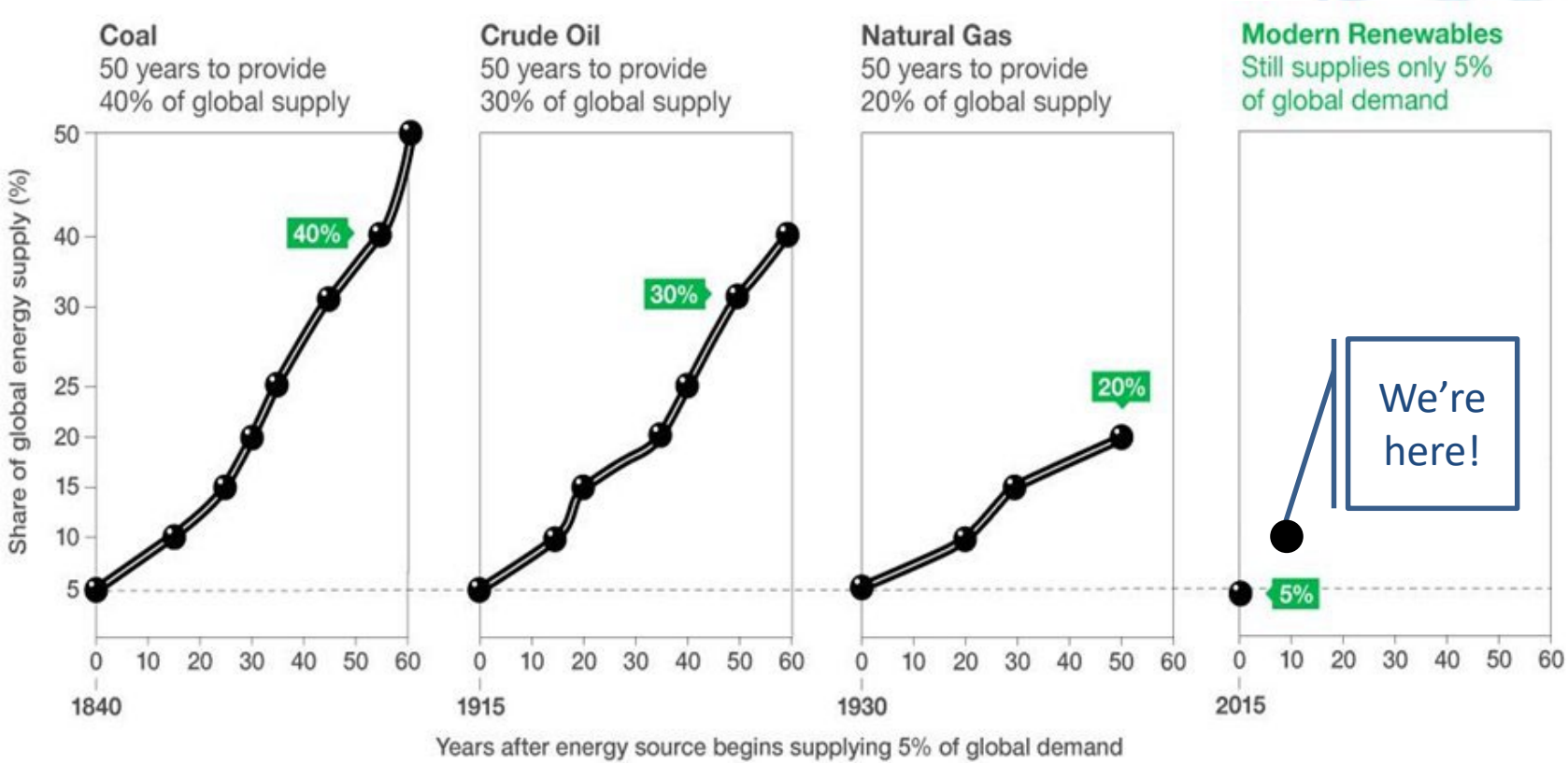
Financing the energy transition

Luciano Lavecchia
Climate change and sustainability hub, Banca d'Italia

18th IAEE European Conference
Milan, 25 July 2023

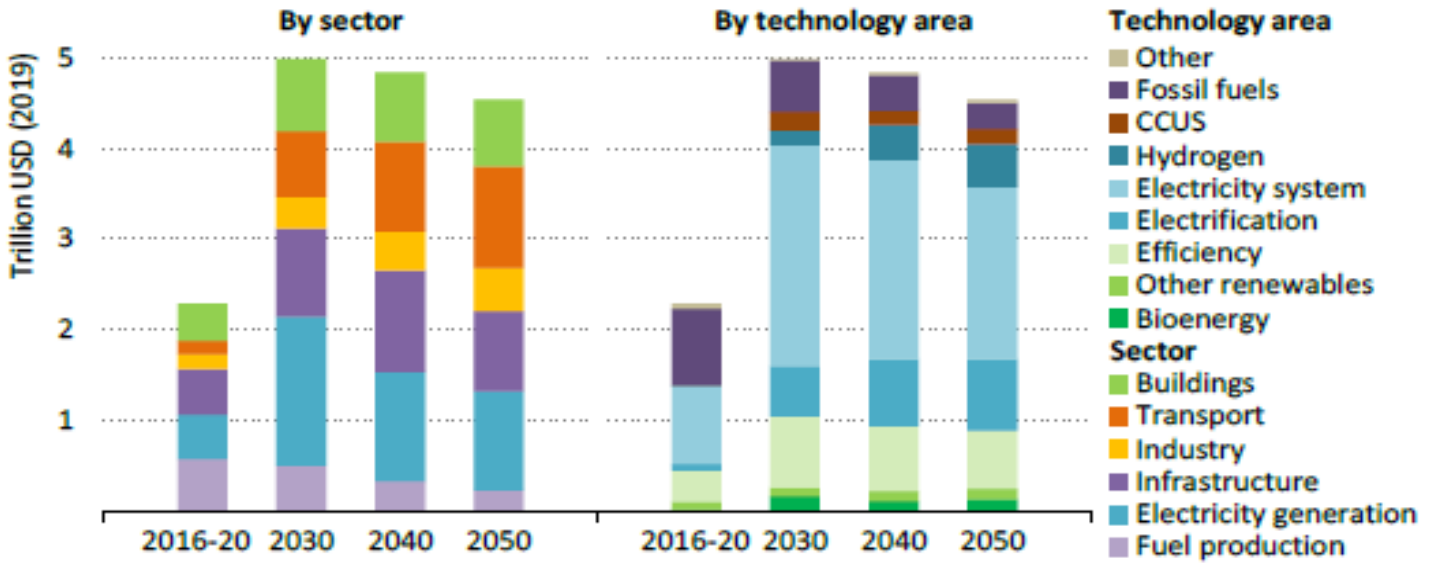
Energy transitions are lengthy processes…



Fonte: Vaclav Smil, Energy Transitions 2016. Modern renewables exclude hydropower

Energy transitions require an unprecedented capital mobilisation

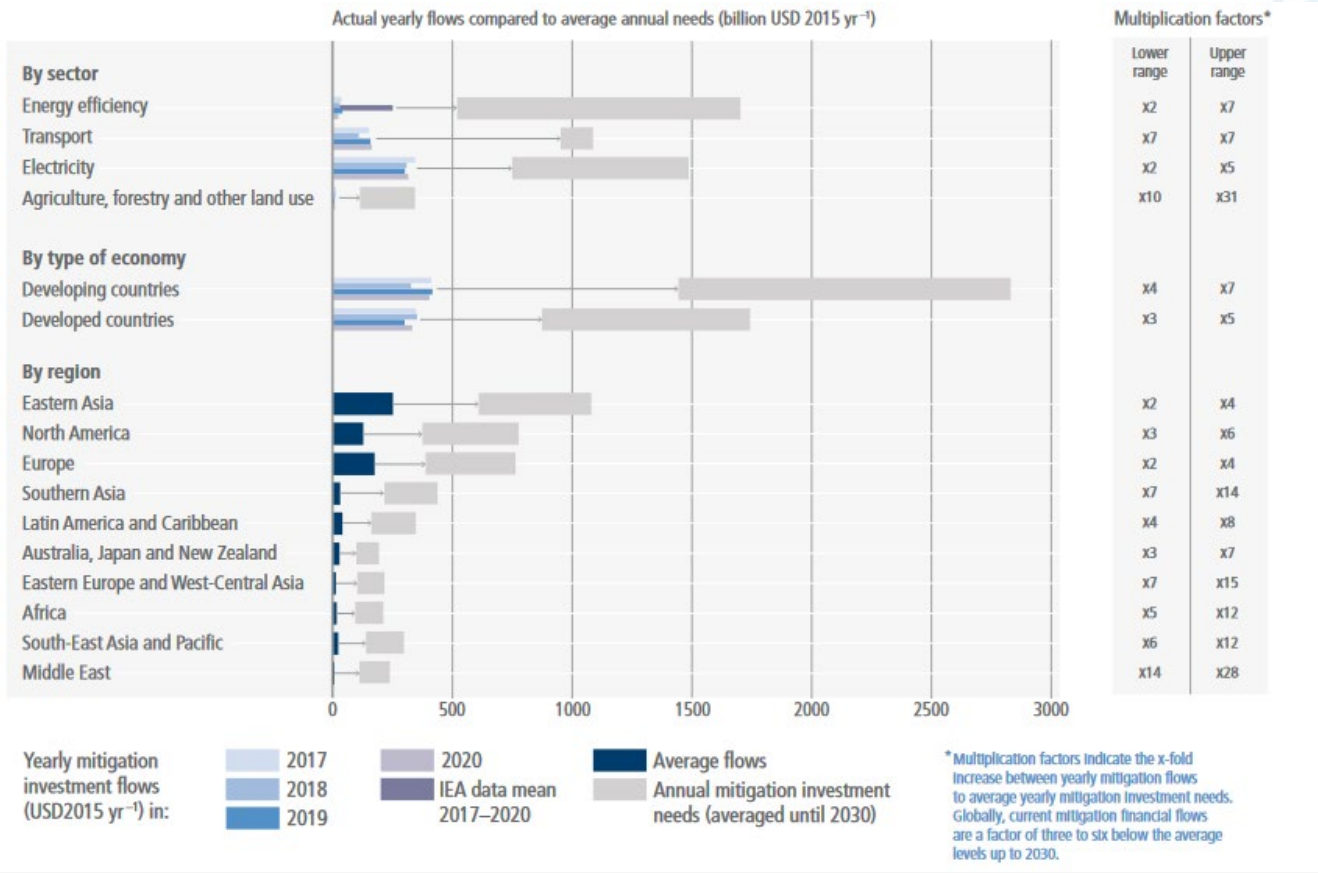
Figure 2.22 ▷ **Annual average capital investment in the NZE**



Capital investment in energy rises from 2.5% of GDP in recent years to 4.5% by 2030; the majority is spent on electricity generation, networks and electric end-user equipment

Source: IEA (2021), Net Zero by 2050. A Roadmap for the Global Energy sector

The capital mobilisation will be different across technologies and regions



Source: IPCC (2022), AR6 WG3, Climate Change 2022: Mitigation of Climate Change, TS

But, who's going to foot the bill?

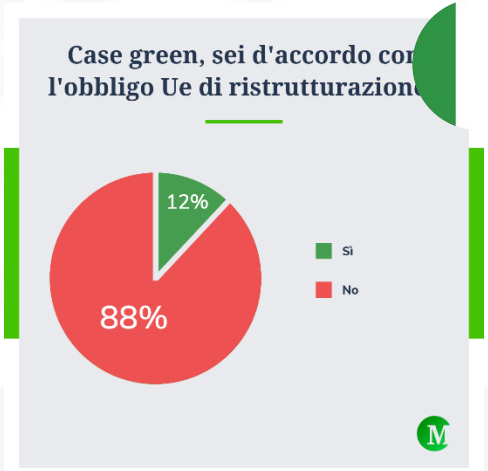
- Savers/customers
- Taxpayers (this presentation)

Europeans feel they could personally do more to fight climate change

- 93% believe climate change is a serious problem;
- 93% have already taken individual climate actions;
- 87% think it is important that we set ambitious targets for RES;
- 67% think that their national government is not doing enough;
- 88% agree that the green transition should not leave anyone behind;
- 50% agree that the EU is doing enough to ensure that the green transition is fair .

Source: Special Eurobarometers «Fairness perceptions of the green transition", October 2022 and "Climate Change", July 2023

This transition is not a dinner party



Policies for the transition: everything but taxes…

TABLE 2

Best policy for government to take against climate change (%)[38]

	GERMANY	FRANCE	ITALY	POLAND	CZECH REPUBLIC	SWEDEN	SPAIN	USA	UK
Make public transport free of charge	34	29	22	25	25	24	23	10	27
Allow communities of households to generate their own energy with shared renewable sources, such as local solar or wind	8	17	28	28	16	14	27	22	16
Only give out government funding to businesses that engage in environmentally sustainable activities	14	20	18	9	18	9	15	14	14
Apply a tax on all carbon emissions	12	7	11	13	8	10	15	15	12
Apply a higher tax on all flights people take	12	7	4	3	6	10	3	4	8
Increase the number of nuclear energy plants	4	6	2	9	10	15	4	8	6
Increase the price of meat by adding a special meat tax	7	2	2	3	2	4	3	4	3
The government should not pursue any of these policies	2	2	2	4	3	4	2	10	4

Source: Eichhorn et al (2020), "From Climate Change Awareness to Climate Crisis Action", Open society foundation.

The case for carbon pricing (1)

THE WALL STREET JOURNAL.

THURSDAY, JANUARY 17, 2019

Original Co-Signatories Include (full list on reverse):

4 Former Chairs of the Federal Reserve (All)

27 Nobel Laureate Economists

15 Former Chairs of the Council of Economic Advisers

2 Former Secretaries of the U.S. Department of Treasury

Economists' Statement on Carbon Dividends

Source: Economists' statement on carbon dividends, The Wall Street Journal, 19 January 2019

The case for carbon pricing (2)

pros

- increase energy prices (efficiency);
- polluter pay principle;
- revenue-recycling mechanisms for ensuring fairness;
- raise new resources;

cons

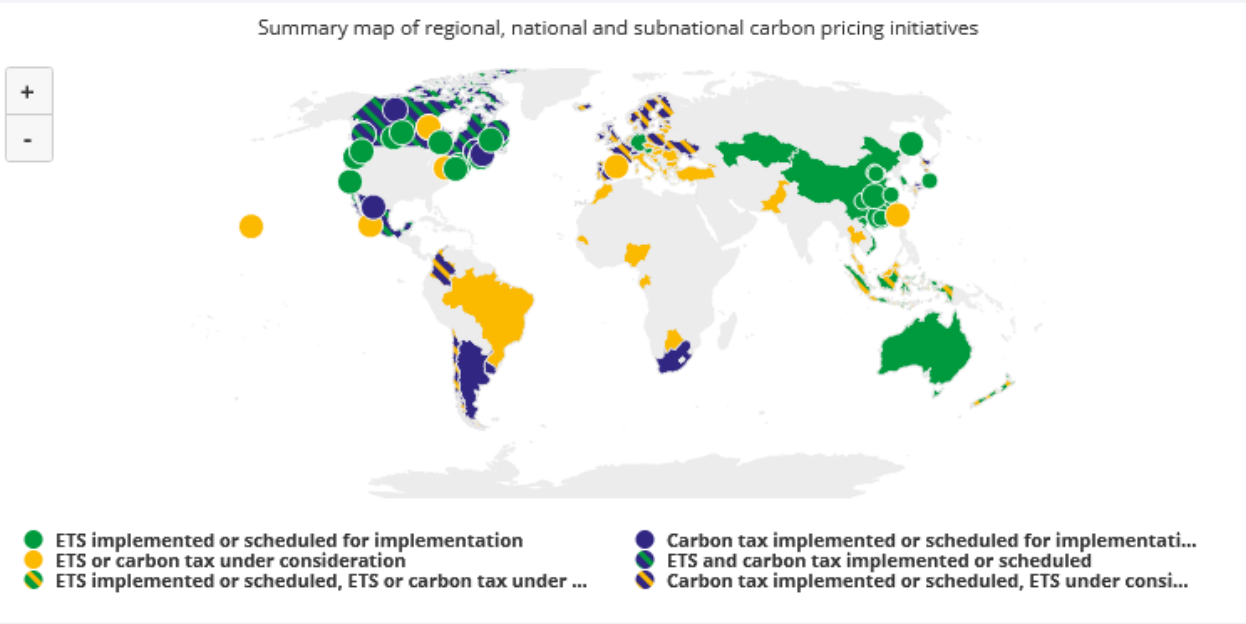
- difficult to identify the “right” Q (cap-and-trade) or P (carbon tax);
- cumbersome application (e.g. ETS for transportation or space heating);
- social rejection.

Economists' most preferred, while policymakers have shown a tepid response

KEY STATISTICS ON REGIONAL, NATIONAL AND SUBNATIONAL CARBON PRICING INITIATIVE(S)

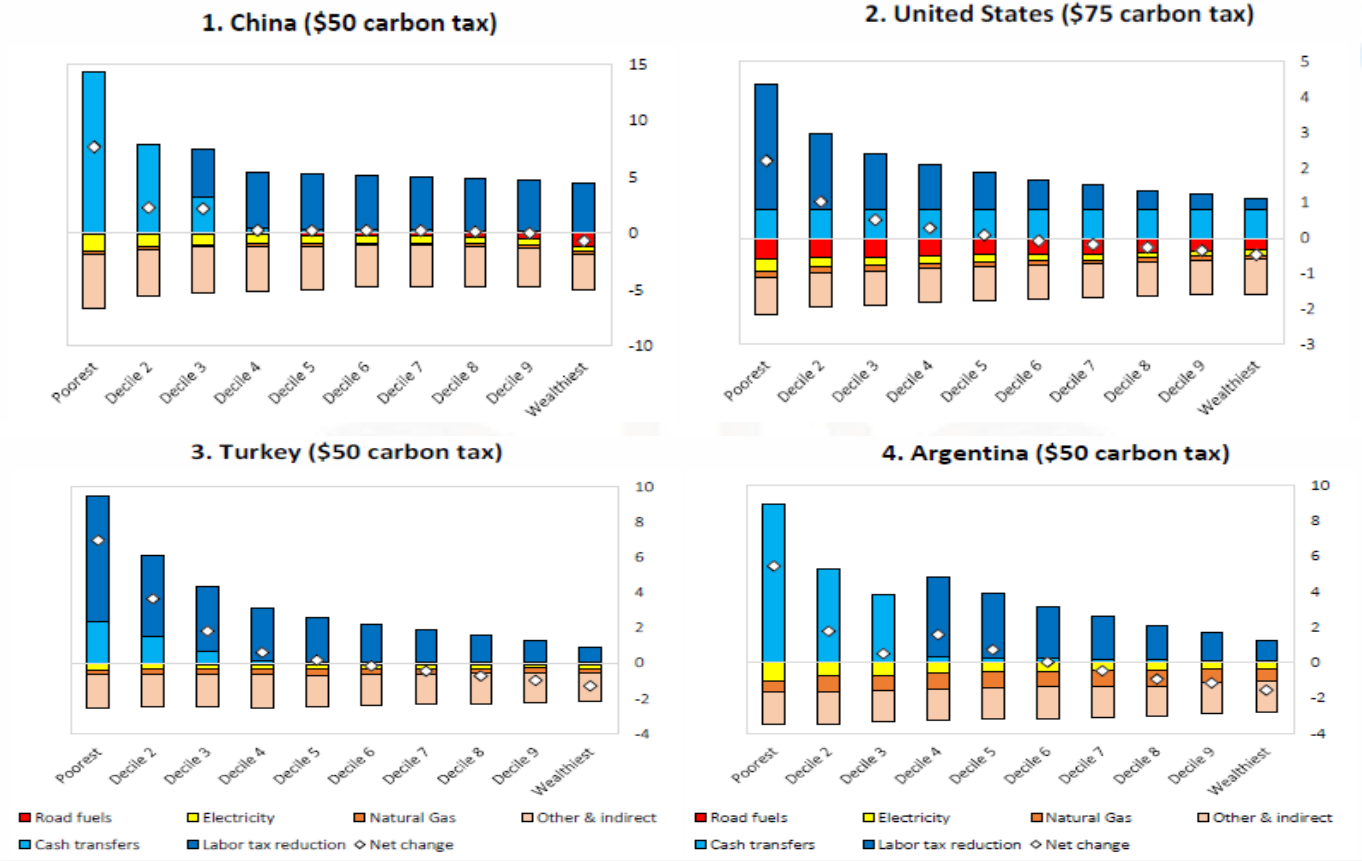
73	Carbon Pricing initiatives implemented
39	National Jurisdictions are covered by the initiatives selected
33	Subnational Jurisdictions are covered by the initiatives selected

In 2023, these initiatives would cover **11.66 $GtCO_2e$**, representing **23%** of global GHG emissions



Source: Carbon pricing dashboard, the World Bank.

Carbon taxes are usually regressive…as RES funding using the electricity bill



Source: Parry et al. (2022) "Carbon Taxes or Emissions Trading Systems? Instrument Choice and Design" IMF Staff Climate Note 2022/006.

A case for a carbon tax in Italy

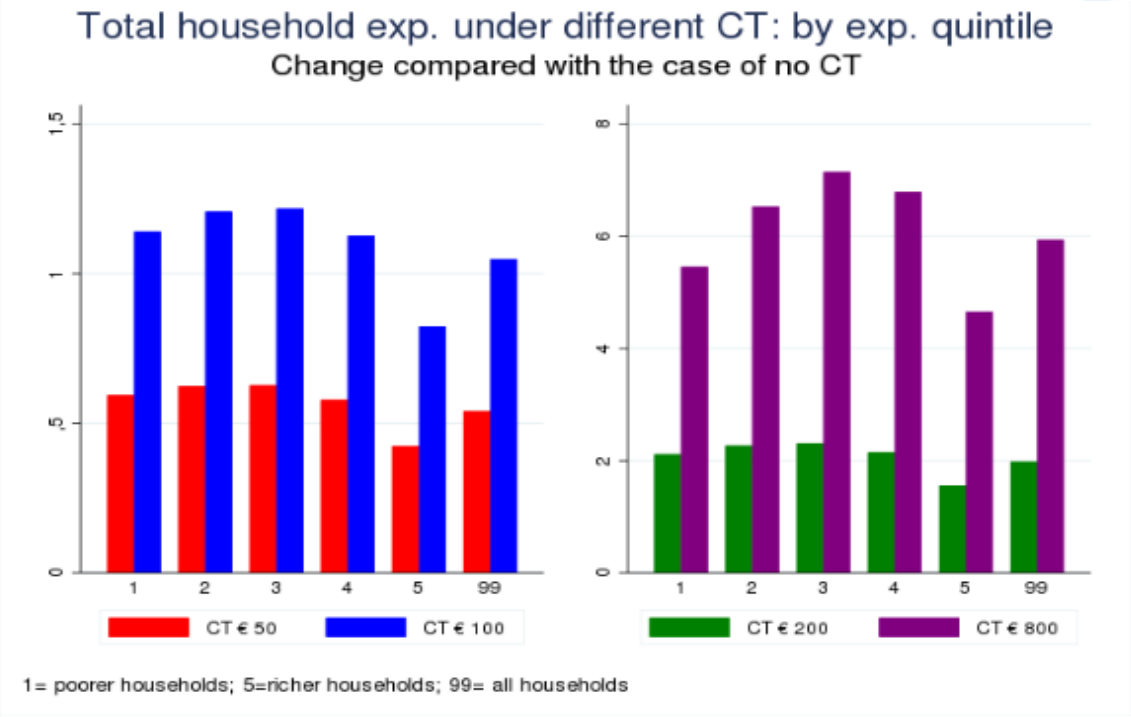


Figure 9: Total household expenditure under different carbon taxes, by expenditure quintile

Source: Faiella and Lavecchia (2021), "Households' energy demand and the effects of carbon pricing in Italy," Questioni di Economia e Finanza, n. 614, Bank of I

Support for climate policies hinges on…

1. Effectiveness in reducing emissions (**effectiveness** concern)
2. Distributional impacts on lower-income households (**inequality** concern)
3. Impact on the respondents' household (**self-interest**)

Also, in the case of carbon taxes (Dechezlepretre et al., 2023):

- people **overestimate** the impact on their budget, **underestimate** the benefits;
- assume it's **regressive** and **not effective**;
- the more **politically biased**, the more **overestimating** the losses ;
- incorporating changing values and political incentives in a dynamic setting models show the failure of the "political Coase" (Besley and Persson, 2023).

How to make carbon pricing accepted?

- Revenue recycling matters: with targeted redistribution, support rises (Dechezlepretre et al. , 2023)
- Effective and inclusive communication (Douanne et Fabre, 2022; Parry et al. 2022; Besley and Persson, 2023);
- However, changing people's beliefs is hard and results are not sizable
- In general, not leaving anyone behind: perceived fairness matter

Conclusions

- Financing this energy transition will require **sizable** resources, from the private and public sectors;
- **Support** for climate policies is based on public **perceptions** of **effectiveness, fairness and self-interest;**
- Among all climate policies, carbon pricing is the **most advocated by economists**, one of **the least preferred** by **policymakers;**
- effectiveness and fairness can (must?) go hand in hand
- what the Implications for firms' competiveness, trade…(e.g. IRA vs. CBAM/CSDDD vs. chinese subsidies)

References

- Besley T. and Persson T. (2023), "The Political Economics of Green Transitions", The Quarterly Journal of Economics, Volume 138, Issue 3.
- Dechezlepretre et al (2023), «Fighting Climate Change: International Attitudes Toward Climate Policies", NBER Working Paper No. 30265, April 2023.
- Douenne T. and Fabre A. (2022), "*Yellow Vests, Pessimistic Beliefs, and Carbon Tax Aversion*" *American Economic Journal: Economic Policy, 14 (1): 81-110.*
- Eichhorn et al (2020), "From Climate Change Awareness to Climate Crisis Action", Open society foundation
- Faiella I. and Lavecchia L. (2021), "Households' energy demand and the effects of carbon pricing in Italy," Questioni di Economia e Finanza, n. 614, Bank of Italy.
- Parry et al. (2022) "Carbon Taxes or Emissions Trading Systems? Instrument Choice and Design" IMF Staff Climate Note 2022/006.
- The Wall Street Journal , "Economists' statement on carbon dividends", 19 January 2019.
- Special Eurobarometer 527 «Fairness perceptions of the green transition", October 2022
- Special Eurobarometer 538 "Climate Change", July 2023

Thank you

Luciano.lavecchia@bancaditalia.it
climatehub@bancaditalia.it