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

Where are we headed and how to make use of recovery funds?

3rd TUM Multidisciplinary Conference and Innovation Week

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About PARIS REINFORCE
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“Where is the EU headed given its current climate policy? A stakeholder-driven model inter-comparison”, Science of the Total Environment, 793.
Policies & targets (NDCs) in place in 2020 would bring global warming to 2.2-2.9 °C in 2100.
False precision to climate outcomes given during COP26 may lead countries to believe good progress is made. Our findings indicate current policies & policy pledges can still lead to **warming outcomes of 3°C** in 2100.

The large model spread highlights the important role of tools used to inform climate policies and pledges, and the critical need to employ diversified toolboxes.

Where is the world headed?

High use of CCS might be an outcome of the use of carbon pricing as a proxy for real-world policies.

It is important to implement policies in models as they are implemented in the real world. Real-world policies may lead to different energy systems than theoretically modelled policies.

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Where is the EU headed?

Co-creating a model inter-comparison with stakeholders: policies currently in place

**GHG emissions 2030**
- Previous target (-40% compared to 1990)
- Green Deal (-55% compared to 1990): We calculate a \(-39\%\) to \(-51\%\) range

**CO₂ emissions 2050**
- With negative emission technologies: 1.0 – 1.65 GtCO₂
- Without negative emission technologies: 2.1 – 2.35 GtCO₂
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**Upcoming economic challenges**

Strong economic impacts from Covid-19 pandemic and measures:
- 1.8 million jobs lost in EU-27 between Sept 2019 and Sept 2020
- IMF expects >2 million additional unemployed in 2021 and no full recovery by 2025

**Green Recovery Packages**

Recovery and Resilience Facility (RRF) from EU recovery funds:
- €200-billion of RRF for green projects
- 29% expected for renewable energy generation *
- 3% for (non-electric) low-carbon mobility *
Also: £ 5 billion clean energy stimulus in United Kingdom

**Emission reductions and job creation?**

Transition from fossil to renewable energy usually creates net jobs (Markandya et al 2016), but potential differences between low-carbon technologies:

How to allocate short-term (2021-2025) recovery funds to maximise impacts in terms of both job creation and emission reductions within this decade?

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**Methodology overview**

1. Preparation of baseline with defined EU current policies: *where is the EU headed?*
2. Modelling impact of 10 subsidy steps for 7 low-carbon technologies
3. Abstracting modelling outputs and transform into portfolio inputs (employment factors)
4. Determination of (Pareto) optimal subsidy portfolios within selected budget
5. Robustness analysis of Pareto portfolios using Monte-Carlo simulations
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**Results: employment gains in 2025, then 2030**

**Emissions cuts by end of decade vs. near-term employment gains**

Onshore and offshore wind for employment. From offshore to biofuels for emissions cuts.

Portfolios of max. jobs lose momentum in 2030: can employment gains be sustained in the longer run?

**Shifting the focus: emissions cuts vs. employment gains both by end of decade**

Limited employment gains (in comparison): same spending period & different gains per project stage (more jobs in earlier stages)

Jobs: offshore wind, biomass, biofuels

Emissions: half budget in onshore wind

"Investigating Optimal Allocations for Green Recovery Funds". *Climate Action in the Post-COVID-19 World*. European Commission
Emissions cuts by end of decade vs. employment gains (both near-term and longer-term)

Can the technological mix be diversified for better balance between near- and longer-term employment gains, by aiming to optimise emissions cuts, employment by 2025, and employment by 2030 simultaneously?
Both the EU and other major emitting countries would strongly benefit from **greener agendas**, on their way to recovering from the COVID-19 pandemic.
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Selected References


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Thank you

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