

COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA

EFFECTIVE REGULATORY REGIMES AS A REQUIREMENT FOR RENEWABLE ENERGY DEVELOPMENT

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1 Introduction

The main objective of the effective regulatory regimes guideline is to provide COMESA Member States with harmonized guidelines that would facilitate regulatory regimes harmonization in the COMESA region in efforts to ensure that private sectors investor are more-or-less faced with similar regulatory regimes in the COMESA region.

Effectiveness is a comprehensive approach consisting of three factors, namely, the potential of the regulatory regime to:

i. overcome barriers for renewable sources;
ii. promote sustainable development; and,
iii. lead to political action beyond the projects in the host country.

There is a wide range of policies that have been developed throughout the world to promote renewable energy (RE). Experience with RE energy policies is still emerging and more experience is needed to understand the impact of some of the policies and approaches that have developed. Thus, many policies may still be considered experimental in nature. This guidelines focuses on the policies that have had a higher degree of success in other parts of the world and could be practically be adopted within the COMESA region. The guidelines raise the main issues that have to be considered when designing an effective regulatory regime that will lead to the development of renewable energy facilities.

2 Design Issues for Regulatory Support Mechanisms

Many renewable energy technologies are relatively new, and still developing. Although costs of some technologies (especially wind) have fallen dramatically, they still need financial support to compete with established, conventional generation in most situations. This problem is exacerbated by the fact that there is not a "level playing field" in the treatment of conventional and renewable energy technologies. This inequality notably includes the failure to take account of the costs of risks (higher oil prices and drought-related hydropower crises) associated with conventional generating technologies when costing generation. Conventional generators benefit from the failure to take these risks into account.

The key regulatory risks experienced by investors are:

KEY REGULATORY RISKS FACED BY INVESTORS	RISK MITIGATION OPTIONS
Weak, inadequate and not independent regulatory frameworks.	It is widely admitted that the following conditions ensure independence: a) Legislation prevents arbitrary dismissal of regulators; b) Regulators are appointed mainly on the basis of professional competence and integrity; c) The Parliament or for example the Council of Ministers is somehow involved in the

KEY REGULATORY RISKS FACED BY INVESTORS	RISK MITIGATION OPTIONS
	appointment procedure; d) During mandate, the regulators enjoy functional independence; e) The regulatory authority is entitled to adopt their own personnel policy, management rules, ensuring competitive salaries; f) The regulatory authority also enjoys budgetary independence from government budget and is endowed with sufficient funding to hire personnel of high professional skills and access to information and expertise; g) Rules prevents a regulator from having actual or potential personal interests in the regulated industry or in politics.
Right of government to override regulatory decisions.	Regulators are be expected to be an arm of Government policy, which inevitably brings them into the political arena. The role of Regulator is making economic (& technical) regulation, taking into consideration government policy. If government override regulators' decisions in economic regulation decisions, this inevitable makes it uncomfortable for the regulators to make independent decisions. In turn, the private sector will have no confidence on the ability of the economic regulator to make decisions based on their regulatory methodologies – particularly of tariffs and pricing.
Lack of clarity about power of the Regulator.	The responsibilities of the Regulator must be clearly stated in the Law Establishing the Regulator. The supporting Regulations by Government, if provided for, must elaborate on powers that are clear and not ambiguous in the founding Legislation.
Regulator without necessary minimum skills, capacity and competence.	This is a common problem in Africa because Independent Regulation is new and local universities and other training institutions do not offer most of the critical courses for economic regulators. Thus, the regulator should provide for training and continuous education. Also, the salaries of the Regulator must be comparable to the regulated entity to minimize turnover. If the Regulator relies of government subvention, its often difficult to match the regulated entity due to budgetary constraints.
Unpredictable and unilateral regulatory decisions undermining project and investment returns.	The Regulator must have a published methodology and public hearing process on all key decisions they make. This must be available in the website and should not be subject to arbitrary change and must be a product of extensive open public consultation. All decisions must be based on the publish tariff making methodology. The parameters used must be open to expert scrutiny.
Playing field tilted in favour of dominant industry player (most often a state owned enterprise).	The energy policy determines if the long-term objective is to open the investment to the private sector. Methods to facilitate the participation of the private sector has to be taken by the Regulator, taking a long-term view on how to introduce interim cross subsidy. This should be based in the long-term need to introduce new and more expensive power to provide for future energy requirements and replacement of ageing infrastructure. In the economic regulation, there must be a concept of transfer pricing. Thus, the existing utility must ring-fence the cost of new generation and this must be compared with private sector cost of new generation by the regulator. Also, competitive bidding (see 3.1.3) could be used in chosing new generation capacity providers.

The important factors for Policymakers and Regulators to take into account when evaluating different regulatory support mechanisms are as follows:

i. Will these costs be spread fairly across business, individual consumers and government?
ii. Whether the mechanism is an effective means of meeting any target set for renewable energy generation.
iii. Whether the mechanism will encourage new renewable energy plants, or whether it just encourages the installation of new capacity.
iv. How will the mechanism interact with other energy policy measures such as R&D programmes or investment support schemes (where such programmes/schemes exist)?
v. Will the mechanism encourage reducing prices for new technologies over time, through reducing or compensating for market failures or through technological development?
vi. Will it be sufficiently flexible to take technological developments and reducing costs into account in the future, so avoiding the potential for developers to make windfall profits?
vii. Will it offer the potential for commercial or technical opportunities, for example, the development of a domestic manufacturing industry?
viii. Whether it will encourage a range of renewable energy technologies, or whether it will concentrate only on one.
ix. Whether it will encourage new entry into electricity generation.
x. Whether the scheme will be transparent for all users.
xi. Whether it will allow exports/imports of power.

3 Renewable Energy Promotion Policies

3.1 Price Setting Policies and Quantity Forcing Policies

Price setting policies establish favourable pricing regimes for renewable energy relative to other sources of power. The quantity of investment obtained under such regimes is often unknown, but the prices are known in advance. Quantity setting policies do the opposite; they mandate a certain percentage or absolute quantity of generation to be supplied from renewable energy at unspecified prices. The most common price setting regime is feed-in-tariffs and the two quantity setting policies are renewable portfolio standards and competitive bid renewable resource obligations.

There is a dedicated climate change program based in Mauritius.

http://www.comesa.int/index.php?option=com_content&view=article&id=66:comesa-eac-sadc-strategize-on-climate-change-programme-implementation&catid=5:latest-news& .

3.1.1 Feed-in-Tariffs

Feed-in Tariff s (FITs) aim to support the market development of renewable energy technologies, specifically for electricity generation. FITs put a legal obligation on utilities and energy companies to purchase electricity from renewable energy producers at a favorable price per unit, and this price is

usually guaranteed over a certain time period. The most effective schemes are guaranteed for a period of around 20 years.

Tariff rates are usually determined for each renewable technology in order to take account of their differing generation costs, and to ensure profitability. Therefore, the FIT rate set by a particular government for solar, wind or geothermal generated electricity may vary depending on the costs associated with each of these technologies.

The guaranteed access to the grid, favorable rate per unit and the tariff term guarantee, mean that FITs make the installation of renewable energy systems a worthwhile and secure investment for the producers, manufacturers, investors and suppliers.

The extra cost of the favorable tariff rate is usually passed on from suppliers to consumers, and shared among all energy consumers by way of a premium on the per-kWh end user-price. The result of financing FIT by spreading the cost between all end-users in this way is that the increase in price per household is very small.

3.1.2 Renewable Portfolio Standards

A Renewable Portfolio Standard (RPS) is a regulation that requires the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal. Other common names for the same concept include Renewable Electricity Standard (RES) at the United States federal level and Renewables Obligation in the United Kingdom.

The RPS mechanism generally places an obligation on electricity supply companies to produce a specified fraction of their electricity from renewable energy sources. Certified renewable energy generators earn certificates for every unit of electricity they produce and can sell these along with their electricity to supply companies. Supply companies then pass the certificates to some form of regulatory body to demonstrate their compliance with their regulatory obligations. Because it is a market mandate, the RPS relies almost entirely on the private market for its implementation. Unlike feed-in tariffs which guarantee purchase of all renewable energy regardless of cost, RPS programs tend to allow more price competition between different types of renewable energy, but can be limited in competition through eligibility and multipliers for RPS programs. Those supporting the adoption of RPS mechanisms claim that market implementation will result in competition, efficiency and innovation that will deliver renewable energy at the lowest possible cost, allowing renewable energy to compete with cheaper fossil fuel energy sources.

RPS type mechanisms have been adopted in several countries, including Britain, Italy, Poland, Sweden, Belgium, and Chile, as well as in 37 (30 compulsory and 7 are voluntary) of 50 USA States, and the District of Columbia. Regulations vary from State to State, and there is no federal policy. Some States also set targets for specific types of renewable energy sources or technologies to encourage their development and use. Many State RPS programs have "escape clauses" if the extra cost of renewable generation exceeds a specified threshold.

RPS mechanisms have tended to be most successful in stimulating new renewable energy capacity in the United States where they have been used in combination with federal Production Tax Credits (PTC). In periods, where PTC have been withdrawn the RPS alone has often proven to be insufficient stimulus to incentivise large volumes of capacity.

A separate Guideline is required for RPS that will go deeper into this form of regulation.

3.1.3 Competitive Bidding

Competitive bidding renewable resource obligations are also known as “demand auctions” or “procurement auctions”, whereby the government issues a call for tenders to install a certain capacity of renewable energy based electricity. Project developers who participate in the auction submit a bid with a price per unit of electricity at which they are able to realise the project. The government evaluates the offers on the basis of the price and other criteria and signs a power purchasing agreement with the successful bidder.

Renewable energy auctions, despite some difficulties in implementation in the past, have become a popular policy tool in recent years. The number of countries that adopted renewable energy auctions increased from 9 in 2009 to at least 44 by early 2013, out of which 30 were developing countries. The renewed interest in auction schemes is driven by their potential to achieve deployment in a cost-efficient and regulated manner. Auction schemes have benefited from the rapidly decreasing costs of renewable energy technologies, the increased number of project developers, their international exposure and know-how, and the considerable policy-design experience acquired over the last decade. When well designed, the price competition inherent to the auction scheme increases cost efficiency and allows price discovery of renewable energy-based electricity, avoiding potential windfall profits and underpayments. While auctions have become very attractive, they only benefit the successful bidders and tend to favour large players that are able to afford the associated administrative and transaction costs.

Based on national energy plans as well as the size and maturity of the renewable energy market, the design of auction schemes will reflect each country’s priorities in terms of technology, volume and location. Technology specific auctions allow for the promotion of certain technologies and diversification of the portfolio. In addition to selecting the technology, auctions can be site-specific. The identification of sites with ideal resources and secured grid connection potentially reduces risks to investors. Technology neutral auctions have also served to promote renewable energy technologies, which have even been able to compete with fossil fuels on certain occasions. The design of auctions allows governments to include other national priorities, the most common one being local content requirements.

A separate Guideline is required for ‘competitive bidding’ that will go deeper into this form of regulation.

3.2 Cost Reduction Policies

A number of policies are designed to provide incentives for voluntary investment in renewable energy by reducing the cost of such investments. The policies can be characterized as falling in five broad categories:

i. Reduce capital costs up-front (through subsidies or rebates);
ii. Reduce capital costs after purchase (via tax relief);
iii. Offset costs through a stream of payments based on power production (via production of tax credits);
iv. Provide concessionary loans and other financial assistance; and,
v. Reduce capital and installation costs through economies of bulk procurement.

3.2.1 Subsidies and Rebates

Reduction in the initial capital outlay by consumers for renewable energy systems is accomplished through direct subsidies or rebates. The subsidies are used to reduce the initial capital cost of the RE system so that so that the consumer purchases it at a lower price. The majority of programs focus on solar water heating and photovoltaic cells, though some include small wind generators, passive solar, biomass, fuel cells and geothermal heat pumps. Homes and businesses are usually eligible, though some programs target industry and public institutions as well. In some cases, rebate programs are combined with low or no interest rate loans.

3.2.2 Tax Relief

Tax relief policies to promote renewable energy have been employed is the Europe, India, Japan, South Africa and the USA. To stimulate the uptake of Clean Development Mechanism projects in South Africa, income from primary certified emission reductions is exempted from income tax until 31 December 2020, in line with the adoption of the second commitment period of the Kyoto Protocol. To encourage the production of renewable energy and fuel allowance, the tax law provides for an accelerated capital allowance for assets are used for purposes such as the generation of electricity from wind, sunlight, gravitational water forces or biomass.

3.2.3 Grants

Grants are also used to stimulate the uptake of RE, the development of RE energy project as well as capacity building. These maybe government grants or grants offered by Institutions such as the Energy and Environment Partnership, the African Development Bank, the World Bank, the European Union, etc.

3.2.4 Loans

Loan programs offer financing for the purchase of renewable energy equipment. Loans can be market rate, low interest (below market rate) or forgivable. Repayment schedule vary, with terms of up to 10 years common. As RE projects are perceived by commercial banks as a higher risks, interest rates are

about 1% higher than those of conventional energy, so government loans that offer interest below the market rate are common.

4 Public Investments and Market Facilitation

4.1 Public Benefit Funds

Public benefit funds are common in developed countries, mainly in the USA, Canada and Europe. The funds are raised by charging per kWh levy on electric power consumption. In general, the funds serve a variety of purposes, such as paying for the difference between the cost of renewables and traditional generating facilities, reducing the cost of loans for renewable facilities, providing energy efficiency services, funding public education on energy efficiency issues, providing low-income energy assistance and supporting research and development.

In South Africa, the government has set a target for renewable energy to contribute 10 000 GWh of final energy consumption. Solar water heating is expected to contribute up to 23% towards this target. To actively encourage and promote the widespread implementation of solar water heating, the national utility (Eskom) has rolled out a large-scale solar water heating programme. This programme assist consumers when buying an SABS tested solar water heater to replace their conventional geyser by providing a 50% subsidy.

Rwanda has developed a program on solar water heating whereby residences get SHW system installed on their houses at a reduced cost. The client pays only 75% of the total cost, 25% is given as a grant from Nordic Development Fund. The 75% is payable over two years as an interest free loan from the Government.

In Kenya has a regulation guiding the use of solar water heaters (SWH). Energy (SHW) Regulation 2012 requires that all buildings within municipalities which are using more than 100 litres of hot water per day should install SWH for at least 60 % of their hotter heating requirements. This Regulation is resulted in the development of a SHW market (manufacturing, installation, maintenance, etc.) within Kenya,

4.2 Infrastructure Policies

Market facilitation supports market institutions, participants and rules to encourage renewable energy technology deployment. A variety of policies are used to build and maintain this market infrastructure, including policies for design standards, accelerated siting permitting, equipment standards, and contractor education and licensing. Additionally, the policies are used to encourage renewable technology manufacturers to site locally and direct sales of renewable energy systems to customers at concessionary rates facilitate market development.

4.3 Government Procurement

Government procurement policies aim to promote sustained and orderly commercial development of renewable energy. Government purchase agreements can reduce uncertainty and spur market development through long-term contracts, pre-approved purchasing agreement, and volume purchases. Government purchases of RE technologies in early market stages can help overcome institutional barriers to commercialization, encourage development of appropriate infrastructure, and provide market path technologies that require integrated technical, infrastructure and regulatory changes.

5 Liquid Biofuels

Liquid biofuels demand is growing worldwide. Examples of the policy and regulatory regimes are given in Appendix A. Further work is required on how COMESA Member States can develop and expand the liquid biofuels sector.

6 Power Sector Restructuring Policies

Power sector restructuring has a profound effect on electric power technologies, costs, prices, institutions and regulatory framework. Restructuring trends are changing the traditional mission and mandates of electricity utilities in a complex ways, and affecting environmental, social, and political conditions. There are five key trends underway that affect renewable energy development, both positively and negatively.

6.1 Removal of Price Regulation on Generation

Power generation is one of the first aspects of utility systems to be deregulated. The trend is inclined towards moving away from utility monopolies to competition, where power contracts between buyers and sellers in wholesale power markets. Distribution and large industrial customers consequently have more choices in obtaining wholesale power. Some markets often begin with independent power producers (IPPs) frameworks. As wholesale prices become more of a competitive market commodity, prices become relatively more important than other factors in determining a buyer's choice of electricity.

The potential effects of competitive wholesale power markets for renewable energy are significant. Wholesale power markets allow IPPs to by-pass the biases of traditional utilities against renewable energy. In some countries, IPPs frameworks have been designed to promote renewable energy. However, the other effects of a competitive wholesale power markets may stifle renewable energy development. Low cost hydro and thermal generation makes it difficult for renewable energy to compete. In addition, the emergency of short-term power contracts and spot markets favour generation technologies with higher variable cost and lower capital costs, like fossil fuels, rather than capital intensive but low operating cost technologies like renewables.

6.2 Self Generation by End Users

Independent power producers may be end users themselves rather than just dedicated generation companies. With the advent of IPP frameworks, utility buy back schemes (including net metering), cogeneration technology options, and more and more end users from utility scale to small residential users are generating their own electricity. The self-generation offsets purchased power and they may even sell back to the grid.

Renewable energy is well suited for self-generation but faces competition from other generation technologies, particularly those based on natural gas. Gas has become a fuel of choice for self-producers because of the short lead times, low fuel and maintenance costs, and modular scale technology. However, natural gas is not readily available is most COMESA Member States and as such renewable energy is the best option for self-generators. Co-generation in traditional sugar companies is increasingly favoured by sugar mills as the costs of utility electricity increase due to a shortage of supply and cost reflective tariffs for new generation capacity.

6.3 Privatization or Commercialization of Utilities

In many countries, Utilities, historically government owned and operated, are becoming private for profit entities that must act like commercial corporations. Even if 100% State owned, they are operated along commercial principles and have lost subsidies and are subject to tax laws and accounting rules as in private firms. This has often led to job losses and management must make independent decision on the bases of profitability, though major decisions are regulated and may require government approval as the shareholder.

The effects of privatisation or corporatization are difficult to judge. The environmental effects of privatisation can be positive or negative, depending on such factors as the strength of the regulatory body and the political environmental policy situation in the country. Private utilities are more likely to focus on costs and less on public benefits, unless public mandates exist. On the positive side privatisation may promote capital intensive renewable energy by providing a new source of finance – capital from equity and debt markets.

6.4 Unbundling Generation, Transmission and Distribution

Utilities have been traditionally vertically integrated, including the generation, transmission and distribution function. Under the restructuring programs, each of these functions is being unbundled to different commercial entities, some retaining a regulated monopoly status (particularly transmission and distribution) and other starting to face competition (mainly generation, but to some extent distribution on an area specific basis).

Unbundling can provide can provide greater community incentives to self-generate using renewable energy. If retail tariffs are unbundled as well, so that generation, transmission and distribution costs are separated, customers have more incentives to self-generate, to avoid transmission and distribution

costs. Open access policies that go along with unbundling also promote self-generation using renewable energy. For example, companies are able to generate wind power in areas where wind is a good resource and wheel the power to their facilities.

However, unbundling can penalize inherently intermittent RE if producers have to pay charges on a per capacity basis. This means that even when capacity is not being used (e.g., due to wind not blowing), the generator still has to pay transmission costs, resulting in high transmission costs per kW. To avoid this, the policy must be drafted to minimize or even eliminate such penalties which would discourage the development of RE. In Brazil, renewable energy enjoys a special transmission tariff which is 50% of the conventional energy tariff.

6.5 Competitive Retail Power Markets

Competition in the retail market means that retail customers are free to select their power supplier amongst all generators operating in a given market. Competitive retail power markets have allowed the emergence of the so-called green power suppliers who offer to sell renewable energy, usually at a premium. As green power sales grow, these suppliers are forced to invest in new renewable energy capacity to meet demand or purchase power from other RE producers. Green power markets can only flourish if accompanied by other policies that encourage the uptake of green power, such as tax incentives and levies on fossil-fuel generated electricity.

7 Barriers to Renewable Energy

The need for enacting policies to support renewable energy is often attributed to a variety of barriers or conditions that prevent investment from occurring. Often the result of barriers is to put renewable energy at an economic, regulatory, or institutional disadvantage relative to other forms of energy supply. Barriers include subsidies for conventional forms of energy, high capital costs coupled with lack of fuel-risk assessment, imperfect capital markets, lack of skills or information, poor market acceptance, technology prejudice, financing risk and uncertainties, high transaction costs, and a variety of regulatory and institutional factors. Many of these barriers could be considered as market distortions that unfairly discriminate against renewable energy, while others have the effect of increasing the cost of renewable energy.

7.1 Costs and Pricing

Renewable energy generally costs more than conventional sources of electricity resulting in cost-driven decision and policies that avoid renewable energy. However, a variety of factors can distort the comparison, for example, public subsidies may lower the cost of competing fuels. It is true that the initial costs of RE technology are often high on a cost-per-unit basis, the cost comparison should be made on a life cycle basis. In many instances, for off-grid rural electrification, RE is cheaper when evaluated on a life cycle basis. Given the declining costs of RET, some technologies are becoming equally competitive, on a life cycle basis, to conventional energy.

Many policies attempt to compensate for costs related barriers by providing additional subsidies for renewable energy in the form of tax credits or incentives, by establishing special pricing and power purchasing rules, and by lowering transaction costs. Reducing subsidies for fossil-fuel power plants is politically difficult. Thus, practically policies have tended to increase subsidies for renewable energy rather than reducing subsidies for fossil-fuels. Some of the subsidies would have been incurred several years back, when the utilities were a department within government and most of the capital costs were written-off. Currently, most RE technologies cannot compete with existing fossil-fuels plants on a life cycle basis. However, all COMESA Member States require new generation capacity and it is with the new investments that RET can, at times, compete with on a life cycle basis. There are always the uncertainties on future costs of primary energy that makes the comparison difficult to make with absolute certainty.

7.1.1 Subsidies for Competing Fuels

Public subsidies can take place many forms: direct budgetary transfer, tax incentives (most Utilities in COMESA are exempted from most taxes), R & D spending, liability insurance, leases, land right-of-way, waste disposal and guarantees to mitigate project financing and fuel risks. Large subsidies for fossil fuels lower the final electricity prices (a common political objective), putting renewable energy at a competitive disadvantage if it does not enjoy equally large subsidies.

7.1.2 High Initial Capital Costs

Even though lower fuel costs and operating costs may make renewable energy competitive on a life cycle basis, higher initial capital costs results in renewable energy providing installed capacity per initial dollar invested when compared to conventional energy sources. Thus, renewable energy investments require higher amounts of financing for the same capacity. Capital markets would ordinarily require a premium in lending rates for financing RE projects because more capital is being risked upfront than in conventional energy.

7.1.3 Difficulty of Fuel Price Risk Assessment

Historically, future fuel price risks have not been considered an important factor because fossil fuel prices have been assumed to be relatively stable or moderately increasing. Thus risks of severe fluctuations have been often ignored. However, with energy markets deregulation and greater geopolitical uncertainties, there is an increased awareness of fuel price risk. In South Africa, Eskom experienced a steep rise (price and volume) in primary energy (coal, gas and diesel) in 2007 resulting in an unbudgeted US $ 700 million increase in costs which could not be recovered from the consumer as the prices had already been determined by the Regulator for that year.

Renewable energy technologies avoid fuel costs (with the exception of biomass) and also avoid fuel price risk. However, this benefit, or risk reduction premium is often missing in economic comparisons and analytical tools because it is difficult to quantify. Further, in most jurisdictions, fuel costs are

factored into regulated power rates so that consumers rather than the utility bear the burden fuel price risk, and utility investment decisions are made without considering fuel price risk.

7.1.4 Transaction Costs

RE projects are typically much smaller than conventional energy projects. Projects may require additional information that is not readily available or they require additional time or attention to financing or permitting because of unfamiliarity with the technologies and uncertainties over performance. For these reasons the transaction costs renewable energy projects – including resource assessment, permitting, planning, developing project proposals, assembling financing packages, and negotiating PPAs with utilities – may be much larger on a per kW capacity basis than for conventional power plants.

7.1.5 Environmental Externalities

The environmental impact of fossil fuels often result in real cost to society, in terms of human health (e.g., health costs, loss of work-days, etc.), infrastructure decay (i.e., as a result of acid rain), decline in forest and fisheries, climate change induced droughts (thus less farming yields which impacts most to rural communities who depend on farming for their livelihood). Investors (both equity and debt providers) rarely include such environmental costs in the bottom line used to make decisions. A large percentage of electricity production from COMESA Member States is from Hydro plants, thus the contribution to environmental costs are is low and politically, there is less pressure to favour clean energy versus fossil fuels in the region.

7.2 Legal and Regulatory

7.2.1 Lack of a Legal Framework for Independent Power Producers

In most COMESA Member States power utilities still have a monopoly on generation, transmission and distribution of electricity. In these circumstances, in the absence of a legal framework, IPP may not be able to invest in renewable energy facilities and sell power to the utility or third parties under power purchase agreements. A number of countries have either completed the legal framework or are in the process developing one. COMESA is in the final stages of developing a guideline that may assist Member States develop the IPP and PPA legal framework that would entice IPPs to invest in RE projects.

7.2.2 Transmission Access

Utilities may not allow favourable transmission access to renewable energy producers or may charge high prices for transmission access. Transmission access is desirable as some renewable energy resources like wind sites and biomass fuel may be located far from population centres. Transmission and/or distribution access is necessary for direct third party sales between the renewable energy producer and the final consumers.

7.2.3 Utility Interconnection Requirement

Individual home or commercial systems connected to utility grids can face burdensome, inconsistent, or unclear interconnection requirements. Lack of uniform requirements can add to transaction costs. A utility may set interconnection rules that go beyond than what is necessary or practical for small producers in the absence of any incentive to set more reasonable but still technically sound requirements. Policies that create sound and uniform interconnection standards can reduce interconnection hurdles and costs.

7.3 Market Issues

7.3.1 Lack of Access to Credit

Project developers or consumers may lack access to credit to purchase or invest in renewable energy because of lack of collateral or poor creditworthiness or distorted capital markets. In some countries, power project developers have difficulties in obtaining bank financing because of uncertainty as to whether utilities will honour long-term PPAs to buy the power. In rural areas, micro-credit lending for household scale RE systems may not exist. Also, available loan terms may be too short relative to the equipment life time.

7.3.2 Technology Performance Uncertainty and Risk Perception

Proven, cost effective (on a lifetime cycle basis) technology may still be perceived as risky because there is still limited experience of their application in the region. The lack of visible installations and familiarity with renewable energy technologies can lead to a perception of greater risk than for conventional energy sources. These perceptions may increase the required IRR, result in less capital availability, or place more stringent requirements on technology selection and resource assessment. Utilities may be hesitant to develop, acquire and maintain unfamiliar technology or give RE proper attention in their generation resource planning.

7.3.3 Lack of Technical and Commerce Skills and Information

In the COMESA region, there is a shortage of skilled personnel who can install, operate, and maintain RE technologies. Regional or Local project developers may lack sufficient technical, financial and business development skills. Consumers, managers, engineers, lenders, or planners may lack information about RE technology characteristics, economic and financial costs and benefits, geographical resources, operating experience, maintenance requirements, sources of finance, and installation services. The lack of skills and information may increase perceived uncertainties and block decisions.

ANNEXURE A – LIQUID BIOFUELS

Biofuels mandates and tax policies in USA, Brazil, Europe and Canada have accelerated the development of the biofuels industry. Biofuels mandates require a certain percentage of all liquid transport fuels to be derived from renewable resources. The 2013 fuel ethanol production figures are shown below:

CONTINENT	PRODUCTION (millions of Litres)
United States	50 345
Brazil	23 723
Europe	5 189
China	2 634
India	2 063
Canada	1 979
Rest of World	2 751

5.1 United States of America

The United States became the world's largest producer of ethanol fuel in 2005. The U.S. produced 50.3 billion litres of ethanol fuel in 2013. Brazil and U.S. production accounted for 83.5% of global production in 2013. In the U.S, ethanol fuel is mainly used as an oxygenate in gasoline in the form of low-level blends up to 10 percent, and to an increasing extent, as E85 fuel for flex-fuel vehicles.

The ethanol market share in the US grew (by volume) from just over 1 percent in 2000 to more than 3 percent in 2006 to 10 percent in 2013. Domestic production capacity increased fifteen times after 1990, from 3.4 billion litres to 6.17 billion litres in 2000, to 50.3 billion litres in 2013. The Renewable Fuels Association reported 209 ethanol distilleries in operation located in 29 states in 2011, and 140 under construction or expansion as of December 2011, that upon completion, would bring U.S. total installed capacity to 56.8 billion litres. Most expansion projects are aimed to update the refinery technology to improve ethanol production, energy efficiency, and the quality of the livestock feed they produce.

5.2 Brazil

Brazil’s biofuels program has its origins in petroleum export embargos of the early 1970s and was designed to reduce the nation’s dependence of foreign oil. Unlike many countries, Brazil has a huge base of actual and potential farmland. In a sizable part of its land base, the climate and soils are very well suited for sugar cane production, making it the world’s largest producer of that commodity. Sugar cane has several advantages over other crops in producing ethanol.

Brazil mandates require a 20% blend of ethanol with gasoline (E-20), although the blend has been as high as E-25. Recently, there has been talk of raising the blend to 25%. In addition, a large majority of the newer Brazilian automobiles are flex fuel vehicles that can use up to 100% hydrous ethanol. Consequently, along with E-20 to E-25, Brazil markets 100% hydrous ethanol to consumers who want to use it.

5.3 Europe

EU's first biofuels mandates were initiated in 2003 with a voluntary 2010 target of 5.75% for renewable fuels to be used for transport fuels. The target included not only biodiesel and ethanol but electricity, hydrogen, and other renewable fuels as they are developed. That target was replaced in late 2009 by a mandatory 10% renewable transport fuels target. At that time, EU also increased its B-5 standard to B-7. Concern about climate change and a desire to reduce greenhouse gas emissions are major concerns underlying the EU renewable fuels program. The plan sets a 20% renewable fuels target for 2020.

Europe has a shortage of land to produce the required ethanol to meet the 2020 biofuels mandates target. This presents an opportunity for COMESA Member States (and Africa) to produce ethanol for the EU market. Most Member States enjoy tariff exemptions from the EU, under the Everything But Arms trade agreement with the EU and thus are able to compete with Brazil, currently the lowest cost producer in the world.

5.4 Canada

Canadian biofuels mandates were implemented on December 15, 2010. Unlike the U.S., its mandates focus on the supply (production and imports) rather than on blenders who blend the fuels with gasoline and diesel fuel. Canada has national biofuels mandates of E-5 for ethanol and B-2 for biodiesel. In addition, four provinces have individual mandates that are equal to or higher than those at the federal level.

5.5 Argentina

Argentina's biodiesel mandate went into effect in 2010 at a required 5% blend level. A short time later it was increased to 7.5%. The mandate was scheduled to increase to 10% in 2013, but the increase has been delayed due to tight soybean oil supplies. Soybean oil accounts for almost all of the biodiesel feedstock being used by the Argentine biodiesel industry.

Argentine fuel ethanol for 2012 was estimated at 260 million litres, made exclusively from sugarcane and molasses. Production at that level is large enough for a national ethanol-gasoline blend of between 2% and 3%. Its 5% ethanol blending mandate had not yet been in 2012. There are 5 new Argentine ethanol plants in the construction and/or commissioning phase that will use grain as a feedstock. When these investments in grain-based ethanol plants are completed and in operation, production is

expected to increase enough to allow an 8% to 10% national average ethanol-gasoline blend. These plants were expected to be completed by the end of 2014.

5.6 China

China has five fuel ethanol plants and mandated ethanol blending with gasoline in 10 provinces. In the last few years, its policies have required that any additional biofuels production facilities are not to use food or feed ingredients as feedstocks. Any new facilities also are not to use feedstocks from land that would otherwise produce feed or food crops. Four of the plants use grain. About 80% of the feedstock for these plants is corn, with 20% accounted for by wheat and rice. The average production of these plants is 492 million litres per year. A fifth much smaller plant uses cassava as the feedstock. Its production is estimated at 177 million litres per year. Total fuel ethanol production in 2013 was estimated to be 2.5 billion gallons.

5.7 South Africa

In SA, the mandatory blending regulations commence on 1 October 2015 and will require that all licensed petroleum manufacturers purchase biofuels exclusively from licensed biofuels manufacturers, so long as the volumes can be blended with the petroleum manufacturer's petroleum within the minimum concentration of 5 % volume per volume ('v/v') biodiesel blending with diesel, and between 2 % v/v and 10 % v/v of bioethanol to petrol.