

EGU24-17148, updated on 20 May 2024 https://doi.org/10.5194/egusphere-egu24-17148 EGU General Assembly 2024 © Author(s) 2024. This work is distributed under the Creative Commons Attribution 4.0 License.



How do interest rates affect decarbonisation pathways? A stakeholder-driven multi-model analysis.

Natasha Frilingou¹, Dirk-Jan van de Ven², Shivika Mittal³, Karamaneas Anastasios¹, Thomas Nikolakakis¹, Francesco Gardumi⁴, Konstantinos Koasidis¹, and Alexandros Nikas¹ ¹Energy Policy Unit, National Technical University of Athens, Athens, Greece (nfrilingou@epu.ntua.gr) ²Basque Centre for Climate Change (BC3), Leioa, Spain ³Grantham Institute for Climate Change and the Environment, Imperial College London, London, UK

⁴KTH Royal Institute of Technology, Stockholm, Sweden

Decarbonisation of the energy sector is a critical task in the efforts to mitigate climate change. As sectoral emissions cuts in modelled pathways aligned with the Paris Agreement are projected to come from at-scale diffusion of emerging or new technologies as well as further development of existing solutions, energy-sector decarbonisation entails major investments in low-carbon technologies. At the same time, a significant chunk of these investments must be made in emerging and developing economies, which currently receive just one-fifth of global energy investments. This underinvestment is, at least partly, due to the large disparities in financing conditions and higher-risk profiles in said countries. Models used to assess decarbonisation pathways typically assume a uniform cost of capital; such assumption, however, does not do justice to real-world conditions and may therefore lead to inaccurate policy recommendations. Moreover, there is considerable uncertainty over how these costs may evolve in the future. In this study, we apply an empirical dataset of estimated cost of capital differentiated by technology and country and explore stakeholder-driven pathways of (de-)risking investments in clean energy vs. fossil-fuel technologies, using an ensemble of two global integrated assessment models and one electricity-system model. Furthermore, we attempt to incorporate a corrective justice dimension in our narratives by assessing the impacts of risk underwriting for low-carbon investments through taxing corporate windfall profits for 2022 and distributing the revenue as subsidies towards highrisk regions.