



***The Italian renewable energy development :
growth, experiences and technologies***

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Overview

- **GSE – OUTLOOK AND MAIN ACTIVITIES**
- **RES DEVELOPMENT IN ITALY**
- **ITALIAN CLEAN TECHNOLOGIES**

GSE – OUTLOOK AND MAIN ACTIVITIES

MISSION

GSE is the state-owned company which promotes and supports the **renewable energy sources development** in Italy.

GSE fosters sustainable development by providing support for renewable electricity generation and by taking actions to build awareness of environmentally-efficient energy uses.



GSE – OUTLOOK AND MAIN ACTIVITIES



“Single Buyer”

Purchase of electricity for small customers.

- 28,5 million customers
- 85 TWh of energy purchased



“Energy Market Company”

Energy Market and Environmental Markets
(green certificates, white certificates,
CO2 allowances)

- 524 TWh electricity traded
- 4 million CV – Green Certificates
(value 339 million euros)



“Research into the energy field”

- 350 researchers
- 40 research projects

GSE – Main activities

Managing of different systems for the promotion of RES, CHP and Energy

Efficiency (qualifying plants, carrying out technical inspections on plants, issuing incentives, re-selling in the market of the RES-electricity purchased, collecting different types of data from plants through a satellite system, etc.)

Support schemes for RES electricity

- **Green Certificates:** issuing GC and monitoring compliance of producers and importers obligated;
- **Feed-in Tariff** (incentive + compensation for the energy sold)

Energy Services for RES and CHP electricity

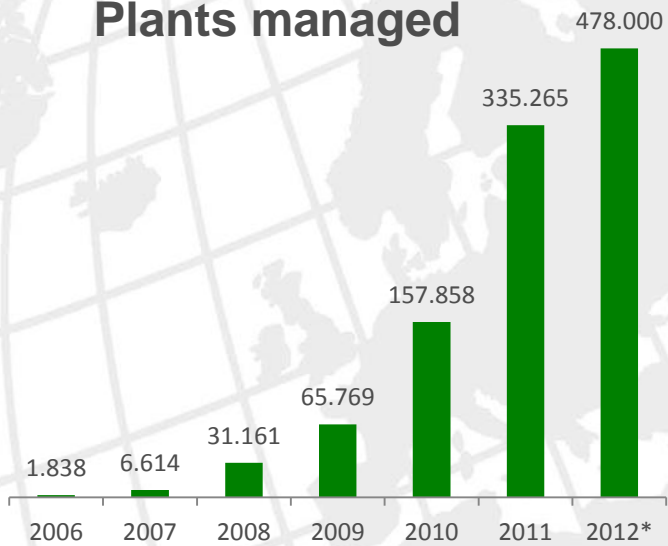
- **Net-metering** system for electricity generated by RES and CHP plants up to 200 kW;
- **Dedicated Electricity Intake:** purchase at average market price of electricity from RES and other plants (producers opting for electricity sale through GSE).

Support schemes for thermal RES and Energy Efficiency

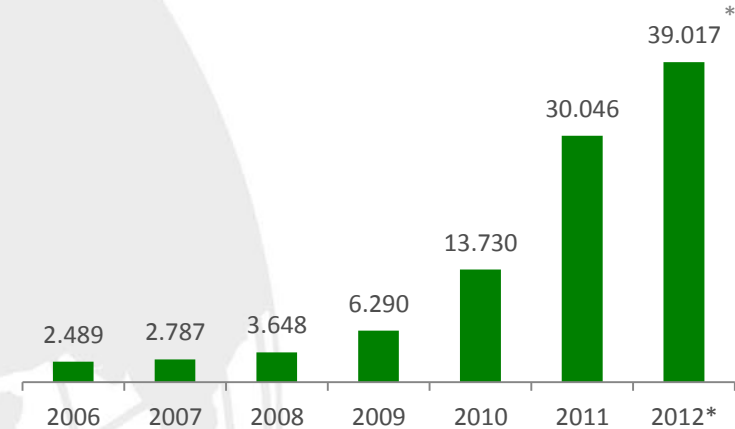
- **White certificates** and other **specific incentives**.

GSE – main activities: some data

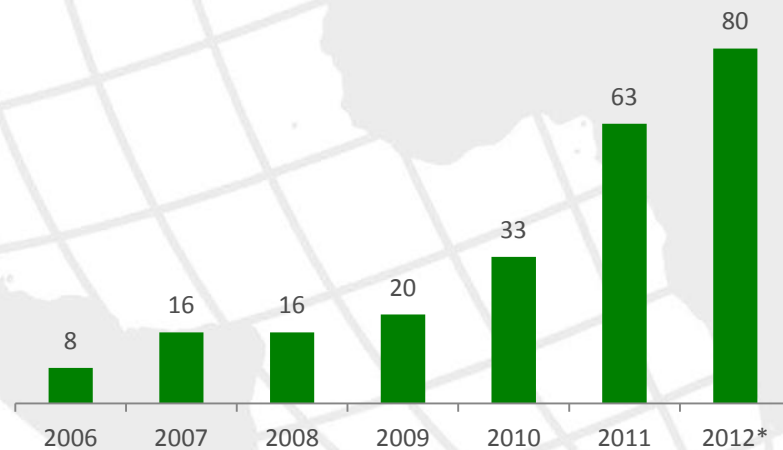
Plants managed



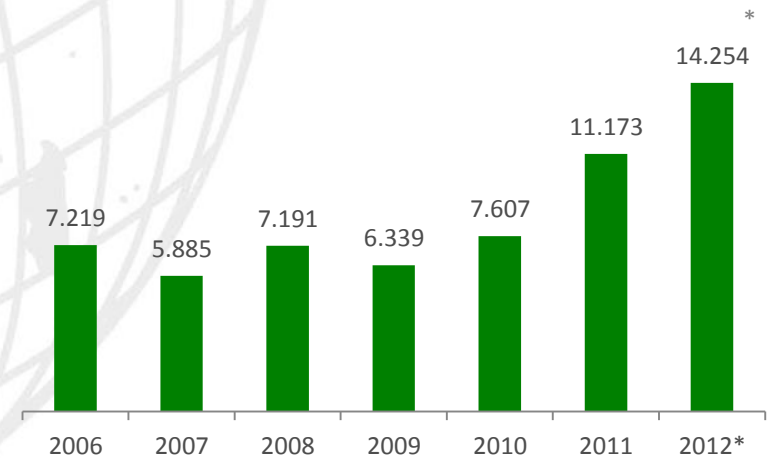
Power managed (MW)



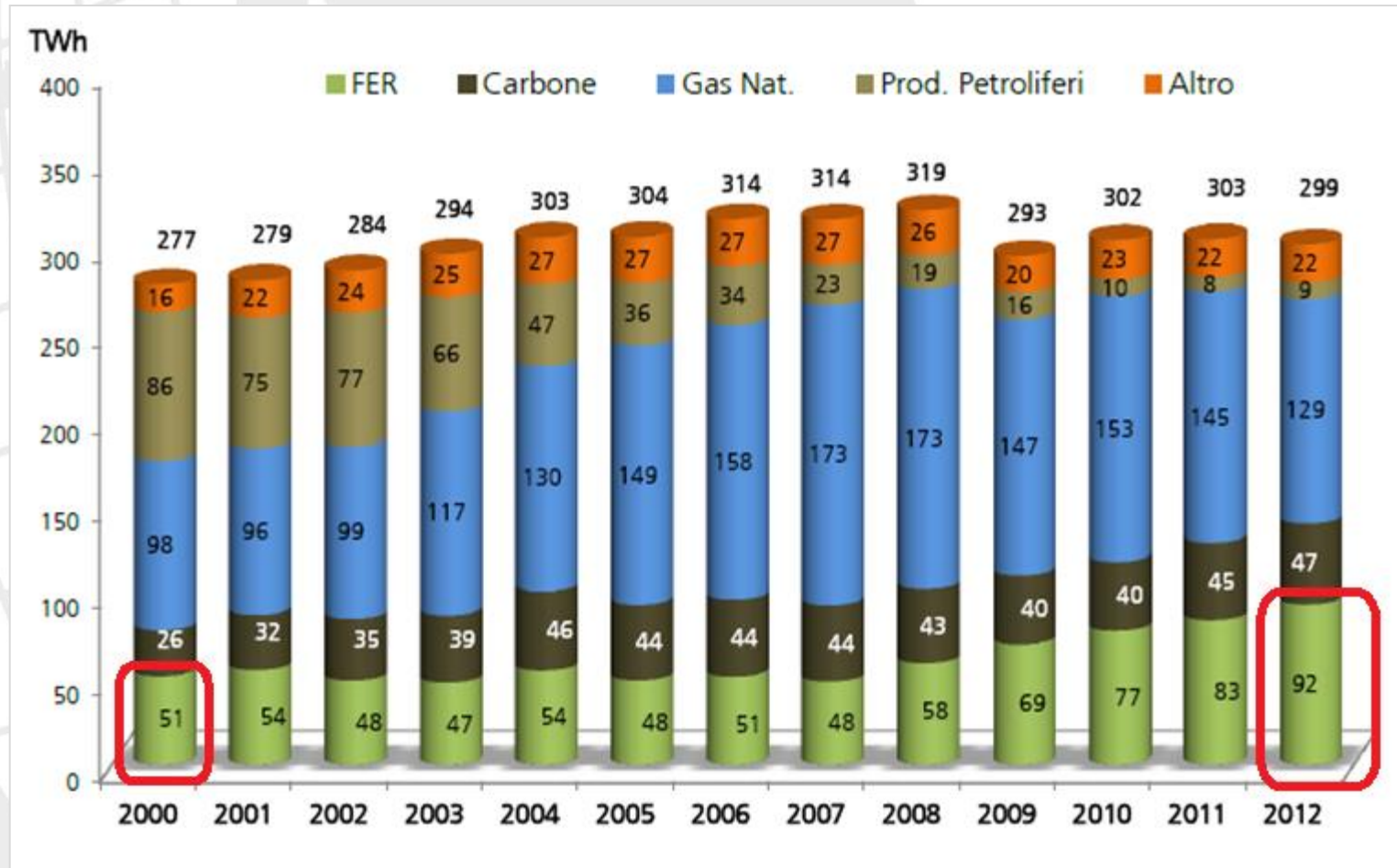
Energy incentivated (TWh)



Total support (Million €)



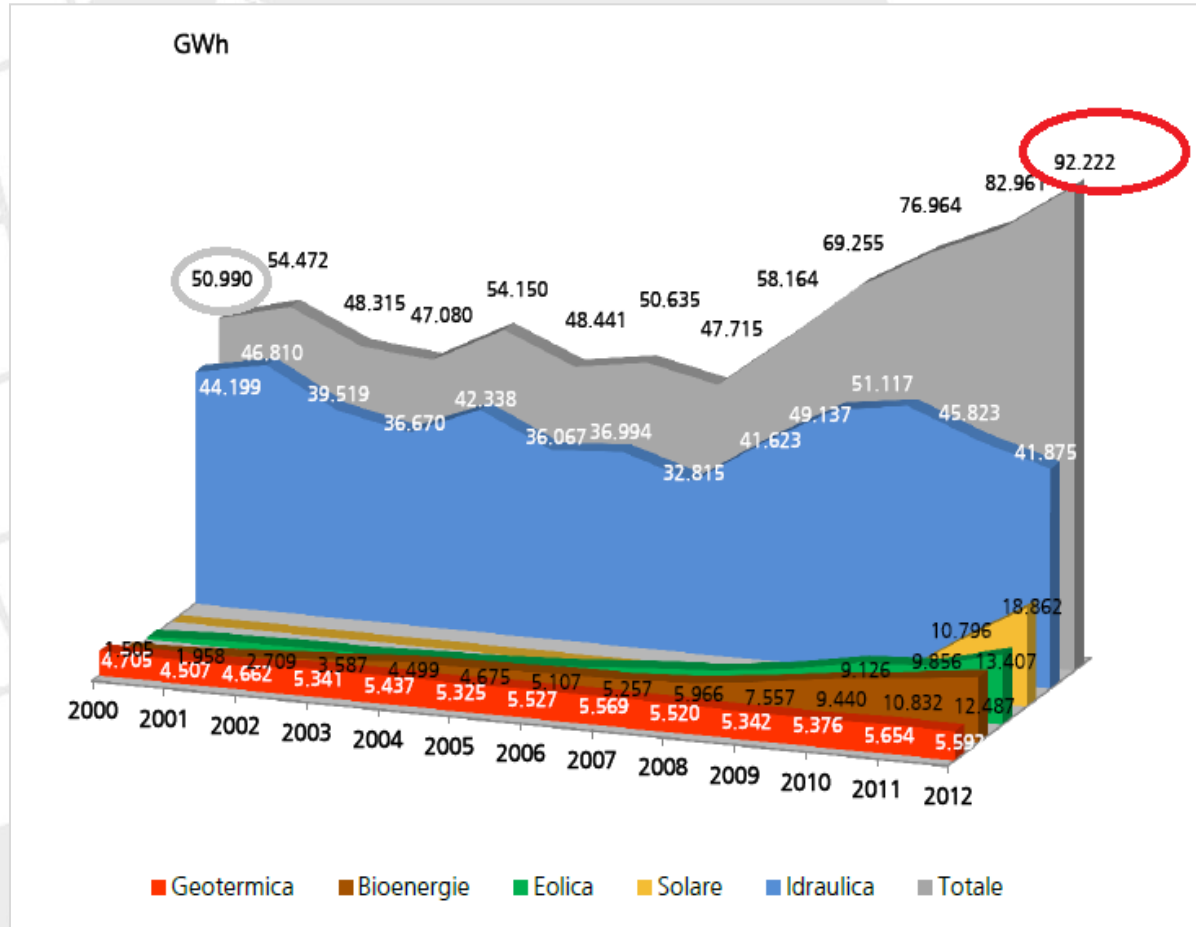
Total gross generation in Italy



Electricity generation from renewables in Italy

In 2000 : 51 TWh
(18,4% of total gross energy generation)

In 2012 : 92 TWh
(27% of total gross energy generation)



A total increase of around 41 TWh due to new RES plants

Number and capacity of renewable power plants in Italy

Solar: 478,000 photovoltaic plants with a capacity of 16 GW

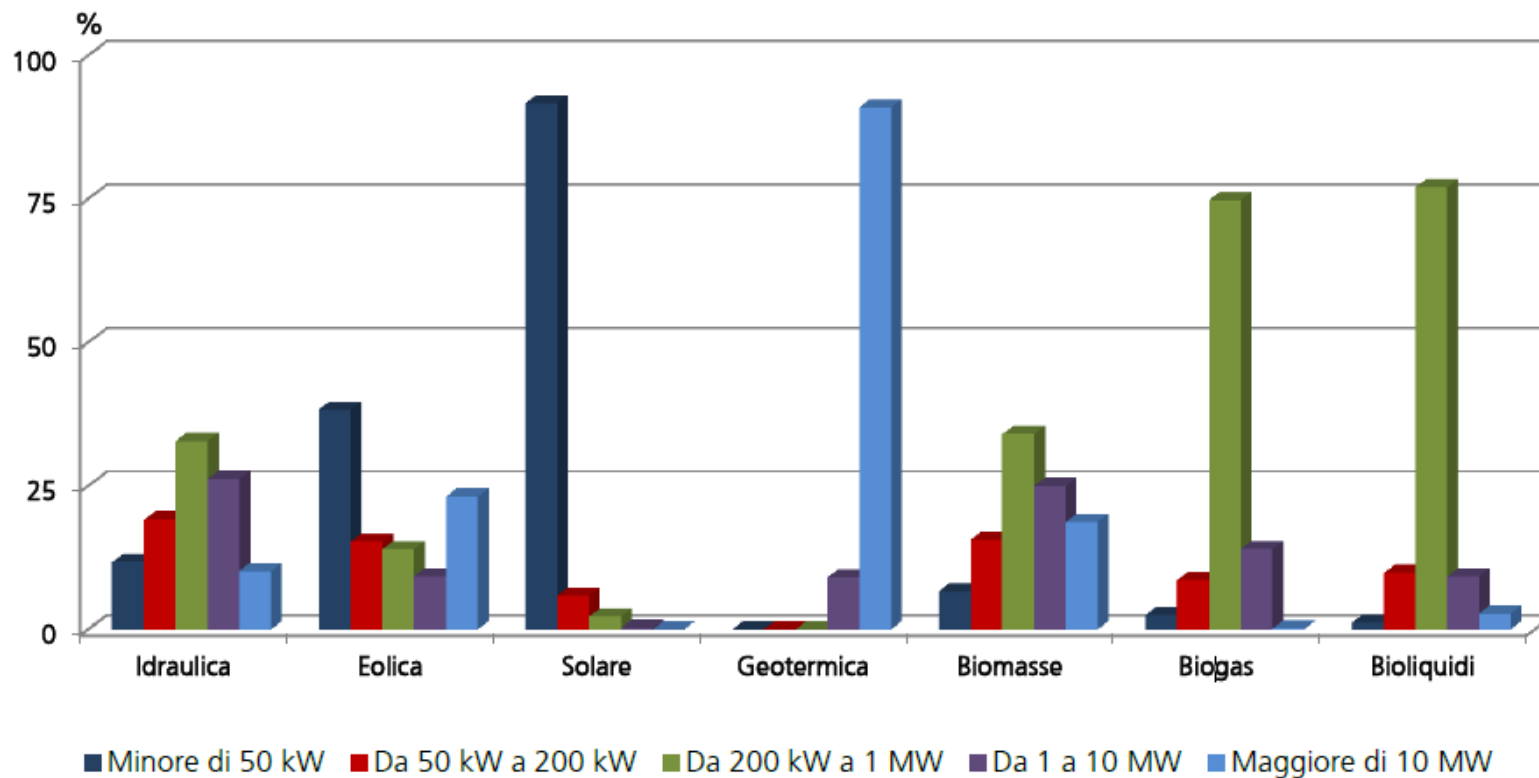
Wind: 1,054 plants with a capacity of 8 GW

Bioenergy: 2.200 plants with a capacity of 3,8 GW

Geothermal: 33 geothermal plants with a capacity of 772 MW

RES power plants size in Italy - 2012

Distribuzione % del numero degli impianti per fonte rinnovabile secondo classe di potenza



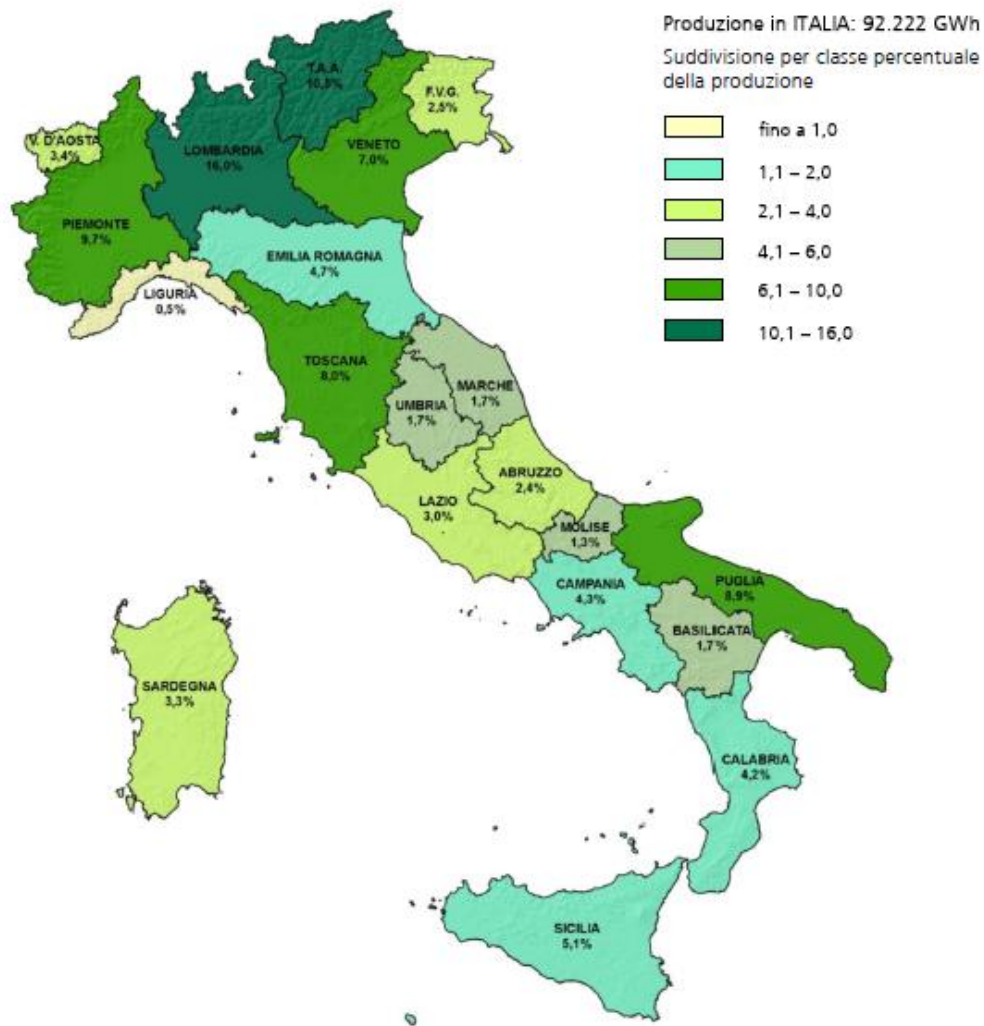
Renewable energy development – Regional Distribution

North: 54,14%

Center: 14,3%

South and Islands: 31,3%

Distribuzione regionale della produzione nel 2012



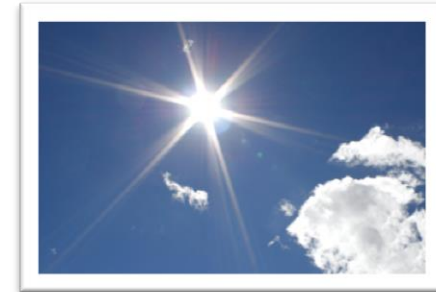
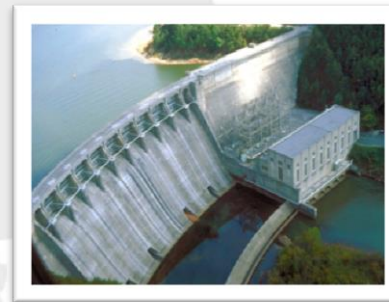
THE ITALIAN GREEN ENERGY INDUSTRIAL CHAIN

The renewable energy strong development creates a new Italian green industry v significant business turnover offering new products and services:

- SOLAR ENERGY
- WIND
- GEOTHERMAL
- BIOMASS
- ENERGY EFFICIENCY
- SMART GRID

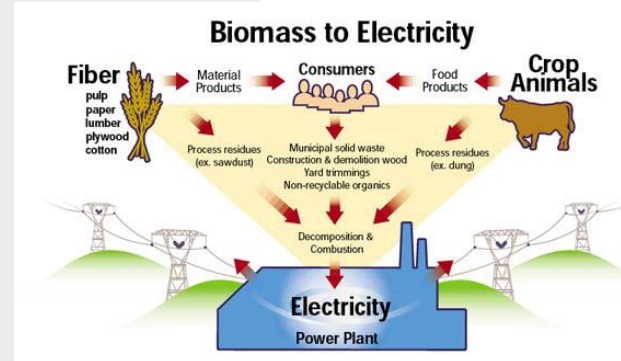
Main aspects of the RES Italian industry :

- ✓ Favourable location
- ✓ High potential of R&D
- ✓ Building integration & design
- ✓ RES for big and small applications
- ✓ Cooperation between companies and universities



Bioenergy Technologies

- gasification of organic waste
- CHP systems, biogas
- biomethane technology
- digesters
- combustors and boilers



Wind Energy Technologies

- **Small to large scale wind energy products**
- **wind turbine generators**
- **Towers**
- **transformers and control systems**
- **slew and wheel drive applications**
- **gearboxes for wind turbine pitch and yaw drive systems**



Geothermal Energy Technologies

- Heat pumps
- Steam plants
- Turbines
- Trills and compressors



Solar Energy Technologies

- solar cells and modules
- inverters
- ultra-thin photovoltaic films
- Solar thermal
- Concentrating solar power (CSP)
- Photovoltaic concentrating systems (CPV)

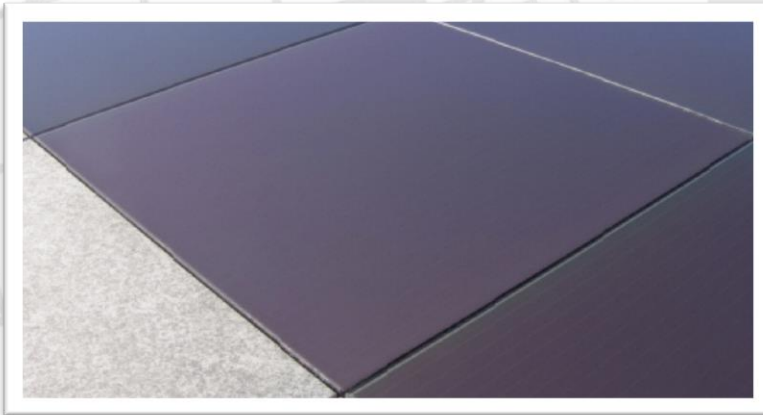


ITALIAN PV SUPPLY CHAIN :

HIGH-INNOVATION & EFFICIENCY

BUILDING INTEGRATION

DESIGN



photovoltaic floor



photovoltaic tiles

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