

Wind energy, a crucial contribution to climate protection and energy security

WWEC Shantou 4th December 2025

Hans-Josef Fell

Member German Parliament (1998 -2013)

ENERGYWATCHGROUP



The world is already far too hot: 2024: 1,6°C

Latest research: 3°C could be reached by 2050 !

Antonio Guterres: The world is on the way to **climate hell**



June 2024: China: Pearl River Delta: Extreme weather:
More than 100,000 people have been evacuated

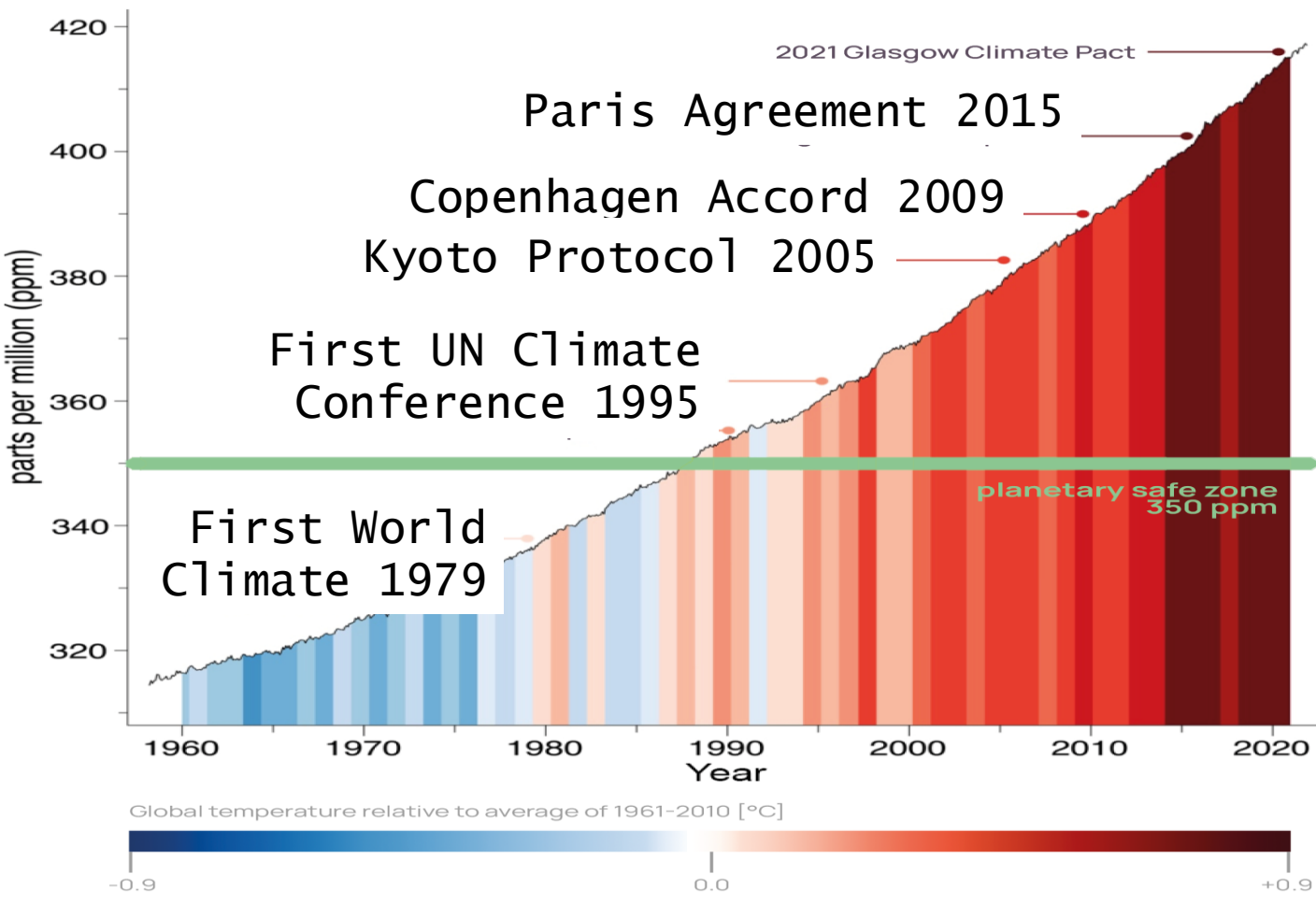
The necessity: Global Cooling by 1°C



Leonardo di Caprio 17.4.2017 in Shanghai
at Presentation of new BYD E-cars

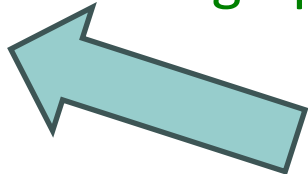
Collective failure of the global community: 2024: 425 ppm CO₂ - 1.63 °C global heating June 23 – August 24

Trends in Atmospheric CO₂ vs. Global Temperature Change



The Earth needs to get back to the planetary boundary of CO₂ concentration - 350 ppm and 1°

Above 1°, 1,5° or even higher implies increasing risk of weather extremes and reaching tipping points.



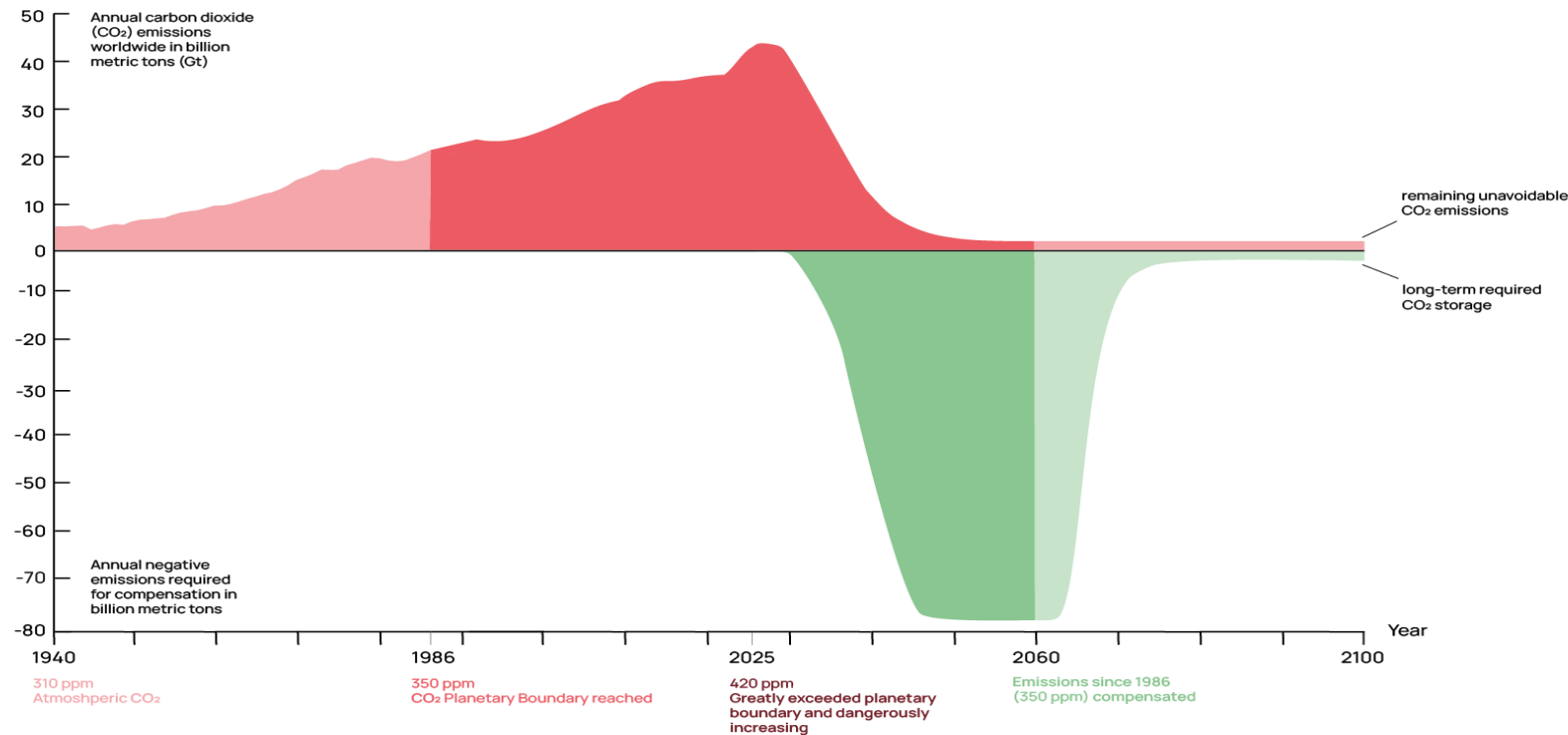
Planetary boundary for a safe human civilisation: 350 ppm CO₂

Title and figure are from *A short history of the successes and failures of the international climate change negotiations* by Mark Maslin, John Lang and Fiona Harvey under the [CC-BY license](#). Figure has been modified by the Holocene Project team.

Falling below planetary limit of 350 ppm CO₂ means:

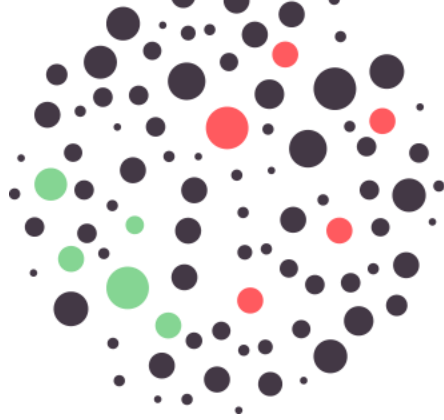
- 1.) Stopp all emissions**
- 2.) Remove from the atmosphere (green) the amounts CO₂ already emitted (red)**

CO₂ emissions & carbon dioxide removal for risk mitigation



The dark green area shows the carbon dioxide removal (CDR) to offset the emissions in the dark red area by 2060 required to significantly minimize risks.
The light green area shows the carbon dioxide removal (CDR) needed to offset the emissions in the light red areas by 2074.

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HOLOCENE PROJECT

Research project:

How does the Earth get back to a safe Holocene level below 350 ppm CO₂ and Warming of only 1° C above pre-industrial levels

This makes it possible:

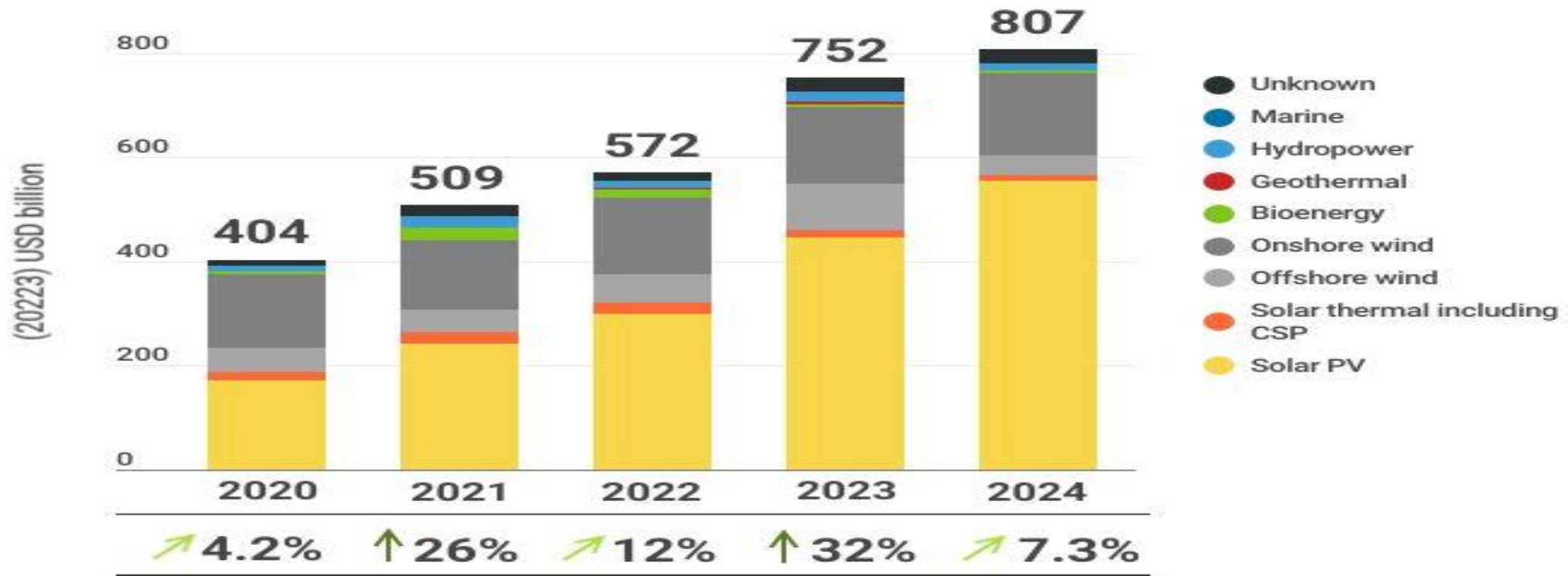
Stop all emissions and take out carbon from atmosphere

- 100% affordable clean renewable energy
 - Circular economy without emissions, waste
 - Regenerative agriculture, forestry, marine economy as green carbon sink
- This means: switch off:
fossil oil, gas, coal**

\$20 million sought for research

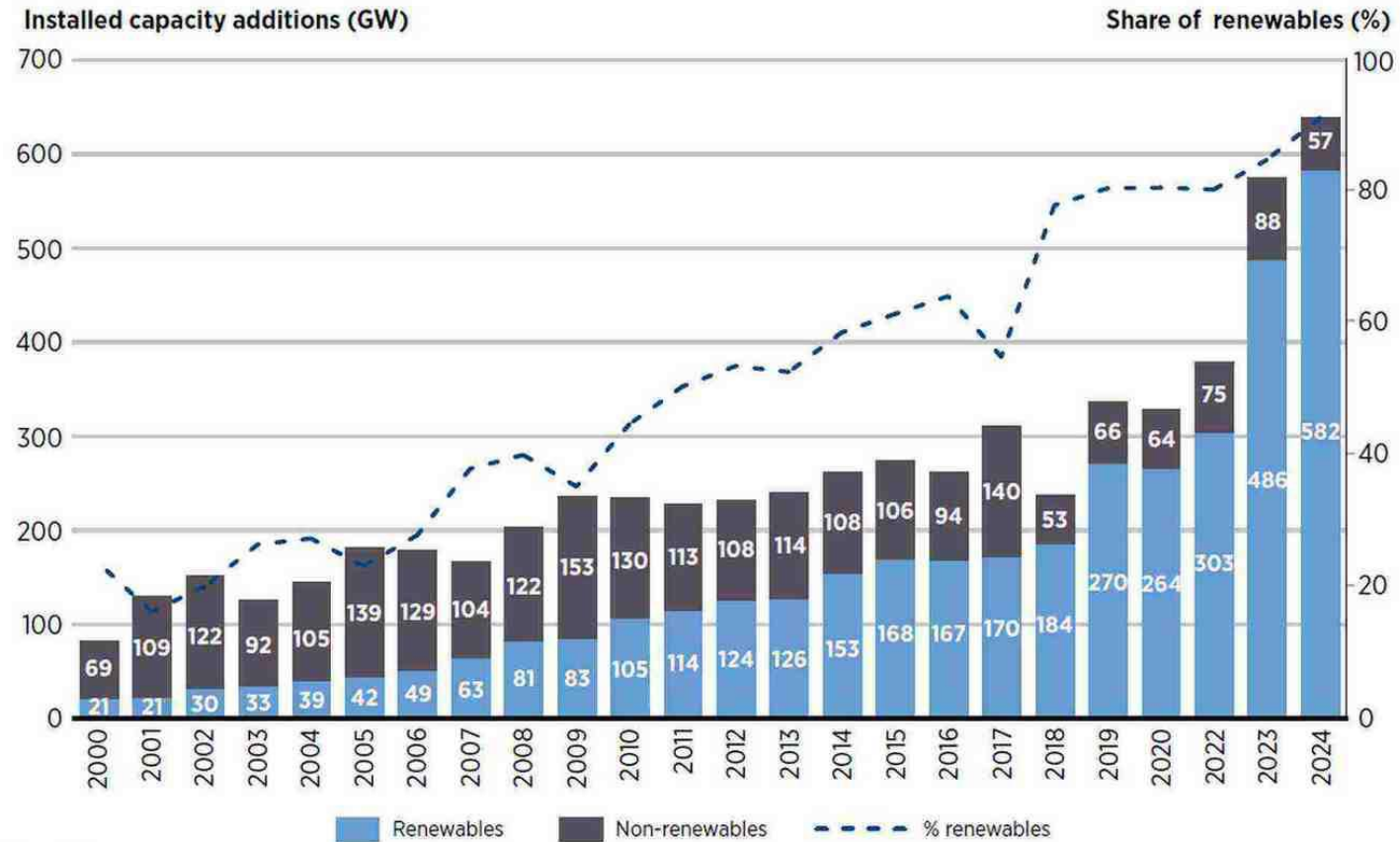
Global Renewable investment increase year by year

Renewable energy investments globally by technology, 2020-24



Sources: CPI analysis based on (CPI, 2025a). Investments for 2024 are estimates based on 2023 CPI data and 2023-24 trends from (BNEF, 2025a).

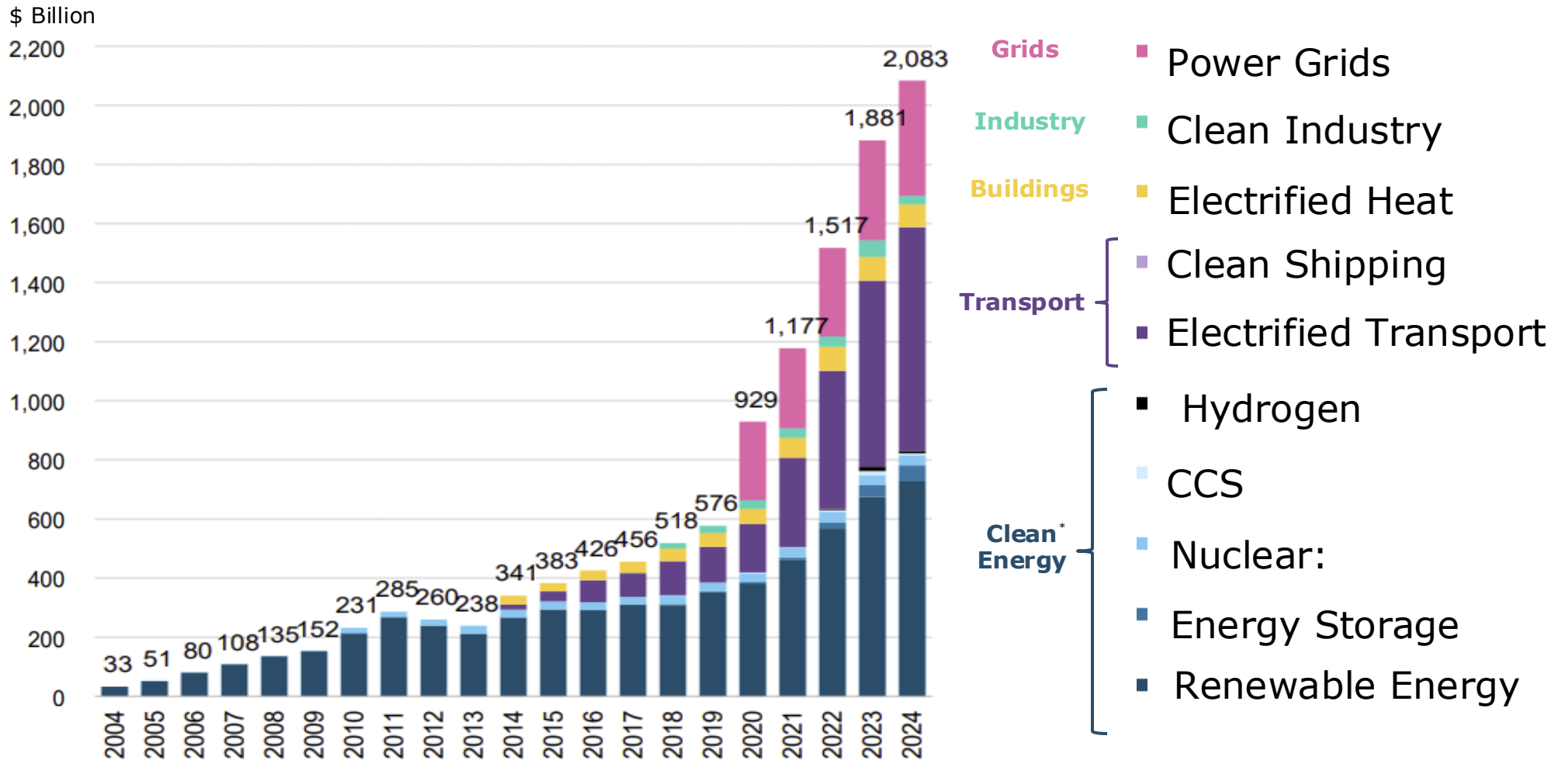
Globally, 90% of all newly installed energy capacity in 2024 was renewable.



Note: GW = gigawatt.

Worldwide new investment: Energy transition by sector

To achieve UN's 2030 RE tripling target, the RE 2023 investment must increase from USD 0.570 trillion to USD 1.5 trillion annually



China dominates 2024 global investment in REN with 352 bn US dollars, representing a share of 40%

Renewable energy investment in 2024

Investment per region (USD bn)



Source: Global landscape of energy transition finance 2025

Biggest success EEG: Drastic cost reduction since 2000

Renewable sources are now the cheapest way to generate electricity.

Electricity generation costs compared
to RE and fossil/nuclear international in 2024

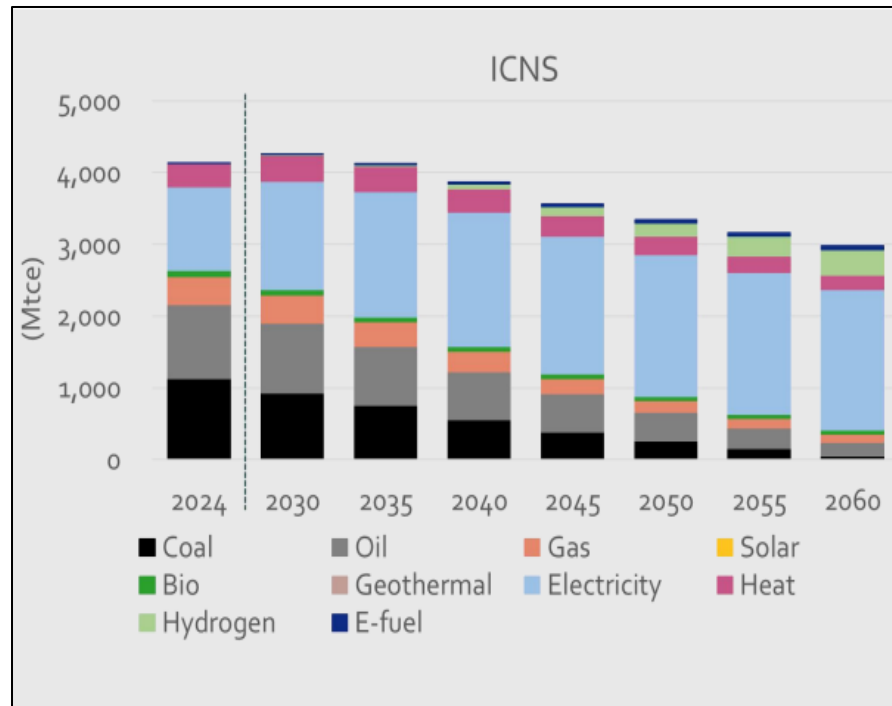
- Nuclear (New french reactor Flammmanville): 17 Cent/kWh
- Natural Gas für peak load: 11 - 23 Cent/kWh
- Coal: 7 - 17 Cent/kWh

- Windpower onshore: 3 - 8 Cent/kWh,
- Windpower plus batteries: 5 - 13 Cent/kWh
- Solarfields: 3 - 9 Cent/kWh
- Solar plus batteries : 6 - 21 Cent/kWh

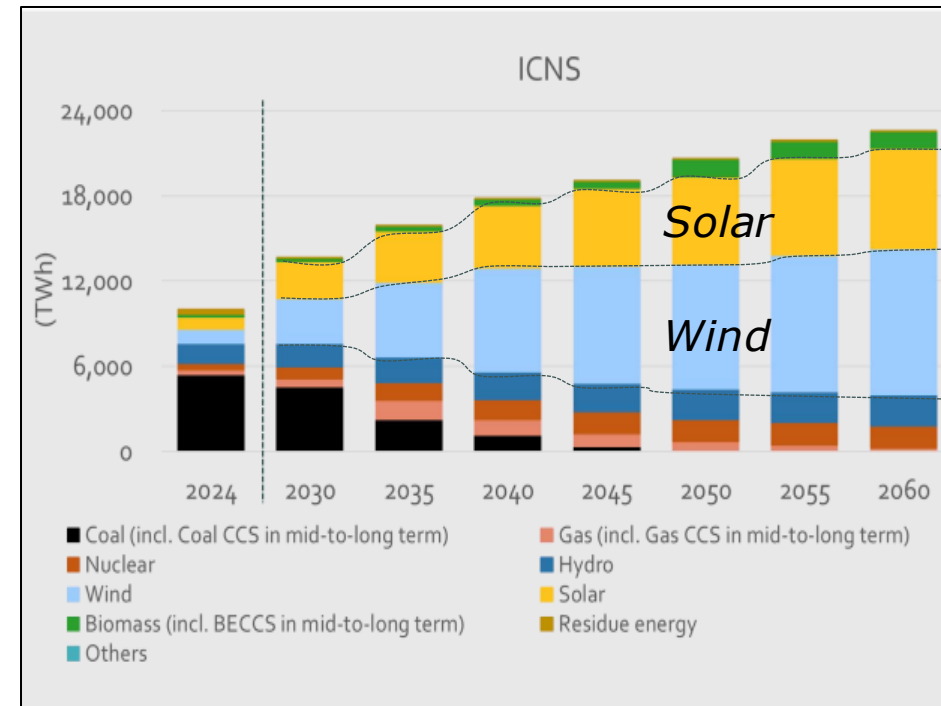
China Energy Transformation Outlook Nov. 2025

Ideal Carbon Neutrality Scenario (ICNS)

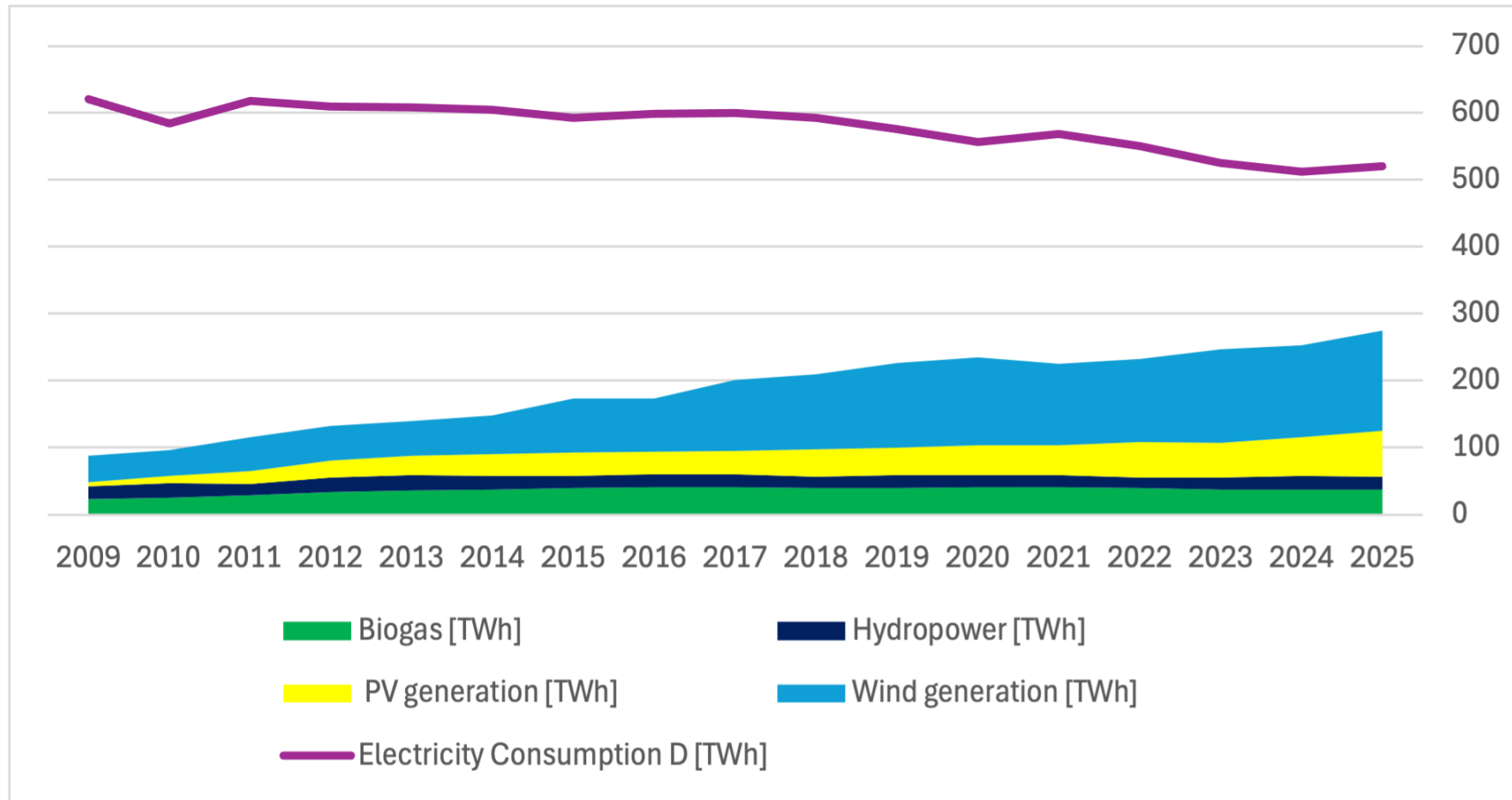
Total final energy consumption
2024 - 2060



Total power generation
2024 - 2060



Germany 2024: around 60% renewable energy share electricity

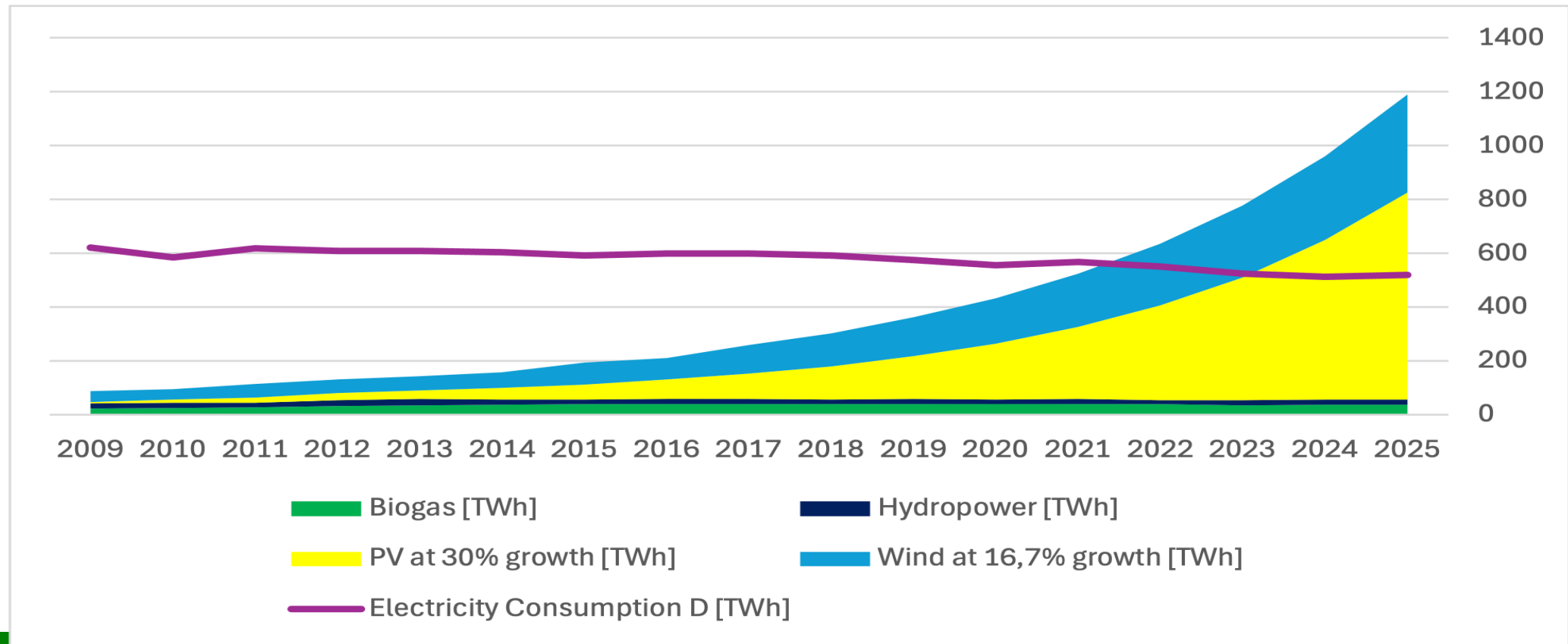


WWEA Scenario

Germany could have 100% RE Electricity in 2021 if:

Wind: Annual growth of 14% from 2018

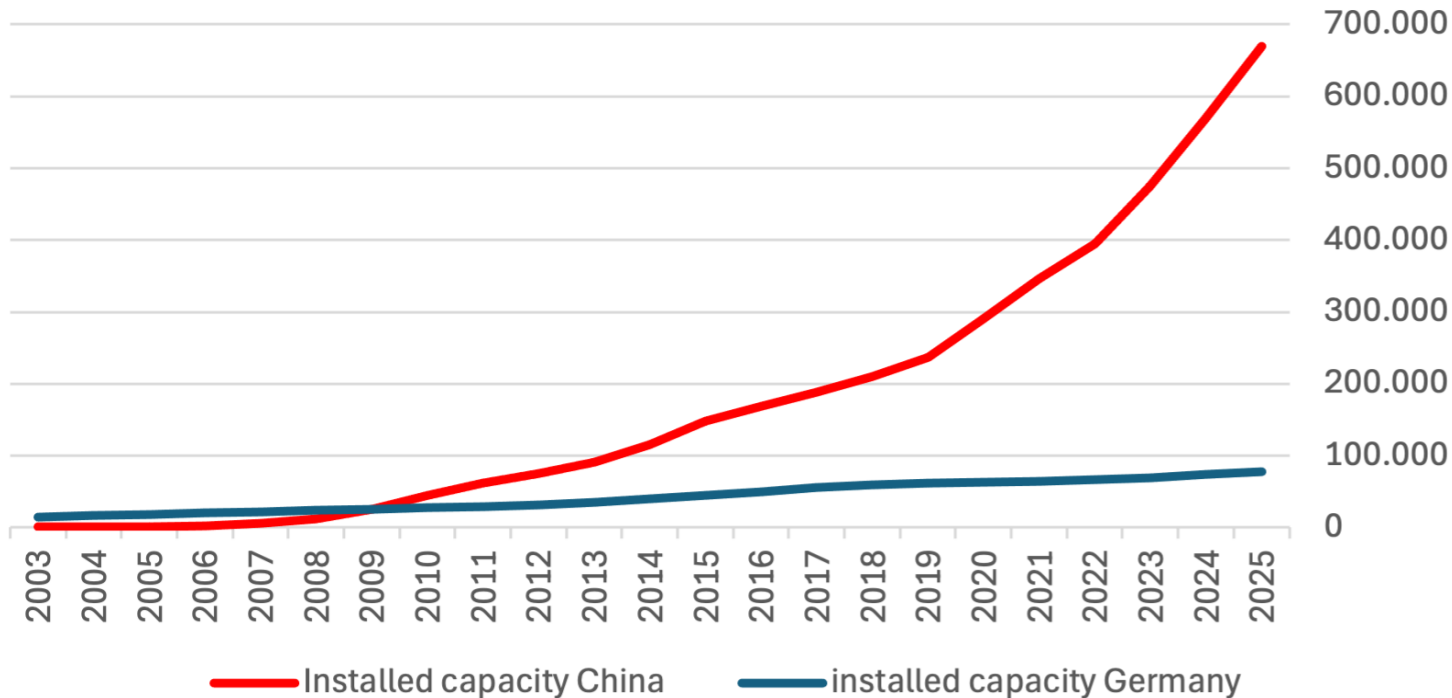
Solar: Annual growth of 30% (64% real 2004 to 2012)



Wind expansion in China and Germany

China average annual growth: 43%

Wind in Germany & China [MW]



WWEA Half Year Report 2025:

72,2 GW added globally
in the first half of 2025,
up 64% year-on-year

Emission-free circular economy for wind turbines:



Replace:

- Steel and concrete with **wood** in wind turbine towers.
- carbon fibers and synthetic resin with **biobased carbon** (plants, algae) in rotor blades

Wind turbine towers e.g. from Hasslacher (Austria)
Wood tower up to 7MW and 200 Meter hub height

Huge afforestation in China, Desert Gobi Huge Carbon sinks



- 45 Millions hektare wood afforested (bigger than Germany)
- 313 Millions new Jobs
- No more sandstormes in Beijing



Dr. Chen Cungen
Northwest University
Father of Gobi Greening
Jinan 2019

Quelle: <https://www.infosperber.ch/Artikel/Umwelt/Dank-Aufforstung-praktisch-keine-Sandsturme-mehr-in-Beijing>

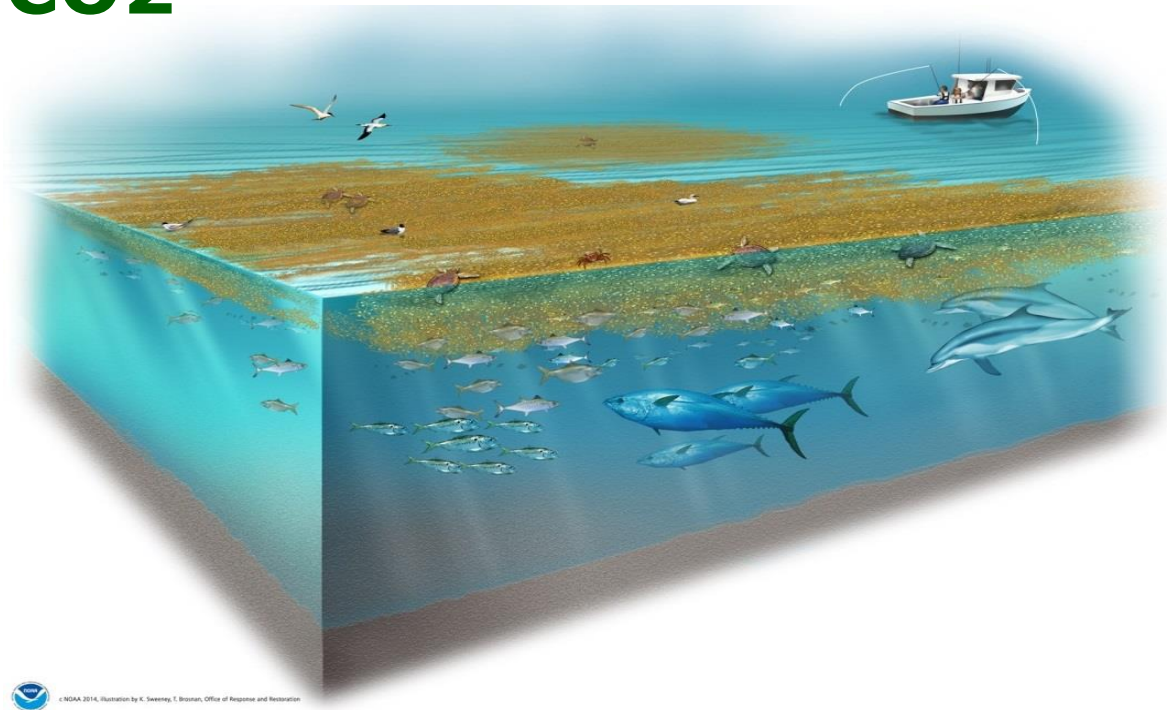
Hans-Josef Fell – MdB (1998-2013)
Präsident der Energy Watch Group

New research result:

Alfred Wegener Institute for Marine Research, Germany

Removing hundreds of Giga tons of Carbondioxide from atmoshpere with controlled macroalgeas growth to come back to 350 ppm CO2

Stimulation of controlled macroalgae growth in the subtropical marine eddies



Oceanic seaweed farms offer further potential applications, products and value chains

Biostimulant



Emulsifier



Material



Building material



Bionaphtha



Biochar



Algae farms amidst offshore wind farms



Amazon is financing the first commercial algae farm at offshore wind farms
At North Sea Farm 1 Netherlands

**Thank you very much for
your attention**

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