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The Global Energy Transition Toward Decarbonization: a multi-scalar perspective and transformation

Plenary Session: The energy industry challenges towards a net zero economy

To achieve the net zero target by 2050 it is fundamental to accelerate the energy transition

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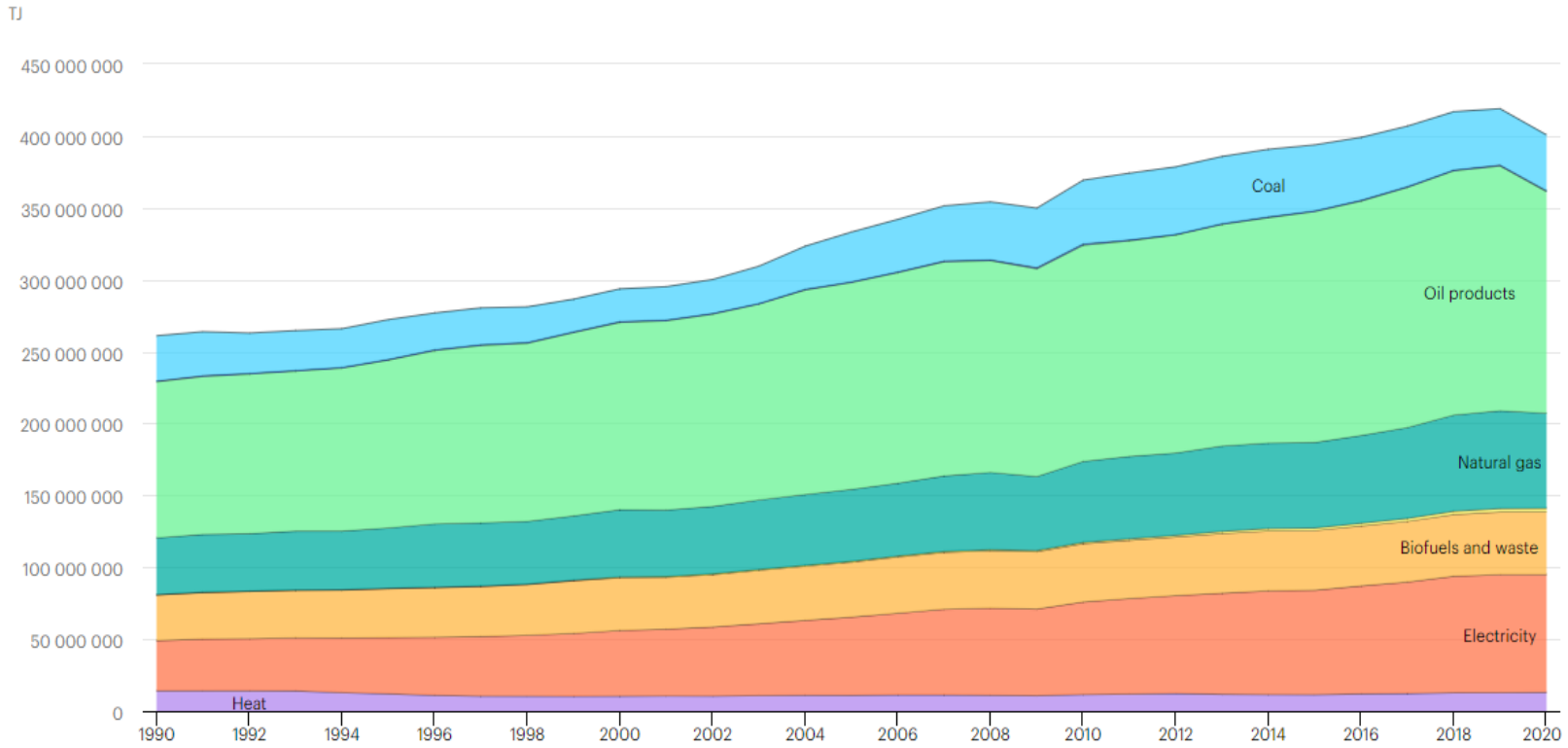
Strategic Advisor at Elettricità Futura

Global energy consumption by source/carrier
1990-2020, in Terajoule (TJ)

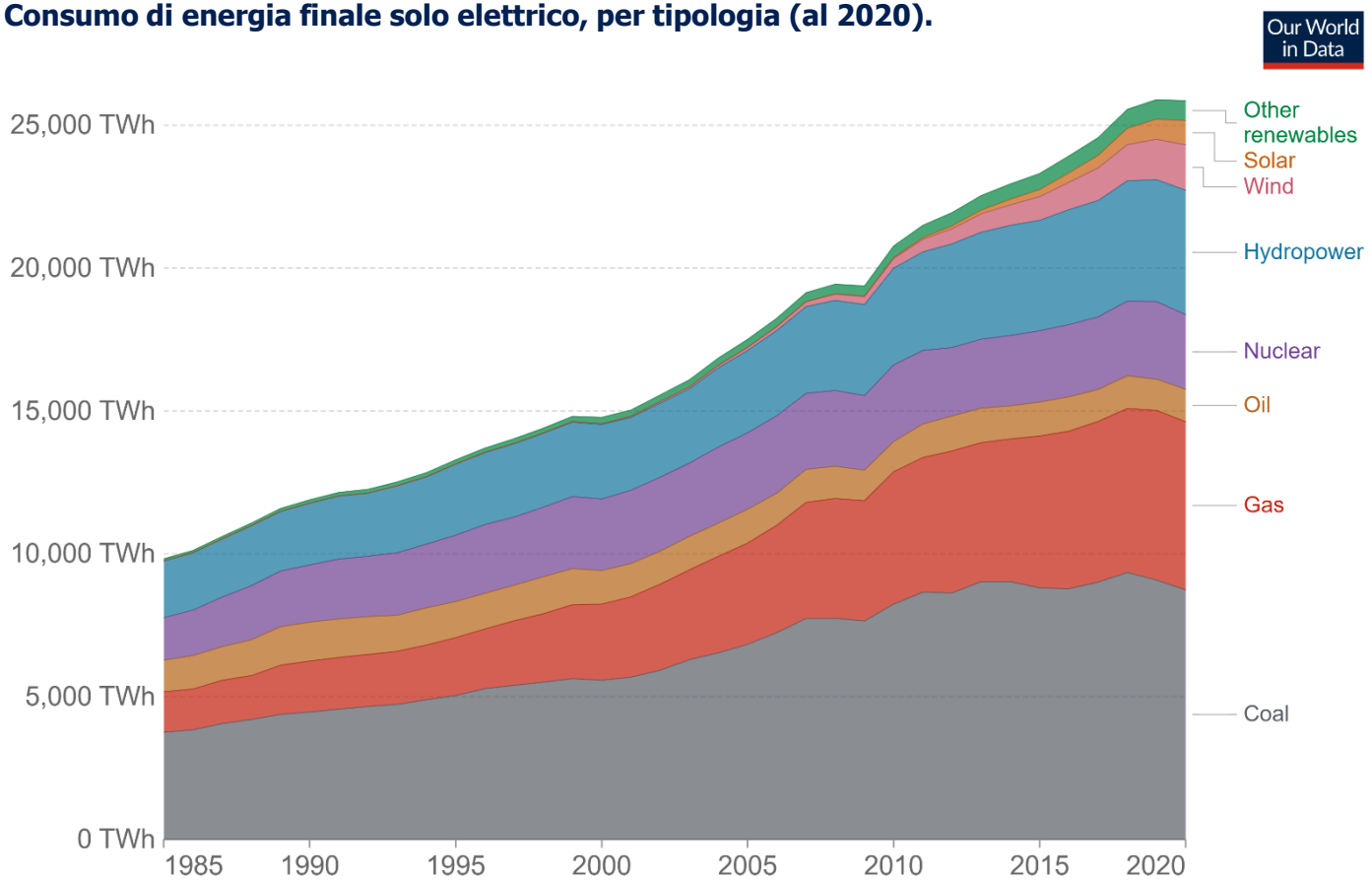


Electricity consumption is increasing, but fossil fuels are still dominant

Fonte | IEA

Global electricity production by source
1985-2020, in TWh

Consumo di energia finale solo elettrico, per tipologia (al 2020).

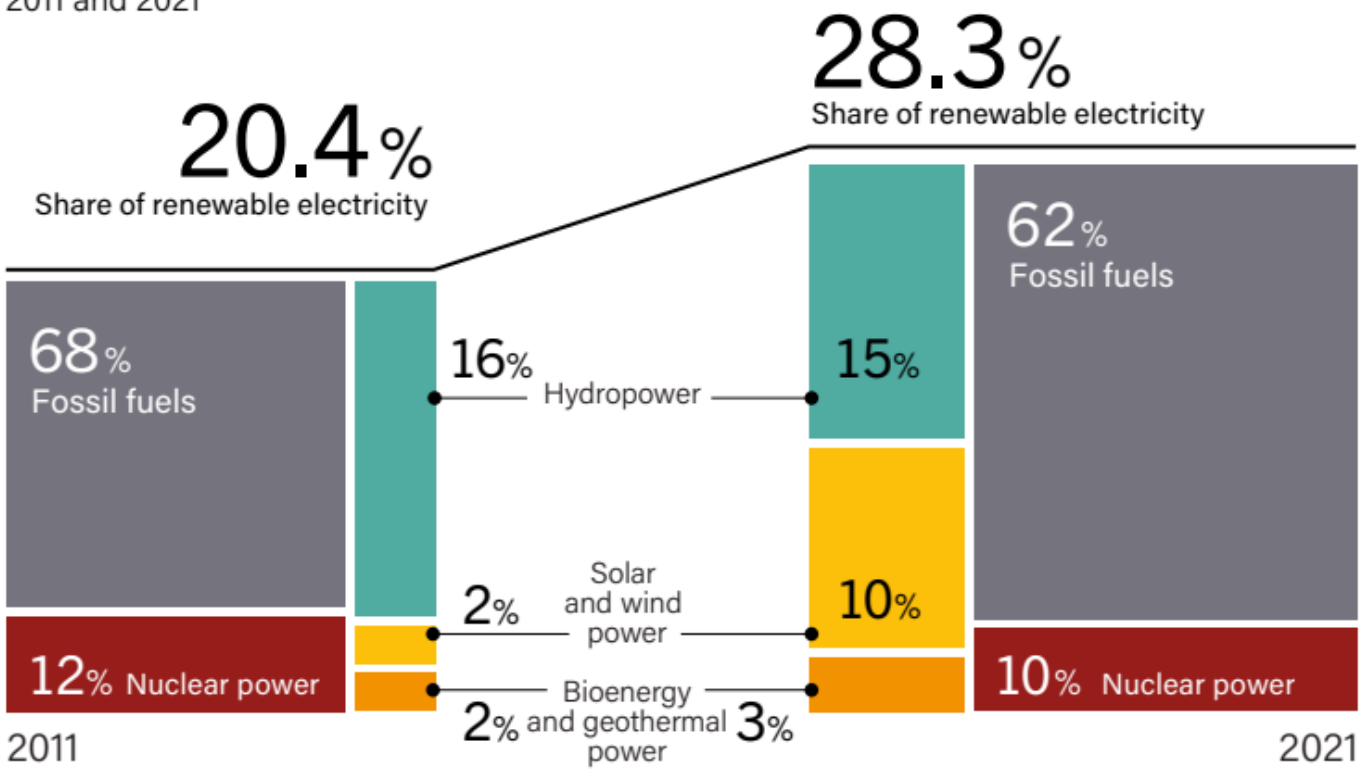


Renewable electricity is increasing, but coal and gas make still over 50% of the electricity production

Fonte: Our World in Data, Oxford University

Share of renewables in the electricity generation mix globally: still a long way to go towards net zero

Share of Renewable Energy in Electricity Generation,
2011 and 2021



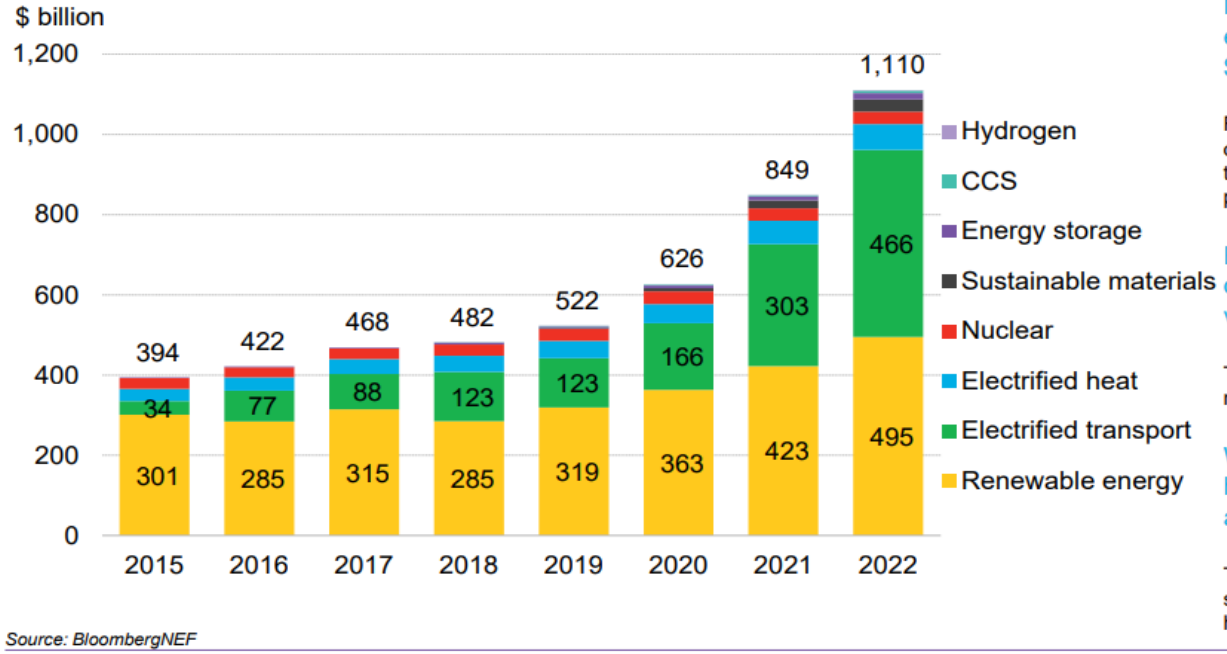
Renewable share of electricity generation increased by almost **8** percentage points in the past decade.

Fonte | REN21, Renewables Global Status Report, 2022.

Global investments in Energy Transition

Energy transition investment surged past $1 trillion in 2022

Global investment in the energy transition by sector



Source: BloombergNEF

54

New capital invested in support of deploying energy transition technologies hit a record $1.11 trillion globally in 2022.

Renewables, which include wind, solar, biofuels and other sources of power, narrowly retained its position as the largest sector, with a record $495 billion in new project investments.

Electrified transport, which includes spending on EVs and charging infrastructure, is now a very close second.

The sector grew to $466 billion (up 54%) as the EV market continued to accelerate globally.

With the exception of nuclear power, which has been flat in recent years, all other sectors also saw record levels of investment.

Together, electrified heat, sustainable materials, energy storage, carbon capture (CCS), energy storage and hydrogen added another $149 billion in 2022.

CLEAN ENERGY MINISTERIAL
Advancing Clean Energy Together

BloombergNEF

In 2022, 90% of investments were in renewables and electrified transport

Fonte: Bloomberg

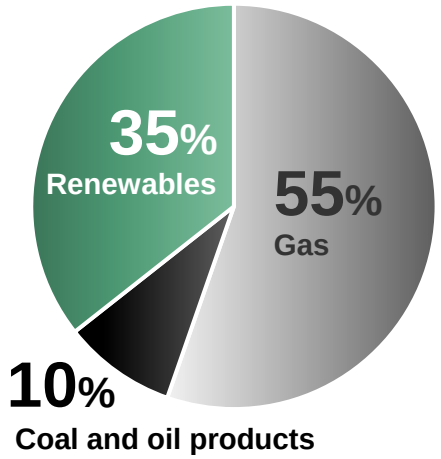
Italy keeps on being too dependent
on foreign countries to satisfy its energy needs.

65% of electricity in Italy is still produced from fossil fuels, mostly from gas (95% being imported).

Renewables are the cheapest energy source.

In addition, 14% of our electricity consumption is covered by imported electricity.

Electricity generation in Italy in 2022



The transition to renewables is a roadmap to independence and national security,
in addition to decarbonisation.

Italy can become more independent and competitive by exploiting the only national resources that produce sustainable electricity, being available in abundance and in a short time at the cheapest cost.

Source | Elaborations by Elettricità Futura on MASE and Terna data. In recent years, the renewable share of the electricity generation mix has been on average 40%.
According to pre-final balance data, the renewable share dropped to 35% in 2022 mainly due to the significant downturn in hydropower production (almost -40% in 2022 compared to 2021).

The 2030 Electricity Plan by Elettricità Futura aims at connecting 85 GW of new renewables to the grid in Italy

	2022	2023	2024	2025	2026	2027	2028	2029	2030
GW PER YEAR	3	7	9	10	10	11	11	12	12
PROGRESSIVE GW	3	10	19	29	39	50	61	73	85
RENEWABLES IN THE MIX	35%	46%	51%	56%	62%	67%	73%	78%	84%

With additional 85 GW, 84% of electricity will come from RES

(also taking into account the increase in electricity consumption)

In addition, the Plan targets 80 GWh of new large-scale storage capacity in Italy.

Source | Studio Accenture «REPowerEU for Italia: Scenarios 2030 for the electricity system» per Elettricità Futura. The 2030 Electricity Development Plan for Italy forecasts an increase in electricity demand with 360 TWh in 2030 compared to 315 TWh in 2022 (pre-final balance figure). In recent years, the RES share of the electricity generation mix has been an average of 40%. According to pre-final balance data, the RES share dropped to 35% in 2022, mainly due to the significant downturn in hydro generation (almost -40% in 2022 compared to 2021).

The 2022-2030 Electricity Plan for Italy by Elettricità Futura

320
Billion €

INVESTMENTS
in the electricity sector and its value-chain.

360
Billion €

ECONOMIC BENEFITS
in terms of added value for the supply chain and related industries, and growth in national consumption.

-270
Million t CO_{2eq}

LESS CO2eq EMISSIONS
from the electricity sector over the 2030 Plan period.

540
Thousand

NEW JOBS
in the electricity sector and its value-chain in 2030, which will be additional to the current 120,000.

The 2030 Italian electricity sector plan will bring crucial opportunities for Italy in terms investments and new jobs

Sources | Enel Foundation study carried out with Althesys and Elettricità Futura "La filiera italiana delle tecnologie per le energie rinnovabili e smart verso il 2030" for economic and social benefits. Accenture study "REPowerEU for Italy: 2030 scenarios for the electricity system" for emissions reduction. By reaching the target set out in the 2030 Plan, CO2eq emissions from the Italian electricity sector will be cut by 75% in 2030 compared to 1990 (which means that 94 Mln t CO2eq will be avoided in 2030 compared to 1990, when 125 Mln t CO2eq were emitted).