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PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLES POWERS

CORRESPONDING MODULE 3



Introduction

Renewable energy from non-biological renewables such as solar, thermal, photovoltaic, geothermal, wind and water power.

Renewable energy is energy derived from **natural sources** that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us.

Fossil fuels - coal, oil and gas - on the other hand, are non-renewable resources that take hundreds of millions of years to form. Fossil fuels, when burned to produce energy, cause harmful greenhouse gas

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emissions, such as carbon dioxide.

Generating renewable energy creates far lower emissions than burning fossil fuels. Transitioning from fossil fuels, which currently account for the lion's share of emissions, to renewable energy is key to addressing the climate crisis.

The common sources of renewables powers are:

Solar energy

Solar energy is the most abundant of all energy resources and can even be harnessed in cloudy weather. The rate at which solar energy is intercepted by the Earth is about 10,000 times greater than the rate at which humankind consumes energy.

Wind energy harnesses



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the kinetic energy of moving air by using large wind turbines located on land (onshore) or in sea- or freshwater (offshore). Wind energy has been used for millennia, but onshore and offshore wind energy technologies have evolved over the last few years to maximize the electricity produced - with taller turbines and larger rotor diameters.

Geothermal energy utilizes the accessible thermal energy from the Earth's interior. Heat is extracted from geothermal reservoirs using wells or other means.

Reservoirs that are naturally sufficiently hot and permeable are called hydrothermal reservoirs, whereas reservoirs that are sufficiently hot but



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that are improved with hydraulic stimulation are called enhanced geothermal systems.

Once at the surface, fluids of various temperatures can be used to generate electricity. The technology for electricity generation from hydrothermal reservoirs is mature and reliable, and has been operating for more than 100 years.

Hydropower harnesses the energy of water moving from higher to lower elevations. It can be generated from reservoirs and rivers. Reservoir hydropower plants rely on stored water in a reservoir, while run-of-river hydropower plants harness energy from the available flow of the river.

Hydropower reservoirs often have multiple uses -



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providing drinking water, water for irrigation, flood and drought control, navigation services, as well as energy supply.

Hydropower currently is the largest source of renewable energy in the electricity sector. It relies on generally stable rainfall patterns, and can be negatively impacted by climate-induced droughts or changes to ecosystems which impact rainfall patterns.



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Description

General description of the CASE STUDY with information related to the questions already mentioned in section 3 of this document.

Background, types, basic information

Best practices

In June 2021, the first Italian **agricultural energy community** for the production and collective self-consumption of renewable energy was founded in Sicily. The initiative involved a group of small and medium-sized businesses in Ragusa, with a total territorial extension of about 60 hectares, led by the agricultural Consortium La Mediterranea.

The "**renewable energy communities**" were introduced in our country on February 28, 2020, with the conversion into law of the Milleproroghe decree 162/2019, in order to create innovative configurations based on sustainability criteria. In practice, these are associations between citizens, commercial activities, public bodies or companies that decide to join forces to equip themselves with plants for the production and **sharing of energy from renewable sources**.

From 2020, therefore, even farms can equip themselves with a shared plant for the self-production of renewable energy, for immediate consumption or to store it in storage systems (and use it as needed).



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Main objective of the institution implementing the case study and main achievements.

Good to remember information, practical information, links to other



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Advantages and challenges

For a farm, participation in an energy community involves:

- environmental benefits, avoiding on the one hand to produce energy from fossil sources, on the other to dissipate energy in network losses;
- economic benefits, thanks to the incentive mechanisms provided by law to promote the energy transition, which can be combined with other contributions such as the Casa Bonus and the Superbonus 110%;
- social benefits, thanks to the sharing of economic



advantages and financial profits with the energy community and environmental benefits - due to the reduction of pollutants and climate - changing-for the entire area in which it is located.

Main data

Budget, main dates (investment, start of production, period of raise funding, etc.), location, module name and number, contact data when possible, institution

Overall, members of the energy community get a **benefit of approximately 169h**

The project of the Ragusa agricultural energy community, supported by Enel con with the collaboration of the Banca Agricola Popolare di Ragusa, involves the construction of a **photovoltaic system with a power of 200 kW.**

The agricultural community will thus be able to virtually share its energy consumption, obtaining twenty-year state incentives equal to about **100,000 € In addition**, the reduction in greenhouse gas emissions will be around **121 tons per year**, with economic benefits and environmental benefits for the whole territory.

Further

Information

..... to be completed with links when possible

<https://www.un.org/en/climatechange/what-is-renewable-energy>



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ANNEX - STRUCTURE OF MODULE CONTENT TO PREPARE SLIDES

Module Name: The name of the partner: Country:

The name of the module	
Target group involved	
Current information about the topic	
Principles of the specific module	
Basic terms/measures of the module/topic	
Training materials (tasks, case studies, exercises)	
Short description of the materials	
Link of the online resources (film or video resources)	
Specific images (to support the purpose of the resources)	
Duration	
Materials	
No of Learners/Representatives	
Individual or group work	
Step by step guide	