

Are self-consumption and energy communities promoted in Europe?

In Europe, self-consumption and energy communities have been promoted by the Directive 2018/2001/EU (RED-II) on the use of energy from RES and the Directive 2019/944/EU on common rules for the internal electricity market. The Directive 2018/2001/EU (from now Directive) distinguishes between renewable energy self-consumers and RECs.

What is the energy demand for space heating in Italy?

Heat pump sizing and operation The primary energy demand for space heating in the current Italian residential sector is still based on fossil fuels (ENEA, 2021). In particular, natural gas is the main one adopted in space heating applications. In fact, more than 50% of the total energy consumption is still burned in conventional boilers.

Does Italy promote REC and self-consumption?

According to this policy, in the last two years, Italy has issued various documents for promoting REC and self-consumption. The RED-II directive has been partially transposed by Decree-Law 162/19 which establishes the characteristics of jointly acting self-consumers or RECs.

Is collective self-consumption economically profitable for Italian residential end-users?

Although differences exist at regional levels for the proposed scenarios, the results highlight how the RES-based Collective Self-Consumption scheme is economically profitable for Italian residential end-users with cost savings up to 32% and environmentally sustainable with carbon emissions reduction up to 60%.

Do self-consumption schemes impact the electric power system?

Regulation on self-consumption is presented and the international implementation experience are discussed. Self-consumption schemes have the potential to impact in a significant way on the electric power system. The evaluation of the shared electricity in various scenarios is discussed.

How does the energy tariff work in Italy?

In particular, the tariff is granted by the GSE, the Italian institution managing the national energy sector, and rewards instantaneous self-consumption and accumulation.

Authors, through an energy model to calculate the energy needs of buildings, highlighted how the introduction of storage systems in the collective self-consumption can improve self-consumption up to 90% making also the buildings more autonomous and self-sufficient with a lower carbon footprint.

In this work, one of the key results is the development of a comprehensive model of the Italian power system that through linear optimization is able to analyze the pathway towards full ...

The objective of Task 1 of the IEA Photovoltaic Power Systems Programme is to promote and facilitate the exchange and dissemination of information on the technical, economic, environmental and social aspects of PV power systems.

Through this analysis, the tool addresses important research questions such as the path to complete decarbonization and power self-sufficiency in Italy, as well as the role of flexibility assets in power grids - such as li-ion batteries, hydrogen storage, ...

These articles show how RECs if optimally managed, have a positive impact on the power system and can be considered as new actors in the energy market, capable of self-supplying and at the same time providing ancillary services with benefits for both the grid and community users.

commodities in Chapter 27 of the Harmonised System (HS). Capacity utilisation is calculated as annual generation divided by year-end capacity x 8,760h/year. Avoided emissions from renewable power is calculated as renewable generation divided by fossil fuel generation multiplied by reported emissions from the power sector. This

This article presents a model of the Italian power system realized employing the open energy modelling framework, Oemof. A Linear Programming Optimization is implemented to evaluate how to minimize system costs at decreasing CO<sub>2</sub> emissions in 2030.

These data were useful for designing self-sufficient isolated systems, such as those mentioned in the scenarios B and C. Observing this case study it was possible to monitor, throughout 2013, the hourly energy consumption of the building and the hourly energy production of the PV system.

In this work, one of the key results is the development of a comprehensive model of the Italian power system that through linear optimization is able to analyze the pathway towards full decarbonization and power self-sufficiency, with high spatial ...

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