e.g. the African Development Bank, the Islamic Development Bank and the African Export-Import Bank) and civil society organizations, could continue to assist Sudan – and other African CDDCs – in disseminating the lessons learned on sustainable and decent job creation in the extractive sector.

At the end of the conference, a survey was conducted to collect feedback on topics of interest for discussion at future OILGASMINE conferences (see annex 2).

Annex 1: Conference Programme

Monday 23 November

19:30–19:45	19:50–21:00	21:00–23:00
Official exhibition opening	OPENING CEREMONY (Friendship Hall) Recitation of the Holy Coran <ul style="list-style-type: none"> • H.E. Dr. Ahmed Mohamed Mohamed Sadig Al-Karouri, Minister of Minerals, Sudan, President of the Conference • Mr. Samuel Gayi, Head, Special Unit on Commodities, UNCTAD • Ms. Marta Ruedas, United Nations Resident and Humanitarian Coordinator, Sudan • Dr. Mukhisa Kituyi, Secretary-General of UNCTAD • H.E. Dr. Mohamed Zayed Awad Musa, Minister of Petroleum and Gas, Sudan • H.E. Mr. Omer Hassan Ahmed Al Bashir, President of the Republic of Sudan 	Cocktails and dinner

Tuesday 24 November 08:30–10:30

Session 1

UPSTREAM POTENTIAL IN SUDAN'S EXTRACTIVE INDUSTRIES

Chair: **H.E. Dr. Azhari A. Abdalla**, Vice-President of the High Committee of the OILGASMINE Conference, Minister of Petroleum and Gas, Sudan

Moderator: **Mr. Azhan Ali**, President, Petrodar Operating Co. Ltd, Sudan

- Investment climate in Sudan: Laws and regulations
Mr. Mohammed Elmahi Elhadi Kadomah, Study and Research Manager, Ministry of Investment, Sudan
- Minerals potential and resources in Sudan
Dr. Yousif Elsamani, Director General of Geological Research Authority of Sudan (GRAS), Ministry of Minerals, Sudan
- Hydrocarbon potential and resources in Sudan
Mr. Ahmed Gibreel Ahmed El-Amain, Section Head G&G Studies, Ministry of Petroleum and Gas, Sudan
- Investment opportunities in Sudan's hydrocarbon industry
Mr. Abdalla Ahmed Awadalla, Promotion Section Head, Ministry of Petroleum and Gas, Sudan

10:30–11:00 Coffee break, sponsored by PETROENERGY

Tuesday 24 November 11:00–12:45

Session 2

INVESTING IN AFRICA'S EXTRACTIVE INDUSTRIES - OPPORTUNITIES AND CHALLENGES

Chair: **H.E. Dr. Wakgari Furi**, State Minister of Mines, Petroleum and Natural Gas, Ethiopia

- Opportunities and challenges in the extractive industry in Uganda
H.E. Mrs. Irene Muloni, Minister of Energy and Minerals, Uganda
- How can energy extractive resources be used for sustainable development in Africa?
Mr. Mahaman Laouan Gaya, Executive Secretary, African Petroleum Producers Association, Brazzaville, Congo
- Petroleum licensing in Ethiopia: Current activities and opportunities
Dr. Ketsela Tadesse, Director Petroleum Licensing and Administration Directorate, Ministry of Mines, Ethiopia
- Investment opportunities in the oil sector in Niger
Mr. Halilou Kane, Secretary General, Ministry of Energy and Oil, Head of Delegation, Niger

12:45–14:00 Lunch break, Friendship Hall, sponsored by GNPOC

Tuesday 24 November 14:00–15:45

Session 3

INSTITUTIONAL FRAMEWORK FOR DEVELOPING A SUSTAINABLE EXTRACTIVE INDUSTRY

Chair: **Dr. El Shaikh Mohamed Abdel Rahman**, Consultant at the Ministry of Minerals, Sudan

- Legal framework for the petroleum industry in Sudan
Mrs. Muna Ahmed Yasin, Director General, Legal Department, Ministry of Petroleum and Gas, Sudan
- Legal framework for the mining industry in Sudan: Historical background and planning for the next decade
Mr. Ibrahim Mohamed Ibrahim, Head of Legal Department, Ministry of Minerals, Sudan
- Environmental and social safeguards in partnering with the extractive industry
Mr. Abdel Rahman Ghandour, Deputy Country Director, Programme, UNDP, Sudan
- Sustainable job creation in the extractive industries – Legal perspectives when applying a resource management perspective
Mr. Frode A. Bernsten, Partner and lawyer, Simonsen Vogt Wiig Advocacy Firm, Norway
- Environmental management in Sudan's oil and gas industry
Mr. Mustafa Abdalla, Section Head, General Directorate of Safety and Environment, Ministry of Petroleum & Gas, Sudan

15:45 –16:15 Coffee break, sponsored by AFREXIM BANK

Tuesday 24 November 16:15–18:00

Session 4

ARTISANAL MINING – OPPORTUNITIES AND CHALLENGES FOR JOB CREATION

Chair: **H.E. Dr. Wakgari Furi**, State Minister of Mines, Petroleum and Natural Gas, Ethiopia

- Extractive industries and sustainable job creation
Mr. Vic van Vuuren, Director, Technical Team for Eastern and Southern Africa, ILO Decent Work, South Africa
- The role of the Ministry of Labour in job creation in Sudan's artisanal and small-scale mining
Mrs. Fatima Omer Mohamed Gamie, Director of International and Regional Organizations Department, Ministry of Labour, Sudan
- Investing in artisanal and small-scale mining: A catalyst for socio-economic development
Ms. Majala Mlagui, Partner, Thamani Trust, Kenya
- Artisanal mining in Sudan: Opportunities, challenges and impacts,
Mr. Mohamed Sulaiman Ibrahim, Geologist, Ministry of Minerals, Sudan

19:30–1:30 Dinner offered by the Minister of Petroleum and Gas, Oil House, Khartoum

Wednesday 25 November 08:30–10:30

Session 5

FINANCING AFRICA'S EXTRACTIVE INDUSTRIES – THE ROLE OF BANKS AND NON-BANK FINANCIAL INSTITUTIONS

Chair: **H.E. Mr. Badr al-Din Mahmoud Abbas**, Minister of Finance, Sudan

- The role of the banking sector in enhancing extractive industries in Sudan
Dr. Mustafa Mohamed Abdalla, Senior Researcher and Managing Director, Central Bank of Sudan
- Financing Africa's extractive industries – The role of banks and non-bank financial institutions: The example of Sudan
Mr. Abdelrahim Hamdi, former Minister of Finance, National Economy, Sudan
- IsDB's experience in financing infrastructure in the extractive industry in Africa
Mr. Mustapha Corr, Energy and ICT Division, Infrastructure Dept., Islamic Development Bank, Saudi Arabia
- Financing local entrepreneurs in Africa's extractive industries
Mr. Kudakwashe Matereke, Regional Manager, East Africa, for Africa, African Export-Import Bank, Egypt

10:30–11:00 Coffee break, sponsored by PETROENERGY

Wednesday 25 November 11:00–12:45

Session 6

LOCAL CONTENT IN SUDAN'S EXTRACTIVE INDUSTRY

Chair: **H.E. Dr. Mohamed Zayed Awad**, Minister of Petroleum and Gas, Sudan

Co-chair: **Dr. Samuel Gayi**, Head, Special Unit on Commodities, UNCTAD

- Critical aspects of establishing and developing a national oil company: Sudapet's experience
Mr. Salih Gafar, Director General, Sudapet Co. Ltd, Sudan
- The experience of a sustainable local mining industry (Au, Ag, Cu, Zn)
Dr. Mohamed Abo Fatima Abdalla, General Manager, Ariab Mining Company, Sudan
- The success story of a Sudanese oil operating company
Mr. Alfatih Yousif Tamim Fartak, Section Head, Safety-HSE Department, Greater Nile Petroleum Operating Company (GNPOC), Sudan
- The role of national contractors in the oil and gas industry
Mr. Aimen Mohammed Ahmed Aboujoukh, CEO, RAM Energy Co. Ltd., Sudan

12:45–14:00 Lunch break, Friendship Hall, sponsored by PETRODAR

Wednesday 25 November 14:00–15:45

Session 7

TRAINING AND CAPACITY-BUILDING IN THE EXTRACTIVE INDUSTRIES FOR SUSTAINABLE JOB CREATION

Chair: **H.E. Mrs. Kornelia Shilunga**, Deputy Minister of Mines and Energy, Namibia

Co-chair: **Dr. Samuel Gayi**, Head, Special Unit on Commodities, UNCTAD

- Developing local skills in Sudan's extractive industry
Mr. Osama Abdel Karim Aloub, Technical Adviser (Metallurgy), Rida Mining Group, Sudan
- Education and training for engineers and workers by academic, business and governmental circles, and Japan's assistance to Africa
Dr. Yoshitaka Hosoi, Senior Advisor for Natural Resources, Japan International Cooperation Agency
- The role of the Petroleum Training Centre in the development of the oil sector workforce in Sudan
Mr. Hamid Sulaiman Hamid, Technical Training Manager, Petroleum Training Centre, Sudan
- CNLC's experiences in Sudan, from zero to one
Mr. Alraiah Abd Alqadir Adam, Human Resources Manager, China National Logging Corporation

15:45–16:15 Coffee break, sponsored by AFREXIM BANK

Wednesday 25 November 16:15–18:00

Session 8

INNOVATIONS AND TECHNOLOGY TRANSFER IN THE EXTRACTIVE INDUSTRIES

Chair: **Mr. Andrew Rugege**, Regional Director for Africa, International Telecommunication Union

- Utilizing liquid natural gas in small-scale applications in power generation and industrialization, and as an alternative fuel
Mr. Abdalla Abdalla, Managing Director, 3A-Cryogenic FZE, United Arab Emirates
- Innovation and technology transfer in the petroleum exploration and production industry in Sudan
Mr. Abd El Majed Mansour, Development Manager, Ministry of Petroleum and Gas, Sudan
- Processing of high tan crude oil in Khartoum Refinery: A unique experience
Mr. Mohamed Osman Khalil Ahmed, Studies Section Head, Ministry of Petroleum and Gas, Sudan
- Petroleum laboratories, research and studies: Towards excellence in oil and gas research, studies and analytical services
Mr. Abdel Gadir Ibrahim Abdel Gadir, Marketing Manager, Central Petroleum Laboratories, Ministry of Petroleum and Gas, Sudan

19:30–21:30 Dinner, sponsored by the Minister of Minerals, Qasr Al Qayrawan, Khartoum

Thursday 26 November 08:30–10:30

Session 9

SOUTH-SOUTH COOPERATION FOR MINING AND PETROLEUM SECTOR DEVELOPMENT

Chair: **H.E. Prof. Ibrahim Ghandour**, Minister of Foreign Affairs, Sudan

- Prospects for South-South cooperation in trade, investment and technology in Africa
Mr. Ahmed Hussein Ahmed, Adviser, United Nations Office for South-South Cooperation for Arab States, Sudan
- The integration of petroleum upstream and downstream to promote economic development in host countries
Mr. Dou Lirong, Vice-President, China National Petroleum Corporation International, Nile Corporation.
- Building institutional capabilities: PETRONAS' journey in human capital development
Mr. Mohamad Yusof Shahid, Country Chairman, Petronas, Sudan Operations
- The NRDB project: Providing Darfur with critical datasets to support natural resource management and development: Geology and water resources
Dr. Steven Boger, Senior geologist, and **Dr. Heinz W. Kreutzer**, Water resource specialist, GAF AG, Germany

10:30–11:00 Coffee break, sponsored by PETROENERGY

Thursday 26 November 11:00- 12:45
Session 10
WOMEN IN EXTRACTIVE INDUSTRIES

Chair: **Dr. Gamar Al Khalifa Habani**, Representative, Women's Union, Sudan

Moderator: **Ms. Majala Mlagui**, Partner, Thamani Trust, Kenya

- Extractive industries driving Africa's growth, leaving no one behind: Gender equality and women's empowerment perspective
Ms. Jennet Kem, UN-Women Country Representative, Khartoum, Sudan
- Women in extractives: What does recent evidence show?
Dr. Anja Tolonen, Assistant Professor, Barnard College, Columbia University, New York, USA
- Women in extractive industries in Sudan – Oil, gas and mining: Opportunities and challenges
Mrs. Nagat Osman Mahmoud, HR Section Head Training and Development, Petro-Dar Operating Company, Sudanese Business Women Secretariat, Sudan
- The success story of a female entrepreneur in the petroleum business in Sudan
Mrs. Widad Yagoub Ibrahim, Founder and General Manager, BEE Group, Sudan

Thursday 26 November 12:45–14:00 Lunchtime Special Session
JOB OPPORTUNITIES IN THE EXTRACTIVE SECTOR

Chair: **Dr. Mohamed Abu Fatima Abdalla**, General Manager, Ariab Mining Company Ltd, Sudan

- Contribution of higher education to capacity-building and job creation in the extractive industries
Prof. Abdalhaleem Hassan El-Nadi, University of Khartoum, Sudan
- HR performance management and appraisal: Overview of AMC's experience
Mr. Mohamed Modawi, Human Resources Manager, Ariab Mining Company
- Resources and talent planning
Mr. Al Sayed al Basheer, Human Resources Manager, Greater Nile Petroleum Operating Company (GNPOC)

Thursday 26 November 14:00–15:45

Session 11

MOVING TOWARDS A GREENER ENERGY MIX: INVESTING IN RENEWABLES FOR GREEN JOBS

Chair: Professor Rashid Ahmed Hussein, Vice Chancellor, University of Sudan

- Clean energy for sustainable development

Mr. Yassir Abdallah Saeed, Director of Renewable Energy, Ministry of Electricity, Sudan

- Story of a successful ,sustainable green business model

Mr. Hassan Hashim Erwa, Sales and Marketing Corporate Director, Kenana Sugar Co., Sudan

- Biofuel potential for the transport sector in Sudan

Mr. Abdel Azim Widaa Jad Alfadeel, Ministry of Petroleum and Gas, Sudan

- Converting naphtha and low octane gasoline to high octane gasoline

Prof. Manal Mohamed Metwaly, Director of Production Planning Department, Middle East Oil Refinery MIDOR, Egypt

15:45–16:30

Closing ceremony

- **H.E. Dr. Ahmed Mohamed Al-Karouri**, Minister of Minerals, Sudan

- **H.E. Dr. Mohamed Zayed Awad**, Minister of Petroleum and Gas, Sudan

- **Dr. Samuel Gayi**, Head, Special Unit on Commodities, UNCTAD

16:30–17:00 Refreshments, sponsored by AFREXIM BANK

Annex 2: Participants' feedback

A survey conducted among the participants on potential topics for future conferences revealed strong interest in training, capacity-building and technology transfer, which could be a theme for a future OILGASMINE conference. Other topics singled out by the survey participants were: the environmental impact of oil, gas and mining operations, renewable energy, investment and local content development. The results of the survey are summarized in the chart below.



