

## COMMENTARY:

# Aligning climate policy with finance ministers' G20 agenda

Ottmar Edenhofer, Brigitte Knopf, Céline Bak and Amar Bhattacharya

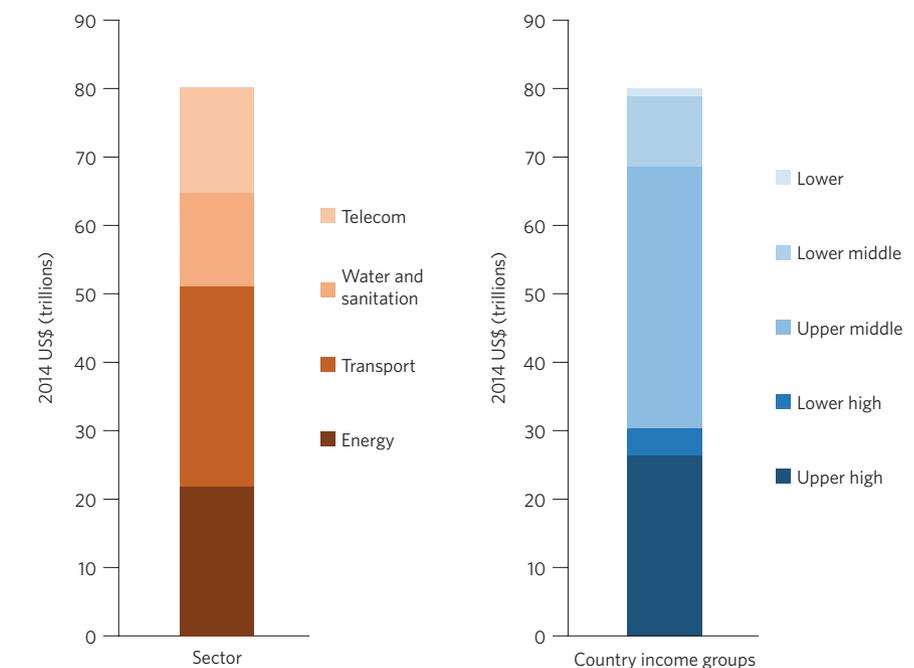
There is no longer a choice between climate policy and no climate policy. G20 finance ministers have to play a key role in implementing smart climate policies like carbon pricing. Yet they remain reluctant to take advantage of the merits of carbon pricing for sound fiscal policy.

The Paris Agreement in 2015 was a success of the heads of state as well as of the environmental ministers. Energy ministers have also begun to take environmental concerns into account in their strategic planning. However, finance ministers and central bankers are not natural allies of climate policy. If Paris is to be taken seriously, this also means aligning climate policy with the finance ministers' G20 agenda.

The G20 process began in 1999 as a meeting of finance ministers. Together, G20 members represent about two-thirds of the global population and more than 85% of global economic output. The G20 countries are responsible for roughly 80% of global energy use and CO<sub>2</sub> emissions. They are, in short, heavyweights in the arena of climate policy.

## Economic consequences

Central bankers have already recognized the severe consequences climate policy could have on the financial sector: their concerns lie in the increased risk of stranded assets. The economic consequences of the Paris Agreement are indeed quite dramatic. Staying below a 2 °C temperature increase implies that the global carbon budget has to be limited to 800 GtCO<sub>2</sub>. This means that by 2050 almost 90% of coal, half of gas, and two-thirds of oil reserves have to remain unburnt<sup>1</sup>. Nevertheless, companies and countries continue investing in oil exploration, gas fracking and coal-fired power plants. It currently appears that existing and planned coal-fired plants will have absorbed almost half of the agreed global carbon budget by 2030<sup>2</sup>. China and India have recently reduced investments in coal, but countries such as Indonesia, Egypt, Turkey and many African countries have increased their investments. Such

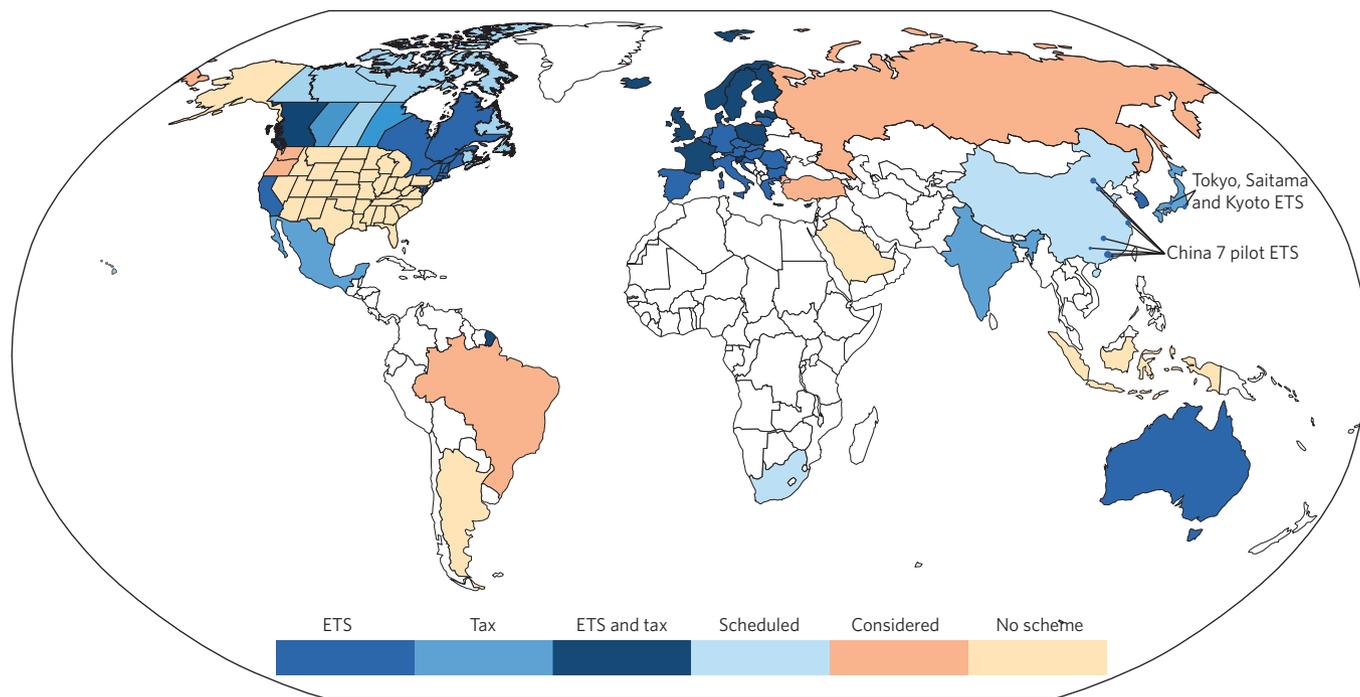


**Figure 1** | Projected cumulative global infrastructure investments by sector and country income groups 2015–2030<sup>8</sup>.

investments are inconsistent with the goals of the Paris Agreement. Even if energy ministers and private companies deem it unlikely that their governments will ramp up efforts to reduce emissions within the next decade, there is little doubt that investments in fossil fuels have become more risky in the post-Paris world. Financial markets have to deal with the risk that climate regulation may devalue assets — they must do so without destabilizing international capital markets. Mark Carney, the Governor of the Bank of England and Chairman of the Financial Stability Board, has requested an evaluation of these risks and has proposed

full disclosure as well as an evaluation of the value of potential stranded assets. The business-led Task Force on Climate-Related Financial Disclosures (TCFD) has made first recommendations in this respect for implementation.

It is conventional wisdom among academics that carbon pricing is an efficient way to reduce emissions<sup>3</sup> — this thinking is also increasingly being taken up by business leaders and investors. While they demand clarity as well as guidance for future investments, the overall resistance within the business community to carbon taxes or emission trading schemes is weakening. The



**Figure 2** | Coverage of carbon pricing within the G20: operating, scheduled and considered schemes, based on ICAP<sup>15</sup> and the World Bank<sup>16</sup>.

agenda of the global business community becomes ever more consistent with civil society’s agenda. Along these lines, in preparation for the G20 summit in July 2017 in Hamburg, Germany, the business community together with civil society and think-tanks published a joint statement supporting both the Paris Agreement and the Agenda 2030 (and its Sustainable Development Goals)<sup>4</sup>. The declaration argues strongly for a concrete and ambitious timeline for phasing out fossil-fuel subsidies, whilst also calling for effective and globally converging carbon pricing mechanisms. Additionally, it calls for implementation of international disclosure and reporting standards for environmental and climate-related financial risks<sup>4</sup>.

International organizations are backing the call for consistent climate policies. During the German G20 presidency, the International Energy Agency and International Renewable Energy Agency published a joint report on the transformation of the global energy system toward a carbon-neutral economy<sup>5</sup>. The OECD has recently argued that this transformation pathway will not hobble economic growth<sup>6</sup>. The World Bank commissioned a report by an expert commission on the price corridor required to fulfil the Paris Agreement, which encourages countries to embed carbon pricing in their overall fiscal policy packages<sup>7</sup>.

### Infrastructure finance

Carbon pricing could become particularly important for the many countries that have to finance a huge amount of infrastructure in the coming years. An unprecedented amount of almost US\$80–90 trillion would be required in energy, transport infrastructure, potable water supply and sanitation and telecommunications within the next 15 years<sup>8</sup> (Fig. 1). These investments, which exceed the value of the entire existing stock, are driven by decaying infrastructure in advanced economies and high demand for new infrastructure in emerging and developing countries due to rapid urbanization and economic growth.

Financing such infrastructure in line with the goals of the Paris Agreement would require a reallocation of resources towards a climate-friendly infrastructure. Unfortunately, the current fiscal system in many countries will not provide the necessary resources. Phasing out fossil-fuel subsidies and adopting carbon pricing is a promising option for finance ministers to support such infrastructure requirements — it is also much more attractive than increasing public debt or distortionary taxes (for example, labour taxes<sup>9</sup>). Phasing out fossil-fuel subsidies or a moderate carbon price of US\$40 per tCO<sub>2</sub> in 2020 could provide many countries with the means to finance universal access to clean water, clean electricity, sanitation, roads and transport services<sup>10,11</sup>. Carbon prices are

not important for their potential to generate revenues alone; they are also instrumental in incentivizing carbon-free investments and in penalizing the use of fossil fuels based on their carbon content. Without carbon pricing, infrastructure investments could lock-in a carbon-intensive growth path from which it would be difficult to divert for many decades.

Large proportions of infrastructure spending will likely be in urban areas. Local governments will have to tap into their own sources of revenue and transfer greater authority to cities and regions. There is a consensus among policymakers and academics that land-value taxes should be an integral part of a policy package of the future: infrastructure investments in cities (for example, in transport systems) increase the value of urban land. If this increased land value were to be made available through land taxes levied by local governments, infrastructure investments could become self-financing<sup>12</sup>. While economists have derived a mathematical proof for this claim, Hong-Kong and Singapore provide empirical evidence that land-value capture has a huge potential in terms of financing infrastructure without increasing inequality or hampering economic growth.

### Carbon pricing

A carbon pricing landscape is already emerging, with about 17% of emissions

in the G20 covered by pricing schemes (Fig. 2). China will implement a nation-wide trading scheme this year, which has the potential to become much larger than the European carbon market. Carbon taxes have also been successfully implemented in British Columbia, Canada. Despite these early successes, there are a number of challenges to carbon pricing that must be addressed. For instance, because low-income households consume a relatively high share of carbon-intensive goods as part of their household budgets, the burden of carbon pricing on those households is higher compared with high-income households. A well-designed recycling of tax or auctioning revenues could make carbon pricing more progressive<sup>13</sup>. Carbon pricing can also reduce the short-term competitiveness of energy-intensive industries like steel and aluminium. A well-designed compensation mechanism can reduce the risks of relocation and the exposure to international competition. Carbon pricing will also incentivize the phase-out of coal-fired plants — this structural change will produce losers. As successful examples show, education, empowerment and industry policy can facilitate the necessary structural change and can also protect people in such circumstances. Reflecting on these challenges, it will be crucial to exchange experiences and to share best practices from the early models.

Finance ministers should also consider the merits of carbon pricing for sound fiscal policy. The challenge is securing additional funding sources, which are crucial in the face of declining tax revenues, while at the same time ensuring both rebuilding of aging infrastructure and building up of new infrastructure. Fiscal conservatives do not find public debt or increasing distortionary taxes attractive. On the contrary, there has even been some support by fiscal conservatives in the United States for a budget-neutral carbon tax<sup>14</sup>. Whilst governing administrations may not implement climate policy, in the mid-term they may be attracted by the emerging G20 agenda.

Business leaders and international organizations have already understood that in a globalized economy the choice is no longer between climate and non-climate policy but between smart and costly regulation. Therefore, it is rational for G20 finance ministers to embrace climate policy, even if climate change is not their primary concern. □

Ottmar Edenhofer<sup>1,2,3\*</sup>, Brigitte Knopf<sup>4</sup>, Céline Bak<sup>4</sup> and Amar Bhattacharya<sup>5</sup> are at <sup>1</sup>Mercator Research Institute on Global Commons and Climate Change, EUREF-Campus 19, 10829 Berlin, Germany. <sup>2</sup>Potsdam Institute for Climate Change Impact Research, Telegrafenberg 31, 14473 Potsdam, Germany. <sup>3</sup>Technical University Berlin, Straße des 17. Juni 152, 10623 Berlin, Germany.

<sup>4</sup>Centre for International Governance Innovation, 67 Erb Street W, Waterloo, ON N2L 6C2, Canada.

<sup>5</sup>The Brookings Institution, 1775 Massachusetts Avenue, NW Washington, DC 20036, USA.

\*e-mail: [Ottmar.Edenhofer@pik-potsdam.de](mailto:Ottmar.Edenhofer@pik-potsdam.de)

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## COMMENTARY:

# California from drought to deluge

S.-Y. Simon Wang, Jin-Ho Yoon, Emily Becker and Robert Gillies

The dramatic switch from extreme drought to severe flooding in California, and the accompanying flip from atmospheric ridge to trough in the northeastern Pacific, exemplifies the pathways to an intensified water cycle under a warming climate.

The prolonged drought in California from 2012 to 2016 was recently broken by a dramatic reversal in the form of extreme precipitation events and flooding. In the Sierra Nevada mountains, precipitation in January and February 2017 exceeded that of the previous wettest

year on record, 1982–1983. For the first time in its history, water poured over the emergency spillway of the Lake Oroville dam, California's second largest reservoir. The excessive precipitation and resultant floods led to the declaration of yet another state of emergency, this time from a

very different perspective with regard to the 2014 drought. The media, resource management entities, and the scientific community have already started to inquire as to why there was such a sudden switch from extensive drought to the other extreme.