

COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA

FEED-IN-TARIFFS GUIDELINES

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1 Objectives of the Feed In Tariff Guideline

The main objective of the COMESA Feed-In-Tariffs Framework is to provide the COMESA member States with harmonized guidelines that would facilitate FIT harmonization in the COMESA region in efforts to ensure that private sector investor are more-or-less faced with similar FIT structures in the COMESA region.

The specific objective of the FIT framework is to provide outline contents expected in a Feed in Tariff regime, which countries can then adopt and/or customize, therefore, harmonizing the FIT regime in the spirit of regional integration.

Feed-in tariffs are the most widely used policy in the world for accelerating renewable energy deployment, accounting for a greater share of RE development than either tax incentives or renewable portfolio standard policies. FITs have generated significant RE deployment, helping bring the countries that have implemented them successfully to the forefront of the global RE industry. However, in the COMESA region, FIT are still in their infancy. Four Member States have promulgated a FIT policy; three Member States are at an advanced stage of developing a FIT policy.

2 Feed In Tariffs Policy Background

2.1 Feed In Tariffs Policy Definition

A feed-in tariff is an energy supply policy focused on supporting the development of new renewable energy projects by offering long-term purchase agreements for the sale of RE electricity. 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 a FIT by spreading the cost between all end-users in this way is that the increase in price per household is very small.

Successful feed-in-tariff policies typically include three provisions: i) guaranteed access to the grid, ii) stable long-term purchase agreements (usually 15-20 years), and iii) payment level based on cost of RE energy.

2.2 History of FIT Policy

This section outlines the development of FITs policy and examines in broad term major worldwide milestones that shaped the current complex FIT policies.

a) The first FIT policy was promulgated in USA through the Public Utility Regulatory Policy Act of November 1978. Among other things, PURPA required utilities to buy electricity from qualifying facilities at rates that were based on utilities' "avoided costs".

b) The first national feed-in tariff legislation in Europe was adopted in Germany's Electricity Feed-in Law of December 1990. As of January 1, 1991, utilities in Germany were required by law to buy electricity from non-utility RE generators at a fixed percentage of the retail electricity. The law included a purchase obligation for this electricity and the percentage ranged from 65-90% depending on the technology type and the project size. A project size cap of 5 MW was also imposed on hydropower, landfill gas, sewage gas, and biomass facilities. Denmark and Spain followed suit with similar provisions in 1992 and 1997, respectively.

c) The cities of Hammelburg, Freising, and Aachen, in a significant development, began offering FIT prices based on the actual costs of RE generation, primarily to encourage solar PV; this approach was soon adopted by other cities in German. This method was in contrast to an avoided cost or "value-based" approach to tariff calculation, or one in which the prices were tied to the prevailing retail price. This cost-based framework enabled efficiently run projects to be profitably operated, and this design feature continues to be identified as one of the most important elements of successful FIT policies.

d) In April 2000, the German Parliament adopted the Renewable Energy Sources Act This legislation signalled a number of important developments:

   i. FIT prices were decoupled from electricity prices at the national level;
   ii. Utilities were allowed to participate, whereas previous policies were confined to non-utilities;
   iii. RE sources were granted priority access to the grid;
   iv. FIT payments for wind power became differentiated by the quality of the resource at different locations; and,
   v. FIT prices became methodologically based on the costs of generation for all technology types.

e) The German approach was soon followed by many other countries. This has led to a higher degree of differentiation in tariff amounts based technology type, project size, project location and quality of resource. Tariff differentiation enables the development of a broader range of technology types.

f) In 2007, Spain introduced an innovative "sliding premium" option. This design offers a variable FIT payment or premium above the spot market price, which effectively ensures that project revenues will remain within a range sufficient to ensure profitability. Policymakers use this option to increase the market integration of RE sources, because electricity is sold directly on the spot market and receives an additional FIT payment. The Netherlands adopted a similar framework in April 2008, where a sliding premium covers the

difference between prevailing spot market price and the guaranteed FIT price. This market integration may become more important as the share of RE sources increases.

2.3 FIT Policy Experiences in COMESA

The four Member States that have adopted Feed-In-Tariffs are Kenya, Mauritius, Uganda and Rwanda.

Kenya

Kenya's FIT policy was adopted in March 2008 and revised in January 2010 and in December 2012. The policy covers the following technologies: biogas, biomass, geothermal, small-hydro, solar and wind. Tariff differentiation is technology specific as well as size specific (below or above 10 MW).

The FIT policy has resulted in three IPP projects in Kenya, and there are:

PROJECT NAME	TECHNOLOGY	CAPACITY (MW)	Tariff (2013)[1] [US $/kWk]
Mumias Sugar	Biomass	29	0.10
O Power	Geothermal	40	0.088
Imenti Tea Factory	Small Hydro	0.5	0.105

The FIT has resulted in 69.5 MW RE generations within in 4 years.
Kenya's target electricity generation is 5 000 MW by 2015 using all electricity generation technologies.

The feed in policy and tariffs of Kenya is posted on their website http://www.erc.go.ke/ .

Mauritius

Mauritius' FIT policy targeted very small private sector power producers. The technology types in the policy are solar, micro-hydro and wind. The total generation as result of the FIT is 5 MW in a system of 540 MW. Unlike, most FIT policies, the cost is not passed on to the consumers; the government subsidies the small producers for a period of 15 years. The tariffs were set at a high level and as such the FIT policy has become expensive for government which subsidies the producers. Consequently, the consultant has been appointed to review the FIT policy and any new RE developments will be under a revised FIT policy.

About 60% of total electricity generation for the national grid is produced by IPPs using biomass (bagasse) in the sugar industry. This electricity is bought by the national utility under the PPA. The standard agreements are:

i. Single Part Tariff Power Purchase Agreement;
ii. Two Part Tariff Power Purchase Agreement; and,
iii. Energy Supply and Purchase Agreement.

The PPA is not regarded as part of the FIT policy; however, they have some similarities to a FIT policy regime.

[1] The FIT tariffs programme is revised every three years. Tariffs for existing developers are increased annually according the PPA agreement.

The feed in policy of Mauritius is posted on their website http://publicutilities.gov.mu/.

Uganda

Uganda's initial FIT policy was developed in 2007, under the Renewable Energy Policy on 2007. It was applicable up to 2009 and is referred to as REFIT phase 1. There was limited uptake by developers during the 3 year period. The policy was then reviewed in 2010 new tariffs were developed based on updated levelised costs of production; the new policy is referred to as REFIT phase 2. REFIT phase was revised in 2012. Uganda's target is 61% of electricity generation from renewables by 2017. The feed in policy and tariffs of Uganda is posted on their website http://www.era.or.ug/.

Rwanda

Rwanda's Renewable Energy Feed-in tariff regulation was promulgated in February 2012. The Rwanda tariffs apply own to small hydro from 50kW to 10 MW. Contract terms are only three years, but the law specifies that the tariffs cannot be reduced. The tariffs will be reviewed in the second year of the program to be implemented in the third year. Electricity tariffs are relative high in Rwanda, however, a FIT policy is important to "to guarantee investors in renewable sources a ready market and an attractive return on investment for the electricity they produce." The FIT policy is still relatively new, but it has attracted the interest of RE developers. Rwanda has hundreds of potential micro-hydro sites that could double the country's generating capacity and expand electrification rates to 35 % of the population in 10 years.

Rwanda's electricity access target is 70% by 2017, predominantly from renewable energy sources.

The feed in policy and tariffs of Rwanda is posted on their website http://www.rura.gov.rw/.

3 Institutional Arrangements

Government & Parliament

Policy makers may choose different routes to developing FIT laws: legal pathways such as, i) a detailed FIT law, ii) a combination of high level mandate law with a regulatory body in charge of policy details, or non-legal pathways such as under a general energy law. There are pros and cons to each of these approaches. Establishing a FIT through detailed legislation, for example, may provide greater investor certainty because the law may be viewed as more difficult to change than a policy enacted as a result of an executive branch or regulatory agency initiative. This decision depends on a number of factors, such as political system, legal tradition, governmental structure, legislative process, market structure, etc.

Regulator

The responsibility for Regulation of in some Member States falls with the Ministry responsible for Energy and in other Member States an independent Regulator has been established. The regulatory body is responsible for the policy details. This involves developing methodologies, approaches and mechanisms necessary to implement the feed-in-tariff law and policy. The calculation and publishing of the FIT is the responsibility of the Regulator. Their role also extends to assisting developers in issues such as clarifying the policy, reviewing PPA, licensing and ensuring that the policy is achieving the intended results.

National Electricity Utility

The national utilities in most control the network – both transmission and distribution – which includes electricity sales to the consumer. They operations are regulated by the Regulator. An obligation by the system operator (national utility) to purchase RE is an integral part of the FIT policy. The utility must purchase RE from developers as per the tariffs published the regulator. Developers enter into a power purchase agreement with the utility based on the tariffs published by the Regulator. The regulator approves the PPA so as ensure it is in accordance to the FIT policy.

Independent Power Producers

The main objective of a FIT policy is to attract private sector investment in the RE energy sector. The policy provides revenue certainty to developers and acts as an investment enabler by making projects bankable. The success of the FIT policy is measured by the number of new IPPs commissioned projects that would not have been considered in the absence of a FIT regime.

Financing Options for FIT

The most common financing mechanism for FIT is for the extra cost to be spread across the utility's customer base. The main argument in favour of this is that it encourages quality and efficiency as any material price increase would lead to a public outcry prompting governments to control the retail price effects of renewable energy technology. The other less commonly used approach is investment subsidies where the financial burden falls upon the taxpayer.

4 Drafting FIT Policy

Some key elements that policy makers should consider when introducing a FIT policy are:

i. *Impose a priority purchase obligation* - grid operators must be obliged to connect renewable energy producers to the grid, whether the producers are utilities, businesses or private households, and they must transmit the electricity they produce. This should be a priority obligation so that electricity from renewable energy sources is purchased ahead of electricity from other sources. The consequence of this obligation may well be that conventional power generation plants must reduce their production. This feature is important as it increases investment security and ensures producers that each unit of renewable energy produced can be sold.
ii. *Determine which technologies and plants will be covered by the* policy - a FIT policy needs to state clearly what renewable energy technologies and plants are covered by it. This is basic, but very important element of any FIT policy.
iii. *Determine a good tariff rate* - the tariff rate for electricity generated from renewable sources must be set at a level that guarantees profitability, and reflects the costs associated with electricity production from that source. Getting the tariff rate right is one of the most important - and most difficult - tasks. If it's too high, windfall profits for producers will follow. If it's too low, there will be no or little investment. For this reason it is important to include a mechanism for adjusting the tariff. Where there are many developers on the same renewable technology in a specific area it is important to implement a bidding method.
iv. *Guarantee the tariff rate over a specific period of time* - the price per unit rate should be guaranteed for a specific period of time after qualifying producers have connected to the

grid. This ensures the profitability of production, and the security of investment for producers, manufacturers, investors and suppliers. The duration can be set differently for each eligible technology. A time limit should be fixed in order to reduce the overall costs of the FIT system. Restricting payment to a certain number of years also speeds up the innovation cycle by replacing old technology with new and more efficient equipment. Experience has shown that tariffs should be guaranteed for a reasonably long period of time, otherwise, investment security may be hampered. The German FIT law guarantees the rate for a period of 20 years, which has proven effective. In COMESA, a period of 15-20 years is recommended, with a renewable period of up to 25 years where deemed necessary to enable investment.

v. *Determine an effective way of financing the FIT policy* - there are two main options for financing the feed-in-tariffs. The costs could be covered by a cost sharing mechanism for all electricity end-users, or it could also be done through a fund. Most countries with FIT policies, including Germany, have financed it through a cost sharing mechanism. Such a mechanism equally distributes the costs on to the electricity bills of all consumers. This usually ensures that the cost per consumer is low. The major political advantage of this financing method is that it is separate from the national budget, and therefore less vulnerable to changes in the political priorities.

vi. *Reduce the tariff rate periodically* - reducing the annual per kWh tariff rate for plants qualifying for connectivity to the grid under the FIT policy encourages innovation and cost cutting. In Germany, for example, the 2005 tariff rates per kWh for PV plants connected to the grid were reduced by 6.5% in 2006. This annual digression of tariff rates has spurred on innovation and encouraged very rapid growth in the renewable energy sector.

5 Design Options for Renewable Energy Feed-In-Tariffs

The most important design elements which policy makers should consider when drafting or improving FIT policy are the following:

i. ***Eligible Technologies*** – each country has to decide which renewable energy technologies to support. In order to make this decision, a RE resource map is useful. The common RET in COMESA are hydro, biomass, solar, wind, geothermal and municipal waste. It is recommended to support a whole basket of RET, rather than focussing on the 1-2 that are currently most effective. By supporting both fluctuating technologies, e.g., wind and solar, and constant technologies, you lay a foundation for a 100% renewables based electricity system. However, this approach is not optimal for most COMESA Member States where the cost of electricity is a critical consideration. Thus Member States may rather opt for least cost RET only – which maybe hydro and/or biomass [bagasse] and/or geothermal and/or wind power. Solar is particularly a useful off-grid option for rural areas.

ii. ***Eligible Plants*** – policy makers have to decide on the eligibility plants for various reasons. Large hydro plants are often able to compete with conventional technology, and thus the tariffs have to be differentiated according to the size of the plant. The location of the plant is may also require tariff differentiation – especially, wind plants. Many COMESA Member States are already predominantly RE producers, thus the targets set need only be met by small scale plants. Also, older plants that benefited from other forms of incentives need not benefit from RE to the same extent as new RET plants.

iii. ***Financing Mechanism*** – a main feature of traditional REFITs is that additional costs caused by the policy are distributed equally amongst all electricity consumers. However, in the context of developing countries with high levels of poverty, distributing the cost benefit of a REFIT solely to the consumers will have negative consequences. Thus, innovative financing mechanisms are required such as, i) co-funding from international climate change, ii) additional taxes on fossils, ii) subsidies for low-income households.

iv. ***Tariff Calculation Methodology*** – the methodology adopted for tariff calculation is critical for attracting new investments in RET. A balance is required between the consumer's needs for lower tariffs and investor's needs for a good return on investment. They are three common approaches to the tariff methodology: i) the 'avoidance' cost approach, which sets tariffs based on existing prices, ii) rate of return approach, and iii) benchmarking, which sets the tariff based on cost of generation plus a return consummate with the risk. Empirical evidence shows that countries using the rate of return approach have been most successful in rolling out renewable energy.

v. ***Technology Specific Tariffs*** – technology-specific support is one of the main features of many REFITs. In contrast to other quality based support schemes, such as tradable certificates, REFITs try to take the technology specific generation costs into account in order to promote a broad base of technologies. Technology specific support is necessary because of the large difference in generation costs amongst renewable energy technologies. Further differentiation is also necessary with the same RET group. For example, different sizes of hydro plants generally have different unit generation costs, the same applies to biomass plants, the costs are driven by the primary energy used [bagasse, animal waste, energy crops, etc].

vi. ***Size Specific Tariffs*** – larger plants tend to be less expensive than smaller plants. Consequently policy makers have to consider including a size specific tariff. This applies to most RETs. The simplest way is to establish the tariff categories according to installed capacity. Most technologies offer standard products of a certain size range. An analysis of standard products of a certain technology in a given country will help set the standard tariff.

vii. ***Duration of Tariff Payment*** - there is a correlation between the length of the tariff payment and the quantum to be paid. The shorter the duration of the tariff payment, the higher the unit cost of the RE. The most common period is 15-20 years. By that time, there may be technology changes and probable cheaper RET generation costs as innovation creeps in. Policy makers must also consider whether the investor may opt out of the REFIT scheme during the guaranteed period when the conventional generation costs become more attractive. The investor could be allowed to switch between the guaranteed payment under REFIT and participation on the spot market.

viii. ***Purchase Obligation*** - along with long-term tariff payments purchase obligation is the second most important 'ingredient' for all REFIT schemes as it assures investment security. This obliges the TSO [grid operator] to purchase all RE produced independent of demand. This implies that in times of low demand, the cutback will only affect 'grey' producers.

ix. ***Priority Grid Access*** - in COMESA, most utilities are still vertically integrated. Consequently, as the grid operators they ought to favour their generation first. If policy makers were to permit this, certainty of purchase by RET investors would be

threatened. Thus, REFITs must include provisions that eligible plants must be prioritized and connected to the grid immediately. The lack of transmission capacity can seriously offset the deployment of renewables. However, existing bottlenecks should not be an excuse to restrict access for green electricity producers, but rather an incentive to undertake much needed grid reinforcement.

x. ***Cost Sharing Methodology for Grid Connection*** - grid connection costs are relatively high when compared to the overall project cost. Thus the methodology for costs sharing is important for the success of green projects. For RE projects the preferred option is that the investor pays for the new electricity line up to the next grid connection point, while the grid operator has to cover all the costs for potential reinforcement of the existing grid infrastructure. The costs covered by the grid operator are passed on to the consumer. The estimated grid connection costs must be incorporated to the tariff calculation methodology.

xi. ***Setting Targets*** - Policymakers have to decide whether the FIT policy will include program or project caps. Caps can be imposed either on the total capacity of RE allowed [usually differentiated by technology type], on the maximum individual project size [also often differentiated by technology type], or according to the total program cost.

xii. ***Overall FIT policy is adjusted over time*** - this can involve two different kinds of adjustments:

a) *Incremental payment adjustments* - these are generally minor, are often pre-determined, and do not change the fundamental nature of the FIT program design. They are generally made to adjust for technological cost reductions or changes in the broader economy. These types of adjustments include administrative FIT payment adjustments such as periodic changes and fuel price adjustments, as well as automatic adjustments such as inflation indexing.

b) *Comprehensive program revisions* - this involves a more detailed consideration of policy goals and overall policy structure. These adjustments can include program eligibility, the duration of support, the presence of caps or targets, and other factors. Comprehensive program revisions typically involve a more detailed review of the policy's success, while highlighting where changes need to be made based on both evolving policy goals and changing technology costs and market conditions.

6 Hybrid Systems

Auctions and competitive bidding systems are technically an alternative policy to FITs. Unlike FITs, auctions and competitive bidding systems do not provide developers or their investor's access to a reliable, long-term revenue stream. But auctions and bidding can be applied in conjunction with FITs in a variety of ways, such as helping to set payment levels.

In 2008, China began using an annual competitive bidding process to set regional competitive benchmark electricity prices; energy contracts set at these benchmarks are effectively FITs. Through this single-round, sealed-bid process, China solicits prices from manufacturers and developers to set regional renewable energy contract prices. This approach works particularly well for China because the growing wind and solar manufacturing industry and rapidly changing technology prices make utilizing a standard FIT difficult. For example, if a FIT were set and then

technology prices rapidly declined without an adjustment to the payment level, excessive overpayments could occur.

South Africa initially developed a FIT regime and published the FITs. However, to ensure power was competitive, affordable and sustainable, South Africa subsequently opted for a competitive bid process over a feed-in-tariff regime.

APPENDIX A – Framework for Renewable Energy Feed-In-Tariffs

Eligible Technologies

As a first step, legislators have to decide which renewable energy technologies they want to support, i.e. which technologies are going to be eligible for tariff payment under the REFIT scheme. In order to make this decision, there should be good knowledge about the potential and resource availability of each technology in each Member State in the COMESA region. National resource maps are very useful for this purpose.

Generally, it is recommended to support a whole basket of renewable energy technologies, instead of focusing on just one or two technologies which are currently the most cost-effective. This point should be repeated for emphasis: one of the key ways REFITs lower costs later is by producing a diversified set of technologies now. In essence, a REFIT is a tool for technology development and cost reduction. It is one of the major advantages of REFIT schemes that the technology-specific approach allows for the development of a wide range of technologies at relatively low costs. If you are planning to have a large share of renewables in the future electricity mix, you will need a variety of different technologies.

By supporting both fluctuating technologies, e.g. wind energy and solar, and technologies that are more constant, e.g. biomass, solar thermal, geothermal, and hydroelectric, lays the foundation for a 100% renewables-based electricity system at an early stage.

Nonetheless, some Member States may opt for supporting only one technology with a REFIT. A REFIT for only one technology such as photovoltaic's (PV), however, includes certain risks mainly related to public acceptance if the cost of the policy is passed through to bill payers. As the electricity costs for PV are significantly higher[2] than that of conventional energy and other renewable energy technologies, and the amount of electricity produced is comparatively small, the additional costs as distributed by financing mechanisms might seem rather high to consumers. In contrast, if a large portfolio of technologies is eligible under the REFIT legislation, the average cost for one unit of renewable electricity is rather low. To a certain extent, more mature technologies such as wind power will help less mature technologies such as PV to be developed. In this way public acceptance can be strengthened. When defining the technologies eligible under the REFIT legislation, it is important to include precise definitions. This is especially true for biomass/waste and PV installations.

The term "biomass" incorporates a large variety of resources, such as forestry products, animal waste, energy crops, and sometimes municipal wastes. Policy-makers must decide upon the eligibility of impure biomass and waste material. Generally, the non-biodegradable fraction of waste is not eligible for tariff payment. In the case of PV, advanced REFIT schemes differentiate between certain categories, i.e. ground-mounted vs building-integrated PV.

[2] The cost for PV systems has drastically reduced in recent years and is predicted to fall even further. this is at least partly a success of REFIT policies: through financing the initially expensive technologies they have increased demand and production, which led to a decline in overall cost.

Eligible Plants

Besides eligible technologies, those designing REFITs should determine which plants are covered under the REFIT scheme. Usually, tariff payment only applies to generation plants in the given country. In this case of offshore wind turbines, the national territory can either be limited by the UN definition of Territorial Waters, i.e. 12 nautical miles offshore, or the Exclusive Economic Zone, i.e. 200 nautical miles offshore.

Moreover, the policy maker usually limits tariff payment to the size, i.e. the installed capacity of renewable energy plants. Especially in the case of hydropower, tariff payment can be granted only to plants up to a certain maximum capacity, e.g. 20 or 100 MW. The reason for this is that large scale hydropower is already slightly more competitive with conventional energy sources even without any financial support in areas with large resources. One unit of hydropower-based electricity can often be produced at costs as low as US$ 0.04 or 0.06/kWh, whereas onshore wind and landfill gas electricity (the next cheapest sources) cost about US$ 0.06-0.08/kWh. Besides, large-scale hydropower projects are more capital-intensive and have more significant environmental impacts than other renewables that policy-makers should consider.

Theoretically, it is also possible to exclude certain producer groups from tariff payment. In the first South Africa, the REFIT regulations, for instance, the legislator decided to exclude plants where publicly owned utilities or owned a 50% plus shares. This can be an appropriate step where regulators plan to liberalise electricity markets and wish to allow new actors to become competitors to well-established national utilities. However, it is recommended that the exclusion of any producer group from tariff payment be avoided in COMESA as the public sector is the main player in the electricity industry.

Financing Mechanisms

A main feature of traditional REFITs is that additional costs caused by the policy are distributed equally among all electricity consumers. This financial burden-sharing mechanism permits the support of large shares of renewable electricity with only a marginal increase of the final consumer's electricity bill. No government financing is included under these conditions. Moreover, by determining tariff payment and establishing the purchase obligation for all renewable energy by the existing utilities, the national government only acts as a regulator of private actors in the electricity market. Alternative financing mechanisms have proven to be sensitive towards external effects, such as changes in government or general economic downturns.

However, in the context of developing countries with high levels of poverty, distributing the costs of a REFIT solely to consumers is likely to have serious negative consequences and would jeopardize efforts to increase energy access. Thus, innovative financing mechanisms - including co-funding from international climate change funds (Uganda), additional taxes on fossil fuels (Algeria) or subsidies for low-income households (Ghana) are options that have to be considered by each Member State.

Large scale hydropower projects also have negative environmental impacts, especially on downstream areas, and cause social problems to the displacement of people living in the project area. Under certain conditions, the reservoirs can also emit significant amounts of greenhouse gases. Thus, large-scale hydro in some countries is not considered a renewable energy source. However, in this study, all hydro power generation is considered as renewable.

Some REFIT schemes also apply other limitations. The Spanish REFIT scheme, which stopped accepting new applications in January 2012, only grants tariff payment for installations with a maximum capacity of 50MW. These limitations often have historical reasons. In the past, it was believed that renewable energy could only cover a small share of the electricity mix and that, by definition, renewable energy power plants had to be small-scale and distributed. The recent experience in many countries, however, contradicts these assumptions. Even though the distributed application is still one of the major advantages of renewables, the development in wind energy shows that wind farms with several hundred megawatts of installed capacity are feasible and economically viable. Large-scale plants are also expected for other technologies, such as solar PV, Concentrated Solar Power (CSP), geothermal and biomass. Therefore, we suggest not including limits on plant size other than for large-scale hydropower. Instead, tariffs should be differentiated according to the size of each plant. Eventually, renewable energy capacity will have to replace large-scale conventional electricity plants, with no limits to be placed on either plant size or overall installed capacity.

The start of generation, i.e. the moment the installation gets connected to the grid, also determines whether a plant is going to be covered by the REFIT. We recommend only including newly installed capacity as old renewable power generation plants are likely to have profited from previous support instruments. Therefore, the coming into force of the legislation usually In order to pass the price from the producer of renewable electricity to consumers, the costs (the aggregated tariff payments) must be passed along the electricity supply chain.

First, the producer of renewable electricity receives the tariff payment from the local grid operator. By legal obligation through the REFIT scheme, this grid operator is obliged to pay for, connect and transmit the produced electricity. Normally, renewable electricity producers get connected to the next distribution system operator. In some cases, however, a producer of a large plant might also decide to connect directly to higher voltage lines through the transmission system operator. Afterwards, the costs and the accounting data are passed to the next highest level in the electricity system until the national TSO aggregates all costs and divides it by the total amount of renewable electricity produced.

Tariff Calculation Methodology

One of the most important questions for policymakers dealing with REFITs is how to get the tariff level right. A tariff that is too low will not spur any investment in the field of renewables while a tariff that is too high might cause unnecessary costs for consumers. Regulators (and the consultants and economists they frequently employ) have applied different methodologies for tariff calculations. Less successful tariff calculation methodologies are setting the tariffs based on the existing electricity price or ‘avoided costs’. Another methodology bases the tariff on the actual cost of generation plus a small premium, thus offering sufficient returns on investment. Empirical evidence shows countries using the latter method have been most successful in increasing the rollout of renewable energy. This approach will hence be considered as ‘best practice’.

Different names have been used to describe this tariff calculation approach based on actual costs and profitability for producers. The German REFIT scheme is based on the notion of ”cost-covering remuneration”, the Spanish support mechanism speaks of a “reasonable rate of return”, and the French “profitability index method” guarantees “fair and sufficient” profitability. Despite the variety in names and notions, in all cases the legislator sets the tariff level in order to allow for a certain internal rate of return, usually between a 5% and 10% return on investment

per year. In some cases the rate will have to be higher as the profitability of renewable energy projects should be comparable with the expected profit from conventional electricity generation. Only if the profitability of renewable energy generation is similar to or higher than that of nuclear or fossil plants will there be an economic incentive to invest in cleaner forms of energy. When determining the tariff for a new REFIT, an analysis of countries with similar resource conditions and existing REFIT policies might be useful first step. Therefore, we have included a lot of tables with data relating to real tariffs in the country case studies presented in this book. If, for instance, the neighbouring country has a well-functioning REFIT scheme, the tariff applied in this country might serve as a point of reference. The mere comparison of tariff levels is not be sufficient. Many other design options that have an impact on the profitability of a project have to be taken into account, including the duration of tariff payment, grid connection costs and administrative procedures. After a good frame of reference is established for tariffs, cost factors related to renewable electricity generation have to be evaluated.

It is recommended that the tariff calculation be based on the following criteria:

- Investment costs for each plant (including material and capital costs);
- Grid-related and administrative costs (including grid connection cost, costs for the licensing procedure, etc.);
- Operation and maintenance costs;
- Fuel costs (in the case of biomass and biogas); and,
- Decommissioning costs (where applicable).

Based on this data, the nominal electricity production costs for each technology can be calculated. Tariff calculation methodologies are rather technical but certainly interesting for all committed policy-makers. As an example, we are going to present the German approach for tariff calculation for industrialized nations. Under the German REFiT scheme, a transparent tariff calculation methodology was developed based on the electricity generation costs. Generally, tariff payment is guaranteed for 20 years at the level applicable in the first year of production. However, the tariff applicable for new projects is revised every four years based on progress reports.

Technology Specific Tariffs

If the policy maker calculates the tariffs based on the generation cost of renewable electricity, technology-specific tariffs are the natural result. Technology-specific support is one of the main features of many REFITs. In contrast to other quantity-based support schemes, such as tradable certificates, REFITs try to take the technology-specific generation costs into account in order to promote a broad base of different technologies. Technology-specific support is necessary because of the large differences in generation costs among renewable energy technologies. While certain types of biomass or biogas can already be produced for less than US$0.03/kWh, less mature technologies are produced at much higher cost. However, from 2007-12 the costs for photovoltaic's have more than halved from US$0.43/kWh to US$ 0.19/kWh – not least because of the positive impact of REFITs.

Further differentiation might be necessary within the generic group of biomass products. As mentioned above, biomass fuel types include forestry products, animal waste, energy crops, and sometimes waste or the biodegradable fraction of waste. Generation costs vary widely as, for instance, energy crops are generally more expensive than residues from forestry, and producing biogas from animal residues is more expensive than the generation of landfill or sewage gas. Therefore, some REFIT schemes take different fuel types for biomass plants into

account. In addition, the cost for different transformation processes of biomass to electricity, such as co-combustion and gasification, might have to be reflected in the tariff design.

Size Specific Tariffs

Besides technology-specific tariffs, many REFIT schemes include different remuneration levels for different sizes of a given technology. The underlying idea is that larger plants are generally less expensive. Therefore, most REFIT schemes set specific tariffs for a particular technology in relation to plant size. The easiest way is to establish different groups according to the installed capacity. The choice for the range of each group does not necessarily have to be random. Many technologies offer standard products of a certain size range. In the case of PV, for instance, a typical rooftop installation for private households has a capacity of 3-30kW. Larger-scale rooftop installations for industrial buildings or farms usually have an installed capacity of up to 100kW. Therefore, an analysis of standard products of a certain technology in a given region or country will help to set plant-size-specific tariffs. In order to avoid potential disruptive effects through size categories, the legislator also has the option to develop a formula which relates the plant size to the tariff payment.

Duration of Tariff Payment

The duration of the tariff payment is closely related to the level of tariff payment. If a legislator desires a rather short period of guaranteed tariff payment, the tariff level has to be higher in order to assure the amortization of costs. If tariff payment is granted for a longer period, the level of remuneration can be reduced. However, in the case of longer payments inflation will be greater and must be factored in. REFITs around the world usually guarantee tariff payment for a period of 10-20 years, while a period of 15-20 years is the most common and successful approach. A payment of 20 years equals the average lifetime of many renewable energy plants. Longer remuneration periods are normally avoided because otherwise technological innovation might be hampered. Once tariff payment ends, the producer will have a stronger incentive to reinvest in new and more efficient technologies instead of running the old plant in order to receive tariff payment. However, producers normally have the right to continue selling electricity under standard market conditions.

When fixing the duration of tariff payment, policy-makers should clearly state whether producers have the right to leave the REFIT scheme during the guaranteed payment period. This might be of interest for renewable electricity producers if the spot market power price for ‘grey’ electricity, i.e. fossil or nuclear power, rises above the guaranteed REFIT as selling electricity on the open market could be more profitable. In countries which have started to incorporate the negative external costs of fossil fuels and remove subsidies for conventionally produced electricity, this will probably start to occur more in coming years, especially for the most cost effective renewable energy technologies such as wind energy and landfill gas capture. In this case, legislators basically have three options:

1. They can mandate that the REFIT duration period has to be ‘fulfilled’ and the renewable electricity producer do not have the right to enter the ‘grey’ power market. The positive effects of this approach are the lower electricity costs for final consumers, once the power price for conventional power exceeds the guaranteed tariff level. In this case, the REFIT will stabilize and lower the average electricity price. However, such a policy could delay the integration of green electricity into the grey power market as developers will be getting less for their renewable electricity.

2. Regulators can state that the renewable electricity producer has the right to leave the REFIT but no right to re-enter the REFIT scheme. This would in essence complicate the participation of renewable electricity producers in the conventional grey market as future prices might be difficult to anticipate.

3. The legislation can give the producer the opportunity to switch between the guaranteed remuneration under the REFIT and the participation within the spot market for electricity. By those means, the producer can gather first-hand experience in the power market without being exposed to all risks related to volatile market prices. In this case, regulators would determine a time period in which the producer is allowed to change between both systems, such as once every month or once every year.

Purchase Obligations

Besides long-term tariff payments, the purchase obligation is the second most important 'ingredient' for all REFIT schemes as it assures investment security. It obliges the nearest grid operator to purchase and distribute all electricity produced by renewable energy sources, independent of power demand. This means, for instance, that in times of low demand, the grid operator will reduce the amount of 'grey' electricity while all 'green' electricity is incorporated into the electricity mix. The purchase obligation is especially important for more variable renewable energy technologies, such as wind and solar PV, as the producer cannot control when the electricity will be generated. In contrast, gas and coal and nuclear power plants can increase and reduce output, as can hydroelectric dams, biomass facilities and geothermal power stations. Therefore, advanced REFIT schemes sometimes include tariff differentiation according to electricity demand (Demand-Oriented Tariff Differentiation).

The purchase obligation protects renewable electricity producers in monopolistic or oligopolistic markets where the grid operator might also dispatch power generation capacity. When decisions are made about which power generation sources to use to meet electricity demand, such grid operators might be biased and dispatch power example of a well-designed purchase obligation, the German REFIT establishes an obligation to purchase, transmit and distribute all electricity produced under the REFIT scheme.

Priority Grid Access

Unfair grid access rules are often a barrier in power markets where the grid operator itself is engaged in power production. This lack of 'unbundling' generation, transmission and distribution might lead to a situation where the grid operator prioritizes its own generation units when it comes to the question of which power plant will get connected to the grid. Therefore, REFITs usually include provisions that eligible plants must be connected to the grid. The German REFIT scheme, for instance, states that 'grid system operators shall immediately and as a priority connect plants generating electricity from renewable energy sources'. We recommend this approach as the 'immediate' connection prevents delays by the grid operator and 'priority' connection enables renewable energy plants to get connected to the grid before conventional power generation units.

Equally, the lack of transmission capacity can seriously offset the deployment of Renewables. This is especially true in many African countries. However, existing bottlenecks in the grid should not be an excuse to restrict access for green electricity producers, but rather be an incentive to undertake much needed grid reinforcement in line with national grid extension plans and expected growth in overall grid capacity.

Cost-Sharing Methodology for Grid Connection

Grid connection rules have an impact on the overall profitability, and therefore success, of renewable energy support policies. Even though other support mechanisms may be well established in a given country, discriminatory practices, regulations, interconnection standards and other rules might offset or seriously disturb the deployment of renewable energy projects. This is due in particular to the high cost for grid connection in relation to the total project costs. The European study GreenNet-Europe has calculated that, in the case of offshore wind power plants, grid connection can account for up to 26.4% of total investment costs.

Even though the share is lower for all other renewable energy technologies, the methodology for cost sharing of grid connection is often essential when it comes to the decision as to whether a project is profitable or not. Many REFITs define the methodology used for dividing the costs for grid connection between the renewable electricity producer and the grid operator. Some legislators prefer to establish these rules in legislation for grid regulation. Essentially, three different methodologies can be applied to connection charging: the 'deep', the 'shallow' and the 'super-shallow'. The deep connection charging approach leaves the producer of renewable electricity with all costs, both for grid connection and for grid reinforcement. This includes the costs for the connection line to the next connection point and the costs for reinforcing the already established grid infrastructure. In the case of a lack of transmission capacity, the producer has to pay for the necessary upgrading. This approach is not recommended. Historically, it was employed for large-scale conventional power plants. In the light of the high investments costs for these power plants, the additional expenditures for grid connection under the deep approach were negligible. This is different for renewable energy projects, which tend to have much lower overall costs per project than mammoth nuclear and coal fired units. Furthermore, the deep approach provides an incentive to produce electricity only in areas with a well-developed power grid. This makes sense in the case of coal and gas-fired power plants but not in the case renewable energy projects. Wind power plants, for instance, should be built in the windiest locations and not just in regions with available grid capacity.

As an alternative, the shallow connection charging approach was developed. It states that the renewable energy producer only has to pay for the new electricity line to the next grid connection point, while the grid operator has to cover all costs for potential reinforcement of the existing grid infrastructure. The costs covered by the grid operator will be passed on to the final consumer in terms of system charges. Under this approach, the renewable electricity producer will choose the location for the power plant depending on the resource availability (wind speed, etc.) and not infrastructure availability. It is also possible to mix both approaches. In this case, the power producer pays for the electricity line to the next connection point. The costs for grid reinforcement are shared between the grid operator and the electricity producer. Normally, the share covered by the producer depends upon the assessment of their proportional use of new infrastructure. This combination can be seen as a compromise between an incentive for using available grid infrastructure and choosing the resource optimal locations.

A super-shallow connection charging approach was implemented in some European countries to promote the deployment of offshore wind power plants, particularly in Denmark and Germany. Connection lines from offshore wind fields to the nearest onshore connection point are rather expensive because of the long distances involved. To free the offshore wind power developers from this financial burden, legislators decided that even the costs for the new connection line from the offshore wind park to the next onshore connection point have to be paid by the grid operator.

The shallow grid connection approach or even the super-shallow grid connection approach is recommended. This allows for a strict separation of infrastructure investment and investment into new generation capacity. There is clearly a tendency for countries wanting to promote renewables to move away from the deep to the shallow connection charging approach. Whatever cost-sharing methodology regulators wish to apply, they must take the financial advantages (super-shallow approach) or disadvantages (deep connection charging approach) of green electricity producers into account when calculating the tariffs. The estimated costs for grid connection and reinforcement must be part of the tariff calculation methodology.

Effective Administrative Procedures

The experience of some REFIT countries shows that, despite good economic and grid access conditions, generation capacity for renewable electricity does not increase significantly. The reasons for mediocre performance despite having the best designed REFIT can include administrative barriers such as long lead times for project approval, a high number of involved authorities and the lack of inclusion into spatial planning[3]. The European Commission, for example, recommends implementing quicker approval procedures for small-scale projects because they differ fundamentally from large-scale coal-fired power plants. It makes little sense to force both types of projects to go through the same administrative process[4].

Minimizing lead times

One major administrative barrier for renewable energy projects is long lead times. In the EU, lead-times for small-scale hydropower development vary from 12 months (Austria) up to 12 years (Portugal and Spain). Policymakers can reduce this barrier by establishing a time limit on the entire approval process. National and local entities will be forced to deal with project permissions in due time, and organizations opposed to renewables will have less influence when it comes to non-economic barriers. Setting deadlines for the decisions of each authority will help, as long as authorities can keep them. Especially on a local level, administrative bodies often lack experience in dealing with industrial size projects.

Minimizing the coordinating Authorities Involved

Another important constraint for the development of renewables is the large number of authorities involved in the licensing process. In France, for instance, wind power producers have to get in contact with 27 different authorities at different political levels. In some Italian regions, up to 58 permits from different authorities are needed for small scale hydropower plants. Complexity can be reduced by clarifying the responsibilities of each authority, and establishing a new organization dedicated to rapid renewable energy deployment, sometimes called a 'one-stop shop', to coordinate and simply the planning process. Most successful are those countries that authorize one single administrative body to deal with all subordinated authorities at different political levels.

Inclusion in spatial planning

Spatial planning provisions help to organize the use of physical space in a given country, such as stipulating where roads, industrial areas, power plants, and sewer systems should be located. Spatial planning at local level must anticipate future renewable energy projects by

[3] Ragwitz, M. et al, 2007; Roderick, P. et al, 2007; Coenraads, R. et al, 2008
[4] 8 EU Commission, 2005

including them when drafting or revising regulations and standards. In this process the available resources, such as wind speed and solar radiation, should be identified.

Setting Targets

Sometimes REFIT legislation is combined with ambitious political targets for renewables. This has merit, as targets are important in signaling long-term commitment to investors. They indicate that support mechanisms will be in place for a certain period of time and they increase the likelihood of tariffs being sufficiently high. Targets should always be formulated as minimums by including the words 'at least' (e.g. 'at least 20% by 2020'). This way, targets do not have the negative effects of acting as capacity caps, where the deployment of new installation slows or comes to a halt once the target has been reached.'

Targets can be formulated as a certain share of renewables in the overall energy or electricity mix. This has been done by the German legislator who determined that the German REFIT scheme 'aims to increase the share of renewable sources in electricity supply to at least 30% by the year 2020 and to continuously increase that share thereafter'. Alternatively, targets can also be established for the installed capacity. We recommend establishing targets for the short, mid and long term, thus establishing a pathway of how renewables can increasingly substitute fossil and nuclear power generation sources.

Progress Reports

Last, but not least, evaluating and periodically reporting on the state and progress of REFIT programmes is crucial for long-term success. Reporting and evaluation is usually the task of the ministry that handles the policy. It ensures that the law works well and, if necessary, recommends how it could be improved or amended. In some countries, progress reports provide the scientific grounds for periodic amendments of REFIT schemes. This periodic revision guarantees stability for the producers, who know that the legislation will not be changed in the meantime, but it also gives politicians room for modifications.

When regulators implement a REFIT scheme for the first time, frequent adjustments might be necessary in the first couple of years. Progress reports typically include an analysis of the growth rates and the average generation costs of all eligible technologies. They identify the economic, social and environmental costs and benefits of renewable energy support (especially an estimate of greenhouse gas reductions). They review the additional costs for the final consumer. And they calculate the ecological effects of renewable energy plants, positive and negative, on nature and landscape.

Checklist for a Basic Refit Scheme

The World Future Council's 'powering Africa though FIT study developed following checklist that regulators can refer to when drafting a basic REFIT scheme.

- Choose the eligible technologies based on the resource availability in your country.
- Determine which kind of power production plants shall be eligible.
- Establish a transparent tariff calculation methodology based on the generation costs of each technology.
- Set technology- and size-specific REFITs.
- Fix the duration of tariff payment (usually 20 years).

- Create a robust financing mechanism, sharing the additional costs among all electricity consumers.
- Oblige the grid operator to purchase all renewable electricity.
- Grant priority grid access.
- Regulate the cost sharing for grid connection and reinforcement based on the 'shallow' or 'super-shallow' connection charging approach.
- Create effective administrative procedures.
- Set renewable energy targets and mention them explicitly in the REFIT legislation.
- Establish a progress report as the scientific.

FEED IN TARIFFS ANALYSIS IN COMESA

A.1 Countries with REFIT Policies

1. Kenya

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	Public investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	yes	no	no	no	yes	no	no	yes	no

KENYA REFIT DESIGN FEATURES	
Integration with policy targets	The long-term energy strategy 2012-2030 sets the following targets: - 5 530 MW from geothermal energy - 1 000 MW from biomass energy - 2 000 MW from wind energy - 300 MW from small hydro energy
Eligibility	Biogas (0.5 – 40 MW) Biomass (0.5 – 100 MW) Geothermal (< 70 MW) Small hydro (0.5 – 10 MW) PV (0.5 – 10 MW) Wind (0.5 – 100 MW)
Tariff Differentiation	Yes, for: - Biogas - Biomass - Small hydro [(0.5<1 MW), (1-5 MW), (5-10 MW)] - PV - Wind

KENYA REFIT DESIGN FEATURES	
Tariff Methodology	Rate of return (currently 12% post tax on equity)
Duration of Payment	20 years
Cost recovery	Pass through to consumers – 70% for all technologies & 85% for PV
Interconnection Guarantee	Yes, if it meets the standards
Interconnection costs	Generally paid by the generator
Purchase	Guaranteed purchase of all production and priority dispatch
Purchasing entity	KPLC – State owned network operator
Triggers and adjustment	FIT policy reviewed every 3 years
PPA	Negotiated case by case. Standard contract recently developed.

2. Mauritius

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, financing or	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
yes	no	no	no	no	yes	no	no	no	no

MAURITIUS REFIT DESIGN FEATURES	
Integration with policy targets	*The long-term energy strategy 2009-2025 sets the following targets:* - *17% from bagasse* - *2% from hydro* - *4% from waste energy* - *8% from wind* - *2% from Solar PV* - *2% from Geothermal*
Eligibility	PV (< 50 kW) Wind (< 50 MW) Hydro power (<50 kW)
Tariff Differentiation	Yes, for: PV [(<2.5 kW), (2.5 – 10 kW), (10-50kW) Wind [(<2.5 kW), (2.5-10 kW), (10-50 kW)] Hydro [<(2.5 kW), (2.5-10kW), (10-50kW)]
Tariff Methodology	Rate of return (based on IRR of 6-8%)
Duration of Payment	15 years

MAURITIUS REFIT DESIGN FEATURES	
Cost recovery	The Mauritius Ile Durable fund, which is funded through tax revenue
Interconnection Guarantee	Yes, if it meets the standards
Interconnection costs	Generally paid by the generator, including grid upgrades
Purchase	Guaranteed purchase of all production and priority dispatch
Purchasing entity	Utility
Triggers and adjustment	Revise programme after 2 MW extra installed capacity or 200 installation
PPA	Standard contract.

3. Rwanda

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
yes	yes	no	yes	no	yes	no	no	no	no

RWANDA REFIT DESIGN FEATURES	
Integration with policy targets	BY 2012 – EDPRS - Increase Energy access from 6% in 2 000 to 16% - Double the electrification rate - Installed capacity of 130 MW - Reduced electricity prices BY 2017 – EDS - Increase generation capacity to about 1 000 MW BY 2020 – Vision 2020 - From 6% in 2000 to 35% grid connection - Decrease share of wood in the national energy consumption from 94% in 2000 to 50%.
Eligibility	hydro (0.5 - 50 kW), could consider hydro outside this range.
Tariff Differentiation	Yes, for various tariffs for hydro starting from 50k up to 10 MW.
Tariff Methodology	Rate of return before any CDM benefits
Duration of Payment	Negotiable
Cost recovery	-
Interconnection Guarantee	Yes, if project is within 10 km of national grid.
Interconnection costs	Grid operator pays and recovers from pass-through to consumers
Purchase	Guaranteed purchase of all production and priority dispatch

RWANDA REFIT DESIGN FEATURES	
Purchasing entity	Transmission system operator
Triggers and adjustment	Tariffs adjusted annually to US$ PPI and differential inflation
PPA	Standard contract

4. Uganda

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
yes	yes	no	yes	no	yes	no	no	no	no

UGANDA REFIT DESIGN FEATURES	
Integration with policy targets	Renewable Energy policy (REP) aims to increase the use of new RE from current 4% to 61% of total energy consumption by 2017. The target installed capacity by 2017 (by technology) is: - Large hydro-power = 1 200 MW - Mini and micro hydropower = 85 MW - Co-generation = 60 MW - Geothermal = 45 MW - Municipal Waste = 30 MW
Eligibility	Project between 0.5-20 MW. Larger projects negotiable
Tariff Differentiation	Yes, for: - Wind (< 150 MW) - Solar PV (< 7.5 kW) - Geothermal (< 75 MW) - Landfill gas (< 50 MW) - Biogas (<50 MW) - Biomass (< 50 MW) - Bagasse (< 50 MW) - Hydro [(500 kW – 1 MW), (1MW – 8 8MW), (>9 MW)]
Tariff Methodology	Rate of return
Duration of Payment	20 years
Cost recovery	Recovered from consumers. Policy also allows the costs to be shared through voluntary green power programs revenues, donor support, international climate change funds and other finance mechanisms.
Interconnection Guarantee	Yes, for all licenced generators.
Interconnection costs	Generally paid by the generator

UGANDA REFIT DESIGN FEATURES	
Purchase	Guaranteed purchase of all production and priority dispatch
Purchasing entity	Uganda Electricity Transmission Company
Triggers and adjustment	Revised every 2 years for the first 4 years and every 3 years thereafter.
PPA	Standard contract

A.2 MEMBER STATES THAT ARE IN ADVANCED STAGES OF MAKING REFIT POLICIES

5. Ethiopia

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, financing or	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	yes	no	yes	no	no	no	no	no	no

ETHIOPIA PROPOSED REFIT DESIGN FEATURES	
Integration with policy targets	Ethiopia plans on developing 2.5 GW of renewable energy by 2030 under its Climate Resilient Green Economy Initiative which will includes: - 22,000 MW of hydropower (Government Projects) - 1,000 MW of geothermal (Government Projects) - 2,000 MW of wind (Government Projects)
Eligibility	- Only main grid connected projects - Projects with less than 50% government ownership - Hydro power (0.1 – 10 MW) - Biomass (0 – 10 MW) - Geothermal (0.5 – 10 MW) - Bagasse (0.1 – 10 MW) - Wind (0.2 – 10 MW) - Solar PV
Tariff Differentiation	Yes but published tariff differentiation has since been revised.
Tariff Methodology	Not yet developed.
Duration of Payment	15 years for wind, biomass & bagasse. 20 years for hydro and geothermal.
Cost recovery	Recovered from consumer
Interconnection Guarantee	None

ETHIOPIA PROPOSED REFIT DESIGN FEATURES	
Interconnection costs	Under review
Purchase	100% of production
Purchasing entity	Utility
Triggers and adjustment	-
PPA	Standardised contract

Through Ethiopia has drafted the REFIT proclamation as summarised above, implementation is 2-3 years away because it has not been turned into law. The country is looking at other options such as:

- Open bidding for renewable projects
- Unsolicited bids for projects.

The Ethiopian Energy GENERATION data OCTOBER 29/2013

1. Generation Installed Capacity

No	Description	Capacity MW					
		Hydro	Diesel	Geothermal	Wind	Total	In Services Year
A	ICS						
1	Koka	43.2				43.20	1960
2	Awash 11	32				32.0	1666
3	Awash III	32				32.0	1971
4	Finchaa	134				134	1973
5	Malka Wakana	153				153	1773/2003
6	Tis Abay I	11				11	1988
7	Tis Abay II	73				73	1964
7	GilGel Gibe I	184				184	2001
8	Aluto Langano			7.3		7.3	2004
9	Kaliti		14			14	1999
10	Dire Dawa		38			38	2004
11	Awash 7 kilo		35			35	2004
12	Nazerat Diesel		30			30	2004
13	Debrezeit Desiel		30			30	
14	Beles	460				460	
15	Gilgel Gibe 2	420				420	
16	Tekeze	300				300	
17	Amerti Nesh	57				57	2013
18	Adama 1				51	51	2013
19	Ashegoda				120	120	2013
20	Stand by Diesel on defferent Sites		25.3			25.3	1958
	ICs Total	1899.2	172.3	7.3	171	2249.8	
B	SCS						
1	Yadot	0.35				0.35	

No	Description	Capacity MW					
		Hydro	Diesel	Geothermal	Wind	Total	In Services Year
2	Sor	5.00				5.00	
3	Dembi	0.80				0.80	
4	Isolated Diesel plants		30.06			30.06	
	SCS Sub Total	6.15	30.06			36.21	
EEPCO ICS+SCS Grand Total		2005	202.36	7.3	171	2285.66	

6. Egypt

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
yes	yes	no	yes	yes	yes[5]	no	yes	no	no

Egypt has set a target of 20% renewable energy in the electrical energy mix. Hydro installed capacity currently contributes 10% and is expected to drop to below 6% by the year 2020. This implies that 14% of the renewable energy must come from other sources by 2020. This is equivalent to installed capacity of 7 200 MW. The renewable energy strategy priority states that wind energy should contribute 12% of the targeted 14% of the renewable energy mix by the year 2020 for the following reasons:

i. There is a high potential of wind energy in many sites with a high capacity factor.
ii. The local experience in wind energy dates back to the 80's - the current installed wind energy capacity is 405 MW.
iii. The potential for an increasing share of local manufacturing of wind energy equipment is to 30-70%[6].
iv. Wind generation costs are getting closer to oil and gas generation costs.

Renewable energy laws and legislations

The new electricity law has adopted three mechanisms for power generation from renewable sources, these mechanisms are:

[5] In Egypt FIT are new, but part of long-term strategy to develop 2 500 MW REFIT base RE.
[6] Sourced from the latest report issued by IMC in cooperation with Cairo University.

1. Plants shall be built by New And Renewable Energy Authority (NAREA)
2. Competitive Bidding
3. Feed-in-Tariff

Item	NREA	Competitive Bidding	Feed-In-Tariff
Program size	2200 MW	2500 MW	2500 MW
Single Wind Farm Size	Large (100-400 MW)	Large ten modules (each of 250 MW)	Medium and Small below 50 MW
Developer	NREA	Private(most probably international)	Private(focus on local)
Finances	Governmental and soft financing from international development agencies	Commercial Finance	Commercial Finance
Tariff Setting	Proposed by Egypt Era and approved by the Cabinet of Ministers	According to the bid outcome	Proposed by Egypt Era and approved by the Cabinet of Ministers
Contracting	20 years	Long term PPA mostly for 20 years	15 years
Off taker	Grid		Grid or distribution system
O/M	NREA	Developer	Developer
Construction Responsibility	NREA through EPC	Developer	Developer

Renewable Energy Incentives in Egypt

NAREA Incentives

Soft financing is provided to investors with the objective of promoting the development RE projects. The current installed capacity is 400 MW. The plan is to add another 200 MW every year until 2200 MW is reached. As of 2014 the incentives will include both soft financing and partnership with other governmental entities.

Competitive Bids

The grid issues tenders requesting supply of RE power in blocks of 250 MW that will total 2500 MW. The private sector will be offered viable long-term power purchase agreement with the grid operator. This may be increased by 750 MW if the feed-in-tariff program does not meet its target.

Feed-In-Tariffs

The target for the FIT incentive is to reach 2500 MW. Their targets are small to medium wind energy developers. The FIT is set for 15 years and the tariffs are based on the wind speed and

capacity. International experience has shown that feed-in tariff are more attractive for smaller wind RE projects investors like farmers, cooperatives and private investors.

7 Malawi

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	Public investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	yes	no	yes	no	no	no	no	yes[7]	no

Renewable Energy Policies

Public investment, loans, or financing		
Sector	*Technology*	*Incentives*
Rural Energy	Solar PV	Solar Charge Malawi will invest $367,000 to help the Malawian government bring solar energy to rural areas
Tax Incentives		
Sector	*Technology*	*Incentives*
Electricity	Non-Technology specific	Targeted electrification rate
Electricity	Non-Technology specific	Elimination of the import duties for wind generators, solar PV and other solar products.
Obligation and Mandate		
Sector	*Technology*	*Incentives*
Petroleum	Non-Technology specific	Biofuel mandate of E20 (20% ethanol and 80% petrol)

A3 COUNTRIES WITHOUT REFIT POLICIES

8 Burundi

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES		
Financial Incentives	Public Financing	Regulatory Policies

[7] Only for biofuels.

Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	no	no	no	no	no	no	no	no	no

Burundi's Energy National Profile in 2009 was:

a) Total Primary Energy Supply: 98.2 PJ - Of which renewables: 95.4 PJ (97.2%)
b) Energy self-sufficiency: 97.3%
c) Fuel imports: 10 million USD (2.6% of total imports)
d) Electricity generation: 241.5 GWh - Of which renewables: 237.2 GWh (98.2%)
e) Electricity use per capita: 23 kWh
f) Electrical capacity: 32 MW - Of which renewables: 31.4 MW (98.1%)
g) Electricity access rate: 2.7%
h) Share of population using solid fuels: > 95%

Potential Renewable Energy Resources:

- Wind
- Solar
- Hydro
- Biomass

The Ministry of Energy and Mines has invited bids for two 10 MW photovoltaic solar plants at Gitega and Bubanza. Bids for the build, own and operate contract are now due by 2 October, following a deadline extension to give more time for bidders to prepare their submissions. According to a joint study by the Ministry of Energy and Mines and the United Nations Development Programme (UNDP), Burundi has significant solar potential of 2,000kWh/m2/yr, which is comparable with the Mediterranean area, as well as 1,700MW of hydro potential, of which 300MW is economically exploitable. However, ministry officials say development of hydro sites is often hampered by a lack of feasibility or technical studies.

9 Comoros

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	no	no	no	no	no	no	no	no	no

Comoros does not have a written strategy document for renewable energy. However, the non-existence of a strategy document does not prevent individual entrepreneurs and the State from developing RE projects, be it in an unorganized fashion.

The country has a potential for RE project that are based on:

1. Hydro Power,
2. Wind Energy, and
3. Solar Power.

Studies are being conducted on how the above RE sources should be harnessed in the country. Also, preliminary studies are being conducted on the potential for geothermal power. The lack of the government policy on energy does hinder co-ordinated development of energy project, including RE. The size of the country and the low level of development implies that policies can best be achieved through external donor funding/grants.

10 Democratic Republic of Congo

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	no	no	no	no	no	no	no	no	no

One of the major developments in the energy sector is the Electricity Code policy project, which passed in 2009. This project has facilitated important changes in DRC's energy sector, including the creation of the Electricity Regulation Authority (ARE), the National Electrification Fund (FONEL), and the National Electrification Agency (AGENA).

Financing Mechanisms

No financing mechanism is currently in place for projects promoting modern on or off-grid lighting technologies. Within the framework of the government's strategy for the development of renewable energy for electrification, however, the DRC government is creating the National Electrification Fund which will represent a new financial mechanism.

The potential beneficiaries eligible for funds are private operators, small businesses, NGOs, rural cooperatives, and financial institutions. The FONEL will finance decentralized systems using renewable energies, among others.

In addition to the FONEL, there are several microfinance institutions (MFIs), which already operate in the cities and rural areas. These institutions are excellent intermediaries to gain access to the poor.

Lighting Africa

The DRC Lighting Africa program supports the government in its efforts to help bring reliable and affordable modern lighting to DRC's people. It complements current grid extension and off-grid rural electrification efforts by creating an enabling environment for the introduction of innovative new off-grid lighting solutions and the phase out of traditional lighting sources. Recent advances in lighting technology, including Compact Fluorescent Lamps (CFLs) and Light Emitting Diodes (LEDs), promise better lighting solutions- ones that are clean, portable, durable, lower cost, and higher quality than conventional lighting options. The larger Lighting Africa Program operates across Africa in addition to DRC, helping to mobilize the private sector to provide affordable, renewable, and clean lighting to rural, urban, and peri-urban customers without electricity access and focusing mainly on low-income households and micro businesses.

10 Djibouti

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
No	no	no	no	no	no	no	no	no	no

Djibouti currently has installed electricity generating capacity of 85 megawatts (MW), all of which is thermal (oil-fired). In January 2001, U.S.-based Geothermal Development Associates (GDA) announced that it had completed a feasibility study on the development of a 30-MW geothermal power plant in Djibouti. The study, which commenced in August 2000, established the commercial viability of the proposed generating facility. The $115 million plant, to be located in the Lake Assal region west of the capital, will be constructed on the build own operate (BOO) financing scheme. The Global Environmental Facility (GEF), a joint initiative of the World Bank and the United Nations (UN), has approved a $280,000 financing package to pay for contract negotiations required for the project. To date, however, these funds have not been released. At the same time, however, Electricite de Djibouti, the national electric company, has begun to remove aging diesel-fired generating units.

To continue to provide power to rural residents, the government, with the help of a grant from a number of Arab financial institutions, is installing solar and wind capacity. The primary goal of the project is to replace old diesel powered rural water pumps with new ones powered by renewable resources, but excess energy will be used for electrification.

Djibouti's Energy National Profile in 2009 was:

a) Total Primary Energy Supply: 11.2 PJ - Of which renewables: 3.6 PJ (32.3 %)
b) Energy self-sufficiency: 32.3%
c) Electricity generation: 335.0 GWh - of which renewables: 0.0 GWh (0 %)
d) Electricity use per capita: 394 kWh
e) Electrical capacity: 118 MW - Of which renewables: 0 MW (0 %)
f) Electricity access rate: 50 %

g) Share of population using solid fuels: 16%

National RE Targets - 30% of rural electrification to come from solar photovoltaic by 2017 – mainly off-grid.

Potential Renewable Energy Resources:

- Wind
- Solar
- Biomass
- Geothermal - 30 MW of geothermal capacity addition proposed (1 project)
- Ocean
- Hydro power

11 Eritrea

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	no	no	no	no	no	no	no	no	no

Electricity is only available in Eritrea's larger cities and towns, leaving about 80% of the Eritrean population without access to electricity. Some smaller villages have community diesel generators which can provide small amounts of electricity to households. Photovoltaic (PV) electricity generation is being used in special applications throughout the country. Twenty-six rural health centres are each supplied with 2-kilowatt (kW) solar photovoltaic power systems for refrigeration, lighting, operating theatres, fans, and laboratory equipment. Additionally, the majority of the 140 rural clinics are equipped with solar powered vaccine refrigerators. Approximately 3% (about 60 villages) of Eritrea's villages have been supplied with PV systems (0.8 to 1.2kW) to power water pumps to supply drinking water. Each system serves a minimum of 300 households. Over 70 rural schools (out of 700) have been provided with PV systems for lighting and power.

Eritrea’s Energy National Profile in 2009 was:

a) Total Primary Energy Supply: 30.4 PJ - of which renewables: 23.5 PJ (77.4 %)
b) Energy self-sufficiency: 77.4%
c) Electricity generation: 295.0 GWh - Of which renewable: 2.0 GWh (0.7 %)
d) Electricity use per capita: 51 kWh
e) Electrical capacity: 167 MW - Of which renewables: 1 MW (0.6 %)
f) Electricity access rate: 32.0%
g) Share of population using solid fuels: 63%

National RE Targets:

50% of electricity generation from wind. Potential Renewable Energy Resources:

- Wind
- Solar
- Biomass
- Geothermal - 50 MW of geothermal capacity addition proposed (1 project)
- Ocean
- Hydro power

12 Libya

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	yes	no	yes	no	no	no	no	no	no

Renewable Energy Authority of Libya was founded to promote the development of RE in Libya. The main objectives of REAOL are:

a) A comprehensive mapping of renewable energy sources in Libya and implement the studies to determine the current and future market.
b) Implement of renewable energy projects in various forms.
c) Increase the contribution of RE in the national energy mix.
d) Encourage and support the industries related to renewable energy.
e) Propose the legislation needed to support renewable energy.
f) Implementation of the programs related to the energy efficiency

A goal has been set by REAOL to reach 10% of the energy supply from renewable energy resources by the year of 2020. To achieve the target mentioned, several plans were decided as following:

YEAR	% RE	TYPE	
2015	6	Wind	750
		CSP	100
		PV	50
		SWH	150
2020	10	Wind	1 500
		CSP	800
		PV	150
		SWH	300
2025	25	Wind	2 000

YEAR	% RE	TYPE	
		CSP	1 200
		PV	500
		SWH	600
2030	30	Wind	-
		CSP	-
		PV	-
		SWH	-

To ensure the successful implementation Libya's RE plans, the following must be considered:

a) Libya's electricity market is a complete monopoly. GECOL is the only generation company, transmission, Distribution Company and is heavily subsidized.
b) The price of electricity in Libya is very low. A fair and practical FiT must be in place.
c) Libya has does not have an independent energy regulator.
d) Investment laws in the energy sector are yet to be developed.
e) The energy market in Libya is very much fragmented and it not easy come up with risk assessment.
f) Libya (REAOL) must create a standard or project specific power purchase agreement to promote the various RE technologies (cost + profit + margin).
g) The Libyan financial institutions must get involved in the investment.
h) Directing a percentage of current support for conventional energy sources (fuels of various kinds) to support the development of renewable energy sources
i) Libya must play a role toward the implementation of renewable energy international [including COMESA] initiatives.

13 Madagascar

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility quota obligation	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	no	no	no	no	no	no	no	no	no

Renewable Energy Financial Incentives
Feed-In-Tariffs

The significance of the possibility to feed-in electricity to existing grids is rather limited due to the small size of the national grid. Nonetheless, where such projects have been developed, the national power utility JIRAMA has proven to be reluctant to offer favourable feed-in tariffs. Only 2 operators of small hydro power plants have managed to conclude individual

feed-in contracts with JIRAMA on the basis of a 10 years' tenure and a pretty low feed-in tariff of approx. € 0.04 / kWh. A feed-in-law is not in place and not on the current policy agenda.

National Electricity Fund (FNE Fond National de l'Electricité)

Together with the establishment of the Rural Electrification Agency in 2004, Madagascar has introduced a consumer tax of 1.25% on electricity bills for consumptions being higher than 20kWh per month. The funds are provided to the Rural Electrification Agency to co-sponsor rural electrification projects. The agency offers a maximum of 70 % of investment costs to private operators who contribute the remainder and receive the concession to exploit the plant for 10-20 years. Even though a national electricity fund is in place, its impact is restricted as the funds available are very limited and its actual structure does not allow for financial contributions by other stakeholders like international donors, finance institutions or private investors. Therefore a restructuration of the FNE is being analyzed.

Energy Sources

Total installed electricity capacity (2008): 246 MW

- Hydro-electric: 50.4%
- Conventional Thermal: 49.6%
- Total primary energy supply (2008): 6,549 ktoe
- Biomass: 90%
- Oil and oil products: 9 %
- Hydro: 1 %
- Coal: 0.1 %

Renewable Energy Potential

RET	ACTUAL AND POTENTIAL GENERATION
Solar	The average horizontal insolation is 5.5 kWh/m2/day. Photovoltaic's (PV) in particular are currently utilised for powering public buildings such as health clinics, as well as an off-grid rural electrification solution.
Wind	The north and south have been identified as favourable to wind energy, exhibiting average wind speeds of 7.5 to 8.1 m/s at 80m. A 1.2 MW farm being constructed in the north of the island.
Biomass	GEM Biofuels has a 137,000 acre plantation within the country dedicated to jatropha oil production. The first commercial shipment of oil was made in January, 2010.
Geothermal	Madagascar is believed to have a geothermal potential which is estimated to be in excess of 350MW.
Hydro Power	The total hydro-electric potential of the country is estimated at 7,800 MW. However, only 150 MW of this is currently exploited

14 Seychelles

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES		
Financial Incentives	Public Financing	Regulatory Policies

Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility quota obligation	Net Metering	Obligation and mandate	Energy Certificate (REC)
coming	yes	no	no	no	coming	no	no	no	coming

Renewable Energy incentives

Recent amendments to existing tax legislation have had a direct and beneficial impact on renewable energy in the country. Currently, imports of technologies for non-renewable energy production, such as diesel generators, are subject to a 15% tax rate under the Goods and Services Tax Act. Amendment 3 to the 2010 regulations of the Goods and Services Tax Act of 2001 (Regulation 163F) state that "Goods imported to be used in the process of conservation, generation or production of renewable or environment friendly energy sources, as endorsed by the Seychelles Energy Commission are exempt from Goods and Services Tax". A similar exemption for renewable energy technologies is offered in the 2010 "Promotion of Environment Friendly Energy Regulations" under the Trades Tax Act.

The Energy Bill which is currently being prepared will make provision for the adoption of schemes for the promotion of renewable energy sources, including Feed-in-Tariffs, Power Purchase Agreements, Quota obligations and creation of Funds.

Clean Development Mechanism and Carbon Tax

There is no designated national authority for CDM in Seychelles however the Energy Bill will make provision and will recommend the establishment of a designated national authority within the Ministry responsible for environment.

15 Sudan

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility quota obligation	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	no	no	no	no	no	no	no	no	no

Sudan Renewable Energy Master Plan

The Sudan Renewable Energy Master Plan was drafted in 2005 in an effort to promote the use of renewable energy sources, including priority projects such as Photovoltaic (PV) installations and biomass co-generation, so as to avoid technological dependence on an oil-

based market in the sector development. From the Master plan, the Energy policy objectives are:

1) Review the current status of renewable energy development in Sudan, assess the prospects and propose a master plan for policy development and systematic implementation of programs for promoting and commercialization of renewable energy applications including appropriate institutional structure and linkages.
2) Facilitate through a master plan, a progressively increasing contribution from renewable sources of energy as part of the national energy balance and thereby helping to improve energy services especially in rural areas, reduce dependence on conventional energy, and lead to environmentally sound and sustainable development.

The National Energy priorities suggested in the master plan are several projects on renewables that should be fast-tracked for development in Sudan (quick winners), to generate rapid results and impact in the near future. It contains a set of proposals for the implementation of these quick winners. The quick winner options are renewables that can be implemented in the near term before the window of opportunity for renewable energy technologies (RETs) passes, to demonstrate success in renewable energy and avoid technological lock-in to an oil-based energy sector.

Some of the identified priority projects include; Solar PV for institutions and water pumping, solar water heaters for industrial applications, biomass cogeneration for agro-industries, wind pumping for water lifting etc.

Financial Incentives

The Sudan Renewable Energy Master Plan was drafted in 2005 in an effort to promote the use of renewable energy sources, including priority projects such as PV installations and biomass co-generation, so as to avoid technological dependence on an oil-based market in energy sector development. Funding allocations for the program total approximately US$ 9.1 million, half-funded by bilateral/multilateral donors through grants or soft loans. Of this, US$ 4.25 million is allocated for the promotion of solar PV and SWH in the short term, with a further US$ 1.05 million for wind pumping. The medium-term plan to 2015 is estimated to require US$ 15 million of funding and targets a wide range of renewable options, including small-hydro power for rural mini-grids, development of the country's geothermal resources, and modern and improved bio-energy options.

Government priorities in the renewable sector include:

- Reducing unsustainable biomass use,
- Increasing wind energy use for rural on- and off-grid electrification, as well as in water pumping and agriculture,
- Increasing the dissemination of community-scale PV projects,
- Assessment of the geothermal and small-hydro potentials of the country, and the identification of priority projects.

16 Swaziland

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES		
Financial Incentives	Public Financing	Regulatory Policies

Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, financing or	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
No	no	no	no	no	no	no	no	no	no

Swaziland currently does not have financial incentives for renewable energy. However, almost all electricity generation is from renewable energy – hydro and bagasse thermal power station as well as SWH and off-grip PV solar panels. The country's rural electrification has intensified to a point where the national access rate is just over 70% and the target is to increase it to 100% by 2022. All new IPP projects that have reached the feasibility stage are also renewable. A coal-based base load thermal power station is at the planning stages. This project, however, competes with significant expansion of co-generation project in the sugar belt which material reduce the potential size of the thermal power station to a point of making it not viable unless export agreements are finalized within the SAPP.

Renewable energy resources include traditional biomass e.g. firewood, wood-waste from the forest industries, bagasse from the sugar industries; hydropower from water and new renewables such as solar and wind. There is a significant scope for increased renewable energy use in Swaziland. Renewable energy will play an important role in the world's energy supply in the near future mainly because of environmental concerns associated with conventional energy use. The Ministry of Natural Resources and Energy initiates, implement and support renewable energy projects and initiatives. The Government of Swaziland formulated a strategic framework and Action Plan with regards to renewable energy development in the country to address access to energy.

The government seeks to: -

- Develop a renewable energy information programme and will establish and maintain an appropriate renewable energy information system.
- Establish a centre for demonstration and education on renewable energy and sustainable energy
- Encourage and enhance, where applicable, topics on renewable energy and energy in general in educational and training curricula.
- Maximise the use of renewable energy technologies wherever they are viable
- Promote greater understanding and awareness of renewable energy resources and the associated technologies;
- Develop and maintain accurate renewable energy resource data and make it available to all, so as to make informed policy decisions regarding sustainable energy use and supply.
- Develop woodlots in areas where there is an acute fuel wood shortage

Swaziland has engaged a consultant to produce a report and framework for engaging IPP which will include investigating:

- Feed-In-Tariffs
- Competitive bidding, which is currently seen as most appropriate for Swaziland.

17 ZAMBIA

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES									
Financial Incentives			Public Financing		Regulatory Policies				
Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, financing or	Public competitive bidding	Feed In Tariff	Utility obligation quota	Net Metering	Obligation and mandate	Energy Certificate (REC)
Yes	yes	no	no	no	no	no	no	yes	no

Renewable Energy Incentives

The Government has provided financial incentives for the solar sector by waving import duty on solar equipment in order to reduce the price of solar equipment. Further, the ERB has waved the licence fees (0.7% of annual turnover) for solar distributors. These two incentives have resulted in an increase in the number of solar distributors from 18 in 2008 to 34 in 2011.

Clean Development Mechanism and Carbon Tax

The country a signatory of the Kyoto Protocol. Carbon tax (introduced in 2011) is only applied to motor vehicles and the funds raised do not go directly to dealing with reducing or studying carbon emissions in the country. The carbon tax is collected by the national Road and Transportation Safety Agency in the same way road taxes for vehicles are collected.
The greatest carbon emissions are released from the burning of wood fuel at domestic level and from coal used mostly in the mines. Heavy industry are also significant producers of CO_2. There are no indications that the Government is considering additional carbon taxes either than for motor vehicles as mentioned.

18 ZIMBABWE

Renewable Energy Promotion Policies

RENEWABLE ENERGY POLICY PROMOTION POLICIES		
Financial Incentives	Public Financing	Regulatory Policies

Capital Subsidy, grant or rebate	Tax incentives	Energy Production Payment	investment, loans, or financing	Public competitive bidding	Feed In Tariff	Utility quota obligation	Net Metering	Obligation and mandate	Energy Certificate (REC)
no	no	no	no	no	no	no	no	no	no

Renewable Energy Incentives

Power generation is dominated by the State utility**,** Zimbabwe Electricity Supply Authority. While the importance of Renewable Sources of energy is recognized, the government has not offered any incentives for renewable energy. It should be noted that hydro power from Kariba is a significant source of electricity. The current economic conditions in Zimbabwe presents a serious challenge to the government's ability to offer any State funded RE programs such as feed-in-tariffs.