
“Smart Island” projects

Terna’s way to sustainability

Luigi Apicella

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About Terna – Company Profile

Terna is

- ...the **largest independent transmission system operator (TSO)** in Europe
- ...the **owner** of the Italian High Voltage National Transmission Grid
- ...**responsible for the transmission and dispatching of electricity** throughout the Country
- ... Listed on the Stock Exchange since 2004

Numbers

Grid

~ 72,000 km of high voltage power lines

25* Interconnections lines with neighbouring countries (+5 on going projects)

3 Submarine internal connection (1 HVDC and 2 HVAC)

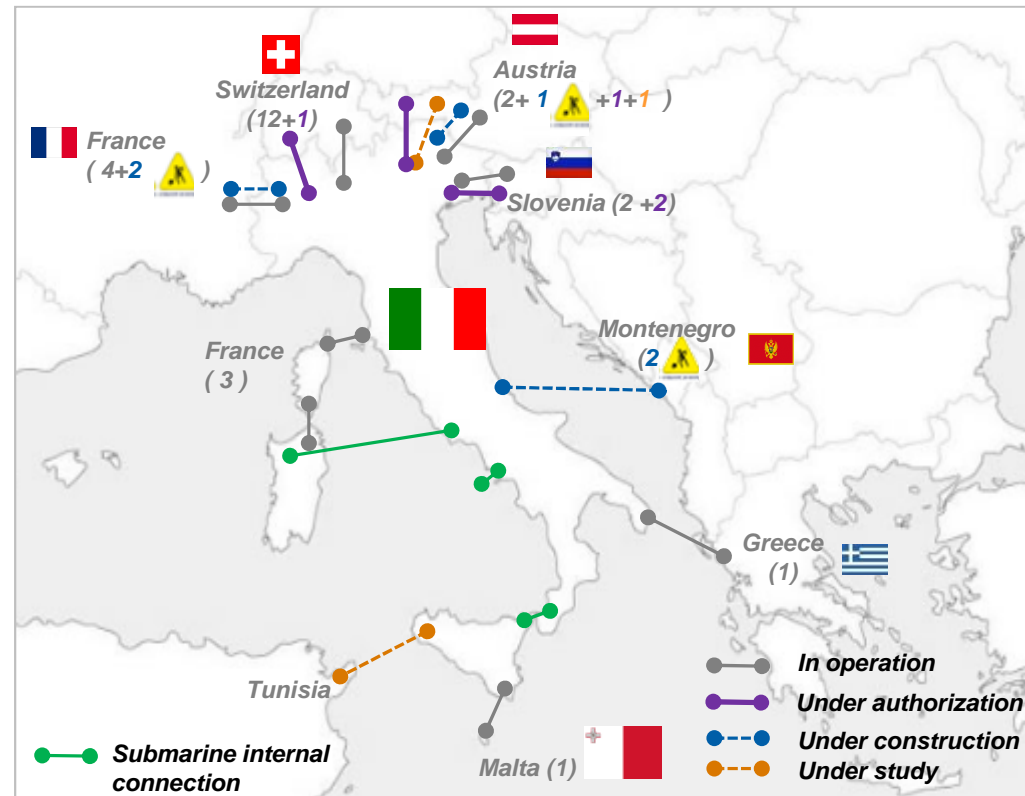
852 Substations

Electricity Market

316 TWh of energy consumption

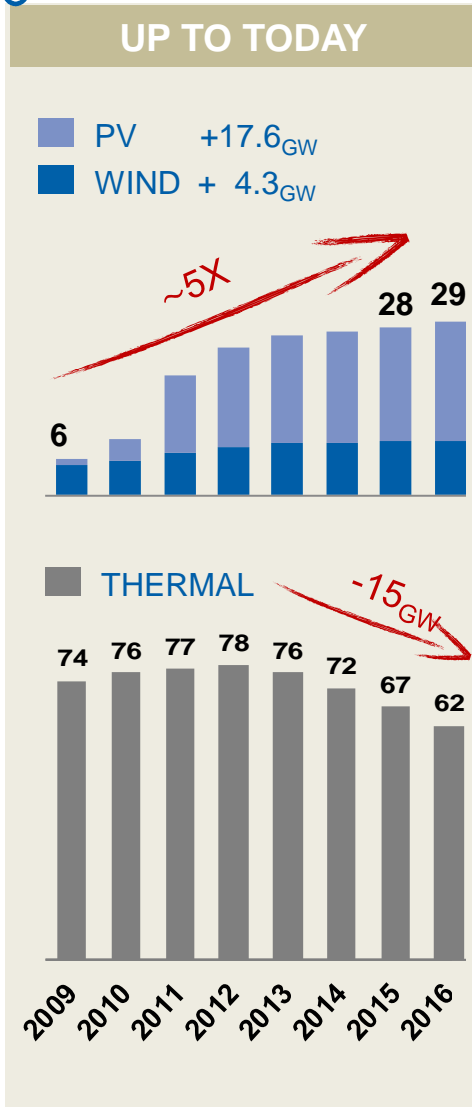
~ **60,500 MW** demand peak

Focus on **safety** and technological **innovation** for **sustainable** Grid development

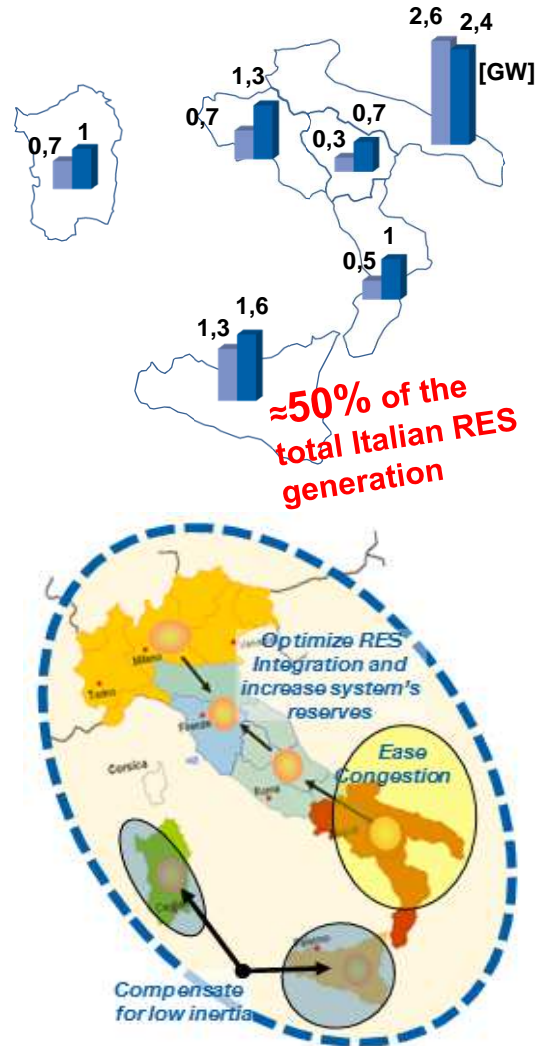


The Italian Context – Trends and Main Issues





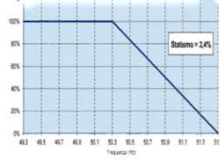

RES growth VS Thermal decommissioning (GW)



Main Issues stemmed from RES's growth



Terna's Strategy New problems new solutions

Network Congestions	Reconductoring	Energy Intensive Storage
		
Lower Inertia and reserve	Power Intensive Storage	Interconnection
		
Increase system's flexibility	New frequency requirements for RES	Improvements on the Network Defense System
		

Guidelines and Targets of Energy Transition



Decarbonisation

Market Efficiency

Research & innovation

Security of Supply

European Guidelines



Environment

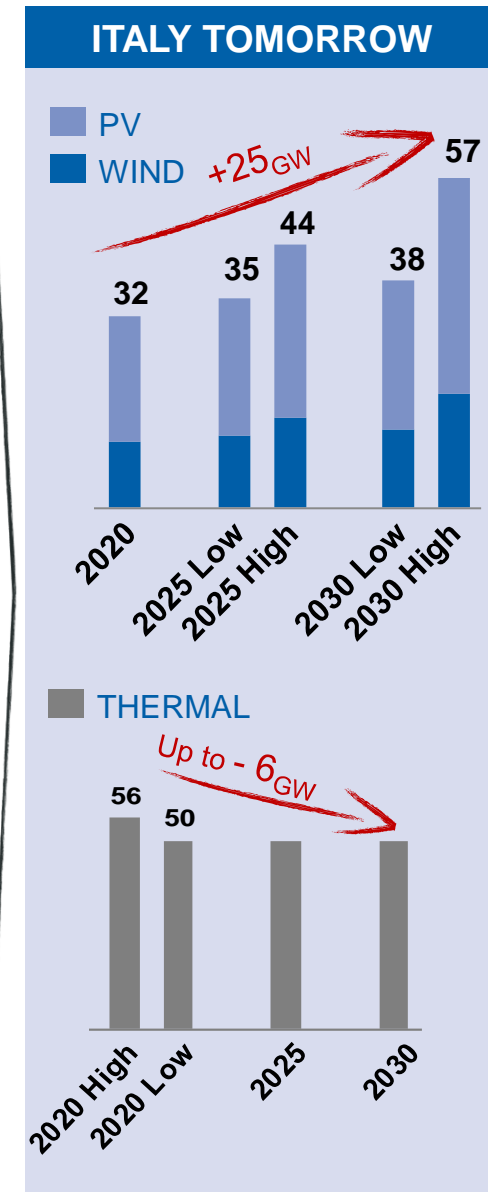
Competitiveness

Security of Supply

National Energy Plan

TARGETS

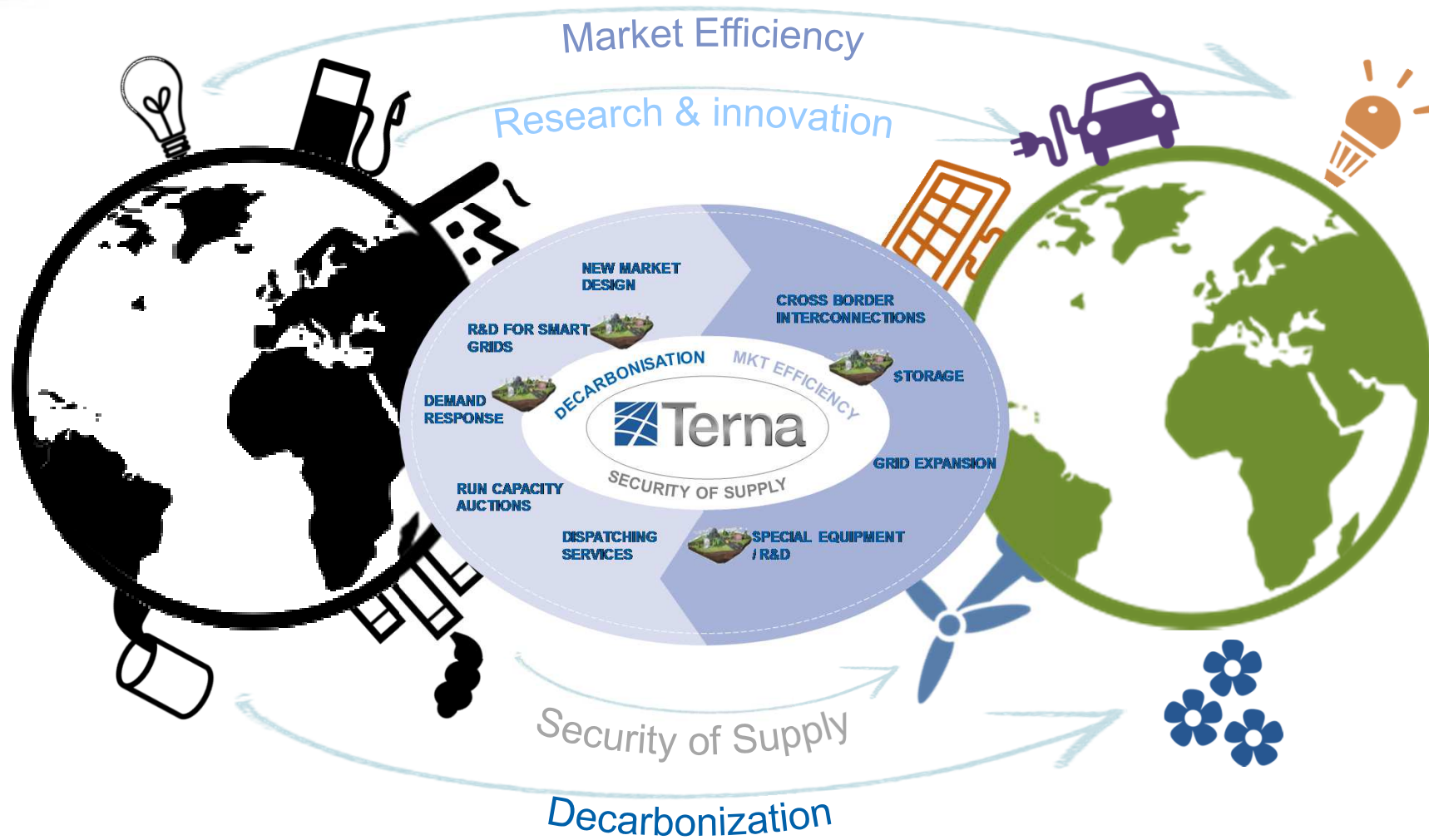
	2020 EU 20-20-20		2030 The energy bridge
	EU	Italy	EU
Reduction of GHGs emissions	- 20%	- 13% ¹ ✓	- 40%
Consumption covered by RES ²	≥20%	≥17% ✓	27%
Energy Efficiency (vs BAU scenario)	+ 20%	+ 20%	+30% ³
Interconnection vs. installed capacity	≥ 10% ⁴	≥ 10% ⁴	≥ 15% ⁵



1. Target for Italy related to Effort Sharing Decision
 2. Share of renewable energy in percentage of gross final energy consumption (transport + electricity + heating & cooling)

3. Proposal EC Winter Energy Package (target previously set at 27%)
 4. "Barcelona criterion" from the European Council of 2002, in Barcelona
 5. Single Member State target under study by EC

Enabling Energy Transition



TSOs have a key role in enabling the energy transition



The "SMART ISLANDS" PROJECT

Perfect test bed for the system of the future

TODAY

All the island's electric demand is supplied by diesel generator



Fossil fuel fired power plants has a big impact in terms of local pollution (NO_x, SO_x, PM10, noise) and global warming (CO₂ emission)



The electricity cost is subject to the commodity price fluctuations



The cost of transportation also contribute to increase the total cost



The fuel supply can be difficult in case of long term insulation



Fuel availability is also linked to political scenario



TOMORROW



Renewable power plants will replace the diesel generation (up to 100%)

Fuel consumptions, costs and local pollution will be cut off (almost by the same percentage)

CO₂ emissions will also be reduced

Fuel consumptions extra reduction can be achieved by the "smart components" of the project



Active demand



e-mobility



Forecast



Enhanced control system



Energy Storage

OUR PROJECTS



Giglio island

Our first Smart Island project

- Electricity consumption: 10,5 GWh/anno
- Maximum load: 3,5 MW

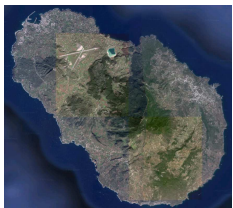
- Renewable generation target: **20%**
- Renewable power target : **≈ 2 MW**
- Investment: **≈ 5 mln€***

Giannutri island



The **First Smart Island** in Italy

- Renewable generation target: up to **90%**



Pantelleria Island

The biggest not interconnected island

- Electricity consumption : 44 GWh/anno
- Maximum load : 8,2 MW

- Renewable generation target : **20%**
- Renewable power target : **ca. 6 MW**
- Investment: **≈ 15 mln€***

Other Italian islands



- Ustica
- Favignana
- Marettimo
- Lampedusa
- Ponza



THANK YOU