

In this section



VOXEU COLUMN ENVIRONMENT

For climate economics, preferences can and should be treated as endogenous

Linus Mattauch, Nicholas Stern, Théo Konc / 13 Jun 2022

In economic analysis, preferences are usually assumed to be fixed. This column analyses the impacts of climate mitigation policies when preferences can change. It argues that carbon taxes can change climate preferences by affecting social norms and influencing preferences in social networks. Changes in preferences can increase the effectiveness of a carbon tax by 38%. Ultimately, the implementation of instruments complementary to pricing that affect preferences should be part of the toolkit used in formal economic analysis.

AUTHORS



Linus Mattauch



Nicholas Stern



Théo Konc

Consider a policymaker aware that a growing share of young people in Western countries choose to be vegetarians. How should she integrate this information into her way of thinking about climate policy? A look at conventional economic analyses might puzzle her. Economic agents are either modelled as updating beliefs about their consumption options, such as the consequences on the environment or their own health; they simply learn new facts. Or they change their habits, understood as making choices mindlessly. Economists rarely assume that people revise their preferences because their underlying values change.

With regards to climate change, economists have correctly pointed out the need for economic regulation (Klenert and Hepburn 2018, Klenert and Fleurbaey 2021). However, current economic policies are insufficient for achieving the world's climate targets. Environmentalists stress the need for voluntary action by consumers to decrease their carbon footprint. This suggests that the transition to net-zero is more likely to succeed if values change. However, this perspective is very different from how economists typically describe the transition to a net-zero carbon society.

Economic analysis assumes people have fixed preferences for their current lifestyle. Avoiding certain consumption items and shifting towards more sustainable alternatives therefore comes at a welfare cost. A carbon tax would reduce welfare if environmental benefits are not considered. For instance, policies aimed at reducing meat consumption could reduce welfare if people have a strong and unchanging taste for meat.

Research in behavioural economics, however, has shown that choices cannot be fully explained by stable preferences and behavioural biases, but that the social environment affects agents' decisions. Changes in values and culture can drive long-lasting changes in behaviour. Smoking and recycling are but two examples for how attitudes have significantly changed in recent times (Nyborg et al. 2016).

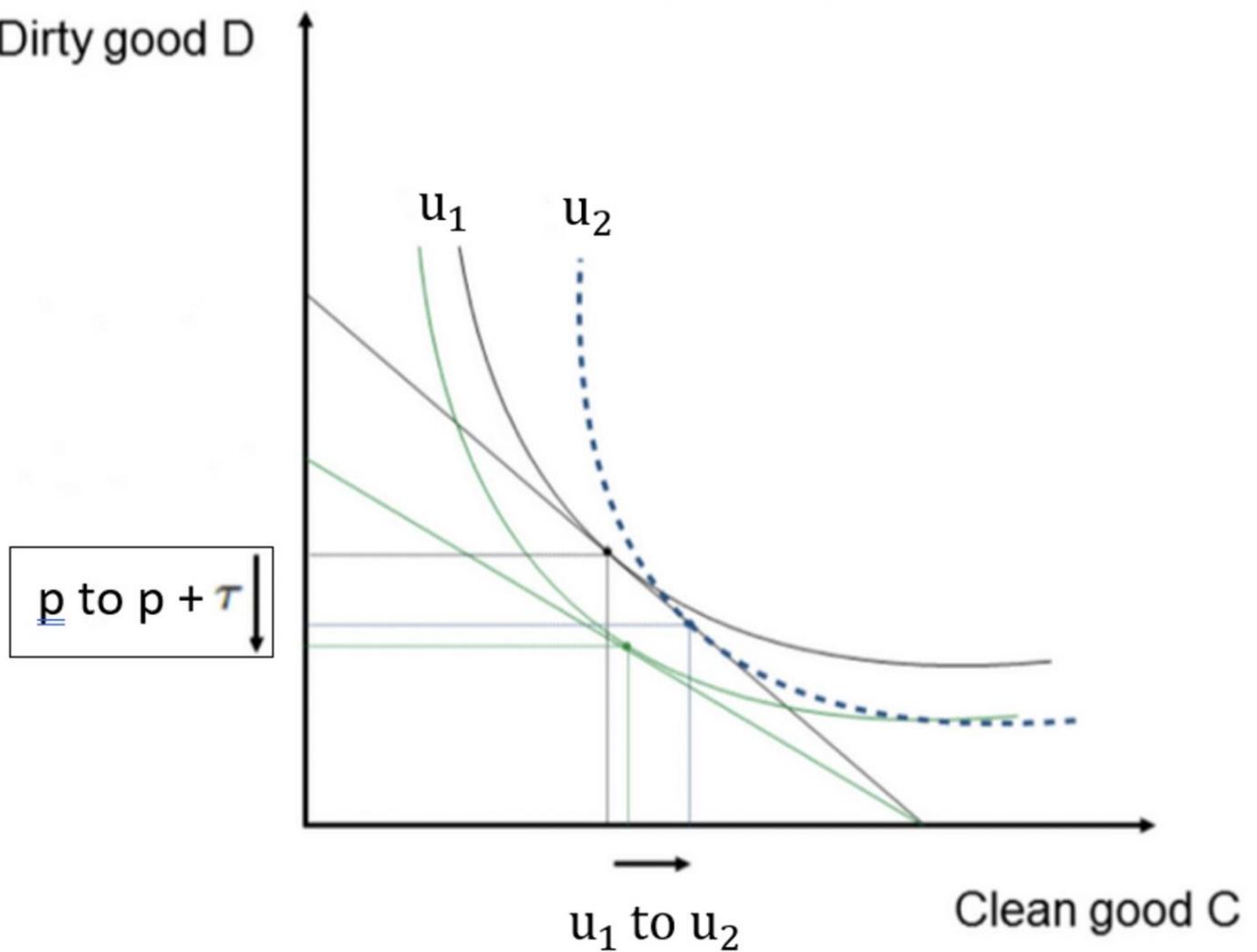
A tax can change the preferences through different channels. Bowles and Polania-Reyes (2012) show that taxes alter the social environment in which agents form their preferences. In environmental policy, large feebate schemes for low-carbon transport can increase its attractiveness through a social norm, while reducing the intrinsic motivation for environmentally responsible behaviour (Hilton et al. 2014). Furthermore, conspicuous peer behaviour influences some consumption decisions such as energy conservation, or adoption of renewable energy technologies.

Can formal economic analysis be carried out when preferences are treated as endogenous?

In two recent publications, we examine climate mitigation policy assuming that policies can change the preferences. In Mattauch et al. (2022), a study in collaboration with Nicolas Stern of the 2006 Stern-Report on the Economics of Climate Change, we model a consumption decision between two goods: low-carbon and high-carbon. We assume that policy instruments such as taxes or infrastructure programs also change preferences – whether it is intended or not – and represent such effects as shifting utility curves, in addition to shifting relative prices (Figure 1). We prove that the tax level to reach a climate target needs to be adjusted when it influences consumers to like low-carbon goods more (or less). We also establish that the value of investing in low-carbon infrastructure is higher when that infrastructure leads to a shift to low-carbon preferences. For example, citizens growing up in easily bikeable cities might like low-carbon transport options more.

Figure 1 Simple microeconomics of a shift towards less polluting consumption

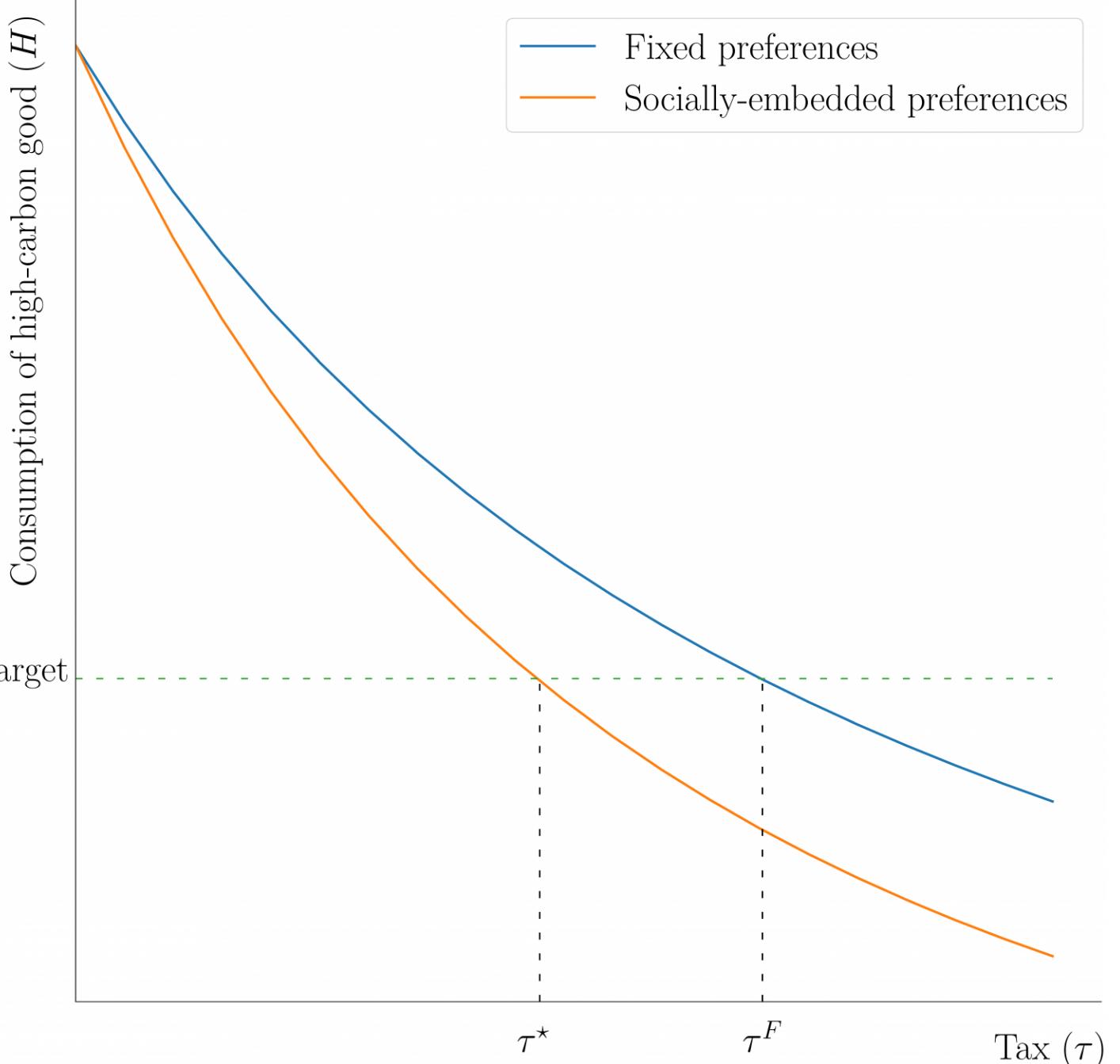
Dirty good D



Notes: Adapted from Mattauch et al. (2022). Higher consumption of the clean good, C, can be achieved by changing its (relative) price p or shifting the utility curve, or both.

In Konc et al. (2021), we model consumers as socially embedded agents, who form their preferences under the influence of peers. Using a framework similar to Mattauch et al. (2022), we show that a carbon tax has two types of effects. A first-order or immediate effect is a reduction in carbon-intensive consumption, through the usual price effect. A second-order or subsequent effect is a change in preferences due to consumption changes in the social network. Since preferences in social networks are interdependent, the effects of taxation are enhanced by a social multiplier. Using calibrated simulations, we estimate that the changes in preferences increase the effectiveness of a carbon tax by 38% (Figure 2). This means that a tax designed to achieve a certain emissions target can be lowered due to the social multiplier effect.

Figure 2 Reduction of high-carbon good consumption due the carbon tax under fixed and socially embedded preferences



Notes: Adapted from Konc et al. (2021). We compare the effective tax between the cases with (orange line) and without (blue line) social interactions. The marginal effect of the tax on high-carbon consumption is greater with socially embedded preferences. Therefore, the effective tax τ^* is lower when we consider social interactions.

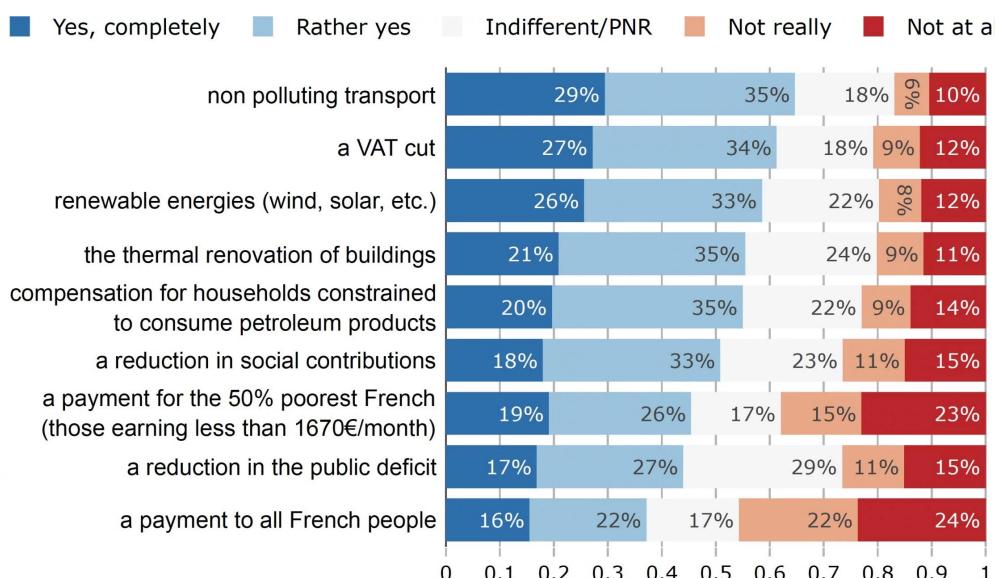
Should formal economic policy analysis really treat preferences as malleable by policy?

So far, we have shown that it is possible to model the influence of policies on preferences. However, this does not settle the question of whether it is a good idea. After all, a long tradition in economic analysis has treated preferences as exogenous. This position is often defended on the grounds that policies would otherwise become ‘paternalistic’. After all, evaluating policy-driven preference changes often forces societies and their institutions to take a stand on which preferences are more desirable – the old or the new ones. Our short general answer to this objection is: If society does not debate how preferences are formed and exerts explicit democratic control over decisions that influence them, preferences are at risk of developing without clarity about what is at stake. This could result in preferences being shaped to benefit special interest groups rather than society as a whole (Bowles 2016, Hoff and Stiglitz 2016). For most social scientists and public policy experts outside of economics, the issue of how values should be changed is already of great concern. And even in welfare economics, recent contributions pioneer several precise ways of conducting welfare analysis with endogenous preferences, with differing conclusions (Fleurbaey and Tadenuma 2014, Mattauch and Hepburn 2016, von Weizsäcker 2005).

For the future of policy advice on climate, our work aligns with a chapter in the most recent assessment of the Intergovernmental Panel on Climate Change: demand-side measures could reduce carbon emissions by 40-70% (IPCC 2022: Chapter 5). A growing body of research examines how avoiding emission-intensive behaviours or adopting lower-impact behaviours (such as consuming animal-free protein) could be encouraged by public policy (Creutzig et al. 2022). The implementation of instruments complementary to pricing that modify the preference formation process can increase welfare after all. Whether economists like it or not, research in social science on how to deliver a net-zero carbon economy will continue to examine how preferences change. To us, economics should be part of that agenda and contribute to it with its sharp tools of formal analysis and quantification of welfare effects.

References

- Bowles, S and S Polania-Reyes (2012), "Economic incentives and social preferences: substitutes or complements?", *Journal of Economic Literature* 50(2): 368-425.
- Bowles, S (2016), *The Moral Economy*, Yale University Press.
- Bloch, F (2016), "Targeting and pricing in social networks", in Y Bramoullé, A Galeotti and B W Rogers (eds.), *The Oxford Handbook of the Economics of Networks*.
- Creutzig, F, L Niamir, X Bai, M Callaghan, J Cullen, J Díaz-José, M Figueroa, A Grubler, W F Lamb, A Leip, E Masanet, L Mattauch, J Minx, S Mirasgedis, Y Mulugetta, S Budi Nugroho, M Pathak, P Perkins, J Roy, S de la Rue du Can, Y Saheb, S Some, L Steg, J Steinberger and D Ürge-Vorsatz (2022), "Demand-side solutions to climate change mitigation consistent with high levels of well-being", *Nature Climate Change* 12(1): 36-46.
- Fleurbaey, M and K Tadenuma (2014), "Universal social orderings: An integrated theory of policy evaluation, inter-society comparisons, and interpersonal comparisons", *Review of Economic Studies* 81(3): 1071-1101.
- Hilton, D, L Charalambides, C Demarque, L Waroquier and C Raux (2014), "A tax can nudge: The impact of an environmentally motivated bonus/malus fiscal system on transport preferences", *Journal of Economic Psychology* 42: 17-27.
- Hoff, K and J E Stiglitz (2016), "Striving for balance in economics: Towards a theory of the social determination of behavior", *Journal of Economic Behavior & Organization* 126: 25-57.
- IPCC – Intergovernmental Panel on Climate Change (2022), *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press
- Klenert, D and M Fleurbaey (2021), "The social cost of carbon and inequality", VoxEU.org, 28 April.
- Klenert, D and C Hepburn (2018), "Making carbon pricing work for citizens", VoxEU.org, 31 July.
- Konc, T, I Savin and J C van den Bergh (2021), "The social multiplier of environmental policy: Application to carbon taxation", *Journal of Environmental Economics and Management* 105: 102396.
- Mattauch, L and C Hepburn (2016), "Climate policy when preferences are endogenous—and sometimes they are", *Midwest Studies in Philosophy* 40: 76-95.
- Mattauch, L, C Hepburn, F Spuler and N Stern (2022), "The economics of climate change with endogenous preferences", *Resource and Energy Economics*, p.101312.
- Nyborg, K, J M Andries, A Dannenberg, T Lindahl, C Schill, M Schlüter, W N Adger, K J Arrow, S Barrett, S Carpenter and F S Chapin III (2016), "Social norms as solutions", *Science* 354(6308): 42-43.
- von Weizsäcker, C C (2005), "The welfare economics of adaptive preferences", MPI Collective Goods Preprint.



Public support for carbon taxation: Lessons from France

Fabre, Douenne

The social cost of carbon and inequality

Klenert, Fleurbaey

VOXEU COLUMN / 28 APR 2021

Climate change complacency in Europe

Oswald, Nowakowski

VOXEU COLUMN / 28 SEP 2020

945 READS

AUTHORS



Linus Mattauch

Robert Bosch Junior Professor for Sustainable Use of Natural Resources, Technical University Of Berlin



Nicholas Stern

IG Patel Professor of Economics and Government, London School of Economics and Political Science



Théo Konc

Postdoctoral Researcher, Technical University Of Berlin

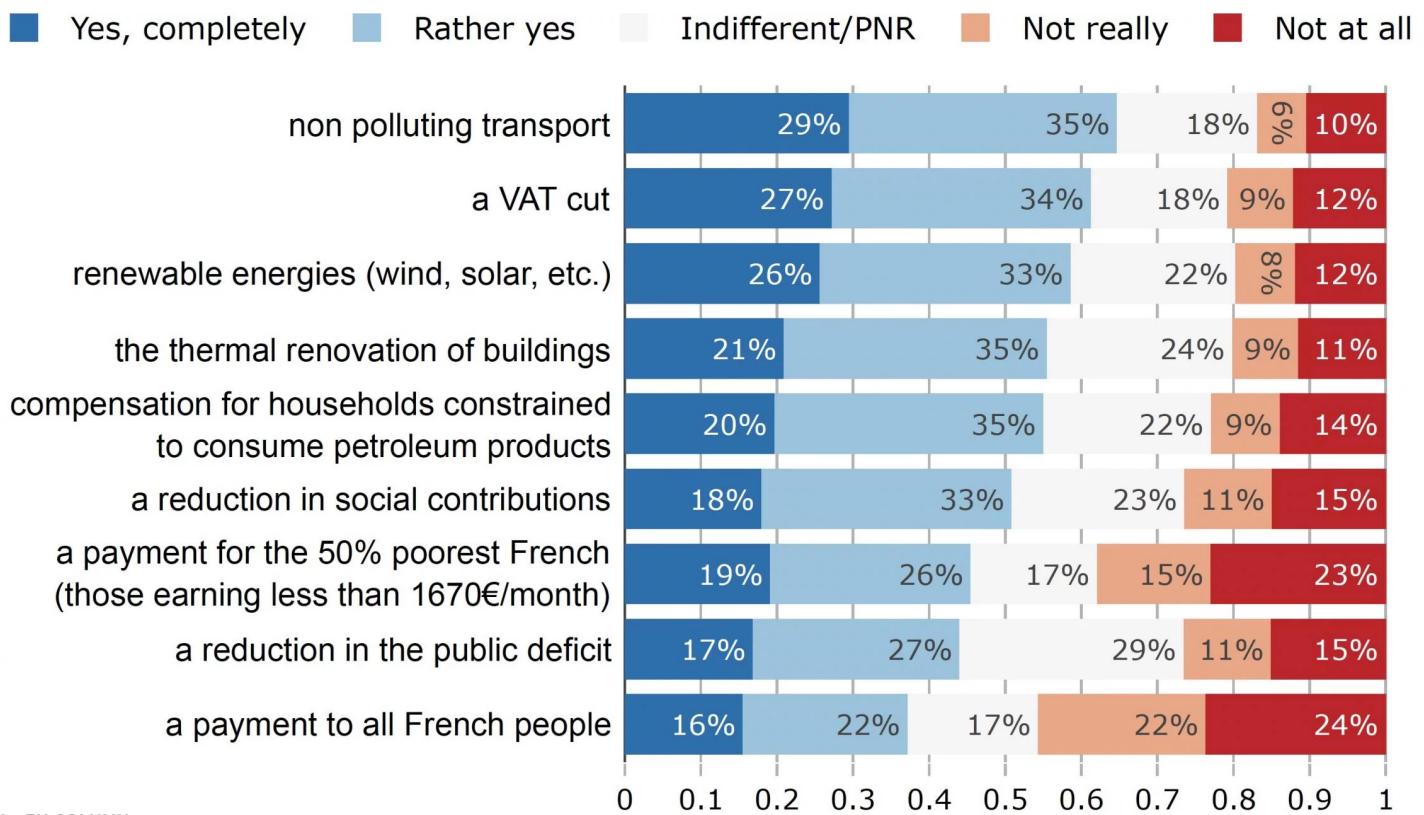
THEMES

ENVIRONMENT

KEYWORDS

CLIMATE CHANGE GLOBAL WARMING PREFERENCES CARBON TAX

SHARE



VoxEU COLUMN

Public support for carbon taxation: Lessons from France

Adrien Fabre, Thomas Douenne

1 MAY 2022 ENVIRONMENT



VoxEU COLUMN

The social cost of carbon and inequality

David Klenert, Marc Fleurbaey

28 APR 2021 ENVIRONMENT / POVERTY AND INCOME INEQUALITY



VoxEU COLUMN

Climate change complacency in Europe

Andrew Oswald, Adam Nowakowski

28 SEP 2020 ENVIRONMENT / EU POLICIES

THEMES & CURRENT ISSUES

[Business Cycles](#)

[Central Banking](#)

[Climate Change](#)

[Competition Policy](#)

[COVID-19](#)

[Development & Growth](#)

[Economic history](#)

[Energy](#)

[EU Economic Architecture](#)

[Exchange Rates](#)

[Finance and Fintech](#)

[Financial Markets](#)

[Financial Regulation and Banking](#)

[Health Economics](#)

[Inflation](#)

[International Finance](#)

[International trade](#)

[Labour Markets](#)

[Migration](#)

[Monetary Policy](#)

[Political Economy](#)

[Poverty and Income Inequality](#)

[Productivity and Innovation](#)

[Taxation](#)

[Ukraine Initiative](#)

[Women in Economics](#)

SIGN UP TO OUR NEWSLETTER

Your email address

[SIGN UP](#)

FOLLOW US

[Contact Us](#) [Contact](#) [Cookies](#) [Privacy Policy](#) [RSS Feeds](#)

Copyright 2021 CEPR / designbysoapbox.com