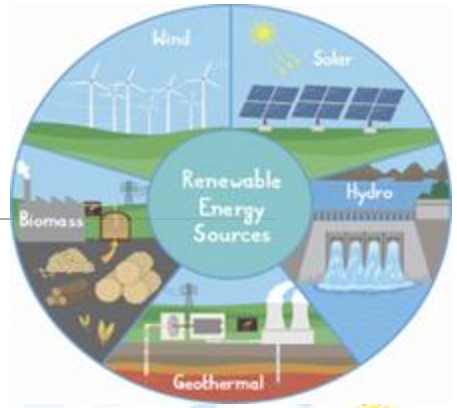
Smart and fast ways to save energy and cut emissions

ERASMUS +

THINK SMART ACT GREEN

Renewable Energy



- Renewable energy sources are becoming increasingly important in our quest to reduce emissions and combat climate change.

- Solar, wind, hydro, and geothermal energy are some of the most promising sources of renewable energy.

- By transitioning to these energy sources, we can reduce our reliance on fossil fuels and cut greenhouse gas emissions.

The Two Greatest Energy Challenges Facing the World

- Finding alternative energy sources to oil: As oil reserves dwindle and concerns about their environmental impact grow, finding alternative energy sources has become a top priority.

- Cutting CO_2 emissions to the atmosphere: CO_2 emissions are the main driver of climate change and reducing them is critical to avoiding the worst impacts of global warming.

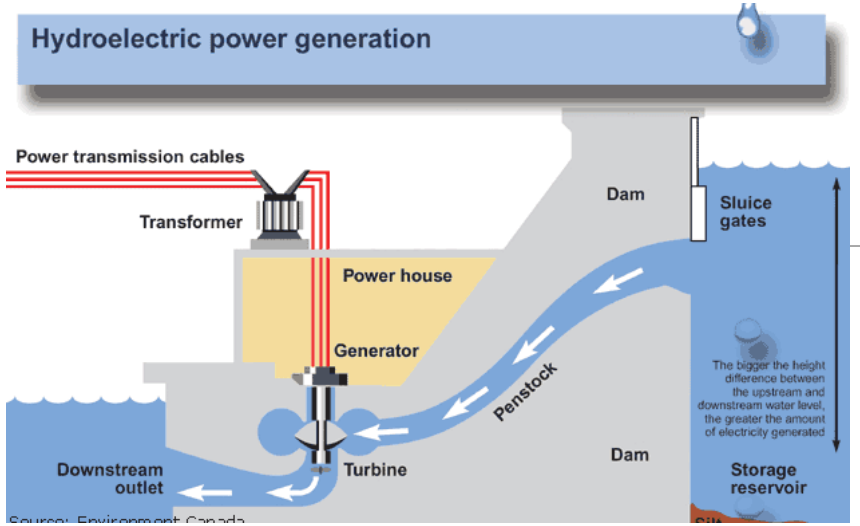
  Addressing these challenges will require a concerted global effort and the deployment of innovative solutions.

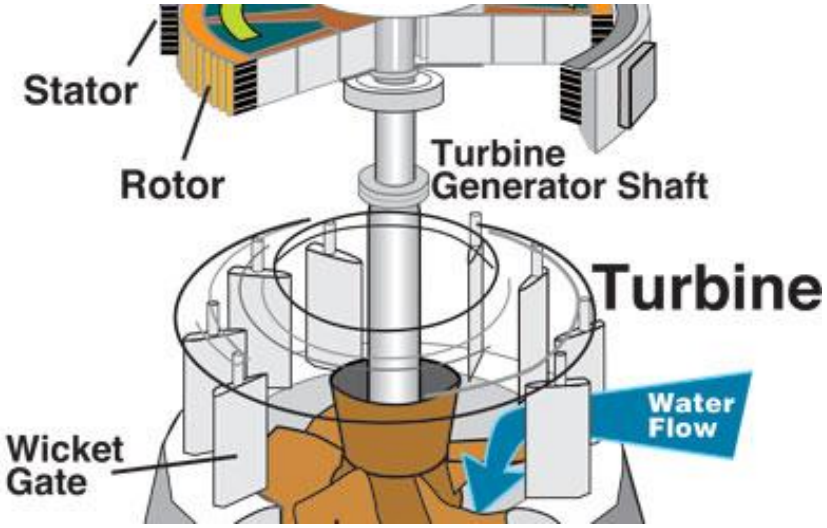
Madeira Island

Madeira is a total energy island, which means it is not connected to any other landmass electrically.

Wind farms

In the Autonomous Region of Madeira, there are 11 wind farms connected to the grid, 9 of which are in Madeira and 2 in Porto Santo. Out of these, 6 belong to EEM (1 in Porto Santo) and ENEREEM (4 in Madeira and 1 in Porto Santo), while the remaining 5 wind farms (4 in Paúl da Serra and 1 in Caniçal) belong to other private entities.





Hydroelectric Power

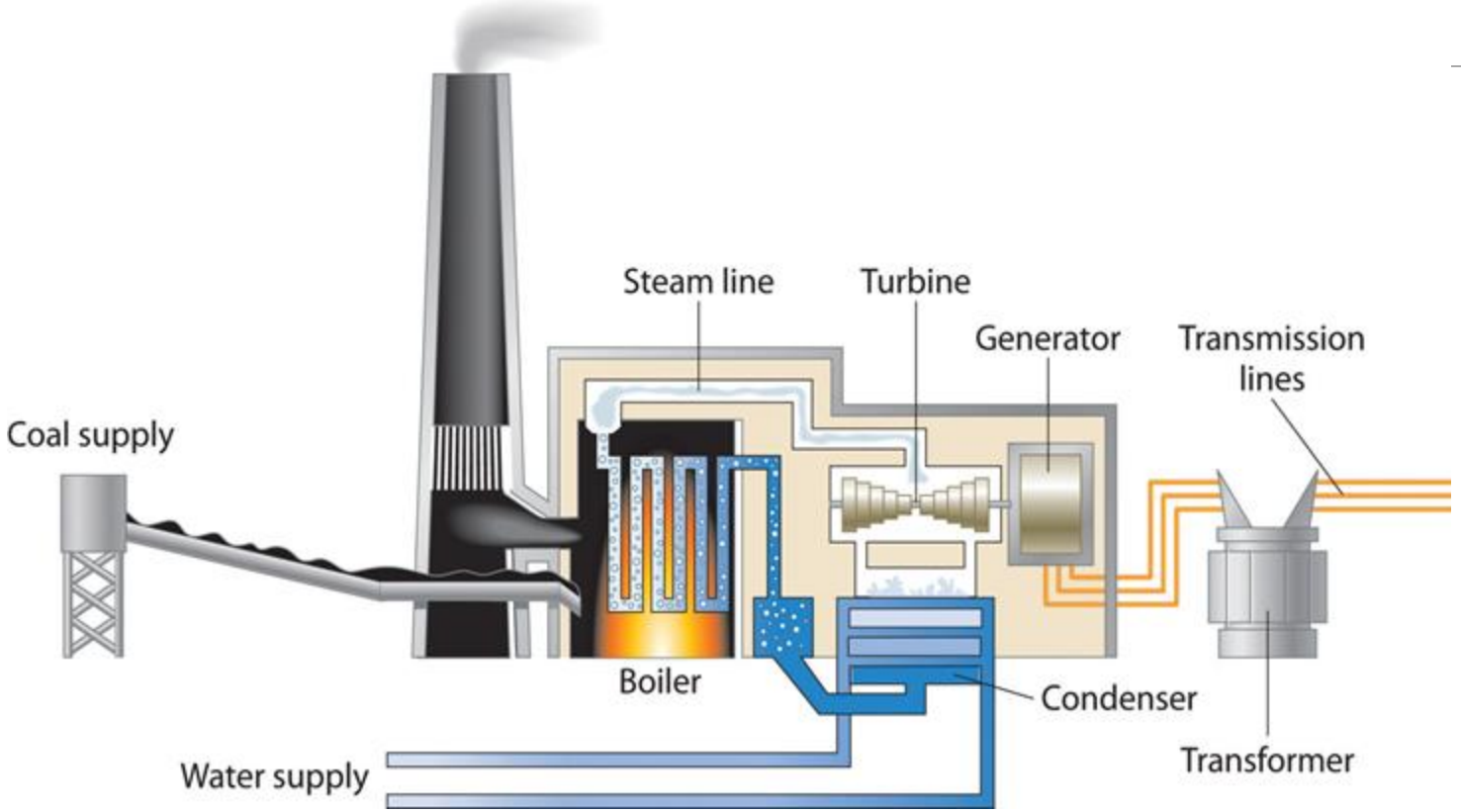
Pumped storage is a technique used for storing water to meet peak-period power demands. Water is pumped back up to a storage pool above the power plant during low-demand periods, such as at night. This water can then flow back through the turbine generators during high-demand periods to generate electricity.

Hydroelectric power plant

There are ten hydroelectric power plants in Madeira :

- Ribeira da Janela Power Plant
- Fajã dos Padres Power Plant
- Calheta Power Plant
- Socorridos Power Plant
- Serra de Água Power Plant
- etc.

Thermal Power



Thermal power plants use the heat energy from burning fossil fuels such as coal, oil, and natural gas to generate electricity. The heat energy is used to produce steam, which drives a turbine connected to a generator. The generator then converts the mechanical energy into electrical energy.

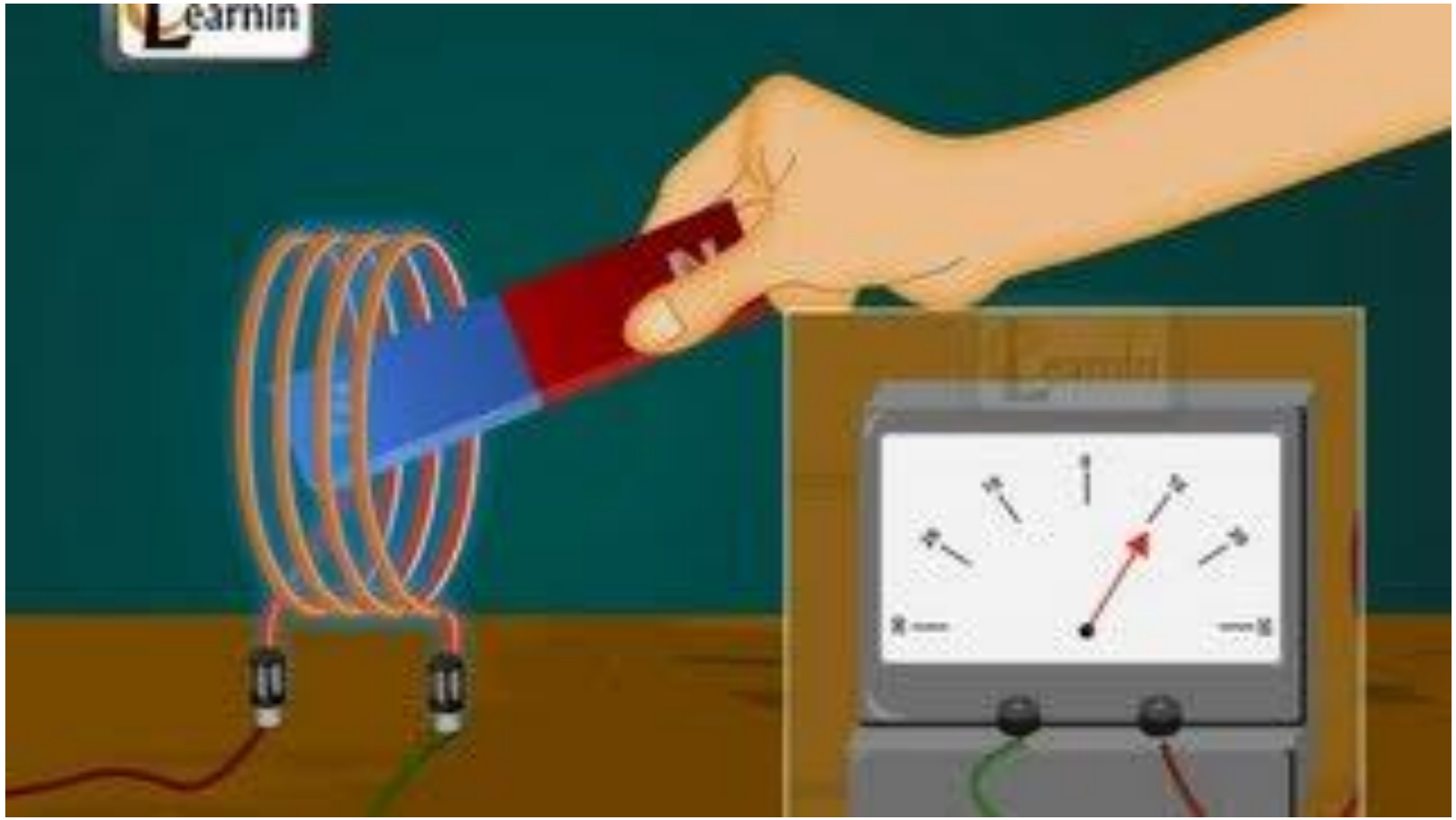
Thermoelectric power plant

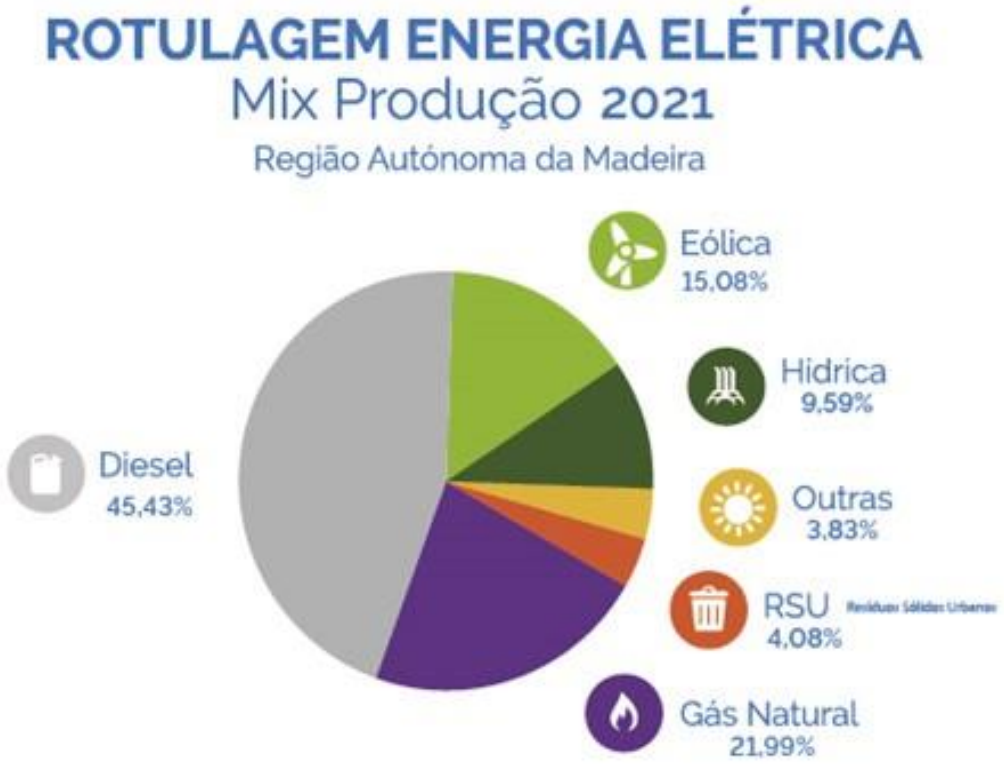
There are two thermoelectric power stations on Madeira Island, one operated by EEM and the other by a private company. Both power plants primarily used fuel oil until 2013. However, in 2014, with the addition of a third ship at the Vitória-Vitória III thermal power plant equipped with dual-fuel engines, natural gas was introduced as an alternative to fuel oil. Natural gas is a less expensive and less polluting source of energy.

On the island of Porto Santo, there is a thermoelectric power plant, belonging to EEM, based on the burning of fuel oil.

Solar Photovoltaic Power

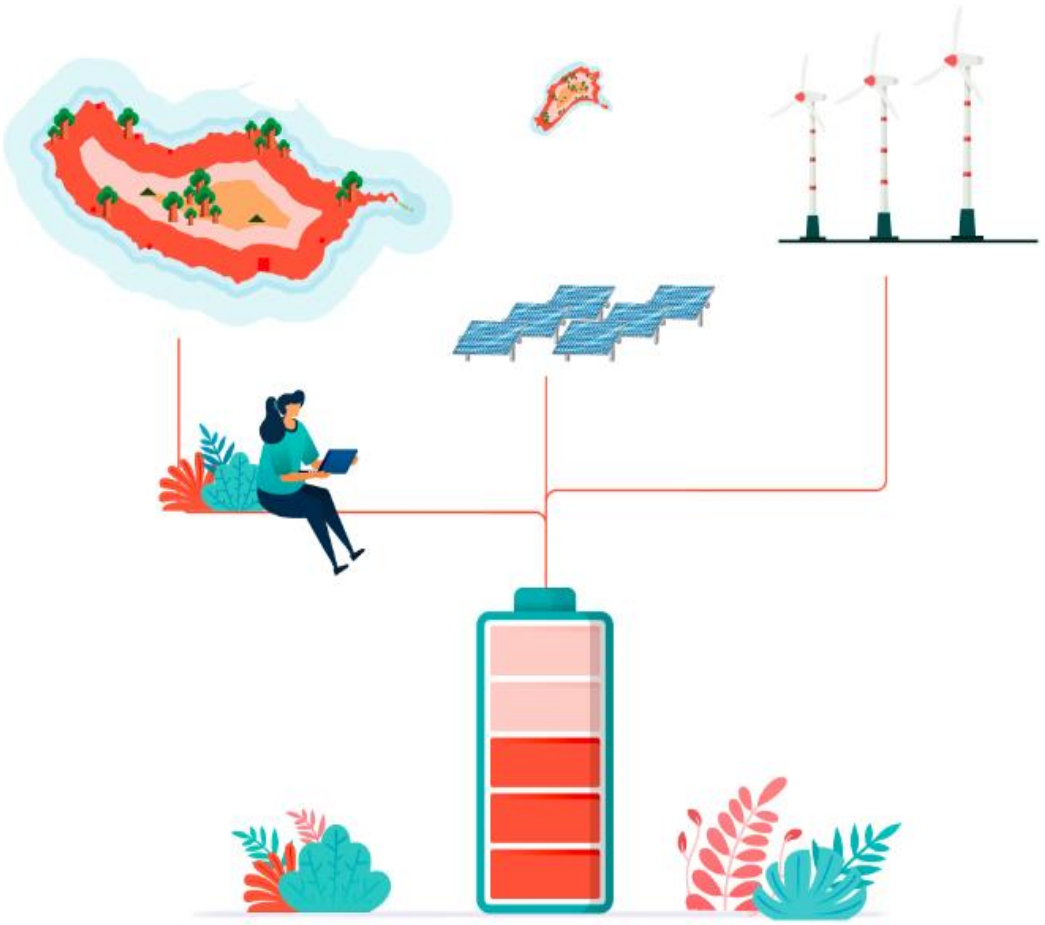
Variation of the magnetic flux and the electromagnetic induction





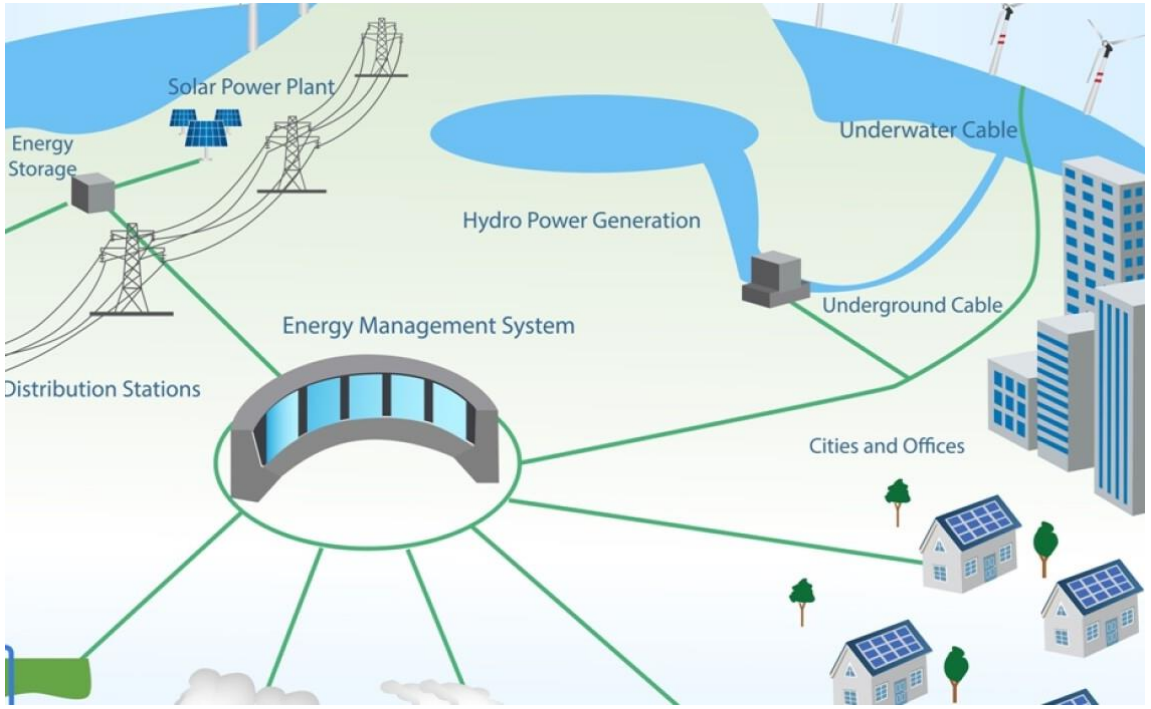
The results of the energy mix achieved in 2021 show a greater contribution from renewable energy sources and fewer CO_2 emissions. In the year 2021, the contribution of renewable energy to total electricity production reached the best result in the last 14 years and the contribution of wind energy reached the historical maximum of 28 years.

Increasing the use of renewable sources in our energy production mix and reducing the sources that have the greatest environmental impact in RAM is the objective that moves us every year.

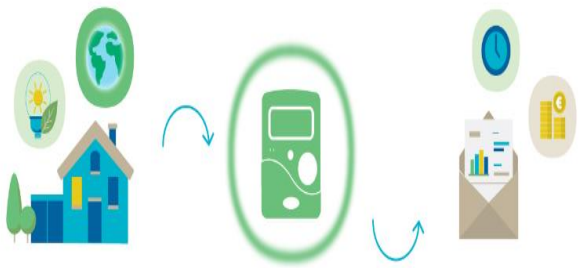


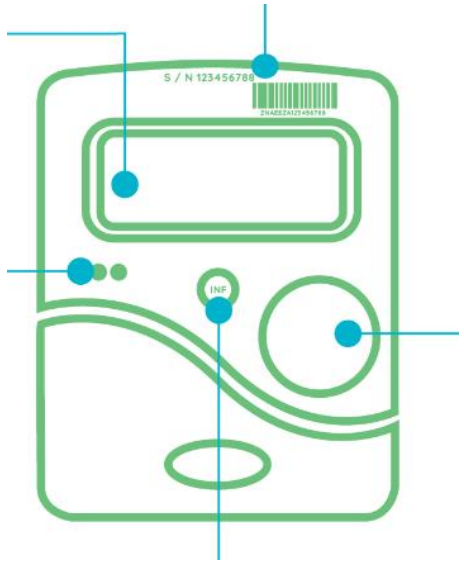
The Battery Power Plants program aims to complement the region's electroproduction system using batteries. This action will allow the removal of thermal generators that consume fossil fuels and integrate more renewable energies, such as hydro, wind, and photovoltaic, always, come rain or shine. Improving the efficiency of the region's power generation system makes it more sustainable and reduces CO_2 emissions.

Madeira and Smile



The Smile project seeks to enhance the management of the distribution network in Madeira by implementing an intelligent control and automation system. This system will include grid balancing and frequency control mechanisms. A Smart Grid is an electricity network that can automatically monitor and adjust to changes in both energy supply and demand.





EEM INOV- smart electric meter

130,000 smart meters will be installed, providing better management of RAM's electricity consumption and increasing energy efficiency throughout production and distribution

The Insulae project located in Madeira promotes better management of electric vehicle charging, with the integration of more renewable energy. During the project, several intelligent and bidirectional charging demonstrators will be available in a distributed system of charging stations for 100% electric vehicles.

Maximizing the impact of innovative energy approaches in the EU islands