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# Energy industry challenges to a low-carbon economy, the RES and gas role in the transition

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General Manager



## We are the leading association in Italy representing companies operating in the electricity sector.

Over 500 companies of all sizes active in the production and marketing of electricity from conventional and renewable sources, distribution, in providing services for the sector, are part of Eletticità Futura.

**70 %**  
of the market

**75,000 MW**  
installed electrical power

**40,000**  
employees

**1,150,000 km**  
distribution lines

## Because...

**In 2034 (or before?) we risk exceeding the + 1.5°C threshold and at the end of the century to touch + 3.0°C.**

**In Italy, the average temperature has already increased by + 2.4°C (vs 1880) against an increase in the global average temperature of around + 1.2°C.**

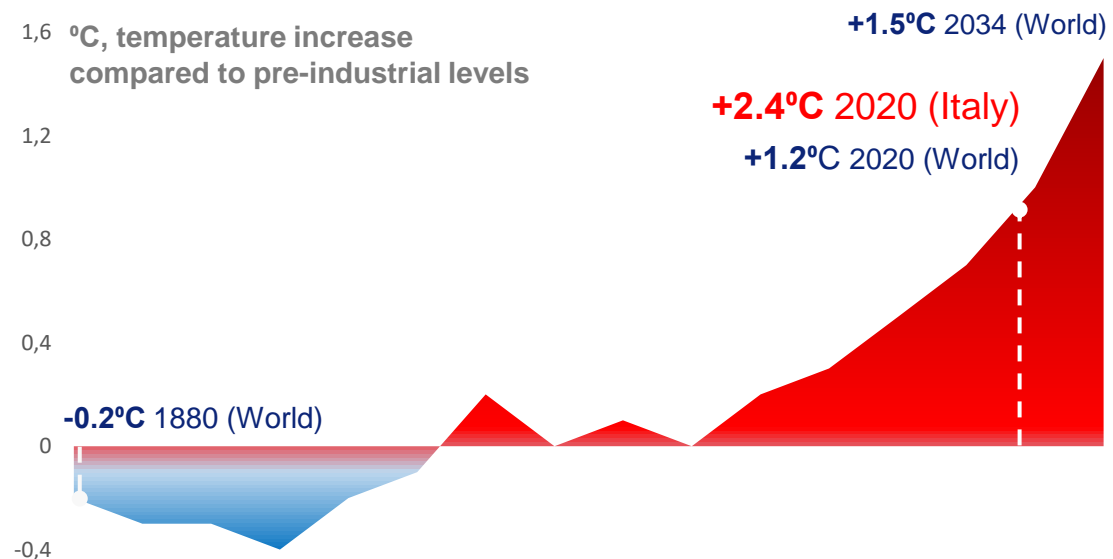
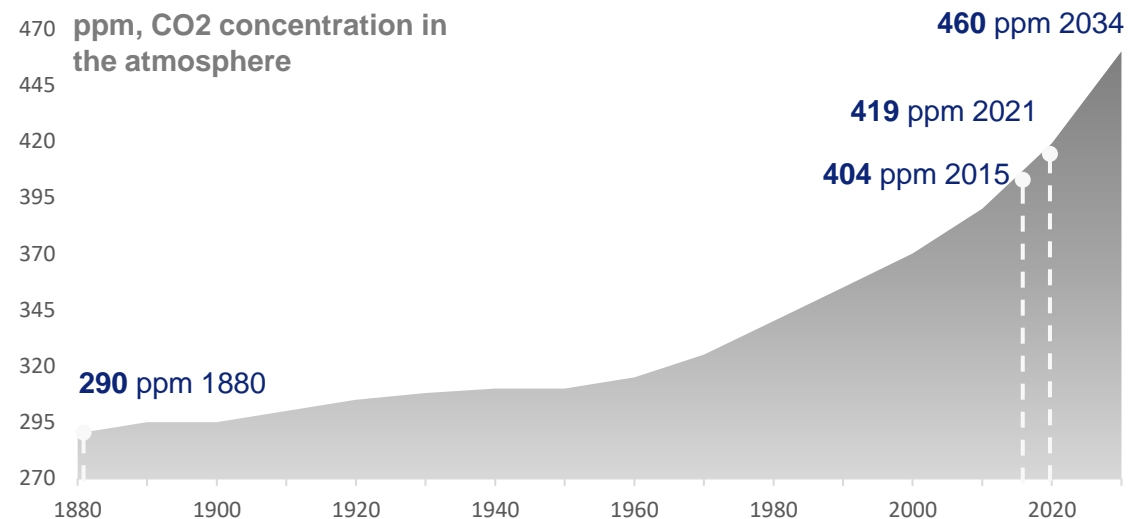
**Italy is the second European country by economic damage related to climate change.**

**There is a direct correlation between the increase of CO2 in the atmosphere and the increase of global temperature.**

**Since 2015, the concentration of CO2 in the atmosphere has increased from 404 ppm to 419 ppm, the historical record reached in May 2021.**

**In 2034, or sooner, we could reach 460 ppm and, as it continues to grow, it will have catastrophic effects.**

## Why should we make the energy transition?



### NOTE

Sources: ONU-IPCC AR6; [CO2 in atmosfera: nuovo record, mai così tanta in 63 anni \(rinnovabili.it\)](https://www.governo.it/it/articolo/videmessaggio-del-presidente-draghi-al-major-economies-forum-energy-and-climate/17928), [Global Monitoring Laboratory: https://www.governo.it/it/articolo/videmessaggio-del-presidente-draghi-al-major-economies-forum-energy-and-climate/17928](https://www.governo.it/it/articolo/videmessaggio-del-presidente-draghi-al-major-economies-forum-energy-and-climate/17928); EEA, Economic losses from climate-related extremes in Europe <https://www.eea.europa.eu/data-and-maps/indicators/direct-losses-from-weather-disasters-4/assessment>; Copernicus: EU Earth Observation Program: <https://climate.copernicus.eu/how-close-are-we-reaching-global-warming-15degc>

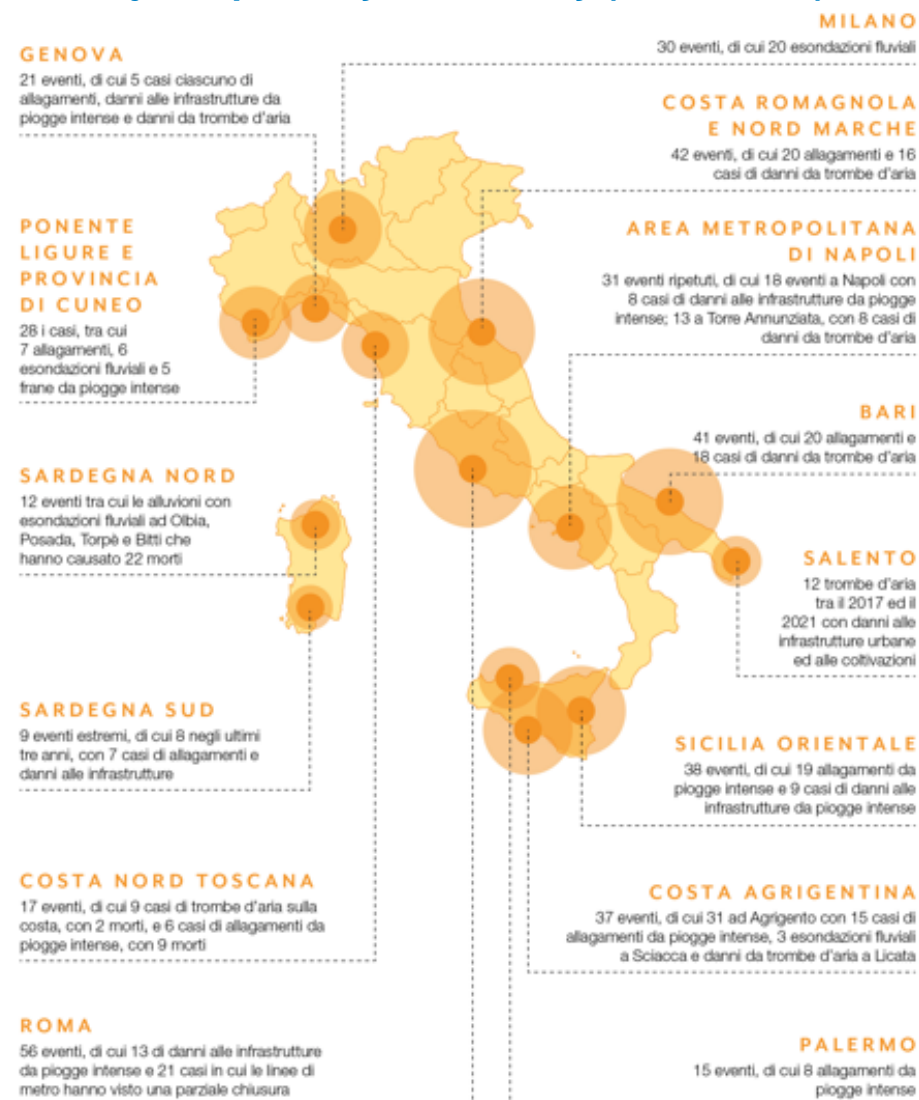
Estimated CO2 concentration in 2034: a linear increase with respect to the historical data of the last 10 years has been assumed if the current trend is maintained.

# Italy is in full climate emergency

## Major impacts by area in Italy (2010 - 2021)

In 2021 Italy was hit by 133 extreme climatic events, an increase of + 17.2% of cases compared to 2020.

Italy spends over one and a half billion every year on the consequences of the climate emergency, 5 times more than we invest in prevention!



**Reduce rather than eliminate carbon. It is the compromise that allowed the Glasgow Climate Pact at COP26, but it is the first time that the reduction of coal is written and only until a few years ago it was unthinkable that China and the United States would agree to cooperate on reducing emissions!**

**Markets and finance are now oriented towards transition, an unstoppable process.**

**The road to renewables is increasingly evident.**

**China and India, despite the declarations, could accelerate decarbonization. It is a question of business.**

**50% of all global fossil assets could lose their value by 2036 as they are replaced by renewable assets.**

**NOTE:** COP 26, IEA, Fatih Birol: [Cop26, Fatih Birol: "Cina e India ci sorprenderanno. Taglieranno i gas serra prima del previsto"](https://www.nature.com/articles/s41560-021-00934-2) - la Repubblica Nature Energy, Reframing incentives for climate policy action <https://www.nature.com/articles/s41560-021-00934-2>

## **COP26: it's a good starting point**

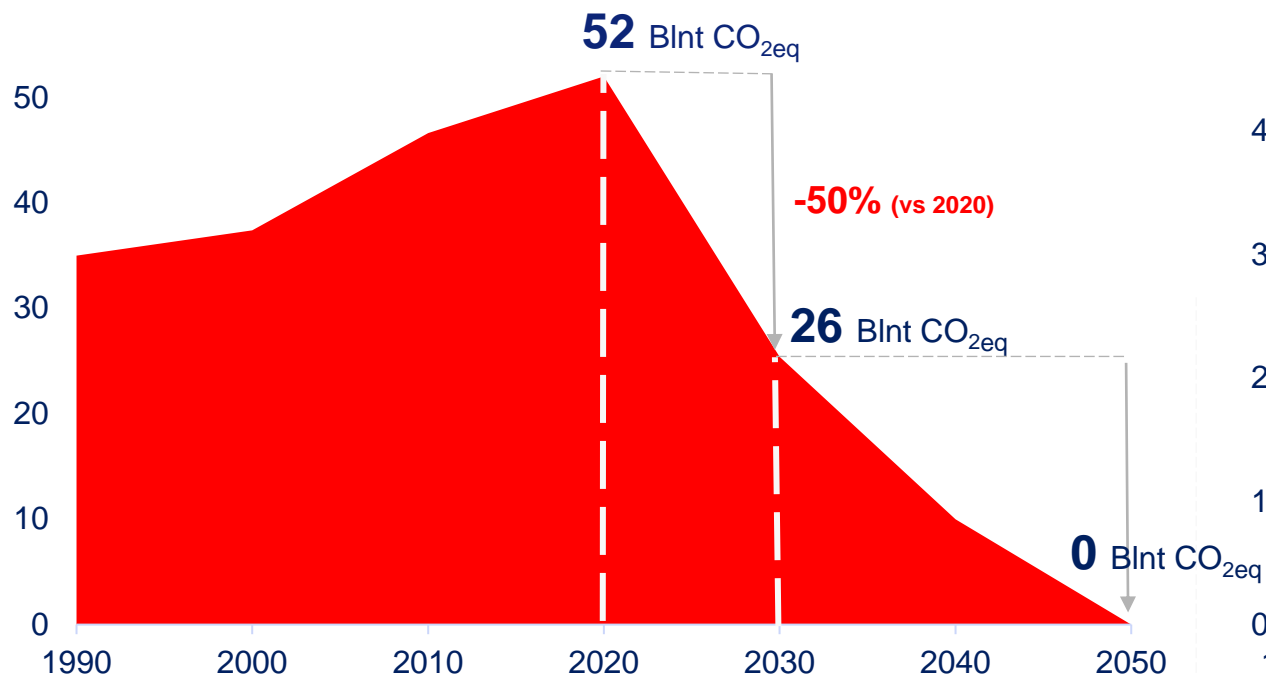


### **Among the main points of the agreement:**

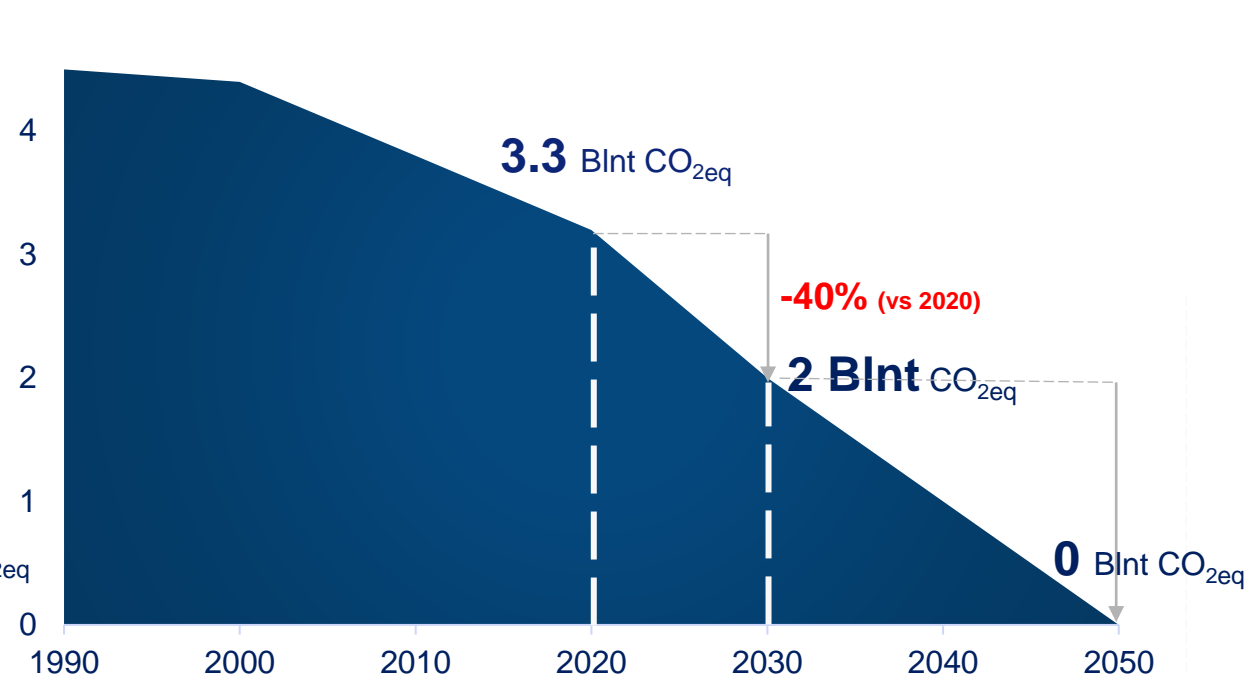
- ✓ **Contain the temperature increase to + 1.5°C by 2050 compared to pre-industrial levels.**
- ✓ **Reduce CO2 emissions by -45% by 2030 compared to 2010 levels, while Europe confirmed the -55% emissions target by 2030 compared to 1990.**
- ✓ **Gradual reduction of coal adopted**
- ✓ **100 billion annually allocated for the energy transition.**
- ✓ **Stop deforestation and 30% reduction in methane losses, from extraction to gas pipelines, by 2030.**

## Comparison between global emissions reduction targets (COP26 Agreement) and EU-27

### Global net emissions reduction trajectory (COP26) by 2050



### Net emissions reduction trajectory in the EU-27 by 2050



- To achieve the emission reduction targets recognized by COP26 according to the indications of the latest IPCC report, globally, it will be necessary to reverse the trend and halve current emissions by 2030 in order to completely eliminate them by 2050.
- The EU-27 has committed to reducing emissions by -40% by 2030 compared to the current value (equivalent to -55% compared to 1990) and to bring them to zero by 2050.

#### NOTE

Elettricità Futura processing based on IEA data, UN Environmental Program, European Commission, Oxford University ([https://www.inet.ox.ac.uk/files/energy\\_transition\\_paper\\_INET-working-paper.pdf](https://www.inet.ox.ac.uk/files/energy_transition_paper_INET-working-paper.pdf)) and McKinsey, [How the European Union could achieve net-zero emissions at net-zero cost](#). The graph with the emission reduction trajectory in the EU-27 also takes into account removals. The data are net of COVID-19 effects in 2020. It is also assumed that net zero emissions will be reached by 2050 globally.

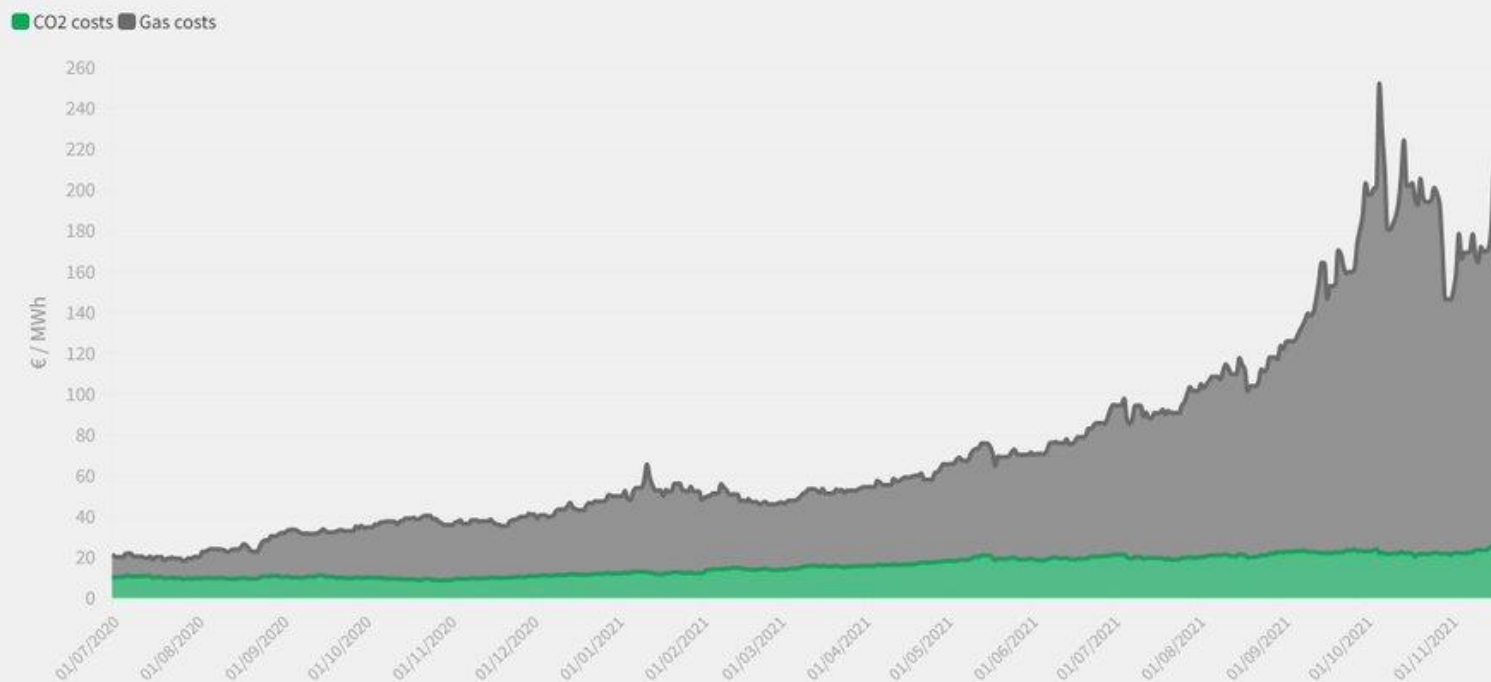
## The decarbonisation process is not the cause of the price increases

The increase in CO2 prices, recorded in recent months, affects only a small part of the costs of gas-fired electricity generation in the EU. It is the cost of the gas raw material that determines the price spike.

Furthermore, a clear indication has come from ESMA (European Securities and Markets Authority) that there is no evidence of abuse in the ETS market in relation to recent price volatility.

### CO2 costs are still only a fraction of EU gas-fired generation costs **EMBER**

Fossil gas costs vs. carbon costs for EU electricity generation from combined cycle gas turbines



Source: Powernext for TTF fossil gas prices (day ahead), ICE Exend for EU-ETS carbon prices (December contract)  
Costs calculated using emissions intensity of 0.37 tCO2eq / MWh and plant efficiency rate of 55% (Lower Heating Value)

#### NOTE

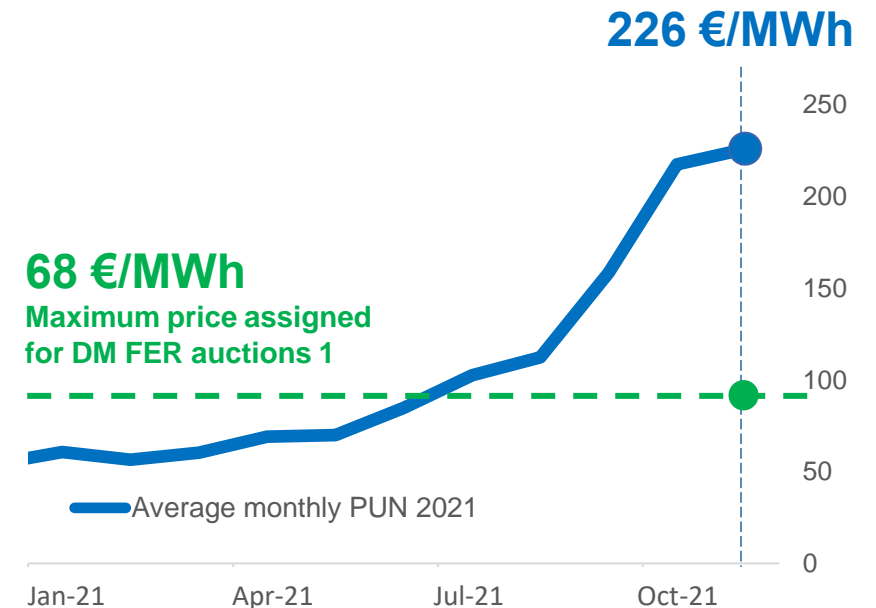
Sources: Ember, ESMA

## Renewables are the most competitive energies

Price trend of the spot electricity market in Italy 2021 (€ / MWh)

Today in Italy it is possible to make **PPA** with a fixed price for 20 years of around **68 €/MWh**, as evidenced by the maximum price assigned by the FER1 DM auctions for wind and fotovoltaic, almost a fourth compared to the November **spot price of 226 €/MWh!**

If we had today the share of renewables expected for 2030, the impact of the gas price increase would have been 40% lower.



**NOTE**

Source: EF elaborations on GSE, GME and Electrification Alliance data.



## Renewables cut electricity bills

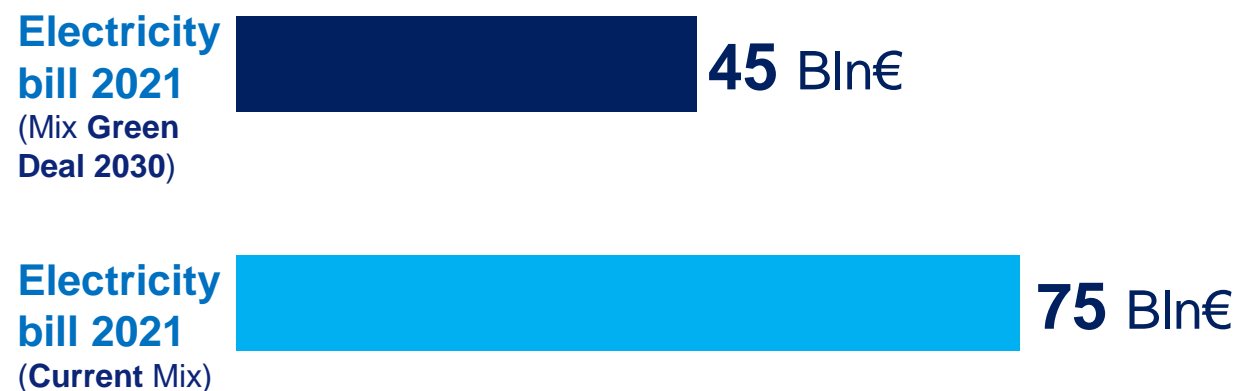
The cost of electricity is growing because in the past 6 months the price of gas has increased by more than four times (exceeding € 90/MWh), with which most of the electricity is produced in Italy and in many European countries.

With the current structure of the generation mix (40% RES of the total electricity generation), the total electricity bill in Italy will be around € 75 billion in 2021 (+70% compared to 2019, pre-COVID, when it was equal to to € 44 billion).

If, on the other hand, we had hypothetically already reached the electricity generation mix, necessary to hit the Green Deal 2030 target, i.e. 70% RES on the electricity generation mix, the total cost of the bill would be € 45 billion compared to € 75 billion, i.e. lower than -40%.

**And Italy would save € 30 billion a year!**

### Total electricity bill for Italy [Bln €]



#### NOTE

EF processing on GSE, GME, Terna and Electrification Alliance data.

**Current Mix:** a wholesale price in 2021 of 160 € / MWh was used as a reference. Final consumption was assumed to be constant compared to 2019 and equal to approximately 300 TWh. The other costs were calculated on the basis of RSE data (<http://www.rse-web.it/notizie/Anatomia-dei-costi-dell-rsquoenergia-on-line-la-nuova-edizio.page>).

**Mix Green Deal 2030:** Obtained assuming an average wholesale price equal to 60 € / MWh and a final consumption similar to the current one equal to approximately 300 TWh. The total cost of the electricity bill is given by the sum of the Energy Component and the Other Costs. Other Costs include: transmission and distribution network costs, system charges, excise duties, operating costs (including dispatching), marketing and sales costs.

The European Union has set the target for reducing CO<sub>2</sub>eq emissions at least 55% by 2030 compared to 1990.

For Italy, respecting the target means increasing the share of renewable energy from the current 38% to over 70% by 2030.

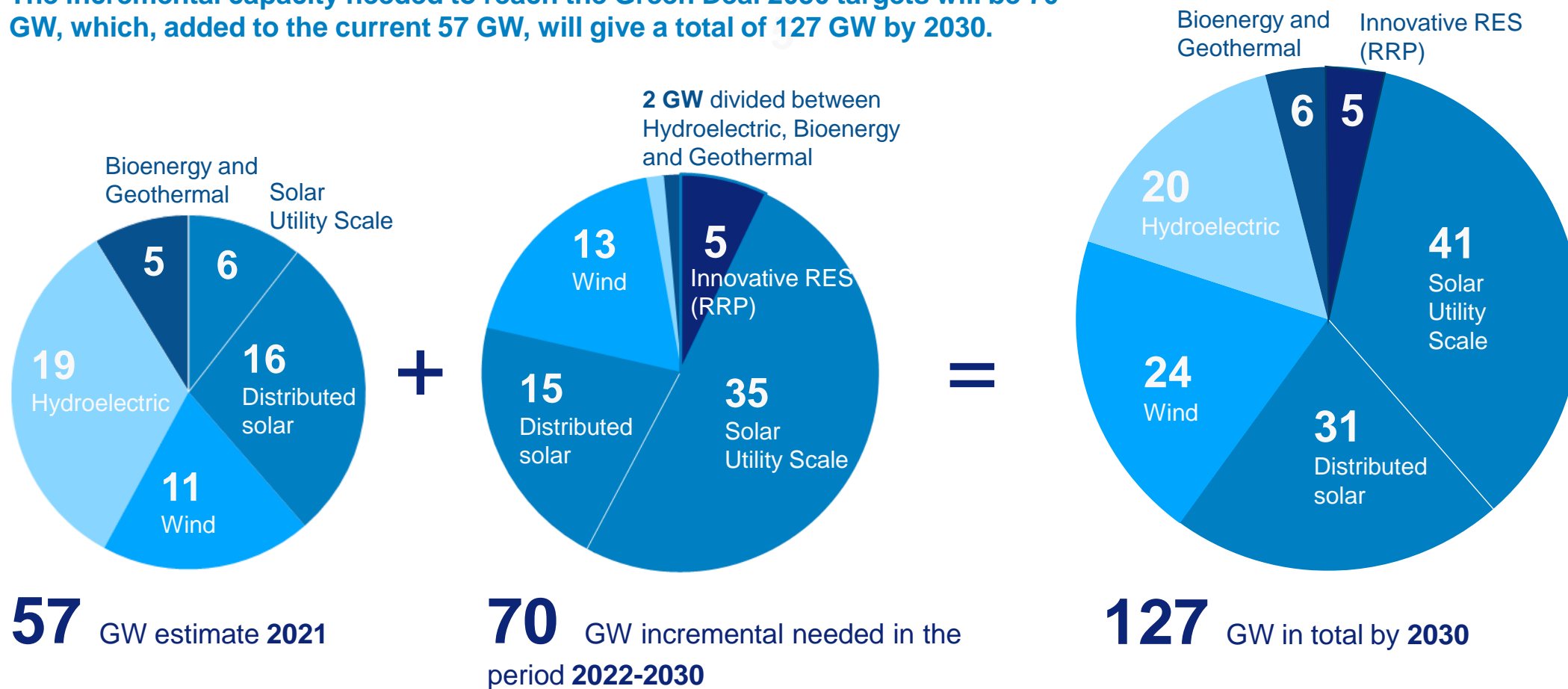
Gas reduction greenhouse effect	2020 Out turn	2030 Target
<b>Electric sector</b> compared to 125 Mt in 1990	<b>-24%</b> -30 Mt	<b>-64%</b> -80 Mt
<b>Transport and thermal</b> compared to 295 Mt in 1990	<b>-20%</b> -60 Mt	<b>-51%</b> -150 Mt
<b>Other sectors</b> compared to 105 Mt in 1990	<b>-19%</b> -20 Mt	<b>-57%</b> -60 Mt
<b>TOTAL EMISSIONS</b> compared to 525 Mt in 1990	<b>-21%</b> -110 Mt	<b>-55%</b> -290 Mt

**NOTE**

The 2020 preliminary data has been elaborated by Electricity Futura on European Commission data and is net of the COVID-19 effects. The 2030 targets are Eletricità Futura estimates based on NECP 2019 and European Commission data.

# Evolution by source of Renewable Capacity to reach the Green Deal 2030 targets [expressed in GW]

The incremental capacity needed to reach the Green Deal 2030 targets will be 70 GW, which, added to the current 57 GW, will give a total of 127 GW by 2030.



**NOTE**

**Estimated 2021:** EF calculations based on Terna data. The latest Terna final data indicate an overall renewable capacity of 56.59 GW at the end of 2020 (with an increase of 2% compared to 2019). It has been assumed that approximately 1 GW of additional net RES capacity will be installed in 2021, in line with 2019 and 2020.

**Green Deal 2030:** EF's preliminary estimates based on Terna, RSE, NECP 2019 and European Commission data. The incremental 70 GW include both new capacity and the increase in power due to the repowering of existing plants.

**Note:** In the pie charts, the Solar Utility Scale includes plants with power equal to or greater than 1 MW.

## Benefits of the Green Deal

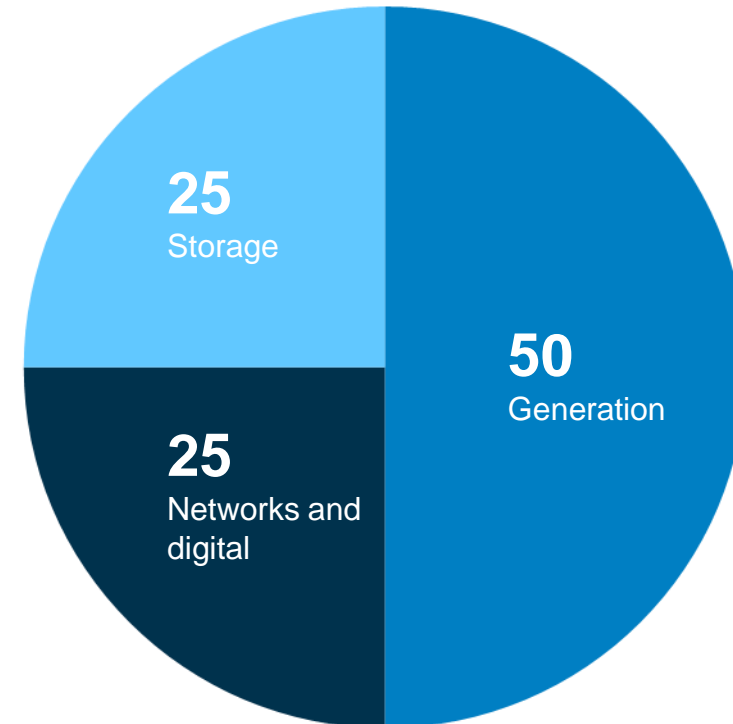
### Investments in the electricity sector

If effectively implemented, the Green Deal will imply in the Italian electricity sector by 2030:

**50** Mt/CO<sub>2</sub>eq  
Avoided emissions

**90,000**  
New jobs

**100** Bln€  
Investments



**2022-2030** private investments [%]

**NOTE**

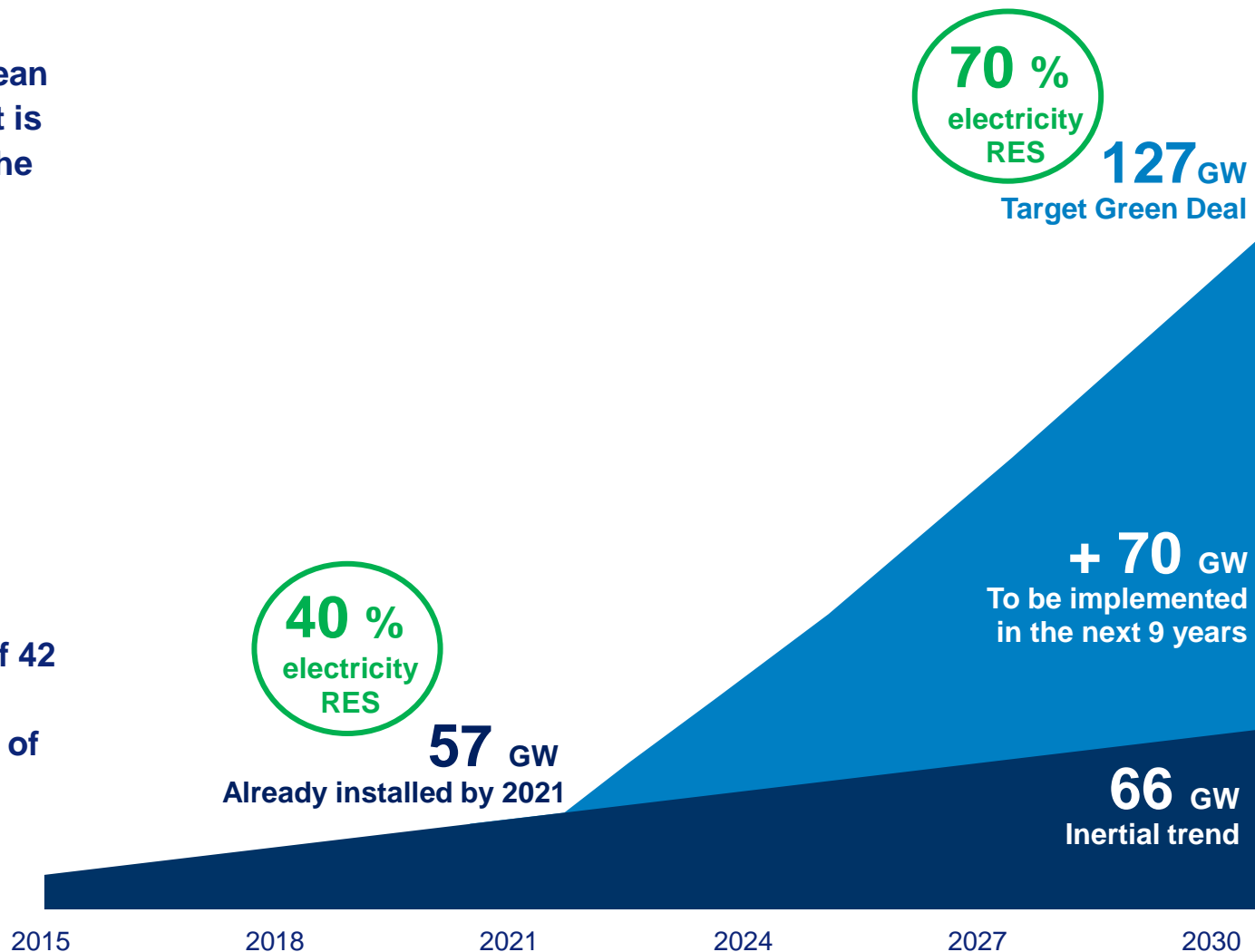
Elettricità Futura's elaborations on NECP and European Commission data.  
100 billion: considering the economic benefits in terms of added value, avoided emissions and creation of new jobs in 2030.

## We need a strong acceleration in permitting, otherwise we will reach the target in 2090

In 2020, Italy was the last of the major European economies for new renewable installations. It is also the country with the longest times and the highest costs to obtain an authorization.

For **photovoltaics**, there is a dramatic gap between the projects presented and those authorized by the Regions. In recent years, Sicily and Basilicata have authorized 2% of requests, in Puglia and Marche the authorizations given are zero.

**Wind** is not better: 91% of new wind projects wait 5 years to obtain an authorization. Out of 42 judgments expressed by the Regions, 41 are negative. Of the 45 judgments of the Ministry of Culture, 35 are negative.



### NOTE

EF elaborations on NECP data - December 2019 and European Commission. In 2015, there were 51 GW.  
2030 power according to the inertial trend of 66 GW: estimated with an average annual increase in renewable capacity of 1 GW.

## It is not a Burden, it is an Opportunity Sharing

For the economy, the environment and employment in the Italian regions

In green the 90,000 new employees in the electricity sector by 2030.

In orange the 100 billion euros of investments in the electricity sector by 2030.

In blue the 70 GW of new RES capacity divided in proportion to the current installed.

The blue histograms represent the currently installed RES equal to 57 GW.



**NOTE:**

Elettricità Futura processing based on RSE, GSE, GME, Terna and the European Commission. The latest Terna final data indicate an overall renewable capacity of 56.59 GW at the end of 2020 (with an increase of 2% compared to 2019). It has been assumed that approximately 1 GW of additional net RES capacity will be installed in 2021 in line with 2019 and 2020. Investments in the electricity sector to reach the Green Deal 2030 targets are estimated at 100 billion, of which 50 for new capacity. The graph shows the breakdown by macro-area of all 100 billion, assuming that investments in storage, digital and networks are correlated to those in new capacity. Similar reasoning for new employees.

## The role of gas in phase out from fossil fuels

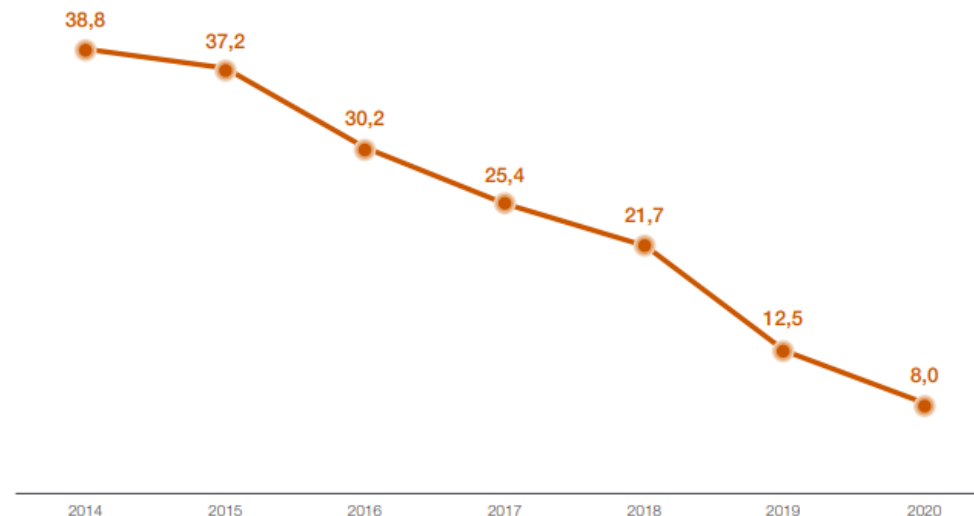
Thermoelectric generation, particularly coal, has undergone a sharp reduction in recent years (about -80%), thanks to the growth of renewables and the growing price of CO<sub>2</sub>.

The development of gas assets can make a particularly significant contribution to decarbonization, by supporting the phase-out of coal and integration of RES (together with the crucial contribution of storage).

### In details:

- the capacity of the coal plants that will be decommissioned by 2025 will have to be covered by new additional generation capacity to ensure the adequacy of the electricity system;
- the existing and new gas generation capacity will be used - together with energy storage - to guarantee the flexibility required by the electricity system in the coming years, supporting the growth and integration of RES;
- in this scenario, the Capacity Market makes it possible to provide the long-term price signals necessary for the system and operators to keep existing more efficient plants in operation and to build new high-efficiency thermoelectric generation capacity to support the transition phase.

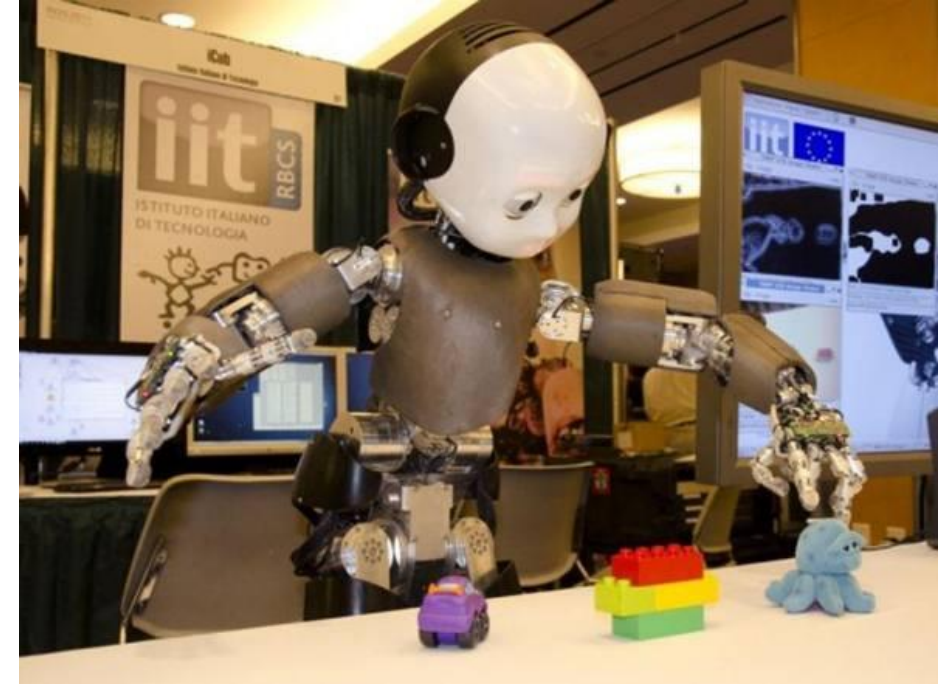
Coal-fired electricity generation [TWh] trend (Italy - Continent)



## 3 system priority actions for the Target Green Deal

To not miss this opportunity, it is necessary that:

1. the **Government** approves asap the new National Integrated Energy and Climate Plan (NECP) in line with the -55% target;
2. the **Regions** agree among themselves on the distribution of the 70 GW to be achieved;
3. the **Superintendencies** do not hinder its realization because the new plants, avoiding the destructive effects of climate change, contribute to the protection of the landscape.



**NOTE**

[News | News | Target Rinnovabili. E' un'Opportunity Sharing, non un Burden \(elettrocitafutura.it\)](#)





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