

Global carbon accounts in 2022

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Paris, September 2022

4 key trends for 2022

68 As of 1 August 2022, there are 68 explicit carbon pricing mechanisms (taxes or tradable allowances - Emissions Trading Schemes (ETS)) around the world. The jurisdictions (countries/groups of countries/of provinces) covered by these mechanisms represent more than 70% of global GDP. The latest of these mechanisms is the Austrian carbon market, launched in July 2022.

1¢-134\$ The range of explicit carbon prices is widening further: as of 1 August 2022, they range from 1 US cent to USD 134 per tonne of CO₂eq (tCO₂eq). These two new extremes are due to the recent launches of carbon pricing mechanisms in Baja California (Mexico) and Uruguay. However, prices remain below USD 10/tCO₂eq for more than 60% of covered emissions. The High-Level Commission on Carbon Prices, chaired by Nicholas Stern and Joseph Stiglitz, estimated that the full incentive effect of these mechanisms is reached for prices between USD 40 to 80/tCO₂eq in 2020 and USD 50 to 100/tCO₂eq in 2030.

100bn Carbon revenues were nearly USD 100 billion in 2021. **This represents a more than 80% increase year-on-year (USD 53.1 billion in 2020, USD 97.7 billion in 2021). This increase is largely driven by the rise in allowance prices on the European carbon market, which exceeded the symbolic threshold of EUR 100/tCO₂ for the first time in the summer of 2022.** For the first time, the majority (70%) of this revenue is provided by ETSs rather than taxes (30%). ETS revenues tend to finance clearly defined environmental priorities, while tax revenues are more likely to go directly to national budgets. However, global taxation remains generally harmful for the climate, and the trend is not positive. The OECD noted at the end of August that fossil fuel subsidies doubled in 2021, from USD 350 bn to USD 700 bn.

20% The jurisdictions implementing a carbon price account for about 55% of global greenhouse gas (GHG) emissions. However, some sectors or populations may be exempt (totally or partially) from paying this price for various reasons. Taking into account these scope and exemption effects, only 20% of anthropogenic GHG emissions are covered by a carbon price.

LATEST DEVELOPMENTS

New pricing mechanisms were introduced in 2022. **Uruguay** has implemented a tax with the most ambitious price in the world to date (USD 134/tCO₂eq). Following a 2019 ruling by the Mexican Supreme Court, allowing states to set their own environmental taxes, the state of **Tamaulipas** becomes the sixth Mexican state to implement a carbon price. In Canada, the State of **Ontario**'s Emissions Performance Standards (a 'baseline-and-credit' type mechanism) and **New Brunswick**'s ETS came into operation this year as well. In the United States, **Oregon**'s ETS was passed in 2019 but actually implemented in 2022. Finally, **Austria** has just launched its carbon market for transport and building heating in July 2022, modelled on the German scheme. Virginia, on the other hand, has officially announced its intention to exit the RGGI Initiative.

The vote by the European Parliament on the border carbon adjustment mechanism (CBAM) also breathes new life into carbon prices globally. In addition to the "mirror" mechanisms adopted or discussed in partner countries (Turkey, Taiwan, Indonesia in particular), the notion of a "climate club" of countries developing ambitious internal policies, supported by adjustment mechanisms at the level of the entire group, is returning to the discussions; the United States and Canada have expressed their interest in a cooperation of this type with the European Union on steel and aluminum.

THE EU ETS, CONFIRMED CORNERSTONE OF A DIVERSIFIED CLIMATE POLICY

The "Fit for 55" legislative package should enable the European Union to achieve its new 2030 target of reducing net emissions 55% below 1990 levels (the previous target was 40%, on gross emissions). The first texts, voted in July 2022, significantly strengthen the role of the European carbon market, extending it to maritime transport, creating an "ETS2" dedicated to road transport and buildings, and reconsidering the rules to be used with air transport, in connection with the "CORSIA" mechanism of the International Civil Aviation Organization.

However, the "Fit for 55" package also recognizes the limits of an "all ETS" policy, by accompanying it with revised sectoral measures (renewable energies, energy efficiency, building performance standards, management of the Land Use, Land Use Change and Forestry (LULUCF) sector) or new ones (alternative fuels, end of combustion engines in 2035) and by introducing two new mechanisms:

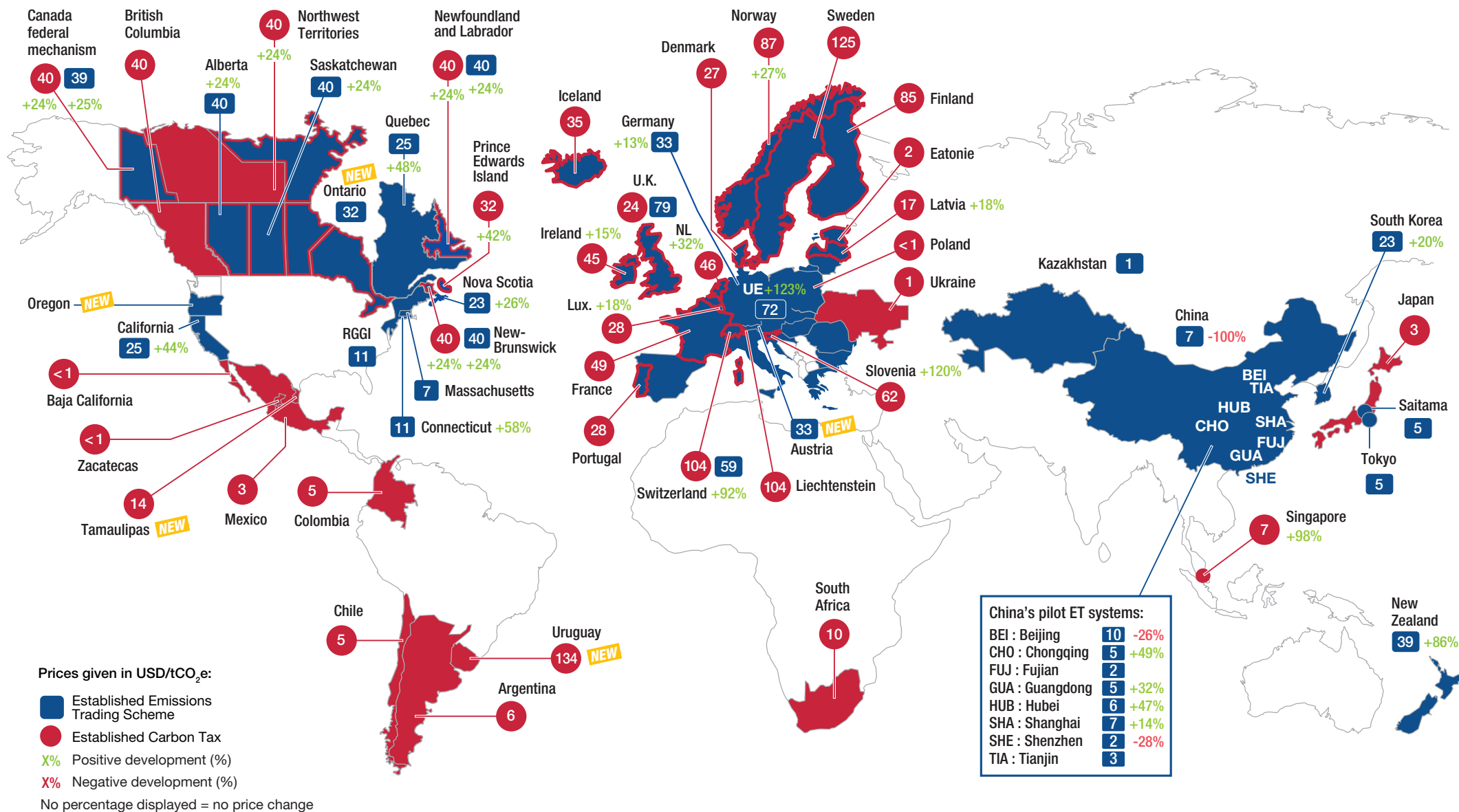
- a border carbon adjustment mechanism (CBAM) putting European industry on an equal footing with their competitors from countries without a carbon price and encouraging the emergence of new mechanisms among the EU's trading partners, while reducing free emission allowances (see Global Carbon Account 2021);
- a Social Climate Fund to support the countries and households most affected by the economic impacts of this transition, funded by the EU ETS and CBAM.

Sources and additional charts:

Les comptes mondiaux du carbone en 2022, I4CE

To provide feedback or obtain more information on the sources used for this 2022 edition of the global carbon accounts: contact@i4ce.org

Map of explicit carbon prices around the world in 2022



Source : I4CE - Institute for Climate Economics, with data from ICAP, World Bank, government officials and public information, Septembre 2022.

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GHG EMISSIONS COVERAGE VARIES GREATLY ACROSS SECTORS

On average, the emissions covered by a carbon price represent 20% of total global emissions. However, this figure varies greatly depending on the sector of activity.

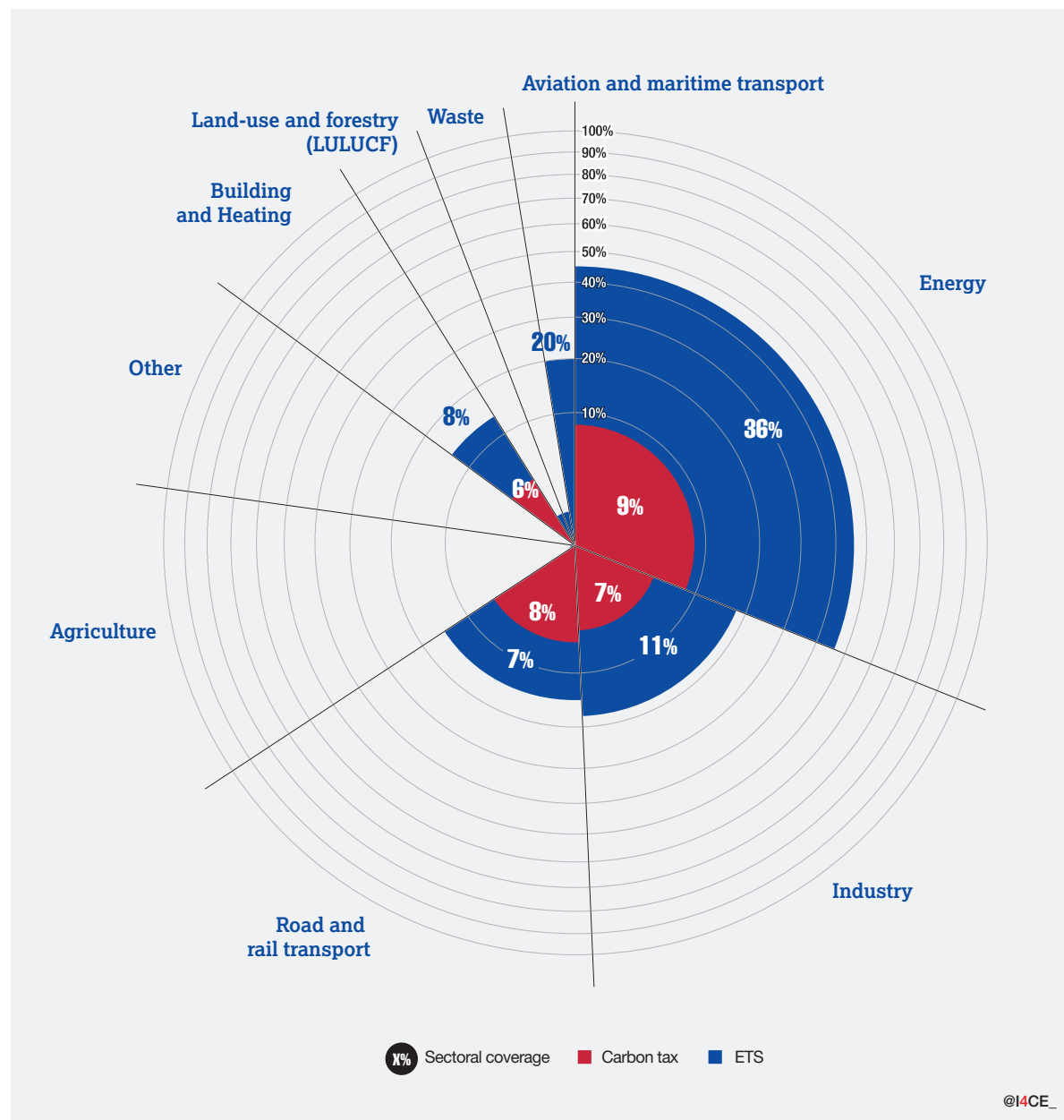
It is particularly high in the electricity production sector (45%), which is usually well covered by carbon markets.

Industry (18%), transport (15%) and heating (14%) show lower coverage and greater variability in the instruments used. These aggregate figures also hide a contrasting reality: industry is very well covered in some jurisdictions (e.g. EU ETS area) and much less so in others. They also result from different technical constraints: end uses are often more diffuse and less easy to target and tax, particularly through carbon markets. The recent German and Austrian markets are the first initiatives in this direction.

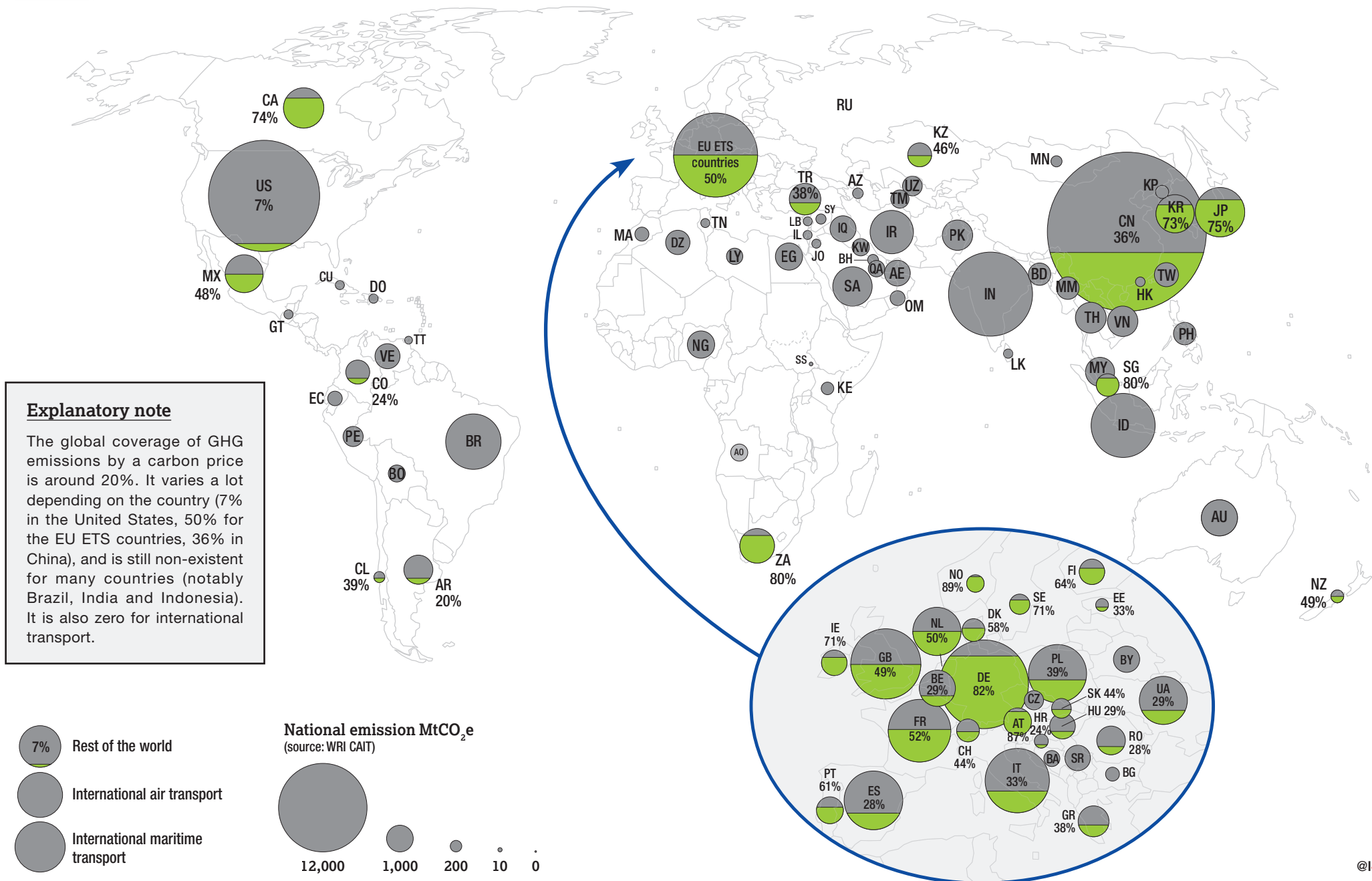
The forestry and land use sectors (1% of global sector emissions covered) and agriculture (not covered to date) remain very difficult to cover because of the large number of actors and the diffuse nature of their emissions (notably CH₄, N₂O and CO₂ emissions from the ecosystems themselves). In New Zealand, emissions from agricultural activity are now subject to mandatory reporting but implementing an actual carbon price will wait until 2025. This mechanism could place quotas on slaughterhouses or processors for livestock emissions, and on fertilizer manufacturers and importers for the crop part, within the framework of the existing quota trading market.

Today, international transport (maritime or air) is not subject to carbon pricing imposed by States for their international activity, despite advanced European discussions on the inclusion of intra-European maritime transport in the EU ETS, as well as its articulation with the initiatives orchestrated by the International Civil Aviation Organisation (CORSIA) and the International Maritime Organisation (under discussion). Aviation is sometimes partially covered for national flights.

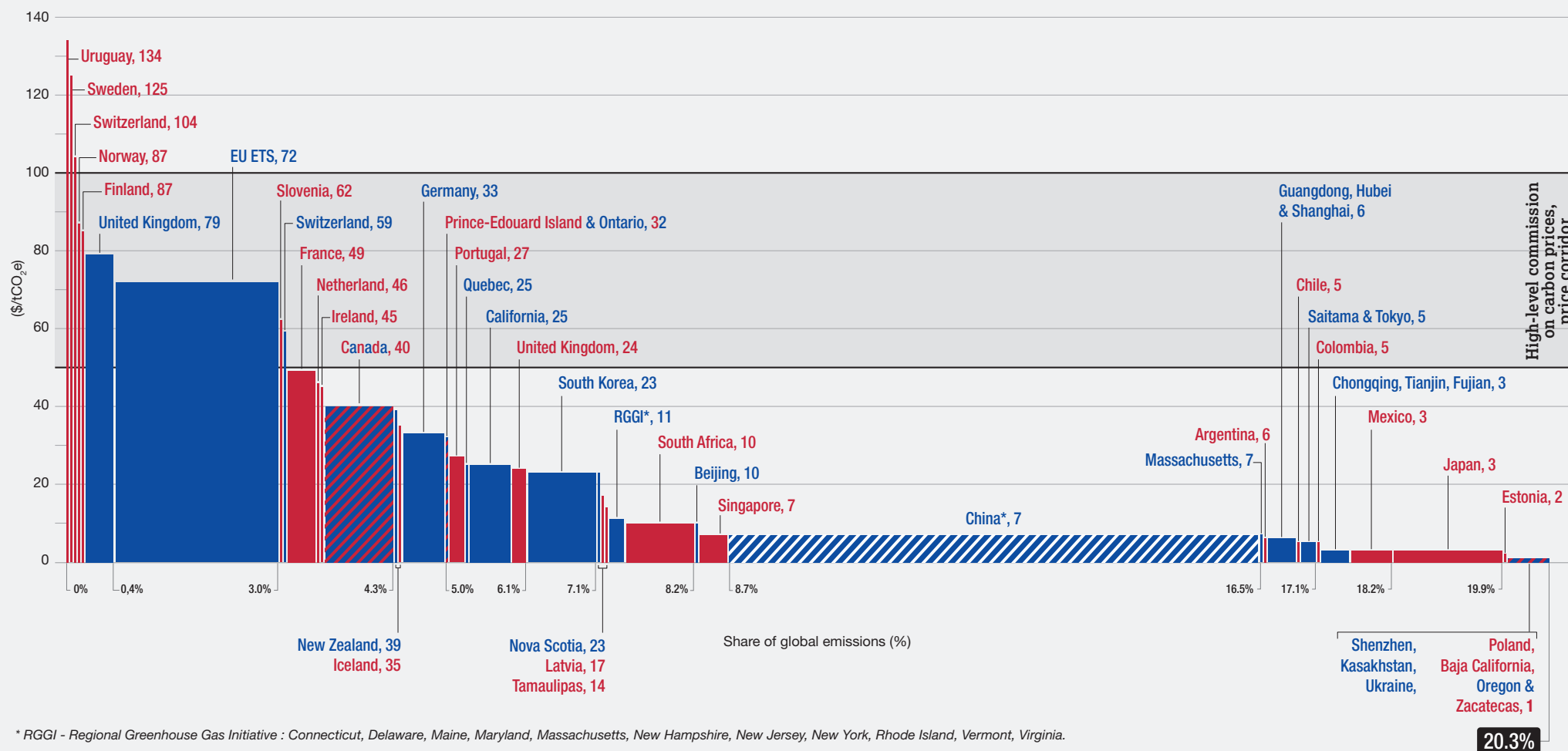
Finally, let us note that these coverage rates are theoretical: they do not reflect free allocations or exemptions due to the gradual entry into force of certain mechanisms, which lead to a lower 'effective' coverage than that given here.



Carbon price coverage of GHG emissions for the 90 most emitting countries



Carbon price and emissions covered by country in 2022



* RGGI - Regional Greenhouse Gas Initiative : Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, Virginia.

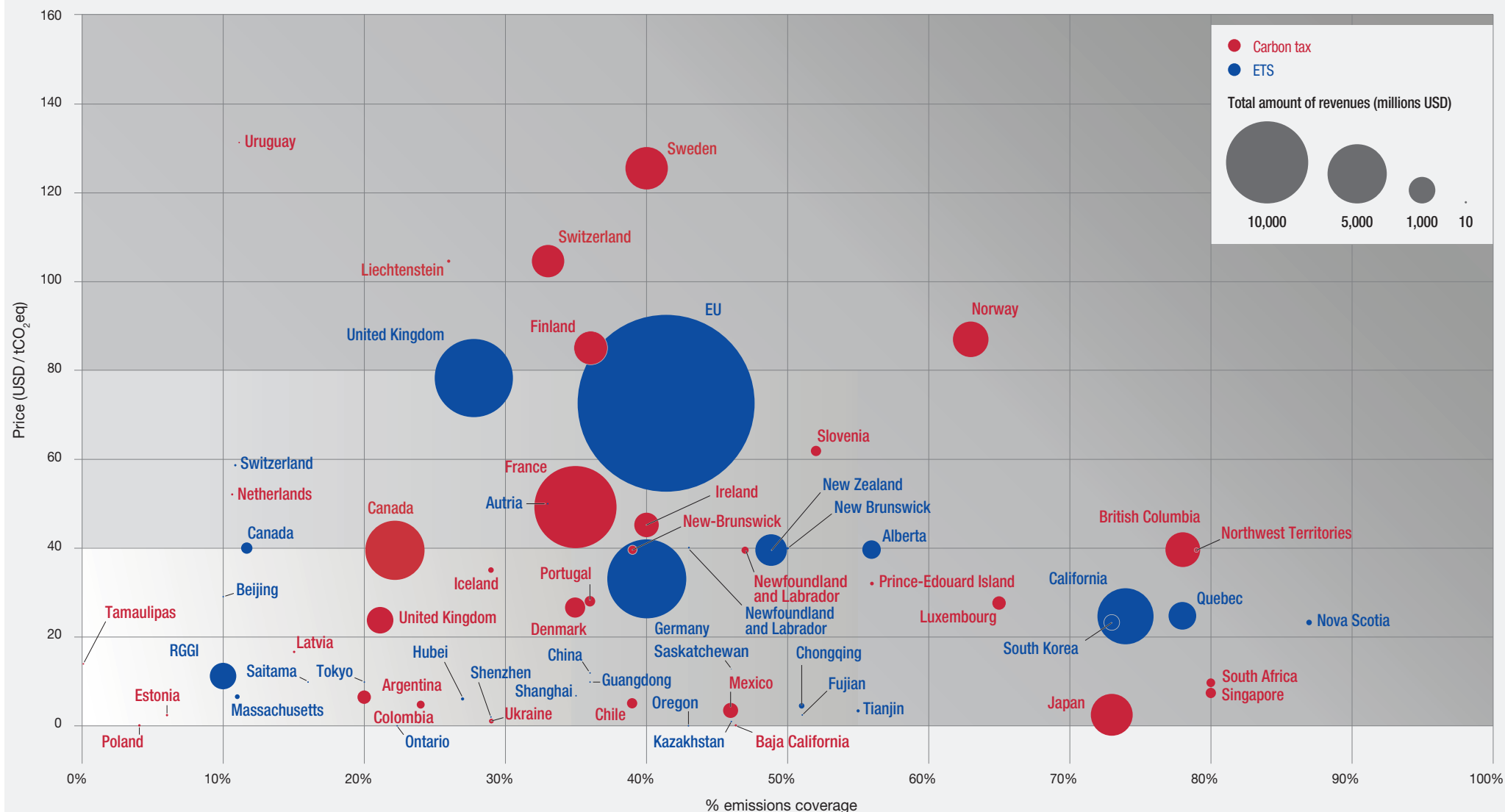
Explanatory note

The EU ETS covers almost 3% of global emissions with a price of USD 72/tCO₂e. The UK covers 0.3% of emissions at USD 79/tCO₂e with an ETS and 0.2% at a lower price (USD 24/tCO₂e) with a tax. The Canadian federal system imposes a price (USD 40/tCO₂e) on the national emissions covered (0.9% of global emissions) but leaves the mechanism (tax or ETS) to the discretion of the provinces, hence the red-blue hatching. The Chinese ETS covers 7.8% of global emissions, but the price displayed here (USD 7/tCO₂e) stands only for secondary markets as the allocations are

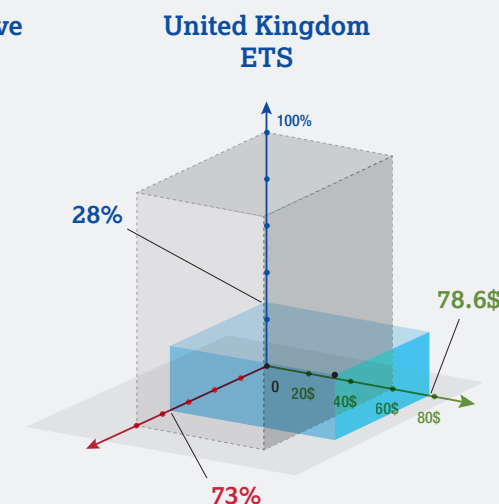
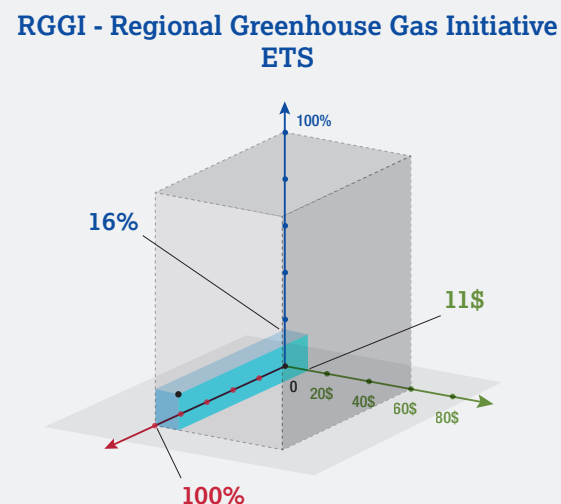
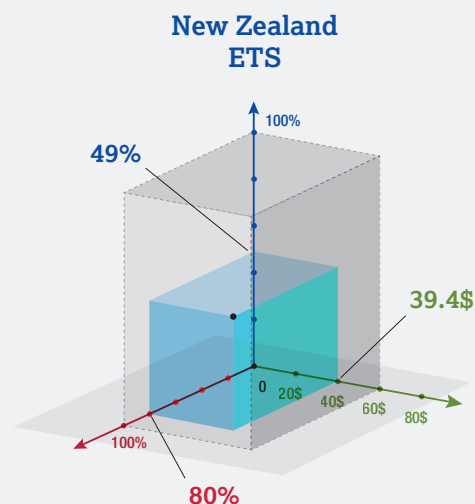
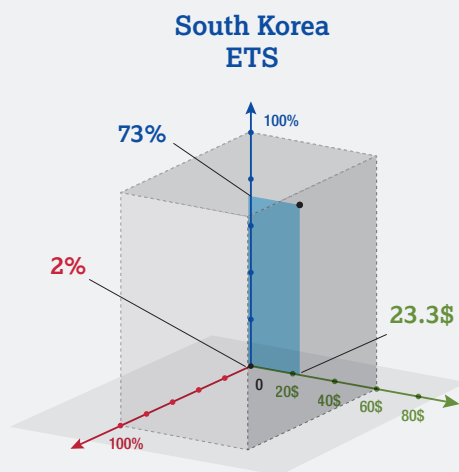
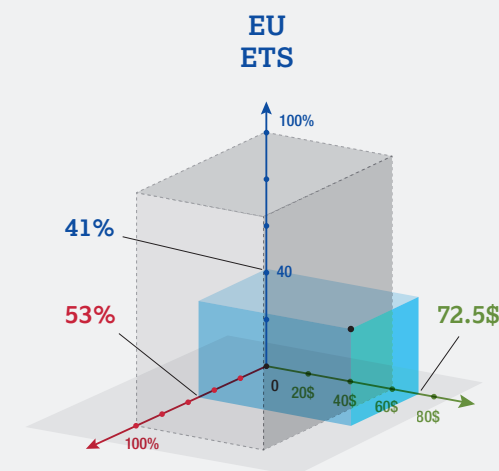
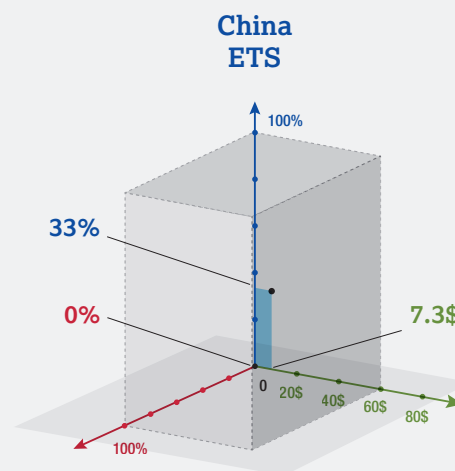
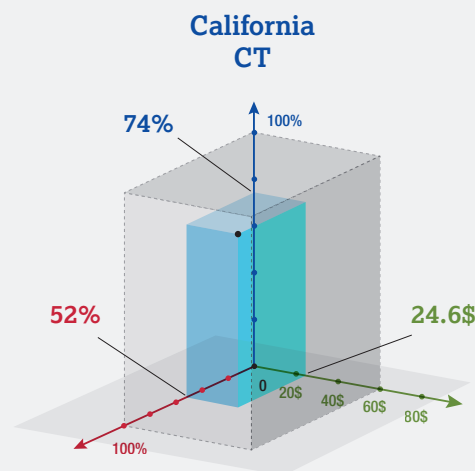
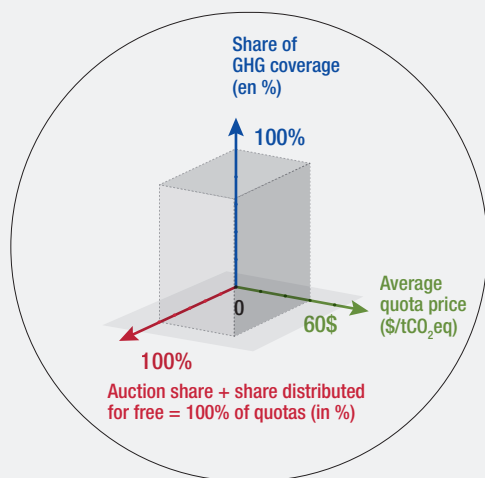
not auctioned yet; they are made available free of charge by the authorities and do not generate any public revenue. This “fictitious” income is represented in blue-white hatching.

To date, the total coverage by carbon prices is just over 20% globally, with only 3% above USD 50/tCO₂e (the 2030 floor price recommended by the report of the High Level Commission on Carbon Pricing, reflecting the scientific consensus on the issue).

Ambition of different carbon pricing schemes



Note : The term ambition used here refers only to the ambition of the carbon pricing instrument itself (high price, broad coverage). The ambition of a national climate policy also takes into account possible complementary pricing mechanisms (such as the two systems in the UK) and more broadly a set of public policies (budgetary expenditure, other tax incentives, regulation etc.) among which a carbon price can be, depending on the case, a necessary pillar, a welcome addition or even an optional complement.



Explanatory note

There are significant differences in the choices made for the three main parameters of an allowance market: the price, the theoretical coverage and the share of allowances actually auctioned. South Korea, for example, has a high coverage rate of 73% of the jurisdiction's emissions, but most of these allowances (98% of them) are distributed for free.

Emissions covered by the Regional Greenhouse Gas Initiative (RGGI) mechanism are auctioned in their entirety, but they represent only a small share (16%) of covered emissions and their price (USD 11/tCO₂eq) is well below the international scientific consensus. The EU ETS auctions only 53% of its allowances; this figure is expected to rise sharply after the introduction of the MACF (see first page).

Increase of carbon revenues worldwide in 2021

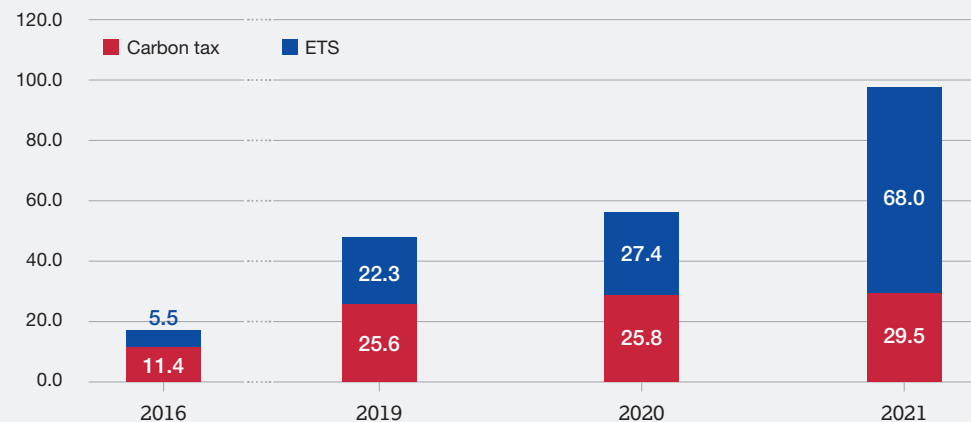
Carbon revenues have almost doubled in 2022 (see graph opposite), from USD 53.1 billion to USD 97.7 billion. This increase is almost exclusively due to the allowance markets, for which two main factors can be identified:

The entry into force of new mechanisms, notably the German market for transport and buildings (the end of the UK's participation in the EU ETS and its replacement by an autonomous national ETS has resulted in a slightly negative balance to date.

The increase in the price of allowances in existing markets, notably the EU ETS: the price of carbon in this market has risen from USD 32/tCO₂eq to USD 72/tCO₂eq over a rolling year (average prices from March to March), reaching USD 100/tCO₂eq for the first time in its history in February 2022. The main drivers of this increase include:

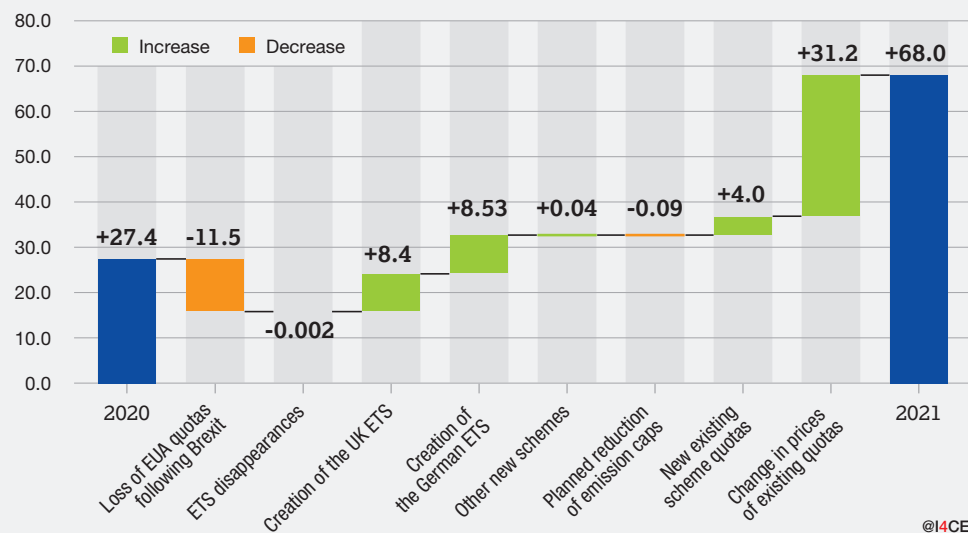
- the introduction of the 'Fit for 55' package, which strengthens the future role of the EU ETS and its long-term credibility;
- Phase IV of the EU ETS, covering the period 2021-2030, which results in fewer allowances being put into circulation;
- the post-Covid economic recovery, which has led to an increase in emissions from all sectors;
- a cold weather wave in the winter of 2021;
- the geopolitical uncertainty linked to the Russian invasion of Ukraine, and its consequences for gas supplies to the European Union. This increase in gas prices has favoured coal in the European energy mix, the combustion of which is much more GHG-emitting.

Carbon revenues - global trend



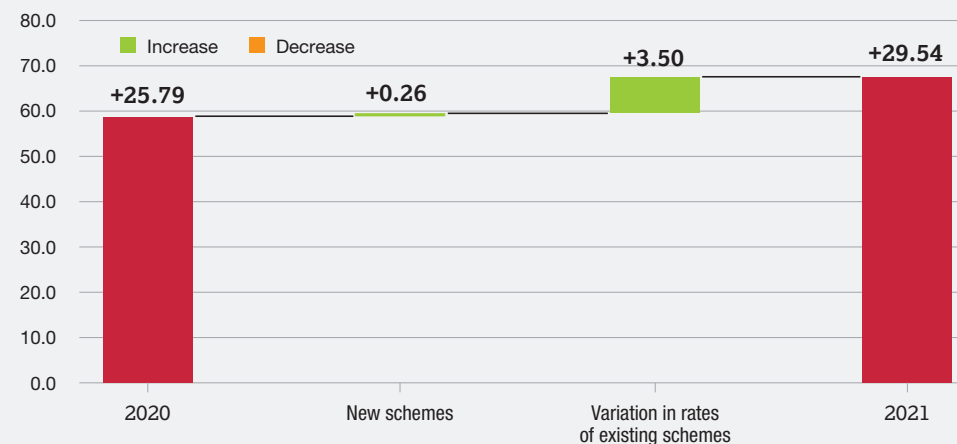
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1 Revenue increase - ETS detail



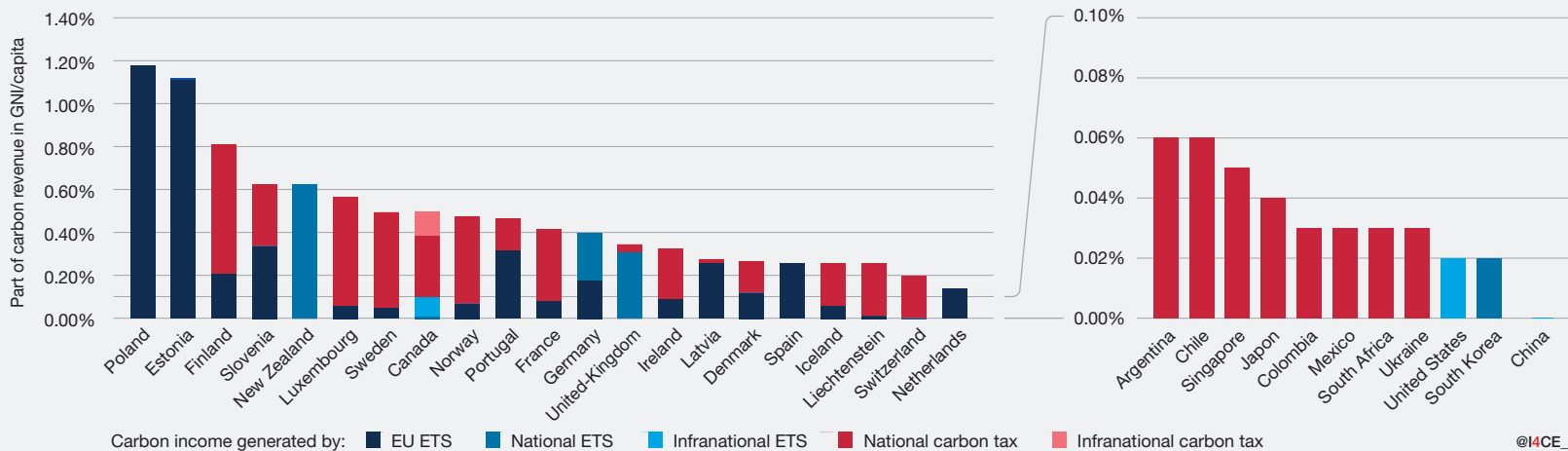
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2 Revenue increase - carbon tax detail



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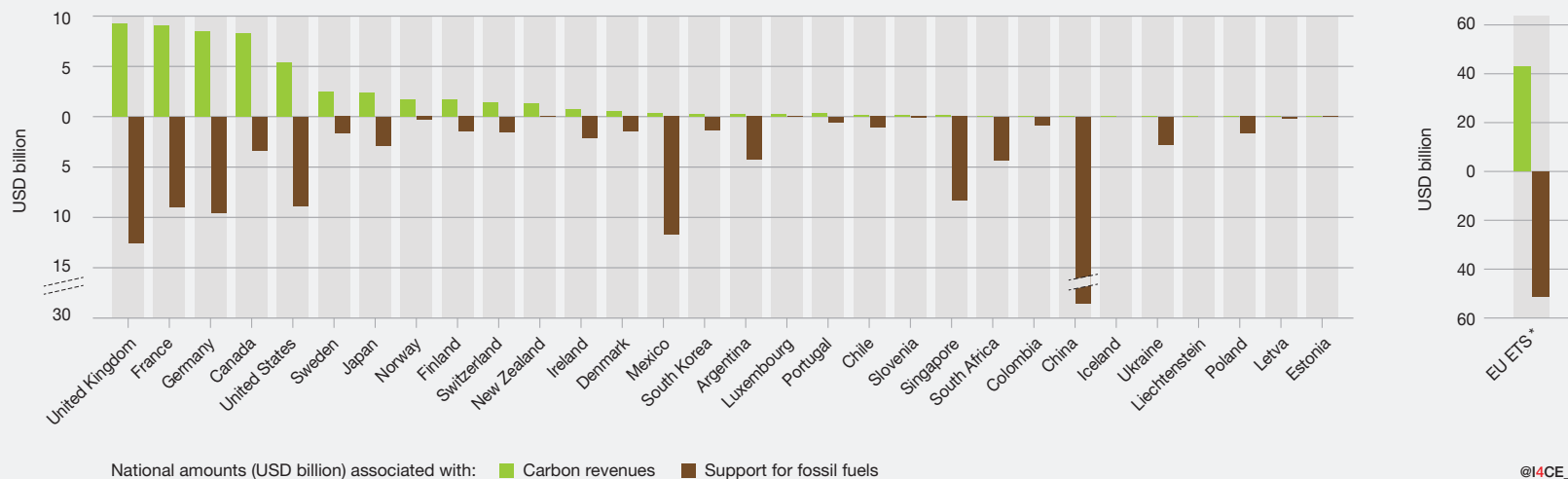
Share of carbon revenues in gross national income (GNI) per capita in 2020



Sub-national carbon pricing schemes are taken into account in the carbon revenues generated per country. For example, the United States does not have a national carbon price but still has revenues from three sub-national mechanisms: the California cap-and-trade, the Regional Greenhouse Gas Initiative (RGGI), and the emissions cap imposed by Massachusetts on its electricity generators.

It is worth noting that Poland is now the world's leading country in terms of the share of carbon revenue in national income. This is due to the very sharp increase in EU ETS prices, the effects of which are even more marked in the Polish case: the increase in gas prices has in fact led to a greater use of coal for electricity production on a European scale, and the EU ETS revenues are almost entirely returned to the Member States in proportion to the allocated quotas. In comparison, France, whose electricity is largely nuclear, has not shown such an increase in national revenues.

Carbon revenues and public support for fossil fuels



Note on the second graph

The UK subsidised fossil fuels in 2019 to the tune of USD 12,629 million. At the same time, carbon pricing in the country generated USD 9,327 million in revenue in 2021.

Sources: *FossilFuelSubsidyTracker.org* based on OECD, IEA, IMF.

Carbon pricing: use of revenues (Millions USD)

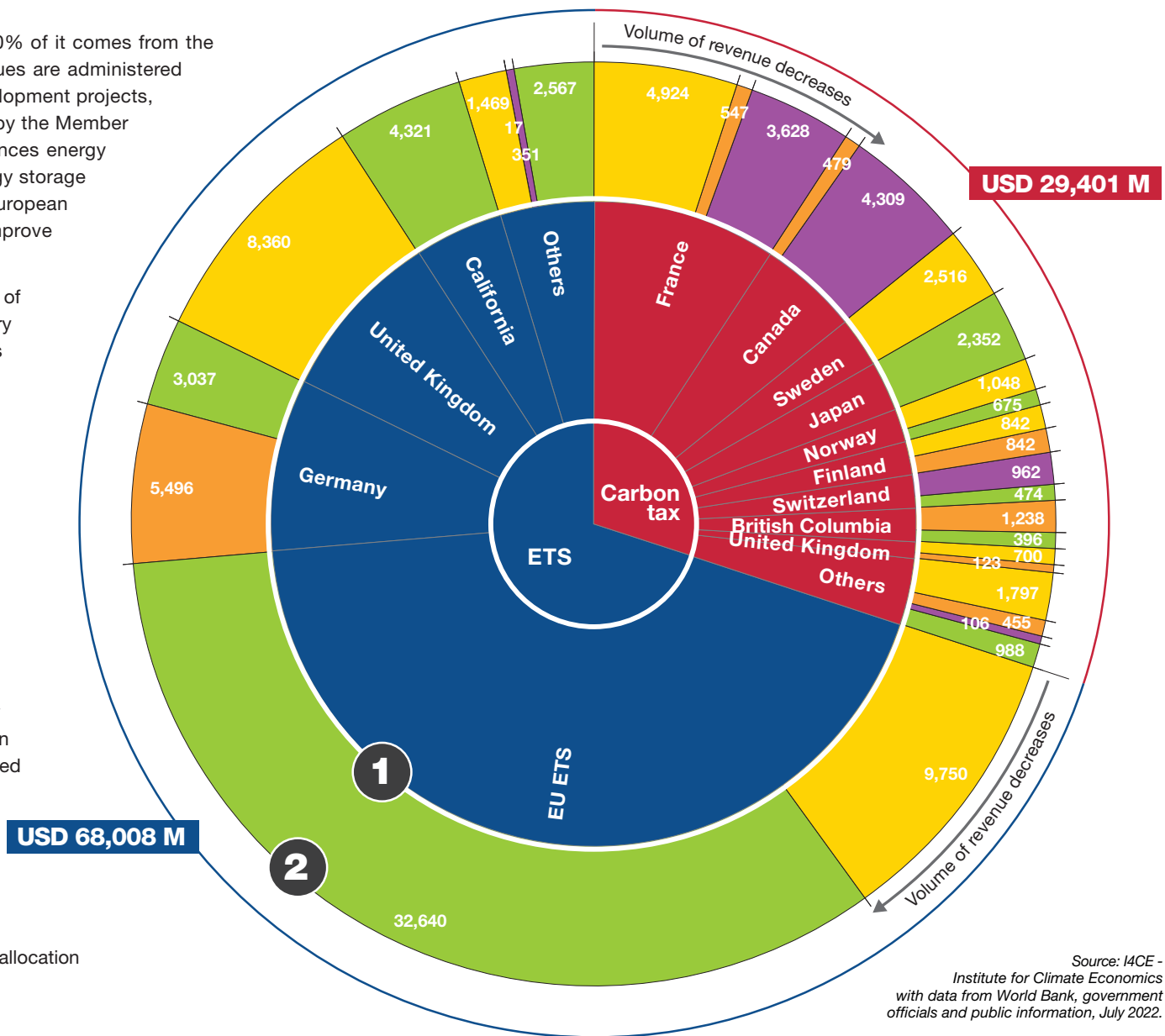
For the first time, it is the ETS that generates the most revenue; 60% of it comes from the European market alone (EU ETS). Three quarters of EU ETS revenues are administered by individual Member States. They mostly support sustainable development projects, and more marginally national budgets. Revenues not administered by the Member States go to two European funds: the Innovation Fund, which finances energy efficiency, carbon capture and storage, renewable energy and energy storage projects; and the Modernisation Fund, which helps 10 low-income European countries to modernise their electricity production systems and improve their energy efficiency.

Note that some countries appear here more than once: this is the case of the UK, which implements both a tax and a market, on complementary perimeters. Furthermore, the ETS reported for Germany is complementary to the country's participation in the EU ETS.

On the tax side, the largest revenues come from the French tax, followed by the Canadian federal mechanism. Most of the revenue from the French tax goes to the general budget, and to a lesser extent to local authorities and infrastructure agencies.

Canada, on the other hand, has committed to returning all revenues to taxpayers through various tax exemptions or subsidies.

Such «informal» commitments, which are more pragmatic than a regulatory earmarking of revenues to a narrowly defined priority, are becoming more widespread. They contribute to the acceptability of pricing policies, while remaining compatible with good budgetary practice. They also pose new challenges in terms of transparency and control of public commitments, and call for further formalisation work to place carbon pricing mechanisms, and the use of associated revenues, in the broader perspective of tools for greening budgets.



Source: I4CE -
Institute for Climate Economics
with data from World Bank, government
officials and public information, July 2022.

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