ENERGY AND MINING INDUSTRY

ENERGY

Energy in Kenya comprises of energy and electricity production in Kenya. Energy may be in form of wind, nuclear, thermal, and hydro or fossils. The most used form of energy used is the fossils with 19.7% of total consumption by 2011. Other main sources are wood, biomass and hydropower. Energy is seen as an aid into the development of the structural infrastructure in Kenya in the Vision 2030.

REGULATORY ENVIRONMENT

The energy sector is regulated in Chapter 314 of the Kenyan Constitution. It has undergone major amendments to provide for Kenya as a producer of petroleum and gas. The final draft of the National Energy and Petroleum Policy was published in June 2014.

The Energy Sector has arrangements with institutions in the country to provide for energy around the country. They include:

- **The Ministry of Energy and Petroleum**: This body is responsible for formulation and rendering of petroleum and energy policies which includes planning of national oil and energy, mobilization of financial resources and training of human capital.
- **Energy Regulatory Commission (ERC)**: It was established in 2006 to be responsible for economic and technical regulation of energy. It also carries out other functions that include licensing, approval of power purchase and network service contracts, tariff setting, enforcement, price setting, and dispute settlement.

- **Energy Tribunal**: It attends to all disputes and queries raised against ERC. It came into operation in 2007 after proposal in 2006.
- **Kenya Power and Lighting Company (KPLC):** This state-owned corporation is responsible for buying electricity in bulk from KenGen and transmitting, distributing and retailing it to end consumers.
- **Independent Power Producers:** These are private power producers who sell their electricity to KPLC.
- **Kenya Petroleum Refineries Limited (KPRL):** Main process of KPRL is processing of crude oil. It was bought by the Kenyan government from Essar after it showed inefficiencies.
- **Kenya Pipeline Company Limited (KPC):** It carries out storage, transportation and handling of petroleum products in the country.
- **National Oil Corporation of Kenya Limited (NOCK):** Stabilizes petroleum supply.
- **Kenya Nuclear Electricity Board (KNEB):** Tracks the development of nuclear energy so as to provide affordable electricity.
- **Centre for Energy Efficiency and Conservation (CEEC):** Advocates for energy efficiency and conservation in Kenya.
- **Oil Marketing Companies (OMCs):** As the name suggests, it retails oil and its products both locally and internationally.
- **Petroleum Institute of East Africa (PIEA):** It is a voluntary membership organization for oil companies to build each other's capacity and create awareness.
- **Oil Exploration and Production Companies (OIEPs):** These are international and local companies that explore energy sources and produce.

- **Kenya Electricity Generating Company Limited (KenGen):** Generates electric power using various sources as hydro, wind, thermal and geothermal.
- **Rural Electrification Authority (REA):** Established under the Energy Act of 2006, REA is responsible for financing electrification of rural areas in Kenya.
- **Geothermal Development Company Limited (GDC):** Specifically established to drive the development of geothermal energy.
- **Kenya Electricity Transmission Company Limited (KETRACO**): Responsible for development, maintenance and operations of national transmission grid.
- **Kenya Revenue Authority (KRA):** Responsible for collection of taxes of all energy transactions in Kenya.
- **National Environmental Management Authority (NEMA)**

  NEMA IS responsible for all environmental regulations that preserve the environment. For example, it works against oil spillage in water bodies, pollution through emission of gases and so forth.

HISTORICAL DATA AND NATURE OF THE INDUSTRY

Connection to the national grid stands at 28%. Hydro Electricity covers 36%, followed closely by fossil fuels 35%, then Geothermal at 26%. The rest is covered by wind and bagasse (dry pulpy residue left after extraction of sugar cane juice) cogeneration energy. Kenya is greatest producer of geothermal power in Africa and projections are for it to become the main source of energy in the coming years.

Kerosene in Kenya still dominates other sources of energy, especially in rural settings. Around 80% of people in rural areas use kerosene for lighting and wood fuel for cooking and other

energy needs. Electricity is used by 15% of the nation population with 40% being from urban areas.

The energy sector employed 16,000 people in Kenya as of 2007. They also contribute tax revenue of about 20%.

GROWTH POTENTIAL

The following are some of the projects under the Ministry of Energy and Petroleum; of which some are complete while others are not.

Kenya Petroleum Technical Assistance Project(KEPTAP)

This is a world bank funded project which became effective in October 2014 to help the government of Kenya to build capacity to manage the petroleum sector and build long term sustainable and developing wealth. It is under 3 Ministries; Ministry of Energy and Petroleum, National Treasury and Industrialisation & Enterprise Development. This project is also to strengthen upward & downward linkages and private & public sector policies to capitalise on oil and gas resources.

Coal Plant

Based in Lamu is a coal fired power plant expected to produce 900-1000MW. The project is supposed to be complete in 2017, and negotiations with several companies are underway; Gulf Energy, Centum Investment, CHD Power Plant Operation, Sichuan Electric Power and Design & Consulting Company and Sichuan No.03 Electric Power Construction Company.

Coal development

A 700MW Liquefied Natural Gas (LNG) Plant is to be set up at Dongo Kundu, in the coastal region. Procurement of land to establish a by-pass road section along Dongo Kundu is ongoing. There are also projects to explore coal in the Kilifi and Kwale counties under the ministry in the financial year 2014/2015. Another prospect for coal are six sites in Meru/ Isiolo, and projects are underway to explore and drill the fuel.

Power Generation project

It facilitated and supported the development of a total of 406 Megawatts of new power generation capacity as follows; 87.5 MW Thika Power Ltd, 52 MW or Power Plant III at Olkaria, 24 MW Kindaruma upgrade, 12.8 MW Olkaria wellhead, 20 MW Olkaria well heads, and 210 MW Olkaria Geothermal units.

Connection of electricity to public institutions

This was a project aimed to provide support for electrification of 5,000 public primary schools, with 4,481 electrified through the National Grid and 603 through Solar PV (PhotoVoltaics).

Monitor, supervise and report on the results of drilling oil exploration wells

The drilling for all the wells was started in 2013.

Geothermal Exploration in Morendat-Malewa area

The Ministry carried out Geological, Geophysical and Geochemical Surveys and completed delineation of the Morendat-Malewa and Kigio-Marula geothermal prospects.

Installation of wind Energy storage facility in Marsabit

Project is ongoing and was expected to be complete by December 2014.

Installation of wind masts and data loggers

Contract for installation of five 100 meter masts awarded and works commenced in 2013.

Re-afforestation of Upper Tana

Works on Sondu Miriu catchment started in Chepalungu, Ndoinet and Saino. Community mobilization completed in all sites and sites preparation in readiness for March/April planting.

Lake Turkana Wind Power Plant

There is a 300MW project by IPP to be completed in 2017.

The 60MW Kinangop Wind plant is financed by Aeolus Kenya, which cost $150 million. It is expected to provide power to 150,000 households. It is expected to be the largest wind power generation setup in Kenya.

Olkaria I

The Olkaria projects are located in Hells Gate National Park in the Rift Valley. Construction of Unit 4 and 5 for 140MW was commissioned in January 2014 and Unit 6 for 70MW in 2015; while refurbishment of the existing units will give additional 45MW on completion in 2016.

Olkaria IV

Construction of 140MW of Units 1 and 2 was to be completed and commissioned in May 2014, Unit for 70MW in 2015, and Units 4 and 5 for 140MW in 2016.

Olkaria V

Construction of a 140MW plant for Units 1 and 2 is to be commissioned in 2017.

Olkaria II

Construction of two units 4 & 5 units will be undertaken to have 140MW installed in 2018.

Menengai Phase I

In Menengai, Nakuru, construction of 400MW power plants is ongoing and is to be completed in 2017.

MINING ACTIVITIES IN KENYA

The mineral industry in Africa is the biggest mining industry in the world. However, its contribution to the economy of Kenya is very minute; that of less than 1% to the GDP. Kenya concentrated on tourism, manufacturing and services until recently when gold was discovered in Western Kenya. Mining in Kenya is dominated by non-metal minerals such as soda ash, fluorspar, kaolin and some gemstones.

REGULATORY ENVIRONMENT

A Mining Act of 1942, Chapter 306, regulated all mining activities in Kenya until a new mining bill of 2014 was proposed. It sought to improve the method of registration of licenses awarded to mining companies in Kenya. Online registration and application for licenses was to be introduced. A 70% share of the mining revenue was to be awarded to national government, 20% to county government and 10% to the community. 2013, a Ministry of Mining was created to regulate the sector.

HISTORY AND NATURE OF THE INDUSTRY

Some of the minerals found in Kenya include: soda ash, limestone, gold, fluorspar, iron ore, talc, heavy sands, coal, hydrocarbons, ruby, emerald, tourmaline, biotite, calcite and beryl among others. The areas common with mining activities are around the Coast and Western Kenya. Recently, the Northern parts of Kenya around Turkana were discovered to have oil deposits.

Geological sources in Kenya with mineral deposits include;

- Western Kenya has great potential for ferrous metals and metallic minerals.
- Central Kenya along the Proterozoic Mozambique belt with deposits of metamorphic minerals such as graphite, marble, kaolin, kyanite, corundum and others.
- Sedimentary rocks are also a primary host for deposits of gypsum, clay, limestone, hydrocarbons, manganese, and construction materials. Lead-zinc and heavy mineral sand are also known to occur along the coastal belt.
- Along the volcanic rocks are mineral sand construction materials, clays, Tron, diatomite, natural carbon dioxide, gypsum and others.

GROWTH POTENTIAL

Soda ash and Gold are the biggest foreign exchange earners. Soda Ash production grew by 4.2 % in 2014 to 468,215 tonnes. Two Kenyan projects; Kwale Mineral Sands and Kilimapesa Gold Mining.

Kwale Mineral Sands was a project estimated to produce minerals, largest producers in the world of 10% of ilmenite and 14% of rutile. It is located 40 kilometers south of Mombasa. It was owned by Base Resources which was acquired in 2010, August by Vaaldiam Mining. In December 2013, ilmenite and rutile production began and in February 2014, zircon production began.

Kilimapesa Gold Mining started its gold mining operations in January 2012 at Kilimapesa, Western Kenya.

Over the plan period 2014/2017 the Ministry of Mining will strive to implement the following flagship projects outlined in the MTP II in order to improve the contribution of the mining sector:

- Conducting a national airborne geo-physical survey;
- Conducting mineral exploration and evaluation;
- Creating special mineral Processing Economic Zones;
- Establishing an internationally accredited Mineral Certification Laboratory;
- Establishing a Mineral Audit Agency;
- Establishing a Mineral and Metal Commodity Exchange;
- Establishing a Regional Geological Survey and Research Centre;
- Establishing a Mineral Sovereign Fund;
- Establishing a National Mining Corporation;
- Establishing a National Seismological Network;
- Undertaking geo-hazard mapping and monitoring;
- Facilitating commercial production of Kwale mineral sands project (titanium);
- Developing a single fiscal regime for mining;
- Developing a National Mining Policy, Legal, Regulatory and Institutional Framework; and
- Participating in the Extractive Industry Transparency Initiative.

Hydrocarbons findings: Exploration of hydrocarbons has found deposits in Lamu, Anza, Mandera and the Tertiary Rift, approximately 485,000sq kilometers, which is considered thrice that of Uganda. Kenya has already drilled 16 wells since March 2012. There are a total of 46

gazetted companies, of which 43 have been assigned to 23 exploration companies and one to NOCK (National Oil Corporation of Kenya).

The government also has an initiative to make a commitment to the Extractive Industries Transparency Initiative which covers oil, gas and mineral resources besides creating a sovereign wealth fund. This has led to a significant decline in petroleum products imported into the country. The total value for exports of petroleum products has decreased, perhaps due to increased competition in the export market.

INFLUENCING ECONOMIC FACTORS

Some of the unique factors that affect the mining sector are as follows:

Regulations and Government policies

The government amends the Constitution from time to time and affected is the Mining Act. In 2014, a new Mining Bill was proposed to change policies. Like in 2013, 40 mining licenses were revoked deemed to be improperly awarded by the previous administration. Online registration for licenses was introduced by the new mining Act.

Location of mining site

The tools and labor involved in the mining process is highly dependent on the type of rocks and ground in a certain area. The lower the rocks are located, the more advanced technology and heavier machinery is required.

Technology

In the mining industry, mining companies have to invest in good machinery that makes the mining business easier and for them to keep up, a lot of maintenance capital is required which can be very expensive, which is our next point.

Financial position of the company

Companies require a large initial capital base to start the mining business which can go as far as millions of dollars such as the Kwale Sand Mining project for which cost estimates amounted to $298 million.

Market potential

Before starting any business, one must have a potential market for the products. In mining, it is no different. Minerals must be worthwhile to someone in the market for a company to extract them. The worth should always be greater than the cost of mining in order to stay in business.