

How does Italy guarantee a long-term supply system of new storage capacity?

The Italian legislator has acted to guarantee a long-term supply system of new storage capacity by introducing a mechanism based on competitive, transparent and non-discriminatory auctions. The system recognises the right to an annual remuneration, in exchange for the provision of the awarded capacity as part of the national energy market.

What challenges will Italy face in the energy transition?

Energy transition - the need to achieve progressive and complete decarbonisation by 2050 - presents Italy with important challenges in increasing energy production from renewable resources on the one hand, and the necessary progressive increase in the availability of utility-scale energy storage capacity on the other.

Are batteries and Hy-Drogen promoting a progressive decarbonization of the Italian power sector?

Both batteries and hydrogen are introduced as electrical energy storage systems. The role of VRES and storage facilities (batteries and hy-drogen) in promoting a progressive decarbonization of the Italian power sector is then explored from an economic and environmental perspective.

How can OSeMOSYS improve long-term planning of the Italian power sector?

In this work, an updated version of the OSeMOSYS tool is used to perform an optimal long-term planning of the Italian power sector. A time series clustering approach is applied, considering time varying input data, such as the time series related to VRES capacity factors and electricity demand.

What resources does Italy use to produce electricity?

The Italian context At present, the Italian electricity supply strongly relies on fossil power plants, which exploit resources such as coal, oil, natural gas and non renewable industrial and municipal waste [41].

Does the Italian power sector need a decarbonization?

The analysis of the decarbonization of the Italian power sector shows that an important shift is needed from the current energy mix, which relies heavily on fossil fuel-based technologies, to an opposite configuration strongly based on renewable energy sources.

Italy's renewable energy challenge hinges on its continued implementation of and support for energy storage systems. Energy storage can help bridge the north-south transmission divide, clean up peaking capacity, ...

achieve high VRES penetration in the electricity mix due to its high energy density and long-term storage capability [7], thereby contributing to the decarbonization process [8]. Compared to ...

Energy storage technology is subjected to the type of storage, short-term and long-term operating time frame,

power and energy ratings and applications. 28,29. ... With a high energy density and low.

In December 2023, the EU greenlit Italy's energy storage program, earmarking a hefty investment of EUR17.7 billion. This initiative is anticipated to facilitate the construction of over 9GW/71GWh of energy ...

The grid-scale energy storage market in Italy is set to become one of the most active in Europe in the next few years having been close to non-existent until now. Research firm LCP Delta recently forecast that after annual ...

In the rapidly evolving landscape of energy technology, the quest for efficient, sustainable, and scalable solutions has never been more critical. As we dive into the depths of innovation, one term stands out as a ...

Centre for Clean Energy Technology, School of Mathematical and Physical Sciences, Faculty of Science, University of Technology Sydney, Ultimo, NSW, 2007 Australia ... In this review, the ...

Europe and China are leading the installation of new pumped storage capacity - fuelled by the motion of water. Batteries are now being built at grid-scale in countries including ...

Italy has set its objectives in the energy national plan (PNIEC) pushing to a high integration of the renewable power generation (55% of renewable share in the electric sector by 2030). In the ...

Renovating buildings with cultural heritage significance is an important step toward achieving sustainability in our cities. The benefits are not only energy-related but also ...