



CHAPTER 7: Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All

Mauritius aims at ensuring energy security by promoting cleaner and sustainable energy through the development of renewable energy and energy efficiency technologies. The island has no reserves of oil, gas or coal, but is endowed with renewable energy resources. While bagasse which is a byproduct of sugarcane, remains the main source of renewable energy (16%), the remaining renewable electricity generation is obtained from hydro, wind, landfill gas and solar.

In this vein, legal and institutional reforms in the energy sector have been undertaken. In 2016, the Mauritius Renewable Energy Agency (MARENA) was created to oversee the development of renewable energy in Mauritius. In 2017 the Utility Regulatory Authority was established to regulate electricity, water and waste water. An Energy Efficiency Act provides for product labelling and importation of energy efficient equipment, and the Building Control Act of 2011 aims to improve energy efficiency in building design.

In order to ensure the progressive energy transition towards RE sources, our policy framework for energy is to;

1. Increase the renewable energy mix to 35% by 2025 and maintain at least this level until horizon 2030;
2. Increase utility scale solar farms in the country ;
3. Put in place special schemes such as Small-Scale Distributed Generation (SSDG) and Medium-Scale Distributed Generation (MSDG), encouraging people to produce and consume their own electricity, thus becoming prosumers; and
4. Promote energy efficiency and reduce our energy usage by 10% by 2030

In Mauritius and Rodrigues, the Central Electricity Board (CEB) is the sole agency for transmission, distribution, and sale of electricity. CEB currently produces 40% of the country's total power requirement from four thermal power stations and eight hydroelectric plants; the remaining 60% is purchased from Independent Power Producers, mainly private generators from the sugarcane industry using bagasse and imported coal.

Mauritius, as a Small Island Developing State (SIDS), is highly vulnerable to the adverse effects of Climate Change as a result of man-made activities, particularly in the energy and transportation sectors. Thus, a Renewable Energy Roadmap 2030 for the electricity sector is being finalised, whereby strategies and projects are planned to allow the achievement of 35% renewable sources in the electricity mix by 2025, and maintained at this level by 2030

The energy mix has been diversified throughout the years as shown below:

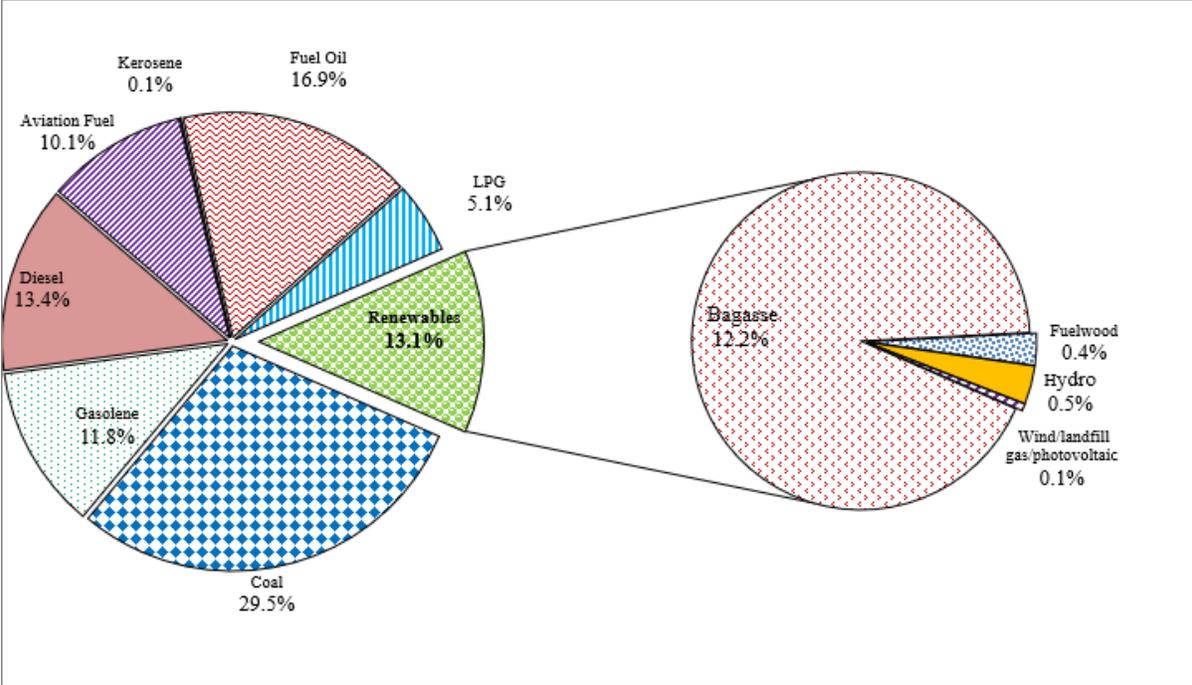


Figure 1- The share of renewable energy sources in the country’s energy mix in 2017

LEAVING NO ONE BEHIND

During the last decade, Mauritius has made tremendous improvement in its electricity sector in terms of reliability and sustainability. **99.6%** of the population has access to reliable supply of electricity. The high level of energy access has been possible through bold decisions and timely planning and investment in our generation, transmission and distribution infrastructure.

To promote social inclusiveness, the Central Electricity Board (CEB) has devised a Home Solar Project for the installation of 10,000 PV kits, each of 1 kW capacity on the rooftops of customers in the Social Tariff Category, in Mauritius and Rodrigues. These households will benefit from 50 kWh of electricity free of charge on a monthly basis, for a period of 20 years,

and all surplus electricity will be injected into the grid. The Home Solar Project is being fully supported by IRENA and has been co-financed by the Abu Dhabi Fund for Development.

A scheme has been introduced to promote the use of solar water heater (SWH) since 2008. Under the four phases of the SWH Grant Scheme, subsidy of 73,480 solar water heaters have been provided for up to 2016.

Green Energy has been promoted by providing a Solar Photovoltaic Rebate Scheme for the Small and Medium Enterprises (SME).

BRIGHT SPOTS

Accelerating Transformational Shift to a Low Carbon Economy

The project will reduce carbon dioxide emission by 4.27 million tCO₂e. It is a key step in achieving Mauritius NDC, our commitment under the Paris Agreement and supporting continued economic growth.

A Grid Code with respect to the Small-Scale Distributed Generation, SSDG, has been developed for any individual wishing to install solar PV system and Medium Scale Distributed Generation, MSDG, for the commercial sector.

The Net-Metering, launched in 2015, allowed the CEB to integrate a total of 5 MW of new PV installations in Mauritius and 200 kW in Rodrigues. 2000 customers, mainly households were able to connect their RE installations into the grid, at zero cost without any energy storage as backup. Part of the initial investment of 15% in PV can be recouped through a relief in tax payment.

Project components for accelerating Transformational Shift to a Low Carbon Economy;

1. Establishment and operationalization of the renewable energy agency ;
2. Grid strengthening to enhance the absorption capacity for intermittent renewables on the main island of Mauritius and Rodrigues ;
3. Support to small /medium scale rooftop PV (50kW to 5MW); and
4. Enabling the outer island of Agalega to become energy-independent through the use of renewables



Figure 2- PV on roof-top of a house

Government is seeking international competitive bidding for all its power projects and favours joint ventures between the local private sector and international firms for scaling up the utility scale solar farms and wind farms in the country. As at date, more than six solar farms and one wind farm have been commissioned.



Figure 3- Wind farm on the northern part of Mauritius

ENERGY EFFICIENCY

Sustainability cannot be dissociated with energy efficiency. Government has put in place several measures so as to promote energy efficiency.

Programme National d'Efficacité Energétique (PNEE) by Business Mauritius

In association with Business Mauritius and l'Agence Française du Développement (AFD), a national energy efficiency programme, "PNEE", has been implemented and led to energy audits in 88 enterprises and subsequent remedial actions to reduce electricity consumption.

The "PNEE" offers technical and financial assistance to groups of Mauritian companies by sub-sector (textile, hotels etc.) or energy use (heating, compressed air system etc.) to implement measures aimed at reducing their energy consumption, controlling their costs, gaining competitiveness and being more eco-responsible. Beyond carrying out energy audits, the PNEE is aiming for the gradual emergence of an energy efficiency market. These have been carried out in different sectors under the SWITCH Africa Green project.

The savings in the consumption of energy represents a reduction in carbon emissions of more than 70,000 tons per year.

An **Energy Efficiency Management Office (EEMO)** has been set up to promote and raise awareness on the efficient use of energy, develop energy performance standards for buildings, appliances and equipment, and provide support to SMEs to improve their energy efficiency.

Some Efficiency Measures;

1. Mandatory labelling of domestic appliances and energy audits in government buildings;
2. Energy intensive private enterprises imposition of 25% additional levy on energy inefficient appliances;
3. Battery Energy Storage System; Reinforcement of grids with the installation of batteries of about 18 MW capacity. 4MW of battery energy storage system (BESS) has already been installed;
4. Subsidy for the sale of 1 million compact fluorescent lamps and Government purchases of energy saving light bulbs
5. Replacement of 50,000 conventional sodium lamps for street lighting in urban and rural roads by Compact Fluorescent Lamps (CFLs),
6. An Energy Efficiency Building Code has also been developed to ensure that all new constructions are energy efficient

Our Regional and International Partnerships

Our regional partners remain one of our major stakeholders in developing and applying renewable energy approaches to the promotion of sustainable development and enhancement of socio-economic benefits, in the Indian Ocean Region. Recently, at the second IORA Renewable Energy Ministerial Meeting on 2 - 4 October 2018, Mauritius and other IORA Member States adopted the Delhi Declaration on Renewable Energy in the Indian Ocean Region.

A MOU between the IORA and the International Solar Alliance (ISA) was also signed in the margins of the meeting which outlines several areas of cooperation for promoting investments in solar energy among IORA Member States and building human, institutional and corporate capacities at national and regional level.

Under the 'Energy' project of the IOC, the preparation of a roadmap for 2030 for Mauritius is being implemented. The SADC Project Preparation Development Facility (PPDF) Steering Committee has approved funding of USD 500,000 for the project "Development of Guidelines and Standards for Renewable Energy in Mauritius".

Mauritius has benefitted from a grant from the Green Climate Fund (GCF) in December 2016. With GCF support, our agencies will be empowered and fully operationalised to assist renewable energy (RE) investors, particularly Independent Power Producers (IPPs), in reducing the transaction costs and time delays currently associated with RE investments.

Sustainable Consumption and Production (SCP) is being implemented in the Republic of Mauritius through the SWITCH Africa Green project. The SWITCH Africa Green project specifically supports the private sector as it aims at accelerating the transition to sustainable production practices in small and medium enterprises to green their businesses.

FUTURE CHALLENGES AND OPPORTUNITIES

Challenges	Way Forward
<ul style="list-style-type: none">Limited access to technology	<ul style="list-style-type: none">A shift to low carbon lifestyles depends largely on the adoption of cleaner technologies.Required capacity and skills to adopt these technologies in our production systems represents an important hurdle
<ul style="list-style-type: none">Lack of enforcement and monitoring	<ul style="list-style-type: none">While policies and regulatory frameworks have already been formulated on key sectors, there is a lack of enforcement due to limited man power and capacity.For example, with regards to the Energy Efficiency Act 2011, while Energy Efficient Labels have been developed for electrical appliances (ovens,

	dishwashers and refrigerators), appliances not conforming to the Labelling system are still on sale.
<ul style="list-style-type: none"> Limited Land Resource 	<ul style="list-style-type: none"> Despite Mauritius being endowed with sunshine and wind, there is a limitation in terms of availability of land for implementation of large-scale PV farm and wind farm. While the integration of off-shore wind farm may be contemplated, the technology remains nonetheless very expensive
<ul style="list-style-type: none"> Lack of capital financing 	<ul style="list-style-type: none"> Financial resources still remain a major constraint for the implementation and management of RE projects
<ul style="list-style-type: none"> Intermittency of RE electricity 	<ul style="list-style-type: none"> The intermittency of RE electricity causes a challenge to control and stabilise the frequency of the electricity grid, particularly to cater for any sudden fall in power output.
<p>Opportunities: Innovative Energy Technology</p>	<p>Way Forward</p>
<ul style="list-style-type: none"> Solar Technology/Waste-to-Energy 	<ul style="list-style-type: none"> Mauritius produces about 500,000 tons of solid waste per year and its only landfill site is close to saturation. A new project of waste-to-energy will be operational in 2022. This project will not only produce electricity, but will at the same time alleviate the problem associated with the disposal of waste in the country. Mauritius and its outer islands receive almost year-round, intensive sunlight which makes solar photovoltaic (PV) energy a major option for producing energy. In Agalega, with the help of the UNDP, a mini-grid solar PV system will be implemented for electricity supply to about 300 families funded by GCF in 2024.
<ul style="list-style-type: none"> Wind and Wave Energy 	<ul style="list-style-type: none"> The Mauritius Research Council (MRC) has done research which showed the potential for development of offshore wind farms, as well as wave energy, in the waters of Mauritius and Rodrigues. Projects have been undertaken with the private sector and the international partners.
<ul style="list-style-type: none"> Energy Efficiency/Green Building 	<ul style="list-style-type: none"> In order to reduce our fossil fuel consumption in the transport sector, a feasibility study will soon be

	<p>commissioned to assist the introduction of electric vehicles into the Mauritian market.</p>
<ul style="list-style-type: none"> • Deep Ocean Water Application (DOWA) 	<ul style="list-style-type: none"> • Deep Ocean Water Application (DOWA) projects are being promoted in Mauritius.
<ul style="list-style-type: none"> • Liquefied Natural Gas (LNG) Projects 	<ul style="list-style-type: none"> • An international call for proposals for consultancy services for a feasibility study for liquefied natural gas was done in 2017. The feasibility study will evaluate the technical and economic feasibility, as well as the best financial model for implementing the project. This natural gas project would provide a backup capacity for renewable energy and is less polluting

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