



Conferência "2023 Ano OE Energia e Clima | Equilíbrio Carbónico e Energias Limpas"

Ciência e inovação para a transição energética

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Global needs on energy to Net ZERO

The EGD

Digitalization

The EU strategy on energy system integration (July 2020)

3 Approaches:

1. Reduce energy demand (*energy efficiency*)

2. Electrification

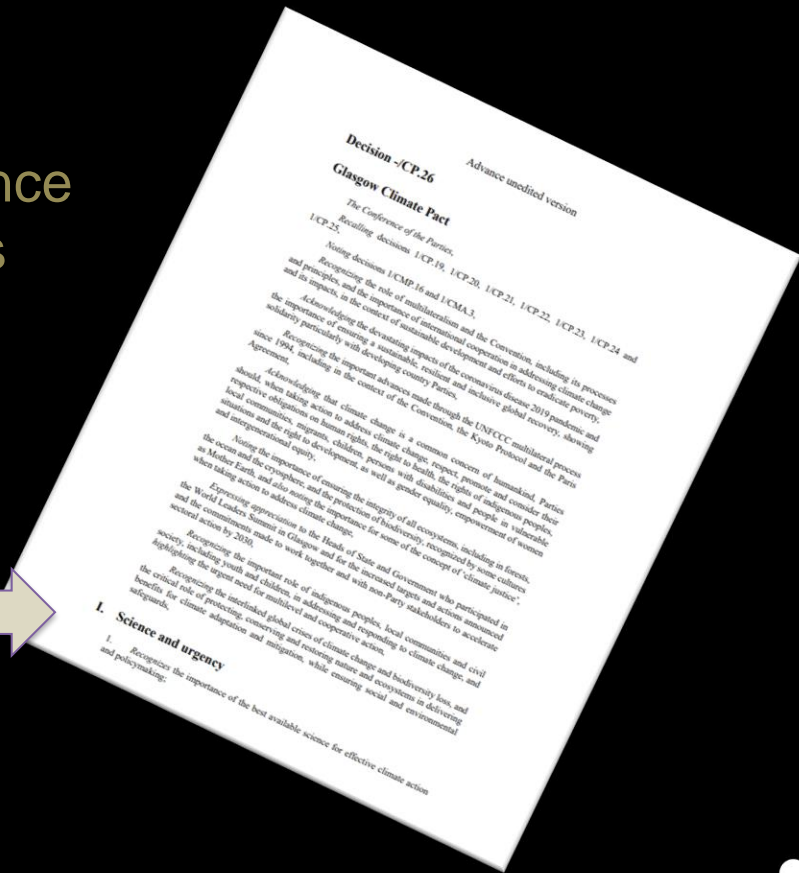
3. H₂ & Bioenergy

COP 26 | Science and technology role

Major focus and reliance on science and technology solutions towards deployment and development of renewable energy technologies

Glasgow Climate Pact

“Recognizes the importance of the best available science for effective climate action and policymaking”



“The new Paradigm” What has changed?



HR EXCELLENCE IN RESEARCH

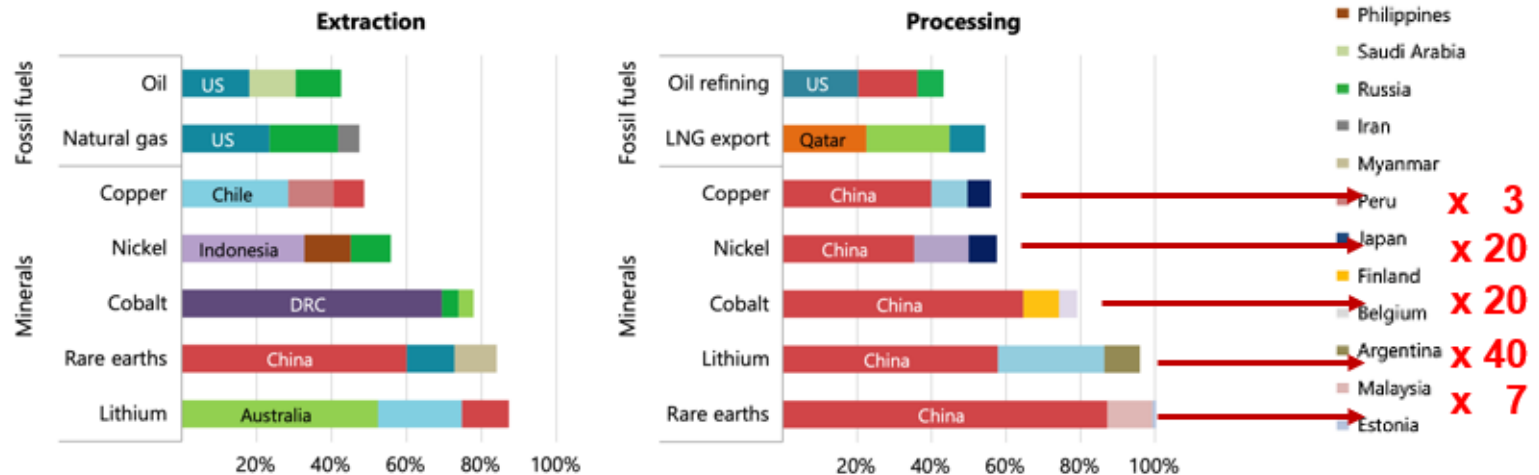


Geopolitical state of Play for Europe



China control over “Critical Minerals”

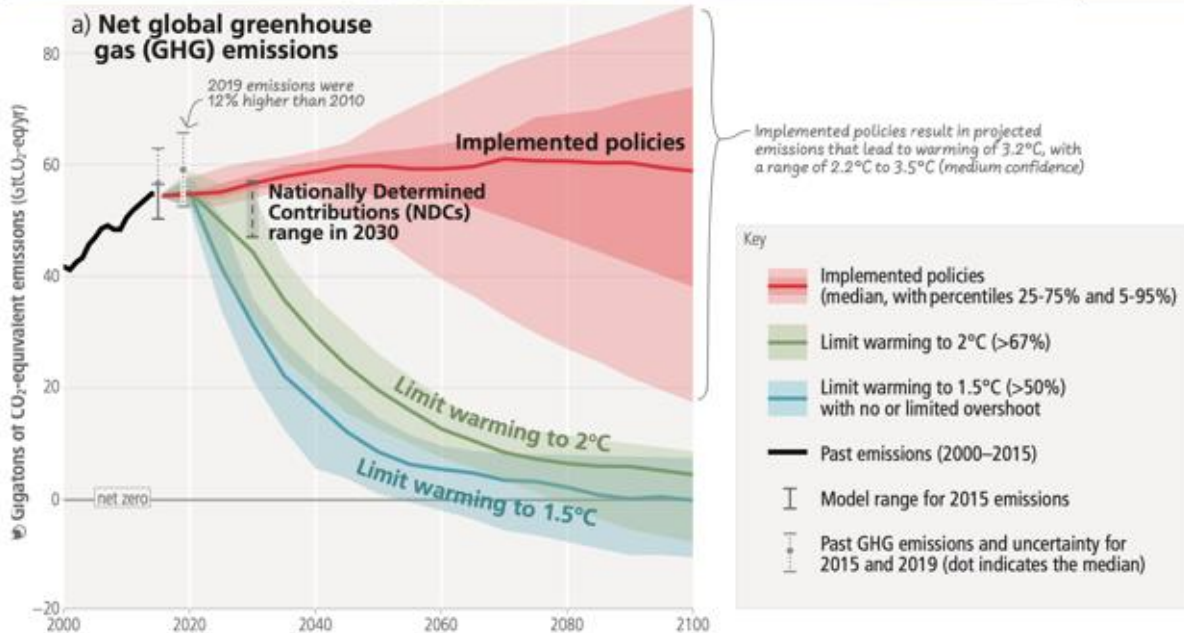
- ▶ Critical Minerals are much more concentrated geographically than fossil fuels
- ▶ China is controlling the production (processing) of most critical minerals; it has a quasi-monopoly on Rare Earths
- ▶ 98% of EU Rare Earth are imported from China
- ▶ The EU has just released the EU Critical Raw Material Act, a strategy to manage critical geopolitical dependencies



Source: IEA, critical minerals, 2021

Climate Warming

AR6 Synthesis Report Climate Change 2023



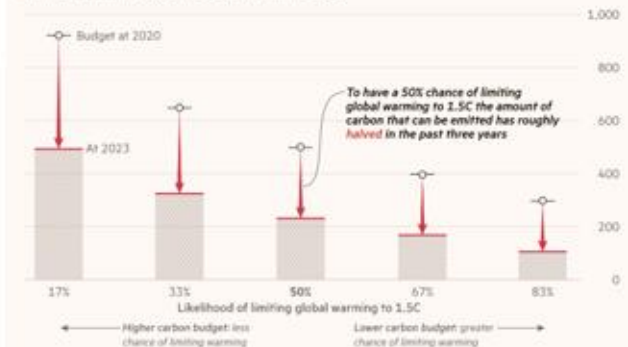
Wildfire smoke makes New York air quality worst in the world

Plumes from burning Canadian forests move across North American cities and force residents indoors



Emissions need to reduce significantly to hit warming target

Estimated remaining carbon budgets (gigatonnes CO₂)



2020 budget from the Sixth Assessment Report Working Group I. 2023 budget includes an update of the anthropogenic historical warming, which is estimated for the 2013–2022 period.
Source: Forster et al. 2023, Earth Syst. Sci. Data © IFT

Social Acceptance



Krisengewinne besteuern!

THEY GOT MONEY FOR WARS BUT CAN'T FEED THE POOR.
DIELINKE SDS

NOS VIES QUE LI ÇA S POUR UNE AUTRE

Rail Against Corporate Greed

CUT PROFITS NOT PAY RAISE WAGES NOT PRI

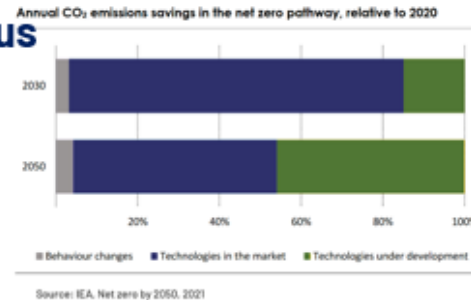
END FUEL PO STOP HIGH-PRICED GAS NO TO HEAT OR EAT
National Pensioners Convention

We Can't Afford to LIVE
of Living Campaign

SALARI

What does it mean for Research ?

1. Increased urgency/short term focus



2. New Transition Constraints

- **Strategic Autonomy**: Transition pathways integrating sustainable/reliable supply chains (e.g., PV)
- **Climate Adaptation** : Increased focus on adapting systems and infrastructures

3. Increased importance of SSH

- **Demand Reduction** as a key enable to Net Zero
- **Citizen Engagement**
 - New infrastructures
 - Reshoring of critical supply chains – Reindustrialisation
 - Rebirth of mining

What does it mean for Research ?

- Ensure **adequate investment** in diversified sources of new supply.
- Promote **technological innovation** at all points **along the value chain**.
- **Scale up recycling**.
- Enhance **supply chain resilience** and **market transparency**.
- Mainstream **higher environmental, social and governance standards**.
- Strengthen **international collaboration** between producers and consumers.



There is no one 'driving the bus' –not politicians – not billionaires.



Thank you!