



Geopolitical impacts on the development and assessment of LTES

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An energy shock of unprecedented breadth and complexity



How energy scenarios and modelling can support the development of strategies during global crises

What energy scenarios cannot do:

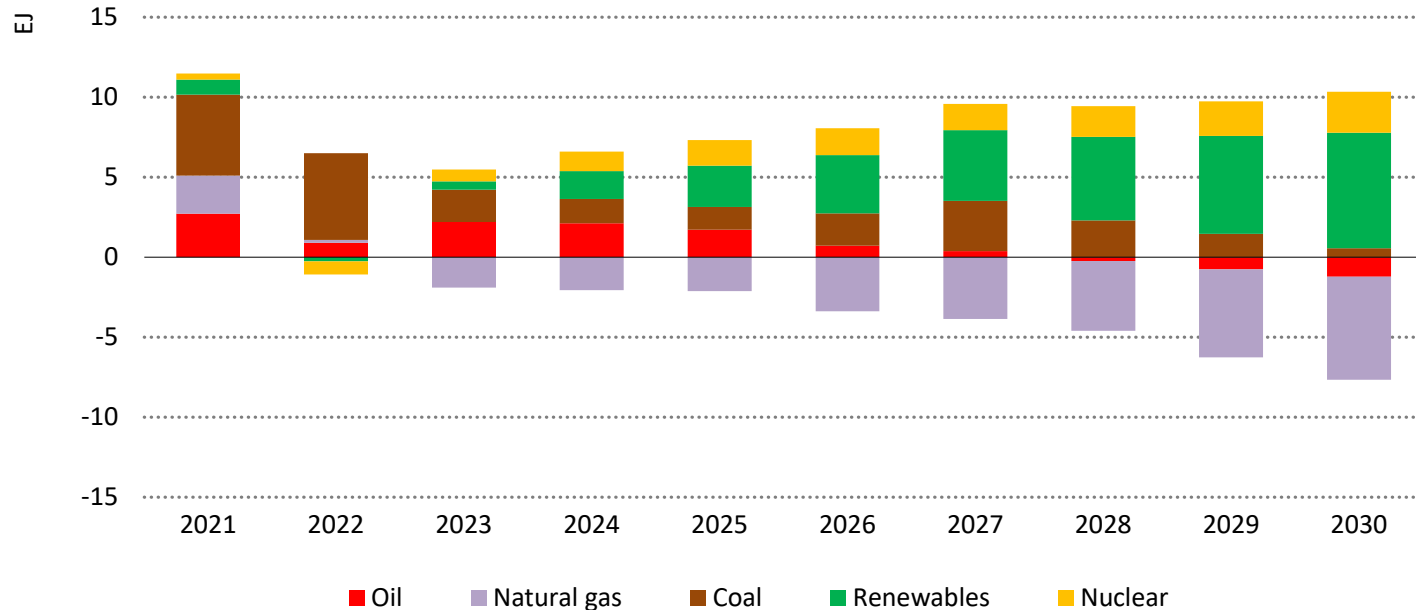
- Energy scenarios are no predictions
- Long-term energy models and scenarios not well suited to analyse very short-term price and demand fluctuations and volatilities

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- Impact of crises can be approximated in scenario assumptions (e.g. GDP, energy demand, prices, trade assumptions, cost of capital)

Crisis can be an opportunity to accelerate the clean energy transition

Difference in total energy supply in the WEO-2022 STEPS relative to the WEO-2021 STEPS



Gas demand is markedly lower than in last year's STEPS while low-emissions sources – led by renewables – see even greater growth. The upside for coal proves short-lived.

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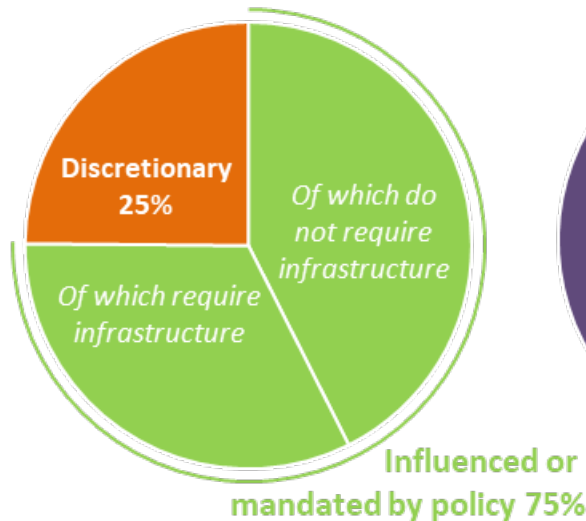
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Behavioural changes can cut CO₂ emissions and improve energy security

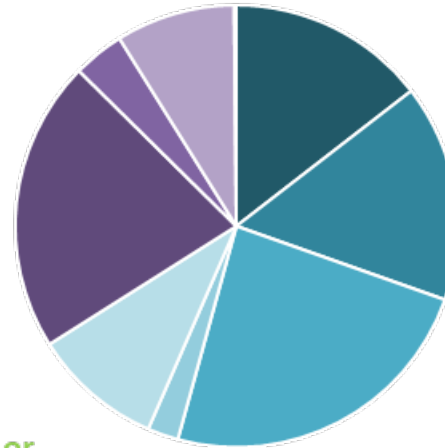
CO₂ emissions reductions due to behavioural changes in the NZE Scenario

Reductions by measure type, 2021-50



Reductions by measure, 2030

1 152 Mt CO₂



Transport 760 Mt CO₂

- Fuel efficient driving
- Low car cities
- Cleaner cars
- Work from home
- Reduced flying

Buildings 390 Mt CO₂

- Space heating
- Space cooling
- Eco-household

Industry 2 Mt CO₂

- Reuse and recycling

Behavioural changes reduce CO₂ emissions, but most depend on targeted policies and some require new infrastructure

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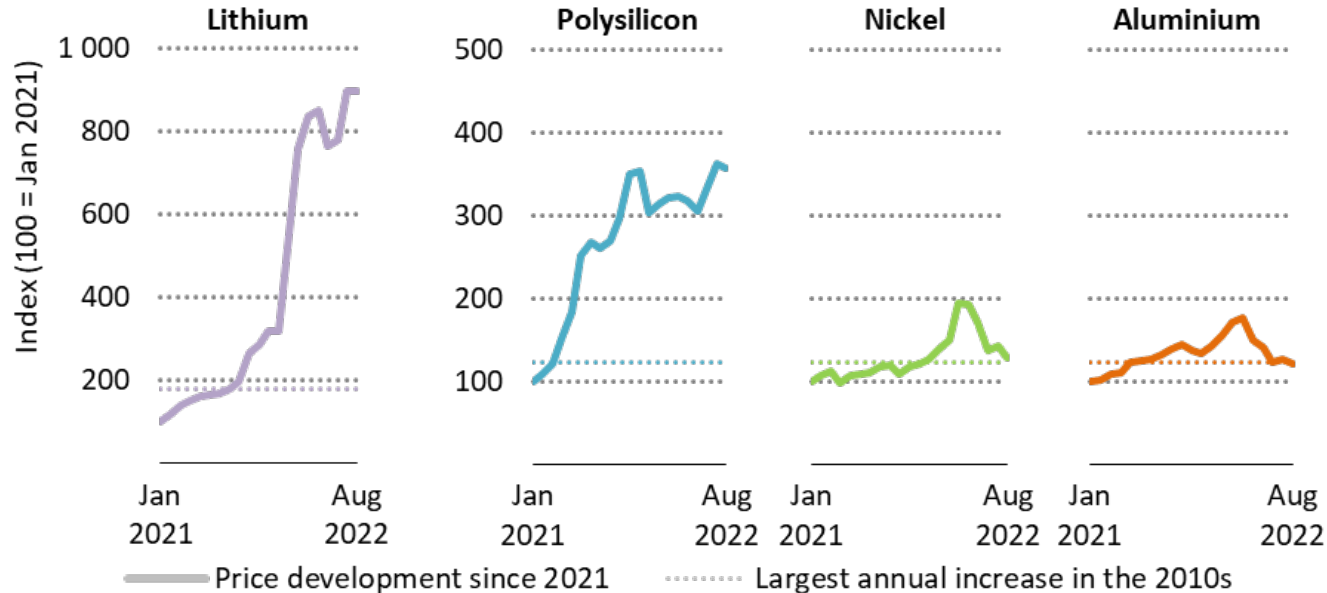
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- Clean energy transitions can lead to new energy security concerns to be analysed (e.g. operation of electricity system, supply chains for clean energy technologies)

Vulnerabilities of supply chains for clean energy technologies

Price developments for selected critical minerals and metals



Prices for important energy transition minerals and metals have been on a rapid upward march since the start of 2021, although price rises moderated in second-half 2022.

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- Insights and knowledge gained from long-term modelling can be helpful for developing short-term strategies

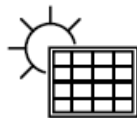
A 10-Point Plan to reduce the EU's Reliance on Russian Natural Gas

Action 1



No new gas supply contracts with Russia

Action 4



Accelerate the deployment of new wind and solar projects

Action 7



Speed up the replacement of gas boilers with heat pumps

Action 2



Replace Russian supplies with gas from alternative sources

Action 5



Maximise generation from existing dispatchable low-emissions sources: bioenergy and nuclear

Action 8



Accelerate energy efficiency improvements in buildings and industry

Action 9



Encourage a temporary thermostat adjustment by consumers

Action 3



Introduce minimum gas storage obligations to enhance market resilience

Action 6



Enact short-term measures to shelter vulnerable electricity consumers from high prices

Action 10



Step up efforts to diversify and decarbonise sources of power system flexibility

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