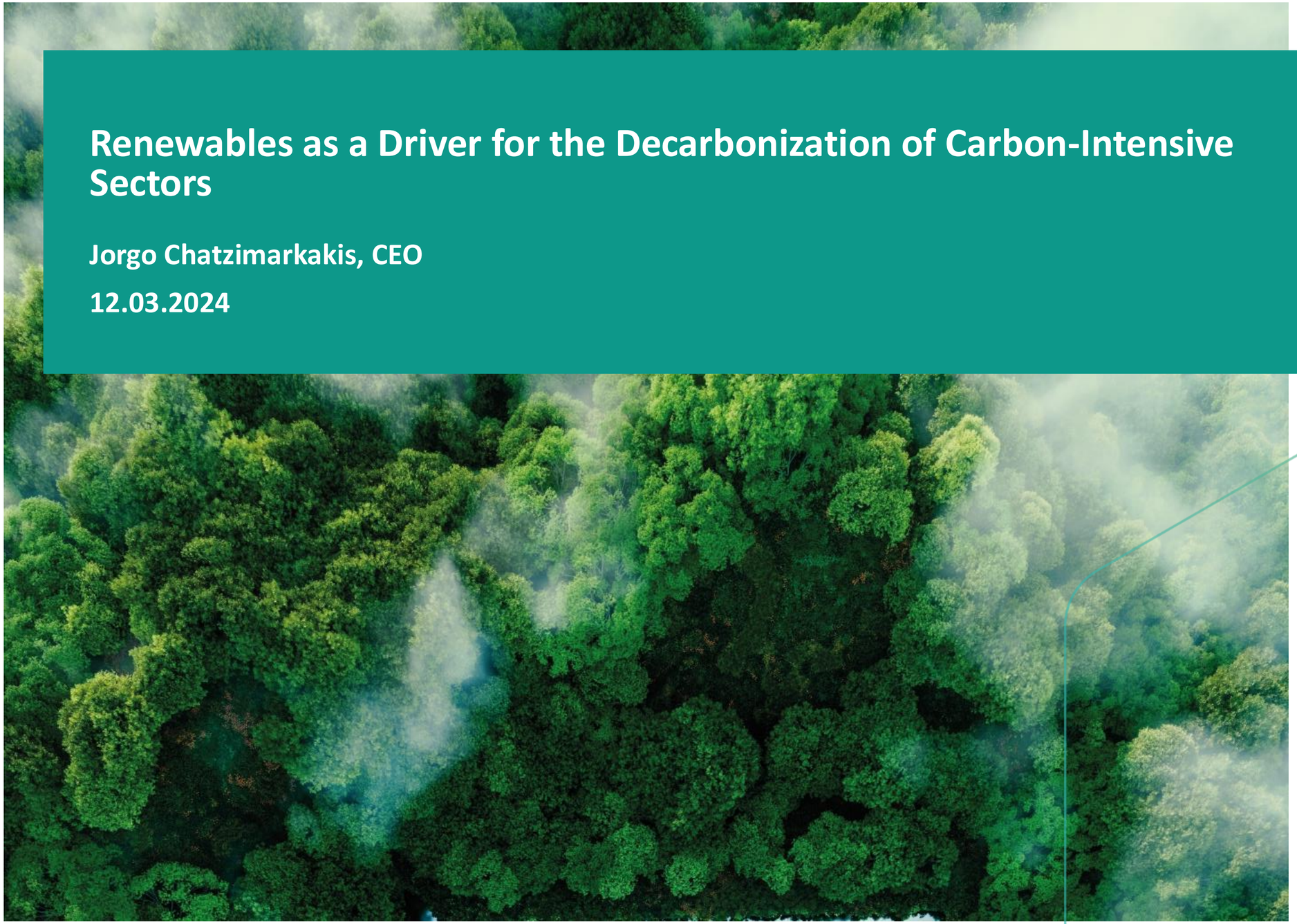
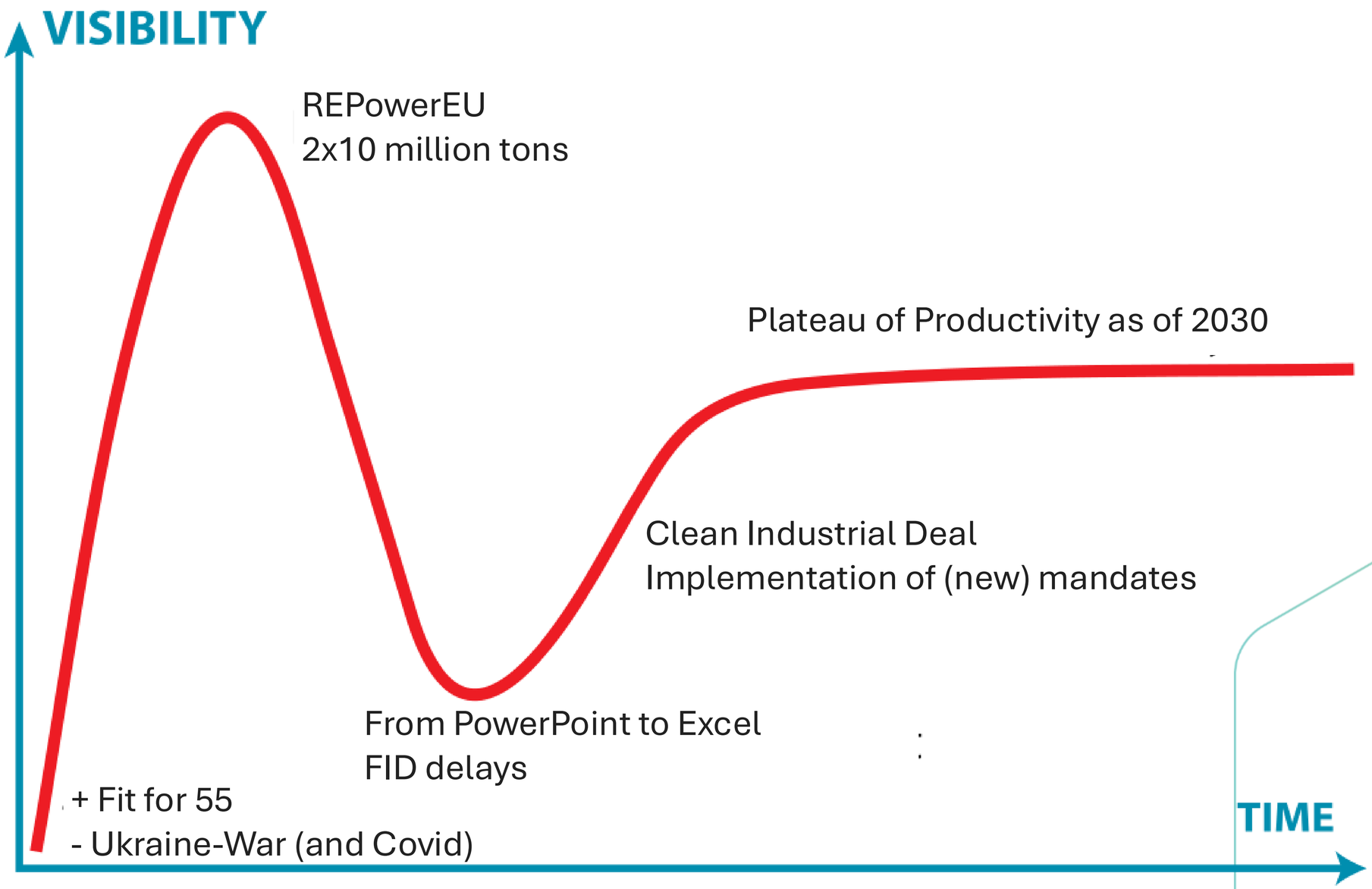


Renewables as a Driver for the Decarbonization of Carbon-Intensive Sectors

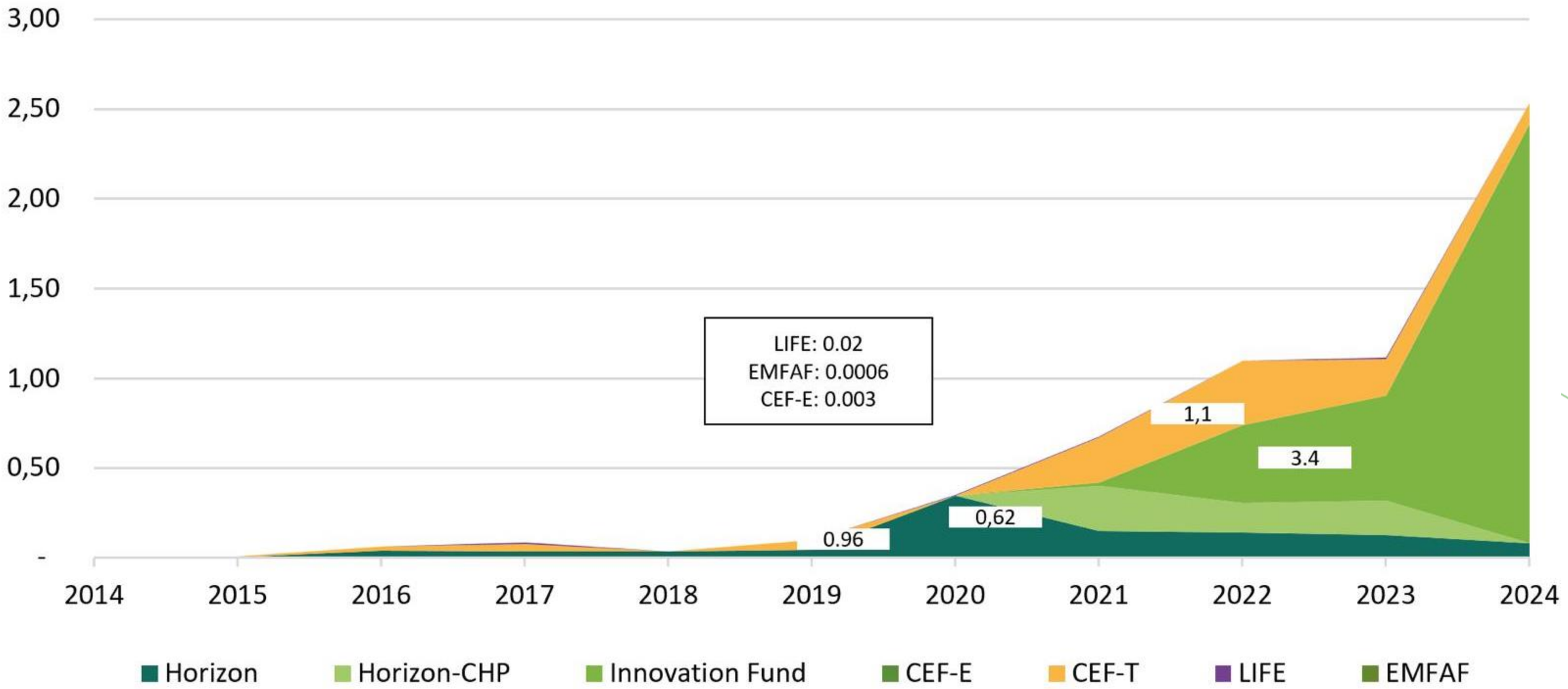
Jorgo Chatzimarkakis, CEO

12.03.2024

Where are we?

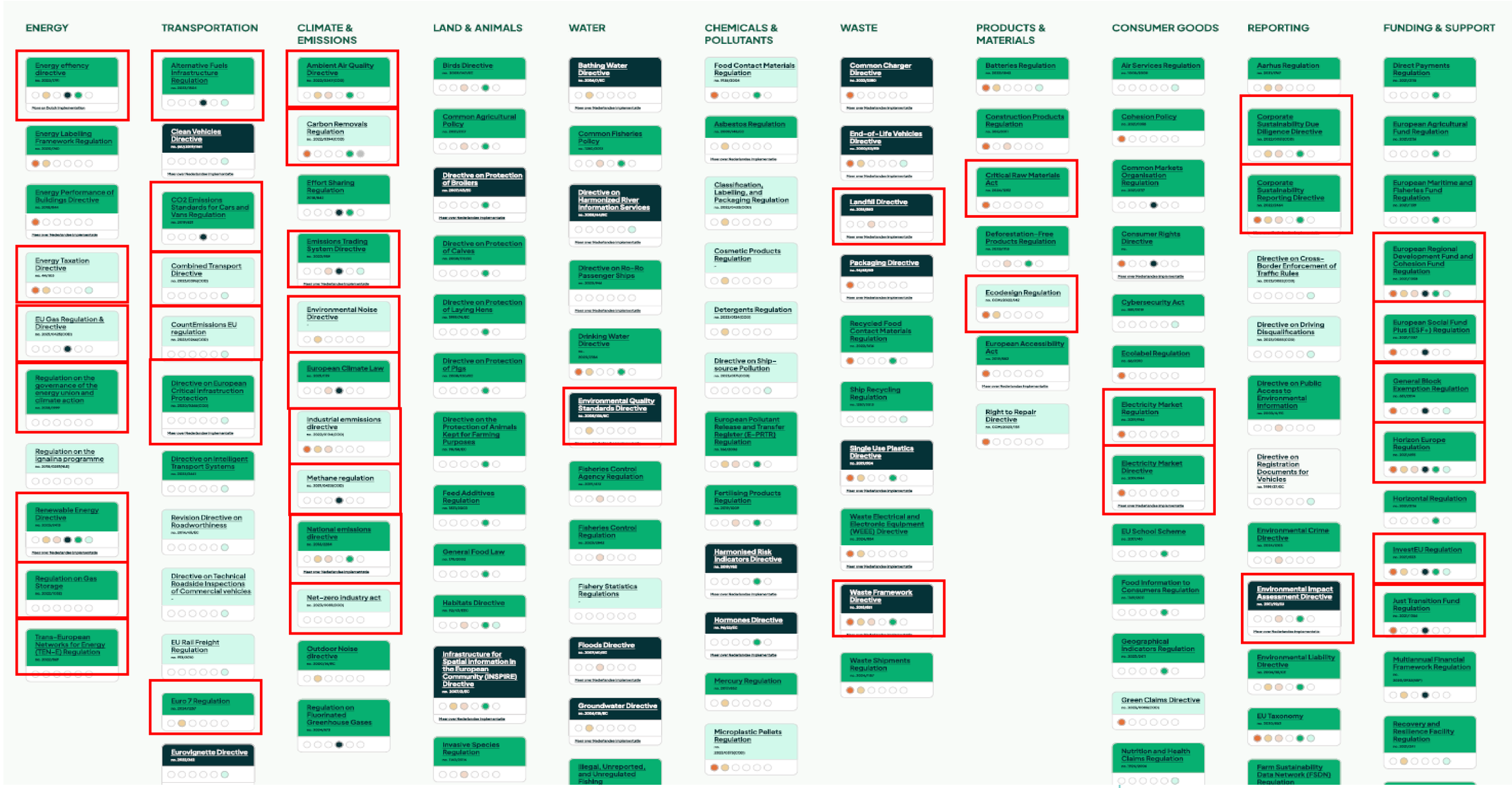

VISIBILITY
REPowerEU
2x10 million tons
Plateau of Productivity as of 2030
Clean Industrial Deal
Implementation of (new) mandates
From PowerPoint to Excel
FID delays
+ Fit for 55
- Ukraine-War (and Covid)
TIME

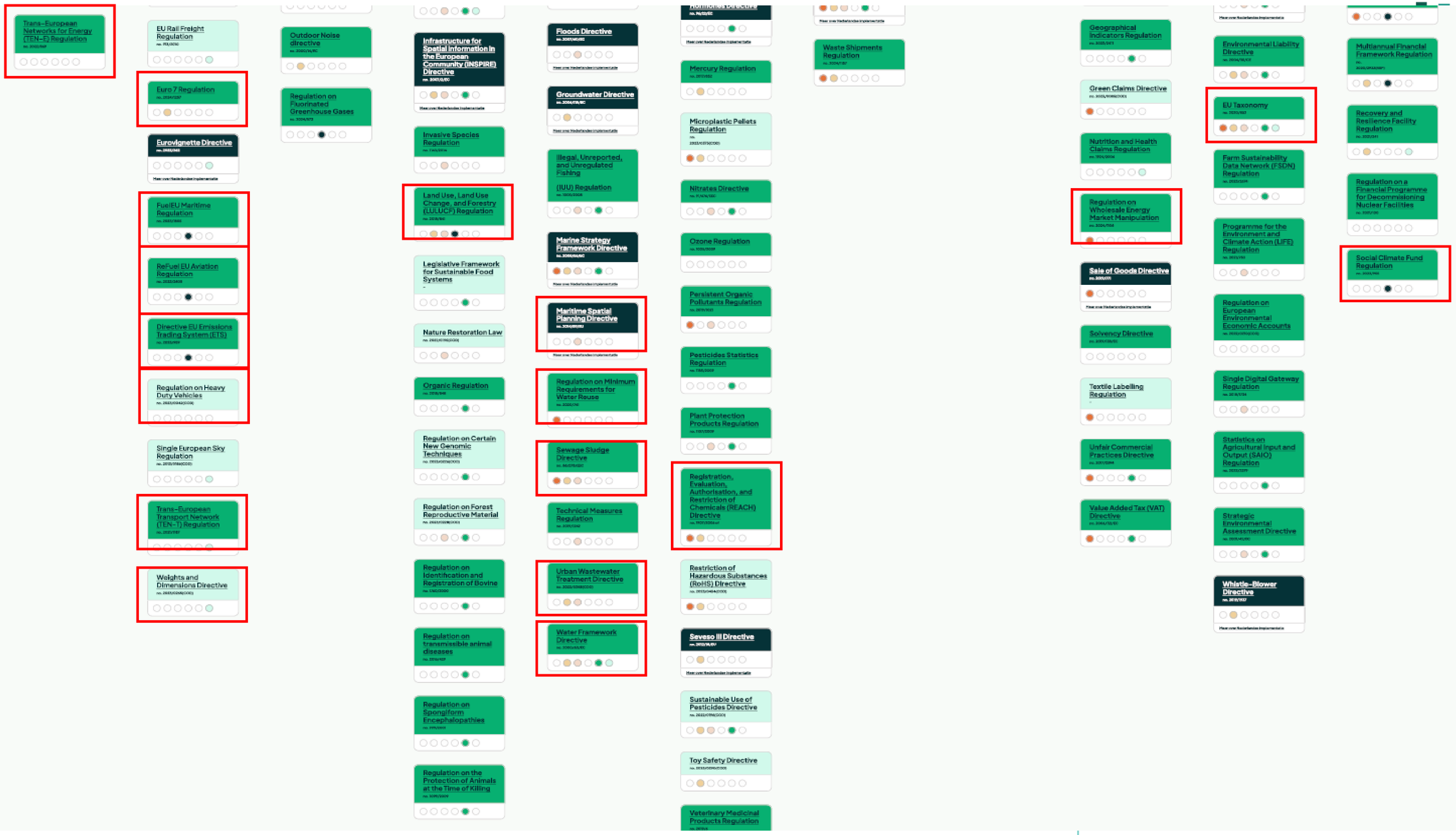
To start with some good news



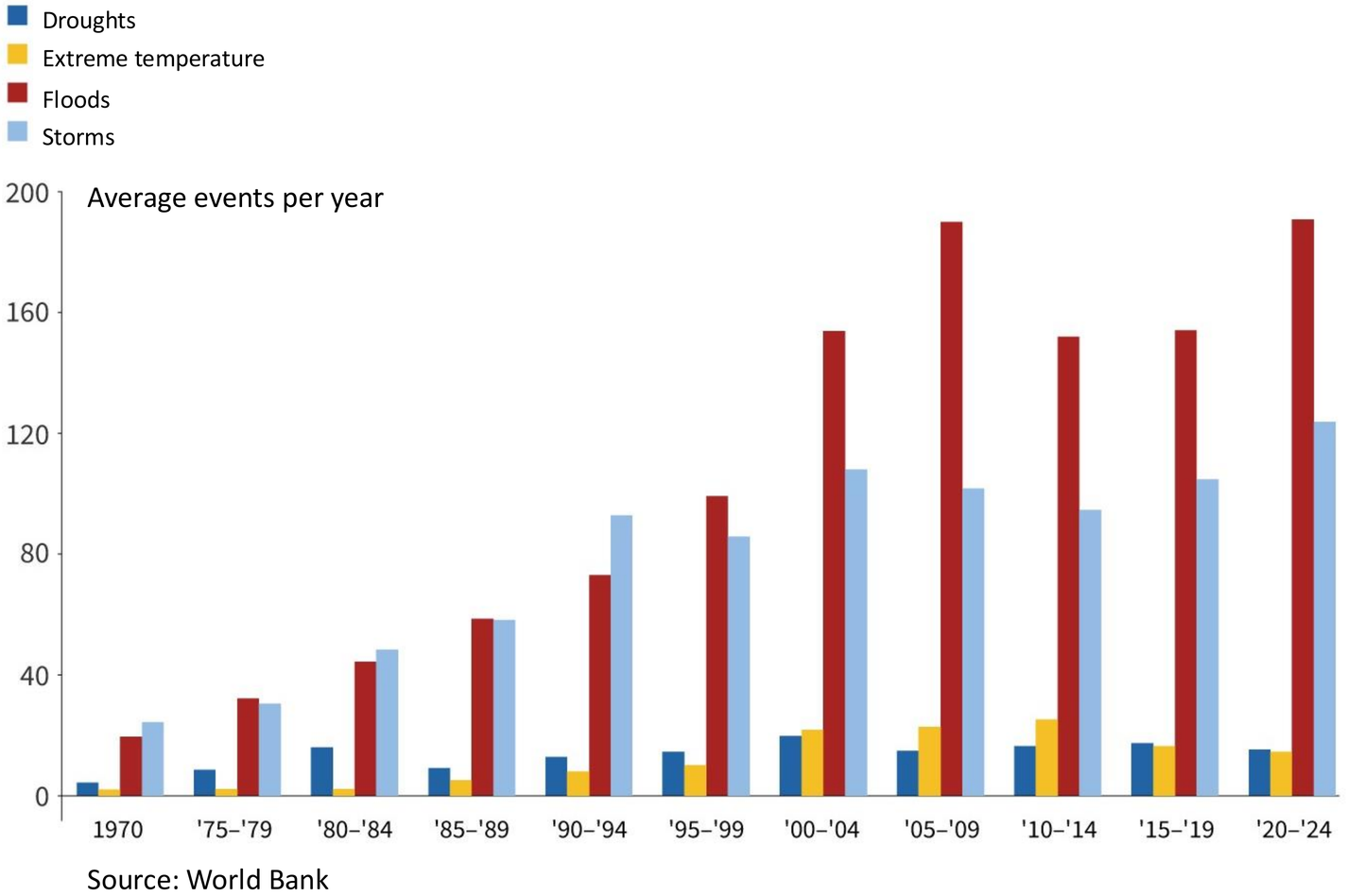
Good news based on advocacy success

Hydrogen Europe




Trans-European Networks for Energy (TEN-E) Regulation
EU Rail Freight Regulation
Euro 7 Regulation
Eurovignette Directive
FuelEU Maritime Regulation
ReFuel EU Aviation Regulation
Directive EU Emissions Trading System (ETS)
Regulation on Heavy Duty Vehicles
Single European Sky Regulation
Trans-European Transport Network (TEN-T) Regulation
Weights and Dimensions Directive
Outdoor Noise directive
Regulation on Fluorinated Greenhouse Gases
Infrastructure for Spatial Information in the European Community (INSPIRE) Directive
Invasive Species Regulation
Land Use, Land Use Change, and Forestry (LULUCF) Regulation
Legislative Framework for Sustainable Food Systems
Nature Restoration Law
Organic Regulation
Regulation on Certain New Genomic Techniques
Regulation on Forest Reproductive Material
Regulation on Identification and Registration of Bovine
Regulation on transmissible animal diseases
Regulation on Spongiform Encephalopathies
Regulation on the Protection of Animals at the Time of Killing
Floods Directive
Groundwater Directive
Illegal, Unreported, and Unregulated Fishing (IUU) Regulation
Marine Strategy Framework Directive
Maritime Spatial Planning Directive
Regulation on Minimum Requirements for Water Reuse
Sewage Sludge Directive
Technical Measures Regulation
Urban Wastewater Treatment Directive
Water Framework Directive
Mercury Regulation
Microplastic Pellets Regulation
Nitrates Directive
Ozone Regulation
Persistent Organic Pollutants Regulation
Pesticides Statistics Regulation
Plant Protection Products Regulation
Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) Directive
Restriction of Hazardous Substances (RoHS) Directive
Seveso III Directive
Sustainable Use of Pesticides Directive
Toy Safety Directive
Veterinary Medicinal Products Regulation
Waste Shipments Regulation
Geographical Indicators Regulation
Green Claims Directive
Nutrition and Health Claims Regulation
Regulation on Wholesale Energy Market Manipulation
Sale of Goods Directive
Solvency Directive
Textile Labelling Regulation
Unfair Commercial Practices Directive
Value Added Tax (VAT) Directive
Environmental Liability Directive
EU Taxonomy
Farm Sustainability Data Network (FSDN) Regulation
Programme for the Environment and Climate Action (LIFE) Regulation
Regulation on European Environmental Economic Accounts
Single Digital Gateway Regulation
Statistics on Agricultural Input and Output (SAIO) Regulation
Strategic Environmental Assessment Directive
Whistle-Blower Directive
Multiannual Financial Framework Regulation
Recovery and Resilience Facility Regulation
Regulation on a Financial Programme for Decommissioning Nuclear Facilities
Social Climate Fund Regulation

Climate protection still evident



Source: World Bank

Angry crowds booed and hurled eggs at the Spanish king during his visit to flood-affected Valencia

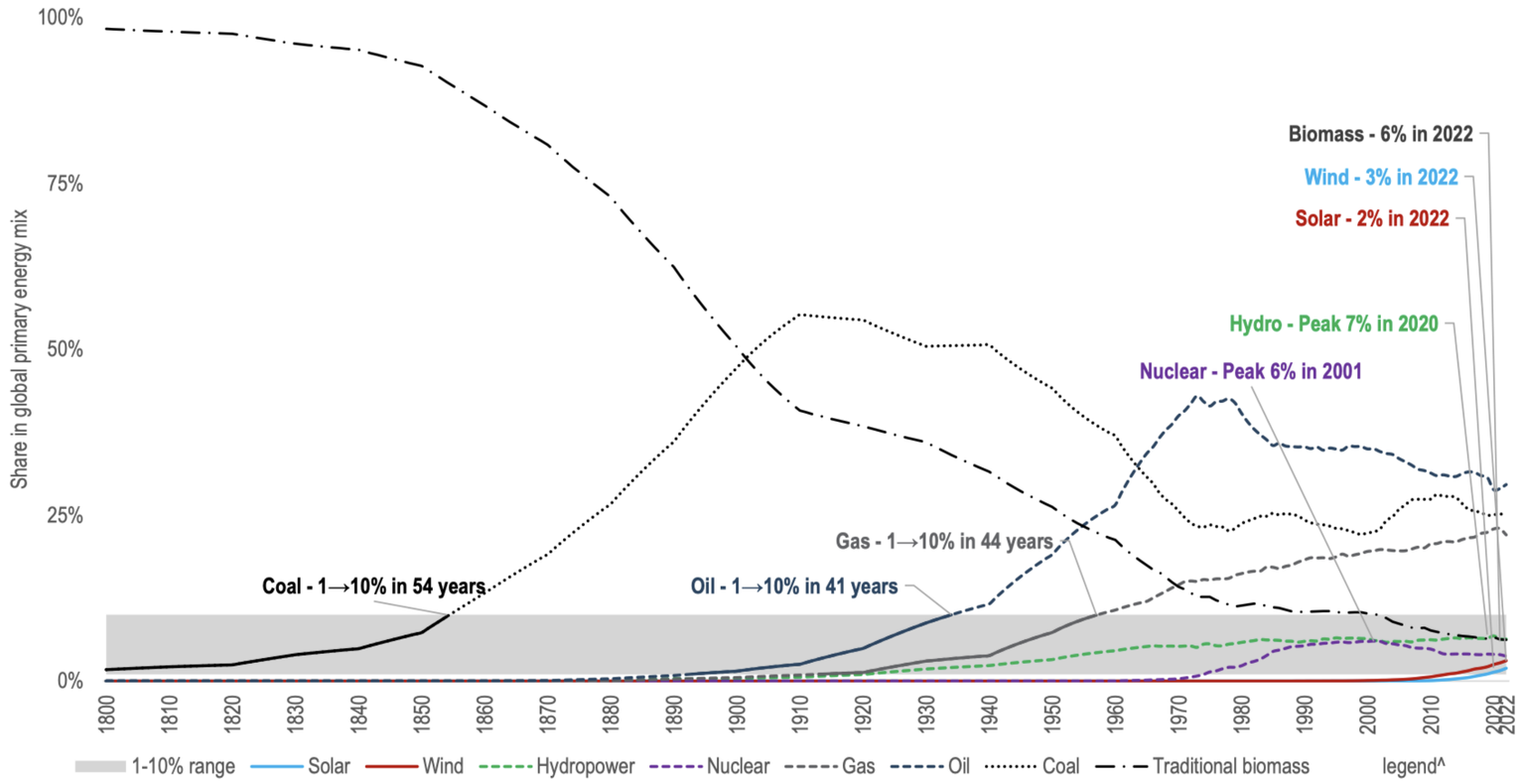
04 Nov 2024 04:12

WORLD Share

Clean hydrogen need funding over a long period of time

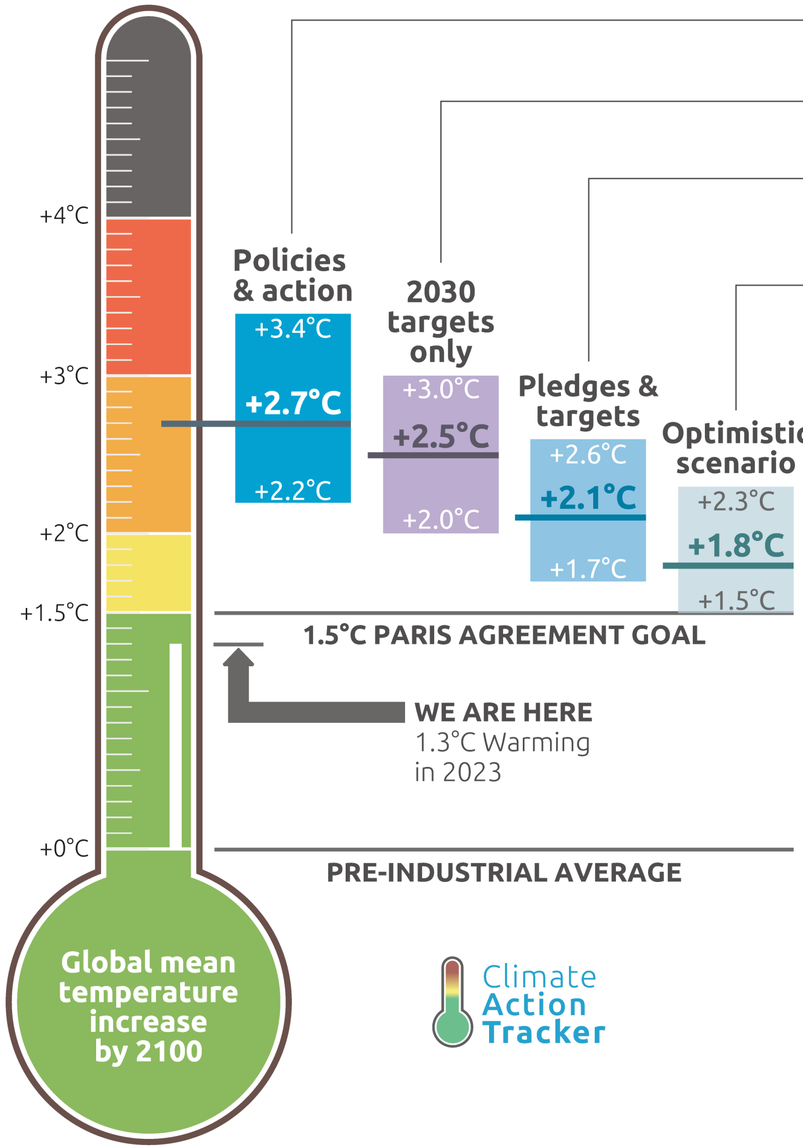
Figure 15: For fossil fuels it took 40-50 years to achieve a sizeable scale, while nuclear/hydro never achieved such scale

Global primary energy mix evolution



Source: Ourworldindata; Energy Institute - Statistical Review of World Energy (2023); Smil (2017) and J.P. Morgan Global Energy Strategy. In the absence of more recent data, traditional biomass is assumed constant since 2015.

Global energy transition is not working



Policies & action
Real world action based on current policies †

2030 targets only
Based on 2030 NDC targets* †

Pledges & targets
Based on 2030 NDC targets* and submitted and binding long-term targets

Optimistic scenario
Best case scenario and assumes full implementation of all **announced** targets including net zero targets, LTSs and NDCs*

† Temperatures continue to rise after 2100

* If 2030 NDC targets are weaker than projected emissions levels under policies & action, we use levels from policy & action

Climate Action Tracker

CAT warming projections
Global temperature increase by 2100

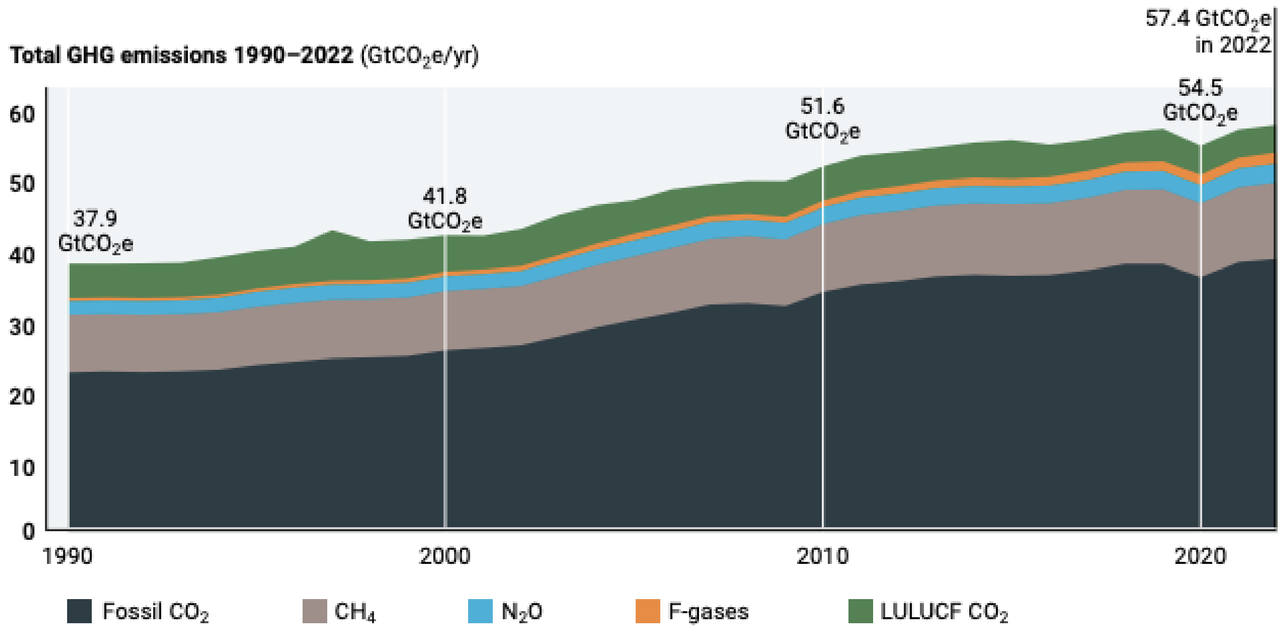
December 2023 Update

New record high of CO2 – energy demand rising

Energy production amounts for 26%

Global GHG emissions increased by 1.3 per cent to reach a new record of 57.4 gigatons of CO2 equivalent

Figure ES.1 Total net anthropogenic GHG emissions, 1990–2022

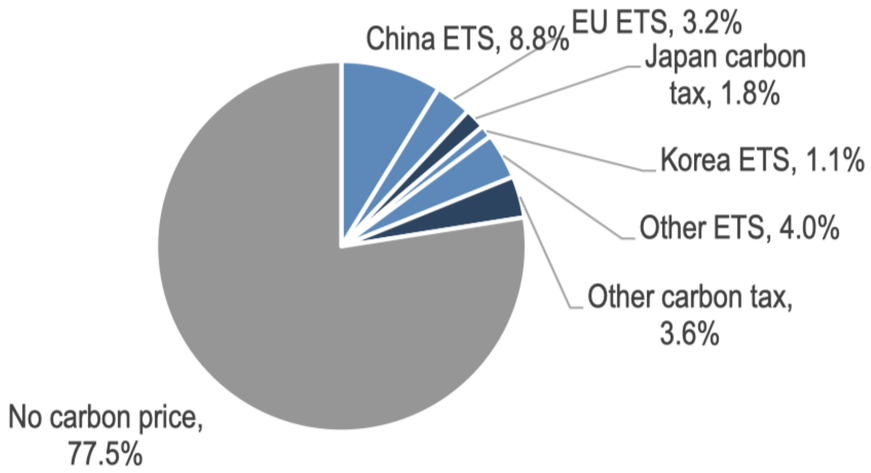


Internalization of external costs not happening

Reality check on carbon pricing

Figure 11: Solutions (3): Global carbon price: currently, only 23% of global emissions are covered by various carbon taxes/trading schemes

Global emissions addressed by carbon taxes/ETS



Source: The World Bank, Monash/C2Zero Real Carbon Price Index and J.P. Morgan Global Energy Strategy.

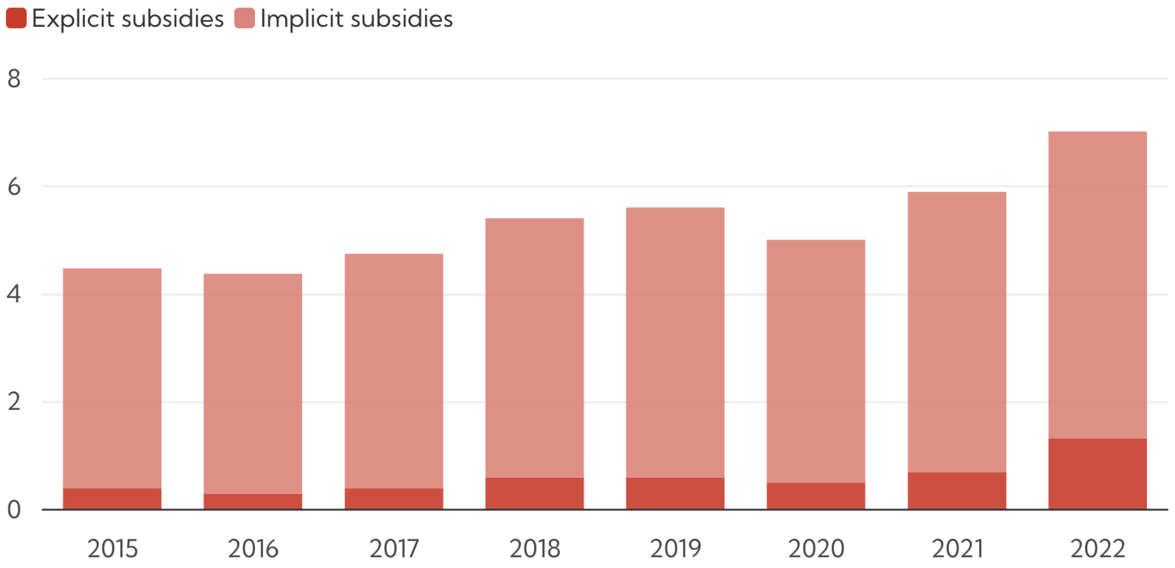
Figure 62: European carbon credits trade at a ~5x premium over Chinese credits

USD/MT

Source: Bloomberg Finance L.P. and J.P. Morgan Global Energy Strategy.

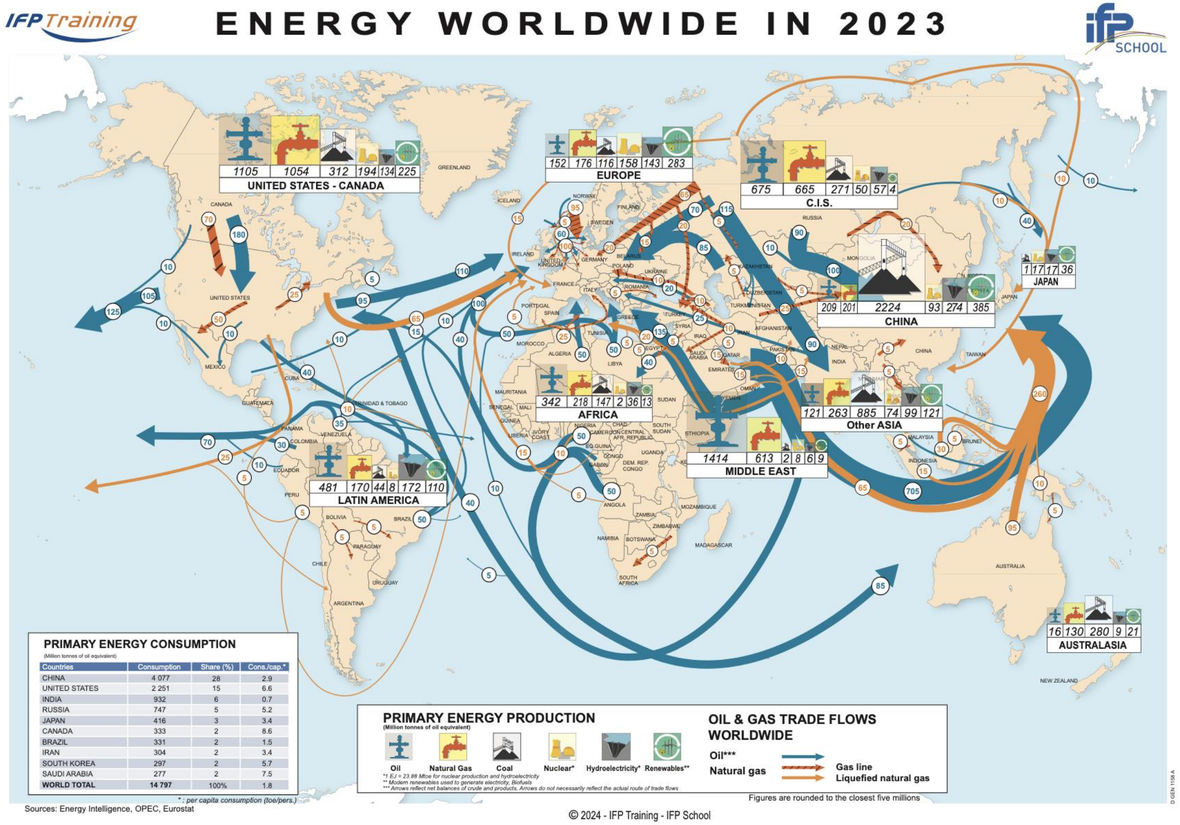
Comparing apples with pears - fossil fuel subsidies

Fossil fuel subsidies topped $7 trillion last year
(total fossil fuel subsidies, trillions of USD)



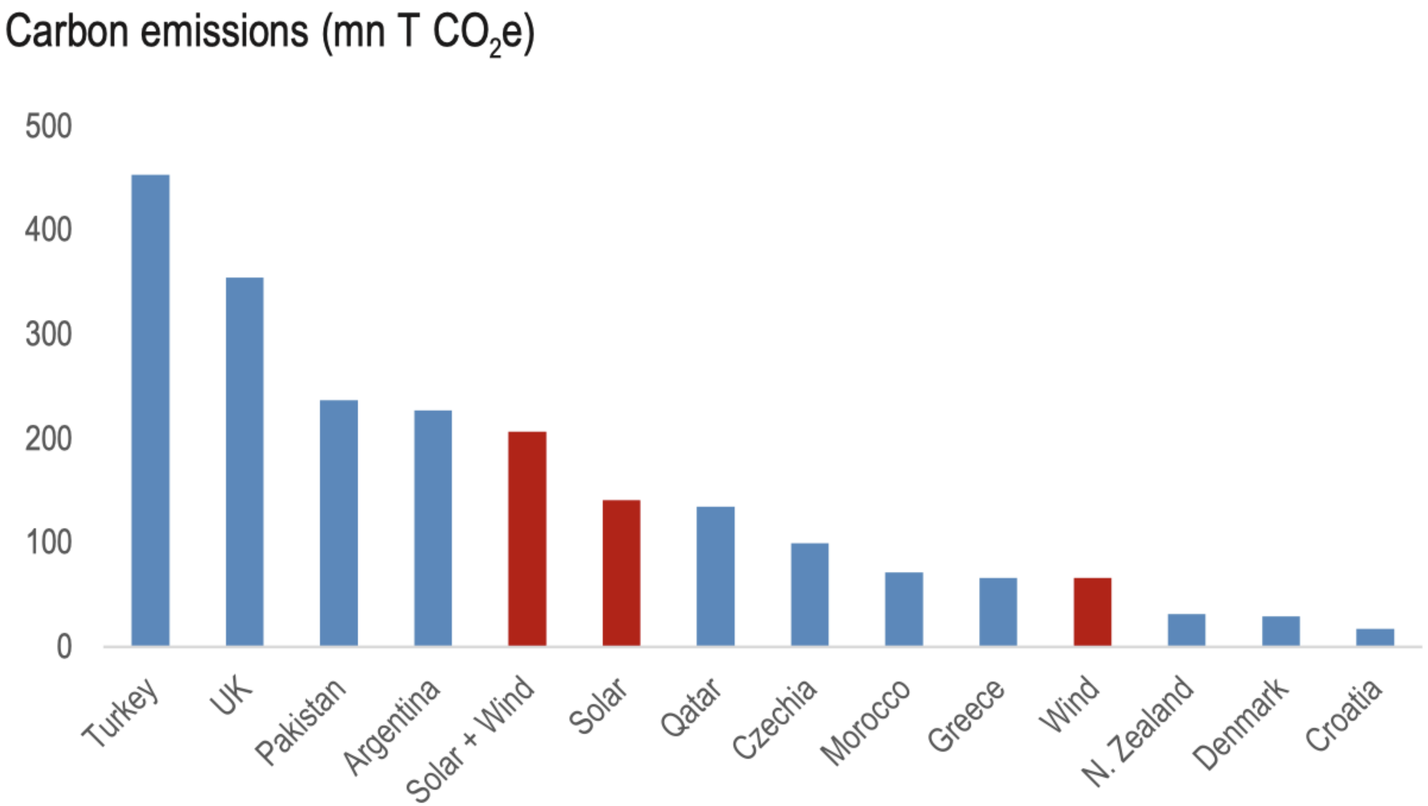
Source: IMF staff calculations.
Note: Figures from 2019 onwards use projections for fuel use. Explicit subsidies: undercharging for supply costs. Implicit subsidies: undercharging for environmental costs and forgone consumption taxes, after accounting for preexisting fuel taxes and carbon pricing.

IMF



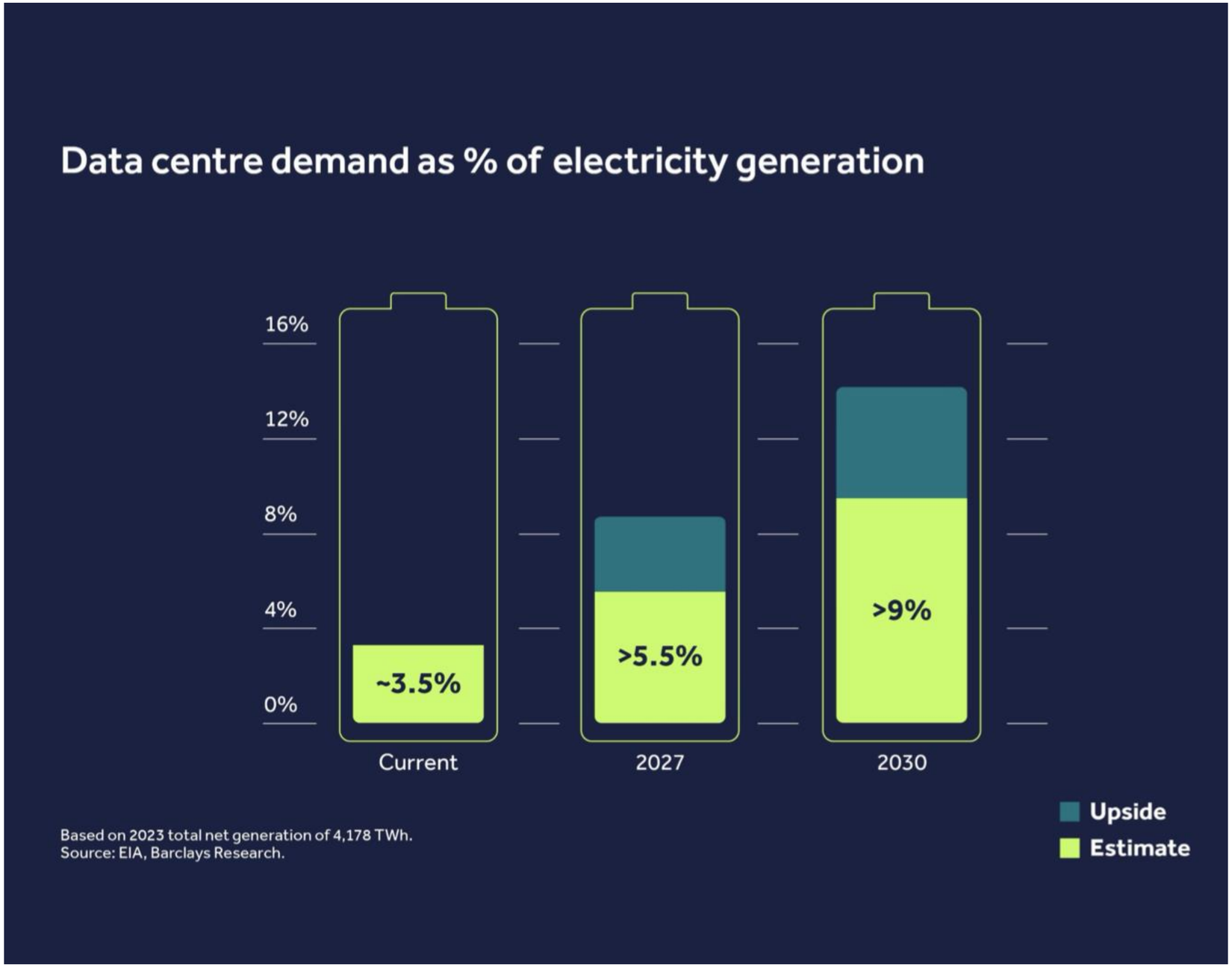
Expansion of solar and wind increases CO2 emissions

Figure 38: The production process of projected wind and solar power will emit ~200 mn tonnes of CO_2e per year



Source: Statistical Review of World Energy and J.P. Morgan Global Energy Strategy. Country profiles refer to actual 2022 numbers, wind and solar numbers refer to estimated average annual emissions 2024-30E.

Electricity demand for data centres sky-rocketing

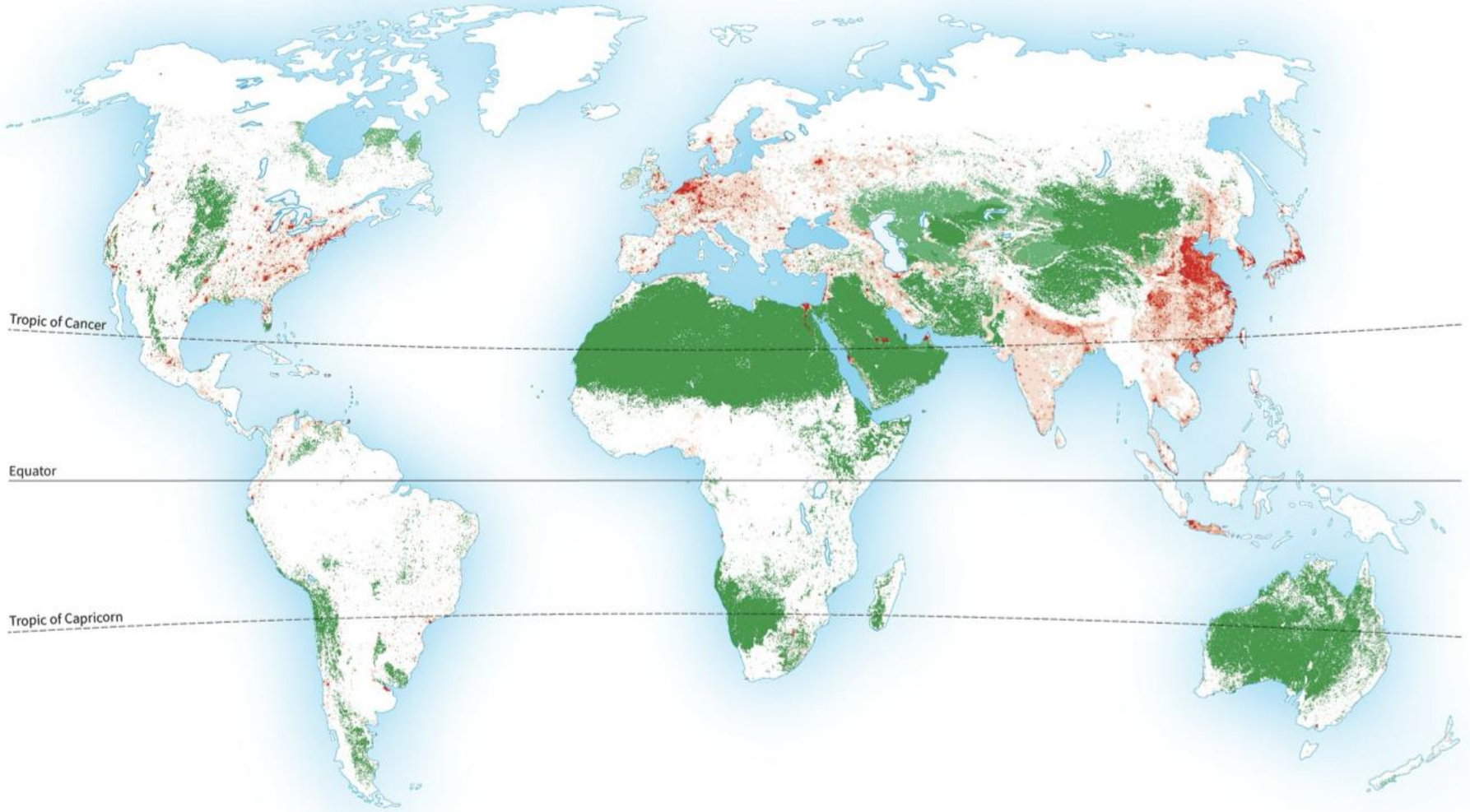


Clean hydrogen need to be linked to fossil demand

Redirect investments

Demand is not where production is

Solar energy heat map: surpluses and shortages per km² [31], [38], [40], [41], [42], [43]



Infrastructure needs 2030 – our or others' objective

Electricity

Hydrogen

Expansion of electricity network:

584 € Billion

Hydrogen grid and storage :

49 Billion €

Thank You

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