# Policy Pathways: from climate risk to policy action



## Introduction

This document provides background information to Policy Pathways and the policy levers explored in the scenario. Policy Pathways creates a concrete scenario where policymakers and other climate professionals can work through ideas about how to use policy to deliver climate action. In other words, it acts as a virtual gym for climate policy.[1]

The platform also collects the data of how people vote on and rank the different policy levers. Together with the points brought up during the discussion rounds, this provides an evidence base for how policy professionals think about climate policy. This document includes preliminary results of the 15 sessions run so far. Nine sessions were run during COP26 in November 2021; and 6 sessions were conducted since February 2022.

Further sessions are planned, and updated results as well as future versions of this document will be available via http://www.ucl.ac.uk/climate-action-unit/policy-pathways.

1 https://www.ucl.ac.uk/climate-action-unit/news/2021/nov/blog-policy-pathways-virtual-gym-climate-policy

## Factual basis of Policy Pathways

The scenario is loosely based on the Asian Renewable Energy Hub and similar projects which are planned in Australia, Saudi Arabia, Qatar etc. AREH's past decision to exchange their electricity exports plan for ammonia production and transport are a clear indicator of the massive changes underway in the clean energy sector.

## Energy technology cost declines

Ives et al. (2021) (available here) analysed the exponential cost declines of clean energy technologies like solar, wind, batteries and electrolysers for hydrogen, and how these cost declines are linked to deployment levels through 'learning-by-doing' and economies of scale.

The historical cost trends are used to construct future energy scenarios. One of the findings of the report is that a decisive transition to a clean energy system could be up to 12 trillion of dollars cheaper than maintaining the current fossil-fuel based system.

This will require deployment growth rates and related cost declines to be maintained for another decade. Without policy and investment interventions of the type explored in Policy Pathways, such a decisive transition would be hard to achieve. The benefits of this transition will thus only materialise if we don't delay, but take decisive policy action.

In these future energy scenarios, a clean energy system consists of renewable electricity (generated through e.g. solar and wind) backed up by energy storage in the form of batteries, hydrogen and ammonia. These allow to deal with the intermittency of renewables, make electricity transportable in chemical form, and/or provide long-term energy security.

Full details are available on http://energychallenge.info

## Policy levers

The scenario includes choices between different policies aimed at driving a decisive decarbonisations of the energy system. Some of these are 'traditional' levers routinely used by governments, whereas others are more novel.

### Spending

Direct subsidies for R&D activities have frequently been used by governments to drive innovation. To accelerate the deployment of solar and wind, however, feed-in tariffs have arguably played a bigger role. In their current form, feed-in tariffs have been in use since 2000. They are currently used in more than 50 countries. For an overview, see here.

## Regulation

Different forms of regulation will be required to accelerate the deployment of these new energy technologies. The scenario focuses on how financial regulation can help to redirect investment flows (public and private) to deliver large-scale clean energy projects.

One of the policy levers proposed in the Policy Pathways scenario is modelled on the Bank of England's 2021 net zero mandate which allows it to take climate impacts of investments into account in its corporate quantitative easing programme.

The second policy lever - adjusting credit 'ratings' or credit weights for capital requirements - has been under discussion in e.g. the United Kingdom and European Union as a 'green supporting factor' for green investments and/or a 'brown penalty' for fossil fuel investments. The People's Bank of China has incorporated a green supporting factor in its Macro Prudential Assessment of banks (as explained here).

The main justification for adjusting credit weights in the scenario is macro-prudential: fossil fuel investments increase climate risk and hence threaten long-term financial stability; clean energy investments are lowering climate risk and hence lower financial instability risk. Another justification is that the existing mechanisms for credit risk assessment systematically overestimate the risks of clean energy projects, as explained here.

## Taxation

An economy-wide carbon tax is seen by many economists as the best policy lever for climate action. However, policymakers and politicians often deem carbon taxes as politically toxic. The scenario contained the option of instituting a selective carbon tax on ammonia production, which is not based on the 'polluter pays' principle, but aims to bring green ammonia production below cost-parity with grey ammonia (produced from fossil fuels).

The principles behind using taxation and spending for 'market shaping' purposes are explained in detail in:

Sharpe, S., & Lenton, T. M. (2021). Upward-scaling tipping cascades to meet climate goals: Plausible grounds for hope. Climate Policy, 21(4), 421-433. https://doi.org/10.1080/14693062.2020.1870097

The 'tipping cascades' article also contains a wider justification for moving away from 'abatement-cost' thinking on climate action to activating economic 'tipping points' which can rapidly accelerate the decarbonisation of the entire energy system.

## Climate risk

Briefly touched on at the start of Policy Pathways, there are serious risks of climate change which will be 'locked into' the system by 2040 if emissions are not drastically cut by 2030. These findings are in line with recommendations from the IPCC, UNEP etc.

The direct and systemic risks posed by this delay of action are explored in:

Quiggin, D. et al. (2021): Climate change risk assessment 2021, Chatham House. https://www.chathamhouse.org/2021/09/climate-change-risk-assessment-2021

## Preliminary results

One of the aims of Policy Pathways is to gather insights about what people who work on climate change - including experts from governmental, non-governmental and corportate sectors - think of available policy options to deliver carbon emission reductions.

Each simulation of Policy Pathways can feel quite varied: different talking points emerge depending on the participants' backgrounds, and different final recommendations are often reached. Across multiple sessions, however, trends start to emerge. For example, specific policies emerge as more popular, while others are identified as being more divisive.

A full discussion of results and what they mean for the successful delivery of climate policy will be provided when more data becomes available. Below are preliminary results of the 15 sessions run up to July 2022 with a total of 85 international participants.

### Voting results

At various stages during the session, participants express their preference for specific policy levers on a scale from 0 to 10: from 'not at all' to 'completely' in favour.

These initial preference votes occur before any group discussions about the levers take place. They capture the prior opinions which participants may have about a policy lever as well as their responses to the information provided in the expert interviews and policy documents.

Figure 1 shows the voting results averaged over all participants to date, for each of the 6 policy levers in the scenario. The newer, innovative policies - like risk-rate adjustment or selective carbon tax - tend to be popular. Most participants do not have strong prior opinions about them. They often cite the expert information as highly convincing.

More established policies - e.g., direct subsidies or the economy-wide carbon tax - are more divisive, receiving a relatively high proportion of both low and high scores. Many participants already have strong opinions for or against. The divided voting results give an indication of the challenges of getting society-wide support for the implementation of these policies.

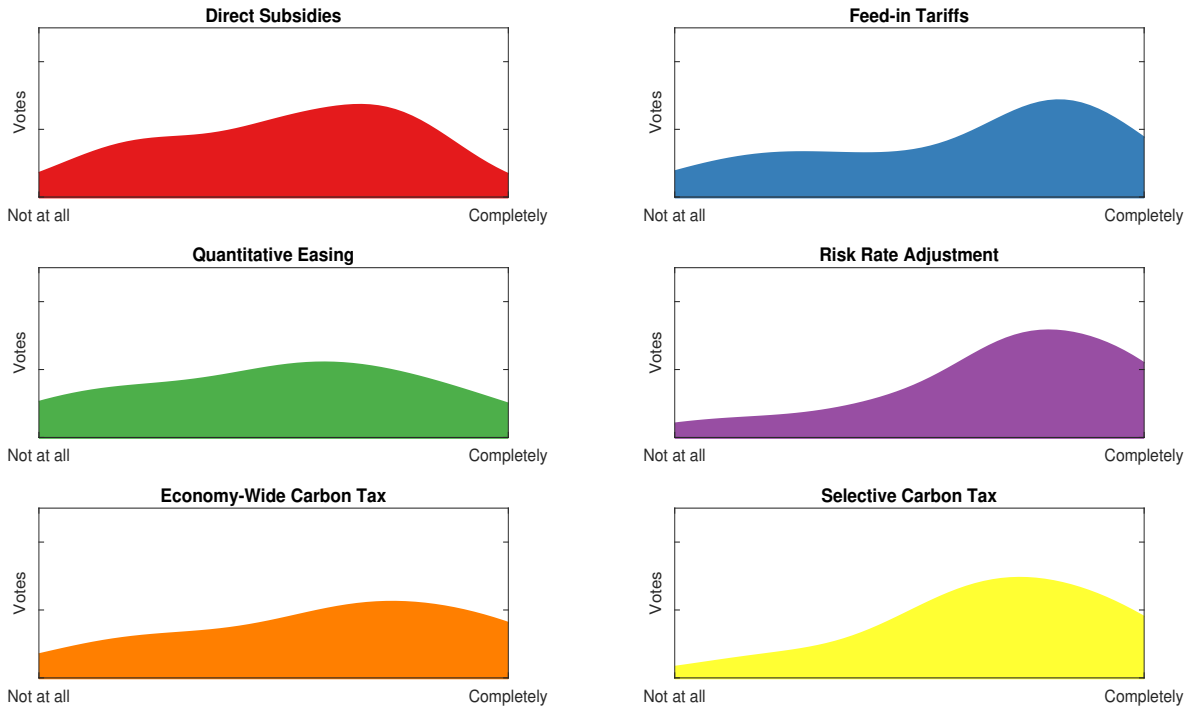


**Figure 1.** Voting results. Each participant expressed how much they were in favour of each of the 6 policy levers on a scale from 0 ('Not at all') to 10 ('Completely'). Each graph shows the distribution of these votes - i.e., shows the proportion of votes between 0 and 10.

## Ranking results

Figure 2 shows how participants rank the 6 policy levers in the final part of the session. The 'Initial ranking' (top) happens after all 6 policy levers have been introduced. This is followed by a group discussion of the ranking results, and subsequently by the 'Final ranking' (bottom). For each policy lever, the different colours in each bar (red to blue) indicate the total number of participants which ranked these policies first, second, third etc.

The results of the initial ranking, where the selective carbon tax and risk rate adjustment perform strongly, is in line with their popularity in the voting rounds. What happens during the discussion, however, is that groups often pivot towards discussing those policies that have more impact on the delivery of this particular energy project. This has led, on several occasions, for other policies (e.g., direct subsidies), to leap ahead in people's final ranking.

Despite some policies clearly coming out on top in the final group results, what remains clear even in the final ranking is how divided ideas about climate policy can be. Even the highest-ranked policy lever (direct subsidies) has a number of strong opponents; and even the lowest-ranked policy lever (economy-wide carbon tax) has a number of strong proponents. These remaining divisions are again an indicator of how it may be difficult to garner enough support for the implementation of these policies across a nation or internationally.

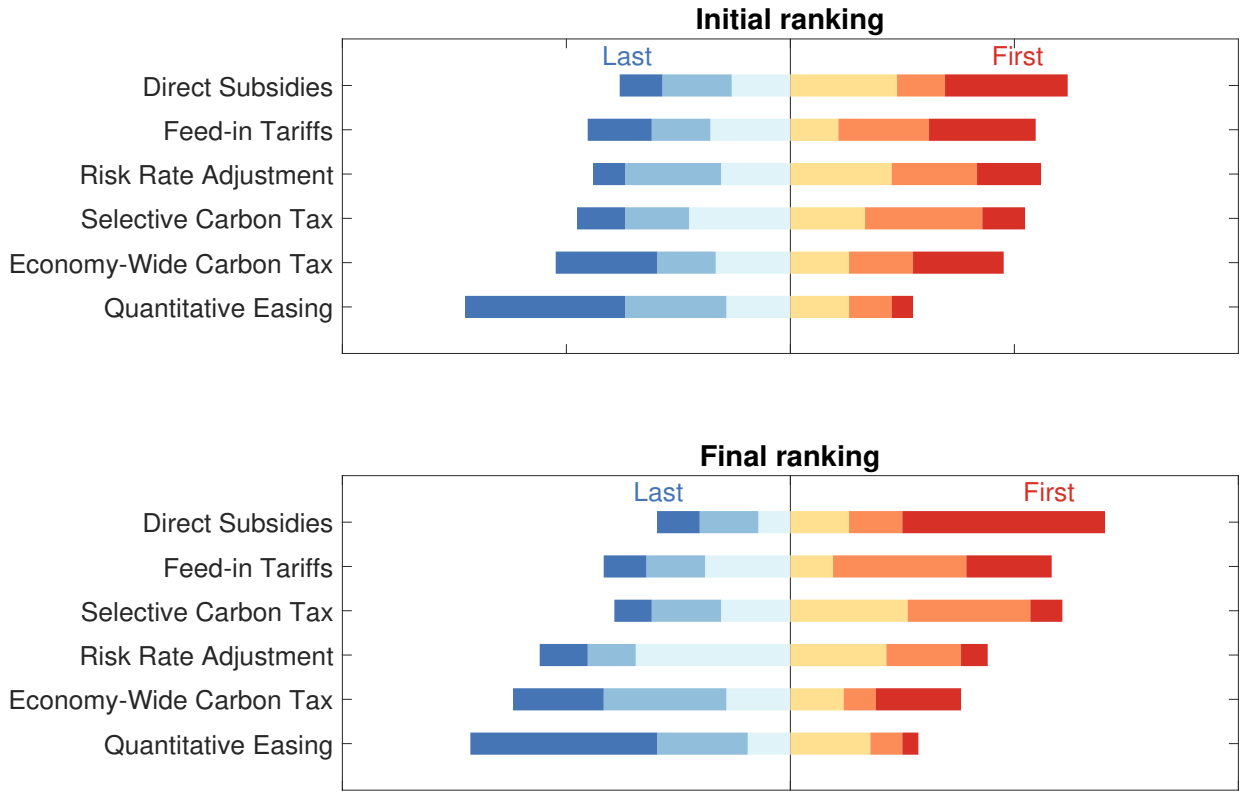


**Figure 2.** Proportion of participants who rank each policy lever as first, second and third (red to yellow segments) vs fourth, fifth and sixth (light to dark blue segments). A long red segment, for example, means it was ranked in first place by many. The 'Initial ranking' is before the group discussion of the ranking results. The 'Final ranking' is after the group discussion.

### Insights from the group discussions

In addition to the voting and ranking results, the group discussions form another source of data. One important insight emerging from the initial sessions is that the group discussions often help the participants to move beyond their initial preferences about the policy levers to thinking about a 'policy package' that is appropriate for the delivery of this specific project. This means that a concrete context like the one set by Policy Pathways can help policymakers to think differently about the ability of policy levers to deliver climate action. We will explore these and other insights more fully when more data becomes available.

## Authors and Acknowledgements

Policy Pathways is a collaboration of Chatham House, the UCL Climate Action Unit, and digital studio Fast Familiar.

Its development was funded by the UK-China Cooperation on Climate Change Risk Assessment project which is a programme of work funded through the prosperity programming of the Foreign, Commonwealth and Development Office.