

COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA

THE COMESA MODEL ENERGY POLICY FRAMEWORK

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ACRONYMS AND ABBREVIATIONS

BB/D (bb/d)	-	Barrels Per Day
COMESA	-	Common Market for Eastern and Southern Africa
CAPP	-	The Central Africa Power Pool
CU	-	The COMESA Customs Union
EAPP	-	The Eastern Africa Power Pool
EIA	-	Environmental Impact Assessment
FTA	-	The COMESA Free Trade Area
GDP	-	Gross Domestic Product
LPG	-	Liquefied Petroleum Gas
MDGs	-	Millennium Development Goals
NEPAD	-	New Partnership for Africa's Development
NGOs	-	Non Governmental Organizations
OAU	-	Organisation of African Unity
PRSP	-	Poverty Reduction Strategy Paper
PTA	-	Preferential Trade Area for Eastern and Southern Africa
PV	-	Photovoltaic
PP	-	The Southern Africa Power Pool
R&D	-	Research and Development
RETs	-	Renewable Energy Technologies

VISION

TO ATTAIN UNIVERSAL ACCESS TO QUALITY ENERGY SERVICES FOR MAJORITY OF THE PEOPLE OF THE COMESA REGION WHILE PROTECTING THE ENVIRONMENT

MISSION

TO FACILITATE PROVISION OF ADEQUATE, AFFORDABLE, RELIABLE, QUALITY, SAFE, AND ENVIRONMENTAL BENIGN ENERGY SERVICES TO SUPPORT SOCIAL AND ECONOMIC DEVELOPMENT

EXECUTIVE SUMMARY

Energy plays a critical role in the development process, as a domestic necessity but also as a factor of production whose costs directly affects prices of other goods and services and the competitiveness of enterprises. It is widely seen as a driver to achieving Millennium Development Goals (MDGs).

Thus, the importance of the energy sector in the economy necessitates that a long-term planning approach for energy development be adopted and it should be in line with the overall macro-economic policies.

The main thrust of the COMESA Model Energy Policy Framework is to provide the COMESA member States with harmonized guidelines that would facilitate energy policy harmonization in the COMESA region in efforts to improve efficiency and increased investment.

Specific objective of this Model Energy Policy Framework is to provide an outline of contents expected in National Energy Policy, which countries can then adopt and/or customize, therefore, harmonizing policies in the spirit of regional integration.

The main energy policy goal is to meet the energy needs, in an environmentally sustainable manner, through providing an adequate and reliable supply of energy at least cost; to support social and economic development and sustainable economic growth and also to improve the quality of life of the people.

Energy policy objectives of this model energy policy framework include improving the effectiveness and efficiency of the modern energy supply industries; improving the security and reliability of energy supply systems; increasing access to affordable and modern energy services as a contribution to poverty reduction; establishing the availability, potential and demand of the various energy resources; stimulating economic development; improving energy sector governance and administration; managing environmental, safety, and health impacts of energy production and utilization; and mitigating the impact of high energy prices on vulnerable consumers.

The COMESA Model Energy Policy Framework focuses on key issues in the energy sector; supply and demand; side policy objectives and policy instruments; and cross cutting issues.

This Model Energy Policy Framework is a flexible policy guideline which is expected to provide a framework for COMESA member States to customize their policies based on the country's specific socio-economic considerations and circumstances.

CHAPTER ONE: OVERVIEW OF COMESA AND STATUS OF THE ENERGY SECTOR IN COMESA

1.1 THE COMESA VISION AND MISSION

COMESA's image of the future is one of a fully integrated, internationally competitive regional economic community with high standards of living for all its people; a community ready to merge with other regional groupings to form the African Economic Community. This vision of the future draws inspiration from the spirit of the COMESA Treaty, and takes into account challenges in the COMESA environment, and lessons and experiences of the past.

The aims and objectives of COMESA, as defined in its Treaty and its Protocols may be summarized as follows:

- to facilitate the removal of the structural and institutional weaknesses of member States so that they are able to attain collective and sustained development, and

- to create and maintain:

(i) a fully Free Trade Area guaranteeing the free movement of goods and services produced within COMESA and the removal of all tariffs and non-tariff barriers;

(ii) a Customs Union with a common external tariff under which goods and services imported from non-COMESA countries will attract an agreed single tariff in all COMESA states;

(iii) free movement of capital and investment supported by the adoption of common investment practices so as to create a more favorable investment climate - a common investment area - for the COMESA region; and

(iv) a gradual establishment of a payments union and the eventual establishment of a monetary union with a common currency; and the adoption of common visa arrangements, including the right of establishment leading eventually to the free movement of bona fide persons.

In pursuit of the above goals, COMESA's mission is to endeavor to achieve sustainable economic and social progress in all member states through increased co-operation and integration in all fields of development, particularly in trade, customs and monetary affairs; transport, communication and information; technology, industry and **energy**; gender, agriculture, environment and natural resources. The implementation of this mission is considered a long term undertaking.

1.1.1 Overview of COMESA

COMESA was established in 1994 as a successor to the Preferential Trade Area for Eastern and Southern Africa (PTA), which had been in existence since 1981 within the framework of the Organisation of African Unity's (OAU) Lagos Plan of Action and the Final Act of Lagos. The ultimate objective of PTA was to create an economic community with high standards of living for the people of area.

COMESA is a regional economic grouping comprising 19 member States which have agreed to promote regional integration through trade development and to develop their natural and human resources for the mutual benefit of all their people.

The member states are Burundi, Comoros, Congo DR, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe.

The aims and objectives of COMESA as defined in the Treaty and its Protocols are to facilitate the removal of the structural and institutional weaknesses of member States so that they are able to attain collective and sustainable development through regional integration. Whereas, the Treaty provides that “the member States undertake to co-operate in the joint development and utilization of energy resources including hydro, fossil and biomass”.

Currently, COMESA is one of the regional organisations that the African Union and the New Partnership for Africa's Development (NEPAD) recognize as a vehicle and a building bloc for Africa's development, especially from the point of view of developing the continent's infrastructure, i.e., energy, transportation, communication, etc.

COMESA has an area of about 12 million square kilometers, spanning Northern, Eastern and Southern Africa and has a population of over 389 million. Moreover, the region is endowed with diverse natural resources which include arable land, minerals, petroleum, water, etc, and it is also a big market.

Trade and investment are considered as the primary instruments for promoting and deepening economic integration in COMESA. In order to facilitate trade and investment, the development of appropriate physical infrastructure and facilitation in energy, transport and communications are taken as key issues.

The COMESA Free Trade Area (FTA) was launched in October, 2000 when nine of the member States eliminated their tariffs on COMESA originating products. Currently there are thirteen member states in the FTA namely Burundi, Comoros,

Djibouti, Egypt, Kenya, Libya, Madagascar, Malawi, Mauritius Rwanda, Sudan, Zambia and Zimbabwe.

Trade has grown significantly averaging 20% per year of intra-FTA trade, while overall intra-COMESA trade has also been boosted by increased intra-FTA trade with a growth rate of about 7% per year.

The next stages for COMESA are the formation of a Customs Union, a Monetary Union and the establishment of a Common Market. The launch of the Customs Union (CU) is programmed for 2008.

1.1.2 Objectives of the COMESA Model Energy Policy Framework

The main thrust of the COMESA Model Energy Policy Framework is to provide the COMESA member States with harmonized guidelines that would facilitate energy policy harmonization in the COMESA region in efforts to improve efficiency and increased investment.

The specific objective of the model energy policy framework is to provide outline contents expected in National Energy Policy, which countries can then adopt and/or customize, therefore, harmonizing policies in the spirit of regional integration.

1.1.3 Need for an Energy Policy Framework and the Strategic Benchmarks

Energy plays a critical role in the development process, as a domestic necessity but also as a factor of production whose costs directly affects prices of other goods and services and the competitiveness of enterprises. The cost of energy is one of the critical factors that affect the success of COMESA's Free Trade Area and Common Investment Area, since it determines, to a great extent, COMESA's competitiveness in its regional and extra-regional markets.

Energy is widely seen as a driver to achieving Millennium Development Goals (MDGs) as it contributes in: eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and empower women; reducing child mortality; improving maternal health; combating HIV/AIDS; ensuring environmental sustainability; and developing a global partnership for development. Because by 2015 all 191 United Nations member States have pledged to meet the above eight MDGs.

Thus, the importance of the energy sector in the economy necessitates that a long-term planning approach for energy development be adopted and it should be in line with the overall macro-economic policies.

It has been established that energy poverty could be defined as the absence of sufficient choice in accessing adequate, affordable, reliable, quality, safe, and environmentally benign energy services to support human and economic

development. It is therefore, apparent that energy poverty exists in many COMESA member States at all levels, particularly in the rural areas.

This energy poverty could be seen through the low levels of consumption of modern energy forms in terms of electricity and petroleum products in most COMESA member States.

The energy poverty could further be seen through the heavily reliance of most COMESA member States on the consumption of traditional energy which is primarily biomass in terms of wood-fuels (fuel-wood and charcoal). In addition, the energy poverty could also be seen through the inadequacy and poor quality of electricity services.

Though the COMESA member States have abundant of energy resources, in most of them, energy is a scarce and expensive resource, because energy resources are unevenly distributed within the region. Moreover, the region's modern energy resources are still underdeveloped including their infrastructure such as electricity transmission and distribution networks, petroleum and gas pipelines, etc, which are unable to deliver their services to consumers in an affordable cost and a reliable way.

The COMESA Model Energy Policy Framework is guided by the COMESA Treaty, provisions on energy. It is also guided by the decision that was made by the COMESA Council of Ministers during its Twentieth Meeting held in Lusaka, Zambia, in December, 2005, to adopt the COMESA Energy Programme whose main thrust is to promote regional cooperation in energy development, trade and capacity building. The COMESA Energy Programme contains some focus areas which include energy policy and regulatory harmonization, development of regional energy infrastructure, facilitation of trade in energy services, capacity building and co-operation with other regional and international organizations and technical institutions. It is worth mentioning, however, that development of a model energy policy framework is one of the activities that have been identified to facilitate energy policy and regulatory harmonization.

The COMESA Model Energy Policy Framework is guided by the COMESA Treaty Articles 106 – 109 and the existing long term COMESA Vision and Mission, NEPAD and AU objectives. The scope of cooperation in the development of energy as provided in the Treaty could be summarized as follows:

(i) the joint development and utilization of energy resources including hydro, fossil and bio-mass;

(ii) joint exploration and exploitation of hydro and fossil fuel;

(iii) creation of more favourable investment climate to encourage public and private investment in this sub-sector;

(iv) encouragement of joint utilization of training and research utilities;

(v) exchange of information on energy systems and investment opportunities;

(vi) development of research programmes on renewable energy systems;

(vii) development of a mechanism for facilitating trade in energy fuels, such as coal, natural gas, petroleum and electricity;

(viii) joint procurement of products; and

(ix) interconnecting national electricity grids.

1.1.4 Energy Policy Framework Context

The points mentioned above justify the need for an appropriate energy policy framework through a set of plans, measures, and actions aimed at guiding, synchronizing, and harmonizing all structures and practices for the provision of energy services. Therefore, an energy policy framework is a necessary instrument for achieving a positive change in energy systems, in order to meet the energy needs of the population for social and economic development.

Experience has shown that, the energy sector has bigger environmental impacts compared to other sectors of the economy. Thus, energy investments are nowadays subject to greater environmental scrutiny than ever before. Energy policies should, therefore, aim at mitigating the negative impacts. It has been established that, a sustainable energy policy is one which integrates economic, social and environmental objectives in a way that improves the well being of the current generation whilst safeguarding the welfare of future generations.

Acknowledgement of international, regional and national energy trends, especially in areas of energy investment, pricing and global impacts is important. Accordingly, the COMESAt Model Energy Policy Framework must also seek compatibility with the global, regional and national energy policies.

Developed and developing countries are putting a high priority on energy so that developed countries can at least maintain the level of development that they have already achieved and that developing countries can achieve a smooth transformation. Based on the above, the energy sector is becoming increasingly important world over. Therefore, all governments need to formulate an energy policy that ensures adequate, quality, cost-effective and affordable supply of energy to achieve a remarkable economic growth and sustain development. However, the issue of ensuring adequate, quality, cost-effective and affordable supply of energy to achieve a sustainable economic growth and development should be on the top of the agenda of the COMESA member States. Therefore, it is envisaged that, an energy policy, whose objectives should go in line with the objectives of the existing social, economic and environmental policies, would play an important role in the above context. Thus, linkages between the energy sector and all other sectors should be recognized.

Many COMESA countries have signed Kyoto Protocol and can take advantage from that to reduce green house gas emissions through the Clean Development Mechanism and also have commitments to achieve Millennium Development Goals (MDGs) by 2015. In addition to above international perspective, there is also regional context, within it, the New Partnership for Africa's Development (NEPAD) offers opportunities for integrating Africa's energy systems (e.g. planning, interconnected grids and cross-border oil pipelines) to enhance energy trade, thus optimizing the development and use of resources and providing cost-effective energy services.

At national level, some COMESA member States have prepared Poverty Reduction Strategy Papers (PRSPs) demonstrating commitment for reducing poverty and have made proposals for the actions needed to provide improved services in a number of sectors, including energy, to achieve the MDGs, and at the same time to reduce the socioeconomic impact of high energy prices on venerable consumers by providing them with necessary tools to mitigate it. Therefore, the role of energy needs to be better articulated in an energy policy document.

1.2 STATUS OF ENERGY SECTOR IN THE COMESA REGION

Compared to the world average energy intensity, it has been established that the COMESA region, like the other comparable regions of Africa, suffers from energy intensity, which is defined as the relationship of energy use to GDP over time. It uses more energy to produce each dollar of income. While its energy consumption per capita, like the rest of Africa, has been far lower than the world average.

The energy sector in the COMESA member States is one of the key sectors that contribute to social and economic development. Adequate, quality, cost-effective and affordable supply of energy would improve the macroeconomic performance of the COMESA countries. As it would help them expand their intra and extra trade through reductions in cost, and in particular, enhances their regional and international competitiveness of exports products. Furthermore, it would help the environment be more conducive for investment. And it would also help in the COMESA member States increase their budgets.

The above would consequently increase the production and would culminate in an increase of economic growth rates of the COMESA member States. Economic, social and political development, among others, would be sustained.

It is worth mentioning, however, that the energy sector in almost all COMESA member States includes the following sub-sectors:

- Electric power;
- Petroleum;
- Gas;
- Coal; and
- Biomass and other Renewable Sources of Energy.

1.2.1 Electric Power

There is a huge hydro potential, which is not yet exploited, along the Congo, Nile and Zambezi river basins. For instance, the hydro potential of Democratic Republic of Congo (DRC) is estimated to be around 100,000 mega watts, whereas, the potential for Ethiopia and Zambia is estimated to be around 45,000 mega watts and 6,000 mega watts respectively.

In almost all COMESA member States, the electric power sub-sector is based on legislation (Act). Some of these Acts are old. However, there is a need to review these old Acts in order to incorporate changes due to evolution in the sub-sector, in particular, the process of sub-sector reforms in terms of unbundling, private sector participation and utility commercialization. In the process of accelerating the power sector reforms, some COMESA member States had already realized the process in terms of unbundling, private sector participation and utility commercialization.

It is important to note that ten COMESA member States have established their regulatory authorities. This is because it is recognized that there is a need to create the regulatory environment that will be likely to attract high investment level and regulate competition. However, regulators vary from country to country in terms of legitimacy, authority, resources and structure.

The total installed capacity of the COMESA region in 2004 was 30,697 megawatts. Almost 64 % of the installed capacity was thermal, whereas, 35 % of it was hydro. The forecasted maximum demand for electric power (2007, 2009 and 2011) will exceed the installed capacity (in 2004) of some COMESA member States whereas it will be less than installed capacity (2004) of some others. In 2004, electricity generation of the COMESA region stood at 150.0 billion kilowatt hours, of which 73.9 % was thermal (oil, gas and coal), about 24.9 % was hydro and the rest (1.2 %) was geothermal and wind. While electricity consumption of the COMESA region in 2004 stood at 123.8 billion kilowatt hours. In 2004, nine COMESA member States were electricity importers, whereas, only six were exporters. The trade in electricity was cross-border in some cases. The percentage of population that has access to electricity in most COMESA member States, with the exception of Egypt, Libya, Mauritius and Seychelles, varies between 2 to 41 %. And when it comes to rural areas the situation gets even more worse.

The immense energy potential of the COMESA member States in terms of renewable energy such as solar and biomass and hydropower potential would make it feasible to increase the rate of access of electricity of the population in rural areas and the whole population as well.

When it comes to prices, it seems that there were also electricity prices differentials among COMESA member States. This justifies the need to enhance the existing co-operation in particular, within the framework of the three power pools that were established in the region, in order to optimize the usage of energy resources available in the COMESA region; increase the power supply of the region; reduce

electricity production cost and create an environment that is conducive for investment. These power pools include the Southern Africa Power Pool (SAPP), the Eastern Africa Power Pool (EAPP) and the Central Africa Power Pool (CAPP).

1.2.2 Petroleum

Like any where else in the world, the petroleum sub-sector in the COMESA region deals with both upstream and downstream industries. The upstream industry covers a wide range of activities in the areas of exploration, development as well as production of petroleum.

The downstream covers transportation of refined products and crude, refining, storage, distribution and marketing of petroleum products. Petroleum sub-sector in most COMESA member States is based on legislation (Act). The analysis of upstream side show that, the COMESA region's proven crude reserves as of 2004 were about 12.3 billion barrels, representing about 12.2 % of Africa and about 1.0 % of the world crude reserves. The region produced about 1.9 million barrels per day (bb/d) of oil in 2004. It was about 22.1 % of Africa's and about 2.4 % of the world's production. The region's top oil producers, in descending order of magnitude, were Angola, Egypt, Sudan and Congo DR.

In 2004, the region's oil consumption stood at 0.9 million bb/d. It was about 32.1 % of Africa's and about 1.1 % of the world's consumption. These figures explain that the region produces more than twice of its consumption. Furthermore, the region's crude refining capacity, in 2004, was slightly above one million (bb/d), which was above the region’s consumption. This means that the existing refining capacity of the COMESA region is more than enough to meet the consumption of the region. It is worth mentioning, however, that most of those refineries are of simple type which makes most of COMESA countries net importers of petroleum products.

Some COMESA member States are regulating the prices of petroleum products while others have already liberalized the prices. It is argued that the impact of the high oil prices on the macroeconomic performance of the oil-importing COMESA member States would be very severe. It is because of the fact that their economies depend on imported oil and they are more energy-intensive.

However, regional petroleum exploration, efficient use of petroleum particularly in transport sector through diversion of traffic to petroleum saving transport systems, harmonization of: laws, rules, standards, regulations, specifications, safety procedures of petroleum products, etc, would be key issues of concern to the COMESA region and they are attainable through harmonizing energy policies.

1.2.3 Gas

Six COMESA member States had proven gas reserves, in 2004. These were Angola, Congo DR, Egypt, Ethiopia, Rwanda and Sudan, but only two of them produced it. They were namely Angola and Egypt. In 2004, they both produced

about one trillion cubic feet amounted to about 20 % of Africa's and about 1.0 % of the world's production.

It is worth mentioning, however, that most COMESA member States lack appropriate gas infrastructure for production, distribution and processing.

1.2.4 Coal

The COMESA region has no abundant recoverable coal reserves. The reserves are only 1.7 % of Africa's reserves. Zimbabwe (with 60 %) and Swaziland (with 25 %) contain the majority of the region's reserves. Total coal consumption of the COMESA region, in 2004, was about 6 million short tones, representing about 3.0 % of Africa's consumption.

1.2.5 Biomass and other Renewable Sources of Energy

Renewable energy resources include biomass in terms of wood-fuels (fuel-wood and charcoal), agricultural residues and animal waste; solar; wind; small hydropower; geothermal; bio-fuels etc.

(i) Biomass

Most of the COMESA member States, rely heavily on the consumption of biomass, which is a traditional energy, because the percentage of population under poverty line in the region is high and the majority of whom are living in rural areas where biomass is accessible; the region's modern energy resources and their infrastructure such as electricity grids and pipelines are underdeveloped; and the low level of industrialization in most of member States of the region.

Advantages of the heavy reliance on the consumption of biomass include that, biomass is a renewable source of energy if it is well managed; and in fact, the use of wood-fuels had enabled most COMESA member States to save some million of US dollars that could have been used to import kerosene, gas and electricity to meet their energy demand.

One of the disadvantages is that, the consumption of wood-fuels could essentially contribute in the depletion of forest resources, which, in turn, has a negative environmental impact in terms of accelerating climate change, threatening biodiversity and increasing erosion. Moreover, it is very difficult to generate surplus output when using biomass energy. In addition, it has been argued that the smoke generated in the use of fuel-wood has negative health impact on women and children. And the efficiency of the end use of non-commercial fuel is very low.

However, supply of biomass could be increased by increasing the productivity of the existing forest resources, establishing new forests and encouraging the alternatives like solar energy by increasing their supply, in addition to improving the technology and raising the efficiency of wood-fuels production and consumption.

(ii) Solar

The COMESA region has a great potential of solar energy and the demand for it is expected to grow as its cost is decreasing and its technology is becoming available and proven for some COMESA member States, as well as the percentage of population that has access to electricity in most COMESA member States is low. Solar would help accelerate electrification of rural areas and semi-urban areas as long as barriers to secure PV marketing penetration are removed.

(iii) Wind

There are ideal meteorological conditions in many COMESA member States for the application of windmill technology. For instance, Egypt and Kenya produce electricity from wind, (1 % of Egypt's electricity consumption is from wind).

(iv) Small Hydropower

The COMESA region has numerous pico, micro, mini and small hydropower sites which can be developed to supply isolated areas or feed into the national grid.

(v) Geothermal

There is considerable geothermal potential in the COMESA region particularly in the rift valley countries such as Djibouti, Eritrea, Ethiopia, Kenya, Rwanda and Uganda. Two COMESA member States namely, Kenya and Ethiopia are generating electricity from geothermal. In 2004, about 10 % of Kenya's installed electric power capacity was geothermal.

(vi) Bio-fuels

The COMESA region has a potential for producing bio-fuels such as ethanol from sugar cane and bio-diesel from Jatropha but the region has not been able to fully utilize bio-fuels potential. Development of bio-fuels helps create jobs; sustain growth; achieve rural development; promote women and reduce poverty.

(vii) Biogas

There is considerable biogas potential in the COMESA region. Some COMESA member States in particular those in eastern Africa are utilizing biogas for heating and lighting.

(viii) Waste to Energy

The COMESA region has considerable potential of waste which can be used as fuel to produce energy.

1.2.6 Nuclear Energy

Some Uranium deposits have been identified in the COMESA region such as Malawi, Congo DR and Zambia. This can lead to working out a nuclear long-term energy programme for the future and thereby sufficient supply of electricity would be secured. Therefore, prospecting and exploring for uranium are to be promoted because of its strategic importance and potential future economic impact. It is worth mentioning, however, that South Africa is the only African country that produces nuclear energy.

1.3 ENERGY EFFICIENCY AND CONSERVATION

Energy conservation is considered to be one of the measures that improve the efficiency of energy production and energy consumption. Therefore, conservation is a cheap energy resource, available all the time and everywhere and could be developed and implemented in a very short time.

Energy resources are substitutable in secondary and end use stages. Therefore, and due to high energy cost, the substitution phenomenon should serve to optimize the energy mix and enrich the economy.

Energy conservation and efficiency analysis could be dealt with by type of energy such as electric power, petroleum and renewable energy across the major sectors which include transport; industry; households, agriculture and etc. This could also be grouped into secondary stage and end use stage.

1.3.1 Secondary Stage

Secondary stage is that stage where energy will be converted, transmitted, and distributed. This stage is accounted for by high level of losses involved in conversion, transmission and distribution of energy. There are many cases which illustrate this.

For instance, the whole electricity system losses, due to electricity generation, transmission and distribution, in the COMESA member States, were ranging from 10 % to 29 %. However, there is a need to reduce these commercial and technical losses or inefficiencies through different measures.

Moreover, refineries in some COMESA countries are not operating as efficient as they should be thereby improving the yield of refineries, is of a vital importance to improve the efficiency of petroleum processing.

In addition, the conversion of fire-wood to charcoal is very inefficient, as the yield of charcoal from the amount of fire-wood used would not be that much. This is because of the primitive character of wood-fuels technology. Therefore, this area is considered to be one of the areas that need more improvement through improving the wood-fuels technology

1.3.2 End Use

End use of energy covers every activity, productive and non-productive. Efficiency of end use is very low in many COMESA member States due to lack of awareness; arbitrary choice of technology; lack of energy conservation; lack of energy measuring devices; lack of regulations and standards governing the efficient use of energy; and lack of economic incentives and penalties to take conservation measures.

And the above means that the region suffers from energy intensity, i.e., it uses more energy to produce each dollar of income.

In many COMESA member States, most households use inefficient incandescent lamps and they could conserve electricity if they use energy saver bulbs. And sometimes they do not conserve electricity due to electricity usage pattern.

The transport sector is the main consumer of petroleum products in many COMESA countries, thereby, lack of mass transport systems, poor mechanical conditions of vehicles and bad roads are some of the major factors affecting efficiency in the transport sector, in many COMESA countries. Therefore, encouragement of efficient use of petroleum in transport sector is one of measures that would be pursued to realize energy conservation.

Biomass in terms of wood-fuels (fuel-wood and charcoal), which represents the bulk of domestic fuel in many COMESA member States, is burnt in inefficient traditional stoves, leading to a huge amount of losses. Therefore, appropriate measures to mitigate this situation include demand management and conservation through improving of stoves (design and dissemination) and education campaign; and encouraging the use of the alternatives through increasing their supply such as kerosene and gas.

CHAPTER TWO: KEY ISSUES IN THE ENERGY SECTOR

Development of relevant policies for the energy sector mandates that, the key issues that affect the supply and demand of energy in most COMESA member States be delineated.

2.1 BROAD ISSUES OF THE ENERGY SECTOR

Broad issues of the energy sector in many COMESA member States include the following:

(i) inadequate co-ordination and information sharing between/oramong the various projects, government bodies, the private sector and civil society organizations;

(ii) lack of investment;

(iii) inadequate energy planning information system (energy supply and demand analysis);

(iv) the absence of a multi-sectoral institutional structure for providing rural areas and also peri-urban areas with energy services;

(v) lower rate of access to modern energy;

(vi) inadequate financial resources to plan for and monitor the energy sector and carry out appropriate research and development (R&D);

(vii) lack for appropriate curricula in energy studies at many institutions of higher learning;

(viii) energy is given low priority among the sectors of focus as compared to some other sectors;

(ix) gender mainstreaming;

(ix) environment considerations;

(x) lack of human resource capacity; and

(xi) lack of appropriate plans to generate needed capacity to meet the demand in appropriate time.

2.2 ISSUES OF ENERGY SUB-SECTORS

In this part the key issues of energy would be dealt with, across the various energy sub-sectors which include the following:

- Electric Power;
- Fossil Fuels; and
- Biomass and other Renewable Sources of Energy.

2.2.1 Electric Power Sub-sector

The electric power sub-sector issues in many COMESA member States include the following:

(i) insufficient investment to develop electricity generation, transmission and distribution projects including the interconnection projects among COMESA member States that can facilitate and enhance the energy trade;

(ii) large technical and non-technical electricity losses;

(iii) inadequate maintenance;

(iv) high costs of supply due to the past insufficient investment in power generation, transmission and distribution and sometimes coupled with a very low operational efficiency and lack of financial planning;

(v) lack of cost reflective tariffs;

(vi) lower electricity coverage (access to electricity), in particular, the rural areas;

(viii) low quality of electricity supply and customer service;

(viii) inefficient commercial operations in terms of lack of an accurate customer database, inadequate systems and controls for meter reading and high accounts receivable; and

(ix) an electricity sub-sector that needs to be restructured and reformed.

2.2.2 Fossil Fuels Sub-sector

The fossil fuels sub-sector issues in many COMESA member States include the following:

(i) insufficient investment for upstream and downstream industries;

(ii) the evolution of prices, in particular, oil prices on the international market impacts negatively on the balance of payments of oil-importing COMESA member States and renders the cost of energy supply unbearable;

(iii) high transport costs due to insufficient transport facilities by pipeline, rail and river;

(iv) low storage capacity compared to requirements;

(v) high margins by fossil fuels companies;

(vi) regulatory issues to regulate the fossil fuels supply industry, for more competition and transparency; and

(vii) inadequate quality control of the fossil fuels products, posing an increasing hazard to public health and the environment.

2.2.3 Biomass and other Renewable Sources of Energy Sub-sector

Issues of Biomass and other renewable sources of energy sub-sector in many COMESA member States include the following:

(i) inefficient production and use of wood-fuels resulting in the depletion of forest resources, which, in turn, has an adverse environmental impact in terms of accelerating climate change, threatening biodiversity and increasing erosion and also has an adverse impact on the health of wood-fuels users, especially in rural households;

(ii) low public awareness about the efficacy and potency of renewable energy technologies (RETs), even if people are aware of RETs, their real potential and technical limits and constraints are generally underestimated;

(iii) little production of equipments and components and underdeveloped markets in RETs equipments and services because of high initial investment cost and lack of financial capacity to cover the initial investment;

(iv) lack of mechanisms to monitor standards and ensure quality control of RETs: the poor quality of some technologies available on the market reduces their lifetime and damages the image of RETs;

(v) inadequate financing mechanisms due to lack of price incentives, physical incentives and other incentives to facilitate investment, communication, promotion and dissemination of RETs;

(vi) inadequate data available on the potential of indigenous renewable energy sources(geothermal, solar, wind, mini and micro hydro, etc)

(vii) shortage of local actors capable of carrying projects financially, technically, and in terms of management; and

(viii) institutional, policy, fiscal and regulatory barriers.

2.3 ENERGY EFFICIENCY AND CONSERVATION ISSUES

Energy efficiency and conservation issues include those generic issues for the major sectors which include transport; industry; households agriculture, etc, and they also include those of sector specific, either in secondary stage or end use stage.

Accordingly, energy efficiency and conservation issues in many COMESA member States include the following:

(i) low level of awareness among energy end users about energy conservation practices, options and benefits and insufficient information about improved energy technologies;

(ii) insufficient incentives, including financing mechanisms to invest in modern efficient technologies and practices and to introduce fuel / technology substitution, e.g., LPG, kerosene, solar, more efficient fuel technology, etc, for wood-fuels;

(iii) lack of penalties to discourage extravagance energy use and damaging energy resources;

(iv) dominance of energy-inefficient technologies, including wood-fuels stoves; lights and other appliances;

(v) poor maintenance culture and sometimes bad infrastructure (roads); and

(vi) inadequate mass transit system, resulting in increased traffic congestion during peak hours and energy consumption per passenger.

CHAPTER THREE: ENERGY POLICY GOAL AND OBJECTIVES

The key issues, in the energy sector, that have been identified and delineated in chapter two, cover a wide range of challenges, mainly of socio- economic, technical and environmental nature. Therefore, all governments need to formulate an energy policy that ensures adequate, quality, cost-effective and affordable supply of energy to achieve a remarkable economic growth and sustain development.

3.1 Main Energy Policy Goal

The main energy policy goal is to meet the energy needs, in an environmentally sustainable manner, through providing an adequate and reliable supply of energy, at least cost, to support: social and economic development and sustainable economic growth and also to improve the quality of life of the people.

3.2 Energy Policy Objectives

The main energy policy objectives of this model energy policy framework include the following:

(i) Improve Effectiveness and Efficiency of the Commercial Energy Supply Industries;

(ii) Improve the Security and Reliability of Energy Supply Systems;

(iii) Increase Access to Affordable and Modern Energy Services as a Contribution to Poverty Reduction;

(iv) Establish the Availability, Potential and Demand of the Various Energy Resources;

(v) Stimulate Economic Development;

(vi) Improve Energy Sector Governance and Administration;

(vii) Manage Environmental, Safety, and Health Impacts of Energy Production and Utilization; and

(viii) Mitigate the Impact of High Energy Prices on Vulnerable Consumers

3.2.1 Improve Effectiveness and Efficiency of the Commercial Energy Supply Industries

Policy instruments required to meet this objective which is meant to undertake major reforms of the commercial energy sector and to improve technical and economic efficiency and effectiveness in service delivery include the following:

(i) fine tune, restructure and reform the energy market through developing quantitative policies (changes in the instruments), qualitative policies (changes in structure within given foundation) and reform policies (changes in foundations);

(ii) promote competition between energy service providers;

(ii) efficiently use all forms of commercial energy to get the most economic value of the energy and minimize the cost through using the most appropriate energy mix;

(iii) pool together energy resources in a coordinated and optimized manner; and

(v) utilize regional co-operation opportunities to reduce energy cost;

3.2.2 Improve the Security and Reliability of Energy Supply Systems

Policy instruments required to meet this objective include the following:

(i) strengthen the stability and reliability of existing energy supply systems through encouraging direct investment;

(ii) increase the supply of energy resources through encouraging direct investment;

(iii) maximize development and the utilization of indigenous energy resources through encouraging co-operation;

(iv) support Research and Development (R&D) through developing the necessary scientific and technological infrastructure, institutions and manpower; and

(v) choose an appropriate level of reliability of energy supply;

3.2.3 Increase Access to Affordable and Modern Energy Services as a Contribution to Poverty Reduction

Policy instruments required to meet the above objective include the following:

(i) promote the use of low cost technologies through appropriate fiscal and tariff-based incentives and other appropriate instruments;

(ii) make modern energy services and end-use appliances affordable through reviewing fiscal policies;

(iii) put in place a conducive environment to accelerate rural energy supply and access through applying subsidies exclusively on capital investment, applying light-handed regulation to facilitate investment in rural energy projects, applying price discrimination for different areas or projects to reflect investment and supply costs, and exploring schemes to assist consumers to purchase appliances thereby increasing the speed at which the load of new consumers matures;

(iv) raise the awareness towards the use and conservation of energy through intensifying provision of consumer information, education and technical advice;

(v) establish sustainable financing mechanisms for energy programmers through work with financial institutions; and

(vi) enhance rural development through provision of adequate forms of energy to the rural areas;

3.2.4 Establish the Availability, Potential and Demand of the Various Energy Resources

Policy instruments required to meet the above objective include the following:

(i) develop a long term perspective of the options for demand/supply matching and develop package information on potential projects for investment through preparing a database on all the available energy resources and energy consumption patterns;

(i) acquire the required data on energy and assess and evaluate the energy resources through building the necessary capacity; and

(ii) assess the possibility of increasing the regional generation capacity of electrical energy, including for the long-term, enhanced R & D of nuclear energy.

3.2.5 Stimulate Economic Development

Policy instruments required to meet the above objective include the following:

(i) attract investments in energy services provision through providing appropriate fiscal and tariff-based incentives;

(ii) achieve energy efficiency through encouraging competition within the energy markets;

(iii) ensure energy supply security and reliability through encouraging direct investment;

(iv) promote energy trade within the region through developing energy co-operation between and among the member States; and

(v) manage energy demand to the extent consistent with maintaining sustainable development and sustainable economic growth through pricing based on economic costs and more efficient use of energy;

3.2.6 Improve Energy Sector Governance and Administration

Policy instruments required to meet the above objective include the following:

(i) clarify the roles and functions of the various institutions involved in the energy sector and increase the role of the private sector and civil society organizations through formulating an energy framework law (in form of an energy regulation act) and related sub-sector legislation, including the electricity act, the rural electrification act, the fossils fuels act, the biomass act, and the other renewable energy services act, to provide a legal basis for improved energy sector governance;

(ii) create a transparent legal and regulatory framework for the sector through establishing energy regulator(s) to regulate energy supply industries;

(iii) better formulate and implement energy policies and programme through building the capacity;

(iv) provide even-handed and predictable regulation through building the capacity of regulator(s);

(v) retain local human resource for the energy sector through developing incentives;

(vi) improve the operational efficiency and effectiveness of all energy institutions through making adequate budgetary provisions; and

(vii) new policies for energy sector be formulated through involving all stakeholders.

3.2.7 Manage Environmental, Safety, and Health Impacts of Energy Production and Utilization

Policy instruments required to meet the above objective include the following:

(i) stick to environmental consideration through subjecting all projects to stringent Environmental Impact Assessment (EIA);

(ii) inform energy producers and users about the environmental, safety and health issues associated with various energy production and utilization systems through undertaking public awareness campaign;

(iii) promote environmentally benign energy technologies including renewable energy technologies (RETs), unleaded petrol, clean coal, etc, through developing a combination of subsidies, tax breaks, and other fiscal incentives as appropriate;

(iv) promote efficient utilization of energy resources and promote energy conservation in all sectors through providing technical assistance, information services, tax breaks, tax rebates, and other incentives;

(v) reduce energy-related emissions that are harmful to the environment and energy users through working towards the establishment and acceptance of broad targets; and

(vi) adopt integrated energy planning.

3.2.8 Mitigate the Impact of High Energy Prices on Vulnerable Consumers

Policy instruments required to meet the above objective include the following:

(i) formulate subsidy mechanisms to give direct subsidy to the end consumers (not through the suppliers);

(ii) choose appropriate mechanism based on the socio-economic impact assessment of each country (subsidy fund, social safety net, etc.); and

(iii) develop a proper means for monitoring and evaluation of the application of those mechanisms

CHAPTER FOUR: SUPPLY AND DEMAND SIDE ENERGY POLICY OBJECTIVES AND POLICY INSTRUMENTS

It has been established that energy policy means a set of plans, measures, and actions agreed upon by stakeholders to guide, synchronize, and harmonize all structures and practices of provision of energy services and that relate to it. Therefore, energy policy is a necessary condition to achieve a positive change in energy systems, i.e. to meet the energy needs of the population for social and economic development in a sustainable manner.

4.1 SUPPLY SIDE

Energy policy objectives and policy instruments of supply side include electric power sub-sector; fossil fuels sub-sector; and biomass and other renewable sources of energy sub-sector.

4.1.1 Electric Power Sub-sector

The overall policy objective of electric power sub-sector is to strengthen, expand and make efficient power supply in order to enable the provision of adequate, quality, cost-effective and affordable supply of electric power to achieve a remarkable economic growth and sustain development.

Specific policy objectives of electric power sub-sector include the following:

(i) to make the electric power sub-sector financially self-reliant and self sustaining through innovation using available infrastructure;

(ii) to improve technical, commercial and financial efficiency of the sub-sector;

(iii) to enhance consumer service level;

(iv) to ensure reliability and quality of supply levels;

(v) to meet the growing demand for electricity;

(vi) to attract private capital and entrepreneurs;

(vii) to integrate environmental impact assessment in all electricity supply projects; and

(viii) to diversify energy generation sources and promotes regional interconnection infrastructure development.

Policy instruments required to meet the above objectives include the following:

(i) expand the existing system through attracting investment by creating incentives and encouraging private sector participation;

(ii) liberalize the electric power sub-sector through opening up for independent power producers;

(iii) achieve financial efficiency through reflecting the actual cost (utility commercialization)

(iv) improve operational efficiency through implementing the power sector reform strategy which includes unbundling, i.e., restructuring from a vertical integrated utilities into separate generation; transmission and distribution;

(v) provide even-handed and predictable electricity sector regulation through building the capacity of regulators;

(vi) expedite the rate of electrification in the rural areas through synergizing the efforts of all stakeholders which include governments, co-operating partners, civil society organizations, and private sector regarding funds, technical expertise, best practices, etc;

(vii) reduce the whole electricity losses through rehabilitation, enforcement and reviewing the metering system;

(viii) promote greater operational and financial efficiency; and

(ix) accelerate the rate of electrification in urban and semi-urban.

4.1.2 Fossil Fuels Sub-sector

Regarding the upstream, the policy objective is to establish the potential of fossil fuels and to promote their potential.

On the downstream side, the policy objective is to ensure an adequate, reliable and affordable supply of quality petroleum products, gas and coal for all sectors of the economy at internationally competitive and fair prices within appropriate health safety and environmental standards.

Generic policy instruments required to meet the above objectives include the following:

(i) attract more investors in both the upstream and the downstream sub-sectors through creating conducive investment conditions; and

(ii) reduce environmental hazards in all fossil fuels operations through developing a mitigation plan.

Policy instruments required to meet the above objectives as they pertain to the upstream sub-sector include the following:

(i) assess the fossil fuels potential through facilitating the acquisition of geological and geophysical data;

(ii) promote investment in fossil fuels exploration and production through packaging and disseminating exploration data;

(iii) maintain an efficient fossil fuels institutions to monitor and regulate exploration and development through building their capacity; and

(iv) encourage the production of bio-fuels such as bio-diesel, ethanol, etc, through increasing support for R&D including capacity building for technology transfer, support property rights and innovations and through providing incentives to investors , .

Policy instruments required to meet the above objectives as they pertain to the downstream sub-sector include the following:

(i) ensure security of supply through keeping appropriate levels of strategic stocks and attracting investment in fossil fuels infrastructure;

(ii) improve transportation and storage of fossil fuels products through promoting the development of infrastructure;

(iii) strengthen the fossil fuels sub-sector though establishing an appropriate institutional framework;

(iv) create a transparent legal and regulatory framework for the sector through establishing and / or strengthening energy regulator(s) to regulate fossil fuels supply industries;

(v) establish an open and competitive fossil fuels market through liberalizing the sub-sector;

(vi) comply to international practices through adopting and adapting to international standards and codes of practices;

(vii) promote security of supply at stable prices; and

(viii) promote efficient use of fossil fuels in the transportation and electricity sectors.

4.1.3 Biomass and other Renewable Sources of Energy Sub-sector

Biomass includes wood-fuels (fuel-wood and charcoal), agricultural residues and animal waste, while other renewable sources of energy include solar; wind; small (mini and micro) hydropower; geothermal; bio-fuels etc.

- **Biomass**

The policy objective is to ensure sufficient and sustainable supplies of biomass to meet the demand while minimizing to a very far extent the environmental impacts associated with biomass industry.

Policy instruments required to meet the above objective include the following:

(i) increase the productivity of the existing biomass resources through efficiently utilizing them, particular, raising the efficiency of charcoal production, while protecting and rehabilitating them;

(ii) establish new forests through promoting establishment of commercial woodlots including peri-urban plantation and through planting fast maturing trees for energy production;

(iii) encourage the production of the huge agricultural residues such as groundnut shells, cotton stalks, agro-industrial residue in terms of bagasse, etc.

(iv) promote the efficient conversion and use of wood-fuels;

(v) co-ordinate, promote and implement economically viable projects to alleviate wood-fuel supply problems; and

(vi) promote the development and use of bio-fuels in a sustainable manner that does not compromise food production in the region.

- **Other Renewable Sources of Energy**

The policy objectives of other **r**enewable sources of energy include the following:

(i) to increase the contribution of other renewable sources of energy in the energy balance;

(ii) to utilize other renewable sources of energy for income and employment generation; and

(iii) to develop the use of other renewable sources of energy for both small and large-scale applications

Policy instruments required to meet the above objectives include the following:

(i) package and disseminate information on renewable systems to create investors awareness on economic potential offered by these alternative sources of energy through establishing community based pilot projects where feasible to promote acceptance and establishing renewable energy promotion centers with demonstration exhibitions and extension training programmes;

(ii) develop education, demonstration and extension of renewable energy through integrating renewable energy studies into curricula of educational institutions, especially technical vocational centers;

(iii) strengthen the institutions dealing with renewable energy through building their capacity and raising their outreach;

(iv) encourage multidisciplinary and cross-institutional co-operation among public, private, NGOs and other institutions through facilitating co-ordination;

(v) encourage the production of cost effective renewable energy technologies through promoting R&D;

(vi) facilitate trade in renewable energy technologies through developing standard specification system;

(vii) promote the use of renewable energy technologies through providing quantitative and pricing policies;

(viii) encourage the local manufacturing of renewable energy technologies through establishing renewable energy credit facilities programmes and establishing sales promotion funds for manufacturers, in addition to promoting development of appropriate local capacity for installation, maintenance and operation of basic renewable energy technologies;

(ix) encourage financial institution to provide credit facilities for renewable energy through providing them with fiscal incentives;

(x) make the environment conducive for engineers, technicians and other professionals involved in renewable energy activities through securing attractive wages and salaries;

(xi) develop an economic use for renewable energy resources through economic application; and

(xii) utilize renewable energy resources to contribute to rural development.

4.2 DEMAND SIDE

Major sectors that consume energy include households; transport; industry and commerce; agriculture; etc.

4.2.1 Household Sector

The overall policy objective for households is to provide adequate, quality, cost-effective and affordable supply of energy to improve the social welfare of the people and sustain development, in particular, rural population.

Specific policy objectives of households include the following:

(i) to achieve a sustainable level of energy security, in particular, for low income households in order to reduce poverty at household level;

(ii) to improve the efficiency in the use of energy, in particular, biomass this will remain a dominant source of energy, especially in the rural areas, for the foreseeable future;

(iii) to specifically target provision of energy to productive activities such as home- based industries in order to directly raise household incomes; and

(iv) to sensitize women on energy source and technology choices so as to reduce the labour and health burdens associated with biomass energy use.

Policy instruments to be pursued to meet the above objectives include the following:

(i) enhance poverty reduction programmes through attaching high priority to household energy services and pricing;

(ii) provide the population, in particular, poor with all basic needs while recognizing energy as one of these basic needs;

(iii) ensure that household energy policy, programmes and projects are linked more closely to other sectors through recognizing the importance of this configuration;

(iv) make modern energy more easily accessible to households, in particular, rural areas through creating incentives;

(v) adopt energy demand management and energy efficiency through improving the technology of end use;

(vi) safeguard household interest by enforcing standards and codes of practice;

(vii) use effectively and efficiently the energy mix to improve the quality of household energy and mitigate demand on wood-fuels through promoting inter-fuel substitution, i.e., promoting wider use of both kerosene and LPG; and

(viii) develop a comprehensive household energy plan through adequately addressing issues related to shortages and inefficient use of modern energy service and biomass.

4.2.2 Transport Sector

The overall policy objective for transport is to promote efficient use of energy and energy substitution.

Specific policy objectives of transport include the following:

(i) to develop a more energy efficient transport system; and

(ii) to reduce environmental pollution and associated health problems.

Policy instruments to be pursued to meet the above objectives include the following:

(i) encourage the use of fuel efficient vehicles through providing incentives and enforcing legislations;

(ii) divert the traffic to energy saving transport systems such as railways and water transport, and the use of buses and urban mass transport through formulating fiscal and transport policies encouraging the use of these energy saving transport systems;

(iii) promote the development and use of alternative fuels such as ethanol bio-diesel, etc, through conducting intensive research;

(iv) control pollution through using environmentally friendly fossil fuels such as unleaded gasoline, low sulphur diesel, etc;

(v) adopt engine tune up instruments programmes for vehicles;

(vi) adopt proper mechanisms to phase out inefficiency vehicles;

(vii) encourage congestion price; and

(viii) encourage decentralization of economic activities.

4.2.3 Industrial and Commerce Sector

The policy objective for industry and commerce sector is to introduce energy efficiency measures for the sector and to take into account the acknowledged potential for improvements that can result in both financial and environmental benefits, thus, making the sector more competitive and also to take into account issues of improving industrial growth.

Policy instruments to be pursued to meet the above objective include the following:

(i) promote the use of cleaner fuels through enforcing environmental performance auditing and promoting the internalization of environmental cost;

(ii) promote the efficient use of energy through developing financial incentives/penalties for energy efficiency, e.g., the introduction of different demand side management measurements;

(iii) encourage the adoption of more efficient energy end-use technologies through providing incentives and training; and

(iv) encourage the establishment and operation of energy saving services.

4.2.4 Agricultural Sector

The policy objective is to increase the use of modern energy in agriculture in order to increase the production and productivity of the sector and hence surplus in production would be created which, in turn, would help, among other things, to increase the growth rate of the economies and thereby the sector can contribute to reduce poverty.

Policy instruments to be pursued to meet the above objective include the following:

(i) raise the production and productivity of labour-intensive agriculture through facilitating that labour be much more based on capital which entails that energy services be provided;

(ii) provide farmers, peasants and pastoralists with facilities to finance energy services through approaching banks and other financial institutions; and

(iii) encourage the use of more efficient water systems and water management techniques.

CHAPTER FIVE: CROSS CUTTING ISSUES

5.1 REGULATORY FRAMEWORKS

It has been established that energy regulatory frameworks are these frameworks, which regulate energy supply, in order to ensure that the existing and future energy needs of the population are met in most reliable, efficient, cost effective and sustainable manner for social and economic development. These frameworks shall be embodied in Act(s). And they are part of arrangements needed to reform energy sector. However, establishment of a pro-competitive regulatory framework that will attract additional investment to the energy sector and develop modern energy resources including their infrastructure which are unable to deliver their services to consumers in an affordable cost and a reliable way, would be a necessary condition for the COMESA member States.

The need to create the regulatory environment that will be likely to attract additional investment and regulate competition is recognized as being very crucial for the energy sector. Therefore, it has become a necessary factor to establish an energy regulatory set up which is an autonomous from, the policy maker (Government) and the service provider.

The objectives of the regulator mainly centred on the following:

(i) to promote investment and develop the modern energy resources including their infrastructure;

(ii) to promote competition; and

(iii) to ensure that entry of new players is not inhibited.

Generally the functions of regulator include the following:

(i) rulemaking and enforcement;

(ii) licensing;

(iii) approving tariffs;

(iv) developing and enforcing performance and safety standards;

(v) arbitrating commercial disputes;

(vi) resolving or mediate consumer complaints against licensees; and

(vii) recommending reforms to the Energy Laws.

One of the first and eventually basic elements that will determine the degree of independence of the regulator is its legitimacy, i.e., the manner in which it is established. Thus, the establishment of regulators should be based on legal instrument.

In theory, there are basically three types of regulatory models, which are prevalent as follows: a unit functioning within a ministerial structure; a semi-autonomous set up independent from a ministerial structure and operators but which some how remains answerable to or controlled by the parent minister; and a body, which functions fully independently from the parent ministry and operator in terms of its decision-makings, composition, funding, etc.

The type of regulatory set up to be established depends greatly upon the specific context of the country and in relation to its stage of development. However, it would be advisable for countries that yet to establish their regulatory set up, to establish that regulator which sends the right signal to the industry.

Guidelines required to address energy regulatory issues include the following:

(i) maintain open and competitive markets are fundamental to achieving an efficient and sustainable energy sector;

(ii) ensure that, well functioning markets are generally the most efficient means of allocation of resources; and

(iii) ensure that, where markets are imperfect, energy prices may not accurately reflect the full social cost and energy suppliers may not choose the most efficient options in such cases, government intervention may be warranted.

5.2 INTEGRATED ENERGY PLANNING

There is a consensus among those who are dealing with energy issues that the principle of integrated energy planning should be followed in order to guide the activities in the energy sector, whose overall objective is to design the economy as it pertains to energy in a sustainable manner taking into consideration socioeconomic, technical and environmental dimension.

Guidelines to be pursued to meet the above objective include the following:

(i) ensure that energy sector provides its affordable services to contribute to sustainable socioeconomic development and poverty reduction and that the role of government should be clearly defined, particularly in areas of social responsibility such as electrification for rural transformation;

(ii) promote coordinated national and regional energy planning;

(iii) facilitate the establishment, maintenance and updates of databases on the energy sector to secure proper decision making in determining least-cost energy supply options;

(iv) raise the awareness toward the understanding that the energy issue is not only a concern of the energy sector but it is rather beyond that, it is a national, sub-regional, regional, continental and international issues;

(v) promote awareness and dedication to change to secure a wide participation as well as co-ordination; and

(vi) ensure that planning is a process not an event and therefore it must be responsive to future changes in conditions;

5.3 ENERGY SECTOR GOVERNANCE

The energy sector in the COMESA member States, like the other sectors, is faced by the impact of powerful drivers such as competition, privatisation, technological advancement, etc. Therefore, the response to these powerful drivers is to adopt reforms in the governance systems and to remove all impediments like the lack of a sound legal foundation, in addition to, appropriate regulatory instruments that encourage and promote fair competition, co-ordination, reporting and liaison.

Thereby, the objectives of the governance of energy sector include improvement of the governance of the sector; and putting in place a sound legal framework for the effective implementation of the reforms.

Guidelines to be pursued to meet the above objective include the following:

(i) review the legal instruments that govern the energy sector so as to incorporate significant changes that have occurred in the economic, social, political and environmental situation;

(ii) provide a legal framework for empowering all bodies dealing with energy to comfortably perform their duties; and

(iii) provide a legal framework for recognizing the benefits that will be accrued from the membership and participation in sub-regional, regional, continental and international cooperation.

5.4 INSTITUTIONAL FRAMEWORK

Management of the energy sector requires efficiently and effectively functioning institutional framework with clearly defined mandates, adequate resources, a trained and accountable staff, and incentives for efficiency in operation. If the above is secured, the energy secured will inevitably contribute to sustainable socioeconomic development.

Based on the above, it is imperative to establish an effective and efficient institutional framework to transparently manage the energy sector taking into account regional energy trade opportunities.

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Guidelines to be pursued to meet the above objective include the following:

(i) provide all bodies dealing with energy with the necessary human and financial resources so that they carry their mandate in a comfortable manner; and

(ii) clearly define the role of each body dealing with energy.

5.5 CAPACITY BUILDING

It is important to build the capacity of those who are working in the energy sector (human resources), by training and other measures, in order to improve their efficiency and effectiveness so that they can diligently perform their responsibilities. This should also be supported by improvement in institutions dealing with energy.

Thus, the objective of capacity building is to develop the skills and knowledge of human resources at all levels for sustainable, effective and efficient energy supply, distribution and utilization.

Guidelines to be pursued to meet the above objective include the following:

(i) facilitate the utilization of available training facilities/ opportunities;

(ii) facilitate the acquisition of technical assistance;

(iii) promote the exchange of staff within the COMESA region and outside the region;

(iv) promote peering programmes;

(v) introduce courses related to the various energy sub-sectors into educational curricula at education levels; and

(vi) strengthen the capacity of all energy sector relevant institutions;

5.6 ENERGY EFFICIENCY AND CONSERVATION

A lot of gains will be accrued through energy efficiency and energy conservation, i.e., to give more attention to the effective and efficient energy use. This entails that energy efficiency and energy conservation should be part of any energy policy.

Therefore the objective is to ensure that energy should be produced, transmitted, distributed and consumed efficiently and energy savings should be made without jeopardizing the desired benefits.

5.6.1 Household Sector

Household sector, in the COMESA region, is one of those sectors that are characterized by high energy consumption in form of biomass. Therefore, energy efficiency and conservation would definitely bring about huge energy gains.

Measures required to improve energy efficiency in household sector include the following:

(i) promote energy efficiency awareness which includes intensifying civic education, the use and pricing of different energy services, etc;

(ii) promote the introduction of a domestic appliance efficiency labeling through legislation; and

(iii) promote the use of energy efficient appliances and fuel efficient cooking technologies in rural areas through support of market priming activities.

5.6.2 Transport Sector

Transport sector, in the COMESA region, consumes the bulk of petroleum fuels. And this offers greater opportunities for achieving savings on petroleum fuels through energy efficiency and conservation and through fuel substitution.

Measures required to improve energy efficiency in transport sector include the following:

(i) provide advice on the efficiency of alternative modes of transport and provide assistance in the formulation of fiscal and transportation policies to promote energy conservation and efficiency;

(ii) manage demand of petroleum fuels through fiscal policies (taxation);

(iii) develop and enforce standards for efficiency of motor vehicle engines;

(iv) enforce speed limits so as to achieve savings in petroleum fuels; and

(v) raise awareness on opportunities to conserve fuel, i.e., by adopting good driving and maintenance practices.

5.6.3 Industrial and Commerce Sector

Measures required improving energy efficiency in industrial and commerce sector include the following:

(i) promote the performance of energy audits, demonstrations, information dissemination, sectoral analysis and training programs;

(ii) promote energy efficiency awareness among industrial and commercial energy consumers and encourage the use of energy efficient practices;

(iii) establish energy efficiency norms and standards for industrial and commercial equipment; and

(iv) undertake demonstration projects to show the benefits from investment in energy efficiency and conservation.

5.7 ENERGY PRICING

Energy pricing, in the COMESA region, differs from country to country. And also different market structures apply different pricing principles.

Therefore, the objectives of energy pricing include the following:

(i) to ensure that the pricing of energy services is based on principles that allow the investor to fully recover costs, earn an appropriate return on investment and encourage technical and economic efficiency; and

(ii) to pursue a policy of uniform energy pricing countrywide, whenever appropriate, as an affirmative action, in order to apply social and economic justice principles and to reduce imbalances among their different parts.

Measures to be pursued to achieve the above objectives include the following:

(i) determine energy prices through market mechanism where the market structure permits and to establish mitigation measures for energy subsidy to vulnerable users;

(ii) regulate energy prices where it is necessary to regulate because of the nature of the energy services;

(ii) reflect the cost of electricity supply when determining tariffs;

(iv) determine fossil fuels prices through market mechanism;

(v) determine biomass prices through market mechanism;

(vi) reflect full financial cost recovery of supplying the services of other renewable energy sources, while removing all import duties and taxes; and

(vii) establish a stabilizing fund to cushion against the impact of high oil prices and other eventualities.

5.8 RESEARCH DEVELOPMENT

Overcoming of long term energy problems of the COMESA region requires applying new technologies to the exploitation and consumption of new and indigenous energy resources. To realize this feature, it is important, as the first step, to strengthen research and development (R&D) efforts. This entails developing the necessary scientific and technological infrastructure, institutions and manpower.

Therefore, the objective is to establish, strengthen and consolidate the basis for research and development (R&D) programme for energy resources and technology.

Guidelines to be pursued to meet the above objectives include the following:

(i) develop and adopt new technologies, especially those applied to new and renewable energy sources;

(ii) adapt proven technologies to local manufacture;

(iii) develop the capability to solve technical problems encountered in all energy-related development projects;

(iv) adapt appropriate simple technologies suitable for rural applications;

(v) improve co-ordination and reporting mechanisms on energy research activities and results; and

(vi) identify budgetary requirements for research and development (R&D) in the energy sector.

5.9 REGIONAL AND INTERNATIONAL CO-OPERATION

The need to co-operate and collaborate between and among the States is borne out of the fact that, individually each State is relatively small to the extent that it cannot take advantage and / or exploit scale economies that is associated with size. However, when countries act jointly and severally they can realize economies of scale and attain sustainable growth and development by promoting a more balanced and harmonious development of their production and marketing structures.

Therefore, the objective of regional and international co-operation is to enhance energy reliability and to reduce energy costs for the COMESA region which, in turn, would enhance regional and international competitiveness of export products.

Guidelines to be pursued to meet the above objective include the following:

(i) develop energy sector co-operation frameworks and protocols with regional government and international bodies like establishment of regional association for energy regulators;

(ii) promote and pursue strategies that encourage regional and international trade in energy; and

(iii) attract investment and facilitate exchange of information and data.

5.10 ENVIRONMENT

Experience has shown that, the energy sector has bigger environmental impacts compared to other sectors of the economy. Thus, energy investments are nowadays subject to greater environmental scrutiny than ever before. In addition, more attention should be given to efficiency in energy production, transmission, distribution and consumption; and to reliance on environmentally benign energy systems, particularly renewable sources of energy to reduce emissions.

Thereby, the objective is to promote the efficient use of energy resources with minimal adverse effects on the environment and climate change.

Guidelines to be pursued to meet the above objective include the following:

(i) comply with global, regional and national environmental initiatives;

(ii) subject energy investment and energy projects to greater environmental scrutiny;

(iii) encourage and promote the use of more efficient energy systems to reduce emissions;

(iv) encourage the use of renewable energy technologies; and

(v) promote the use of unleaded petrol.

5.11 GENDER

Energy sector should address gender issues as they pertain to energy policy, planning, programming, etc. This stems from the fact that, gender dimension has become a key ingredient of development policy and programming, because men and women play different roles in society and have different needs, perspectives and responsibilities.

Thus, the objective is to ensure that gender issues are mainstreamed in energy policy, energy planning and implementation of energy programmes and projects.

Guidelines to be pursued to meet the above objective include the following:

(i) ensure participation of all groups of citizens in all energy sector activities (gender mainstreaming);

(ii) tap, develop and promote energy resources so that they are made available for all groups of citizens at affordable cost (gender mainstreaming);

(iii) ensure energy provision, to disadvantaged groups, be gender sensitive and contribute towards sustainable development;

(iv) publish gender disaggregated data; and

(v) offer equal employment opportunities to both men and women to work in energy sector.

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