

Assessing the socio-economic impacts of different ways to recycle carbon revenues

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Key research questions

- What are the impacts of ambitious decarbonization on:
 - Macro-indicators like GDP, investment, trade
 - Employment change by sector
- How can we ensure double dividends from mitigation?
 - Explore different ways to recycle the carbon revenues, collected by the government.
 - Focus on how new job opportunities can be created and how regressive distributional impacts can be alleviated

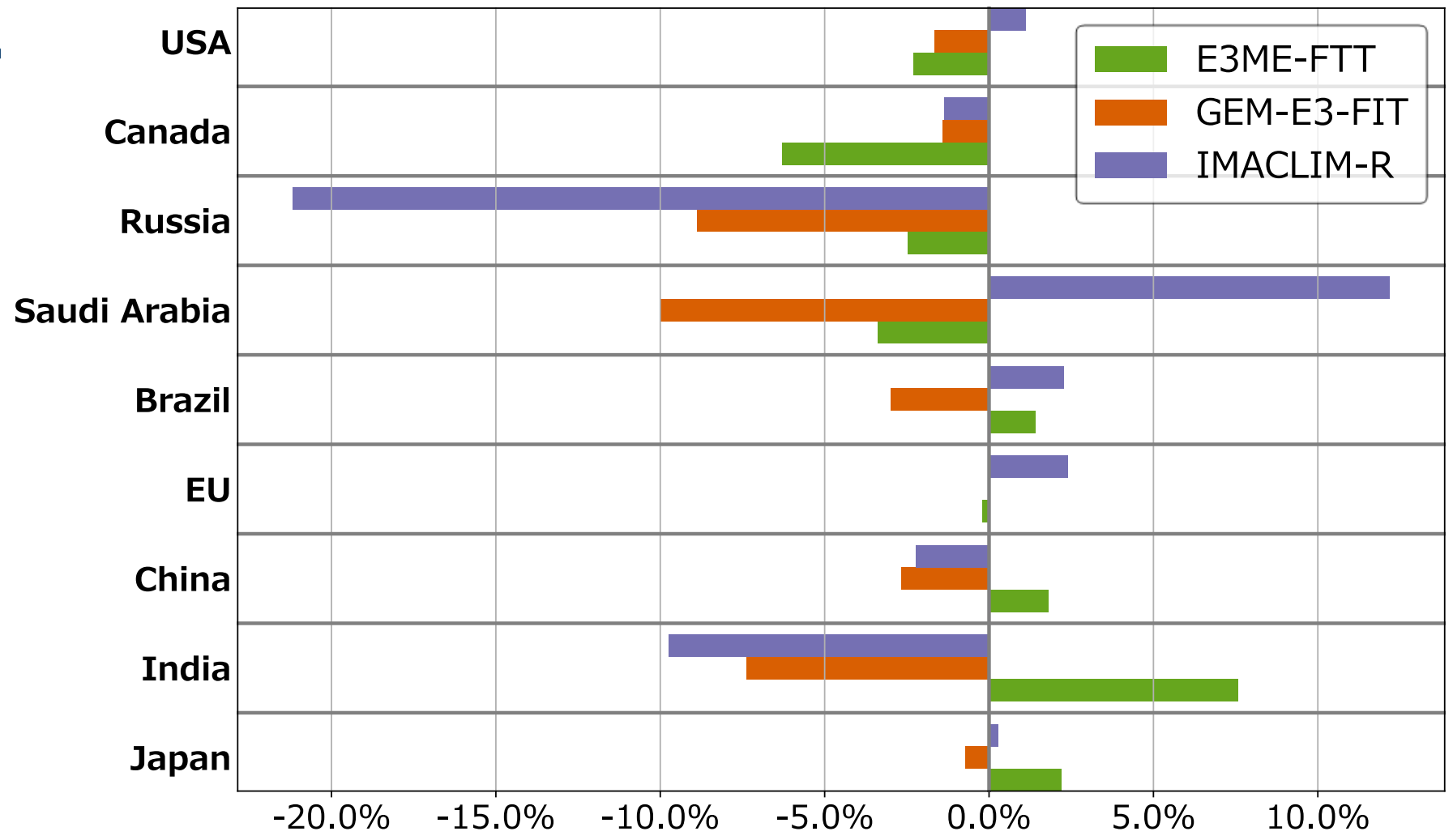


NAVIGATE Macro-economic models used

	E3ME-FTT	GEM-E3-FIT	Imaclim-R	JRC-GEM-E3
Model type	Macro-econometric model	CGE model	CGE model	CGE model
Macro theory branch	Non-equilibrium (Demand driven)	Equilibrium (Supply driven)	Equilibrium (Supply driven)	Equilibrium (Supply driven)
Technological change	Endogenous	Endogenous	Endogenous with high inertia	Endogenous
Energy system representation	Bottom-up, explicit technologies	Bottom-up, explicit technologies	Bottom-up, explicit technologies	Bottom-up in electricity supply Top-down (CES) in other sectors
Labour market representation	Imperfect and flexible market	Imperfect and flexible market	Imperfect market limited flexibility	Imperfect and flexible market
Investment & Finance	Unlimited	Crowding-out of investment	Crowding-out of investment	Crowding-out of investment
Sector coverage	43	52	12	31
Regional coverage	71 countries regions	46 countries	12 regions	49 countries



NAVIGATE Regional disparities



Largest negative impacts:

- Fossil exporters
- Countries with high carbon intensity

More modest impacts in fossil fuel importers

NAVIGATE Sectoral classification on job impacts

Winners

- Electricity supply
- Renewables
- Construction
- Manufacturing for renewable goods
- Agriculture (biofuels)

Losers

- Coal
- Oil and gas extraction
- Gas distribution
- Refineries
- Transport
- Energy intensive industries

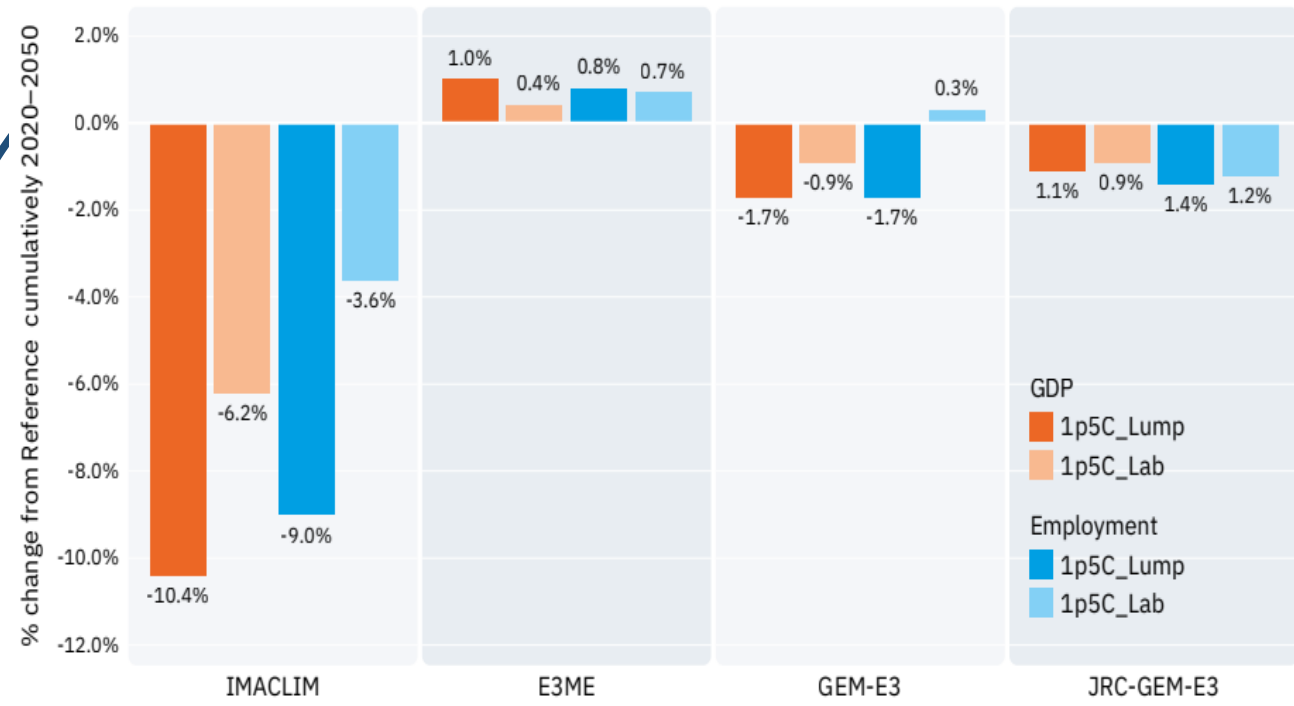
Not clear

- Services (depend on outcomes of revenue recycling)
- Other industries



- Various ways are proposed in the literature to recycle carbon revenues that are an important revenue source for the government
- Literature focuses on two main schemes:
 - Reduce distortive taxes on labour
 - Lump-sum transfers to households (equal-per-capita basis)
- We assess these two key options using a set of 4 well-established, multi-sectoral macro-economic models
 - Explore the socio-economic impacts of different revenue recycling schemes in the context of Paris aligned scenarios (WB2C and 1.5C)
 - Focus on the cost-efficiency and equity impacts of recycling schemes





Two main channels:

- reduced labour costs lower the production cost for firms and distortions are gradually removed
- additional labour demand increases household income and consumption.

Lump-sum transfers to households can reduce inequality, but this misses opportunities for enhanced productivity and job creation especially in resource-constrained CGE models.

The LAB scenarios lead to more positive job effects as they directly reduce labor cost thus increasing labor demand

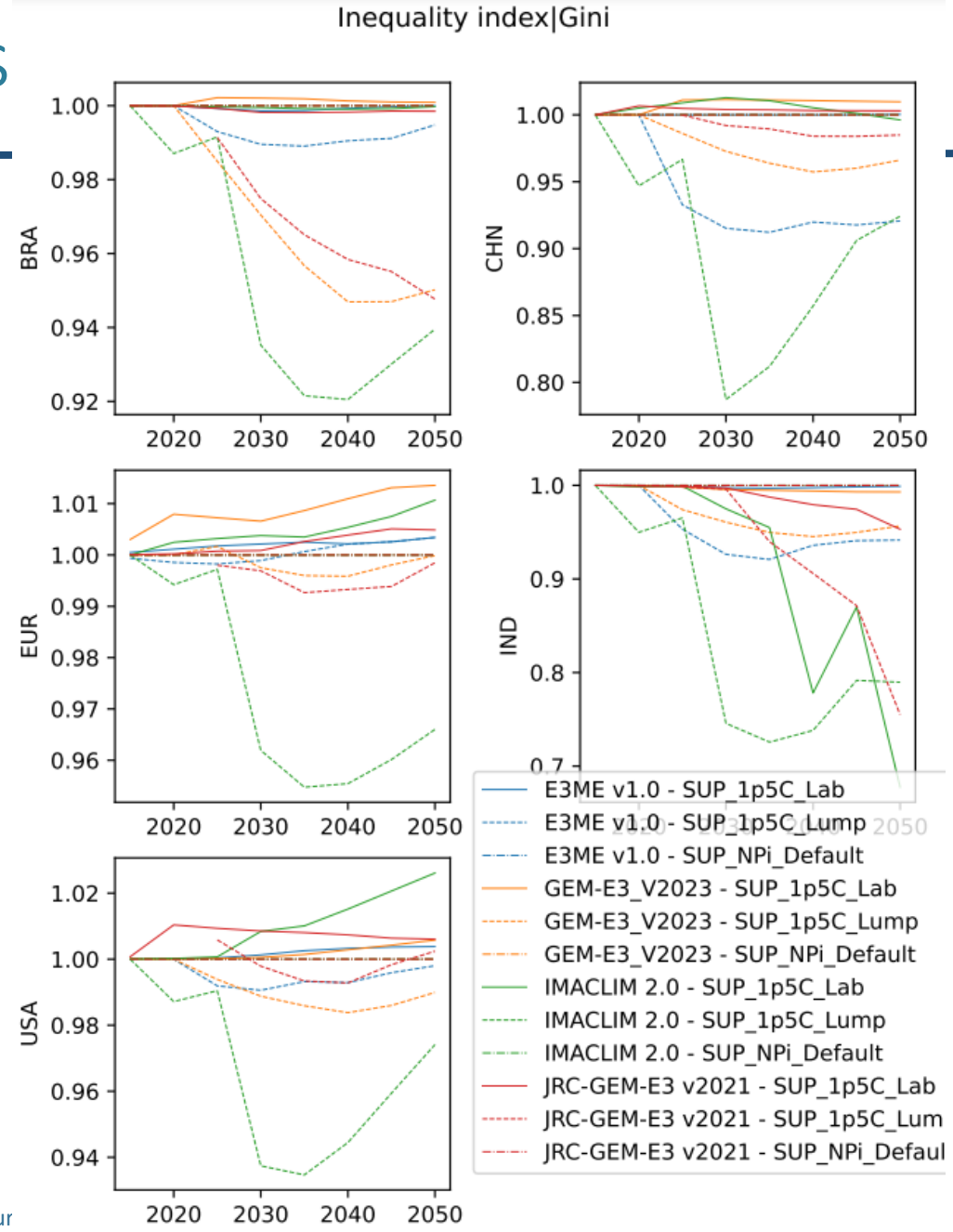
- *Double dividends in GEM-E3 & E3ME*

Using carbon revenues to reduce labor taxes alleviates 40%-70% of GDP losses, while creating job opportunities

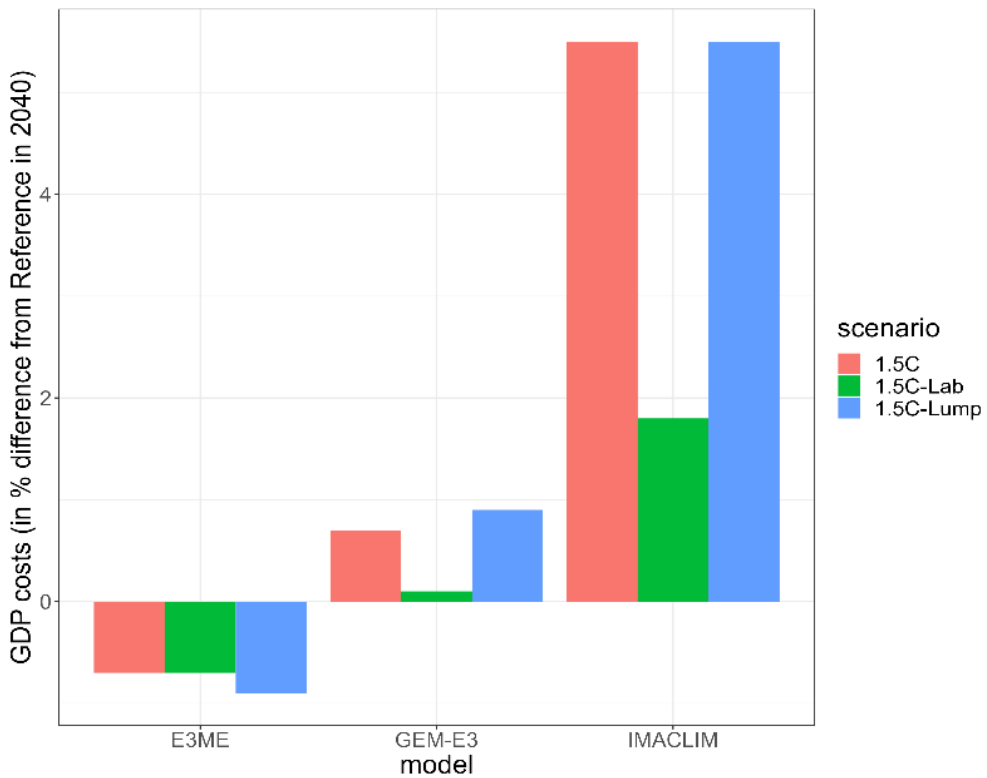


NAVIGATE Inequality impacts

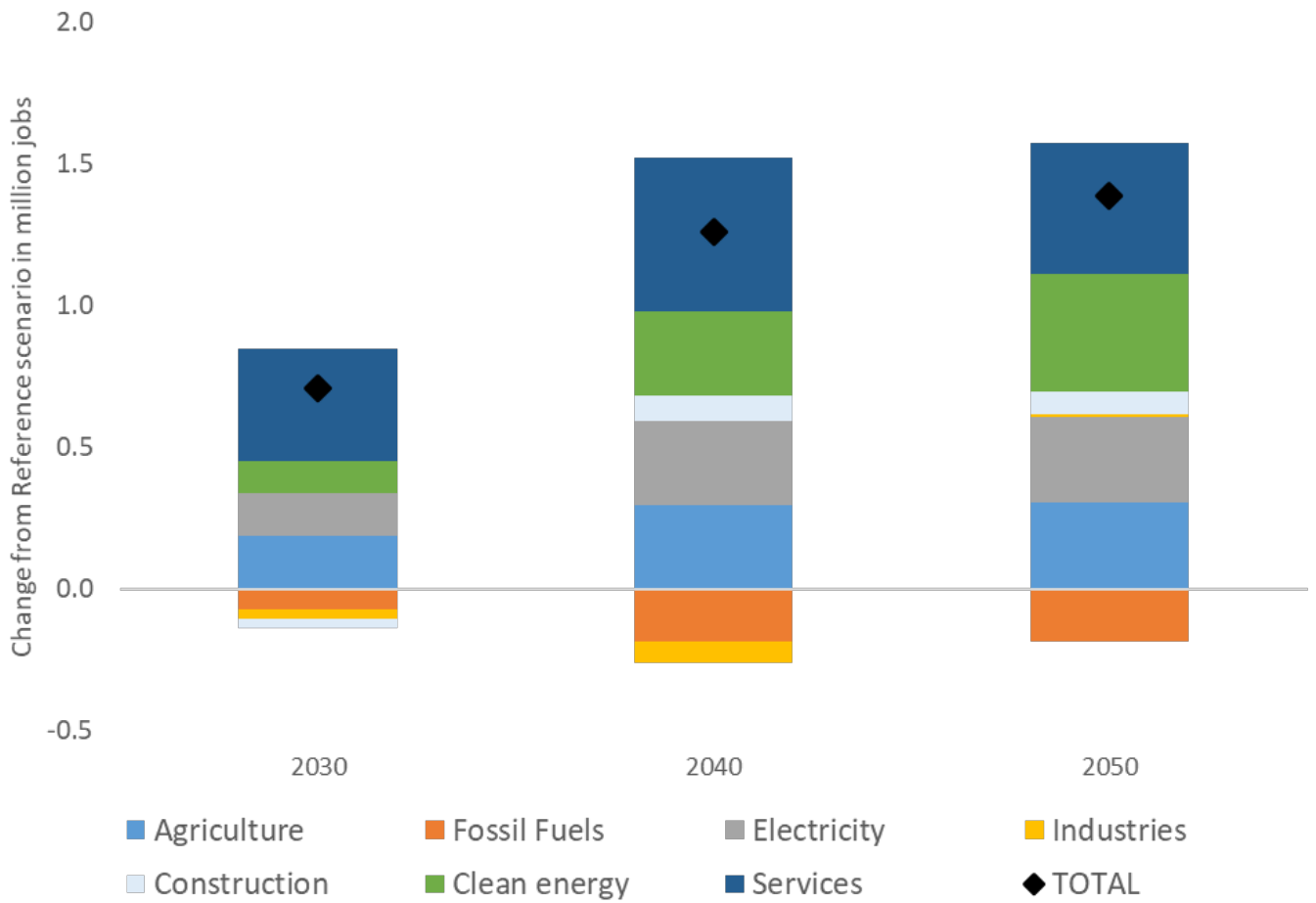
- Progressive outcomes from the lump-sum transfer policy with large Gini index improvements
- Lab tax scenarios have smaller equity impacts in countries, either progressive (IND, CHN) or regressive (e.g. in the EU)
- Trade-offs between equity and efficiency that need to be balanced for well-designed climate strategies



GDP impacts



Job impacts by sector in GEM-E3 in the Lab scenario



Thank you. Q&A session

For more information

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