8TH AIEE ENERGY SYMPOSIUM

GRID SECURITY AND ENERGY STORAGE

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ERG
EVOLVING ENERGIES

Padua, 28th November 2024

A LONG HISTORY...

1938

Edoardo Garrone founds ERG in Genoa.

1947

Production commences at the San Quirico Refinery in Genoa.

1975

Production starts at the ISAB Refinery in Priolo.

1997

The ERG share is listed on the Stock Exchange.

2000

Through ISAB Energy, ERG starts producing and selling electricity from gasification of the heavy residues from refinement.

2006

ERG enters the renewables sector with the acquisition of EnerTAD.

2008

ERG sells 49% of the ISAB Refinery to LUKOIL.

2010

ERG Power's combined cycle power plant (480MW) fuelled by natural gas enters operation.

TotalERG is established, a joint venture for the sale of oil products.

2013

ERG is the leading wind operator in Italy (1,087MW) and among the top ten in Europe (1,340MW), and acquires a company for wind farm O&M activities.

ERG completes its exit from refining.

2014

ERG transfers the ISAB Energy plant and the fuel network of ERG Oil Sicily.

2015

ERG enters the hydroelectric sector acquiring the Terni Complex in Central Italy (527MW).

Wind: ERG continues its growth (+146MW) in France and Poland.

2016

ERG enters the wind market in the United Kingdom with a 47.5MW project. At the end of 2016, installed wind capacity is 1,720MW.

2018

ERG enters the solar power sector: 30 photovoltaic plants acquired, 89MW in operation.

Definitive exit from Oil with the sale of TotalERG.

2019

With the acquisition of Andromeda assets (51MW), ERG increases its PV total capacity up to 141MW.

Wind: ERG grows (+86MW) in France and Germany.

2020

ERG enters the solar market in Germany: co-development agreement with AREAM (600MW).

2021

Wind: ERG enters the Sweden market, and starts operation in U.K.. At year-end installed wind capacity in Europe is 2,198MW. On August 2, ERG signs an agreement with ENEL for the sale of ERG Hydro S.r.l.[1].

ERG enters the solar market in France (79MW) and Spain (92MW)[2].

2022

Wind: ERG acquires 172MW in Italy, and starts up ~230MW in Europe.

With a 35% share in SQ Renewables SpA, IFM NZFI becomes ERG's indirect shareholder, alongside Garrone-Mondini Family.

2023

On October 17 ERG sells the CCGT, becoming a pure renewable player.

ERG starts up the first two repowered wind farms in Sicily, and increases its solar assets in Spain (+149MW).

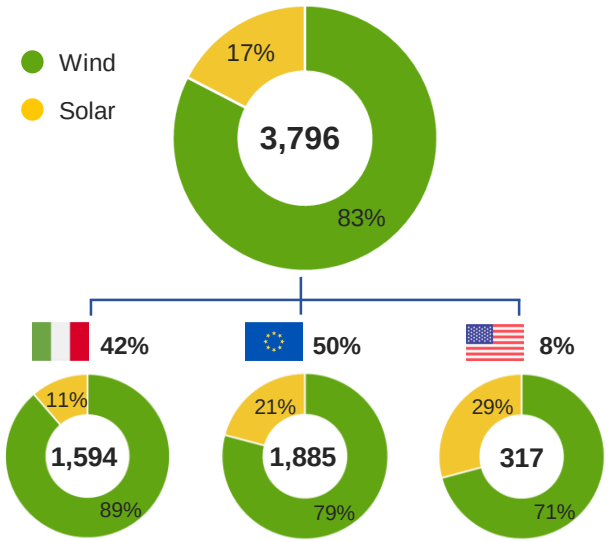
2024

On April ERG enters in US market through a Strategic partnership (75% ERG's stake) with Apex Clean Energy Holdings to manage an operating 317MW Wind & Solar portfolio

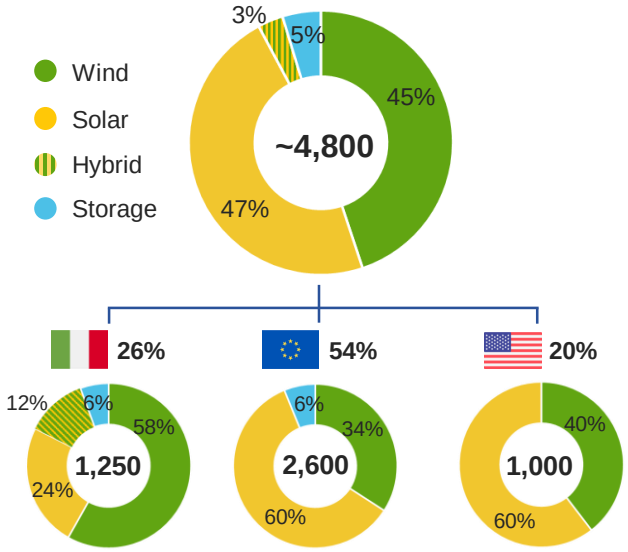
[1] The closing for the sale of the Hydro portfolio to Enel took place on January 3, 2022
[2] The closing of the solar acquisition in Spain (92MW) took place on January 31, 2022

ERG AS OF TODAY: A SOLID AND INTERNATIONAL PLATFORM

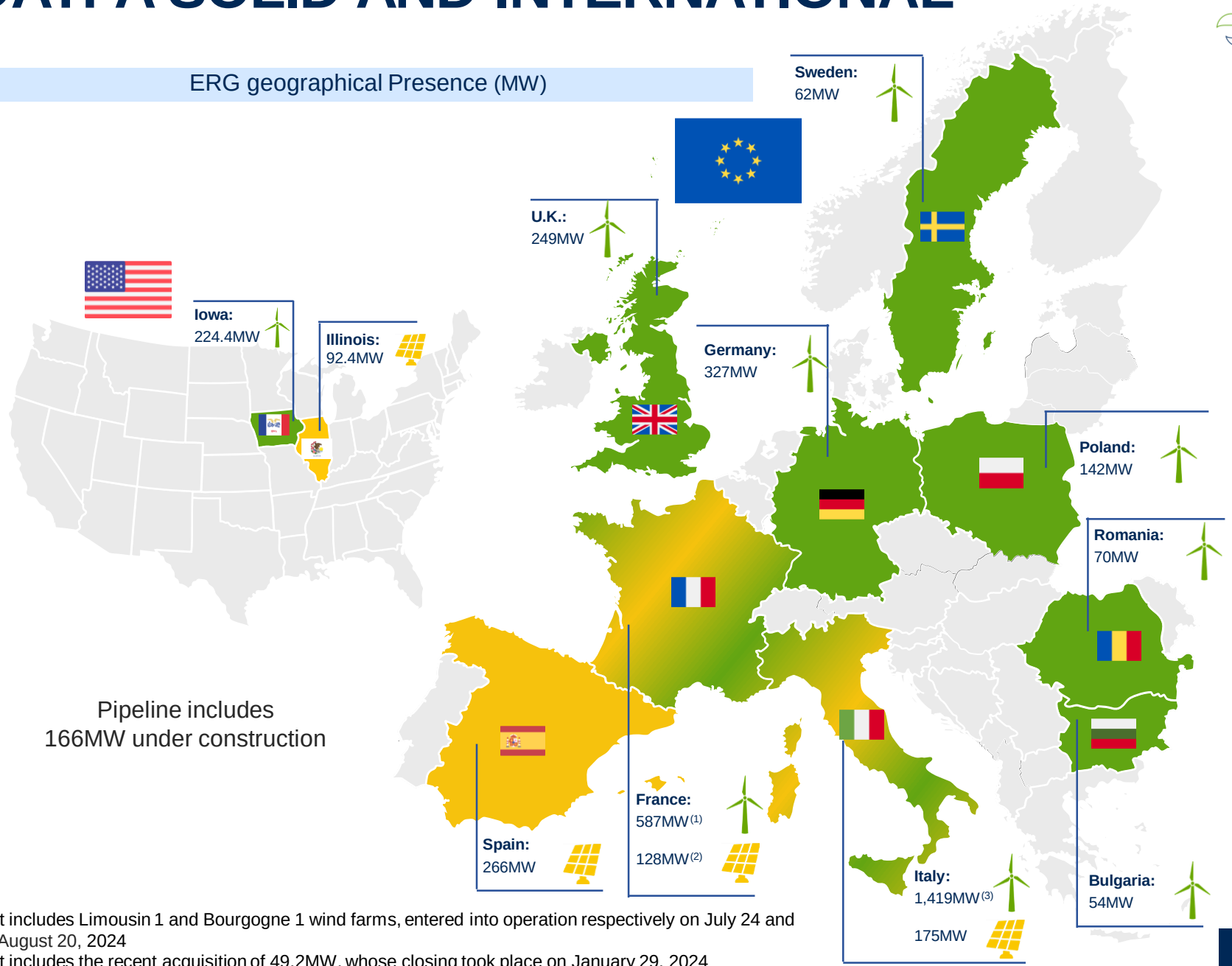
Installed Capacity (MW)



Pipeline (MW)



ERG geographical Presence (MW)



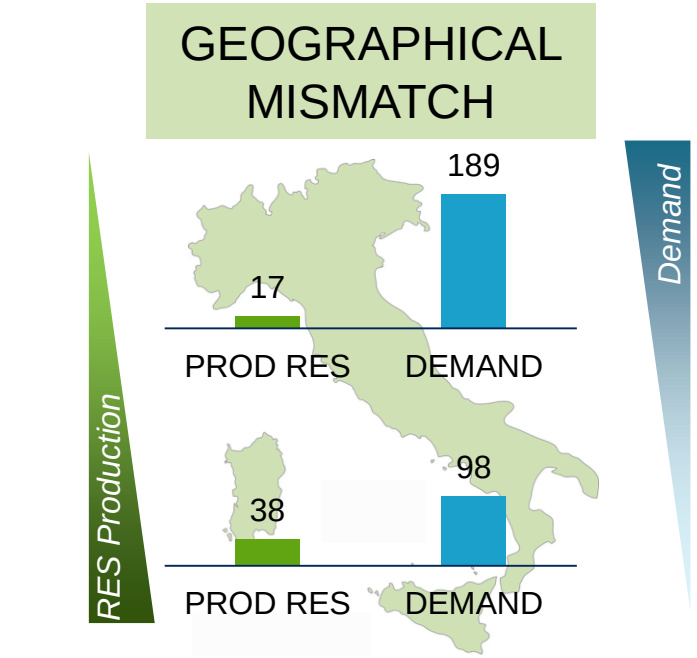
Pipeline includes
166MW under construction

(1) It includes Limousin 1 and Bourgogne 1 wind farms, entered into operation respectively on July 24 and August 20, 2024
(2) It includes the recent acquisition of 49.2MW, whose closing took place on January 29, 2024
(3) It includes Mineo-Militello-Vizzini wind farm (101MW), entered into operation on April 24, 2024 after completion of repowering activities

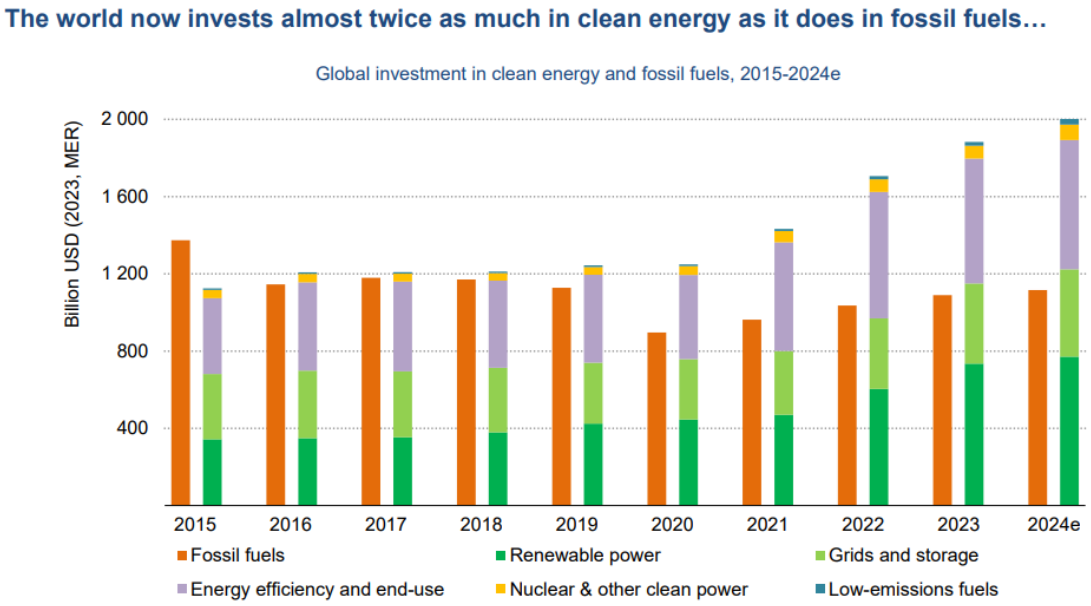
NATIONAL GRID: A LIMITED RESOURCE

The electrical grid is a limited resource.
It is necessary to promote increasing investments in grid infrastructure in order to:

- ✓ Optimize the transit of renewable energy from the south to the north
  - ➢ Reduce curtailments
  - ➢ Promote the development and integration of new renewable energy plants



DATI TERNA 2023



Fonte IEA – World Energy Investment 2024

Enhance the grid to minimize geographical demand-supply mismatch.

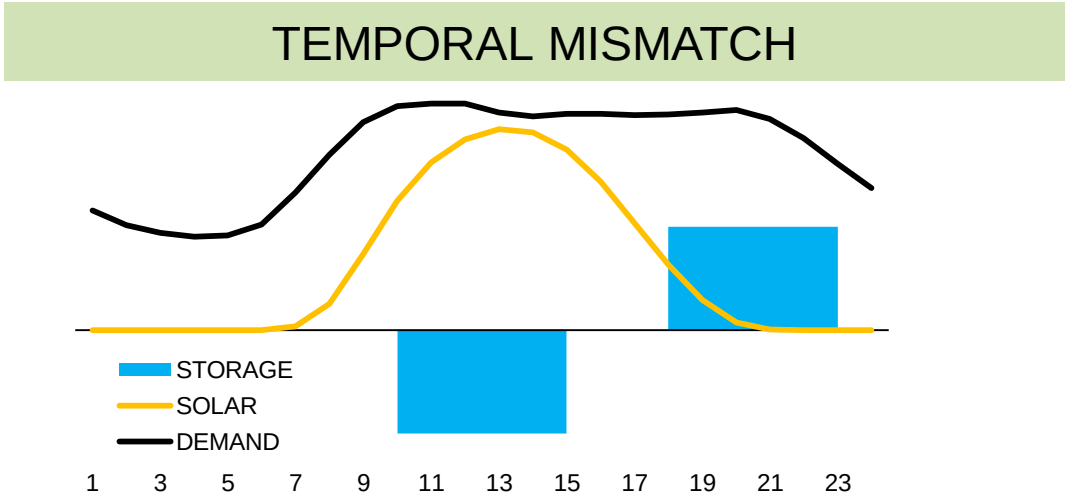
ROLE OF STORAGE IN ENERGY SYSTEMS

Optimized Energy Utilization

- ✓ Stores surplus energy during **high production periods** (e.g., daytime solar).
- ✓ Discharges stored energy to **meet peak demand**, particularly during evenings.

Key Benefits

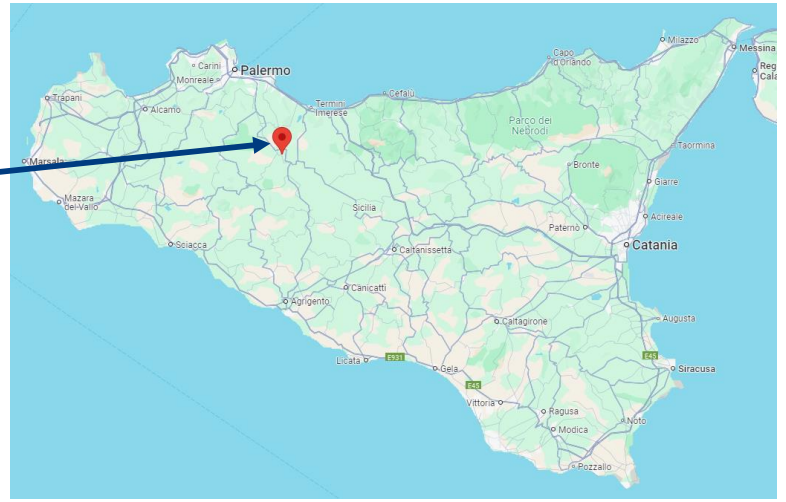
- ✓ **Demand-Supply Balance**: Reduces temporal mismatches between energy production and consumption.
- ✓ **Enhanced Energy Reliability**: Ensures a stable and consistent power supply.
- ✓ **Grid Stability**: Manages fluctuations in renewable energy generation.



Develop storage solutions to minimize temporal demand-supply mismatch.

FIRST STEP IN STORAGE TO INCREASE ASSET PTF FLEXIBILITY

Pilot Project Vicari[1] Key Data:	
Project	ERG - Base Case
Power (MW)	12.5
Capacity (MWh)	50
Duration (h)	4
COD	2025



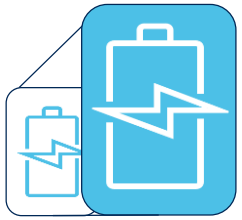
- ✓ **Pilot project** to develop know-how
- ✓ **Hybridization** with exisiting wind plant: no new connection required
- ✓ Power and capacity defined on **costs/benefit analysis**
- ✓ Fully Merchant asset: No Capacity Market / No MACSE

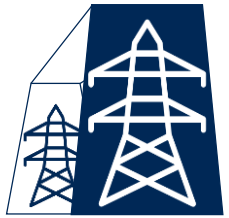
Leveraging on ERG's >200MW pipeline in storage

- Building a Pipeline >200MW in batteries in Italy, Spain, France and UK
- Regulatory framework for batteries still evolving
- First Italian project under construction in Sicily

Increase RES asset flexibility with batteries plants

STORAGE AND GRID FRAMEWORK STILL IN EVOLUTION





	Storage	Grids
What still needs to be defined	• Support mechanisms • Bespoke regulatory framework • Deployment plan	• Increase investments • Better RES integration • Grid optimisation
ERG's proactive levers	• Battery storage pipeline ready to leverage on new rules	• Building early-stage hybridization pipeline in Italy and in France
Geographies		

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