

Enhancing Value Addition In the Extractive Sector in Africa: Why is it Important and How can it be Achieved?

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List of Abbreviations

ACEP	- Africa Centre for Energy Policy
ACET	- African Centre for Economic Transformation
AMDC	- African Mineral Development Centre
AMV	- African Mining Vision
ASM	- Artisanal and small-scale mining
CEO	- Chief Executive Officer
ECOWAS	- Economic Community of West African States
FDI	- Foreign direct investment
HRD	- Human resources development
ICT	- Information communication technology
IOCs	- International oil companies
LC	- Local content
MT	- Metric ton
MVC	- Mineral value chain
RBI	- Resource-based industrialization
R&D	- Research and development
RD&I	- Research, development and innovation
RECs	- Regional economic communities
ROI	- Return on investment
RMCs	- Regional member countries
RMVs	- Regional Mining Visions
SADC	- Southern African Development Community
SMEs	- Small and medium-sized enterprises
STAMICO	- State Mining Corporation (in Tanzania)
STEM	- Science, technology, engineering and math
TPDC	- Tanzania Petroleum Development Corporation
TRA	- Tanzania Revenue Authority
URT	- United Republic of Tanzania
VA	- Value addition
VALCO	- Volta Aluminium Company
WTO	- World Trade Organization

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Executive Summary



H.E. Dr. Mahamudu Bawumia, Vice President of the Republic of Ghana (middle) with few Forum participants during the Opening Ceremony.

The African Mining Vision (AMV) adopted by the African Union in 2009 provides a blueprint for mining development on the continent. The AMV advocates for a holistic approach to achieve the “*transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development*”.¹ To realize this goal, African governments must not only seek to optimize revenues collected from extractive companies—such as royalties and corporate taxes—but act strategically to increase and retain the value of the resources extracted by creating and strengthening the linkages between the mining sector and the rest of the economy.

The theory behind value addition is simple and compelling, but the challenge is in the practice. Governments commonly face time limitations and fiscal pressures, not only in their terms in office but also from their constituencies to produce quick turn-arounds. In contrast, value addition is often a lengthy and complex process. For example, the planning and construction of facilities for the beneficiation of minerals, such as refineries and smelters, require huge capital expenditures and long-term investment. Moreover, given the economies of scale now required for global competitiveness, beneficiation may not be possible in a single state. Hence, governments within a sub-region may need to strategically collaborate to access larger markets and finance for extractive projects, which can further complicate and delay the process.

Rationale, objectives and participants of the Forum

Notwithstanding the political difficulties impinging on any administration, African governments have a key role to play in the process of enhancing value addition in their extractive sector. Under the leadership of H.E. President Nana Addo Dankwa Akufo-Addo, Ghana is firmly committed to establishing an integrated aluminum industry as a key pillar of its national strategy to create and capture more value from the country's rich bauxite deposits and transition the country beyond the need for foreign aid. If successful, this would create the single largest industry in Africa—a multi-billion dollar industry that would have a massive positive impact for job creation on the continent.

The Government of Tanzania is similarly committed to implementing policies to encourage value addition. In March 2017, it announced an immediate ban on the export of concentrates and ores of all metallic minerals. The ban is intended to ensure that mineral processing is undertaken within the country, with the stated objectives of increasing revenue generation, employment creation and technology transfer.

¹ African Mining Vision, p. v. accessed on 29 March 2017 at www.africaminingvision.org/amv_resources/.../Africa_Mining_Vision_English.pdf

Against this background, the Office of the Vice President of the Republic of Ghana in collaboration with UONGOZI Institute of the United Republic of Tanzania co-organized a two-day regional forum for stakeholders in the extractive sector to discuss how African countries should position themselves to optimize benefits from the extractive sector through the design and implementation of value addition strategies. The forum was held in Accra, Ghana, on 4-5 December 2017. The Forum was officiated by the Vice President of the Republic of Ghana, H.E. Dr. Mahamudu Bawumia, with welcoming remarks from Hon. John Peter Amewu, Ghanaian Minister of Lands and Natural Resources. Participants included high-level representatives from the public and private sectors, academia and civil society. In total, about 100 participants from 15 countries attended².

Key Messages

During the forum, participants were tasked to contribute their expertise on how African governments can add value to their natural resources and drive growth in the mining sector in Africa. The following key messages emerged from the discussions.

Why is value addition important?

African countries have a stark choice: to remain primary mineral producers, forever at the mercy of fluctuating commodity prices, or to take full advantage of mineral value chains to promote the industrialization and structural transformation of their economies. Exporting the continent's resources in raw form, in effect, exports jobs, and denies African countries the substantial benefits generated by activities along the value chain. In particular, mineral resources offer wide-ranging opportunities to build industries to supply inputs for the mining sector, to produce key mineral-based feedstocks for other sectors, and to manufacture intermediate and finished "value-added" products for domestic consumption that will promote local and regional economic development.

For example, the potential benefits of building a fully integrated value chain for aluminium in Ghana are substantial. At the basic level, bauxite is traded at around USD 40-60 per metric ton (MT). But moving up the value chain, alumina fetches around USD 400+ per MT, while primary aluminium is trading at near USD 2,000 per MT with significant upside forecasted in years ahead. The multiplier effects of an integrated aluminium industry (IAI) on the Ghanaian economy are also very clear. The industry promises to drive skills acquisition and employment growth, both directly and indirectly, as well as investment in transport and power infrastructure, which, in turn, promote further investment and employment.

How can value addition be achieved?

To increase and keep the value of Africa's natural resources *in* Africa requires the creation and strengthening of linkages between the extractive sector and other sectors of the economy. These linkages include: **down-stream (or forward) linkages** into mineral beneficiation and manufacturing; **up-stream (or backward) linkages** into mining capital goods, consumables and services industries; **spatial linkages** into infrastructure, such as power, logistics, communications and water; and **knowledge linkages** into skills and technological development.

² See Appendix A for a full list of participants and Appendix B for the event program.

Until now, value addition has been narrowly conceived as the further processing of minerals, i.e., the refining of ores or smelting of metals, but this model is no longer sufficient. African economies need to go beyond processing to manufacture intermediate and final products to improve people's lives and livelihoods, and to strengthen domestic supply chains so that local businesses can effectively participate in extractive industries.

The African Mining Vision emphasizes the importance of strengthening all mineral-based linkages while resources are extant so as to maximize the developmental and inter-generational impact of those resources. This is the true meaning of value addition. If managed appropriately, resource-based investments can lay the foundation for diversified economies. Conversely, if African countries cannot make these linkages then it would be best to leave the resources unexploited until such time that the linkages can be made.

In developing strong linkages with the extractive sector, however, Africa faces a significant hurdle. Given present shortfalls in domestic capital, technology and skills, African countries rely heavily on foreign direct investment for developing its mining sector, which can seriously jeopardize the development of linkages. Like all companies, mining investors are focused on maximizing wealth for their shareholders not host countries. They often have global purchasing strategies, hence, are much less likely to use local suppliers, thereby undermining upstream linkages. Similarly, they seek to optimize their processing and manufacturing facilities at a global level, which can deny downstream opportunities in host countries. Knowledge linkages also tend to be concentrated in the home countries, and foreign investors have much more scope and incentive for transfer pricing to evade tax.

Therefore, if African countries opt to use FDI rather than local capital, the state has to intervene to achieve the required linkages. Governments will need to put in place the innovative tax regimes and regulatory frameworks that govern the mining sector from pre-exploration through to mine closure and site rehabilitation. Conditions on mining leases/concessions will need to be carefully negotiated to attract the right investors while ensuring that the strong linkages are made. But a balance has to be struck; if incentives are insufficient or conditions are excessive, potential investors will look elsewhere. Most importantly, given the long-term, capital-intensive nature of extractive projects, investors want stability and continuity. Consistency and transparency in all government communication and action will be key. All relevant information needs to be in the public domain. Governments must be able to stand up in front of their constituencies and explain why they have allowed a foreign investor into the country. In particular, delegates stressed the importance of thorough and transparent licensing procedures to secure the best investors, and well-resourced regulators to monitor and enforce agreements.

What can African governments do to optimize value addition?

As part of the forum's deliberations, participants offered the following recommendations for African governments to create and strengthen the linkages with the mining sector to optimize value addition and accelerate the development of integrated mineral-based industries.

Set clear direction on mineral ambitions within long-term national and regional development goals

From the outset, the development of mineral-based industries need to be rigorously assessed against the size and depth of a country's resources and long-term development aspirations. Each country needs to conduct in-depth comparative value chain analyses and comprehensive market analysis on a commodity-by-commodity basis to ascertain what is required to develop a viable sub-sector and what support would be needed to make it happen. Delegates also stressed the importance of prioritizing value addition initiatives on goods that are demanded locally and on the intermediate and semi-fabricated products, i.e., the key mineral-based feedstocks, which are essential for national and regional development, such as fertilizers for agriculture and base metals, polymers cement and fuels for construction, manufacturing and infrastructure. Import tariffs on inputs and key feedstocks at a regional level may also be necessary to provide some protection to infant industry production.

Invest in geological research to obtain a comprehensive knowledge of the country's mineral endowment

A comprehensive geological data bank of a country's natural resources (location, size, quality and cost of depletion of each deposit) is essential to coordinate and facilitate the activities of large-scale mining companies, and to plan and open up tenements for small-scale miners. The more accurate data that African countries possess about the potential value of resources, the greater will be their ability to strike equitable deals with investors on the division of future rents and benefits accruing from the exploitation of any given deposit. Armed with knowledge, African states will be able approach potential investors with attractive propositions to develop domestic value chains. Conversely, if countries do not fully know their assets at the time of negotiating and issuing a mining license or other agreements then they are unlikely to get a decent deal from investors. Hence, forum delegates stressed the dire need for greater public re-investment into geological survey departments in Africa.

Use mineral property auctions to sell known mineral deposits against linkage development commitments

Mineral deposits embody a massive variation in resource rents, much greater than any other sector except for hydrocarbons (oil and gas). For example, the average rate of return on investment (ROI) in mining varies from around 15% on marginal gold deposits to several hundred percent on some iron, manganese and other mineral deposits. Consequently, mineral regimes will typically set minimum linkage development obligations—i.e., targets for local content, value-addition, and skills formation—so as to make investments in marginal deposits attractive. But the best way to flush out the maximum linkage development for a specific mineral deposit is to seek a market response through the public tender (auctioning) of the deposit/concession against linkage development commitments.

Mining investors tend to have a much better idea of the value of the state's mineral assets than the state itself, hence, competitive auctioning is an effective method of achieving fair value through testing the market's appetite for establishing industrial linkages. However, where little or no geo-data are available, an auction is unlikely to flush out fair value. In these cases, the

areas should first be thoroughly surveyed by the state before auctioning via a time-limited mining concession (lease) or opened up for private exploration (where the asset is considered to be non-auctionable). Most importantly, governments were advised not to follow the World Bank's flawed policy of "open up and let people come in and peg a claim for nothing."

Invest in human capital and research and development (R&D) as the base for industrialization

Knowledge linkages are a prerequisite for developing both backward and forward linkages. Education and training in STEM (science, technology, engineering, mathematics) skills is particularly important, therefore, spending obligations for STEM skilling need to be built into mining licenses. For example, presently in South Africa, 5% of payroll is charged plus a 1% skills levy must be spent by companies on in-country human resource development. However, based upon the rapid growth in the skills base in Africa over the last generation, delegates believed that skills development should not be a barrier. Critically, Africa needs to tap into opportunities to transfer skills, knowledge, and technology from international companies to local companies.

On the issue of skills building, participants highlighted that the technology within extractive industries is changing rapidly, which demands highly-skilled workers who have the capability to handle and adapt to new technologies. Realistically, not every country has the ability to supply the full complement of skills for their industries. Therefore, regional solutions will be needed to reduce skills gaps. In turn, governments will need to be put in place mechanisms to facilitate the free movement of labour and skills between African states, including the provision of work and residence permits and mutual recognition of qualifications/skills.

African countries can also valuably develop training and research, development and innovation (RD&I) institutions on the continent to feed value-adding processes within its industries, and make business models more agile in adapting to market shifts. Hence, delegates recommended further investment in centres of excellence—such as the Tarkwa University of Mines and Technology in Ghana and the Tanzania Gemological Centre (TGC) in Arusha—to build technological expertise and innovation and reap the full benefits from the minerals sector.

Empower local suppliers to participate in the value chain

For countries that are new to extractive industries, the indigenous capacity to participate in the sector will be limited. Hence, to establish backward linkages, domestic entrepreneurs will need to be supported with start-up capital at reasonable rates of interest along with customized support schemes to develop their capacity to competitively supply the mining sector. For example, Tanzania has adopted a Local Content in Supplier Development (LCSD) approach. Under this model, assistance is provided to train, equip and finance domestic suppliers to supply the oil and gas and mining sectors. But, ultimately, local capacity will only be enhanced if local businesses win contracts. Depending on the country context, increasing local content will, therefore, depend on ensuring that company procurement practices give due preference to domestic suppliers.

Establish percentage targets for local content and extend the scope of local content to the regional level

Recent efforts by African states to list the items that mining companies are expected to procure domestically under local content legislation and regulations represent a good start in strengthening backward linkages with the mining sector. However, governments are encouraged to move beyond a list of items to encompass percentage targets for local purchases. Additionally, goods and services need to be separated, as percentages for the local acquisition of services, such as catering and security, could be set much higher than the percentage targets for various goods which are more difficult to source locally, such as explosives or heavy machinery. Percentage targets for local content could also be set much higher if the concept of local content was expanded to embrace regional (REC-level) local content.

Embrace regional cooperation for developing integrated mineral-based industries

To overcome the constraints faced by individual African countries, delegates emphasized the vital need to develop regional (i.e., REC-level) mining visions (RMVs). The regional dimension is all-important given that the development of globally competitive extractive industries demands economies of scale. Working at a regional level increases market size and scale economies for both mining inputs and outputs. For example, Ghana does not have that whole range of raw materials needed for industrialization. But, member states of the Economic Association of West African States (ECOWAS) have all of the essential mineral feedstocks. By coming together, member countries can access a vastly bigger resource base with better deposits—i.e., deposits that can be mined much more cheaply and efficiently. In addition, larger and more efficient plants can be established at competitive scale. For example, the current demand for steel among ECOWAS member countries is sufficient to underpin a world-class integrated steel mill. The same is true for most African regional communities.

By working together, member countries will also not undercut one another in negotiations with investors. By harmonizing and aligning mining regimes to create a uniform operating environment, regional member countries can avoid diluting the provisions of mining licenses to attract investors. They can avoid the “race to the bottom” which is detrimental to all countries. Strengthening minerals sector oversight through collective self-reliance and best practice—for example, the establishment of regional mineral audit agencies that share data—will also help to prevent disreputable companies moving from one country to the next.

Engage and support local communities in mining areas to participate in the value chain

Delegates highlighted the vital importance of structured, regular in-depth consultation with local communities in mining areas to ensure their full participation from the moment the first vehicle rolls up at a prospective mine site. These consultations should be broad and representative of the community as a whole, not just include local leaders. Given that local communities feel the impacts of extractive projects long before revenues start to flow, providing concrete, early benefits are strongly recommended to establish positive perceptions and greater ownership in the development.

Increasing the proportion of goods and services that mining companies must procure locally will also contribute to company efforts to earn and maintain a social license to operate. However, in reality, most local communities are not taking advantage of the presence of the mining company to supply goods and services. Therefore, both the government and mining companies need to be well informed about the needs of local communities and actively support their participation in the value chain.

Secure optimal finance through comprehensive risk assessment and management

The optimal capital structure and sources of capital for each extractives project will depend on the different exposures and risks for the specific deposit and at each point in the industrial value chain for that mineral. To secure the right financing model, therefore, demands a thorough understanding of the key drivers that move value within an industry, and the risks involved at each step of the value chain. Possessing the right data is essential for negotiations with potential investors, and, in turn, how to develop the industrial value chains to meet the country's development objectives. In contrast, without the right information and a comprehensive understanding of risk, African states will continue to be overcharged for capital.

Protect the environment

Long-term value addition and sustainable human development in Africa will depend on protecting the environment. Therefore, any agreements must stipulate strict environmental provisions for minimizing and managing pollution, reducing, reusing and recycling inputs wherever possible, and for the rehabilitation of sites following mine closures. Once again, the implementation of regional mining visions has the potential to improve the environmental stewardship of the mining sector through the alignment of codes for Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs) based on international best practice.

Conclusion

Africa's significant and diverse mineral resources and production, regional markets, and the ingenuity and energy of its population, provide a powerful combination to realize the continent's growth and development, contribute to industrialization, and foster inter-generational equity. But these outcomes will only be achieved through the realization of all of the mineral linkages outlined in the Africa Mining Vision. And for this to happen, countries will need to think and act regionally, not as islands, to realize the full benefits from mineral value chains and drive the industrial and human development of the continent.

Introduction

Africa has a wealth of extractive resources. However, most of its minerals are extracted and exported in their raw state. The processing of its minerals into higher value output and products is done elsewhere. Hence, the majority of Africa's mineral-rich states are not only earning the minimum amount from their resources through the export of unprocessed ores but also restricting opportunities to diversify their economies, thereby leaving them vulnerable to the fluctuations of global resource markets. In many countries, extractive industries operate as enclaves separated from other economic activities. Inherently capital intensive, they provide few opportunities for host country suppliers, assemblers or manufacturers.

This has typically meant that the extractive sector has failed to be a source of local economic growth through job creation, demand for local goods and services, or the transfer of knowledge and technology. To support national development, countries have largely relied on revenues in the form of royalties, profit shares, corporate income tax and dividends from state-held equity in mining projects. But, today there is a growing realization that far greater and more sustainable benefits can be obtained from every gram, ounce or metric ton of mine output through the development of value-adding industrial linkages.

Value addition offers wide-ranging opportunities to build input industries and to provide key mineral-based feedstocks into the rest of the economy. Refineries and smelters would provide employment opportunities with spillover benefits to related industries. In-country processing could also generate additional government revenue over the long term through the sale of higher-value products and lower transport costs. It could also reduce the risk of tax avoidance; unlike more refined products, the mineral content of ores and concentrates can vary considerably, increasing the risk that companies under-report the value of their exports. Though the theory behind the benefits of value addition in the extractive sector is simple and laudable, realizing those benefits is a challenge in practice. If African countries are to secure greater value from their minerals through industrial processes, these industries must be economically viable.

It is against this background that Vice President's Office of the Republic of Ghana and the UONGOZI Institute collaborated to host a two-day high-level regional forum on value addition in the extractive sector in Accra, Ghana, on 4-5 December 2017. The main objective of the



Participants during the Forum

forum was to discuss how African states can optimize benefits from the extractive sector by addressing the barriers to value-added processing. More specifically, the forum focused on:

- ◆ Identifying areas along the value chain with greater potential for value addition in the extractive sector;
- ◆ Public policy, and legal and regulatory requirements for an integrate extractive industries within African countries;
- ◆ Financing options;
- ◆ Measures to encourage local business participation;
- ◆ Technology and skills required;
- ◆ Health, safety, security and environmental considerations; and
- ◆ Regional strategies for value addition.

The Forum was officiated by the Vice President of the Republic of Ghana, H.E. Dr. Mahamudu Bawumia, with welcoming remarks from Hon. John Peter Amewu, Ghanaian Minister of Lands and Natural Resources. The event brought together 100 stakeholders from Africa and internationally, including high-level representatives from the public and private sector, academia and civil society from Sierra Leone, Botswana, South Africa, Tanzania, Ethiopia, Zambia, Uganda, Malawi, Kenya and Ghana. Dr. Paul Jourdan, a visiting professor at the University of Witwatersrand in Johannesburg, South Africa, delivered the keynote address.

The Structure of the Report

This report summarizes the proceedings from the forum.

Section 1 presents edited highlights of the forum's opening session, including the official welcome by Hon. John Peter Amewu, Minister of Lands and Natural Resources, the opening address to the forum by H.E. Dr. Mahamudu Bawumia, Vice President of the Republic of Ghana, and the keynote presentation by Dr. Paul Jourdan, Adjunct Visiting Professor, Wits University, Johannesburg, on the central importance of promoting value addition in building an integrated minerals industry in Africa.

The remaining sections of the report summarize the key messages from the series of topical expert presentations and panel discussions featured at the forum. These were:

- ◆ Country experiences in enhancing the value chain in the extractive sector in Africa (**Section 2**)
- ◆ The value chain of the integrated aluminium industry (**Section 3**)
- ◆ The effective management of resource extraction (**Section 4**)
- ◆ The effective management of an alumina refinery and aluminium smelter (**Section 5**)
- ◆ Promoting value addition and local content in the extractive sector in Africa (**Section 6**)
- ◆ Financing the value chains in the extractive industries in Africa (**Section 7**)
- ◆ Policy, legal and regulatory frameworks for value addition (**Section 8**)
- ◆ Beneficial partnerships between the state, private sector and local communities (**Section 9**)

1. Opening session

The forum's opening session included an official welcome to delegates by Hon. John Peter Amewu, Minister of Lands and Natural Resources, followed by the opening address to the forum by H.E. Dr. Mahamudu Bawumia, Vice President of the Republic of Ghana, and the keynote presentation by Dr. Paul Jourdan, Adjunct Visiting Professor, Wits University, Johannesburg, on the central importance of promoting value addition in building an integrated minerals industry in Africa.

1.1 Official welcome

Hon. John Peter Amewu, Minister of Lands and Natural Resources

The Ghanaian Minister for Lands and Natural Resources (MLNR), Hon. John Peter Amewu, warmly welcomed conference participants and thanked the co-hosts of the Forum: the Office of the Vice President of the Republic of Ghana and the Institute of African Leadership for Sustainable Development (UONGOZI Institute) under the Office of the President in Tanzania. He said that the cooperation between Ghana and Tanzania to deepen the understanding of value addition in African extractive sector was a timely initiative given the increasing recognition across the continent that internalizing the value of Africa's mineral resources held great potential to accelerate industrialization and growth.



Hon. John Peter Amewu

He said that a central component of the African Mining Vision (AMV) adopted in 2009 by the heads of state of the African Union (AU) was to increase value addition in the mining sector by creating and strengthening the linkages between the sector and the rest of the economy. Within this context, the African Mineral Development Centre (AMDC) was established to provide strategic operational support for the application and implementation of the Vision. However, the Minister informed the forum that implementation of the AMV by member states had been proceeding at too slow a pace.

For African countries to succeed in the rapid transformations of their economies, they must take advantage of the full value chain of the mining sector. This will require deliberate action by all stakeholders with governments playing a central policy-making role to put in place the legal and regulatory framework that governs the sector from pre-exploration to mine closure. Beyond the sector's operation, the Minister stressed the additional responsibility of the public sector to ensure that revenues are appropriately generated, collected and managed. He stressed that consistency and transparency in all government actions will be key.

Under the leadership of President Nana Addo Dankwa Akufo-Addo, the Ghanaian government held the view that African countries must go beyond aid and do things on their own. To achieve this objective, Ghana must secure the maximum benefit from its natural resources. As part of these efforts, the Office of Vice President in collaboration with the MLNR through the Cabinet of Ghana has given approval for the establishment of a National Suppliers' Development Program to assist in the developing local capacity in the mining supply chain. The program will be executed in collaboration with the African Centre for Economic Transformation (ACET), AMDC and the MLNR. The program's agenda will mark a shift in approach to more effectively promote mineral beneficiation.

The Minister emphasized that the development of the extractive sector can only be optimized if the exploitation of resources is placed within the context of long-term national and continental developmental goals. Therefore, he urged conference participants to contribute their expertise on ways to drive growth in the extractive industries to enhance African participation in the global economy, and share their insights and experiences on how policies and regulatory frameworks for the sector can be improved to enable African countries to move faster.

Hon. Amewu closed his address by expressing gratitude and hope that by the end of the gathering, participants would have mapped out a clear and actionable way forward. He then welcomed the Guest of Honour, Dr. Mahamudu Bawumia, the Vice President of Ghana, to address the forum.

1.2 Opening Speech: Value addition in the extractive sector—A platform for Africa's economic transformation

H.E. Dr. Mahamudu Bawumia, Vice President of the Republic of Ghana

On behalf of the President and the Ghanaian Government, Vice President Bawumia welcomed delegates and thanked the co-organisers of the event, the UONGOZI Institute.

To open his address, he related that an estimated 30% of the world's mineral resources are found on the African continent yet this resource wealth exists side-by-side with large-scale human poverty.



H.E. Dr. Mahamudu Bawumia

He said that the resource paradox speaks volume about how Africa's natural resources have not been used to promote industrialization and structural transformation and, ultimately, human development. Therefore, the present forum has been organized to re-think the opportunities for the continent to advance its development agenda by optimizing the benefits from its vast extractive resources over and above the collection of royalties and resource taxes. For this to occur, a new paradigm is needed as promoted by the Africa Mining Vision.

The Africa Mining Vision: A paradigm shift

The Vice President said that this new paradigm will require correcting the historical failure of treating the extractive sector as an enclave economy with little to no linkages to the rest of the domestic economy. It will require breaking Africa's excessive dependence on primary commodity exports. It will require governments pursuing more strategic policies and national development plans that recognize resource extraction as a platform for accelerating economic transformation. This new paradigm will also require re-defining Africa's place in the global value chain, moving away from its place as simply a source of raw materials to one of supplying intermediate and refined products. And the instruments to achieve this profound shift will include local content (LC) and value addition (VA) policies, while, at the same time, optimizing the direct revenue benefits through appropriate fiscal and taxation regimes.

What is value addition?

Turning to the topic of the forum, namely "Value Addition in the Extractive Sector in Africa: Why is it Important and How can it be Achieved?", the Vice President commenced with the definition of value addition.

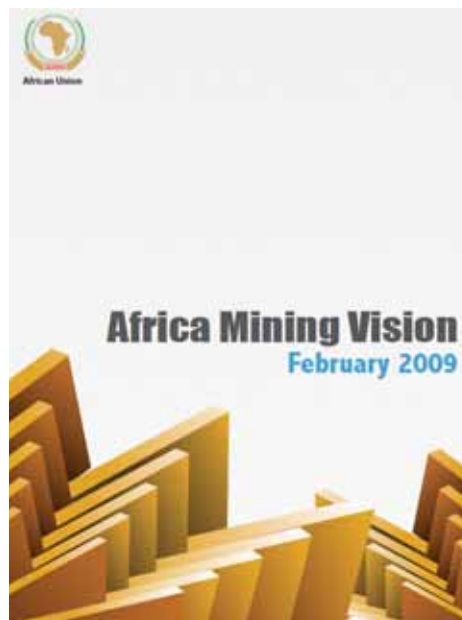
Simply stated, value addition entails taking the raw materials of any natural resource as primary inputs, through to semi-processed or finished products, and, in so doing, enhancing the economic value of the resource.

He then gave two examples to illustrate the concept. For example, for diamonds, the price per carat increases roughly eight-fold from rough diamond to polished gem-quality diamond. Similarly, the value of bauxite increases nearly 6 times if refined into alumina and nearly 33 times if converted into aluminum metal alloy. Therefore, successful value addition can boost national economic growth through promoting links between resource extraction and the broader domestic economy.

He added that the push for VA also recognizes that exporting the continent's resources in raw form and taxing only profits, in effect, exports jobs, and denies African countries the opportunities to gain any substantial part of the revenues generated from a range of activities along the value chain. This push for value addition aligns with the [Africa Mining Vision of 2009](#) and the Work Plan for the AMDC launched in December 2013.

The recent initiative by Tanzania to promote value addition

The Vice President then described the policy initiative by the Government of Tanzania to promote greater value addition. In March 2017, the government announced an immediate ban on the export of concentrates and ores of all metallic minerals. The ban is intended to ensure that value addition activities, such as smelting and refining, are undertaken within the country, with the stated objectives of increasing revenue generation, employment creation, and skills and technology transfer. He added that these actions align with the historical aspirations and actions taken by other African states to promote value addition. For example, in Nigeria, value addition has been part of the national vision and policy of successive governments since the 1960s. And the successes of South Africa's value addition strategy date back to the 1970s. .



Promoting value addition for bauxite in Ghana

Turning to his home country, Vice President Bawumia said that Ghana has some of the richest bauxite deposits in the world; at an estimated annual production rate in excess of 2 million metric tons (MT) of alumina, its reserves could last well over 100 years. Hence, Ghana has the potential to build a multi-billion-dollar industry, with a huge job creation impact not only for the country but also for the continent.

To further illustrate the opportunity, he related that the current market price of bauxite is around USD 60/MT. But, by taking one step up the value chain, which entails the establishment of a refinery to process the bauxite into alumina, the processed product is worth USD 350/MT. Going a step further, if the alumina is processed through smelting to produce aluminum, the estimated market price of the end product is USD 2,000/MT. Establishing an Integrated Aluminum Industry in Ghana.

Vice President Bawumia then provided a brief overview of the country's efforts to establish an Integrated Aluminum Industry, which date back to 1962, when, as part of the Volta River Project, Ghana entered into an agreement for the construction of the Akosombo Dam and the building of the aluminum smelter at Tema (see Figure 1). The plan envisaged that the country's bauxite deposits would, at a future date, be mined and processed in-country.

The Master Agreement established the single largest industry in Ghana, which included the establishment of the Volta Aluminium Company (VALCO), a smelter company with an annual capacity to produce 200,000 MT of alumina from bauxite, then to process further into metals and alloys. However, this vision of an integrated aluminum industry in Ghana—i.e., to mine bauxite, refine locally to produce alumina, and smelt alumina to produce aluminum metals and alloys—was never realized. Currently, Ghana's smelter operated by VALCO is operating at about 20% capacity with intermittent shutdowns. In addition, the areas of the country with rich bauxite deposits also suffer under the menace of irresponsible gold mining, that is destroying land, vegetation, water bodies and livelihoods. Therefore, Ghana urgently needs to establish an integrated aluminum industry through a responsible and sustainable development plan that will protect the integrity of the environment.

Figure 1: Map of Ghana



Source: http://www.nationsonline.org/oneworld/map/ghana_map.htm

Recent government efforts

Under the leadership of H.E. President Nana Addo Dankwa Akufo-Addo, Ghana is committed to establishing an integrated aluminium industry to serve Ghana and Africa. The government is in the process of drafting a bill for parliament to establish the Ghana Integrated Aluminium and Bauxite Development Authority. It is envisaged that the Authority will play an important role in promoting responsible mining, and regulating the development of the industry. It will be responsible for the development of necessary infrastructure, including rail, roads and energy, industrial parks, and associated social infrastructure to support related businesses in the sector and the industry as a whole.

Additionally, in early November, AMDC in collaboration with ACET launched the national program to support the development of world-class supply chains. The goal is to use the mining sector as a launching pad to stimulate linkages, so that Ghana can become a supply hub for large industries throughout the West African market.

In these ways, the Government is firmly committed to transform the extractive sector. The building of an integrated aluminum industry is part of its strategy to encourage the private sector to create and capture more value from the country's resources and move Ghana beyond the need for foreign aid.

The challenges of implementing policies for value addition

However, the Vice President cautioned that domestic and international experience has shown that the implementation of a value addition policy, though laudable, is not without challenges. Hence, the importance of the current forum. He requested that participants seek answers to a number of pressing questions:

- ♦ As the second largest gold-producing country in Africa after South Africa and the tenth largest globally, why has Ghana been unable to successfully add value to its gold?
- ♦ Why are we still in the raw material export silo of our minerals? Is it a question of technology, of financing or of human resources?
- ♦ How can we develop systems that enable us develop in a sustainable manner, while reducing pollution and improving our health simultaneously?
- ♦ What are the hindrances to promoting value addition to Africa's extractive resources?
- ♦ What ought to be the role of government in promoting value addition to its natural resources?

In closing, he repeated his welcome especially to delegates who had travelled from outside the country. He wished for fruitful deliberations and hoped that the forum will produce an extensive report on policy recommendations for how African governments can add value to their natural resources, bauxite in the particular case of Ghana, and with a clear road map on how it should be implemented.

1.3 Keynote presentation: Value addition in the extractive sector—Building an integrated minerals industry in Africa

Dr. Paul Jourdan, Adjunct Visiting Professor, Wits University, Johannesburg, South Africa

To begin, Dr. Jourdan remarked that until now value addition has been viewed in a very one-dimensional way, for example, the processing of bauxite to alumina to aluminium to semi-fabricated products. However, the African Mining Vision unpacks the concept and highlights that value addition is multi-dimensional.

It is not simply about outputs but crucially includes a country's inputs, including the capital goods and technology required to produce higher-value outputs. Therefore, to optimize value addition, policies need to incorporate local content. In turn, increasing local content in capital goods (plant, machinery and equipment) requires investment in side-stream knowledge linkages.



Dr. Paul Jourdan

Africa's mineral reserves are not exceptional but the continent has a mineral economy

At odds with the popular understanding, Dr. Jourdan noted that Africa's known mineral reserves are not exceptional, with the exception of exotic minerals. Indeed, Africa only has two key mineral feedstocks for development—bauxite and phosphates—that exceed the continent's 20% share of the world's land area (see **Figure 2**).

Figure 2: Africa's share of the world's mineral reserves, 2016

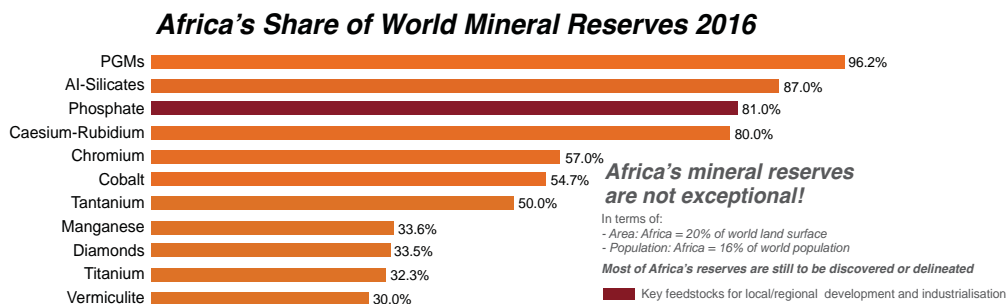
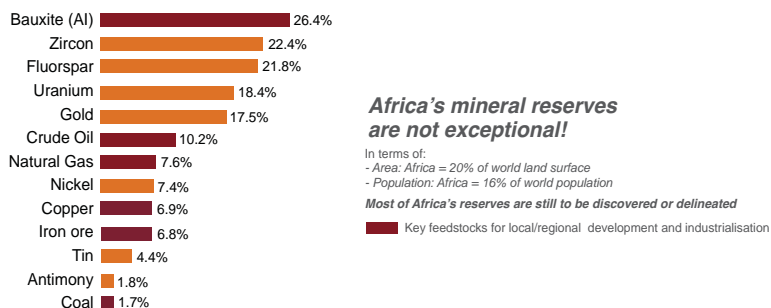


Figure 2: Africa's share of the world's mineral reserves, 2016 (continued)



However, he added that most of Africa's reserves are still to be discovered or delineated. To achieve this, Africa requires an enormous amount of systematic geological assessment; only a very small part of Africa has been adequately explored. Moreover, most of the exploration was undertaken during colonialism. Since independence, few African states have continued with the systematic geological research of their countries.

Moving from a minerals economy to an industrial economy

Based on global trade data, Dr. Jourdan observed that, if the continent was taken as a single country, Africa is a minerals economy. As a share of total exports, mineral exports average around 60%. As such, the continent is dependent (and hence vulnerable) to the vagaries of volatile mineral pricing. Reflecting on this present situation, Dr. Jourdan posed two questions: Is there such a thing as sustainable mining? And how does Africa move from being a minerals economy to an industrial economy?

In response to the first question, the short answer is "no".

Sustainable mining is a myth. All mining is finite. Every mine will leave you with a hole in the ground.

Rather, mining can only be *indirectly* sustainable. Here, he referred to Hartwick's Rule for sustainability which prescribes re-investing resource rents to exactly offset the declining stocks of non-renewable resources, thus keeping the value of net investments equal to zero, i.e., if you re-invest rents from minerals into other forms of capital like human knowledge and skills and physical infrastructure you can have future sustainability after the minerals are depleted and gone. This investment is undertaken so that the standard of living does not fall as society moves into the indefinite future.

But Dr. Jourdan pointed to a significant problem: if countries rely on foreign direct investment (FDI) the bulk of the rents from resources leave the country, for example, as dividends to foreign shareholders. Thus, unless countries have an effective resources rent tax (RRT), rents are effectively repatriated to create sustainability elsewhere. Presently,

RRTs are high with respect to hydrocarbons but only around eight African countries even have an RRT for mining. Clearly, this is a significant dilemma; African countries want to improve sustainability but they are largely dependent on foreign capital, foreign technology and foreign skills and have very shallow domestic capital markets.

To address this problem, the African Mining Vision (AMV) was developed—so as to create the necessary linkages between mining and the rest of the economy and to develop local mining capital where the rents don't leave but are re-invested in Africa. Linkages and diversification are critical for achieving indirect sustainability.

The African Mining Vision: Moving towards resource sustainability

The AMV was developed to optimize the development impact of Africa's mineral assets. It aims to achieve the "*transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development.*"³ Clearly, the characteristics of the mining sector are critical for realizing this vision. Hence, the AMV envisages:

- ♦ *A sustainable and well-governed mining sector that effectively garners and deploys resource rents and that is safe, healthy, gender and ethnically inclusive, environmentally friendly, socially responsible and appreciated by surrounding communities;*
- ♦ *A mining sector that has helped establish a competitive African infrastructure platform, through the maximisation of its propulsive local & regional economic linkages;*
- ♦ *A mining sector that harness the potential of artisanal and small-scale mining to stimulate local/national entrepreneurship, improve livelihoods and advance integrated rural social and economic development; and*
- ♦ *A mining sector that is a major player in vibrant and competitive national, continental and international capital and commodity markets.*

Lastly, the AMV envisages "*a knowledge-driven African mining sector that catalyzes and contributes to the broad-based growth and socio-economic development of the continent, and that is fully integrated into a single African market through:*

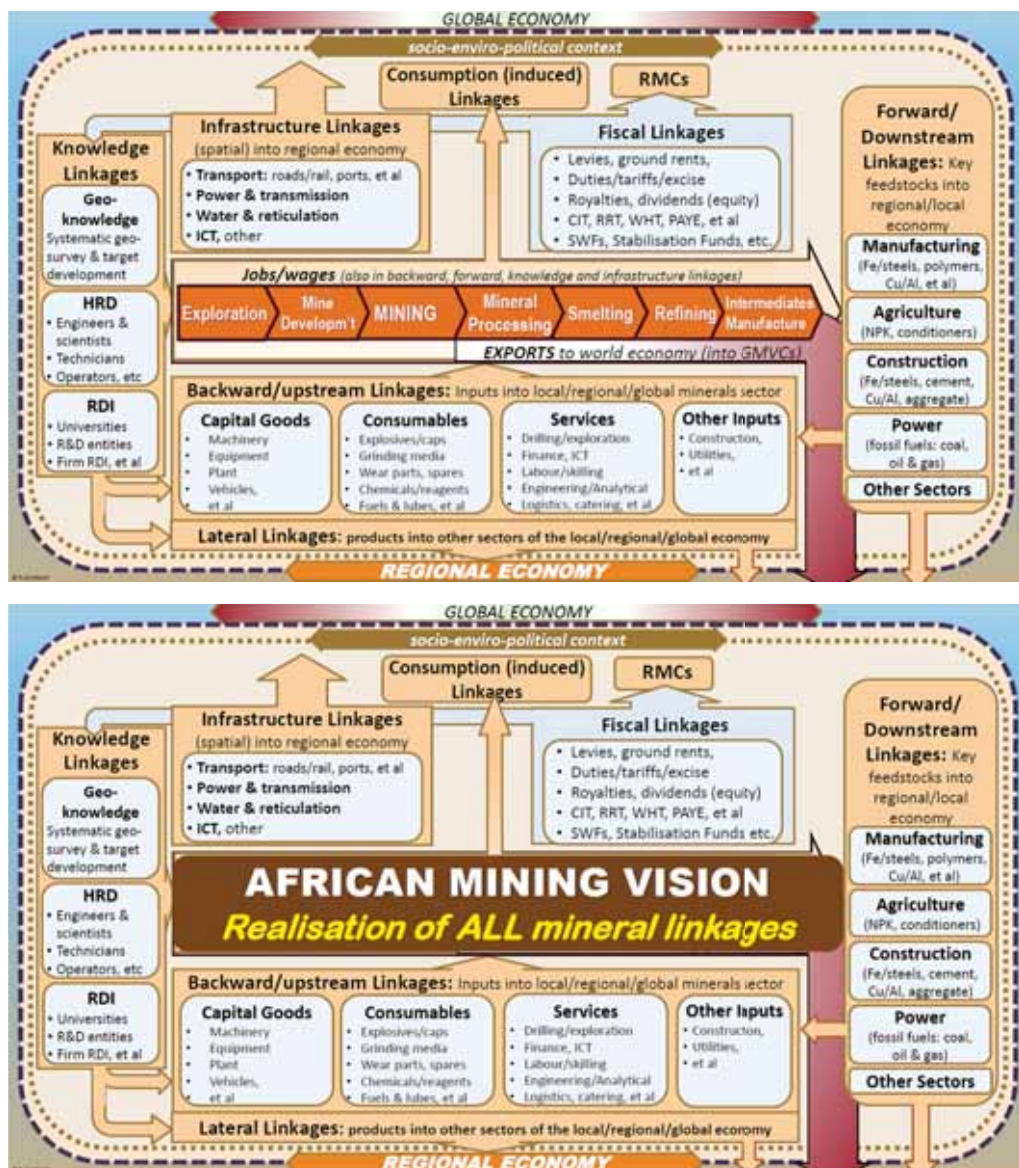
- ♦ ***Down-stream linkages*** into mineral beneficiation and manufacturing;
- ♦ ***Up-stream linkages*** into mining capital goods, consumables and services industries;
- ♦ ***Side-stream linkages*** into infrastructure (e.g., power, logistics, communications, water) and skills and technology development;
- ♦ ***Mutually beneficial partnerships*** between the state, the private sector, civil society, local communities and other stakeholders; and
- ♦ ***A comprehensive knowledge of the continent's mineral endowment.***

³ African Union. The African Mining Vision, February 2009, page v.

Developing the seminal mineral linkages for resource-based industrialization (RBI)

As noted above, the AMV recognizes the critical importance of establishing the vital mineral linkages, while resources are extant so as to maximize the developmental and inter-generational impact of those resources. Figure 3 illustrates these vital linkages, each of which Dr. Jourdan discussed in turn.

3 Linkages with mining sector for resource-based industrialization



Fiscal linkages: These linkages refer to the capture and investment of resource rent taxes in long-term economic, physical and human infrastructure, hence they provide the means for inter-generational benefit. By re-investing RRTs in other forms of capital, countries can avoid becoming progressively poorer. Unfortunately, with the exception of Botswana, African states are getting poorer. They are not re-investing a billion dollars in other forms of capital when they extract a billion dollars out of the ground. Hence, countries are dissaving.

Infrastructure (spatial) linkages refer to the infrastructure, for example, transport, power and ICT, which are put in place to service the mining sector initially but can be used by other sectors when the minerals are exhausted. The city of Johannesburg in South Africa is a good example. Once an area of marginal cattle country, the mining boom, especially in gold, brought a massive boom in infrastructure—all of the roads, rail, pipelines and energy infrastructure radiate from the city. This infrastructure was paid for by gold.

Backward or upstream linkages are local content; i.e., the domestic inputs of capital goods, equipment, machinery, plants, services, and consumables into the mining sector. But, to achieve meaningful levels of local content requires knowledge linkages. Indeed, knowledge linkages are a prerequisite for developing both backward and forward beneficiation linkages. Education and training in STEM (science, technology, engineering, mathematics) skills is particularly important. Here, Professor Jourdan emphasized the strong inter-relationships between the various categories of linkages:

“We do not need graduates in theology, anthropology, sociology etc. if you want to get the economy going. What we need are STEM skills, people who can make capital goods, engineers particularly. ... STEM skills, Human Resources Development (HRD), and Research, Development and Innovation (RD&I) are what underpin the backward linkages. ... No country in the world ... of managed to get into mining equipment without investing in skills. So you need one for the other and you're not going to get investment in skills if you don't capture the rents, so you need the rents to get into the knowledge, you need the knowledge to get into the backward linkages.

Ultimately, Africa needs to control its intellectual property (IP). Otherwise, the continent will just have assembly plants producing things where the IP is held out of Africa.

Dr. Jourdan also stressed the dire need for greater public re-investment in **geo-knowledge**. Overall, investment (funding) into geological survey departments in Africa has been in decline and most of the continent still lacks systematic geological mapping at 1:100,000 scale. He said that if countries do not fully know what assets they have at the time of negotiating and issuing a mining license or other agreement then they are unlikely to get a decent deal from investors. The more knowledge that African countries know about the potential value of resources the greater will be their ability to strike equitable deals with

investors on the division of future rents and benefits accruing from the exploitation of a given resource. It just stands to reason that a portion of revenues from the extraction of current finite resources needs to be re-invested in replenishing the resource stock by funding geological surveys as well as the development of investment targets arising out of systematic investigations. On the long-term value of geological surveys, Dr. Jourdan cited a Canadian study by Boulton (1999)⁴:

“Every \$1 million of government investment to enhance the geoscience knowledge base will likely stimulate \$5 million of private sector exploration expenditures, which, in turn, will result in discovery of new resources with an average in situ value of \$125 million.”

Forward or downstream linkages refer to how mining output is used by different economic sectors, for example, the use of coal for energy generation or the use of minerals in manufacturing to produce intermediate or final products, for example, jewellery from diamonds or gold. Here, Dr. Jourdan stressed the importance of key mining feedstocks for local economic development.

Our people don't need gold or diamonds. A cattle herder in an outpost in Botswana, is he going to benefit from having a diamond necklace made in Gaborone? ... Not at all. What does he need? He needs critical inputs into his livelihood. Those critical inputs are your key feedstocks into local economic development. ... Gold and diamonds are totally useless. I always say if all the gems and diamonds in the world vaporized tomorrow, what would happen? Nothing. They have no use or value but if all the steel vaporized tomorrow this whole building would fall down, your car would disappear. Therefore, when we look at downstream, the first thing we must look at are the mineral base commodities our people need for local economic development, like fertilizers to increase yields. By having those refineries first, we would enhance yields in Africa and about 80% of Africans are dependent on the land or 60% directly on the land. So what I am arguing for is, when we look downstream, let's first look at what are the key feedstocks to enhance the lives of our people, not to make jewellery for Tiffany's.

But he added that this does not mean that Ghana should not try to add value to its precious minerals. For example, Ghana produces enough gold to have an economically viable refinery, i.e., it could produce good delivery bars rather than less-refined dore bars. But this activity should not be the highest priority.

Lateral linkages tend to arise from backward linkages. For example, companies in the U.K. and Germany that once supplied the mining industry with earth-moving or other equipment or were involved in the processing of minerals, re-invented themselves to make products or process output for other sectors. For instance, a company that used to process steel now processes milk.

⁴ Boulton, R.B., 1999, Refinement and validation of a costs, benefits and impact model for TGI: R.B. Boulton and Associates, unpublished report for the Geological Survey of Canada, p. 23.

Consumption linkages, i.e., those which result when mine workers spend their wages to purchase goods and services in the local economy, tend to occur more spontaneously.

Value addition for local and regional economic development

Typically, value addition is more narrowly viewed as the further processing, smelting and/or refining of minerals, but Dr. Jourdan again stressed that this model is not sufficient. Countries need to go beyond refining to manufacture intermediate products that local people can use in the agriculture, construction, power and other key sectors to improve their lives and promote local and regional economic development. Therefore, the AMV stresses the importance of all the linkages described—fiscal, spatial, knowledge, backward, forward, lateral and consumption—within an integrated minerals sector. This is the true meaning of value addition.

Dr. Jourdan considered that if African countries cannot make these critical mining linkages that it would be best to leave the resources unexploited until such time that the linkages can be made. He said:

The greenstone belts in Africa are 3.5 billion years old... so those minerals are not going anywhere. They'll be there long after we've wiped out the human race or we've gone extinct or whatever will happen to us. ... So rather leave them in the ground if you can't make the linkages because you don't get a second chance. Once you've mined them out and you've got a hole in the ground it's too late.

However, he recognized the enormous fiscal pressures on countries and their political leaders to exploit the resources sooner rather than later.

Developing resource linkages: The problem of foreign investment and the benefits of local funding

With respect to developing linkages for resource-based industrialization, Africa faces a significant hurdle. In order to rapidly acquire the requisite capital, skills & technology, Africa mainly uses foreign direct investment rather than relying on domestic capital. However, this can compromise the development of the crucial resources linkages.

For example, foreign companies have much more scope and incentive for transfer pricing (tax evasion) and reducing the fiscal linkages, and nearly all of them do. For example, overcharging for head office expenses, overcharging for debt, i.e. to the mine, or undercharging on the outputs. In addition, foreign companies are paid dividends on their investment, which equates to further leakage from the local economy, i.e. national dis-saving. Transnational corporations often have global purchasing strategies; hence, they are less likely to develop local suppliers, thereby undermining backward (upstream) linkages. Similarly, TNCs seek to optimize their processing facilities at a global level, which can deny downstream opportunities in host countries. For example, why would a

multinational company from Canada or Norway build a refinery in Tanzania when it has excess capacity at home or elsewhere? The same applies to knowledge linkages. These, too, tend to be concentrated in the home countries. He added:

What I am saying is that these foreign companies aren't bad; they are doing what's best for foreign shareholders. They are trying to optimize returns to shareholders. That's the only mission of a private company; it's to maximize returns to shareholders. And if you don't, you get fired. That's the way the world works.

In the longer term, there are also clearly political downsides to the depletion of prime national resources being dominated by foreign capital. Whether one agrees with that or not, it does create political tensions. Nevertheless, these threats can all be overcome with appropriate extractives policies and strategies and, perhaps most importantly, the development of local mining capital.

On this point, he remarked that many countries have historically reserved their natural resources for local capital, not only in Europe but also in developmental states in East Asia, such as China. But, because Africa is short of capital, skills and technologies, it is making this historic compromise. However, Dr. Jourdan stressed that this does not have to be the case. For example, many European countries had very limited local capital to start with, so their early development was slower. However, by slowly developing their companies with local financing, the linkages were much greater. Local companies develop linkages way more than foreign capital. For example, a local entrepreneur developing a mine in Ghana will be much more likely to look around locally or regionally to develop linkages.

If a country opts to use FDI, the state must intervene appropriately to make the linkages

Dr. Jourdan stated frankly: "If you leave it to the market you get no linkages." Therefore, if a country makes the decision to use FDI, then it must also intervene to make the linkages. All the while, its leaders must remember that the minerals in the ground belong to the people. To achieve the required linkages, African countries must impose the appropriate conditions on the mining lease or concession to ensure that the country optimally benefits while the mining continues.

However, he added that:

If your conditionality is over the top you're not going to get foreign investment, so there's a balance to be struck. How far can you go? And the problem then is [that] every mineral deposit is different.

Mineral deposits embody a massive variation in resource rents—i.e., the returns above those necessary to attract investment—much greater than any other sector except for

hydrocarbons (oil and gas). For example, the average rate of return on investment (ROI) in mining varies from around 15% on marginal gold deposits to several hundred percent on some iron, manganese and other mineral deposits. Consequently, it is difficult to design a minerals regime with generic linkage conditions—such as milestones for local content, value-addition, and skills formation—that will efficiently maximize the potential development impact of all deposits over time.

Therefore, in general, a mineral regime will set minimum linkage development obligations in order to make investments in marginal deposits attractive. But the best way to flush out the maximum linkage development for any mineral deposit would be to get a market response through the public tender of the property against linkage development commitments (a form of developmental “price discovery”).

He said that some deposits, such as the diamond mines in Botswana, were able to push hard for linkages; effective rents as high as 70% were charged (50% percent as equity and a further 20% as corporate tax). But that is an exception. Other deposits are marginal and if you push too hard, you make the project non-viable.

State interventions to achieve up-stream and down-stream linkages

Dr. Jourdan then outlined a series of key measures for national governments to implement to realize the linkages for resource-based industrialization (see Table 1).

Table 1: Key interventions to realize up- and down-stream linkages

• Local/regional content obligations for goods and services purchased of 60-80%
• STEM skilling minimum spend obligations ($\geq 5\%$ of payroll)
• RD&I minimum spend ($\geq 0.5\%$ sales)
• Mineral property auction against linkages realisation at 5y, 10y, 15y, 20y
• State right to 30% of output (at reasonable ROI) for key feedstocks
• Local capital targets at 5y, 10y, 15y, 20y
• Reservation of select key feedstock deposits for future local/regional needs
• Realisation of REC markets (scale economies)
• Exports tariffs ($\leq 10\%$) on regional crude exports (ore, conc.) that can be viably beneficiated locally/regionally
• Import tariffs ($\leq 10\%$) on inputs and key feedstocks (local-regional)
• Venture capital (VCFs) for local up- & down-stream investors
• Customised support schemes for local up- & downstream entrepreneurs- B2B
• Regional protocols for inputs and key feedstocks production

With respect to local content laws, Dr. Jourdan highlighted the critical importance of recognizing local content from neighbouring African countries, so as to support the development of bigger, more viable regional markets. He also stressed that spending obligations for STEM skilling need to be built into mining licenses. For example, presently

in South Africa, 5% of payroll is charged plus a 1% skills levy must be spent by companies on in-country human resource development. But, he added that if companies are not spending to that level on skills building, then they are not a very good company and unlikely to stay in business. All companies must spend on skilling to remain competitive. With respect to research, development and innovation (RD&I), he remarked that mining companies are terrible; globally, they only spend half of 1% on innovation. In comparison, ICT and pharmaceutical companies typically spend 12% and 9%, respectively, on RD&I. Moreover, that half a percent is never spent in-country. Therefore, governments must include provisions to ensure that this expenditure on RD&I, small as it may be, is spent in-country.

Dr. Jourdan also recommended that governments use mineral property auctions to sell known mineral deposits. In general, mineral investors will tend to have a much better idea of the value of the state's mineral assets than the state itself, and competitive auctioning (concessions) would be an effective method of achieving fair value through testing the market's appetite for establishing industrial linkages. In this way, the country will get a market response on the value of the deposit against the level of linkages required as part of the sale, for example, tax rate, local content and value addition downstream. When auctioned, prospective companies will come back with offers that they are comfortable with, based on the specific deposit. However, where there are little or no geo-data, an auction is unlikely to flush out fair value. In these cases, the areas should first be thoroughly surveyed by the state before auctioning via a time-limited mining concession (lease) or opened up for private exploration (where the asset is considered to be non-auctionable).

Importantly, he strongly counselled not to follow the World Bank's flawed policy of *"open up and let people come in and peg a claim for nothing."* From personal experience, he had seen how this policy had allowed an Australian company to acquire and on-sell a known deposit in Mozambique for USD 4 billion and the government got nothing!

On rates of local ownership, Dr. Jourdan advised that, if made clear from the start, the gradual imposition of local capital targets up to at least 50% by the end of a typical 25-year mining lease should not chase any mining company away. He said:

I don't think it will have any impact on investment if you just made it clear from the start. But when you come with it suddenly like Zimbabwe did, then you really impact, you wobble everyone. But a simple thing is to agree it will be 50% Ghanaian owned by 25 years in order to get a license renewal. I personally don't think that will chase investors away.

Governments should also aim to reserve a proportion of the output of key mineral feedstocks for future local and regional development but again this needs to be upfront and companies need to be given a reasonable rate of return on investment (ROI).

Crucially, Dr. Jourdan counselled that Africa needs to create larger markets for scale economies to produce feedstocks. The continent must endeavour to strengthen regional economic communities (RECs) as individual countries, even South Africa, are not big enough. Presently, the Southern African Development Community (SADC) is by far the largest market for mining inputs and for outputs. Smelters and refineries must be of sufficient size to be economically viable.

Today, I don't think you can have a cement plant less than a million tons per annum. That's the problem of coming in late ... the scale economies have become enormous and we can't ignore the world because we want to get those feedstocks, like nitrogenous fertilizers, phosphates, potassium to our peasant farmers as cheaply as possible. It's no use us putting up a small plant that is paying more than the world market price; that defeats the objective. Then we might as well import nitrogenous fertilizers from mega plants in the Gulf.

Other important components of government measures will include import tariffs on inputs and key feedstocks at a regional level, so as to offer some protection to infant industry production. Additionally, venture capital for domestic up- and down-stream investors at reasonable rates of interest will be required along with customized support schemes for these local investors to effectively make linkages. Here, the private and public sectors will need to work in collaboration. For example, the mining license can stipulate that the company must have a given percentage of local content, but the state must also commit to helping those local companies grow through education in engineering, special capital schemes, etc.

What are the key mineral feedstocks for local and regional development?

Key mineral-based feedstocks for local and regional growth, development and job creation are listed in **Table 2**. As can be seen, the list includes steel, polymers, base metals, coal and oil, cement and fertilizers but does not include gold, tanzanite, diamonds, gemstones or platinum. Rather, the critical feedstocks for development are those which are essential inputs for manufacturing, power generation, infrastructure and agriculture as shown in the diagram of regional value chains (**Figure 4**).

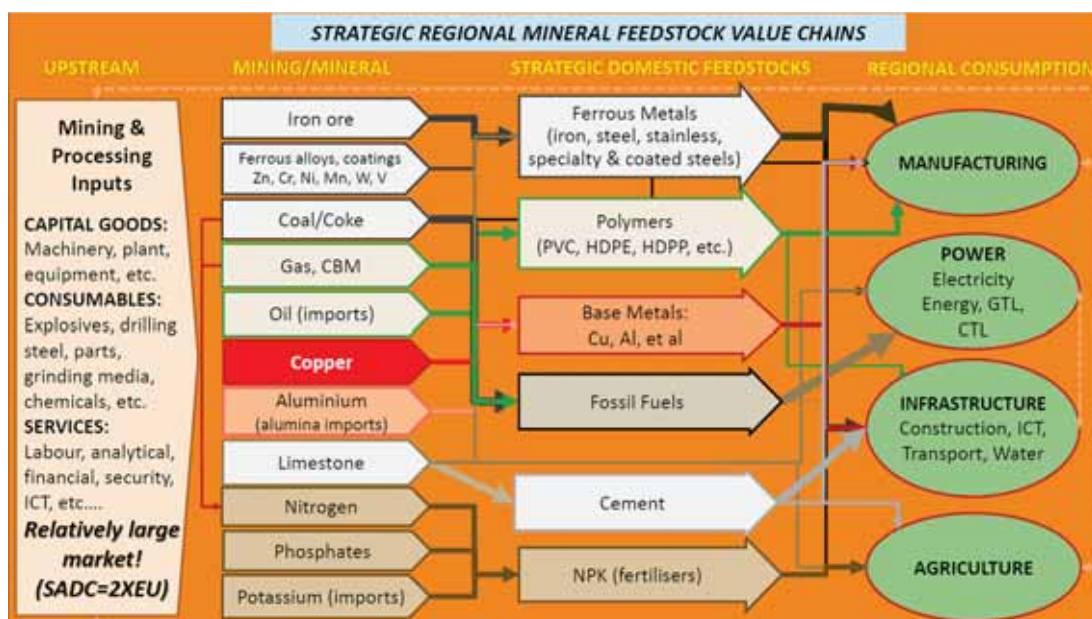
Table 2: Key mineral-based feedstocks

Sector	Minerals
Manufacturing	Steel/alloys; Polymers (from coal and hydrocarbons), Base metals (copper,zinc, aluminium et al.)
Energy (electricity)	Coal, oil and natural gas (and CBM, shale gas)
	Radioactive minerals
	Limestone (emissions)
Infrastructure	Steel

Sector	Minerals
	Copper and aluminium
	Cement (from limestone, gypsum, coal),
	Clays (ceramics), aggregates, et al.
Agriculture	Nitrogen (from coal, gas), Phosphate, potassium and conditioners (e.g. limestone, sulphides)

And, positively, Africa has ample resources for the cost-effective production of all of these critical feedstocks (in most RECs) for economic development. Dr. Jourdan stressed that it is upon these critical feedstocks for development that African states should be concentrating. However, a serious constraint remains; nearly all of these critical mineral-based feedstocks suffer from limited economies of scale in individual countries. The solution: create regional economic community (REC) strategies to enlarge the market.

Figure 4: Strategic regional mineral feedstock value chains



Ghana's local content legislation is a good start

Ghana's local content legislation represents a good start in that it lists the types of goods that mining companies will be expected to source locally. But, Dr. Jourdan considered that it could move beyond a list of items to encompass percentage targets for local purchases. Additionally, goods and services need to be separated, as percentages for the local acquisition of services, such as catering and security, could be set much higher than the percentage targets for various goods which are more difficult to source locally, such as explosives or machinery.

Moreover, the percentage targets for local content could be set much higher if the concept of local content was expanded to embrace "regional" (REC) local content. Under this concept of regional local content, a particular item (say a \$10 million piece of equipment) that is purchased in Ghana could count in full (i.e., 100%) towards the company's targets for local content, but if it was purchased from neighbouring Cote d'Ivoire then it could count as 70%, i.e., \$ 7 million. In this way, the mining company will still have strong incentive to facilitate the linkage in Ghana but if that is not feasible the company will be encouraged to source regionally. If set at the ECOWAS level, Dr. Jourdan believed that local content targets could be as high as 60% for capital goods and 70 to 80% for services because countries are giving mining companies a much greater choice and range of suppliers. He said:

I would rather buy from Nigeria than buy from South Korea, wouldn't you? I'd rather develop Africa. The only losers here are ex-Africa. It's win-win-win for Africa, so we need to build not local content but local regional content.

Later, in response to a question on how local content might be calculated in a regional context, Dr. Jourdan said that a standardized method for calculating the percentage rates for crediting local content from other countries was needed, for example, rates could be calculated based on the inverse of GDP per capita. Using this measure could offer a simple equitable method of accounting for variable geometry, i.e., different stages of development within any regional bloc. For example, Niger is the poorest country within ECOWAS. Therefore, if a mining company in Ghana procured input from a Nigerian supplier then that input could be counted at 90%, while input procured from a supplier in Cape Verde, the wealthiest state in ECOWAS, could be credited at 50%. Over time, GDP per capita rates would change so the rates for crediting local content will self-adjust.

He also recommended that inputs from African states outside a given region should also be counted, for instance, Mauritania is not part of ECOWAS but could still count at 50%. In this way, governments are sending the right signals to mining companies to source inputs on the continent, thereby providing economic incentives for domestic suppliers to gear up for the regional or continental market. In this way, too, the resistance of poorer countries to signing up to regional protocols for fear of domination by larger or wealthier countries can be reduced. Ultimately, an equitable way of joining together that immediately benefits poorer countries is needed to advance the integration agenda.

Based on his calculations, Dr. Jourdan estimated that member countries of ECOWAS are presently importing around \$US 2.5 billion worth of mineral capital goods each year, which is a massive and immediate market to pursue, one that is approximately the same size as the mining input market for Europe. Add the SADC market for mining inputs, which is double the European market, and these two regions alone have a market for mining inputs three times the size of the European market. Moreover, West Africa has a robust pipeline of mining projects giving a significant mineral inputs market going forward. Currently, 55 projects are operational and a further 150 projects in the ECOWAS region are in the conceptual or pre-feasibility/feasibility stages or under construction.

So why are European companies dominating? We have the market, but we don't. Because we all talk regional but we operate as regional member countries (RMCs). And we have barriers against our neighbours. We need to move towards regional mining visions.

Regional mining visions

To overcome the constraints faced by individual African countries, Dr. Jourdan stressed the vital need to develop regional (i.e., REC-level) mining visions (RMVs). The potential benefits of customized regional visions are many-fold. They include:

- Increasing market size and scale economies for both mining inputs and outputs, for both intermediates and semi-fabricated products (key feedstocks into local/regional development)
- Accessing a much wider range, quality and size of mineral deposits for key strategic mineral feedstock requirements
- Widening and strengthening STEM skilling and RD&I capacity and capability
- Improving regional geo-knowledge through cross-border collaboration in geological research
- Harmonizing and aligning mineral regimes to create a uniform operating environment, which is supportive of linkages development, thereby avoiding “the-race-to-the-bottom”
- Strengthening minerals sector oversight, auditing, revenue collection and deployment through collective self-reliance and regional best practice. For example, the establishment of regional mineral audit agencies that share data to prevent disreputable companies moving from one country to the next and ripping them off.
- Enhancing infrastructure capacity and efficacy through harmonization and alignment of transport, power and water systems and multi-RMC resource-based development corridors
- Enhancing local economic and social impacts of mineral projects through harmonized corporate social responsibility and investment mechanisms
- Improving worker health and safety through alignment of codes based on regional “best practice”
- Improving environmental sustainability through alignment of codes for *Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs) that are based on regional “best practice”*.

Of the benefits listed, Dr. Jourdan emphasized that working at a regional level allows for scale economies for both input and output industries. For example, Ghana does not have that whole range of raw materials needed for industrialization. But the region does. ECOWAS has all of the essential feedstocks. By coming together, member countries can access a much bigger resource base with much better deposits—i.e., deposits that can be mined much more cheaply and efficiently. In turn, by working together, larger and more efficient plants can be established with scale economies. For example, the current demand for steel among ECOWAS member countries is sufficient to underpin a world-class integrated steel mill. The same is true for most African regional communities.

Later, in the question and answer session, Dr. Jourdan saw great potential for pursuing regional integration through mining linkages, in particular, if those linkages are focused on products that are immediately and widely needed by the population, such as cheaper fertilizers for agriculture.

I would say that mining linkages are the lowest hanging fruit that I can think of. If three countries came together and said we going to do this for fertilizers, very quickly the other countries will come on board. Because in those three countries suddenly their peasants, their farmers, would be getting cheaper fertilizers. They would have fertilizer plants based on their gas, based on their phosphates, based on their potassium.

Second, by working together, member countries do not undercut one another in negotiations with investors. By putting in place a harmonized mining regime, regional member countries can avoid diluting the provisions of mining licenses to attract investors. They can avoid the “race to the bottom” which is detrimental to all countries.

Conclusion

In closing, Dr. Jourdan said that Africa’s significant and diverse mineral resources and production, regional markets, and the ingenuity and energy of its population, provide a powerful combination to realize the continent’s growth and development, contribute to industrialization, and foster inter-generational equity. But these outcomes will only be achieved through the realization of all of the mineral linkages outlined in the Africa Mining Vision, within the guiding framework of regional mining visions. To implement the AMV, African countries must realize that there is strength in numbers in joining regional mining visions, that they will benefit from joint efforts.

We have all the raw materials. We have the people. We have the resources. We have the resourcefulness. What we need now is leadership. The opportunity is ours for the taking; we only need to grasp it to embark on a more prosperous and equitable African future.

2. Panel discussion: Enhancing value addition in the extractive sector in Africa: Country experiences



Panel discussion on Enhancing Value Addition in the Extractive Sector in Africa: Country Experiences. From left to right: Prof. Joe Amoko-Tuffour, Mr. Benjamin Mchwampaka, Mr. Anthony Paul, Mr. Edward Brown and Dr. Bonny Ignatius Matshediso.

Panellists:

1. Mr. Anthony Paul, Chief Executive Officer, Association of Caribbean Energy Specialists, Trinidad and Tobago
2. Mr. Benjamin Mchwampaka, Commissioner for Minerals, Tanzania
3. Dr. Bonny Ignatius Matshediso, Director, Morupule Coal Mine, Botswana
4. Mr. Edward Brown, Director of Policy Advisory, African Center for Economic Transformation (ACET), Ghana

Moderator: Prof. Joe Amoako-Tuffour, Secretary, Economic Management Team, Ghana

In this first discussion, the panellists shared their insights for value addition in the extractive sector in Africa. This section begins with edited highlights from the opening comments by each panellist on their particular jurisdiction. The moderator then invited questions and comments from the floor. Key issues raised during the open discussion are also summarized below.

The two key challenges for Ghana: Sourcing cheap power and retaining value in-country

Dr. Paul was asked to share his experience on initiatives to improve local content and value addition across the continent with a focus on Ghana's efforts to develop an integrated aluminium industry. To start, he identified two key challenges facing Ghana: i) getting power at the right price; and ii) retaining value in the country.



Mr. Anthony Paul

In response to the first challenge, Dr. Paul highlighted the country's potential to use its natural gas to power the aluminium industry. But, to achieve this, Ghana must first accurately assess what gas it has and how it can be developed to supply the industry with cheap gas. He said that extracting and using natural gas as an industrial power source is complicated. Multinational energy companies typically prefer to invest in oil fields; when gas is associated with an oil deposit it is seen as a nuisance to producers. Therefore, the government will have to negotiate with oil companies to provide gas at the best possible price if the country wants to use it for industrialization.

Just as for natural gas, to retain the value Ghana's bauxite resources in country—and at every step of the value chain—the government needs to accurately map the size, location, cost of depletion, and quality of its bauxite. By knowing its asset base, Ghana can approach potential investors with attractive propositions to develop its aluminum industry rather than wait for investors to come along and seek access to the country's resources, and demand all kinds of concessions to mine the bauxite.

Dr. Paul also stressed that these issues must be addressed within a governance framework that holds people accountable. The challenge, here, is that mining contracts are often shrouded in confidentiality and secrecy, which keeps out of sight what decisions are being made, how they're being made, and how they're being implemented. He said:

If you're going to get what is potentially a marginal industry to make money it must be run really well. People must have good contracts, they must be managed well, and it must be seen to be doing what it's supposed to be doing.

Finally, he counselled that Ghana needs to think regionally, not as an island, to investigate the possibilities for regional collaboration across the aluminium value chain as a way of retaining value. Sierra Leone is also rich in bauxite and Senegal in natural gas. Here, he related the experience of his home country of Trinidad and Tobago and neighbouring Guyana, which recently discovered an oil field that is three times the size of Ghana's Jubilee field. However, Guyana is focused very heavily on local content (which it should be) and so it doesn't want people from Trinidad to come in and take local jobs. But perversely, Guyana seems quite happy for Europeans and North Americans to come in and take their jobs. This mentality, he said, has to change.



Mr. Benjamin Mchwampaka

How Tanzania is tackling the issues of energy and value addition

Mr. Benjamin Mchwampaka, Commissioner for Minerals in Tanzania, was asked how Tanzania was overcoming the issues of energy infrastructure and value addition. In response, he related that the government's principal focus is on exploiting the country's reserves of natural gas. The country has discovered over 54 trillion cubic feet of natural gas, which it is seeking to develop and integrate in the national electricity grid. The government is also trying to revive plans to construct a hydroelectric power station at Stiegler's Gorge (in Morogoro region), and the country has large coal reserves which can be used for power generation.

Like other African countries, he said that Tanzania is prioritizing value addition; the concept is incorporated into the Tanzania's Mineral Policy of 2009 and in the Mining Act of 2010, which was revised in July 2017. The revised Act now requires that all minerals should be beneficiated in the country before they are exported. He said that the government is committed to getting out of the cycle of exporting its minerals in raw form. To achieve this ambitious goal, the government is inviting investors from within and outside Africa, who are technically and financially capable to invest in smelters and refineries. Acknowledging the problems of economies of scale, he stressed the importance of regional integration in building facilities to utilize and beneficiate Africa's resources in Africa.

He also mentioned initiatives to add value to gemstones, particularly tanzanite. He said that, since 2010, the government has stipulated that tanzanite greater than one gram should not be exported without being processed. To achieve this, the government is working to build capacity to process tanzanite and other gemstones in country, including the expansion of the Tanzania Gemological Centre in Arusha. This project is being jointly funded by the World Bank and the government, to make sure that Tanzanians are trained on how best to cut stones to maximize value.



Dr. Bonny Matshediso

The importance of coal in Botswana

Dr. Matshediso related that Botswana has 212 billion tons of coal reserves, but the country currently has only one operating coal mine. He acknowledged the environmental impact of coal but stressed that the vital importance of coal for national development. He said:

We must appreciate that even the developed countries, who had massive coal reserves, they mined their coal, and that coal led to industrialization in their own countries. We'd like to be given an opportunity to also exploit our massive coal reserves, exploit them in an environmentally-friendly way.

Results of a comparative analysis of local content and value addition in eight countries

Mr. Edward Brown from the African Centre for Economic Transformation (ACET) was asked to share results from ACET's recent comparative analysis of the policies, regulations and institutions that govern local content and value addition in eight mineral-rich countries in Africa: Ghana, Burkina Faso, Ethiopia, Mozambique, Namibia, Nigeria, South Africa and Zambia. The study covered five areas:

1. Policy, regulations and institutions
2. Local content and value addition
3. Local employment and skills development
4. Procurement of good and services
5. Local equity and local financing of projects

On policy and regulations, Mr. Brown made three points. First, most of the policies and regulations are fairly recent, dating back between 5 and 10 years, and some policies remain in draft form. Second, with respect to institutional arrangements, there was no blueprint. The study found a variety of institutional arrangements; for instance, Nigeria has a single dedicated institution for the mining sector while all of the other countries, including Ghana, Burkina Faso, Ethiopia and Mozambique have multiple institutions. For example, Ghana has separate bodies that govern the oil and gas sector and the minerals sector. Third, with the exception of South Africa, Namibia and to some extent Nigeria, none of the countries have clearly articulated local content rules or policies that are anchored in their national development plans.

With respect to local employment and skills, Mr. Brown remarked that many official pronouncements in the case countries give the sense that the extractive sector is going to be highly absorbing of labour. But he felt that this is a fallacy. Rather, the extractive sector is highly capital-intensive, risky and demands high skills. For many of these countries, with the exception of South Africa and, to some extent, Nigeria, the capacity to employ highly-skilled

labour is very limited. And, increasingly, the industry is moving into high tech in order to be able to exploit deeper and deeper sources of minerals. This requires advanced technology which means that companies are substituting capital for labour.



Mr. Edward Brown

On local procurement of goods and services, Mr. Brown related that the highest proportion of expenditure in the extractives industry is in procurement, for example, about 80% of oil industry expenditure is in procurement. Here, the study found evidence that countries that have had an active preferential treatment to local procurement have performed better. For example, local procurement in Ghana has increased from 50% in 2013 to 73% in 2014, and in Nigeria from 5% in 2004 to about 70% in 2015. But it is also important to know that local procurement does not necessarily imply local production value addition. In fact the evidence suggests that most of the companies procure products in-country but that these are products that are locally imported. Therefore, to increase value addition, supplier development programs are critical to establish linkages with the extractive sector.

In the area of equity participation, the study observed that state and local private equity participation is increasing, but it is still fairly passive. However, fronting was one serious issue identified. Fronting was not only done for foreign investors but also for local investors and for the political elite, which makes this problem even more intractable. Hence, it will need to be addressed as part of the broader governance of the sector.

On local financing, Mr. Brown thought that the emphasis on asset financing is a little bit unrealistic given the limited financial depth in many of the study countries. Once again, the pursuit of regional solutions becomes very important.

Finally, Mr. Brown acknowledged the large appeal for value addition in many countries, but he considered that value addition is not necessarily the best option for every resource-producing economy. Rather, the benefit of value addition must be assessed against the size and depth of a country's resources. Countries must closely examine their prospects and value chain analysis to see whether it makes sense. Here again, the regional dimension becomes all-important because it is a scale issue. The size of the capital investments required is very huge. Therefore, local financing and value addition has to be anchored in a broader regional context where you can source inputs regionally, where you can source financing regionally, and, most importantly, avoid a race-to-the-bottom by each country trying to do its own thing and trying to compete among each other.

Having resources is not a sufficient condition for pursuing a value addition policy

Mr. Brown commented that value addition may not be right for all countries. Even in the non-extractive sector, having the resources is not a sufficient condition. Rather, each country needs to look closely at the supply and value chains to see whether the development of a particular industry is a viable proposition. For example, if a country is importing a high percentage of inputs, then it is not going to be competitive. Most projects are highly capital-intensive, therefore, to be competitive, a country has to source locally. Hence, in-depth comparative value chain analyses are needed on a commodity-by-commodity to ascertain what is needed to develop a viable sub-sector and what support would be required to make it happen. Therefore, the questions become: How do you source the materials and how do you source the financing to make a project viable at sub-regional level. Just because Ghana has iron ore does not mean it has to produce steel when Guinea would also produce steel. It's not going to be possible. Hence, there has to be a regional strategy which is anchored in a regional industrial policy.

Strong, well-resourced regulators are needed to ensure value remains in-country

Asked if countries should enact legislation for value addition (as they have done for local content), **Dr. Paul** advised that governments should first identify what options are available to add value to a country's specific reserves, and what regulations and guidelines for operators are in already in place. He stressed that African countries need well-resourced regulators and strong, consistent and transparent contracts and procedures to retain as much value as possible in line with national laws and development aspirations. He said: *"If you have a really skillful regulator, then you can do anything without legislation."* A regulator should be able to account for all operations within a country through transparent contracts. A company's sole objective is to make as much wealth as possible for its shareholders as quickly as possible and so will try and find ways to sidestep the regulators. Companies will often charm, intimidate or bully the regulator and, without sufficient capacity to push back, the companies will often get their way. Therefore, appropriate defense mechanisms are required. And, frankly, if regulators are inexperienced, then strong regulations are needed.

Now having strong regulations without the capacity to implement them means you create exceptions. Which destroys the basis, the rationale of the law? If the legislation is too strong and not targeted and not implementable then that will fall down. So, the bottom line is that whatever you put in place must be in service of some objective, but it must also be well thought out and pragmatic.

Prioritize value addition for products that are used locally

During the question and answer session, **Ms. Jacqueline Maleko, Chairperson of the Tanzania Women Chamber of Commerce**, supported the recommendation of the keynote speaker, **Dr. Jourdan**, to prioritize adding value to those products that Africans can use ourselves. She said:

There are products for which we can create our own market because a market should start from within instead of looking outward. As you know, most African countries produce what we don't consume and consume what we don't produce. Look at the panel; all are in suits. Where are the Nigerian clothes? Where are we going to sell Nigerian clothes? So we have to change our mindset. ... Let's prioritize those products that can have market within Ghana and within the region.

Investing in human capital as the base for industrialization

Ms. Maleko also emphasized the importance of investing heavily in human capital as a necessary foundation for industrialization.

We have to prioritize and go step-by-step. Let's develop the critical mass of human capital. This is what South Korea did some years ago. ... They started by developing human capital, supporting their institutions, supporting their private sector, investing heavily in innovation and R&D. They didn't just jump and start doing without laying the base. Unless we lay the base for value addition for our mining, this will not work. I remember Mwalimu Nyerere. He said, "Let's not hurry in doing a lot of mining extraction, let's develop the critical mass of our people so that when we start doing it we have our own people".

Dr. Matshediso strongly agreed with Ms. Maleko on the issue of human capital. He said that, in Botswana, tertiary education is free. Additionally, the government has established the Human Resource Development Council, which identifies the labour needs within priority sectors so as to train students to fill positions within those sectors.

On the issue of skills building, Mr. Brown highlighted that the technology within extractive industries is changing rapidly and to be competitive demands highly-skilled workers who have the capability to handle and adapt to new technologies. But not every country has the ability to supply the full complement of skills for their industries. Once again, countries need to embrace regional solutions. He said:

We need to look at regional institutions that can begin to supply those kinds of skills. In fact, we are beginning to see that in Ghana with the Tarkwa University of Mines and Technology where a lot of the training in the West African Region is being done through this institution. So there can be centres of excellence at the regional level that would begin to deal with these issues.

In addition, the movement of labour and skills across countries needs to be improved. He said:

We are still living in silos. We talk about ECOWAS and movement of labour. But when you look at the movement of skills, the whole issue of work permits, residence permits, portability of social security and all those things, mutual recognition becomes very critical.

Dr. Paul was optimistic. Pointing to the rapid growth in the skills base in the last generation, he believed that skills development is not a barrier. He said that African countries just have to figure out how to do it, and added that “the same companies we are railing against, they are very good at developing skills.”

Africa needs to tap into the opportunities provided by mining companies as well as engage with professional bodies to source and share knowledge and expertise.

Mr. Mchwampaka said that the Tanzanian government requires mining companies to pay a 5% skills development levy which most companies do pay. However, he said that the funds collected need to be more properly managed and set aside specifically to fund programs to enhance skills.

Value addition strategies need to be anchored within regional industrial strategies

In closing the session, **Mr. Brown** said that very few countries, except Namibia, South Africa and Nigeria, have clearly defined strategies for local content and value addition. Yet, even in those countries, their regulations and laws for local content and value addition are not anchored in an industrial framework.

We’ve all said this is an industry which is highly-capital intensive and high skill yet not a single country, even South Africa, has anchored its local content and value addition program within the broader SADC industrial strategy.

Therefore, he strongly recommended that the entry point for each country trying to transform its economy should be to look at the regional level, so as to orchestrate and finance industries that can provide output for regional markets. In turn, this implies that countries need to put in place a regional regulatory framework that pools resources to achieve economies of scale and avoids a destructive race to the bottom.

3. Expert presentation: The value chain of the integrated aluminium industry

Mr. Michael Ansah, Senior Vice President, Global Real Estate and Facilities, Dell Corporation⁵

Mr. Ansah's presentation focused on three issues related to the aluminium industry. First, he provided an overview of the demand trends shaping the industry internationally. Second, he looked at an example of a global company that is successfully developing and fully harnessing the value chain within the industry and how this impacts on the company's value. Lastly, he examined Africa's attempts to create an integrated aluminium industry (IAI) in countries with the potential to do so. In particular, he examined the steps being taken by the government of Ghana to build an IAI anchored on exploiting the full aluminium value chain.



Mr. Michael Ansah

Background to the aluminium industry

To begin, Mr. Ansah gave a brief background to the industry. He said that there had been significant growth in demand for aluminium of the past 10 years. The metal is used for a variety of applications in the automotive industry, where the trend to build lighter vehicles to reduce emissions is driving demand, and in the aerospace industry, where it is the preferred metal for building aircraft and engines. Aluminium is also increasingly used in building and construction as well as packaging and industrial design. And it continues to be heavily used in the making of household appliances and utensils.

The life cycle of aluminium is illustrated in **Figure 5**. The metal is produced in the following four stages:

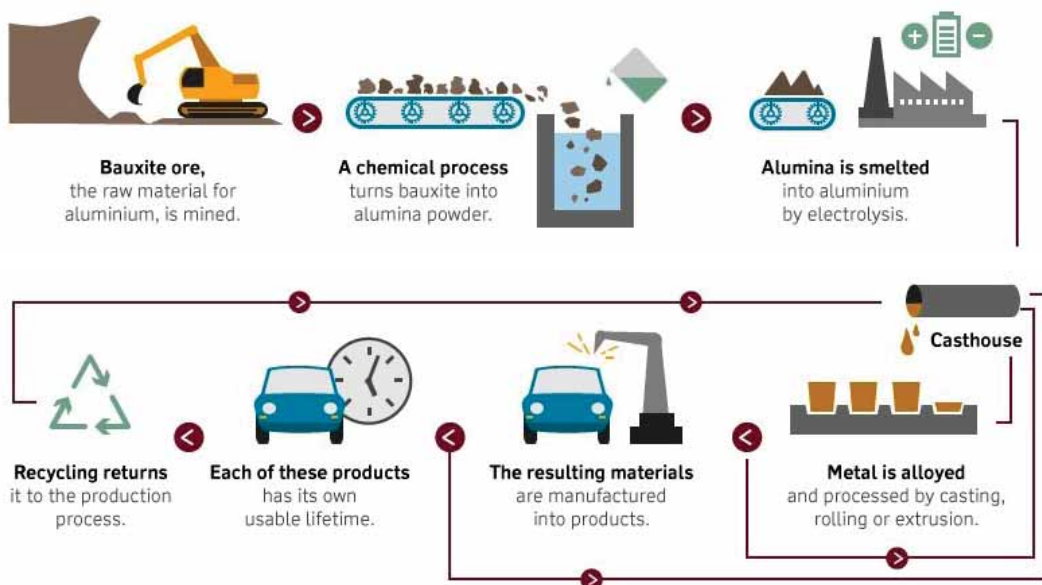
- Mining of bauxite, mainly large-scale open-cast mining
- Conversion of bauxite to alumina in a refinery
- Conversion of alumina to primary aluminium in a smelter
- Semi-fabrication to produce extrusions, castings, cables, etc.

Driving the value chain of an IAI will, therefore, require active participation in each stage of the process. Once produced, the metal is infinitely recyclable.

⁵ He is also currently assisting the Office of the President on the Ghana Integrated Bauxite and Aluminium Development Authority.

THE LIFE CYCLE OF ALUMINIUM

Aluminium provides a twist on the traditional life cycle in that, once born, it never dies. Infinity recyclable, it exists in a continuous loop of formation and transformation.



Global trends

Global demand for aluminium has been fuelled by demand from China, which is the world's largest producer and consumer of the metal, and, more recently, from India. The metal has even become a favourite among investors; following the recent global recession, aluminium has become a hard asset, one of the most actively traded on the London Metal Exchange. Some analysts have termed it the "metal of the future."

In recent years, the growth in the Chinese economy has slowed with flow-on impacts on global growth. However, the introduction of an economic stimulus package by the government of China to kick-start growth combined with the government's drive to close excess capacity of 4 million MT of aluminium, which is 10% of China's total smelting capacity, in response to environmental concerns, have driven up demand and prices. With China accounting for around 60% of global aluminium production, the closure of even 10% of its capacity will have an impact on prices. Hence, the success and growth of the industry will in large part be contingent on sustaining and even growing current demand levels. China and India will be crucial in that regard

Emirates Global Aluminium Company: A case study in value addition

The Emirates Global Aluminium Company (EGA) in the United Arab Emirates (UAE) is an example of a company that has successfully pursued value addition. The UAE is now the fifth largest aluminium producer in the world. The industry is second only to oil and gas in the UAE, employing over 8,000 workers and exporting products across the world.

EGA has a clear vision of industry integration—from mining bauxite to refining through to producing aluminium. The company is slated for an initial public offering (IPO) next year that will raise USD 3 billion valuing the company in excess of USD 15 billion. The company is investing in new projects to expand upstream and internationally. From its heritage in aluminium smelting, EGA is creating new revenue streams and securing the resources that will allow the UAE's aluminium industry to grow. For example, it is developing a bauxite mine and associated export facilities in Guinea, and constructing an alumina refinery, only the second in the Middle East, which will reduce the UAE's dependence on imported alumina.

When these projects are complete, EGA will be an integrated upstream and midstream aluminium company, delivering value from mine to metal. EGA is ranked among the world's top companies in the volume of value added products, i.e., 'premium aluminium'.

The aluminium industry in Africa

In West and Central Africa, the activities of the aluminium sector have occurred almost entirely in four countries: Guinea, Ghana, Cameroon and Nigeria. Guinea has the largest bauxite reserves in the world, with over 30% of the world's known reserves. The country is the fourth largest producer of bauxite globally, with annual production of some 15 million MT. Ghana has also mined bauxite since the 1940s. Cameroon has huge reserves of bauxite plus the potential for producing power.

Alumina has been produced and exported in Guinea. The country is presently looking to build another refinery through an arrangement with China. However, Guinea has no smelter to date, due in part to the challenges of producing cheap power for this industry.

Aluminium has been smelted in Ghana and Cameroon, and, more recently, in Nigeria. There are a further three smelters in Southern Africa, all operated by BHP Billiton. But, in 2010, Africa had less than 6% of global primary aluminium production. And, today, no country in Africa has a fully integrated aluminium industry that incorporates all of the essential components of the value chain.

Impact of value addition

The need to build a fully integrated value chain for aluminium cannot be overstated, given its potential to spur industrial development and growth. At the basic level, bauxite is traded at around USD 40-60 per MT; alumina will fetch around USD 400+ per MT; while aluminium is trading at near USD 2,000 per MT with significant upside forecasted in years ahead.

Therefore, African countries have a stark choice—to remain primary mineral producers, forever at the mercy of fluctuating commodity prices, or to move up the value chain to refine alumina, to smelt aluminium, and finally to produce value-added aluminium products for sale in the global market.

The multiplier impacts of an IAI on an economy are also very clear. The industry has the potential to drive skills acquisition and employment growth, directly and indirectly. And the large-scale industrial development that an IAI can drive is well-proven, including port facilities, railway infrastructure and power plants which promote further investment and employment.

To be successful, the development of an IAI will depend on two key factors: i) the right regulatory and fiscal environment to encourage investment; and ii) the availability of cheap power, since power is the main variable cost in the smelting process. There will need to be commitments for stable power pricing and consistent supply that will guarantee global competitiveness. For example, a smelter of 500k to 700k capacity will require generation capacity of 900 to 1,300 MW AC priced at 2.5 to 3.0 cents per kW hour.

Ghana's experience in building an IAI

Since the 1920s when the Volta River power project was conceived, Ghana has looked to establish an IAI to exploit the full value chain. The country has bauxite reserves in excess of 900 million MT, but the vision for the industry has not been realized for various reasons, particularly the lack of reliable and cheap power.

But, Ghana is now on the cusp of realizing the IAI that has eluded the country for decades. The current government is planning to introduce legislation to establish Ghana's Integrated Aluminium and Bauxite Development Authority. The authority will be tasked with driving the development of an IAI, which has been identified as a strategic pillar of Ghana's industrialization. The government is committed to putting in place all of the necessary elements for the establishment of the IAI, including a clear rationale for an IAI and the role of government, a strong regulatory regime for the industry, and the appropriate tax regimes to attract the right investment.

It aims to build a structure that will attract significant private sector participation, attracting both foreign and local investors to work in partnership with government. Over time, the government will seek to drive further private sector participation, and look to build a publicly-traded enterprise that is world-class, profitable, and a significant net contributor to the country's revenues. It will look to partner with the private sector with a clear commitment to build the full value chain of an IAI over a reasonable timeframe, including fully exploiting the country's bauxite reserves, building a refinery, and revamping, expanding and leveraging the VALCO smelter.

For Ghana, as is the case for other African countries with the potential to build an IAI—Guinea, and Cameroon especially—a major issue is the availability of cheap, dedicated power in sufficient quantities over the long term. Solving this issue will be the key to establishing an IAI. To this end, the government is committed to finding a solution that is sustainable and does not create power shortage or pricing issues for other sectors of our economy.

Conclusion

In closing, Mr. Ansah said that establishing an IAI would be difficult but the benefits for the development of Ghana would be profound.

We are under no illusions that this will be hard. But in part, that is why we choose to focus on this sector, realizing the significant impacts it will have on our economy in the long run, in employment, training and skills transfer, building industrial parks for value-added products for the local market and export. We are fully aware of the benefits of the full value chain, and we intend to drive this in its entirety. A time has come for Africa to realize its true potential.

4. Panel discussion: Effective management of resource extraction



Panel discussion on Effective Management of Resource Extraction. From left to right: Mr. Henry Antwi, Dr. Benjamin Adoo and Mr. Gerald Mturi.

Panellists:

1. Mr. Michael Ansah, Senior Vice President, Global Real Estate and Facilities, Dell Corporation
2. Dr. Benjamin Adoo, Executive Chairman, Asanko Gold Ghana Ltd. And Member of the Integrated Aluminium Industry Project Working Committee
3. Mr. Eric Asubonteng, Vice President, Ghana Chamber of Mines, and Managing Director, AngloGold Ashanti Obuasi
4. Mr. Gerald Mturi, Executive Secretary, Tanzania Chamber of Minerals and Energy
5. Mr. Henry Antwi, Commercial and Technical Advisor, Minerals Development Oman

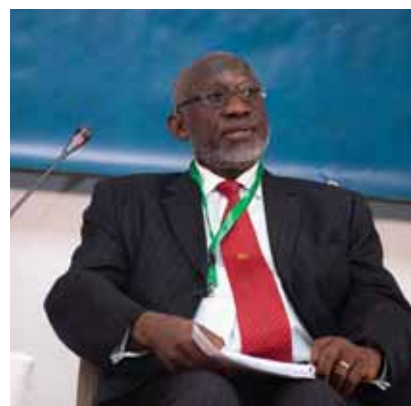
Moderator: Mr. James Lemaire, Chief Executive Officer, Continuous Improvement by Employees (CibE) Ghana (a partner of ACPE Inc.)

The development of an integrated aluminium industry in Ghana relies on the successful exploitation of bauxite resources. Therefore, this panel discussion focused on the identifying the priorities for the effective management for resource extraction.

What does effective management of extraction mean?

Asked to describe what the effective management of extraction means in practice, **Dr. Ben Adoo** stressed that, before any resources are extracted, companies must strategically nurture social alliances (i.e., secure a social license to operate) in the areas where the minerals are to be extracted.

It's important for mining companies to maintain social alliances. ... You cannot just go to the land and just exploit without having the alliances of the people around you. ... So, prior to all that we want to do now, we need to strategize and see how we can achieve our social alliances.



Dr. Benjamin Adoo

Second, the extraction companies must assess the safety of the personnel involved and the security of the operations and the equipment to be used, as well as the safety and well-being

of people in local villages and towns. Here, he added that bauxite mining is a surface operation so it does not have to contend with the safety issues of underground mining. Fortunately, too, bauxite mining does not face the issue of illegal mining as is the case with gold.

Third, extraction companies must assess the availability of skills. Dr. Adoo said that bauxite mining does not employ many people, but the equipment used is very expensive to run and to maintain. Therefore, the personnel who are operating the equipment must have the relevant skills, hence, appropriate training programs will need to be conducted before the bauxite can be extracted.

Fourth, the quality of bauxite that is extracted varies widely depending on what other minerals and other organic matter are found in the deposit as well as the technological expertise to separate out the contaminants, such as carbon, silica, iron, calcium oxide and water. Therefore, the appropriate analysis and management of the commodity during extraction is critical. You cannot expect the refinery to pay for tonnage that has not been cleared of the other products in the ore.

Finally, extraction companies must have strong environmental credentials and controls. For example, some bauxite deposits are found in elevated areas, which may be water catchment areas. Therefore, companies must do their environmental homework properly, so as not to disturb the free flow of freshwater from these hills.

The need for investment in local entrepreneurs to participate in the value chain

Mr. Eric Asubonteng was asked to share what lessons Ghana had learned from its mining activities to date. In response, he said that, historically, the country's approach to retaining value from the mining industry has been to try to tax the companies as much as practically possible. But it is clear that this approach is not sustainable in creating and keeping value within the country. There are many reasons why this approach has not worked in favour of the average Ghanaian. For example, some critics would say that the tax revenue collected from the industry in the past has not been used effectively. But, Mr. Asubonteng pointed to another cause. He said:

I think there's an important aspect that has been missed, which we are gradually starting to realize now. And that is we haven't developed or nurtured local entrepreneurs as much as practically possible to partake in the value chain.



Mr. Eric Asubonteng

Continuing, he said that governments have recently sought to address this issue through local content legislation and regulations that require industries to purchase certain items domestically. But, again, he considered that these interventions are not having the expected impact.

Why? Because we haven't looked at the problem holistically. These entrepreneurs are not doing what is expected to really deliver the full value. [Rather] you get a lot of briefcase businessmen who basically just buy and sell. But ultimately that's not what we want. We want to be able through local content regulations to develop a strong manufacturing base so that the impact of it or the benefit of it can, with time, go beyond the mining industry and develop linkages into other industries within the economy.

Therefore, Mr. Asubonteng reiterated the need to address the situation holistically. Along with local content regulations, constraints in the business environment—such as financing, that stop private businesses from entering the market—need to be looked at to encourage local entrepreneurs to get into that space.

Partners not enemies—The importance of dialogue and trust between the government and investors

Reflecting on the experience of Tanzania in exploiting its resources, Mr. Mturi emphasized the importance of a mining policy that functions as enabling tool to achieve national objectives. However, he highlighted a number of challenges encountered during the review of the country's mining legislation undertaken in July 2017. One of the biggest challenges is the lack of trust between the government and investors. There is a notion that investors are thieves, which is creating a lot of friction between the two parties. He said:

Governments and investors should treat each other as partners not enemies. There should be good communication between the two ... when enacting new legislations or working on improving policies. ... Changes should not be introduced as surprises; business-wise that does not work.



Mr. Gerald Mturi

A step-by-step approach for success in the minerals sector: The experience of Oman

Asked to share his experience of assisting the Government of Oman to develop its minerals sector, **Mr. Antwi** highlighted the importance of taking a methodical step-by-step process and enlisting the help of experts at each stage of the process. He said that the government made the decision to diversify the economy away from oil and gas revenues into mining and metals.

As a first step, the government comprehensively assessed the country's mineral potential. Upon finding that the scale of available resources was not sufficient to attract big investors, the country opted to develop a strategy of enhancing value. To do this, it set up a company that drove a process that examined concept studies and investment rationale for different value-addition opportunities.

The development of an aluminium industry was the first selected. Even though Oman does not have reserves of bauxite or alumina, the rationale at the time was that these inputs could be imported to smelt using the country's abundant reserves of gas. To achieve competitiveness, the key was the gas price. Another challenge was the capital intensity of the project, for example, the aluminium plant needed USD 2.5 billion to build.

Through a very rigorous assessment process, the company made sure that the project was robust enough to be able to attract investors and partners. Market research was conducted to assess metrics for all metals, such as employment generation per unit of gas consumed, economic returns, feedstock security and the potential for downstream. Once the whole process had been completed, the company was able to justify the utilization of Oman's gas. The country is now producing about 360,000 tons of aluminium per year. He added:



Mr. Henry Antwi

If we are not profitable then instead of adding value you are actually destroying value. If you can't operate on an economically robust basis, you are actually destroying value because you end up subsidizing which is not good.

5.

Parallel session 1: The effective management of an alumina refinery and aluminium smelter

This session discussed two key components of the value chain for an integrated aluminium industry: the management of facilities to refine bauxite to produce alumina and the management of an aluminium smelter to convert alumina into primary aluminium.

5.1 Expert presentation: Effective management of an alumina refinery

Presenter: Mal Briggs, Vice President, Alcoa Mining, Australia

Alcoa is the world's leading producer of alumina. The company currently operates six refineries in Australia, Brazil and Spain, and has a 25% share in a refinery in Saudi Arabia. The company's three-refinery operation in Western Australia is the world's biggest single source of alumina. In this presentation, Mal Briggs from Alcoa Mining Australia shared his insights into what drives investment in the aluminium industry from the company perspective.



Mr. Mal Briggs

A positive growth story for the aluminium industry

To begin, Mr. Briggs said that projections for the growth of the aluminium industry continue to be quite positive. However, the vast majority of the aluminium industry is concentrated in China, which makes it difficult for new entrants to gain access to the market. Nevertheless, the overall world consumption of aluminium is a fantastic new story from the point of view of continuous—and perhaps dramatic—growth. Therefore, the shared challenge is to identify what parts of the market are open to compete in.

Supplying bauxite is one potential opportunity

Supplying bauxite may be one good opportunity. Internal demand for bauxite within China is growing dramatically because their domestic bauxite supplies are running out. China only has poor grades. The country is finding it increasingly difficult to get its hands on the right bauxite in the right place for the right price so they are spending significant amounts of money importing bauxite. Therefore, in addition to investigating the feasibility of producing alumina and aluminium, supplying bauxite is an opportunity that needs to be properly explored.

The significant challenges of running an alumina refinery

Mr. Briggs remarked that alumina refineries are difficult beasts to control. They are not quite as simple as smelters; the chemical processes in a refinery are really difficult to maintain especially given that the quality of bauxite to be processed can vary considerably.

Considerable expertise is required in managing refineries, which is why Alcoa has run an Australian-based centre of excellence for 50 years to research the equipment and processes for more efficient and cleaner alumina production. Sourcing this technical knowledge and expertise is one of the key challenges facing the alumina industry in Africa. Wherever the refinery is to be built (Ghana or elsewhere in West Africa), it will need to be competitive. And to be competitive, the refinery cannot be an expensive one.

Achieving sustainability—Securing a social licence to operate and protecting the environment

Alcoa owns bauxite mines around the world to supply its refineries. Until recently it has not mined bauxite to supply third parties but this is starting to change given that bauxite is increasingly a marketable product, whereas before it was just a basic commodity that no one really wanted. Therefore, Alcoa is working to identify new mining opportunities as well as grow its existing mines.

As highlighted by Dr. Jourdan in his keynote address, mining is not really sustainable because you can't replace the product once it has been mined. However, Mr. Briggs identified three aspects for achieving an acceptable, perhaps more "old-fashioned form of sustainability" in the mining context: i) the company has make some money; ii) the situation of the communities around the mines must improve; and iii) the environment cannot suffer. Alcoa has extensive experience and responsibility in these respects. For example, one of its long-standing bauxite mines in Western Australia (WA) is located within the environmentally precious and sensitive Jarrah forest ecosystem. Here, the company has invested heavily in rehabilitation. The company is also running a relatively new mine in Juruti, Brazil, which is located on the banks of the Amazon River.

As part of ensuring the sustainability of operations, Mr. Briggs stressed that companies must secure and maintain a social licence to operate from the local communities in the vicinity of a mine. He said:

We have long term plans in WA. For example, we've been there for 55 years [and] we want to be there for another 45 years if we can get that right. So the only way we'll be there in the future is if the community allows us to be there. So it's worthwhile working hard.

The other sustainability element or environmental aspect that must be managed is that for every ton of alumina that is produced, 1.5 to 2 tons of residual (waste) product will have to be stored. He stressed that bauxite residues grow quickly—for example in WA, Alcoa has over 700 million tons of bauxite residue stored. So, in the development of an alumina refinery, the operators must think ahead about how residual products will be managed and sites rehabilitated so as not to leave a lasting and damaging environmental legacy. Some residues are also caustic in terms of chemical composition and not easy to build on, which present additional challenges for storage and site rehabilitation.

In short, Mr. Briggs said that it is essential to strike a balance where private enterprise, government interests and local communities all benefit from the mining development.

Drivers for private investment

Mr. Briggs then identified the drivers for private investment aluminium industry. First, Alcoa is seeking to make a profit so it won't enter into a longer-term agreement where the risks are too high. Second, the establishment of a refinery must also consider market variability. For example, Vice President Bawumia remarked earlier that alumina is selling for USD 350 a ton. This is quite true; handsome money can be made today. But, in January 2016, the alumina price fell to just under USD 200 per ton. At that price, almost all of Alcoa's refineries were under water, and the cheapest and best refineries were making a very tiny margin. Therefore, investors have to be very careful about setting refineries up for success.

Moreover, China can make decisions that can make or break the market and these fluctuations are hard to predict. Right now, everyone is very happy because the Chinese government has pulled back on some industry licenses and operators for environmental reasons but this could change tomorrow such that the alumina price will drop again. It is a really tough market, so if you're going to invest the significant sums needed to set up a refinery it has to be robust and competitive.

Third, Alcoa is protective of its global reputation. He said:

We have talked about reputation. One of the things that Alcoa will not do is enter into a relationship, a joint venture with a partner in a country where we are worried about environmental health or safety issues not being best practice. We wouldn't, for example, compromise the environmental side of it, be it pollution or rehabilitation.

He added that the drivers for government investment could easily be different from private investment. For example, the government may be focused on generating employment or other benefits for the country as a whole rather than just a single business. In short, each party needs to fully understand what is driving their investment and make sure that the interests of the different stakeholders are appropriately aligned and agreed, always bearing in mind that building a profitable refinery is a massive investment.

The potential for Alcoa investment in West Africa

Mr. Briggs said that Alcoa has been working in West Africa to assess the industry's potential and is interested to enter into a joint venture with the government to establish an alumina refinery either here in Ghana or in Guinea. Previous studies have indicated that establishing a refinery was unlikely to be profitable. In Ghana, the refinery proposed was very small in size based around the smelting capacity, and it was not robust enough to handle the market conditions at the time. However, this does not mean a refinery will never be built. For example, if today's market conditions were to continue for some time a company would probably invest without too many concerns. Such decisions are all about risk and confidence in what the future might hold. And, of course, costings are critical, particularly the costs of energy and the quality of the bauxite, as the refinery established may have to handle different types/qualities of bauxite. Many variables need to be considered.

In closing, he hoped that his presentation had offered some insights into what drives investment from the company perspective, and reiterated that Alcoa would be glad to be involved in discussions on establishing an alumina refinery and to share its expertise on what is needed for success.

5.2 Panel discussion: Effective management of alumina refinery



Panel discussion on Effective management of alumina refinery. From left to right: Prof. Kwaku Appiah-Adu, Mr. Mal Briggs, Hon. John Peter Amewu and Dr. Theophilus Acheampong.

Panellists:

1. Mr. Mal Briggs, Vice President, Alcoa Mining, Australia
2. Hon. John Peter Amewu, Minister of Lands and Natural Resources, Republic of Ghana
3. Mr. Theophilus Acheampong, Extractive Industry Consultant

Moderator: Prof. Kwaku Appiah-Adu, Head of Delivery Unit, Office of the President, Ghana

Across Africa, the successful establishment of an alumina refinery is often the missing link for achieving fully integrated aluminium industries. Therefore, this panel was focused on continental experiences and challenges to develop an alumina refinery.

The challenges facing African countries in developing an alumina refinery

To open the discussion, **Hon. Amewu, Minister of Lands and Natural Resources**, described some of the major challenges facing African countries in developing an alumina refinery from the perspective of the government. First, the aluminium sector is energy-intensive. Therefore, to develop refineries or smelters requires not only a source of cheap energy but also energy that is available.



Hon. John Peter Amewu

He considered it was counter-productive for Ghana to direct energy to the aluminium sector if that power has to be heavily subsidized as was the case during the earlier operations of VALCO. Hence, rigorous comparative cost analyses need to be done to ensure that energy is used for the most productive and beneficial activities. And, for this, a regional perspective is essential. For example, he said:

If Nigeria is able to produce energy at an affordable price and Ghana has the ore and Togo is able to set up the refinery, regionalization must be able to take the way forward.

He also said that African countries need to put in place resource depletion policies to maximize wealth from mineral resources over the long-term. He described the market as “hog-like”, therefore countries must put in place depletion policies to know at what price and over what time, resources can be extracted for optimal inter-generational return.

African states also need to create physical regimes that are more stable, attractive, enduring and sustainable. Governments are not an engine of investing, but the public sector must create the infrastructure if we are going to make these resources available to investors in the private sector. So, too, the government must put in place, laws and regulations that are mutually beneficial, i.e., competitive to attract investors but also a benefit to the government and to the people.

Running the numbers: A viable refinery from a business perspective

Dr. Theophilus Acheampong identified several key issues from a business perspective that will need to be critically analyzed if a viable alumina refinery is to be established in Ghana or any country in Sub-Saharan Africa.

They were: the quality of the country’s bauxite deposits, the availability of power at the right price, and the fiscal and regulatory regimes for extractive industries.

On ore quality, the best mines in the world—for example, Boke mine in Guinea and some Brazilian mines—have bauxite deposits with about 55% aluminium oxide (Al₂O₃) content. In comparison, the best deposits in Ghana currently have Al₂O₃ content of between 45% to 47%, which means that greater capital investments will be required to refine and smelt this ore. In turn, the question becomes whether Ghana has the capital to invest to reconfigure/upgrade VALCO's facilities to be able to process these grades of bauxite.



Dr. Theophilus Acheampong

Second, to run any smelter at a competitive scale requires a capacity in excess of 1.5 to 2 million metric tons (MT) of primary aluminium per annum. However, currently in Ghana, the VALCO smelter has an installed capacity of only 200,000 MT. The smelter has 5 potlines, and each potline requires around 80 MW of power. So, roughly speaking, if the VALCO smelter was running at full capacity, it would require 400-500 MW of power, which represents approximately 25-30% of the present power demand for the country as whole. Hence, even to run a small smelter is very energy-intensive. In addition, current electricity tariffs for industry are 15 to 20 cents per kilowatt hour (kWh), but to refine or smelt aluminium at a competitive economic scale requires power around 5 to 7 cents per kWh. Therefore, Dr. Acheampong counselled that the Ghana government must dig down and run the numbers to assess whether it has the ore quality and power to be competitive.

Lastly, Dr. Acheampong highlighted the need for a more harmonized mining code, similarly to what is in place for the oil and gas sector. Presently, the mining regime requires the payment of royalties of around 3-5% on a tiered basis as well as corporate income taxes, but it does not have a component for windfall taxes based on the project return. Direct state equity participation is also not included in the mining code, whereas the Ghana National Petroleum Corporation (GNPC) has 13.6% stake in the Jubilee Oil Field and contributes directly to financing the operations of the field. In addition, the government can take as much as 30% extra value of the windfall profit based on the project return. Hence, moving towards a more harmonized mining code is one of the ways that Ghana can unlock more value from its mineral resources.

Low quality bauxite is not necessarily a barrier to efficient refining

On the issue of ore quality, Mr. Briggs said that 45% Al₂O₃ content doesn't sound high when compared to what is extracted in Guinea, but he added that Alcoa refineries are able to process bauxite with 33% Al₂O₃ content, which, by world standards, is classified as very poor. He said:

If you invest in the infrastructure, you can get very efficient processes. And if you run it well, you can make a lot of money irrespective of the bauxite. It's not easy with bauxite of that grade but we've done it and it can be done.

However, in comments from the floor, *Dr. Ben Adoo*, advised that available data on Ghana's bauxite grades is very limited. He said that the quality of ore is known for the Awaso mine but comprehensive data are not known for Nyinahin and Kibi. But, data to date suggest that Ghana's bauxite may be among the best in the world. Also, in determining ore quality, the silica content within a deposit is another very important factor in addition to the aluminium oxide content. For example, the Awaso mine has 3% silica which is very low. This means that the consumption of sodium hydroxide to remove the silica from the bauxite is very low, which, in turn, reduces operating costs.

Exploration and private sector participation in Ghana

Hon. Amewu stressed that timely and ongoing exploration is vitally important to unearth a country's mineral resources as a necessary foundation and pipeline of resources for future production. Therefore, the government of Ghana is working towards improving the tax regime for exploration activities. He also affirmed that the present government believes in private sector participation and so it is creating the framework to allow the private sector to grow. He noted that the government is fully aware that the creation of national mining companies is one option to increase its interests in the extractive sector but prefers to create a framework for Ghanaian-owned companies to get involved.

5.3 Expert presentation: Establishment of the Volta Aluminium Company Ltd (VALCO)

Presenter: Mr. Dan Acheampong, Chief Executive Officer, VALCO

The history of VALCO

In this presentation, Mr. Acheampong gave a short history of the Volta River Project and the establishment of VALCO. First proposed by the British Colonial Administration in the 1920s, the Volta River Project was conceived as a way to produce hydroelectric power from the Volta River. But for over thirty years the project was not pursued. Then, upon Ghana attaining independence in 1957, President Kwame Nkrumah immediately sought funds to develop the project, seeing its potential to accelerate Ghana's industrial development.

However, he had a much bolder vision; the project was no longer limited to the construction of a dam for the generation of hydroelectricity for consumption by the population but also to allow the exploitation of Ghana's bauxite deposits through the establishment of an alumina refinery and aluminium smelter. The dam was also envisioned to be a source of water for irrigation and for the expansion of the fishing industry. However, at that time, the energy consumption of the whole country was only 50 MW, hence, there was an urgent need to find an off-taker to buy the huge amount of excess electricity that was to be generated by the proposed 912 MW dam at Akosombo.

Strategically, during his time in the U.S.A. for his college education, Nkrumah had established contacts with the political elite. And upon becoming President, he asked for the assistance of then U.S. President Dwight Eisenhower, who, in turn, exerted his personal influences on Edgar Kaiser, a businessman who owned and ran a number of smelters in the north-western part of the U.S.A. Bowing to the pressure, Kaiser agreed to build the VALCO smelter in Ghana thereby providing the guarantee as an off-taker that the country needed to obtain the loans to build the Akosombo Dam. However, in the final appraisal of the project, Kaiser's engineers recommended that alumina for the smelter be imported for the first 10 years, and, thereafter to consider the building of a refinery. In 1961, the Volta River Authority and the Volta Aluminium Company were established to develop the dam at Akosombo and an aluminium smelter and harbour at Tema.



Mr. Dan Acheampong

Development of the VALCO smelter was started in 1964 and, by 1966, the first three potlines (representing 60% of final capacity) had been installed. The first metal was poured in November of that year, and by March 1967 commercial production had started. The 4th potline was added in 1970 and the fifth and final potline brought online in 1974.

Fast forward to 2004, and Kaiser was facing its own challenges such that the business decided to focus on high end-value aluminium products. Owning refineries in the U.S. and internationally, the idea to build a new refinery in Ghana was shelved. Then, as part of the reorganization of the company, Kaiser decided to sell its 90% share of VALCO to the Government of Ghana, and, subsequently, in 2008, Alcoa also sold its 10% share. So the government became the 100% owner of the Volta Aluminium Company Limited Ghana at a cost of USD 20 million.

VALCO today

That investment by the government is now conservatively (and independently) valued at USD 326 million with replacement cost of the facility estimated at USD 1.2 billion. It is a first-world industrial estate in a developing country. The smelter is currently operating at 20% capacity but it has huge prospects as the centre-point of a fully integrated aluminium industry in Ghana if power can be secured at a globally competitive price. Based on present aluminium prices of USD 2,000 per ton and production of 175,000 MT per annum, the smelter has the potential to earn USD 350 billion over the 100-year life of the plant. And if the all of the linkages (downstream, upstream and lateral) are realized, the industry has the potential to create over 2 million jobs. In closing, Mr. Acheampong was passionately optimistic, envisioning that Ghana along with South Africa will take their places alongside the BRIC (Brazil, Russia, India, China) group of emerging economies (see Figure 6).

6. The potential economic benefits of the aluminium value chain in Ghana

THE ALUMINIUM VALUE CHAIN





Panel Discussion on Effective Management of an Aluminium Smelter. From left to right: Mr. Dan Acheampong, Mr. Ishmael Ackah and Mr. George Dodd.

5.4 Panel discussion: Effective management of an aluminium smelter

Panellists:

1. Mr. Dan Acheampong, CEO, VALCO
2. Hon. John Peter Amewu – Minister of Lands & Natural Resources, Republic of Ghana
3. Mr. Ishmael Ackah, Energy Economist and Local Content Coordinator, Ghana Energy Commission
4. Mr. George Dodd, Deputy C.E.O - Operations, VALCO

Moderator: Mr. Anthony Boateng, Management Consultant (Finance, Strategy, Governance)

Continuing on from Mr. Acheampong's presentation, this discussion focused on the challenges and potential solutions to VALCO's constrained operations, and recent actions by the government to overcome the problem of power.

Sufficient, reliable power at the right price continues to be the biggest challenge facing VALCO

Mr. Dodd said that VALCO has explored a number of options in recent years to overcome the problem of getting sufficient, reliable power at a competitive price to operate the smelter at its installed capacity. In 2005, the idea of building a dedicated coal-fired plant to power facility was first raised. But, shortly after, in 2007, Ghana discovered oil and associated natural gas. As a result, plans for the coal-fired plant were abandoned upon the promise from the government that a gas power plant would be built and enough gas allocated to run the smelter. Hence, VALCO continues to rely on the government for power. This continues to be the biggest challenge facing the smelter. Indeed, in 2014 and 2015, the facility was nearly shut down by the national power crisis. During that period, the smelter suffered power cuts and as many as 20 outages in a single day.

Fortunately, Mr. Dodd said that the present government has promised to increase the power allocation to VALCO in 2018. At the same time, the company is examining ways to modernize the facility to bring down the plant's energy consumption of the plant as well as look for alternative ways of generating power to support the government's efforts. But, first and foremost, Mr. Dodd said that VALCO needs to survive.

Proposed options for supplying power to VALCO

Mr. Acheampong said that in the last year, VALCO received only 70 MW of power on average, which meant that it was only able to run one potline, which is 20% of installed capacity. But he added that the company has been promised an additional 75 MW in 2018. Given the many competing demands for the 2,500 MW of power produced from Akosombo (including for sale to neighbouring countries), he recommended that a comprehensive national power strategy was needed. To realize the vision of President Akufo-Addo to build an integrated aluminium industry, Mr. Acheampong proposed two options for supplying the industry with the power it needed. Under the first option, Akosombo, which sells power at around 4 to 7 cents per kWh, would be the dedicated power supply for the aluminium industry. Under this scenario, the vast gas power plant at Tema and other power sources in Ghana would be used to supply other industrial and residential demand. Alternatively, the government could implement a differential pricing system, whereby VALCO pays a lower tariff so that they can operate at a competitive level while other commercial/industrial users and residential consumers pay higher prices.

Explaining the rationale for using a differential system of electricity tariffs in the short-term, Mr. Acheampong said that the policy of the current government is to protect certain companies, including VALCO, that it sees as essential for industrial development. Moreover at full capacity, VALCO's total power demand would be approximately 350 MW, which is equivalent to the electricity demand for the city of Kumasi. Given the large amount of power involved, VALCO will not be supplied through the normal distribution system but directly from the Volta River Authority (VRA) so distribution and other charges are reduced. In addition, the government is able to waive certain taxes and levies on the final tariff.

Hon. John Peter Amewu concurred and expanded upon the rationale presented by Mr. Acheampong.

VALCO has only one meter that the VRA comes to read every month. [There is] no tampering ... They come in and they get the volumes of power consumed and they bill us. But if you compare it to ECG [Electricity Company of Ghana], look at the number of technical losses, commercial losses. Those losses alone, believe you me will be enough to power all of VALCO. So, the cost for supplying power to VALCO is very minimal...Why should the person buying in bulk pay more than the person buying at the retail shop?

Later in the discussion, Mr. Acheampong agreed that the issue of energy was the single most challenging problem and the biggest reason why VALCO is operating at 20% capacity.

If you gave VALCO more power now at 7 cents we'll shut down tomorrow because then your costs will be out of this world and anybody who knows how smelters operate will tell you that.

Sourcing alumina locally is a further way to cut smelter costs

Mr. Acheampong said that sourcing alumina locally would be another significant cost-saving measure, if for nothing else than the savings on freight costs. Alumina constitutes about 30% of total smelter costs. If the smelter was running all 5 potlines, it would need around 500,000 metric tons of alumina each year. With freight costs of USD 40 a ton, the smelter could save USD 200 million.

So if you can get your power right and you can get your alumina right you are home and dry, and if you have the right calibre of people, which we have right now, that is the reason I said in my presentation that this is our time with destiny.

VALCO's potential is enormous but it cannot be profitable operating at 20% capacity

The potential for the company is huge but Mr. Acheampong spoke openly and frankly about its current situation. He said:

Is VALCO making money at current metal prices? The simple answer is 'no'. There's no way you can run a 200,000 metric ton capacity smelter running at 20% and still make money because you have to spread your costs over a wide range of people and also a wide range of maintenance costs. The depreciation alone at VALCO at the current rate is about 11 million dollars. But we have to do the right things, so we keep our books right so that everybody understands why. We are not going to say that because we are running at 20% of the capacity, we have to also charge 20% depreciation. It can't be so because the whole smelter is there and you are watching over it. You have to protect it.

In closing, Minister Amewu said that the government is committed to supporting the company given its enormous potential to support the industrialization and development of Ghana.

At the end of the day the books are consolidated, so that what you lose at the smelter level or even if every time you were going to lose at the smelter level you can recover it on the downstream. [Similarly] you don't just come in and make your money at the downstream and take it away because you have created jobs but then you also are helping to keep the smelter, which is the goose that is laying the golden egg. You are supporting it to continue to lay the golden eggs for you to get your supplies downstream.

6.

Parallel session 2:

Promoting value addition and local content in the extractive sector in Africa

6.1 Expert presentation: Experiences in value addition from the SADC region

Presenter: Dr. Charles Siwawa, Chief Executive Officer, Botswana Chamber of Mines

As highlighted earlier in the forum, most minerals have been mined and exported out of Africa in raw form. Beneficiation of these minerals has been done in other countries. Consequently, Africa has seen little value in return. But, today, the situation is changing; African countries are increasingly interested in pursuing value addition. In his presentation, Dr. Siwawa highlighted the central role of governments in the process of enhancing value from the extractive industries.



Dr. Charles Siwawa

The economics of mineral beneficiation

Until now, much of Africa's mineral wealth has been exported due to the complexities and costs associated with beneficiation. In particular, key inputs for mineral beneficiation, especially competitively priced electricity have not been available on the continent. The costs of constructing and operating plants have also been prohibitively high. To some extent, the toll treatment of ores has ameliorated the running costs by spreading these costs among several mining companies, and other forms of beneficiation have surfaced, enabling cheaper and less complex processes.

The African Mining Vision

To find an effective and actionable way forward, Dr. Siwawa advised that all African countries need to implement the African Mining Vision (AMV) in its entirety. The vision was adopted by the Heads of State of the African Union (AU) in 2009. It was developed so that member states would avoid the "resource curse" and use their mining resources to build economic and social linkages for the long-term benefit of their populations. Subsequently, Agenda 2063, adopted by the AU in 2013, has buttressed the AMV by engendering the principle of self-reliance with Africa financing its own development.

The role of African governments in value addition

Value addition is a long-term process and most African governments are not patient enough to allow for the process to unfold. Governments commonly face time limitations, not only in their terms in office but also from their constituencies to produce quick

turn-arounds. Notwithstanding the political difficulties impinging on any administration, Dr. Siwawa said that African governments have a key role to play in the process of enhancing value addition in their extractive sector.

Perhaps most importantly, the establishment of mineral beneficiation plants should be economically driven rather than political expedient. Typically, these plants require high capital expenditures and long-term investment, which, in turn, requires a stable political space and conducive business environment with appropriate incentives for potential investors. Where beneficiation cannot be achieved in one state, governments within a sub-region may need to strategically collaborate to take advantage of economies of scale.

6.2 Panel discussion: Prospects and challenges of value addition in Africa



Panel discussion on Prospects and Challenges of Value Addition in Africa. From left to right: Mr. Emmanuel Kuyole, Ms. Ivy Irene Nakalyango and Mr. Emmanuel Jengo.

Panellists:

1. Dr. Charles Siwawa, Chief Executive Officer, Botswana Chamber of Mines
2. Mr. Talent Ng'andwe, Deputy Chief Executive Officer, Zambia Chamber of Mines
3. Mr. Emmanuel Jengo, Council Member, Tanzania Chamber of Mines and Energy
4. Ms. Ivy Irene Nakalyango, Chief Executive Officer, Uganda Chamber of Mines and Petroleum

Moderator: Mr. Emmanuel Kuyole, Executive Director, Centre for Extractives and Development Africa (CEDA), Ghana

Following on from the presentation by Dr. Siwawa, panellists in this discussion shared the experiences and challenges in their home countries to increase value addition.

To commence the discussion, **Mr. Kuyole** took up the point made by Dr. Siwawa that governments on the continent have a short-term mindset; their focus is all too often on winning the next election. He remarked:

They have made promises to citizens who voted for them and the continent doesn't have patience if you do not deliver on your goals. So the focus of the government is to intervene on immediate things—royalties and tax revenue. So, how do we get the government—as much as we want them to be efficient in collecting these revenues—to also focus on value addition which takes a longer time?

He asked the panellists to answer this question with reference to the actions of the governments in their home countries.

The importance of open and frank communication

Ms. Nakalyango remarked that when oil and gas was discovered in Uganda, the country did not have the policies and laws in place to govern the sector and to ensure that the people of Uganda would benefit from those resources. She said that some individuals and communities were hurt along the way because initial expectations were very high. Significant lessons were learned, particularly, on the importance of communication between the government, the private sector, local communities in mining areas and the general public.

You don't just rush because of political statements associated with investments. We now have communications in the government and within the private sector plus the Uganda Chamber of Mines. We make sure that we tell the government the truth so as to be able to make decisions. We are realistic so anticipated projections can be handled. We do that for our private businesses but also for the government to make good decisions.

Mr. Talent Ng'andwe agreed with Ms. Nakalyango on the importance of dialogue between the government and mining companies. He said Zambia is a very good example of how political decisions can backfire. In 2014, the Zambian government made the decision to increase royalties from 6% to 20% on open-pit mines, which came as a shock to mining interests. As a consequence, mining companies retrenched about 10,000 workers and the ruling party almost lost the elections. Therefore, just as for taxes and royalties, he stressed the need for regular dialogue between the government and mining companies on value addition so that all stakeholders are well-informed of any proposed new measures and brought on board.

The mining value chain is complex

Mr. Emmanuel Jengo said that not everyone understands the complexity of mining value chain, on exactly how value is added. Often national debates about mining are narrowly focused on what level of royalties a company will pay (whether 3 or 4 or 5 or 6 or 7%). But these arguments neglect the multiplier effects of mining operations to the economy.

He said that value-added activities are found throughout the value chain, particularly, suppliers of inputs and services for exploration and mining operations. All of these activities have multiplier effects. In the case of Tanzania, a recent study found that the gross value added to the economy was around 43% of the amount generated by the companies, which is a significant percentage.

In the case of Zambia, Mr. Ng'andwe highlighted that the country's limited manufacturing base was a significant problem for increasing value addition.

Our manufacturing base in Zambia is very small because of the privatization process that we went through in the year 2000. A lot of companies were sold, thus weakening our manufacturing base. So, I urge governments and the mining industry to support that sector.

Supporting communities to participate in the value chain

Mr. Jengo highlighted that increasing the proportion of goods and services that mining companies must procure locally not only contributes to revenue maximization but also contributes to company efforts to earn and maintain a social license to operate. However, in reality, most local communities are not taking advantage of the presence of the mining company to supply goods and services. Therefore, both the government and mining companies need to be better informed about the needs of local communities and support their participation in the value chain.

Mining companies can take part in the district management team to know the real things that they can solve ... This is key [for] people to support your operations.

Ms. Nakalyango said that Uganda is exploring ways to promote and build the capacity of local suppliers/players in the mining sector. She said that the Ugandan government has been working to train local communities to supply products to the industry but often problems surface when, after a period of time, the local supplier cannot continuously supply the company at the right place and at the right time. Therefore, programs are needed to build the capacity of local suppliers to meet required industry standards.

In his closing remarks, Mr. Talent Ng'andwe agreed that local suppliers need to be encouraged. Zambian mining development agreements are very clear on what the companies should do in the communities where they are operating. But he added:

The issue of transparency should be observed. We cannot run away from the problem because some of these mine owners are connected to some of biggest suppliers. [Also] I think there is a big problem in the definition of local content in Zambia. ... If [companies are] registered in Zambia, they are considered local companies. But how do we make sure that our indigenous people penetrate into those companies in terms of getting contracts? The issue of ownership should be observed to help local suppliers.



Participants during Mr. Anthony Paul's presentation.

6.3 Expert presentation: Enhancing local content in an integrated extractives industry

Presenter: Dr. Anthony Paul, CEO, Association of Caribbean Energy Specialists, Trinidad and Tobago

Dr. Paul's presentation centred on enhancing local content in an integrated extractive industry, why is it important for creating and retaining more value from natural resources in-country, and how governments can optimize local content.

Creating and capturing value in-country can be achieved in many ways

There are many ways that African countries can increase the value that they capture and retain from extractives in many different ways (Table 3).

Table 3: Increasing value capture and retention from extractives

Operations
Extracting more of the resource commercially
Improving operational efficiency and reducing costs
Increasing participation and inputs by locals
Getting a higher price
Fiscal and monetary policies

Increasing in-country activities and investments Improving revenue collection Increasing taxes Better revenue management
Beneficiation: Adding Value to Raw Materials
Going further downstream Multiplier effect and cross-sector impacts of operations
Good Governance
Policies, legislation, strategies, contracts, etc. Institutional capacity and administrative efficiency Reducing risk or the perception of risk

Keeping value in-country by increasing local content

Increasing local content is one broad area that a country can keep the value of their resources in-country. For the purposes of his presentation, Dr. Paul defined “local content” as the “sum of the inputs of local goods and services, including employment, provided in extractive operations.” Therefore, local content only occurs when operators hire locals as employees or contractors, i.e., it is the outcome of companies’ hiring and procurement activities. In addition, when performed in country and/or by locals, the beneficiation of mineral resources—i.e., the mid- and down-stream activities to convert raw materials into final usable products and delivering them to users is considered local value addition.

What “local” means can vary depending on the specific regulatory regime in a given country. But, generally, in the case of individuals, “local” refers to nationals (citizens and legal residents), and, in the case of companies, “local” refers to companies that are beneficially majority-owned by nationals. However, Dr. Paul emphasized that local content is a means to an end, not the end in and of itself. The rationale for increasing local content is to support national development and increase national wealth.

Steps to optimize local content

To optimize local content, the government must first identify potential opportunities through comprehensive market analysis, and then prioritize those opportunities based upon which activities are more desirable, viable and/or feasible. For countries that are new to extractive industries, the indigenous capacity to participate in the sector will be limited. Hence, increasing local content will depend on building and enhancing the capacity of individuals, companies, government or other services, institutions, infrastructure, utilities and facilities to support the extractive sectors. Critically, African countries have to find ways to promote the transfer of skills, knowledge, and technology from international companies to local companies.

Policies will also be needed to guide stakeholders as well as an appropriate regulatory, monitoring, reporting and oversight (i.e., governance) framework to ensure that local content targets are met and benefits are realized. But, ultimately, local capacity will

only be enhanced if locals are hired and local businesses win contracts. Depending on the country context, increasing local content will, therefore, depend on ensuring that company employment and procurement practices give due preference to nationals and domestic suppliers.

6.4 Panel discussion: Country experiences in promoting local content in the minerals sector in Africa

Panellists:

1. Mr. Anthony Paul, CEO, Association of Caribbean Energy Specialists, Trinidad and Tobago
2. Mr. Nhlanhla Gumede, Interim Chairperson, PetroSA, South Africa
3. Mr. Emmanuel Konjoh, Head of Local Content Unit, Ministry of Mineral Resources, Sierra Leone
4. Ms. Beng'i Issa, Executive Director, National Economic Empowerment Council, Prime Minister's Office, Tanzania

Moderator: Dr. Kojo Busia, Coordinator, African Mineral Development Centre

This discussion focused on the experiences of different African countries in promoting local content in the minerals sector.

The early experience of Tanzania in establishing a local content regime

Ms. Beng'i Issa described the actions of the Government of Tanzania in promoting local content. To begin, the government first identified priority sectors, which not only included mining, and oil and gas, but also infrastructure, transport and communication, agriculture, livestock, manufacturing industry, trade and tourism. It also identified factors that cut across all sectors, which act as catalysts for increasing local content, such as education, science and technology, finance and insurance, and procurement. Local content policies and regulations as well as institutional frameworks for regulating, coordinating and monitoring local content have been established in the energy and mining sectors. Now, the government is working on a policy that will act across all sectors.

The government's actions with respect to local content are focused on four areas: i) employment; ii) supply chain; iii) technology; and iv) community development. Establishing a database for suppliers and skills is an integral part of the government's efforts to optimize local content. In particular, the state is working very closely with institutions for education and skills development to identify potential suppliers who can be trained and capacitated to contribute to their sectors and to bridge skills gaps so that more Tanzanians can be employed. Tanzania has a decentralized system of administration comprising 190 district councils. Therefore, in each council, coordinators for local content have been appointed and trained with the objective of increasing awareness of LC opportunities at the community level and to work closely with investors to see how people in those areas can participate for their benefit.

Later in the discussion, she said that the Tanzanian government has created a national committee for local content as well as a series of technical LC committees for individual sectors, for example, mining, oil and gas, and infrastructure. Made up of representatives from the government, private companies and investors, the committees meet to discuss issues around local content and iron out any challenges. Most importantly, increasing local content will ultimately depend on the contracts negotiated. Therefore, the government collaborate closely with investors on local content to ensure that companies are required to employ nationals and procure local goods and services to the fullest extent possible.

An online platform for local content in Sierra Leone

Mr. Emmanuel Konjoh, Head of the Local Content Unit, Ministry of Mineral Resources, Sierra Leone said that his government has established the Sierra Leone Local Content Agency, a specialized, semi-autonomous entity for coordinating and monitoring local content across all sectors of the economy and has put in place an online system that assesses LC performance and procedures related to employment, procurement and capacity development. Companies working in Sierra Leone are required to input regular updates to the system. In this way, the government does not have to be “in the face of private companies” but has a centralized portal of LC data from all companies operating in the country. Opportunities for domestic suppliers can be quickly identified and analysis of the data collected also informs improvements to policies and tax regimes. To ensure transparency, local content analyses are produced each year and made public.

State participation is essential to drive the local content agenda: The view from Botswana

Just as international companies are motivated by self-interest to accrue wealth for their shareholders, Mr. Nhlanhla Gumede said that state participation is essential to drive the local content process for the benefit of their populations. He said:

The only way you drive change is to have state participation. We [Botswana] used to export certain skills; we were Africa's centre for exporting artisans and minerals but we are importing those skills today ... And the reason for all that is happening is because we are driven by equal equity participation. And equity participation, unfortunately, is about individuals, self-enrichment.

Therefore:

If you are driven in your country's transformation then ... [despite] all the challenges it is better to have the state owning a certain percentage in a particular industry or company that would stand for the interests of the people.

African countries must also recognize that their economies are too small individually. Hence, regional (cluster) strategies will need to be pursued if the continent is to develop local participation.

7. Financing the value chains in the extractive industries in Africa

7.1 Expert presentation

Presenter: Mr. Samuel Frimpong Boateng, Member, GNCCI Think Tank

Dr. Boateng's presentation focused on financing for the extractives industry in Africa. Securing the right finance is a perennial issue for any business in any industry but it is particularly difficult for extractive projects given the large sums and significant risks involved. Therefore, Dr. Boateng stressed the critical importance for resource-rich countries on the continent to get the fundamentals right so as to optimize their financing and not overpay. He began by giving a short history of financing models on the continent. His presentation was followed by a question and answer session.

A brief history of financing models in Africa

Dr. Boateng described that resource-backed financing models were initially developed in the United Kingdom. Recognizing that Africa countries were resource rich but that their sources of capital and credit worthiness were very low, the British utilized private banks to finance extractive projects beginning in the early 1990s.

This model was followed by the Dutch, French and a few South African institutions. Then, commencing in 2004, Chinese investment in Africa increased significantly but with two major differences to the European model. First, China decided to use state institutions to provide finance rather than private banks. Second, while the European approach was largely focused on asset-based loans, China adopted a Resource for Infrastructure (Rfi) financing model, which equated to "let's build this infrastructure for you and then take your resources." Subsequently, China also used Concessions, Construction Right and Offtaker Rights (CCO) agreements. These deals were particularly enticing with low interest rates (around 3% to 5%), long maturities (20 and 50 years) and long payment holidays (5 to 7 years).



Dr. Samuel Frimpong Boateng

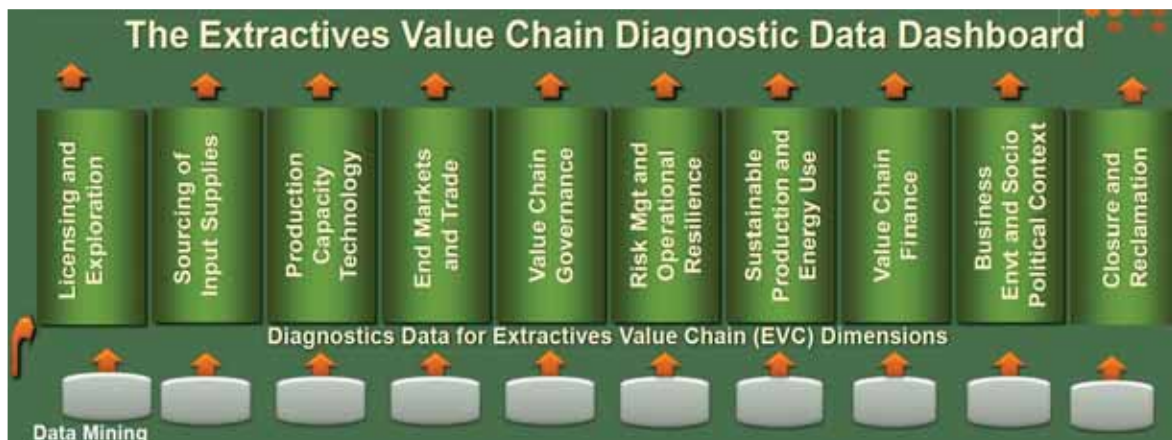
However, Dr. Boateng stressed that development is not only infrastructure; African states must also consider the issues of revenue and revenue diversification and the growth of non-resource capital to achieve sustainable, long-term development. Presently, though it is all infrastructure: water, electricity, roads, railways, etc. He believed that Africa needs to be smarter and take a more creative in approach to secure the right financing. And this requires knowledge.

Securing optimal finance depends on the right information and mature risk management

To secure the right financing model for extractive projects demands a thorough understanding of the specific industry, the key drivers that move value in that industry, and the risks involved at each step of the value chain. **Figure 7** lists a set of 10 dimensions that need to be examined with respect to the extractive sector. For each dimension, the right form of data must be available to inform policies, business strategies and investments.

“No value chain development or mapping can be successful if diagnoses are wrong. ... We must ensure we understand ourselves and we understand our data. ... Once you have your data, [and] you understand the industry ... then you [can] talk about your financing.”

Figure 7: The extractives value chain diagnostic system



With respect to financing, Dr. Boateng emphasized the need to understand risks; the capital structure and the sources of capital will depend on different exposures and risks at each point along the value chain. For example, the risks involved in resource exploration are completely different from the operational risks for companies towards the other end of the value chain. Figure 8 illustrates the inter-relationship between the different types of risk and potential financing options by project phase in the minerals sector.

Without the right data and a comprehensive understanding of risk, African states will continue to be overcharged for capital.

Once you understand your risks, no investor can rip you off (excuse my language). You understand the risks, investors understand the risks, so your bargaining power is broader.

Having the right data, therefore, is essential for negotiations with potential investors, and, in turn, how to develop the industrial value chains to meet the country's development objectives. He said that if Ghana and Africa desires to move beyond aid, it cannot do business as usual. For example, he stressed that it is counter-productive to tax exploration companies. He said

It's not right to charge, to tax exploration companies. It's not right. It's never right. Why should you charge, take tax from an exploration entity that is trying to move your reserves from inferred through indicated to proven and give you clarity on your assets.

Figure 8: Overview of risks and types of financing in the minerals sector by project phase



He also highlighted the importance of not directly connecting the country's development goals with the expected revenues from commodities. Optimizing and managing revenues is vital, and should be an integral part of the processes of development but not a target for development, because valuation models for extraction and production can be wrong and commodity prices are inherently volatile. The investment models need to respect the nature of the commodities and the income collected, so that if prices change it does not have serious knock-on (destabilizing) effects on fiscal and macro-economic policy.

Dr. Boateng was optimistic. If managed appropriately, resource-based investments can be a foundation not only for improved infrastructure but also for a diversified economy and stable, sustainable employment. He pointed to the success of Chile. Starting from its resource base in tin and copper, Chile is now a developed country with a per capita income in excess of \$22,000. Good governance, good diversification and good management were hallmarks of the country's success. In closing, he said:

So, let's rise up Africa, let's move it, let's get it right. Let's be creative, more innovative. And, if Chile has done it, look at our resources! Ghana is the second largest gold producer in Africa, the tenth in the whole world. We have bauxite. We have all these things, so why must we struggle? Never.

7.2 Question and answer session

Panellists:

1. Dr. Samuel Frimpong Boateng, Consultant & Member of GNCCI Think Tank
2. Mr. Anthony Boateng, Management Consultant (Finance, Strategy, Governance)

Moderator: Mr. Francis Owusu, Director, Mow Group Ltd

Public-private partnerships in the extractives industry must ensure linkages with the rest of the economy

Asked to identify the benefits of public-private partnerships (PPPs) for value addition in the extractive sector, **Dr. Samuel Boateng** stressed that public participation is absolutely essential in ensuring value is truly added. However, in Ghana at present, mining companies—for example, Gold Fields Ghana, Newmont and Golden Star Resources—have established various types of Public-Private Community Partnerships (PPCPs), through which the company engages the community in local development. These are viewed as PPPs but most of the activities under these partnerships are restricted to the local community; they do not connect or integrate extractive projects into the wider economy.

Hence, Dr. Boateng reiterated the need for African governments to understand the industry properly, understand the value chains and the risks, and what really drives the key value-adding processes of the chain. Echoing the keynote address of Dr. Jourdan, he advised that all public inputs and partnerships must pursue the five-fold linkages. First, **fiscal linkages** will ensure that countries mobilize revenues using the right taxes.

Second, **spatial linkages** will ensure the appropriate infrastructure development (roads, railways, water, energy and ICT) is put in place for the benefit of industries as well as the wider economy. Through fiscal and spatial linkages, governments effectively make the country's extractive resources ready for investment. And, by putting in place the right policies, regulations and laws, investors will be more comfortable to invest in a high-risk environment.

Third, governments need to establish **backward linkages** to strongly promote the development of local supply chains and suppliers for the extractives industry. Here, Dr. Boateng recommended **Supply Chain Financing** as one of the best models in value chain financing. For example, Tanzania has adopted a Local Content in Supplier Development (LCSD) approach. Under this model, assistance is provided to train, equip and finance domestic suppliers to supply the oil and gas and mining sectors. Fourth, **forward linkages** will ensure that raw materials are beneficiated in-country.



Participant raising a question during the Q&A session.

For Ghana, there is no reason why it cannot process its gold to make jewellery and ornaments and become a trading centre for gold like Dubai. He gave the example of Botswana, which used to export all of its diamonds, but now is a global leader in the polishing industry. Fifth and finally, **knowledge linkages** are essential. The government needs to develop training and RD&I institutions to build capacity to really feed the value-adding processes within its industries. By investing in research, development and innovation, industries can be made more resilient and business models can be made more agile, so that if markets shift they know how to adapt to those shifts.

The government's leadership role in realizing value addition from extractives

Asked to describe the challenges facing the Ghanaian government in financing the value chain in the aluminium industry, **Mr. Anthony Boateng** pointed to two core challenges: i) infrastructure investment is lagging, and ii) the country has a significant skills gap for individuals and local companies to profitably engage with the extractive sector. Speaking generally, he said that realizing value addition:

It starts by defining the value. What exactly do you want? And once you define your value, I think you can then attract the right stakeholders, the right partners you need to help you achieve that value. ... I think we are in a bit of haste and we look more at their product that we want [rather] than the processes to achieve the product and also the emergent strategies that might come from it that might benefit the country.

On a practical level, he stressed that investors want stability and continuity. Hence, the government must take effective ownership and responsibility for projects, and ensure that government action is coordinated across all relevant ministries. For example, the Ministry of Environment, Ministry of Energy and the Ministry of Trade and Industry all have to be on board to maximize value along the full value chain. He said:

If there is no plan in terms of looking at the ownership of the project and being responsible in terms of taking the lead, then you are upping your risk profile.

Critically, Mr. Boateng believed that such leadership needs to come from the top. If the President champions the project, he considered that half of the problems would be solved. In closing, he said

I think the government has huge challenges, yes, but if it can take the bull by the horns and see the project as something that is for the people of Ghana rather than for the investors, I think we'll make good strides going forward.

Different options for financing the development of the value chain

Later in the session, **Mr. Boateng** was asked whether the government should borrow to finance the development of the entire value chain or should the government partner with the private sector. In response, he highlighted the pros and cons of public versus private financing. In the scenario that the project is entirely funded by the government, there is higher risk that performance measures for the investment may not be met. He said: *"If there isn't pressure in terms of performance then it effects how the whole value chain operates, and, as we say, the public sector has no business in doing business."* At the other extreme, if the private sector was to wholly fund the value chain, there is a risk that the company would seek to maximize shareholders' wealth at the expense of the government's development objectives. Therefore, a hybrid funding situation is preferable, such as a PPP. But, as described earlier, this partnership must be strategically negotiated to optimize the linkages between the project and the rest of the economy.

On a related issue, Dr. Boateng was asked whether it would be beneficial to lump up the entire value chain as one investment or look at different parts of the chain as separate investments. In answer, he reiterated the need to understand all parts of the value chain, linkage by linkage, area by area. The whole idea is to ensure operational resilience of the chain; if one particular point of the chain has an exposure, it affects the entire chain. Once you know what the opportunities and risks/exposures are at each point along the chain, then you can devise the right means for financing. Lumping the value chain together is not a smart idea because the players are different, the exposures are different and the diagnostics are different for each point and linkage on the chain.

8. Policy, legal and regulatory frameworks for value addition

This session featured two presentations followed by a short question and answer session. In the first presentation, Mr. Kwaku Addai Antwi-Boasiako, CEO Minerals Commission, Ghana, outlined the role of the government in Ghana's minerals sector to realize national development goals. The second presentation by Dr. Mamadou Barry

8.1 Expert presentation: The role of the government in Ghana's minerals sector

Presenter: Mr. Kwaku Addai Antwi-Boasiako, CEO Minerals Commission, Ghana

Recapping the discussions to date, Mr. Antwi-Boasiako said that there is no question that Africa is well endowed with significant mineral resources and the continent leads in the production of many key minerals. Second, it is generally agreed that harnessing those mineral resources should have provided great transformative opportunities to propel our countries and indeed the continent into accelerated broad-based development. Yet, Africa remains the poorest of all continents.



Mr. Kwaku Addai Antwi-Boasiako

The situation in Ghana is no different. The country is the tenth largest gold producer globally yet its lack of economic transformation is clearly apparent. Why is this the case? One major reason is the status of the country's trade agreements. Ghana is among the world's worst mining suppliers and processors. Supply and processing companies have emerged in South Africa and Chile and other mineral-producing countries, but the Ghanaian mining sector procures 80% of its inputs from abroad, which costs the country USD 1 billion. In addition, Ghana exports the vast majority of its minerals as unprocessed ores which costs the country USD 5.1 billion in lost revenue each year.

In contrast, Chile has effectively harnessed its copper reserves. Chile's per capita income is now USD 24,000, the highest in Latin America. In 2017, Chile was ranked among the top 25 countries on the Global Talent Competitiveness Index. Mining contributes 7-10% of GDP but when you combine all the benefits they harness from the total value chain, the contribution is 30% of GDP. He said:

I was in Chile and I drove for 5 hours on a dual-carriage way. Five hours, no potholes. I checked their health system, fantastic. Their educational system, one of the best. All on the back of copper, not gold, copper.

Another point of agreement is Africa needs to reconceptualise value addition. Until now, the continent has focused narrowly on the downstream, on the end of the value chain rather than the whole journey. Rather:

We need to embrace the multi-dimensional nature of the value addition. To hand value across the total value chain—pre-mining, exploration, exploitation, processing and even the community development aspect of it.

A vision for Ghana's minerals sector

What is the way forward for Ghana's mineral sector?

In answer to this question, Mr. Antwi-Boasiako said that, at the outset, Ghana has to define its national aspiration. He said:

When the minerals are gone, what do we want to see in Ghana? When the gold is gone, when the bauxite is gone, what do we want to see in Ghana? How do we survive? We need to answer that question. And more importantly, what do we want from mining? As far as I am concerned, Chile has answered the question.

As mentioned earlier, Chile has successfully used its mineral wealth to improve the incomes and public services for its population, including health, education and roads. In addition, the country has strategically invested mining revenues to diversify its economy, for example, into manufacturing, fisheries and viticulture.

Once the country's aspirations are clearly in view, Ghana must then proceed to decide upon the priorities for developing the mining sector. On this, Mr. Antwi-Boasiako highlighted seven inter-related factors. First, the country should reclassify its resources into strategic and non-strategic minerals. For example, he considered that both lithium and solar salt will be key development minerals for Ghana's future.

Second, the government needs to decide on the level of state participation. Here, again, the example of Chile is instructive. Given the national importance of copper, the government set up CODELCO in the 1970s, a state-owned mining company, which produces 30% of the copper in Chile and is now the largest copper producer in the world. As a result, revenues and profits from CODELCO go straight to the national treasury.

Third, like Chile, Ghana needs to foster a greater sense of ownership and national pride in its mining industry, which will help to reduce conflict at the community level. To increase this sense of national ownership, he highlighted the vital importance of community dialogue and participation.

Community engagement must be an integral part of the licensing process; potential investors need to negotiate agreements to ensure the rights of communities in mining areas to participate and benefit from the projects, either through provision of equity or other forms of return. In turn, a community-based governance system needs to be established to manage the returns, so that communities are involved in actually managing the returns from the mining project.

Fourth, he stressed that the state must create a framework to protect the environment. Mining companies must be responsible for minimizing and managing pollution, including reducing, reusing and recycling inputs wherever possible, and for the rehabilitation of mining sites.

Fifth, Ghana needs to develop innovative fiscal and taxation regimes to enable investment in the mining sector. For example, Chile finances up to 30% of high-tech projects in mining, and 70% of the costs of pre-investment feasibility studies. It also provides tax benefits and exemptions for mining companies that go to remote areas, such as the Atacama Desert. To take another example, Morocco has a corporate tax exemption of up to 10 years for start-ups. All equipment and materials necessary for exploration are tax-exempt. In stark contrast, Ghana charges VAT on exploration *activities, so investors are encouraged to look elsewhere.*

Sixth, Mr. Antwi-Boasiako said that Ghana must set up and empower world-class suppliers to participate in the value chain. Here, he stressed it is not enough to enumerate a list of products that companies must source from Ghana. Rather, the government needs to help domestic suppliers to start up, develop and be competitive.

We need to find a way of helping them develop the capacity, the capability to supply. We need to provide them with tax incentives and financial incentives. We need to begin as a country to have start-up capital [and] venture capital that will help small companies stand on their feet. Then, of course, we need to have a lot of training to help them develop.

On this aspect, the government would do well to invest in centres of excellence to build technological expertise and innovation to develop the mining sector and reap the full benefits.

Seventh but by no means last, Ghana as a country needs a comprehensive geological data bank. Accurate knowledge of Ghana's resources is essential to coordinate and facilitate the activities of mining companies as well planning and opening up tenements for small-scale miners.

8.2 Expert presentation: Can value addition in artisanal and small-scale mining (ASM) be a solution to illegal mining in Ghana?

Presenter: Dr. Mamadou Barry, Senior Mining Specialist, World Bank

The status of artisanal and small-scale mining in Ghana

To start, Dr. Barry gave an overview of the small-scale mining sector in Ghana. Presently, ASM in the gold sector employs between 0.5 million to 1 million people. In 2016, ASM contributed around one-third of the country's total gold output. These figures clearly indicate the significance of small-scale mining and its potential to contribute to poverty reduction. However, despite this upside potential, Ghana is experiencing a serious downside to ASM due to the high prevalence of illegal mining, popularly referred to as "galamsey", in the country.

Types and impacts of illegal mining

Illegal mining takes place in different ways, including:

- Informal or unlicensed mining, i.e., mining precious minerals without the requisite licences or permits
- Unauthorized use of a license, i.e., having a licence to mine in specific areas, which are designated on a site plan, but choosing to mine in other areas
- Encroachment on large-scale mining concessions, where licensed small-scale miners work outside their licensed areas and trespass on concessions belonging to large-scale mining companies
- Unauthorized mechanization, i.e., use of large-scale mining equipment in small-scale license areas.
- Involvement of foreign sponsors, where local chiefs, land owners or farmers make deals with foreigners to operate illegally in remote areas.

Where it occurs, illegal mining can have very economic, environmental and health impacts. The use of destructive mining methods and uncontrolled practices, such as the use of toxic mercury, cause severe environmental damage to water resources, agricultural land, crops and forests, as well as threaten the health and safety of miners as well as the local population.



Dr. Mamadou Barry

In Ghana, it affects 75% of the country's water courses through siltation and pollution. It can restrict the flow of streams, both increasing the chance of upstream flooding and loss of access to clean water downstream. Illegal mining can also severely undermine social relations; some of the most horrendous violence in Africa is driven by illegal mining interests in the Great Lakes Region. It is also a frequent cause of conflict between licensed mining companies and local communities.

Best practices for addressing illegal mining

Dr. Barry said that the World Bank has been working for the last 25 years to address the issues of artisanal and small-scale mining, and make ASM a sustainable sector of the economy. But he stressed that ASM is not just a mining issue; it is also a poverty and development issue. Therefore, a comprehensive approach is required not just to legalize ASM but also to formalize and integrate the sector into the mining value chain (Figure 9). Through appropriate national governance systems and technical and financial support, small-scale miners can be an integral part of mining supply chains and value addition.

9. Elements of a comprehensive approach to combating illegal mining



Country cases to transform the small-scale mining sector

Dr. Barry then described the efforts by governments in Chile and Tanzania to transform the small-scale mining sector and control illegal mining by implementing value addition strategies.

Chile

In Chile, the government adopted a strategy of value addition to transform its small-scale mining sector into a profitable and competitive producer. In 1960, the government established the Chilean Mining Corporation (ENAMI) with the mission to help Chilean nationals to integrate into the mining sector and develop a viable small-scale mining sector. This has been so successful now that you have companies in Chile that have grown from small-scale miners to become listed companies on the London stock exchange.

ENAMI purchases, ores and concentrates from small- and medium-scale producers, processes and smelts them, and then exports the output (largely cathodes and refined copper) to international markets.

ENAMI's assets include one smelter, five processing plants, purchasing agencies, and a network of technical support and technology transference facilities, all focused on providing services to around 2,000 small-size private sector producers of copper and precious metals. Through ENAMI's incentives and services, small- and medium-sized mining firms are able to access international metal markets. ENAMI enables these producers to attain competitive "economies of scale" and "economies of scope". It also provides loans for mining development. So small-scale miners have access to international prices.

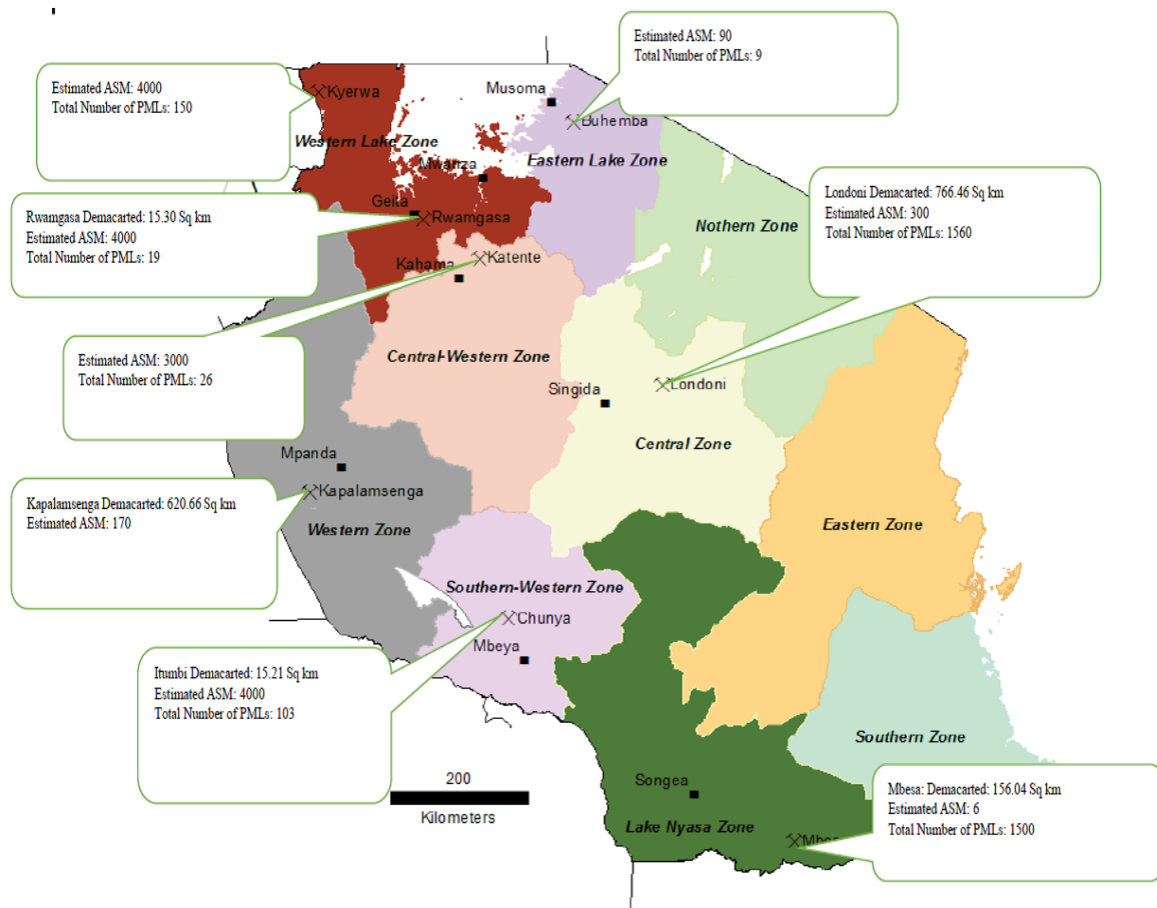
Today, ENAMI's annual production is between 140,000 to 200,000 tons of refined copper with annual revenues of around USD 0.8 billion to USD 1 billion. Moreover, ENAMI is not a burden on the government budget. It receives government funding for promotion of small-scale mining, but achieves autonomy by operating as a commercial entity. It pays the government back in the form of a special 40% tax on gross income as well as 100% of net profits. Like CODELCO, ENAMI is a very successful and profitable state-owned mining enterprise.

Tanzania

In Tanzania, conflict and violence between large-scale miners and small-scale miners involving security forces was once a frequent occurrence, for example, at the controversial North Mara Gold Mine. But, in recent years, the government with funding from the World Bank has been implementing the Sustainable Management of Mineral Resources Project (SMMRP). The project is strengthening government capacity to manage the ASM sector. Key project activities are as follows.

First, geological surveys were expanded to demarcate areas for use by small-scale miners (Figure 10). Around 25 areas have been identified (up from around 5 areas). These areas are sufficiently large to attract small-scale miners.

Figure 10: Map of Tanzania showing some areas demarcated for ASM



Second, the regulatory framework for ASM has been improved, in particular, licensing procedures have been simplified and decentralized to 7 zonal mining offices in ASM “hotspots” so that miners can apply for permits more easily. As a result, over 30,000 primary mining licenses for small-scale miners have been issued—a real success.

Third, a value chain approach is being used to encourage the formalization and sustainable development of ASM to boost local entrepreneurship and employment in mining. To start, small grants were given to small-scale miners to promote good techniques and good business skills. The government is also in the process of establishing centres of excellence—i.e., value addition centres similar to the toll processing centres run by ENAMI in Chile. The centres are used both to demonstrate good practices and miners can also bring in their products and receive greater value for them. For example, the Tanzania Gemological Centre (TGC) in Arusha is being funded to add value to precious and semi-precious stones that can be sold regionally and internationally, with the vision that it will become a centre for excellence for gemstones in East Africa. Specialized machinery and foreign trainers have been brought in to build the capacity of Tanzanians in cutting and polishing stones, and the program is integrating the development priorities of mining communities into local government planning. In the future, the project is proposing to establish an auction house where stones are regularly auctioned. In this way, it is envisioned that TGC will become a one-stop shop for value addition for all activities related to gemstones.

Lessons for Ghana’s efforts to control illegal mining

Given the similarity of the mining sector context, the experience in Tanzania in particular offers valuable lessons for Ghana to control illegal mining. Among his recommendations, Dr. Barry suggested that the Ghanaian government could take the following steps:

- Accelerate detailed geological investigation and demarcation of areas for small-scale miners
- Bring services closer to ASM
- Simplify ASM permitting
- Empower ASM communities
- Redefine small-scale mining and restrict the use of large-scale equipment in ASM
- Promote investment ASM value addition. In particular, coordination and consolidation of ASM can be encouraged by creating mining centres of excellence for teaching and demonstration of value addition, mercury-free processing technology, and toll processing.

8.3 Question and answer session

In the short Q and A session that followed the presentations, **Ms. Jacqueline Maleko, Chair of the Tanzania Women Chamber of Commerce**, stressed that to effectively engage the private sector in development requires knowledge about who is in the private sector. Hence, it is critically important to conduct mapping of the private sector to know who is who so that the government can appropriately direct local investment in the mining sector.

Echoing the words of President Akufo-Ado, she stressed that African countries must also create conducive environments and opportunities for its young people to invest at home not seek greener pastures overseas.

Centres of excellence are needed in all African countries with demand-driven programs and curricula. Technology, too, is needed for local businesses to add value but this need not be expensive. She said:

In China, there's a town called Haifeng. It's being developed because of African gemstones. Every house has a lapidary machine. So why can't we do the same in our countries? We have the special economic zones; let's use these facilities to develop our people because all they need is simple appropriate technology to add small, small values.

Most of all she said do not forget Africa's women. Women are actively engaged in mining and they are using the products of mining. Therefore, policy makers and private investors must remember that their countries have a critical mass of business women.

And last but not least, countries need to invest in marketing. In closing her comments, she said:

There's a big gap between innovation and marketing. If you don't invest in marketing, we will do value addition and find there's no market for it. So it is important to invest heavily in market research and market intelligence before even deciding to add value. The marketers come first but, as you know, scientists, they are very silent about marketing. Yet you cannot produce anything without knowing whom are you producing it for.



Ms. Jacqueline Maleko

9.

Panel discussion: Beneficial partnerships between the state, private sector and local communities



Panel discussion on Beneficial Partnerships between the State, Private Sector and Local Communities. From left to right: Mr. Benjamin Boakyee, Amb. Andrew McAlister, Mr. Nana Kobina Nketsia V, and Mr. Sam Thakkar.

Panellists:

1. Amb. Andrew McAlister, McAlister Consulting Corporation
2. Mr. Sam Thakkar, General Secretary, Uganda Chamber of Mines and Petroleum
3. Mr. Nana Kobina Nketsia V, Omanhene of Essikado Traditional Area

Moderator: Mr. Benjamin Boakyee, Africa Centre for Energy Policy

The final panel discussion focused on the interplay between important stakeholders in the mining sector, including public and private actors as well as local communities. Establishing trusting and mutually beneficial partnerships is a pre-requisite for the successful operation of the mining sector.

Our thinking must change: The people of Ghana, their communities and their land must come before mining interests

In his opening remarks, Mr. Nana Kobina Nketsia V, Omanhene of the Essikado Traditional Area was scathing in his assessment of the mining industry in Ghana and its impacts on communities and the environment. From his close knowledge of the communities in his region, he said:

We are just a colonial state, getting rid of what we call our resources, our natural resources without any value addition. ...When you go to [mining areas] Kisia, Obuasi, Tarkwa, you feel like crying.



Mr. Nana Kobina Nketsia V

He stressed that the country must profoundly change its thinking and what it values. He said:

First of all as to the resource, who owns them? But we need to rethink our whole connection to the land. We've talked about the material structures. But what about the communal structures that we destroy? That is not talked about. You know, the intangibles that go in and destroy communities, bring corruption, push up conflicts and so on. We leave them aside and just work with them as figures.

In particular, he highlighted the fundamental importance of the land to people and the future of their communities:

The most important thing that any people have is land. ... Everything is based on land. ... Yet you want to pull in investors? To do what? How do I see the future of my community in the next 50 years? Nobody comes and asks me those questions. I don't care about the ... economic theories and so on. What I care about is how my society will go on. If you take our history, the reason why we are colonized, the whole of Africa was colonized because of these resources.

Ghana's independence, therefore, depends upon controlling and using its resources to enhance its society.

Africa must partner with sound legitimate investors

Mr. Sam Thakkar said that foreign investment is not detrimental to Africans. What African countries must do is prudently identify and select the companies with which it partners. To do this, he noted the importance of scrutinizing the corporate governance practices of potential investors.

We shouldn't shun them. There are good sound legitimate investors ... These investors normally have corporate governance within their own bodies. Most of these are listed companies. Most of these are large companies in their own countries.

They will have an element of corporate social responsibility which they have to adhere to without fail even without the regulations and the policies of our own individual countries. If they don't adhere to those their share prices drop They lose their profitability. We can create a big noise for them as a small country on an international market and that's the end of that company. They don't worry about government regulations and incentives, etc. They are worried about their brand and their image with regards to how they're going to be seen if they do something wrong in our countries.



Mr. Sam Thakkar

In his remarks, Amb. Andrew McAlister stressed the importance of a thorough and transparent licensing process to ensure that the country partners with the best investors. Governments must be able to stand up in front of their constituencies and explain why they have allowed a foreign investor into the country. He said:

I would urge that a very bright light be shone on the permits process; very careful assessment of applicants must be done to ensure they've got the capability to do what they're supposed to be doing, and, once a prospecting license has been issued, ensure that the minimum expenditure requirements are respected. Shining a bright light on prospecting licenses means putting all [of the information] out in the public domain. Who has the license? When did he or she get it? When does it expire? And how much money have they spent on that license in accordance with the minimum expenditure requirements, whatever they may be? I think that's a very, very important way of ensuring that you get quality investors and the people just don't lock up large land parcels for speculation.

Nana Nketsia was less sanguine. From his experience, he considered that there was nothing ethical about mining companies, and that the history of mining on the continent was one of widespread plunder and violence. And he believed that the contemporary situation was no different. He said:

It's not nice and sweet and ethical and people coming and you vet them. They'll find its cheating all the time. It's been deception; that has been our history with the West especially and now the Chinese are coming in. And if up to today we're still blind then we might as well be blind forever.

He agreed that countries must know the different stakeholders and what they really want but most of all he emphasized the importance of education.

If your education doesn't help you to lift up your community then you haven't been educated. It's as simple as A,B,C. Whatever you have learnt, if it doesn't help you to lift the people around you then forget it then probably you've been mis-educated.

The importance of community consultation and engagement from the outset

Amb. McAlister highlighted the importance of structured, regular in-depth consultation with local communities in mining areas to ensure their full participation from the moment the first vehicle rolls up at a prospective mine site. These consultations should be broad and representative of the community as a whole, not just include local leaders. Companies should aim to speak with people whose voices might not always be heard, for example, the voices of women, ethnic minorities and people living with disabilities. He also commended the practice of companies that engage independent third parties to verify the quality of the relationship with the local communities. Indeed, in some cases, financial institutions demand thirdparty verification of community relationships as a condition of initial or continued financing of a project.

Amb. McAlister also recommended that one of the very first things that governments need to do is provide concrete, early benefits to local communities that bear the immediate impacts of mining developments. He realized that this can be difficult given the lengthy time lag before most extractive projects earn taxable income. However, by providing some quick wins/benefits can provide local communities with a solid stake and engender positive perceptions and ownership in the development.



Amb. Andrew McAlister

To achieve beneficial partnerships requires transparency and communication from the top to the bottom

In his final remarks, Sam Thakkar said that for African countries to achieve beneficial partnerships, demands transparency and communication all the way from top to bottom. But, presently, there are deficiencies in practice. He said:

We don't have transparency. We don't have clarity with regards to who is in charge of what. We have loads of regulations but regulations are in a book ... and then that book is put on a shelf in someone's corporate office and then no one bothers to read it. The only time [you do] is when you're caught out, if you have the revenue authorities coming in to say that you've not paid your taxes or where you have got a major issue because you've not paid the government official that got you the contract in the first place, right?

To rectify this situation, governments must be able to scrutinize and screen investors and be very clear on the practices and capabilities of the companies coming in. And if a country wants the company to add in local content or value addition, then they must ensure that those provisions are included in the binding contract under which the company operates. He also stressed that governments cannot simply create policies at the top, pat themselves on the back and consider the job is done, and forget about how people at the community level are going to benefit and what their inputs are going to be. They also need to be involved in the process.

Here, he gave the example of an a junior exploration company from Australia investor that is looking for copper, nickel and lead in the northern part of Uganda, a relatively deprived area of the country,. He related that they have not made any big songs and dances about what they want to do or gone to the President's Office demanding incentives and tax breaks or anything else. Rather, they have brought their cash and they're doing their jobs. They are directly involved in the local communities and 90% of their employees are Ugandan. Not only are they paying salaries to their employees but enrolling them into the tax system and social security funds.

In closing, Mr. Thakkar said that governments and the private sector have the same objective but different motivations; the investor has to maximize profits for its shareholders otherwise it sinks, while the governments wants to extract as much revenue for their five-year term! Clearly, these differences have to be reconciled—the company will seek tax efficiencies and other incentives; the government will push for more or higher taxes—and it is here that transparency and communication has to flow from the top all the way down with space for follow-up from bottom up as well.

Summing up, the moderator, Benjamin Boakye, said that governments, businesses and communities all have their particular interests; the critical objective is how those interests are aligned. And, here, the state has the central responsibility for regulating the minerals sector to ensure that interests are aligned as far as possible for the mutual benefit of all parties and for the development of African countries. To achieve this goal, governments have know who is coming into the country and that investors have the capacity to deliver. And as Nana Nketsia rightly said African leaders must re-orient their thinking and actions to be in the interests of Africa, its land and its people.

Appendix A: List of Participants

First Name	Organization
Ms. Abena Asante	Office Of The President
Mr. Abraham Otosil	-
Ms. Ambwene Lusekelo	Independent Consultant
Prof. Amoako Tuffuor	Ovp
Dr. Andrew Mcalister	Mcalister Consulting
Mr. Aning Sam	C.a.s.a
Mr. Antony Paul	Aces Caribbean Energy Speciausis
Mr. Antony Boateng	-
Nr. Anyars Ibrahim	Ovp
Ms. Barbara Andoh	Center For Energy And Natural Resources
Mr. Ben Adoo	Asanko Gold Ghana Ltd
Mr. Ben Aryee	Mlnr
Eng. Benjamin Mchwampaka	Parliament Of Tanzania
Mr. Bonny Matshediso	University Of Botswana
Dr. Chris Kpodar	Solomon Investments
Mr. Christopher Anokye	Mlnr
Mr. Convine Nyamweya	Kenya Chamber Of Mines
Mrs. Cynthia Asare Bediako	Office Of Vice President
Mr. Dan Acheampong	Volta Aluminium Company
Mr. Doto Biteko	Parliament Of Tanzania
Dr. Edward Brown	African Centre For Economic Transformation
Mr. Emmanuel Jengo	Tanzania Chamber Of Minerals And Energy
Mr. Emmanuel Konjoh	Sierra Leone Local Content Agency
Mr. Emmanuel Bissue	Essikado Traditional Council
Mr. Eric Asuboteng	Gcm
Mr. Felix Owusu	Frontier Rail Ltd
Mr. Francis Owusu	Mow Group
Mr. George Egbenunyia	Ministry Of Lanos And Natural Resource
Mr. George Dodo	Volta Aluminium Company
Ms. Georgette Sakyi-adoto	Women In Mining
Mr. Gerald Mturi	Tanzania Chamber Of Minerals And Energy
Mr. Godwin Nyelo	Tanzania Chamber Of Mines
Mr. Henry Antwi	Minerals Development Oman
Mr. Innocent Bashungwa	Parliament

First Name	Organization
Mr. Isaac Abraham	Minerals Commision
Mr. Issahaku Budali	International Finance Corparation
Ms. Ivy Irene Nakalyango	Uganda Chamber Of Mines And Petroleum
Mrs. Jacqueline Maleko	Tanzania Women Chamber Of Commerce
Mr. James Lemaire	Cibe
Mr. Jerry Ahadjie	Minerals Commision
John	State Mining Corperation
Joshua	Presidents Office
Kadija	Ovp
Kennedy	Ghana Institute Of Management
Kimani	Kenya Chamber Of Mines
Kobina	Chieftaincy
Dr. Kojo Busia	Amdc/uneca
Mr. Kwaku Antwi-boasiako	Minerals Commision
Prof. Kwaku Appiah-adul	Office Of The President
Mr. Kwasi Okoh	Aluworks Ltd
Mr. Lamptey Julius Bradford	Gncci
Lord Mensah	Ugbs
Lyman Mlambo	Institute Of Mining Research
Mr. Michael Ansah	Op
Mr. Mal Briggs	Alcoa
Mr. Mamadoa Barry	World Bank
Mr. Michael D Abrokwa	Valco
Mr. Nhlanhla Gumede	Petroleum Oil And Gas Corp Of Sa
Mr. Orton Kiishweko	Independent Consultant
Mr. Osei Owusu-korkor	Frontier Rail Ltd
Dr. Paul Jourdan	Various
Prof. Paul Buatsi	Recycled Refuse Intl Ltd
Mr. Peter Abum Sarkodie	Environmental Protection Agency
Dr. Philip Kofi Adom	Institute Of Energy And Policy Change
Mr. Richmond Antwi-bediako	Optimal Development Consultant
Prof. Rod Crompton	Wits Business School
Ms. Rose Mwebaza	Africa Development Bank
Mr. Sameer Thakkar	Uganda Chamber Of Mines And Petroleum
Ms. Sarah Ataki	Office Of The President
Ms. Sarah Jane Danchie	Acet
Mrs. Sonia Magogo	Parliament Of Tanzania
Mr. Sulemanu Koney	Ghana Chamber Of Mines
Mr. Sylvestre Obeng-nyame	-----
Mr. Talent Ngandwe	Zambia Chamber Of Mines
Mr. Vusi Mabena	Miasa
Ms. Zena Salum Kongoi	Stamico

Appendix B: Roundtable Program

Programme

DAY ONE – 4th December

TIME	Opening Ceremony
08:30 - 09:00	Registration
09:00 – 09:10	Introductory Remarks Prof. Joseph Semboja - CEO, UONGOZI Institute
09:10 – 09:45	Keynote Presentation: Value Addition in the Extractives Sector in Africa: Building an Integrated Minerals Industry Dr. Paul Jourdan Adjunct Visiting Professor, Wits University, Johannesburg, South Africa
09:45 – 10:00	Welcoming Remarks Hon John Peter Amewu – Minister of Lands & Natural Resources, Republic of Ghana
10:00 – 10:20	Opening Speech by the Guest of Honour Vice President of the Republic of Ghana - H.E. Dr. Mahamudu Bawumia
10:20 – 10:25	Schedule of the day and expected outcomes Prof Kwaku Appiah-Adu – Head of the Vice Presidents Delivery Unit
10:25 – 10:30	Vote of Thanks Barbara Oteng-Gyasi MP – Deputy Minister of Lands & Natural Resources
10:30 – 11:00	Health Break & Group Photo
11:00 – 12:00	High- Level Panel discussion Enhancing Value Addition in the Extractive Sector in Africa: Country Experiences - Hon. Alan John Kyerematen, Minister of Trade, Industry, Ghana - Dr. Bonny Ignatius Matshediso, Director, Morupule Coal Mine, Botswana - K.Y. Amoako – Founder, ACET Moderator: Hon. Kojo Oppong-Nkrumah, Deputy Minister of Information

TIME

12:00 – 13:00	<p>Presentation on the Value Chain of the Integrated Aluminium Industry (15 minutes) Presenter: Mr. Michael Ansah</p> <p>Moderated Panel discussion: Effective Management of Extraction (45 minutes) - Dr Ben Adoo – Chairman Integrated Aluminium Industry Project Working Committee and Asanko Gold Ghana Ltd. - Mr. Kwame Addo-Kufuor – President, Ghana Chamber of Mines</p> <p>Moderator: James Lemaire – CEO, CIBE (Partner of ACPE Inc)</p>
13:00 – 14:00	Lunch
14:00 – 16:30	Break-out sessions (see programme page 2)
16:30 – 17:00	Health Break
17:00 – 17:15	Highlights from parallel sessions
17:15– 17:30	<p>Closing Remarks and Schedule for Day 2 Prof Appiah-Adu – Head of the Vice Presidents Delivery Unit</p>
18:00 – 21:00	Networking & Cocktail

Notes

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