



World Economic Situation and Prospects

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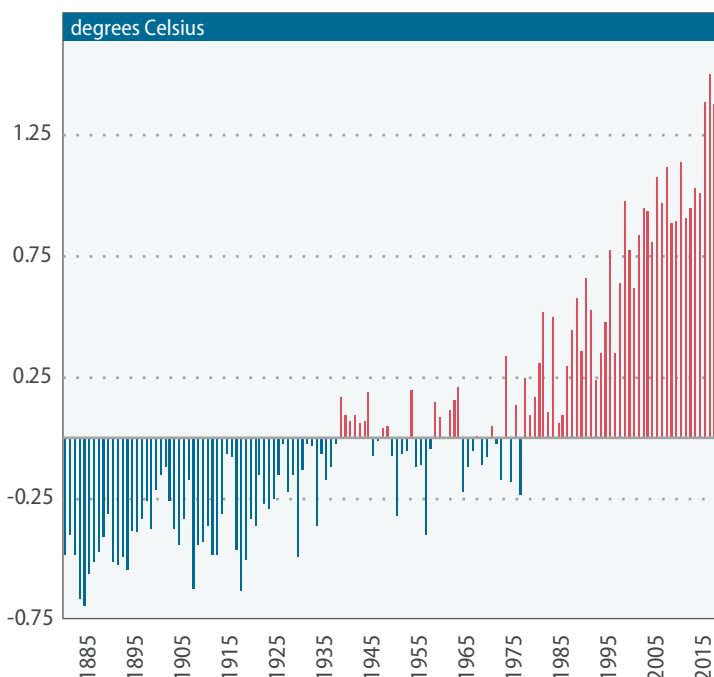
Global issues: Climate risks and the case for internalizing the cost of CO₂ emissions

The rationale for carbon pricing: changing decision-making amid an unfolding climate crisis

Evidence such as historic temperature data indicates a worrying trend. In numerous countries and geographic areas, the hottest years over the last century have occurred in the last decade. At the global level, the past four years were the hottest in the last 139 years (*figure 1*). Coupled with the observation of more severe weather-related natural catastrophes in terms of both magnitude and frequency, this presses home the point that speaking just of climate change might not do justice anymore to the actual extent of the global challenge at hand. Instead of climate change, the more accurate description appears to be climate crisis or climate catastrophe.

As a consequence of this unfolding climate crisis, the big question is what policy measures would be effective in the available timespan and can be sufficiently finetuned in order to put the

Figure 1
**Global land temperature:
Deviation from 20th century average, 1880-2018**



Source: NOAA National Centers for Environmental Information, Climate at a Glance: Global Time Series, retrieved on July 17, 2019 from <https://www.ncdc.noaa.gov/cag/>

Summary

- Carbon pricing is a vital policy tool to address the unfolding climate crisis
- Amid rising global temperatures, drought forces Australia to import wheat for the first time in a decade
- Debt-for-climate swaps are an innovative development financing instrument

world on an environmentally sustainable development path. A key requirement is moving away from fossil fuels and doing so very fast. Achieving this will necessitate a wide range of measures that will have to be combined in terms of their technical design and geographic coverage. These include phasing out subsidies for fossil fuels, increasing and fine-tuning the targeting of renewable-energy subsidies and making greater use of regulatory instruments such as efficiency standards. However, a key element across all these various measures is putting a price on carbon dioxide (CO₂).

The objective behind carbon pricing is to fix a fundamental flaw in the economic system. Economic decisions that result in the emission of CO₂ create a host of negative effects on the environment. But with no monetary cost incurred by the emitters of CO₂, decisions on the production and consumption of goods and services are based on an artificially low cost of using fossil fuels, compared to a full-cost assessment which includes these environmental externalities. This means that certain consequences of economic decisions accrue as a negative externality to society at large, but do not feature in the private decision-making by producers and consumers. This understatement of costs has dramatic consequences: certain goods and services are produced and consumed in quantities that exceed the environmentally sustainable level. In other words, individual decisions made on the basis of the existing incomplete set of price and cost signals impose high environmental costs on society. Carbon pricing obliges producers and consumers to internalize into their economic decisions what has so far been off-loaded as a negative externality onto society. Creating a market for CO₂ emissions would essentially establish CO₂ as a commodity, whose price has then to be factored into economic decisions. This would shift economic incentives, for example, by requiring the calculation of new, adjusted costs along the extraction and consumption chain of fossil fuel-based products.

Forms of carbon pricing: emission trading systems and carbon taxes

Carbon pricing can take different forms, but generally falls into one of two categories. In the case of an emission trading system, emitters need to purchase allowances in order to cover the quantity of CO₂ they are emitting. The advantage of this approach from the policymaker's perspective is that the total quantity of allowances, and hence the total emission level, is fixed. But this can also be a major challenge, as getting the total emission quantity right may require repeated policy adjustments. Europe's emission trading system experienced a version of this type of problem, when an oversupply of allowances depressed the CO₂ price so much that the trading system became largely ineffective. Policymakers subsequently stepped in and made changes to the system, contributing to a meaningful adjustment in the CO₂ price. The alternative category is some form of tax or fee on CO₂. The advantage of this can be easier implementation but may also introduce new challenges, for example, unintended distributional consequences. In practice, various carbon pricing initiatives already exist, with the price per ton of CO₂ ranging from less than \$1 to \$139.¹

Carbon pricing would redefine the notion of economic liabilities and wealth

Putting a price on CO₂ would underpin a far-reaching redefinition of what constitutes economic liabilities and wealth. Carbon-intensive assets and projects would be subject to monetary liabilities through the forced valuation of CO₂. This would significantly incentivize the avoidance of environmental pollution and, through relative pricing effects, the development of clean-energy solutions. At the same time, carbon pricing could also incentivize the provision of positive externalities. Preserving and creating carbon absorption capacities, for example by protecting and expanding forests, could be the basis for new types of monetary revenue and this would create an entirely new economic paradigm, with intact forests suddenly becoming a newly valuable natural resource. Countries that could benefit in this regard include, for example, Costa Rica, whose forest coverage increased from around 30 per cent in the 1960s to more than 50 per cent today.

Carbon leakage and emission front-loading highlight the need for a multilateral approach

To date, carbon pricing tools have been introduced on a very limited and fragmented basis. This implies the risk of carbon leakage, in the form of the relocation of carbon intensive industries to jurisdictions with more lax regulation, potentially even increasing global emission levels. There is also a green paradox, as the prospect of imminent carbon pricing incentivizes the extraction of even more fossil resources at a faster pace before regulatory changes take effect. Consequently, there is an urgent need for a concerted, multilateral approach to carbon pricing. Unified principles and standards would also facilitate aligning carbon pricing with other major policy areas such as trade and international finance. However, absent a global solution, accelerating regional and subregional carbon pricing

mechanisms constitutes a second-best alternative given the urgency of the challenge at hand.

Developed economies

North America: Emissions per capita in Canada remain high

Canada has a relatively ambitious carbon pricing programme by global standards. Some of the most populous Canadian provinces have had some form of carbon price in place for over a decade. But in December 2016, Canada announced the Pan-Canadian Framework on Clean Growth and Climate Change, which required all provinces to introduce a carbon pricing programme by April 2019, or be subject to a federal pricing system. The federal system sets a price of CN\$15 per ton of CO₂ this year, rising to CN\$38 per ton by 2022. Charges on fossil fuels are coupled with investments in public transit and green infrastructure to support transition towards a low-carbon economy—a target that remains some way off.

Canada is one of the biggest emitters of greenhouse gases (GHG) per capita in the world, having emitted 16.85 tons of CO₂ per capita in 2017, ranking 11th globally.² This is largely due to its large oil and gas sector, which contributes roughly 8 per cent of GDP and more than a quarter of GHG emissions. Despite having some carbon pricing measures in place, emissions from this sector have increased by nearly 25 per cent since 2005, due to the increased production of crude oil and especially the expansion of the carbon-intensive oil sands industry. Emissions from freight trucks and passenger light trucks in the transportation sector have also continued to increase over this period. Some positive developments have been seen elsewhere, notably a more than 35 per cent decline in emissions from the electricity sector, partly reflecting the phase-out of coal-fired electricity generation plants.

Developed Asia: Drought leads Australia to import wheat for the first time in a decade

Hit by drought for the second consecutive year, Australia, one of the largest wheat exporters in the world, imported bulk wheat from Canada in the second quarter of 2019. According to the Australian Bureau of Agricultural and Resource Economics and Sciences, wheat production is forecast to decline to 17 million tons during the 2018–2019 crop season, compared to 31 million tons in 2016–2017. The drought has impacted crop growing conditions in Eastern Australia while conditions remain stable in Western Australia. Thanks to production in Western Australia, the country remains a substantial net exporter of wheat. However, the requirement for a specific variety compelled the country to import bulk wheat, which is not replaceable by the varieties grown in Western Australia. As global wheat production is forecast to decline moderately this year, wheat prices are projected to stay firm in the second half of 2019.

Europe: Carbon pricing has further moved to the forefront of economic policy

In Europe, the issue of putting a price on the emission of CO₂ has moved to the forefront of the current debate on economic policy.

¹ United Nations (2019), World Economic Situation and Prospects as of mid-2019 (E/2019/70), available from <https://www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-as-of-mid2019/>

² Muntean, M., et al. (2018), Fossil CO₂ emissions of all world countries – 2018 Report, EUR 29433 EN, Publications Office of the European Union.

For one, a number of mechanisms are already in place or in the process of introduction and refinement in this regard, including an emission trading system in the European Union (EU) and a fee-based approach in Switzerland. More recently, a number of expert panels to the German government have explicitly called for the introduction of a more widespread payment mechanism regarding the emission of CO₂. The ensuing wider debate has also begun to include possible ways to ensure a neutral effect for households, with proposals to redistribute the generated fiscal income back to citizens via tax credits, discounts on various taxes or fees, or outright refunds. The first signs of a consensus have already emerged between political parties, labour unions and industry associations regarding the general need for more widespread CO₂ pricing. The details that will require more discussion include the precise design of the pricing system and how to target its effects. In related news, France has announced a plan to introduce a tax on flights and there have been renewed efforts, including from countries like France, to phase out global tax exemptions for jet fuel.

Poland is one of the most coal-dependent countries in the EU. The draft energy policy under discussion envisages that in 2030 coal will still cover 60 per cent of electricity needs. Policy actions to limit coal use would negatively affect mining jobs and could have serious social and political implications. The EU has recently committed €1.25 billion to support Government efforts to alleviate the impact of mine closures on impacted regions.

Economies in transition

CIS: Feeling the impact of climate change

The countries of the Commonwealth of Independent States (CIS), including the Russian Federation, are affected by climate change. Although not all economic consequences of the changing climate are negative—in 2018, there was a drastic increase in container ships traffic through the Northern Sea Route thanks to melting ice—the detrimental ones still prevail, including more complicated agricultural and forestry management, higher frequency of flash and coastal flooding, increased erosion and loss of biodiversity. Melting permafrost releases additional GHG, further contributing to global warming. In Central Asia, melting glaciers threaten the region's water supply and political stability. Carbon intensity of GDP in the CIS countries is relatively high; in the Russian Federation, renewable power generation accounts for around 20 per cent of the total if hydropower is included; otherwise, the share of renewables is just 3.6 per cent. The new 2035 energy strategy, still under discussion, should bolster the role of renewables, but reliance on fossil fuels remains. According to a 2017 report by the International Renewable Energy Agency (IRENA), it is possible to increase the share of non-hydro renewables in total energy consumption to 11 per cent by 2030.³ However, this would require an estimated \$300 billion of investments between 2010 and 2030. Most of the CIS countries have adopted national strategies to develop green energy sources. For instance, Armenia has established a revolving fund to promote energy saving technologies, while Belarus has adopted regulations to facilitate private investment in renewables. However,

³ See https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Apr/IRENA_REmap_Russia_paper_2017.pdf

the prospective establishment of a common energy market in the Eurasian Economic Union (EAEU) by 2025 may lead to lower prices of oil and natural gas for the energy-importers in the EAEU, potentially undermining financial viability of alternative energy projects in the absence of offsetting carbon pricing initiatives.

Among the countries of South-Eastern Europe, with the exception of Albania, energy generation is heavily dependent on coal, and the outdated power stations produce high levels of emissions. Despite the agreement signed by these countries in 2005 to meet the EU's pollution control requirements by 2018, progress in investing into cleaner energy sources is still lagging.

Developing economies

Africa: Economic crisis deepens in Zimbabwe due to extreme weather events

A combination of severe drought and extreme weather events, including Cyclones Idai and Kenneth that hit earlier in the year, is causing growing food insecurity in Mozambique and Zimbabwe. These disasters have destroyed crops and rural infrastructure in both countries. According to the World Food Programme (WFP), the food security situation in Zimbabwe is likely to deteriorate towards the end of this year, impacting more than 4.7 million people. The WFP also warned of the dire situation in Mozambique, with 1.6 million people already facing an acute food crisis.

Extreme weather events have also exacerbated macroeconomic challenges, particularly in Zimbabwe, which is facing a deepening economic crisis. The urban population in Zimbabwe has been suffering from worsening power and water shortages. In early July, the water level at the Kariba Dam, the source of the country's primary hydropower supply system, dropped to 24 per cent. The reduced hydroelectricity generation caused extended blackouts even in its capital, Harare. At the same time, more than 2 million people in Harare have lost access to municipal drinking water as several dams dried up.

In contrast, electricity supply has remained stable in Mozambique. The water level of the Cahora Bassa Dam, the source of Mozambique's main hydropower supply system, stayed full. Zimbabwe traditionally imports electricity from neighbouring countries, including the Cahora Bassa system. However, the lack of foreign currency is preventing Zimbabwe from importing more electricity, as the country's prolonged balance of payments crisis has resulted in a depletion of foreign exchange reserves. Furthermore, fiscal space is very limited, making it difficult to introduce additional budgetary measures to alleviate the crisis. In addition, the monetization of fiscal deficits has fuelled rapid inflation, with consumer price inflation at 176 per cent in June. There are growing concerns that the electricity crisis will affect Zimbabwe's mining exports, resulting in a further deterioration of the balance of payments.

Pacific Islands: High vulnerability to climate shocks poses main threat to medium-term growth prospects

Growth in the Pacific Island countries as a group is projected to remain fairly steady in the near term. Following last year's major earthquake, Papua New Guinea is likely to experience an economic rebound, amid a resumption in energy production. In contrast,

growth in Fiji and Vanuatu is expected to moderate as post-cyclone reconstruction efforts near completion.

From a medium-term perspective, the Pacific Island economies continue to face significant structural challenges, including remoteness from international markets, large infrastructure gaps, and a weak private sector. These challenges are exacerbated by the region's high vulnerability to the adverse effects of climate change.

The increased frequency and intensity of natural disasters is inflicting long-lasting damage on these countries. These devastating events often entail significant human and economic costs, while reconstruction diverts resources away from much-needed productive investment. In addition, many of these economies are heavily dependent on the tourism sector, which is also being threatened by climate risks. In Fiji, Kiribati, and Vanuatu, tourism-related revenue account for between 20 to 45 per cent of GDP.

Given the strong linkages between climate risks and the development prospects of the Pacific Island economies, policymakers should prioritize investment in climate-resilient infrastructure and strengthening disaster preparedness. As most countries in the region struggle with limited resources and policy space, cooperation and support from the international community remains crucial.

South Asia: Impact of climate change becomes increasingly visible

Densely populated and poor in climate-resilient infrastructure, South Asia remains one of the most exposed regions to the increasing effects of climate change. While the region has not contributed much to total GHG emissions (relative to developed economies), it bears unprecedented costs of climate change. Scarce resources must be channelled towards investment in climate resilience, while human capital and welfare needs remain underfunded. Agriculture and fishing are the most exposed sectors to the changing climate, while at the same time providing employment and often the only source of income for a vast share of the South Asian population. Furthermore, lost economic output and lower productivity are often not visible in the headline estimates of disaster costs, but undermine the region's future growth potential. A recent study by Diffenbaugh and Burke (2018)⁴ suggests that global warming might have reduced GDP per capita of the bottom 40 per cent of the global population by 17–31 per cent between 1961 and 2010. A large share of this group lives in South Asia. Within the same period, a few of the developed economies have benefited from the rising temperatures, leading to a further widening of the development gap. As the frequency and intensity of extreme weather events increases, the output loss is expected to rise in the coming decades.

Western Asia: Efforts continue to reduce CO₂ emissions from gas flare

Gas flaring is a significant source of CO₂ emissions in Western Asia. As a by-product of oil extraction, oil wells produce natural gas from oil reservoirs, which is called “associated gas”. While crude oil producers can put associated gas into commercial use, on-site flaring is often a preferred option for cost reasons. Moreover, to vent natural gas as methane is not a preferred option because

methane is a more damaging GHG than CO₂. Nevertheless, CO₂ emissions from gas flaring in Western Asia has been on a gradually declining trend. Major oil producers have successfully put a significant portion of associated gas into commercial use to reduce gas flaring. A considerable amount of the natural gas supply of the member countries of the Gulf Cooperation Council comes from associated gas. In June 2019, Iraq's oil minister announced that gas flaring in Iraq's southern oil fields would be eliminated by 2022. By tapping on previously flared associated gas, Iraq is expected to increase its power generation capacity, as electricity shortages have fuelled social unrest in recent years. While technological hurdles to eliminating gas flaring are not high, it needs financial resources and policy coordination. In 2015, the United Nations and the World Bank launched the “Zero Routine Flaring by 2030” Initiative. Along with this initiative, the elimination of gas flaring is projected to contribute to climate policy in oil-producing countries in the region.

Latin America and the Caribbean: Debt-for-climate swaps as an innovative source of financing in the Caribbean

The Caribbean economies face a complex set of development challenges. Chief among them are slow economic growth, large public debt burdens and high vulnerability to external shocks, particularly natural disasters. Over the past decade, per capita incomes have stagnated or declined in most countries. The average public debt-to-GDP ratio stood at 70 per cent in 2018 and almost all economies are saddled with a heavy interest burden. For the group of Caribbean small States, interest payments on government debt accounted for a quarter of total revenues in 2016–17. At the same time, the region is severely affected by climate change. Tropical storms, which have a disproportionately large impact on the Caribbean, are becoming stronger and more frequent. Sea level rise is increasing the risks of flooding and soil erosion, while longer dry and shorter wet seasons are hampering the region's agricultural industries.

Given the strong interactions between climate change, macroeconomic performance, and public debt dynamics, several international institutions—including the United Nations Economic Commission for Latin America and the Caribbean, the World Bank and the Commonwealth Secretariat—have recently proposed debt-for-climate swaps as a way to simultaneously address these challenges. Such swaps would build on the concept of debt-for-nature swaps, which have been implemented in several countries since the late 1980s, particularly for forestry projects. The basic idea of debt-for-climate swaps is simple: vulnerable and highly indebted countries would receive bilateral and multilateral debt relief in exchange for committing to invest the liberated funds in climate adaptation and mitigation programmes.⁵ In practice, designing and implementing debt-for-climate swaps is a difficult process that involves complex negotiations, and appear to be most suitable for countries with improved governance.⁶

⁴ N. Diffenbaugh, and M. Burke (2018), “Global warming has increased global economic inequality” Department of Earth System Science, Stanford University, Stanford, CA.

⁵ Fuller, et. al. (2018), Debt for Climate Swaps: Caribbean Outlook.

⁶ Linde Warland and Axel Michaelowa (2015), “Can debt for climate swaps be a promising climate finance instrument?”, Zurich, Switzerland.