



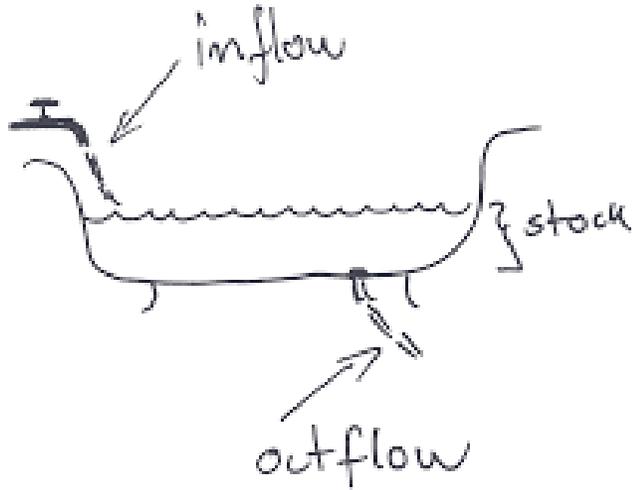
Produzione di energia ed emissioni a livello globale

Centro Levi Cases

Lorenzo Forni

23 Aprile 2024

Effetto serra ed emissioni



1) l'aumento delle temperature è dovuto all'aumento del livello (si noti il "livello", cioè la concentrazione, non il "flusso", cioè le emissioni annuali) dei gas serra nell'atmosfera;

2) questo aumento delle emissioni è causato principalmente dall'uomo;

3) le concentrazioni di gas serra nell'atmosfera hanno raggiunto livelli tali per cui il loro ulteriore aumento porterà a un significativo incremento delle temperature medie globali....

→ abbiamo 10/12 anni al ritmo di emissioni attuali prima di superare i due gradi

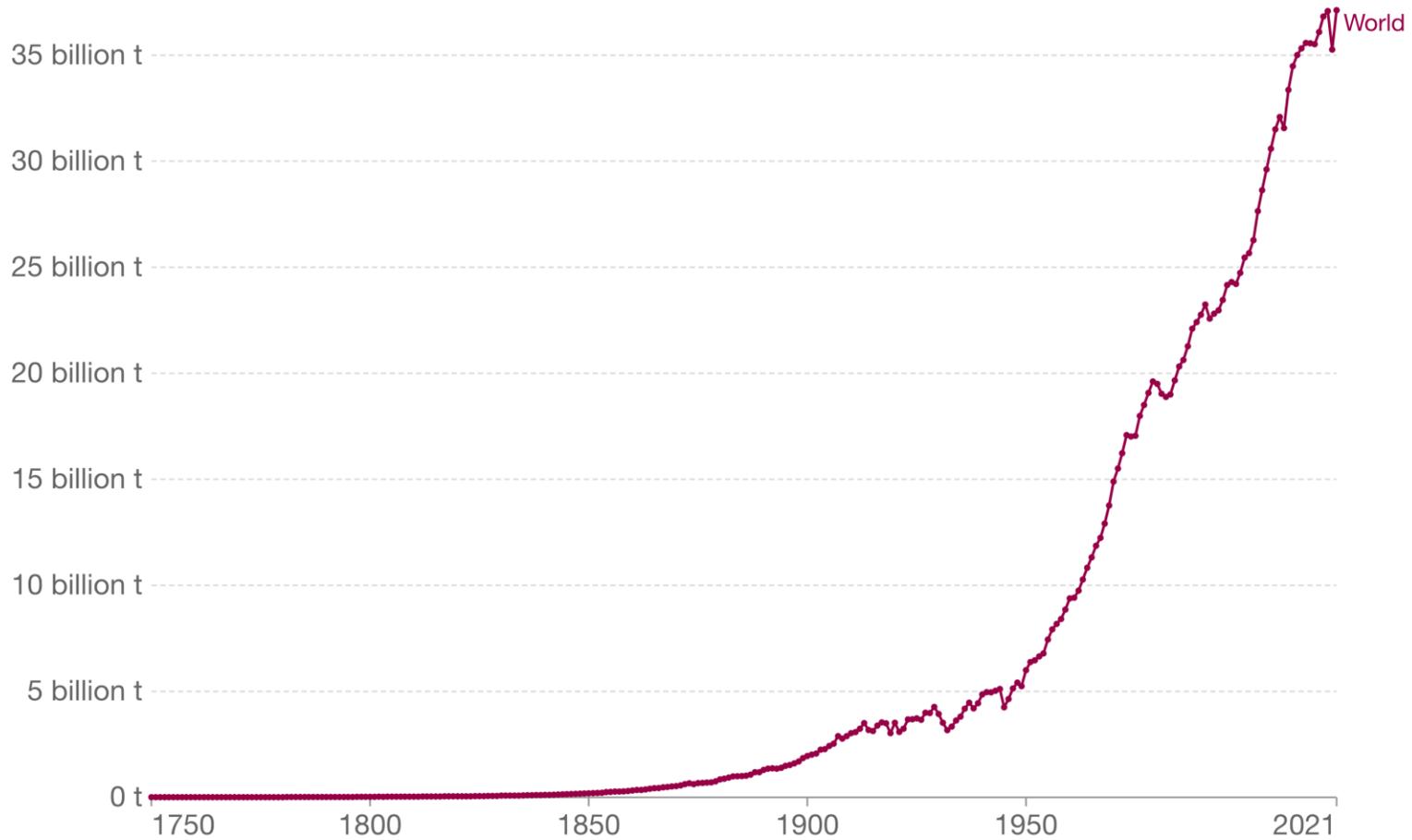
Prima o poi dovremo portare le emissioni a zero (meglio prima che poi).

È una sfida enorme, ma abbiamo le tecnologie per affrontarla, ci sono però vari ostacoli.



Annual CO₂ emissions

Carbon dioxide (CO₂) emissions from fossil fuels and industry¹. Land use change is not included.



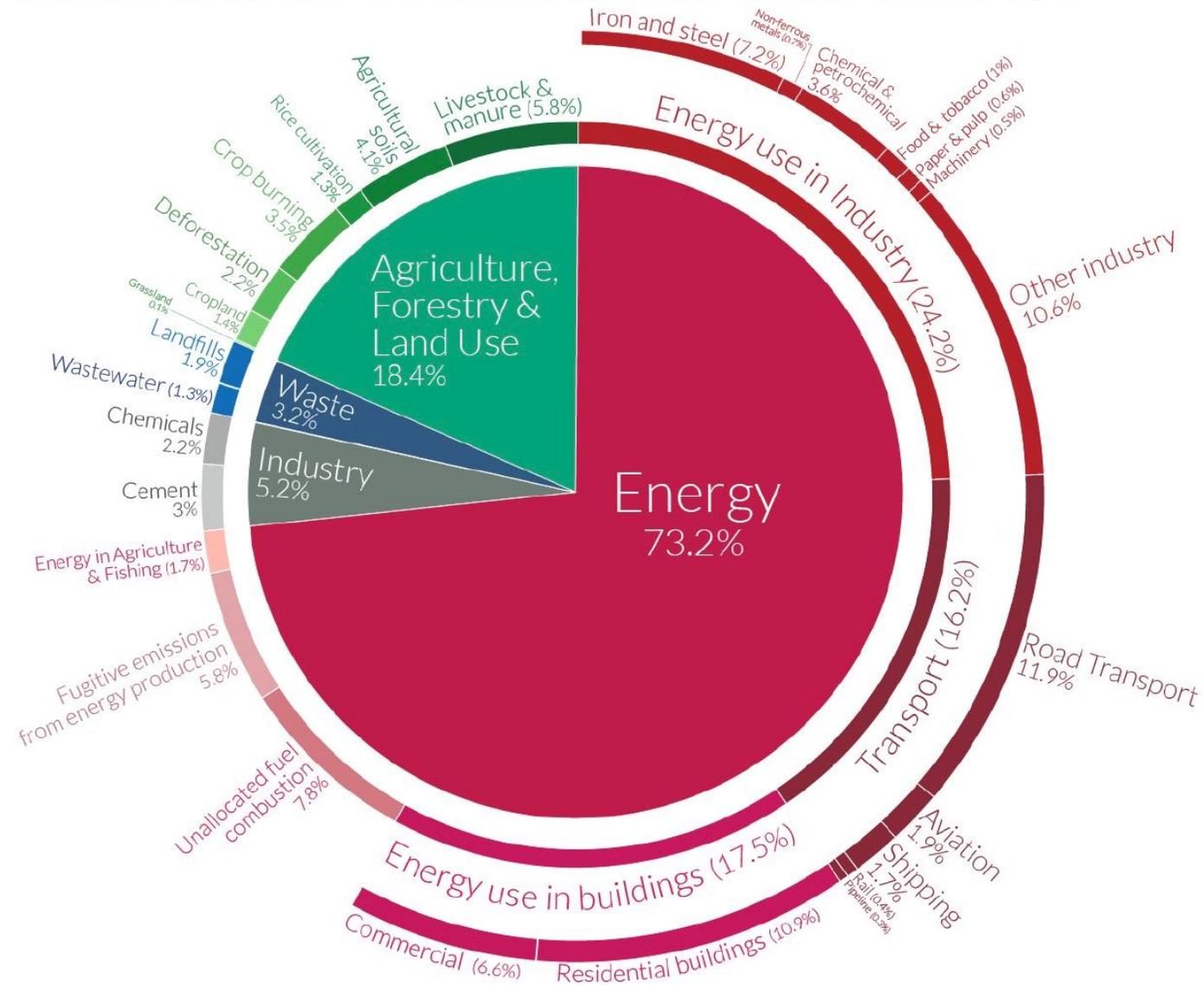
Source: Global Carbon Project (2022)

OurWorldInData.org/co2-and-greenhouse-gas-emissions • CC BY

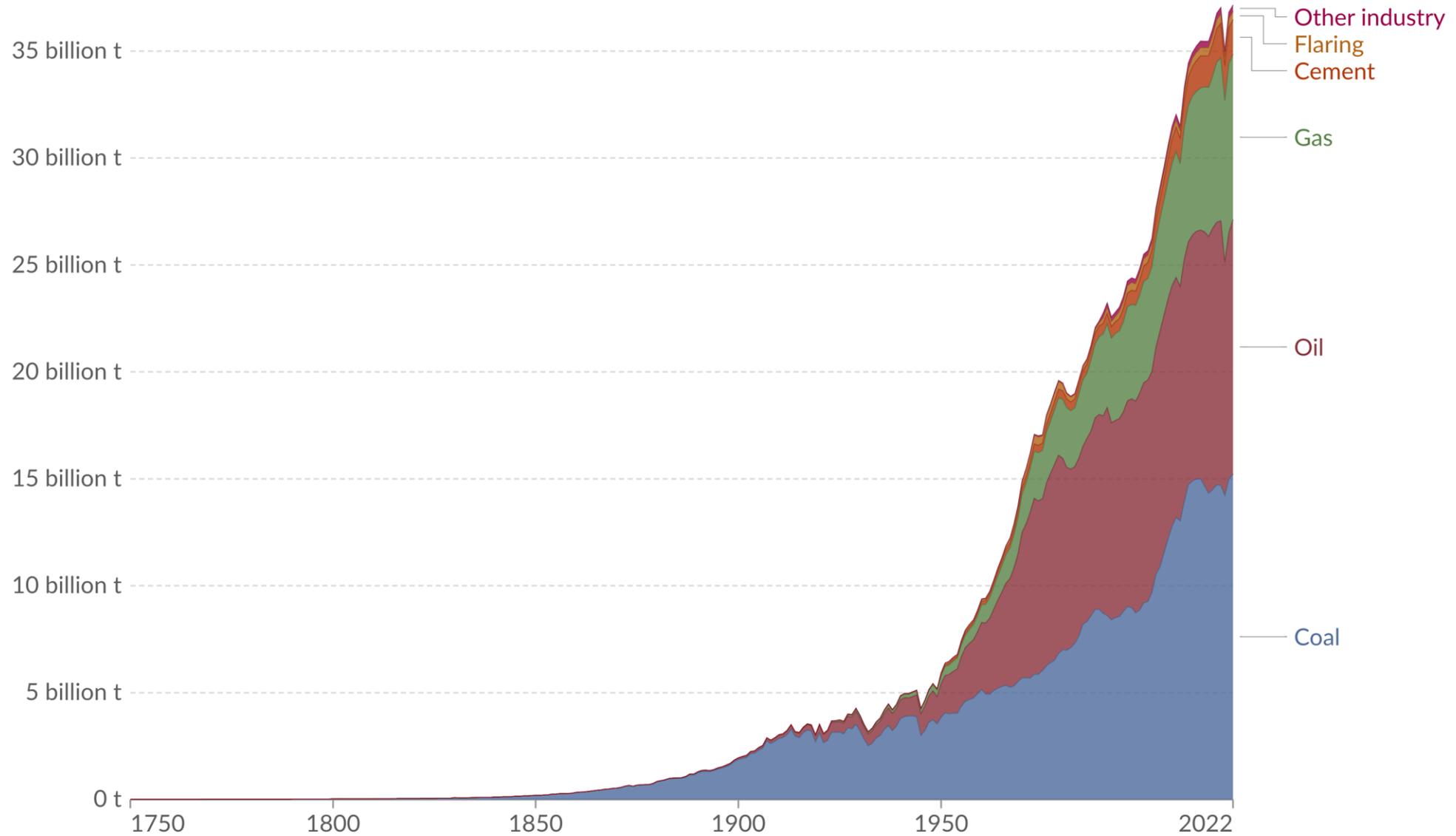
1. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO₂) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO₂ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO₂eq.



CO₂ emissions by fuel or industry type, World

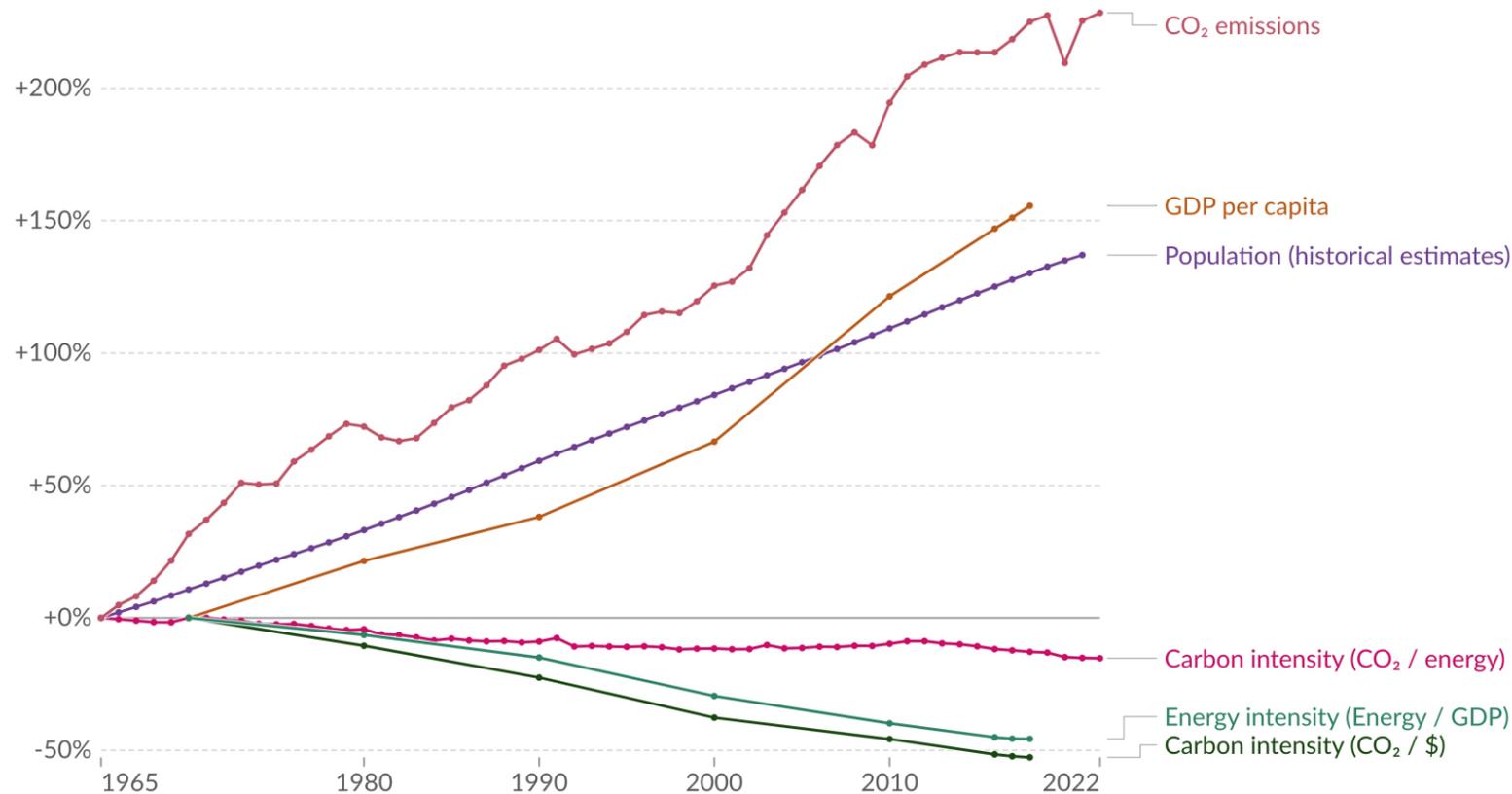


Data source: Global Carbon Budget (2023)

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Kaya identity: drivers of CO₂ emissions, World

Percentage change in the four parameters of the Kaya Identity, which determine total CO₂ emissions. Emissions from fossil fuels and industry¹ are included. Land-use change emissions are not included.



Data source: Global Carbon Budget (2023) and other sources

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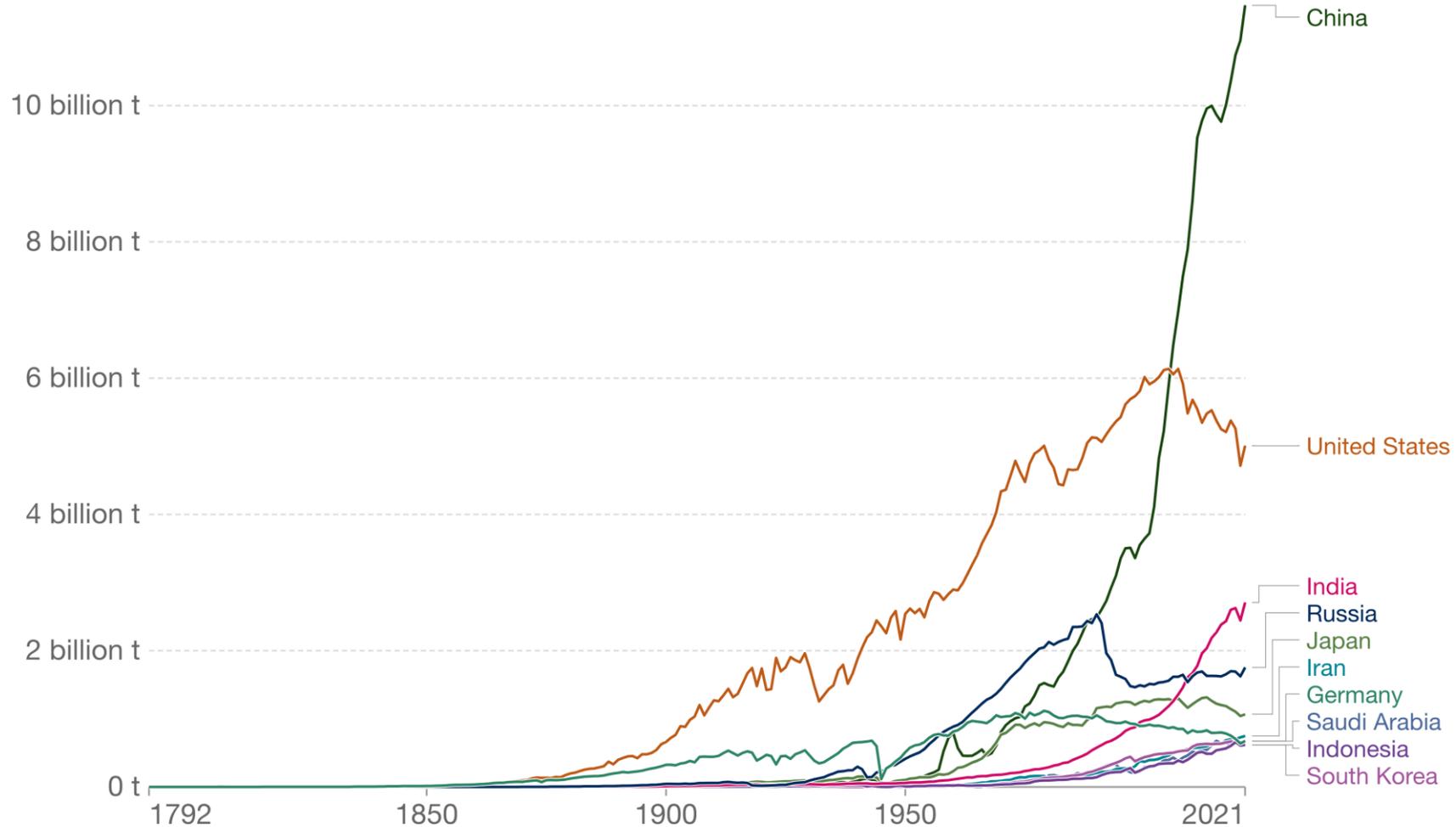
Note: GDP per capita is measured in 2011 international-\$² (PPP). This adjusts for inflation and cross-country price differences.

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2. International dollars: International dollars are a hypothetical currency that is used to make meaningful comparisons of monetary indicators of living standards. Figures expressed in international dollars are adjusted for inflation within countries over time, and for differences in the cost of living between countries. The goal of such adjustments is to provide a unit whose purchasing power is held fixed over time and across countries, such that one international dollar can buy the same quantity and quality of goods and services no matter where or when it is spent. Read more in our article: [What are Purchasing Power Parity adjustments and why do we need them?](#)

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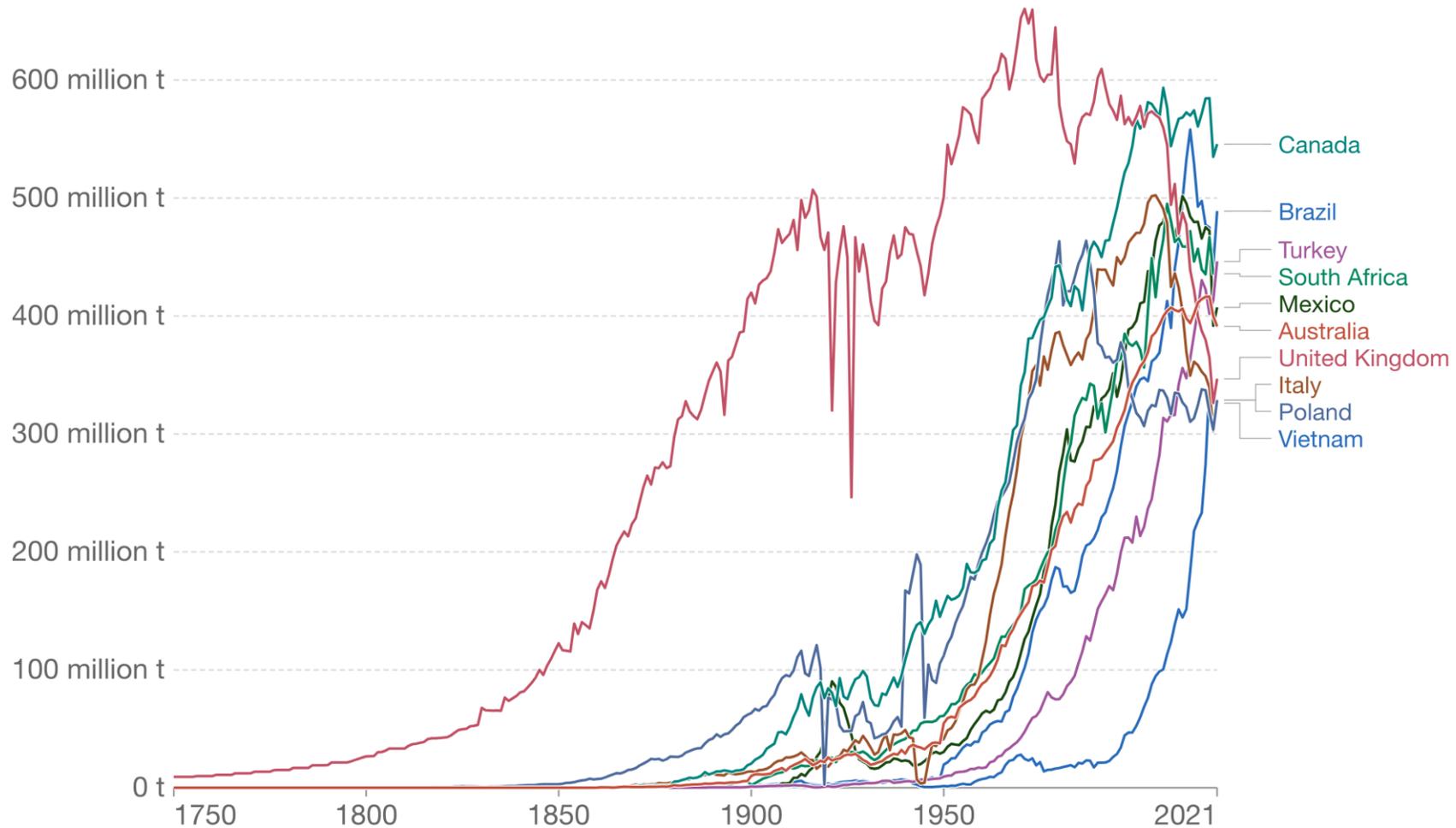
Source: Global Carbon Project (2022)

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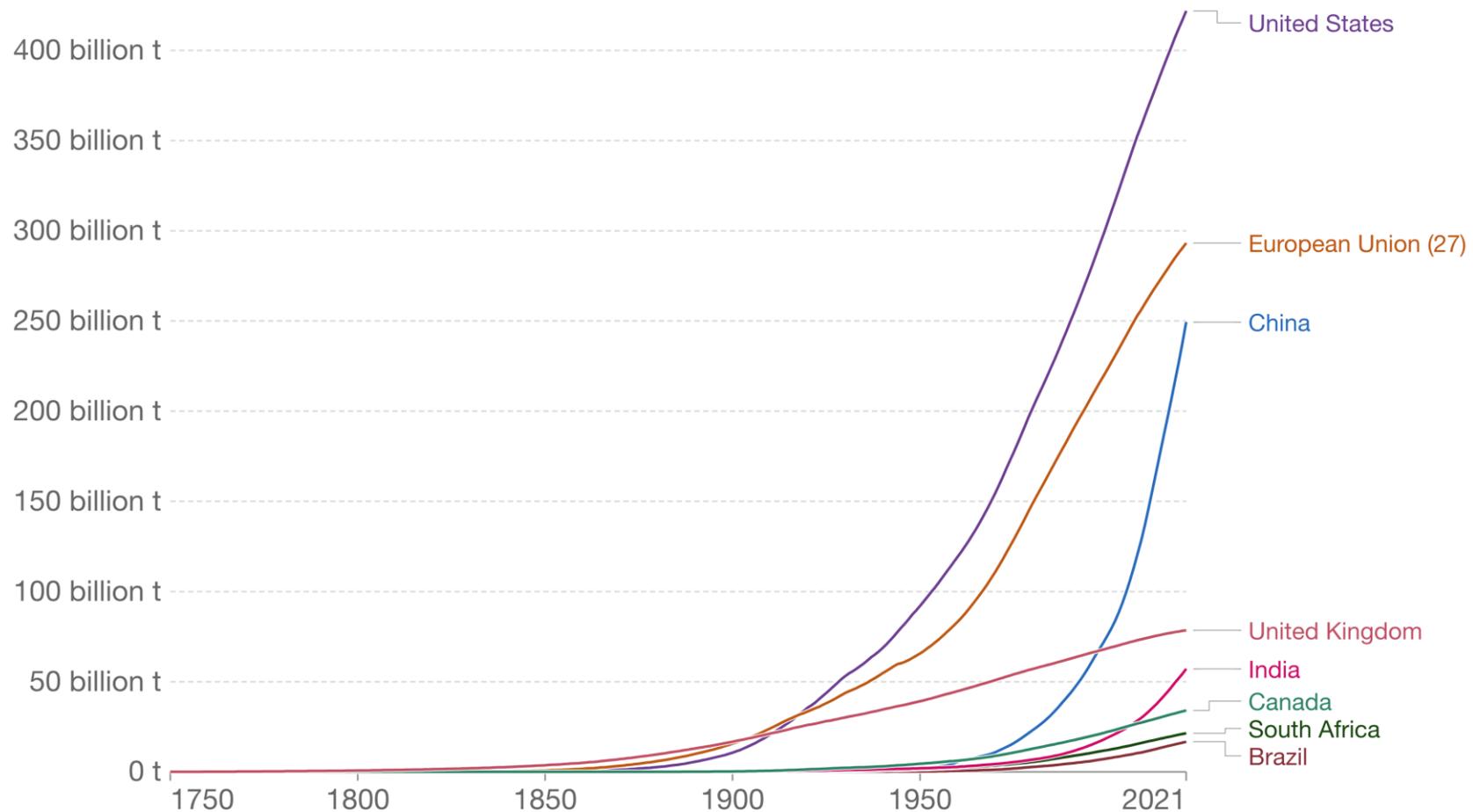
Source: Global Carbon Project (2022)

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Cumulative CO₂ emissions

Cumulative emissions are the running sum of CO₂ emissions produced from fossil fuels and industry¹ since 1750. Land use change is not included.



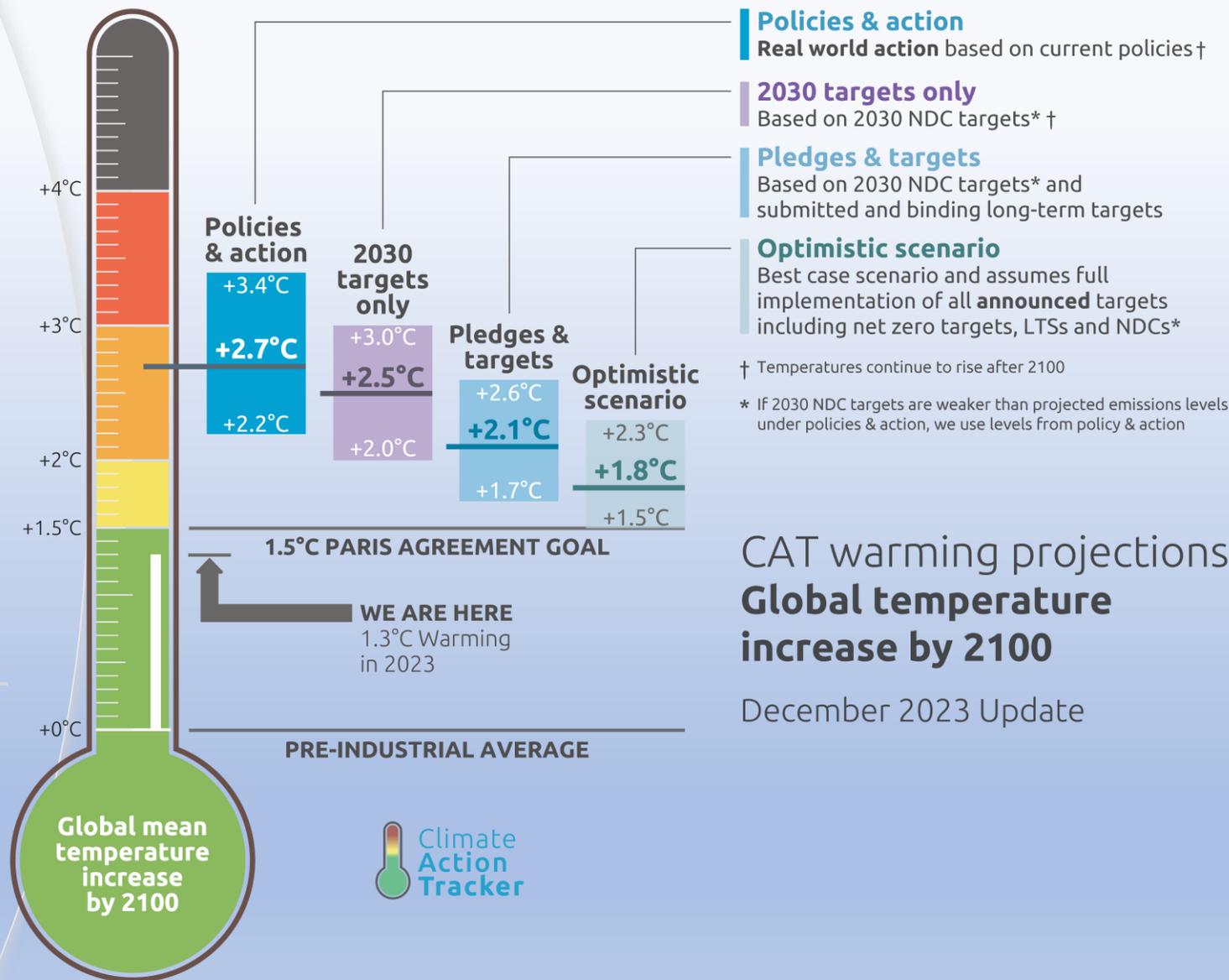
Source: Global Carbon Project (2022)

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Reality check:

Al momento stiamo procedendo verso un aumento delle temperature tra i 2 e 3 gradi a fine secolo



CAT warming projections
Global temperature increase by 2100

December 2023 Update

Ci sono molti ostacoli (non di tipo tecnologico):

- Free riding
- Orizzonte di lungo periodo
- Scarsa consapevolezza del problema
- Nessuno vuole sostenerne i costi (economici e NIMBY)....
- ...i cittadini si oppongono ai governi...
- ...i paesi in via di sviluppo si oppongono a quelli avanzati
- Ostacoli organizzativi (permessi)
- Lobbies
- Incertezza sulle politiche migliori da adottare

Policies per ridurre le emissioni:

- ✓ Carbon pricing (carbon tax, cap and trade)
- ✓ Investimenti diretti pubblici
- ✓ Incentivi ad investimenti green e a R&D
- ✓ Regolazione diretta sulle industries
- ✓ Regolamentazione finanziaria

Quali obiettivi?

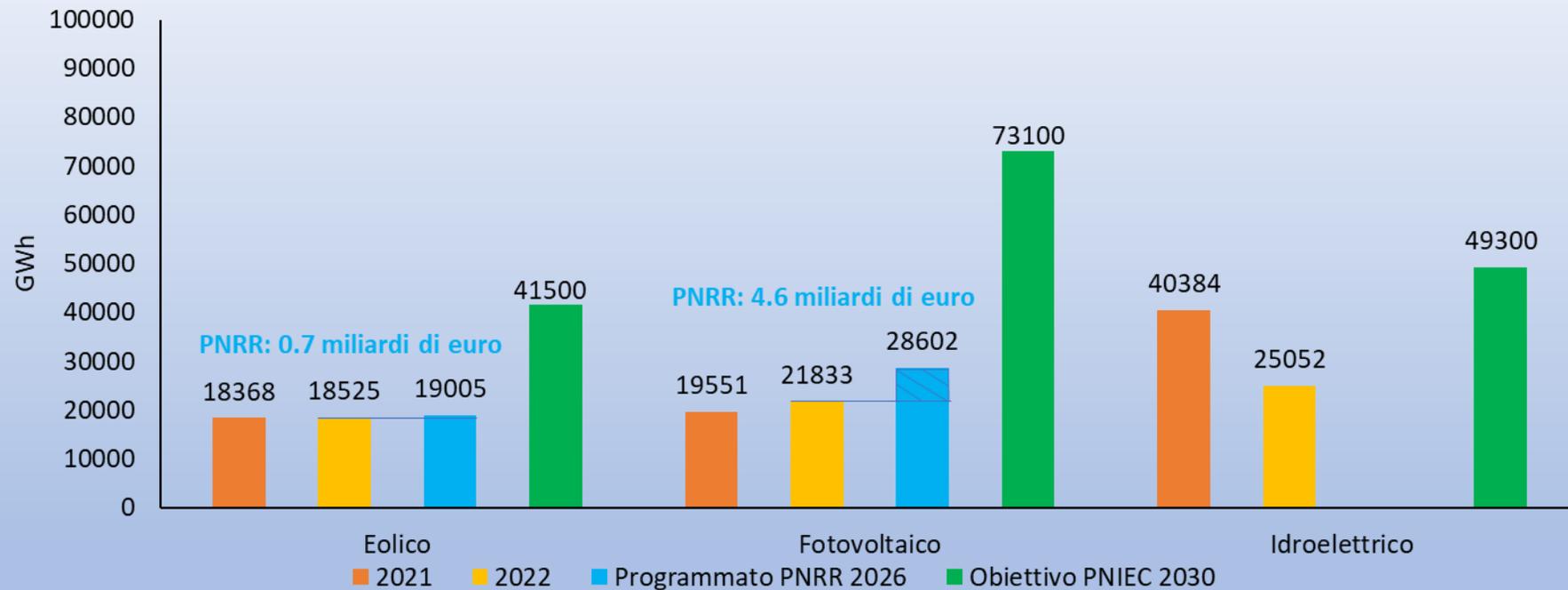
- ✓ Eliminare i sussidi dannosi per l'ambiente (soprattutto i sussidi ai combustibili fossili)
 - ✓ Aumentare la produzione di energia rinnovabile (solare, eolico, idroelettrico)
 - ✓ Incentivare il risparmio energetico...
 - ✓ ...e l'economia circolare
 - ✓ Approvare una «Legge sul Clima»
- 

Le misure in
atto o
proposte
nella UE
(esempi
recenti)

- ✓ Rafforzare ETS e estenderlo ad **abitazioni** e **trasporti** dal 2027 – approvato a livello UE
- ✓ A partire dal 2035 le **auto** immesse sul mercato devono tutte a **emissioni zero** – approvato a livello UE
- ✓ Proposta europea «**case green**» (proposta marzo 2023) – approvato a livello UE

Italia: Obiettivi PNIEC ad oggi lontani...

PRODUZIONE GREEN IN ITALIA, 2021-2022 E OBIETTIVI PNRR 2026 E PNIEC 2030



Nel 2021 la
Costituzione
italiana è
stata
modificata:

Articolo 9

- *La Repubblica promuove lo sviluppo della cultura e la ricerca scientifica e tecnica [cfr. artt. [33](#), [34](#)].*
- *Tutela il paesaggio e il patrimonio storico e artistico della Nazione.*
- *Tutela **l'ambiente, la biodiversità e gli ecosistemi, anche nell'interesse delle future generazioni**. La legge dello Stato disciplina i modi e le forme di tutela degli animali.*

Articolo 41

- *L'iniziativa economica privata è libera.*
- ***Non può svolgersi** in contrasto con l'utilità sociale o **in modo da recare danno** alla salute, **all'ambiente**, alla sicurezza, alla libertà, alla dignità umana.*
- *La legge determina i programmi e i controlli opportuni perché **l'attività economica pubblica e privata possa essere indirizzata e coordinata a fini sociali e ambientali** [cfr. art. [43](#)].*

In sintesi

- L'innalzamento delle temperature è in corso
- Bisogna però procedere in fretta per ridurre le emissioni...
- ...e non stiamo facendo abbastanza...
- ...ci sono molti ostacoli che impediscono passi avanti...
- ...ma la politica economica può fare la differenza...
- ...bisogna capire come “disegnare” politiche che abbiano il consenso dei cittadini.