

# PARIS REINFORCE



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Delivering on the Paris Agreement in a fragmenting world

PARIS REINFORCE final event, Sorbonne, Paris, November 15, 2022

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### **The cost of phasing out Russian fossil fuels**

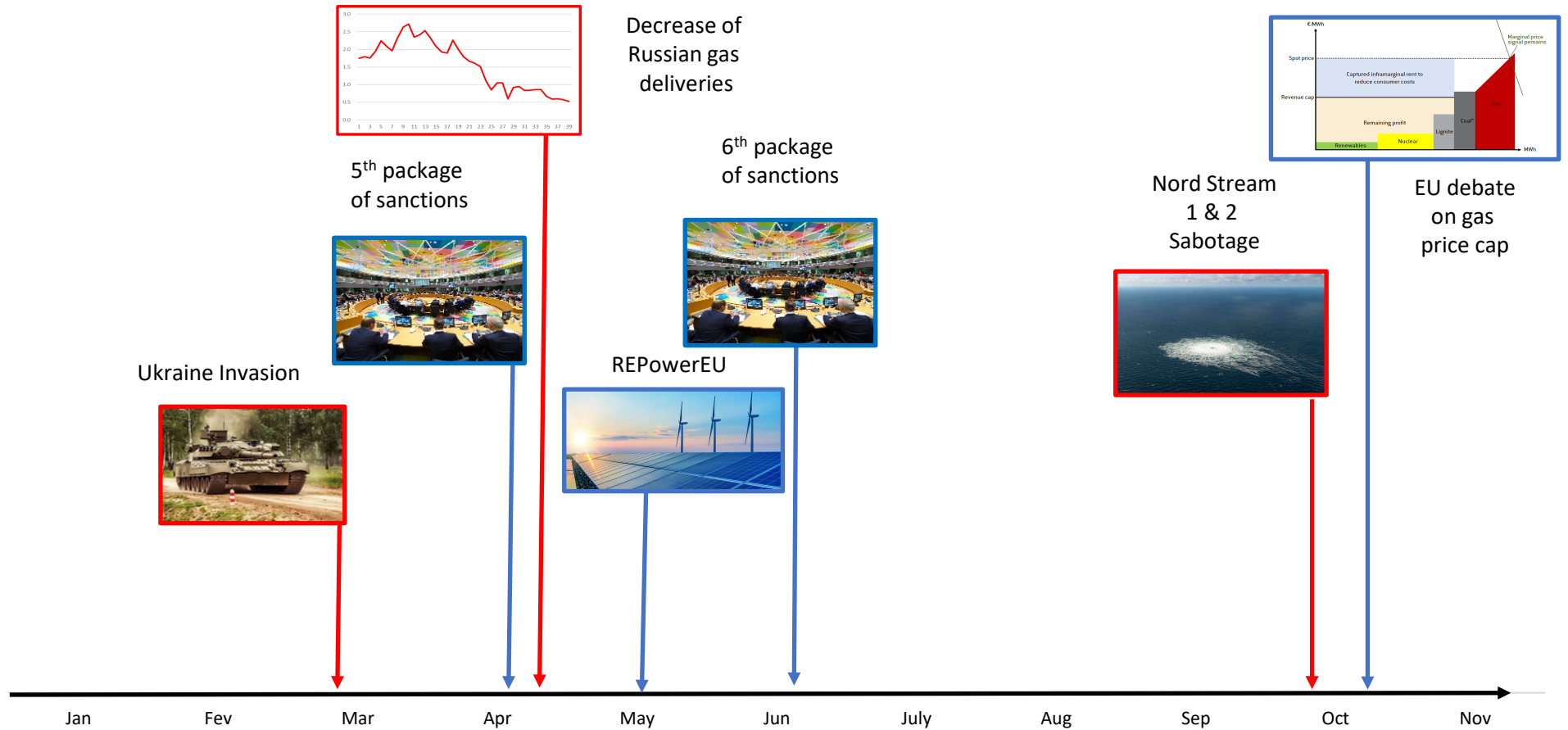
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Marc Vielle, Sigit Perdana (*Ecole Polytechnique Fédérale de Lausanne*)  
and Maxime Schenckery (*IFPEN*)



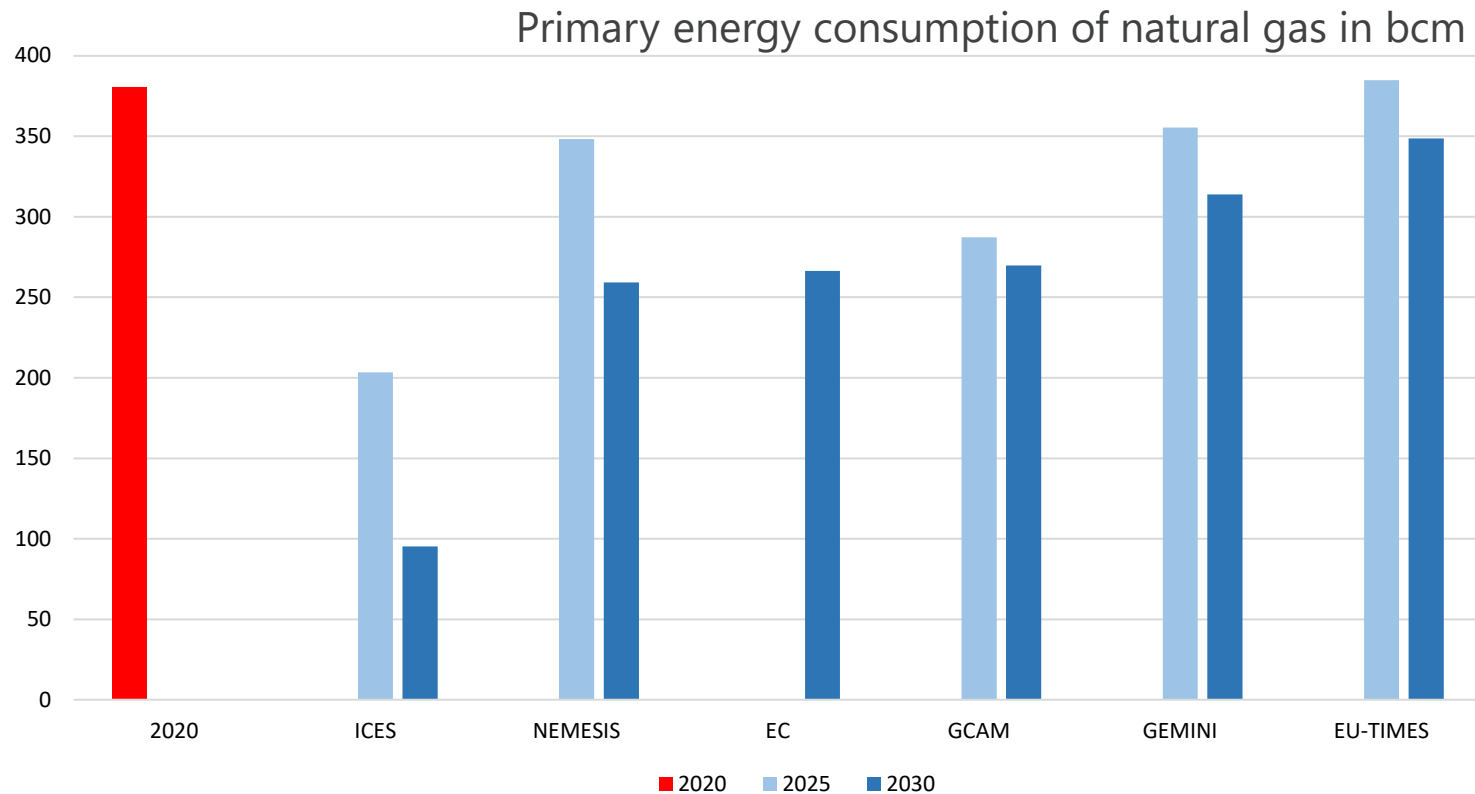
[www.paris-reinforce.eu](http://www.paris-reinforce.eu)

# Timeline of European energy events related to the Ukraine invasion



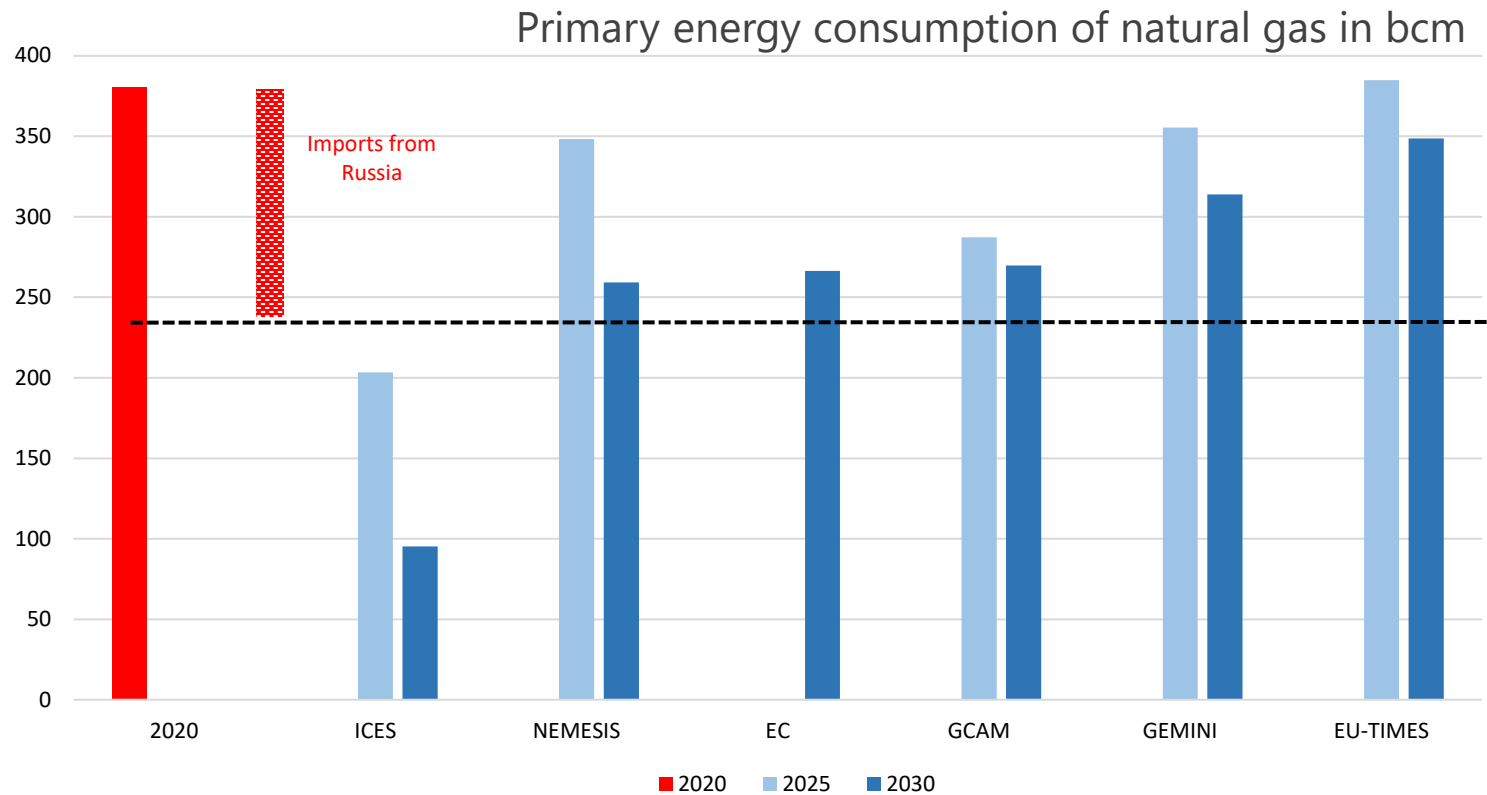
The PARIS REINFORCE project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 820846.

## Insights from Paris Reinforce runs Scenario NZE EU Policy standard



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## Insights from Paris Reinforce runs Scenario NZE EU Policy standard



Research Question: **What are the impacts of cutting Russian fossil energy imports considering the fit for 55 Package?**

- We use the GEMINI-E3 PR version where EU27+UK and Russia are represented
- The reference scenario assumes that the fit for 55 package is implemented (i.e. -55% of GHG emissions in 2030) and benefits from Paris Reinforce runs
- Timeframe 2022 – 2030

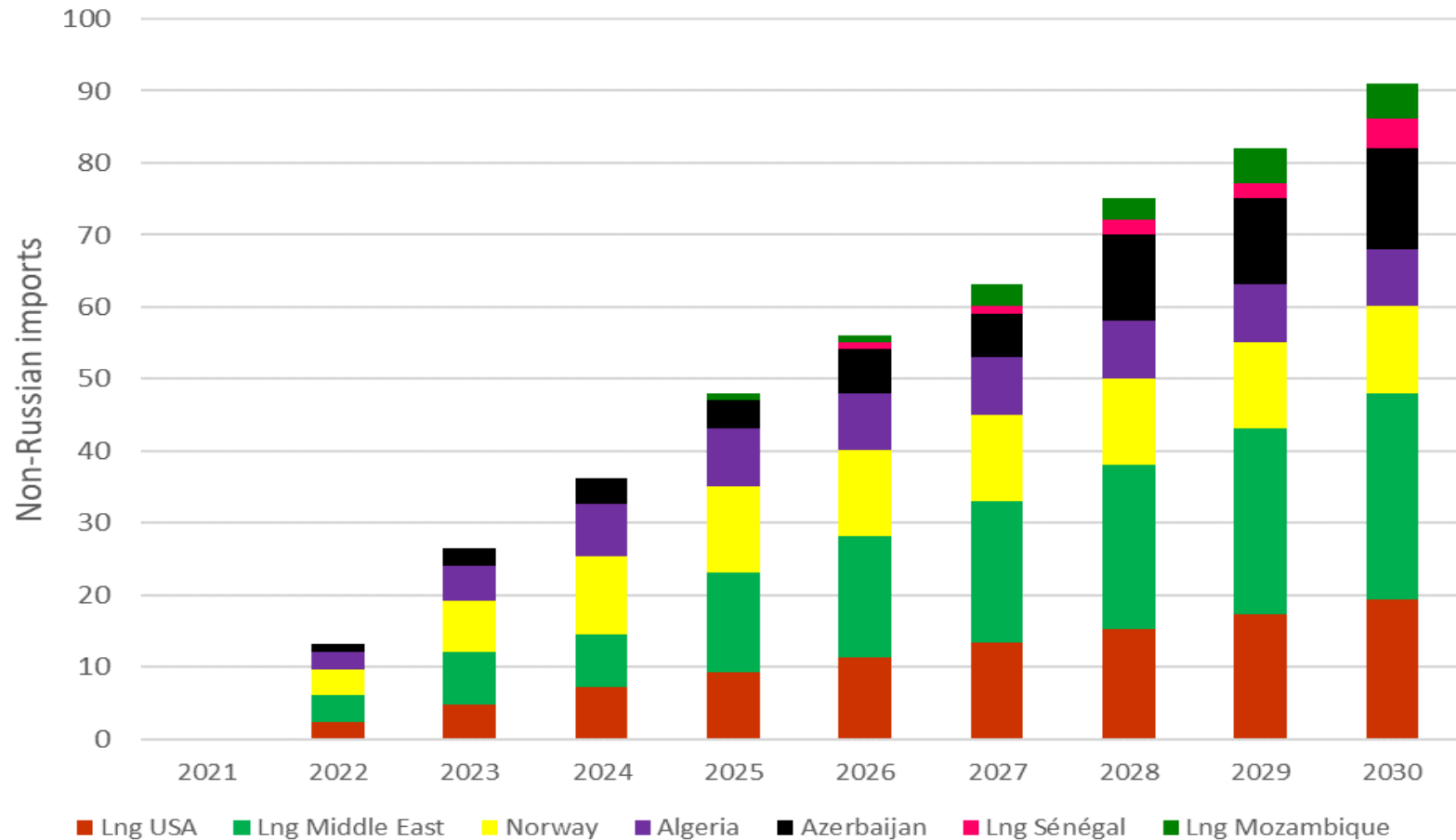


- **Current Policies scenarios:** *NZE EU Policy Standard* with two European CO<sub>2</sub> prices
- **No gas embargo:** 5th and 6th packages of energy restrictive measures are implemented
- **Full embargo:** No gas embargo + embargo on natural gas
- **Limited gas embargo:** No gas embargo + only 80 bcm of Russian gas import
- **Short term embargo:** Limited gas embargo but with an additional assumption of war ending in 2025 and returning of energy deliveries
  
- All scenarios deliver ***a level of emissions compatible with Fit for 55***



# Assumptions on additional gas import capacities

- Current natural gas imports from Russia in 2021: 157 bcm



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# Full Embargo scenario: European energy impacts

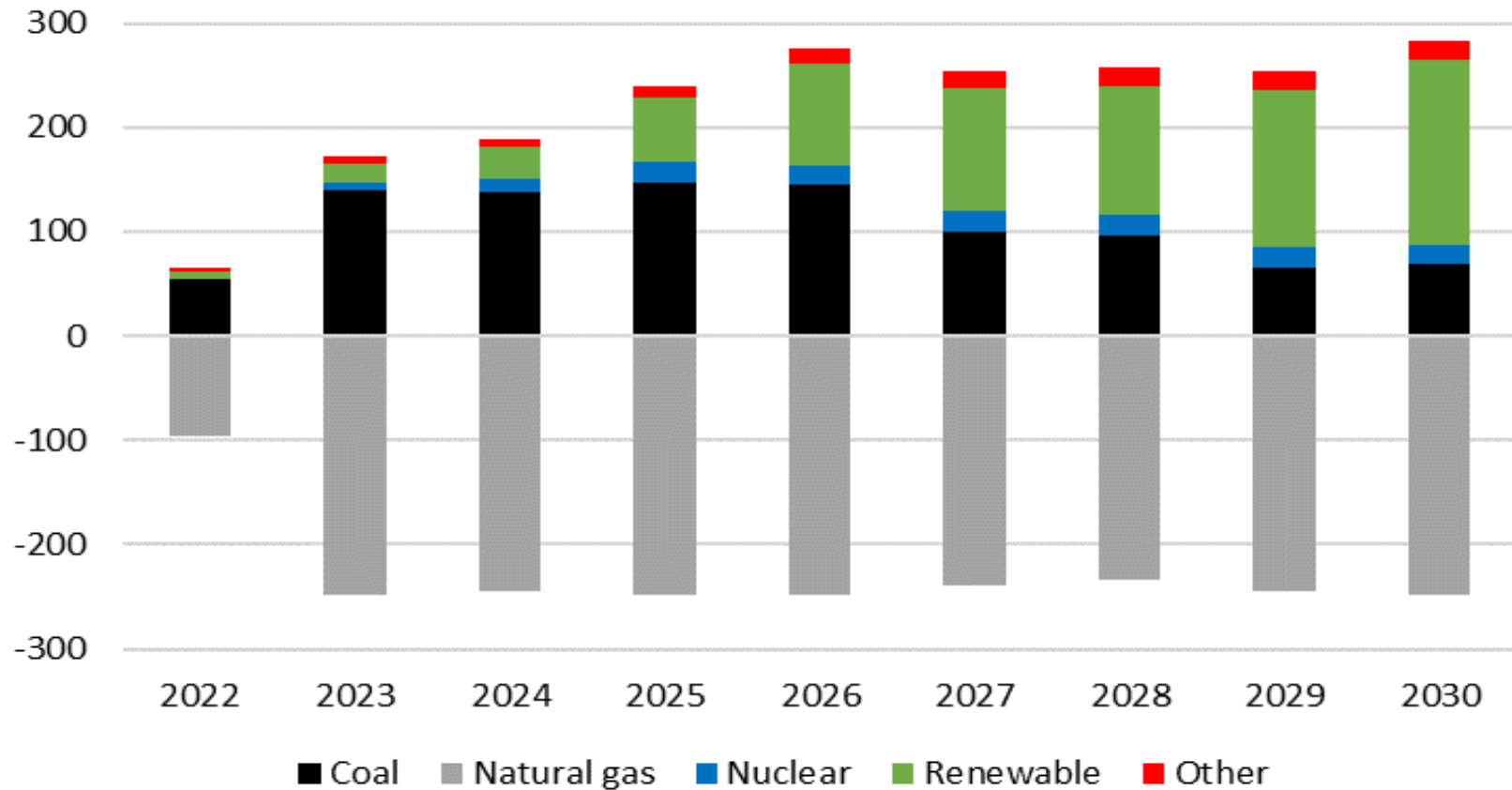


- Wholesale gas price increase: +69% in 2025, +64% 2030
- In 2025, European gas consumption decrease by 134 bcm (87 bcm in 2030): Electricity generation -51, residential -31, energy intensive industries -21, other sectors -31
- Natural gas partly replaced by coal (+26% in 2025) domestically produced and imported
- Embargo moderates CO<sub>2</sub> ESR price, and have less impact on CO<sub>2</sub> ETS price



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## Change in TWh wrt to current policies scenario



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# Full Embargo scenario: Macroeconomic impacts

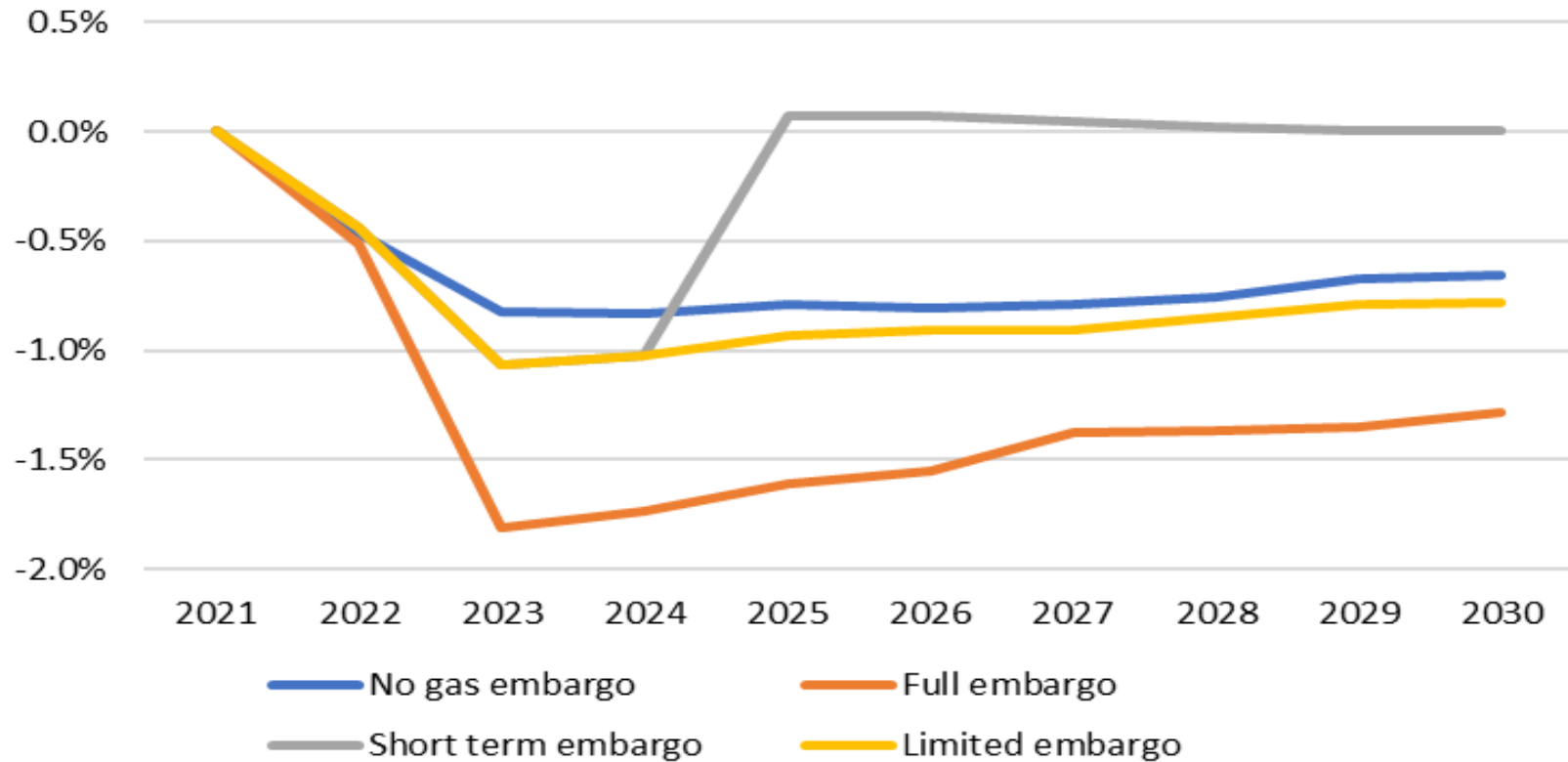


- European GDP: -0.20% in 2025 and -0.19% in 2030
- Welfare cost: -0.79% of household consumption in 2025 (-0.66 in 2030)
- Cumulative European welfare cost is evaluated to **3092** €<sub>2021</sub> per European resident from 2022 to 2030

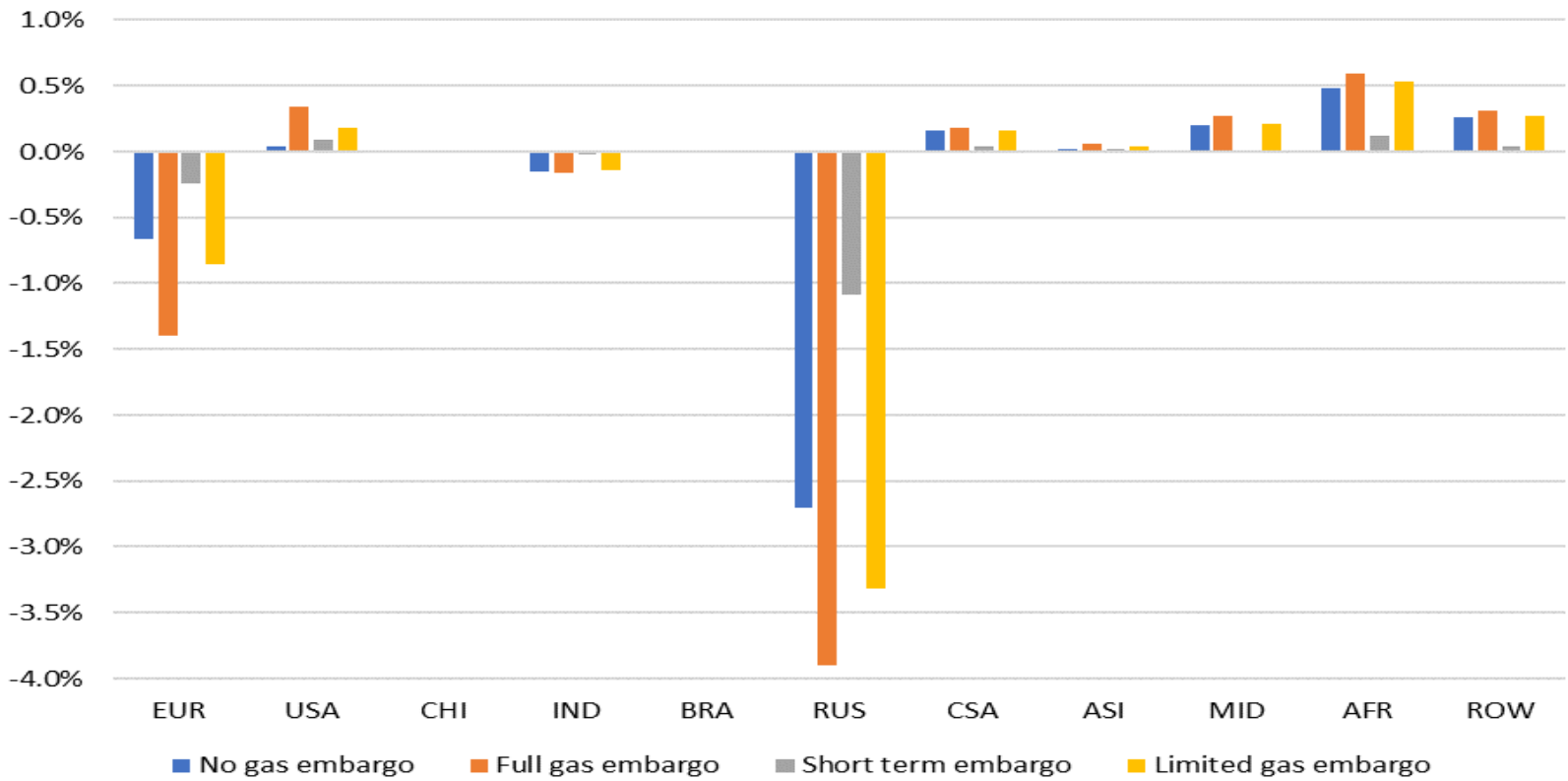


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## European welfare change in % of household consumption

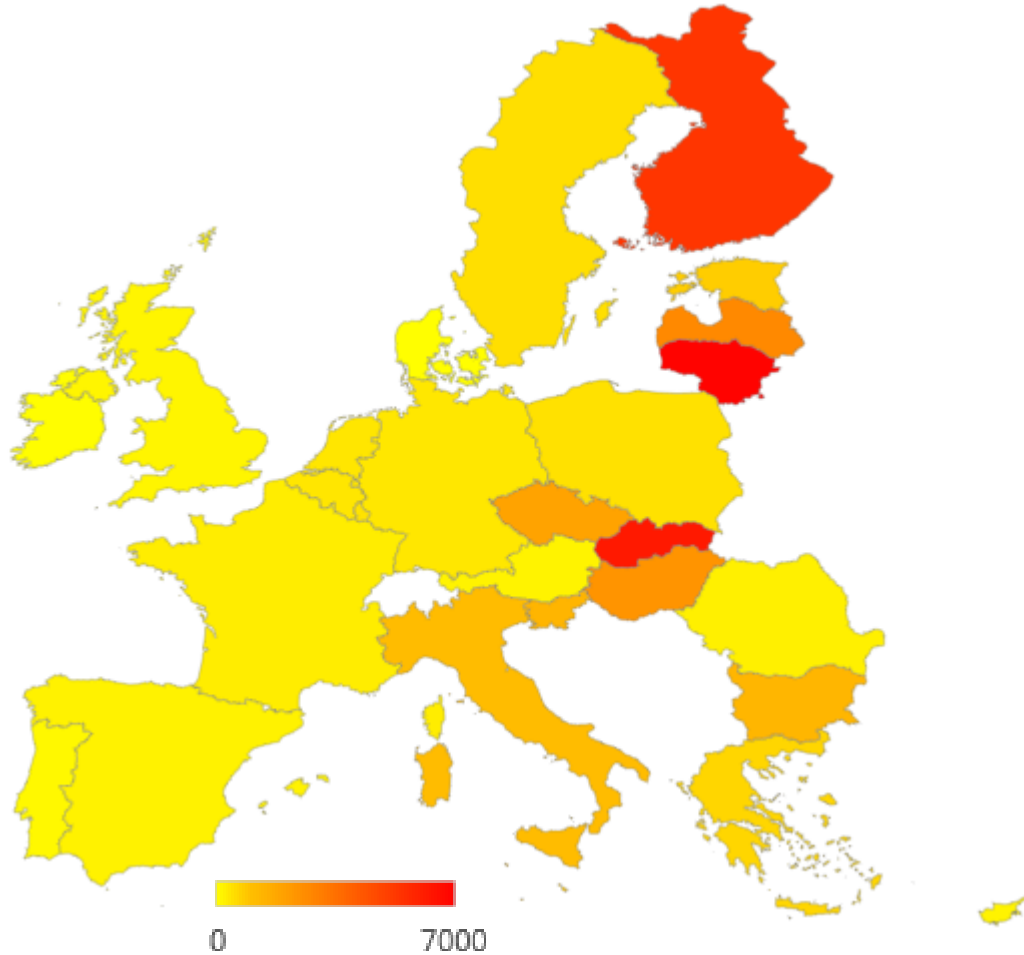


## Cumulative welfare change in % of Households consumption



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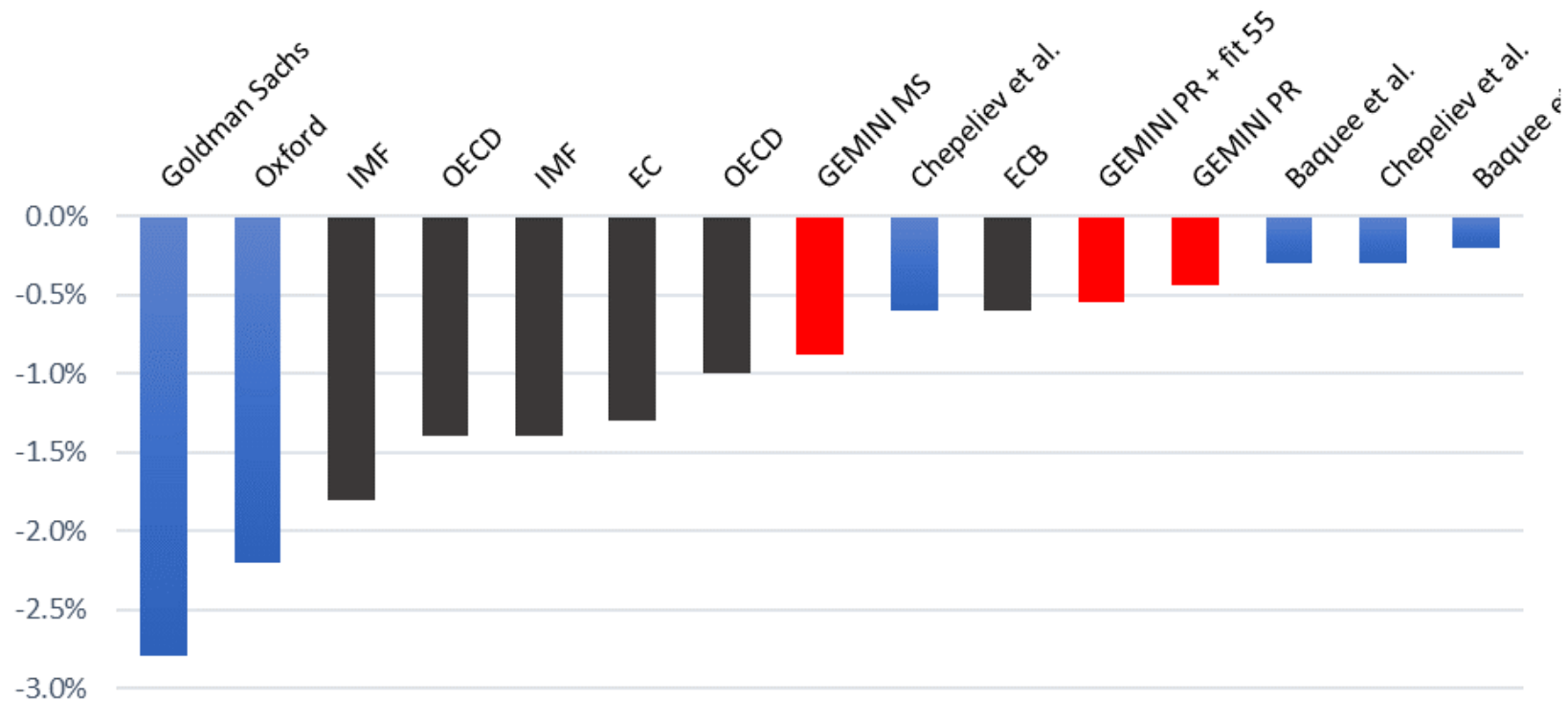
Cost per MS resident year 2030 in €



- (EU27+UK) cost x 2 with respect to previous assessment

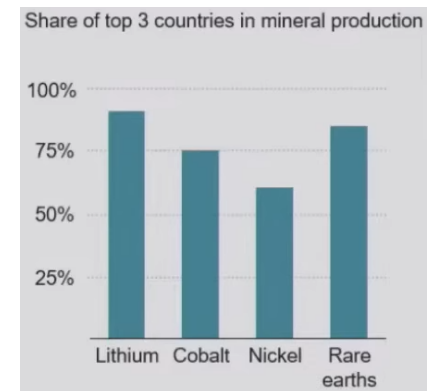


## Short term European GDP loss in %



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- The cost of current EU 5th and 6th energy restriction packages is substantial (= **1468** €<sub>2021</sub> per European resident)
- An embargo on natural gas doubles this cost
- Coal plays a significant role in short term especially in electricity generation
- These restrictions have a more detrimental impact on Russia
- Policy implications
  - Supply side: Diversification & overcoming bottlenecks → investment in natural gas infrastructure *versus* stranded asset
  - Demand side: Demand adjustment *versus* price cap
  - Solidarity between Member States
  - Net zero trajectory toward new dependencies





Thank you!

**Sigit Perdana**

**Maxime Schenckery**

**Marc Vielle**

[sigit.perdana@epfl.ch](mailto:sigit.perdana@epfl.ch)

[maxime.schenckery@ifpen.fr](mailto:maxime.schenckery@ifpen.fr)

[marc.vielle@epfl.ch](mailto:marc.vielle@epfl.ch)

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