

# THE ECONOMIC IMPLICATIONS OF CLIMATE CHANGE MITIGATION POLICIES

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Climate change poses significant risks to the well-being of people throughout the world. Recent extreme weather events have highlighted that these risks are already uncomfortably high. Sir David Attenborough described the Australian bushfires as the moment of crisis to address climate change. Moreover, he lamented the lack of action in addressing the issue, arguing that “this is an urgent problem that has to be solved and, what’s more, we know how to do it – that’s the paradoxical thing, that we’re refusing to take steps that we know have to be taken”.<sup>1</sup>

The risks posed by climate change are widely recognised and have led to promises of action. More than 190 countries have signed the 2015 Paris Agreement and set a goal to limit average global temperature rises to well below 2 degrees above pre-industrial levels.<sup>2</sup> Significantly though, the United States has embarked on the process of withdrawing from the Paris Agreement because it is deemed to impose an unfair economic burden on American workers, businesses, and taxpayers.

The articles in this issue of the *Review* highlight some of the economic issues involved in acting to cut greenhouse gas emissions to a level consistent with the ambition to limit global temperature increases. Together they help explain why progress in tackling this “urgent problem” is likely to be slow even though “we know how to do it”.

While all countries may agree on the need to cut carbon emissions, a key focus in climate negotiations

will be on how much each country is allowed to emit. Jonathan Camuzeaux, Thomas Sterner and Gernot Wagner examine different scenarios for greenhouse gas emissions and argue that by 2030 the main protagonists in climate negotiations are likely to be the United States and India. At present the United States and China are responsible for about 40 per cent of global greenhouse gas emissions. However, under current policy China’s emissions are expected to peak within a decade, whereas emissions from India are projected to continue rising, given that the fast-growing economy is a heavy user of carbon-intensive coal. The type of global agreements reached on emissions policy may, therefore, have an even greater impact on India than on China.

Given their different paths of development and historic greenhouse gas emissions, the United States and India are likely to prefer opposing methods of allocating rights to emit greenhouse gases. As Camuzeaux *et al.* point out, the costs of mitigating climate change that each country bears will depend on how rights to emit are allocated. They consider a number of allocation mechanisms ranging from a ‘grandfathered’ allocation, where rights depend on historic emissions, to equal per capita emissions. They argue that by around 2030, the United States and India will have the most to gain and lose depending on which allocation mechanism is chosen and that this will turn the two countries into the most significant negotiating partners in any form of global climate negotiations. In particular, the United States has the most to gain from a grandfathered allocation, with

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India losing the most. These relative positions reverse with equal per capita allocations; India gains, and the United States loses, measured in terms of monetary flows in a hypothetical global financial flows model.

One policy that has been used to help mitigate climate change is carbon pricing. This has been used by the European Union since the launch of its emissions trading system (ETS) in 2005. Milan Elkerbout examines how the role of carbon pricing has evolved in the EU and describes how the new European Commission under Ursula von der Leyen proposes to extend its reach. As Elkerbout notes, the ETS is one of the foremost examples of using carbon pricing in climate change mitigation policy and there are many lessons that can be learned from its use in designing policies to meet more ambitious global targets.

A key issue should carbon taxes be applied globally is how they will affect economic developments both within individual countries and globally. Recent work at NIESR has examined how economic growth and inflation are affected by levels of carbon taxes, how the revenues they raise are distributed and how monetary policy responds to resulting changes in prices. These issues have been examined using an extended version of the National Institute Global Econometric Model (NiGEM). The extended version of NiGEM is also likely to be useful in analysing economic policy co-ordination at the international level as a consequence of more general policies to mitigate climate change.

It has been calculated that a significant proportion of global energy reserves must remain unused if policymakers are serious in their ambition to limit climate change and

global temperature increases. Amy Myers Jaffe discusses whether financial markets have taken sufficient account of such 'stranded' assets or whether there is a risk of a sudden cascading change in the valuation of energy assets when the penny drops. She argues that rather than public companies the problem of stranded assets may be most relevant to sovereign states and associated financial markets. This could impact particularly on the relatively poor populations of resource dependent economies such as Venezuela, Nigeria and Iraq.

Part of the solution to climate change is the promotion of renewable energy. One possible impediment to the rapid and widespread diffusion of renewable energy is intellectual property rights (IPR) protection that prevents technology transfer to developing countries. Empirical evidence on this issue is provided in the paper by Jinkai Li, Oluwasola E. Omoju, Jin Zhang, Emily E. Ikhide, Gang Lu, Adedoyin I. Lawal and Vivian A. Ozue. They find that there is no evidence that IPR protection hinders renewable energy adoption except in countries with high levels of research and development. In such countries, stronger IPR protection may increase competition among inventors, which discourages the rapid diffusion of new technology and possibly restricts its availability. They find that the main driver of the transition to clean energy is trade openness.

## NOTES

- 1 BBC interview, 16 January 2020, <https://www.bbc.co.uk/news/science-environment-51123638>.
- 2 <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.