

STEERING TOOLS FOR THE TRANSITION



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Maximising benefits of carbon pricing through carbon revenue use: A review of international experiences

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LIST OF ABBREVIATIONS

CBAM	Carbon Border Adjustment Mechanism
CO₂	Carbon Dioxide
COP	Conference Of The Parties
CPI	Carbon Pricing Instrument
CPLC	Carbon Pricing Leadership Coalition
CT	Carbon Tax
ETS	Emissions Trading System
EU	European Union
EUCDs	European Union Climate Dialogues
EU ETS	European Union Emissions Trading System
G7	Group Of Seven
GHG	Greenhouse Gas
ICAP	International Carbon Action Partnership
IEA	International Energy Agency
IMF	International Monetary Fund
LTS	Long-Term Strategy
NCQG	New Collective Quantified Goal
NDC	Nationally Determined Contribution
OECD	Organisation For Economic Co-Operation And Development
PMR	Partnership For Market Readiness
R&D	Research & Development
RGGI	Regional Greenhouse Gas Initiative
SDGs	Sustainable Development Goals
UK	United Kingdom
UNFCCC	United Nations Framework Convention On Climate Change

EXECUTIVE SUMMARY

1. Context

This report aims to inform policymakers and practitioners on lessons learned and ways forward on the use of carbon revenues, with a comprehensive approach based on a review of international experiences.

The scope of the report concerns compliance carbon pricing instruments (CPIs) that directly put a price on greenhouse gas (GHG) emissions to encourage their reduction: direct carbon taxes (CTs) and emissions trading systems (ETEs). Carbon crediting and indirect carbon taxes – such as fuel excise taxes – are not part of the scope.

Hence, **the term ‘carbon revenues’ for the purpose of the report refers to the financial resources generated through carbon taxes and ETES by governments**, that they can then use to pursue diverse policy objectives. The term leaves out ‘revenue forgone’ – the potential income that a government does not collect because of exemptions, reductions, or free allocations.

The analysis on the use of revenues covers 30 CPIs in 27 jurisdictions that together make 94% of global carbon revenues. A wider scope is applied only to provide a global landscape of carbon pricing and carbon revenues based on I4CE data, complemented by World Bank data.

The main criteria for the selection of jurisdictions covered included revenue generation and data availability for the 2022 fiscal year, but also diversity; aiming to cover a large variety of practices, balancing size, geographical distribution, and share of ETE and carbon tax.

This report is the final step of a broader process, carried out as an activity of the EU-funded European Union Climate Dialogues (EUCDs) project, with the **aim of supporting a switch to a comprehensive perspective where carbon revenues are part of the implementation of low-carbon and climate resilient pathways.**

For its intended purpose, the report presents:

- An introduction on the relevance of carbon revenues in the current global context.
- A global landscape of carbon pricing instruments and their revenues.
- A proposal of an analytical framework with four pillars to explore experiences.
- A review of international experiences using the analytical framework proposed.
- A conclusion on the role of carbon revenues in financing the climate transition.

2. Why do carbon revenues matter?

Annual climate finance needed through 2030 is now estimated at USD 8.1 to USD 9 trillion¹, but these numbers are likely to increase with inaction. Over the past few years, the world has seen climate records breaking. 2023 is now confirmed as the world’s warmest year so far² and 2022 as the year when global GHG emissions set a new record³.

Carbon pricing can be a source of revenues to finance the climate transition and to support the most vulnerable to avoid negative socio-economic consequences. The energy crisis triggered by the war in Ukraine and other angles of the polycrisis have indeed made the political economy of implementing climate policies more complex. Yet the urgent need to address the climate crisis, and to fill fiscal gaps to face climate and development challenges, make solid arguments for strengthening them.

Carbon revenues have been increasing along with the number of carbon taxes and emission trading systems worldwide and changes in prices and coverage. A total of 74 carbon pricing instruments had been implemented by August 2023, and revenues reached between USD 93 billion⁴ and USD 95 billion⁵ in 2022. This trend could continue in the medium-term, raising the relevance of making good decisions on their use.

‘How to use carbon revenues’ has thus become a crucial question policy makers need to address as part of the design and implementation of carbon pricing policies. Carbon pricing revenues need to be well managed to avoid distortionary effects and maximize benefits for climate and other policy objectives. Good decisions on the use of carbon revenues generate a double dividend, meaning they can have more than one positive effect, and foster public acceptability of carbon pricing.

3. The global landscape: carbon pricing revenues have more than tripled since the Paris Agreement and the upward trend to continue

- In 2022, out of 71 CPIs in place, 59 generated revenues or had publicly available information on estimated volumes – 35 carbon taxes and 24 ETSs.
- Revenues generated by carbon pricing policies have increased overtime, reaching around USD 95 billion in 2022 from USD 26 billion in 2015, a trend expected to continue with new CPIs and changes in existing ones.
- The top 5 revenue-generating jurisdictions in 2022 were led by the European Union (EU) ETS, accounting for 44% of global carbon revenues.
- Around half of CPIs implemented over the past 3 years or under development/consideration are located in emerging or developing countries, and they could start playing a bigger role in carbon revenue generation.

4. Policy makers are confronted with a chain of decisions on the use of carbon revenues, which can be seen as part of a four-step process

To provide a comprehensive perspective on what the use of carbon revenues entails for policy makers and practitioners, we propose an analytical framework based on a four-step approach as a tool to explore the question:

- 1 **Strategy:** defining specific purposes or policy objectives for carbon revenue use – focusing on environmental, social, and/or economic aspects to address concerns such as climate and nature, redistribution, competitiveness, or carbon leakage, which can be aligned with broader policy objectives in strategic planning documents.
- 2 **Operationalisation:** choosing among different options for institutional and administrative arrangements to operationalise carbon revenue use (e.g. using special-purpose fund to channel revenues for climate action), which should be assessed to consider possible trade-offs and be based on the choice of policy objectives.
- 3 **Implementation:** using carbon revenues as planned – through the institutions and channels defined for different purposes – but considering transparency and communication as key aspects to generate trust and increase public support.
- 4 **Evaluation:** assessing outcomes and their alignment with policy objectives pursued, which translates into having accountability mechanisms in place including internal evaluations, external audit, and/or oversight. The dimension of acceptability of carbon revenue use can be included among outcomes to assess.

FIGURE A. AN ANALYTICAL FRAMEWORK TO EXPLORE THE QUESTION OF THE USE OF CARBON PRICING REVENUES



Source: I4CE based on IMF's Green PFM framework.

5. There is no ‘one-size-fits-all’: exploring diverse experiences from the field with a process-based approach

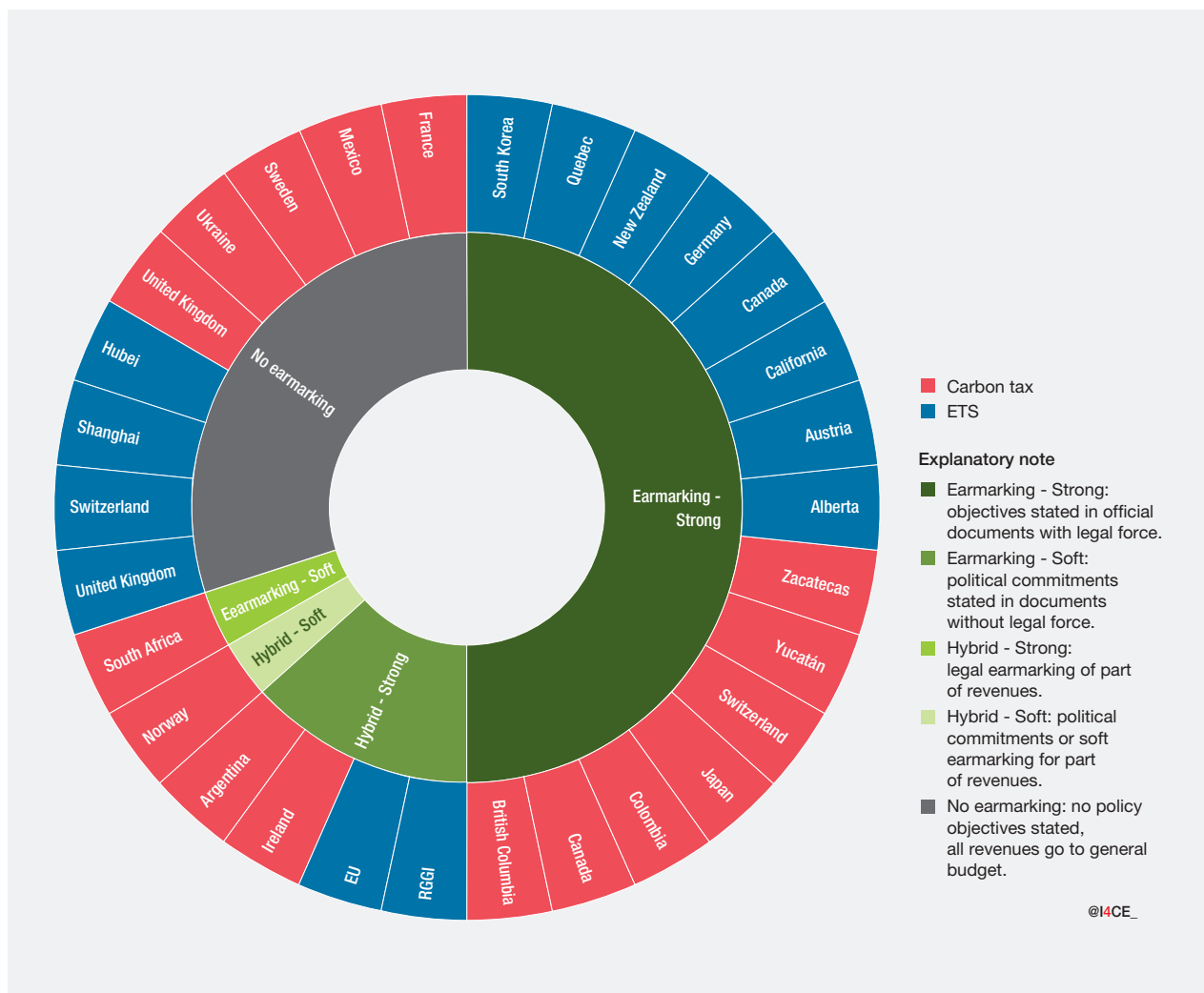
Using the proposed analytical framework, 30 carbon pricing instruments in the 27 selected jurisdictions – 16 carbon taxes and 14 ETSs – were analysed. Findings are presented in this section for each step of the process.

To define policy objectives and decisions should be based on country contexts and priorities; striving for policy coherence and alignment with broader climate and development strategies.

This step goes beyond the ‘earmarking’ or ‘no earmarking’ debate or the dilemma between having all revenues feed public budgets or serve a particular purpose. It entails seeing carbon revenues as part of the funding options that can help achieve a wide range of economic, social, and economic policy objectives in line with countries’ or jurisdictions’ needs and goals.

- Most jurisdictions – 21 out of 30 – have chosen to define policy objectives using some form of earmarking – strong as legal or soft as political commitments – for all or part of revenues.
- Out of the 14 ETSs studied, 10 have stated objectives for carbon revenue use, 9 of which include environmental objectives mixed with other socio-economic aims. An equal number of carbon taxes defined environmental and socio-economic objectives (9) with some mixing aims, while 8 had no aims defined for all (5) or part of the revenues (3).

FIGURE B. APPROACHES TO DECISION-MAKING ON CARBON REVENUE USE



Note: The figure shows the number of schemes and does not consider the volume of revenues.

Source: I4CE based on data collected from official documents

TABLE A. POLICY OBJECTIVES FOR CARBON REVENUE USE PER CATEGORY IN SELECTED JURISDICTIONS

Carbon pricing instrument	Jurisdiction	Objectives per category			
		Environmental	Social	Economic	Unspecified
ETS	Alberta (Canada)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Austria	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	California (USA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Canada	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	EU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Germany	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Hubei (China)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	New Zealand	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Quebec (Canada)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	RGGI (USA)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Shanghai (China)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	South Korea	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Switzerland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	UK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Carbon tax	Argentina	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	British Columbia (Canada)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Canada	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Colombia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	France	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Ireland	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Japan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Mexico	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Norway	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	South Africa	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Sweden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Switzerland	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	UK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Ukraine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Yucatan (Mexico)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Zacatecas (Mexico)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Source: IACE based on data collected from official documents.

To operationalize decisions on policy objectives for carbon revenue use, there is a need to assess trade-offs between different options and to design appropriate governance structures ensuring effective coordination.

The use of the general budget as a channel is a legitimate choice that has often been supported by claims of flexibility and efficiency, yet its use should be coupled with tools to track expenditure – as green budget tagging – to avoid it becoming a sort of black box. A wide array of options of institutional and administrative arrangements – such as special-purpose funds, the tax system or even the social security system – should also be considered and analysed contrasting pros and cons against how they can serve stated policy objectives.

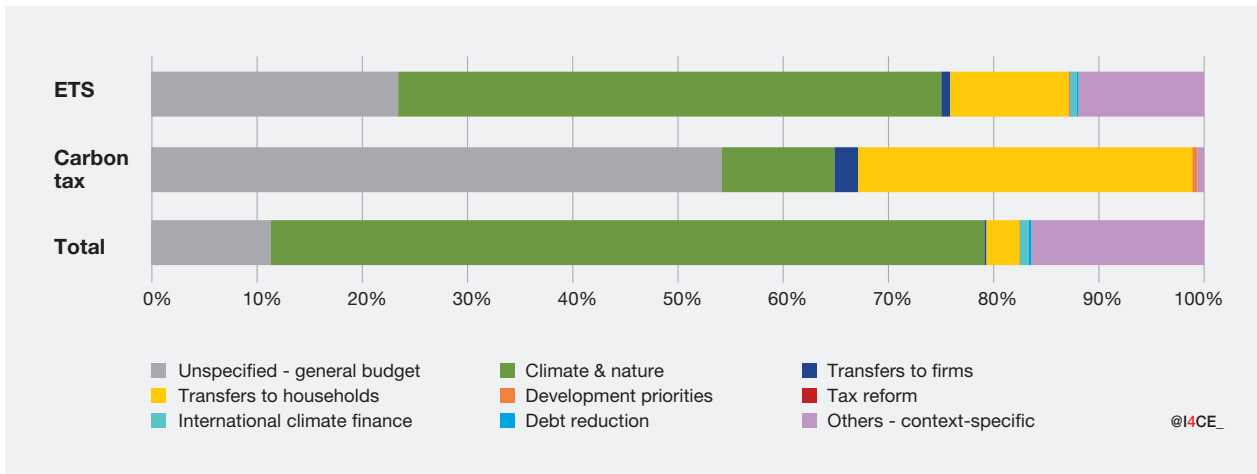
- At least one channel other than the general budget is in place to facilitate revenue use in 10 out of 14 ETSs, including special purpose funds, the social security system, and the tax system. In most carbon taxes – 9 out of 16, revenues are channelled solely through the general budget, yet some (3) pursue specific objectives and allocate revenues for these purposes through the budget process.
- Several measures to ensure stability and predictability of carbon revenues are observed, particularly in ETSs, such as market stability mechanisms, declining caps, phasing out free allocations, among others.

To implement decisions on objectives for carbon revenue use, transparency and effective communication have yet to improve, particularly on reporting actual uses.

A lack of data and of clarity on methodological choices limits the possibility of assessing the real contribution of carbon revenues for the climate transition and other objectives, a key piece to evaluate the overall policy effectiveness.

- Around 52% of carbon revenues – close to USD 47 billion – have been used for climate and nature, with half of the jurisdictions analysed dedicating all or part of revenues to this aim.
- Carbon revenues have been used for climate and nature in 9 out of 14 ETSs and 8 out of 16 carbon taxes; in 3 ETSs revenues have been used for international climate finance.
- Good practices on transparency and communication have been identified in 10 out of 27 jurisdictions covered based on their levels of publicly available information.

FIGURE C. AGGREGATED SHARES OF CARBON REVENUE USE PER CATEGORY



Source: I4CE, 2023.

To evaluate the effectiveness of carbon revenue use and improve accountability, more ex-post evaluations and audits are needed, along with assessments on the link between revenue use and acceptability of carbon pricing.

Few jurisdictions have taken this key step, which is very much needed to feed the overall process and make new decisions if needed for each previous steps based on the lessons learned.

- Accountability processes rarely land in the needed assessments of the impact of decisions on carbon revenue use, and few jurisdictions in general carry out ex-post evaluations or audits by external actors.
- Assessments of the impact of carbon revenue use in connection with the acceptability of carbon pricing are currently absent and should be included in formal evaluation processes.
- Outcomes in terms of acceptability of carbon pricing related to carbon revenue use are highly influenced by choices on communication strategies and political contexts.

Good decisions on the use of carbon revenues can maximise benefits of carbon pricing and help ensure public support, but the potential trade-off with effective decarbonisation and the overall achievement of climate objectives must be considered to ensure policy coherence. Using revenues to support citizens or households that need it the most is a way to ensure the overall carbon pricing policy is socially fair, and supporting businesses to safeguard competitiveness is a choice that can be defended. Yet the devil is in the details, so how this is done and the consequences of these choices should be carefully analysed.

6. A key piece of the puzzle: the case for carbon revenues to be part of financing plans for the climate transition

- Carbon revenues are already playing a role in the financing of the climate transition and there is potential for them to be further used to fill climate investment deficits. Over half of carbon revenues generated in selected jurisdictions – that represent 94% of global carbon revenues – have been used for climate and the overall environmental transition. Yet they are not often integrated in climate strategies such as NDCs and LTSs, which is a needed step.
- Carbon pricing revenues should integrate the broader discussion of how to finance climate action, as part of the development and implementation of financing plans for the transition – defined as tools that provide a clear picture of the investments needed, policy and funding options to fill the finance gap, and macroeconomic implications.
- Key milestones of the UNFCCC process are opportunities for carbon revenues to join this discussion – notably the NCQG at COP29, the revised NDCs at COP30, and the Sharm el-Sheikh Dialogue on the operationalization and implementation of Article 2, paragraph 1(c) of the Paris Agreement.
- The landscape of carbon revenue use worldwide will certainly evolve in the years to come, as some jurisdictions have plans to change certain choices or have defined aims for the use of revenues of new carbon pricing instruments, which could strengthen their contribution to climate action and other development goals.

1. INTRODUCTION

PURPOSE OF THE REPORT

This report aims to **inform policymakers and practitioners on the lessons learned and ways forward on the use of carbon revenues, with a comprehensive approach** based on a review of international experiences.

1.1. Context: Why do carbon revenues matter?

Annual climate finance needed through 2030 is now estimated at USD 8.1 to USD 9 trillion, but these numbers are likely to increase with inaction⁶. Over the past few years, the world has seen climate records breaking and a call for ‘dramatic action’ to achieve the objectives of the Paris Agreement rising⁷. 2023 is now confirmed as the world’s warmest year so far⁸, and 2022 as the year when global greenhouse gas (GHG) emissions set a new record and the energy crisis posed additional challenges⁹.

Carbon pricing can be a source of revenues to finance the climate transition, while supporting the most vulnerable to avoid negative socio-economic consequences. Applying the ‘polluter pays principle’, the use of carbon pricing instruments as climate policies has spread around the world, reaching a total of 74 carbon taxes and emission trading systems by August 2023¹⁰. Revenues generated by these instruments reached between USD 93 billion¹¹ and USD 95 billion¹² in 2022.

Yet the present global context of polycrisis¹³, defined as the interplay between multiple crises, has complicated the political economy of implementing carbon pricing. With energy prices rising, governments felt pressure to adopt measures to reduce them in the short-term, which added up to fiscal burdens accumulated during the pandemic and worked against carbon pricing policies. But the urgent need to address the climate crisis and to bolster government revenues to fill fiscal gaps has made a stronger case for strengthening them¹⁴.

‘How to use carbon revenues’ has become a crucial question policy makers need to address as part of the design and implementation of carbon pricing policies. Carbon pricing revenues need to be well managed to avoid distortionary effects and maximize benefits for climate and other policy objectives. Good decisions on the use of carbon revenues generate a double dividend, meaning they can have more than one positive effect, and foster public acceptability of carbon pricing instruments (CPIs).

Carbon revenues can be used to increase fiscal space to finance the climate transition in both developed and developing countries, contributing to bridge the existing investment gap for climate and for the Sustainable Development Goals (SDGs) – estimated at USD 4 trillion in 2023 up from USD 2.5 trillion in 2015¹⁵.

Choices on the use of carbon revenues should carefully consider country-specific contexts and constraints. Jurisdictions can adopt various approaches to using carbon revenues, and there is no ‘one size fits all’ solution. Proceeds from CPIs can be used in a variety of ways to pursue specific policy objectives. Thus, the choice of how to best use carbon revenues should respond to each jurisdiction’s context and priorities, but lessons learned from existing experiences can provide helpful guidance.

This report is the final step of a broader process, carried out as an activity of the EU-funded European Union Climate Dialogues (EUCDs) project, with the **aim of supporting a switch to a comprehensive perspective where carbon revenues are part of the implementation of low-carbon and climate resilient pathways.**

1.2. Scope and methodology

This report focuses on compliance carbon pricing instruments (CPIs) used as climate policy tools that directly put a price on greenhouse gas (GHG) emissions to encourage their reduction. These are primarily carbon taxes or emissions trading systems (ETs). Carbon crediting and indirect carbon pricing – such as fuel excise taxes – are not part of the scope.

Hence, **the term ‘carbon revenues’ for the purpose of the report refers to the financial resources generated through carbon taxes and ETs by governments**, that they can then use to pursue diverse policy objectives. Key determinants of carbon revenues include prices and coverage. Prices are expressed in USD per ton on CO₂, and coverage refers to the share of GHG emissions under carbon pricing.

The analysis of the use of proceeds covers 30 carbon pricing instruments that together make 94% of global carbon revenues (see Annex 1). A wider scope is applied only to Chapter 2, which presents a global landscape of carbon pricing and carbon revenues based on I4CE data, complemented by World Bank data.

The main criteria for the selection of jurisdictions covered included revenue generation and data availability for the 2022 fiscal year, but also diversity. We aimed to cover a large variety of revenue use practices, balancing size, geographical distribution, and share of ETs and carbon tax.

For the analysis, both quantitative and qualitative data were collected using different methods. A literature review was the starting point, followed by semi-structured interviews with key stakeholders including researchers and practitioners in selected jurisdictions, international organizations, and academia (see Annex 3). These were complemented by inputs from four workshops gathering around two hundred government officials and experts.

The revenue estimates are given in current USD. Given the recent inflation rates, estimates would be lower if considered in constant USD.

BOX 1. DEFINITIONS: CARBON TAXES AND EMISSION TRADING SYSTEMS

A **carbon tax** is a policy instrument through which a government levies a fee on covered entities for their GHG emissions, providing a financial incentive to reduce emissions. Under a carbon tax, the government sets a direct price on GHG emissions – the tax rate. This explicit price is expressed as a value per ton of carbon dioxide equivalent (tCO₂e).

An **ETS** limits emissions of covered entities by issuing tradable emission units or allowances that they can sell or buy to meet their compliance obligations. ETs can be designed in different ways, the most common ones being cap-and-trade systems and rate-based systems. The first set an overall limit for emissions (cap) from covered entities, and the second set a limit on net emissions based on a performance benchmark. The government can then sell (sometimes through auctions) emission allowances and/or distribute them for free to covered entities.

Source: World Bank 2023.

1.3. Structure

The report is structured as follows:

- **Chapter 2** provides an overview of existing carbon pricing instruments and revenues raised worldwide;
- **Chapter 3** discusses the proposal of an analytical framework with key pillars to explore the question of the use of proceeds from carbon pricing instruments;
- **Chapter 4** presents findings of the application of the analytical framework to selected jurisdictions;
- **Chapter 5** concludes with an analysis on the role of carbon revenues in financing the climate transition.

2. THE GLOBAL LANDSCAPE: CARBON PRICING REVENUES HAVE MORE THAN TRIPLED SINCE THE PARIS AGREEMENT AND THE UPWARD TREND TO CONTINUE

KEY TAKEAWAYS

- Carbon pricing instruments have almost doubled in number since 2015, from 38 by the end of that year to 74 by August 2023.
- In 2022, out of 71 CPIs in place, 59 generated revenues or had publicly available information providing estimated volumes – 35 carbon taxes and 24 ETSs.
- Revenues generated by carbon pricing policies have increased overtime, reaching around USD 95 billion in 2022 from USD 26 billion in 2015, a trend expected to continue with new CPIs and changes in existing ones.
- The top 5 revenue-generating CPIs in 2022 were led by the EU-ETS, accounting for 44% of global carbon revenues.
- Around half of CPIs implemented over the last three years or under development/consideration are located in emerging or developing countries, and they could start playing a bigger role in carbon revenue generation.

Carbon pricing instruments are climate policy tools that can be adopted by supranational, national, and subnational jurisdictions to put a price on greenhouse gas (GHG) emissions. Although carbon pricing encompasses a wide diversity of approaches, as public policies they generally take the form of carbon taxes and emissions trading systems (ETS). Both put a price on emissions, but the former by setting a specific price to be paid, while the latter by establishing a market which then determines the price¹⁶.

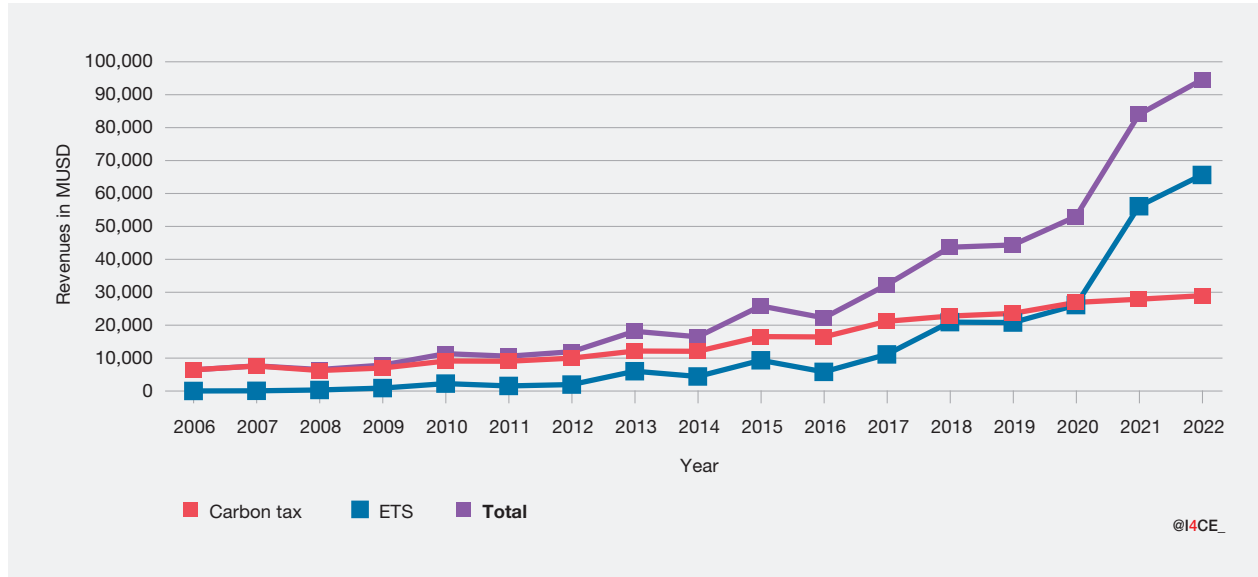
Carbon pricing is considered one of the most cost-effective policies to limit climate change. By applying the “polluter pays” principle, carbon pricing is expected to incentivize businesses and individuals to reduce their GHG emissions and invest in cleaner technologies and energy sources. The rationale behind is that putting a price on carbon will promote behavioral responses such as changes in production, consumption and investment patterns¹⁷, while at the same time generating co-benefits and raising revenues which can be used by governments to achieve a wide range of policy objectives¹⁸.

The number of carbon taxes and emission trading systems implemented worldwide almost doubled from 38 by the end of 2015 to 74 by August 2023. These span different geographical scales, from the supranational to the subnational, with a wide range of prices and coverage. From USD 1 cent per ton in Baja California (Mexico) to USD 154 in Uruguay, and a coverage of 24% global emissions considering those covered at explicit prices – the coverage figure drops to 6% when considering effective prices that take into account exemptions, reduced rates and free allowances¹⁹.

Carbon taxes generate revenue based on the size of the tax base and the price set, while ETSs through auctioning of emissions allowances²⁰. The tax base may vary from one jurisdiction to another, grounded on several factors including the size of the economy. In contrast, ETS revenues depend on the share of allowances auctioned at a given price.

2.1. Carbon revenues reached around USD 95 billion in 2022 from only USD 26 billion in 2015

FIGURE 1. EVOLUTION IN CARBON REVENUES GENERATED WORLDWIDE FROM 2006 TO 2022



Note: Volumes of carbon revenues can vary from one source to another depending on methodological choices.
Source: Based on World Bank data from the State and Trends on Carbon Pricing Dashboard.

Carbon revenues have experienced a sustained increase over the years, but with clear differences between the trend for carbon taxes and emission trading systems. The first have had a less radical yet constant increase from USD 6 billion in 2006 to USD 29 billion in 2022 and close to USD 17 billion in 2015. While the trend for ETSs shows major increases with several peaks, notably in 2021, up from no revenues back in 2006 and only USD 9 billion in 2015²¹.

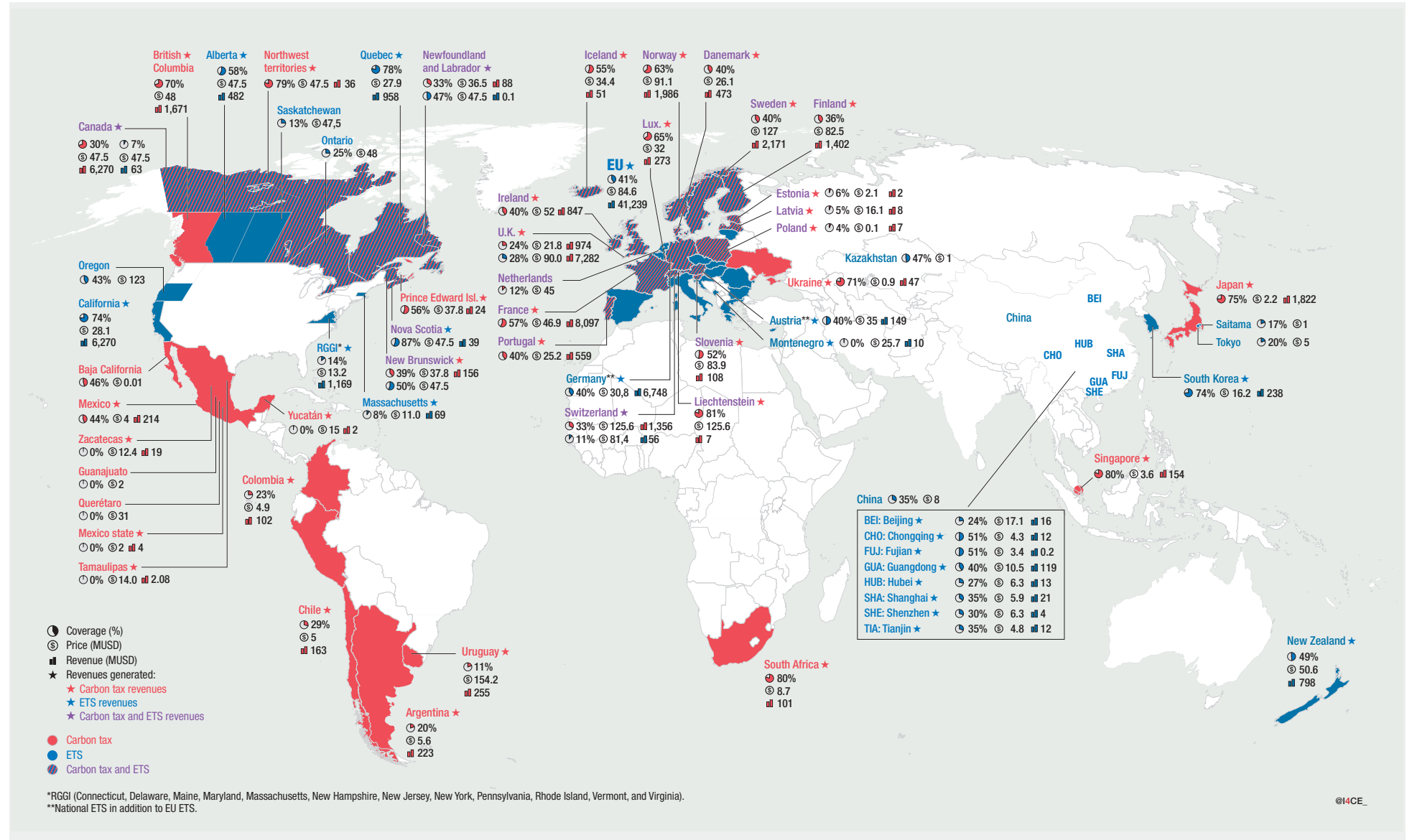
2007 marked a turning point in the global landscape of carbon revenues, as the first year ETSs started generating revenues. Before that year, carbon revenues were exclusively generated by carbon taxes, mainly from European countries and a subnational carbon tax in British Columbia (Canada). Alberta (Canada) was the first jurisdiction to generate revenues from an ETS. In 2008, the European Union's ETS (EU ETS) and the Regional Greenhouse Gas Initiative (RGGI) – a subnational ETS joining several eastern states of the United States – followed and several others joined the club in the subsequent years.

In 2021, ETS revenues reached around USD 56 billion, from close to half (USD 26 billion) in 2020. The EU ETS revenues increased by around USD 10 billion, from USD 22 billion in 2020 to USD 34 billion in 2021. Other two ETSs that started generating revenues also added their shares, the German ETS and the UK ETS, with around USD 8 and USD 6 billion respectively.

2.2. Out of 71 carbon pricing instruments in place worldwide in 2022, 59 were identified as revenue-generating

In 2022, out of 39 CTs and 32 ETSs implemented, 35 and 24 respectively were identified as revenue-generating based on publicly available data.²² This landscape is in strong contrast with the one in 2015, when only 8 ETSs and 17 carbon taxes had raised revenues.

FIGURE 2. THE LANDSCAPE IN 2022: 59 OUT OF 71 CARBON PRICING INSTRUMENTS GENERATING REVENUES



Note: In Europe, beyond the EU ETS there are national ETSS in Austria, Germany, and in Montenegro.

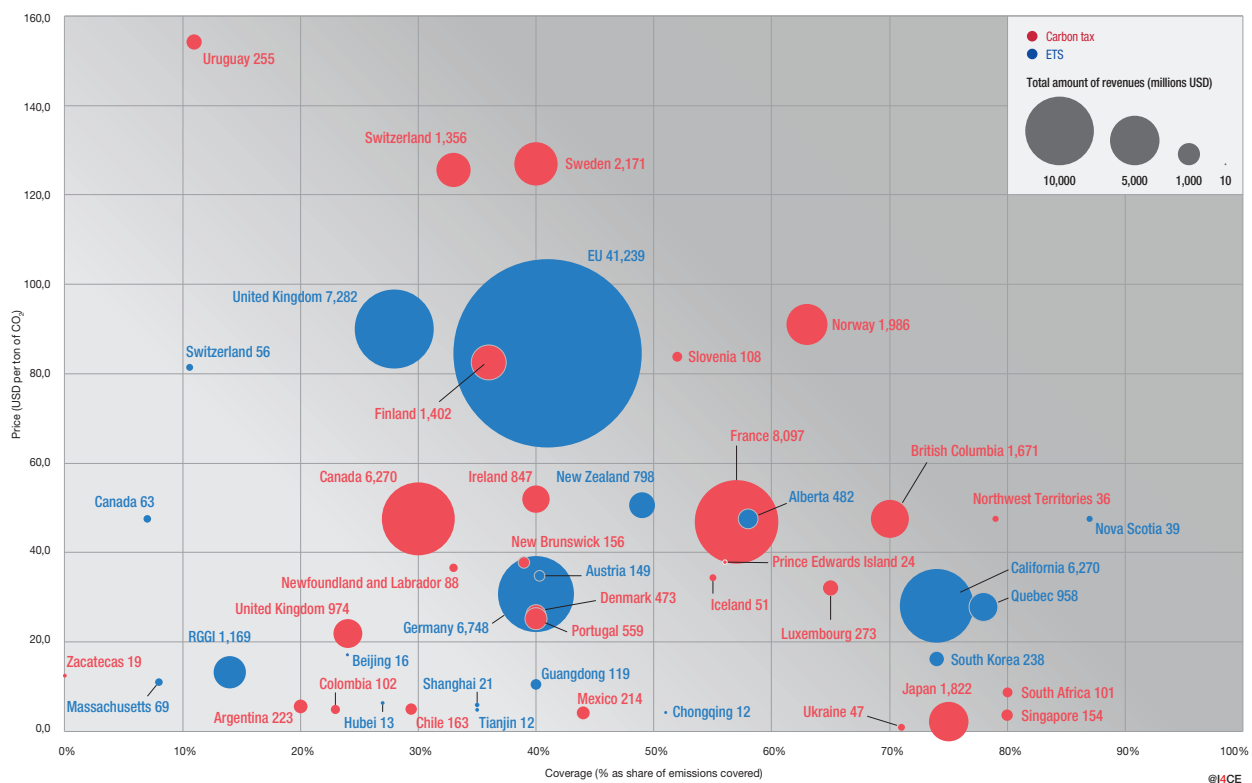
Source: I4CE based on data collected for the Global Carbon Accounts.

2.3. The EU ETS and four G7 countries' carbon pricing policies generated 75% of global carbon revenues in 2022

The top 5 revenue-generating jurisdictions in 2022 were led by the EU-ETS, accounting for 44% of global carbon revenues. The EU is followed by France (CT, 9%), UK (ETS, 8%), Germany (ETS, 7%), and Canada (CT, 7%). Prices and coverage, along with the size of the economy, are considered the main determinants of the amount of revenues raised²³.

Prices ranged from USD0.01 (Baja California) to USD 154 (Uruguay) per ton of CO₂, and coverage from 0% to 87% of emissions. Yet 76% of jurisdictions had prices below USD 40, the minimum recommended by the High-Level Commission on Carbon Prices by 2020²⁴. Around half of the jurisdictions generating revenues had a coverage below 40% of emissions

FIGURE 3. REVENUES, PRICES, AND COVERAGE: 48 OUT OF 59 JURISDICTIONS WITH REVENUES ABOVE USD 10 MILLION IN 2022



2.4. Emerging and developing countries leading on carbon pricing developments: key factors driving the trend

Around half of carbon pricing instruments implemented over the last three years or currently under development or consideration are located in emerging or developing countries. Latin America and Asia are the regions that stand out as the ones with the greatest number of CPIs under development or consideration. Most of these new schemes are ETSS²⁵.

Increasing interest in carbon pricing instruments is highly driven by the need to deliver on climate commitments, but not only²⁶. Carbon pricing can also be a path to raise revenues that can help fill the large climate and SDG finance gap in developing countries. To face climate change alone, these countries (excluding China) will need USD 2,400 billion annually until 2030²⁷. As many of them are confronted with a lack of fiscal space, high debt, and low access to climate finance, CPIs could be integrated as part of the policy mix to fill the gap.

So far, several CPIs in emerging and developing countries are not revenue-generating or have limited proceeds, although this picture could change in the coming years. Countries like China and Brazil could transform the landscape once their ETSS, in place or planned in the case of Brazil, start generating auctioning revenues. Their contribution would be complemented by existing and forthcoming carbon pricing developments in other 'global south' countries.

But an additional factor has come into the picture, driving increasing interest in carbon pricing worldwide: the Carbon Border Adjustment Mechanism (CBAM) of the EU²⁸. Countries without carbon pricing in place and with strong trade links with the EU may be affected by this mechanism that is in force since October 2023. Thus, for jurisdictions with exports of goods covered by the CBAM, introducing carbon pricing could become financially advantageous.

BOX 2. THE CARBON BORDER ADJUSTMENT MECHANISM (CBAM) OF THE EUROPEAN UNION

Instituted as part of the European Green Deal, the Carbon Border Adjustment Mechanism (CBAM) is a significant development in the EU's climate policy aiming to prevent carbon leakage and encourage cleaner production globally. It is designed to level the playing field between European producers, who are subject to carbon pricing, and non-EU producers, who may not be. It does so by imposing a carbon price on imports of specific products.

The CBAM will initially apply to imports of goods whose production is carbon intensive and at most significant risk of carbon leakage: cement, iron and steel, aluminium, fertilisers, electricity, and hydrogen. By confirming that a price has been paid for the carbon emissions generated in the production of certain goods, the CBAM is expected to ensure the carbon price of imports is equivalent to the carbon price of domestic production.

On October 1, 2023, the CBAM started its transitional phase. During this phase, importers are required to report GHG emissions embedded in certain imported products, with the first reporting period set to end 31 January 2024. The gradual introduction of the CBAM is aligned with the phase-out of the allocation of free allowances under the EU ETS.

The CBAM's full implementation is scheduled for January 2026. Importers will then need to declare each year the quantity of goods imported into the EU in the preceding year and their embedded GHG emissions using the EU approved methodology. Based on this assessment, they will be required to surrender the corresponding CBAM certificates, whose price will be linked to the EU ETS.

Source: European Commission 2023.

3. STRATEGY, OPERATIONALISATION, IMPLEMENTATION, AND EVALUATION: A FOUR-STEP APPROACH TO EXPLORING THE USE OF CARBON PRICING REVENUES

KEY TAKEAWAYS

In line with the aim of the report of providing a comprehensive perspective to the question of the use of carbon pricing revenues, a proposal for an analytical framework was developed to study selected experiences. The framework includes four components as the main steps of the process:

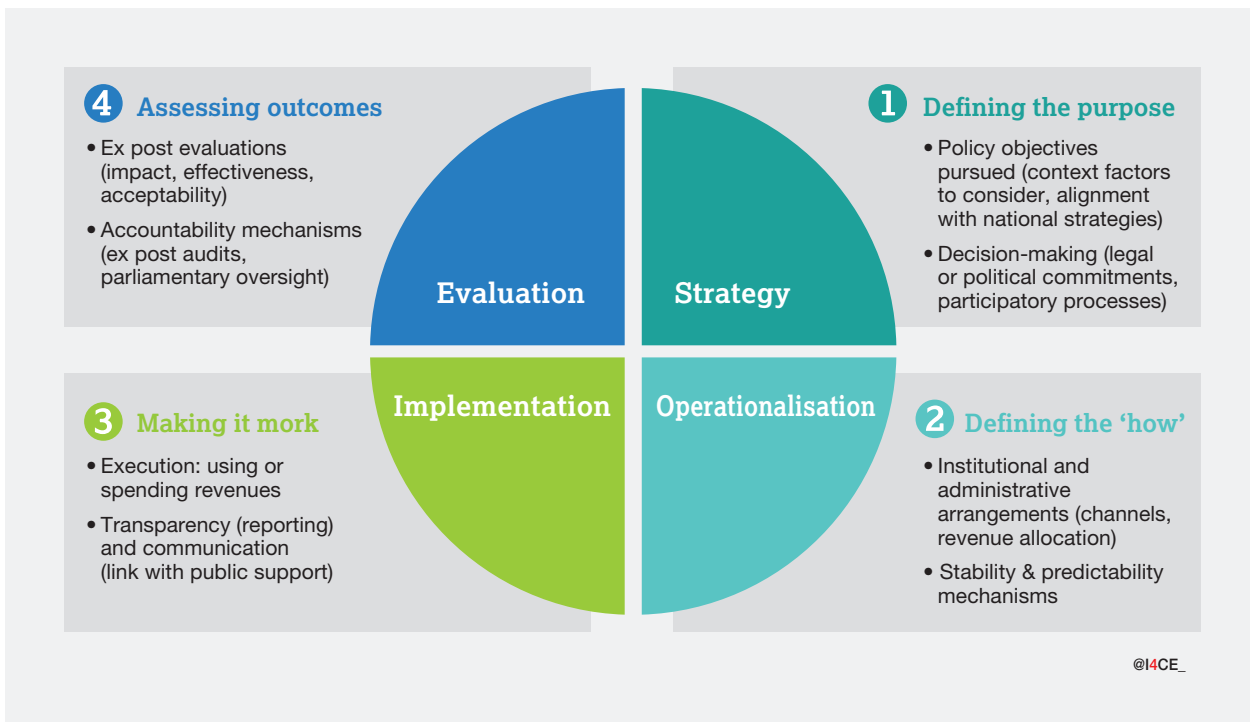
- **Strategy:** as a first step, policy makers can define specific purposes for carbon revenue use – focusing on environmental, social, and/or economic aspects to maximise the benefits and minimise negative impacts of carbon pricing on society and the economy, which can be aligned with broader policy objectives in strategic planning documents.
- **Operationalisation:** depending on the purpose, there are several options for institutional and administrative arrangements to operationalise carbon revenue use (e.g. using special-purpose fund to channel revenues for climate), which should be assessed to consider possible trade-offs and be based on the choice of policy objectives.
- **Implementation:** this step entails using carbon revenues as planned – through the institutions and channels defined for different purposes – but considering transparency and communication as key aspects to generate trust and increase public support.
- **Evaluation:** the final stage in the process is to assess outcomes and their alignment with policy objectives pursued, which translates into having accountability mechanisms in place including internal evaluations, external audit, and/or oversight. The dimension of acceptability of carbon revenue use can be included among outcomes to assess.

Abundant literature has addressed the issue of the use of carbon pricing revenues with diverse approaches, yet a quite generalised focus on the types of uses dominates the landscape. The discussion on whether carbon revenue use is – or should be – unconstrained or constrained – earmarked or hypothecated – for a specific purpose is often a starting point, to then land in typologies of carbon revenue use and their application²⁹. In line with this approach, other research works have further studied public preferences for these options in different contexts³⁰, or the best suited options depending on the contexts³¹.

But beyond types of uses, there is a vast field to explore on the use of carbon pricing revenues. First, the discussion on uses can be taken further to connect with the strategic planning level and the definition and alignment with policy objectives as legal or political commitments – strong or soft earmarking. Second, the operationalisation of carbon revenue use can be addressed in the broader context of governance and coordination aspects, as institutional and administrative arrangements needed depending on aims pursued. Third, the actual use of revenues can be seen as an implementation phase – when revenues are executed – considering aspects of reporting, transparency, and communication which are key aspects to ensure public support. Finally, the outcomes of carbon revenue use can be assessed, with a focus on evaluation, external oversight, or accountability mechanisms.

Translating these elements into a holistic process-based approach, we propose an analytical framework to be used as a tool to explore the question of the use of proceeds from carbon pricing instruments with a comprehensive perspective. Inspired by the ‘Green PFM analytical framework’³², it includes four components as the different stages of the process. These key pillars, which were defined using a bottom-up approach and considering the story told by the diverse inputs collected on experiences studied and by multiple actors consulted, are illustrated in Figure 4, along with principles proposed to guide the overall design and implementation of carbon pricing policies in **Box 3**³³.

FIGURE 4. AN ANALYTICAL FRAMEWORK TO EXPLORE THE QUESTION OF THE USE OF CARBON PRICING REVENUES



Source: I4CE based on IMF's Green PFM framework.

BOX 3. PRINCIPLES TO GUIDE THE OVERALL PROCESS

Certain principles have been proposed to be considered in the design and implementation of carbon pricing policies, that can also be useful in the specific process of the use of carbon revenues.

These principles are:

- Fairness: equitable distribution of costs & benefits;
- Alignment: between objective & policies;
- Stability & predictability: sending consistent and credible signals;
- Transparency: clarity on design & implementation;
- Efficiency & effectiveness;
- Reliability & environmental integrity: measurable reductions on harmful activities.

Source: World Bank & OECD 2015.



3.1. Strategy: Defining the purpose

Policy objectives for carbon revenue use are the specific goals or aims that governments or policy makers intend to achieve by allocating or spending carbon pricing revenues.

The first question policy makers should answer when addressing the issue of the use of carbon pricing revenues is: ‘what purpose will they serve?’. This translates into the definition of policy objectives of carbon revenue use and includes sub-questions such as ‘who will they benefit?’ and ‘how much will be directed to each objective or beneficiary?’. But it could also include other procedural aspects, such as the public participation mechanisms put in place for the decision-making process (e.g., a citizens’ assembly and other consultation mechanisms).

The relevance of aligning the use of carbon revenues with objectives within the broader fiscal policy framework has been highlighted in the literature. Fiscal policy objectives can include efficiency, long-run growth, equity, and acceptability³⁴. Each of these objectives can guide the choice of policy objectives for carbon revenue use. For instance, a focus on equity can lead to the decision to use carbon revenues for social objectives by redistributing them to households or vulnerable population, while a focus on long-run growth would prioritise support for businesses.

Policy objectives for carbon revenue use can also be defined with a broader strategic planning perspective, in alignment with national transition or development strategies. This point will be further explored in Chapter 5, through an assessment of the integration of carbon pricing revenues within climate strategies: Nationally Determined Contribution (NDCs) and Long-term Strategies (LTS).

When reflecting on the purpose of carbon revenue use, there are key aspects to consider. These include, but are not limited to, the concept of ‘double dividend’³⁵, the risk of a ‘waterbed effect’³⁶, and public preferences³⁷. Details for each of them are provided in Box 4 below.

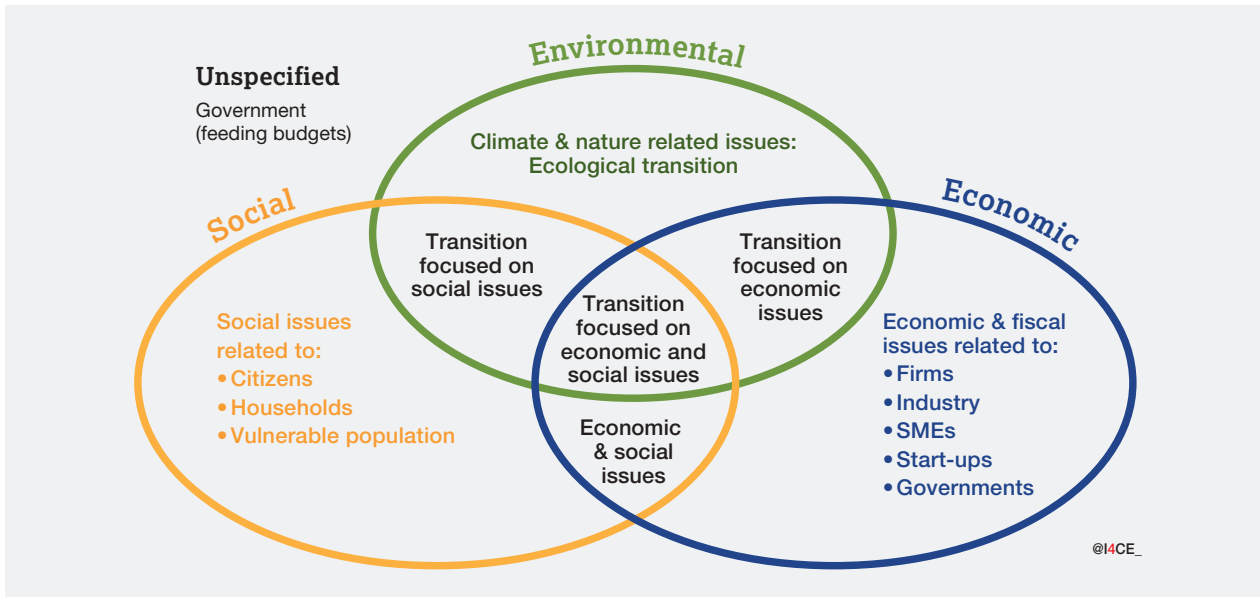
BOX 4. THREE KEY ASPECTS TO CONSIDER WHEN DEFINING THE PURPOSE OF CARBON REVENUE USE: INSIGHTS FROM THE LITERATURE

- 1. The concept of ‘double dividend’ as an argument for the strategic use of carbon revenues:** It is broadly defined as an improvement to both environmental and economic outcomes by replacing distortionary taxes with carbon pricing. This means that to prevent possible negative and to achieve positive outcomes beyond environmental ones, revenues can be used to reduce other taxes. Yet this argument can be extended to various uses of revenues beyond those linked to the tax system, such as investing in mitigation options or redistributing them to households to maximise the environmental impact or alleviate social effects.
- 2. The risk of a what is called a ‘waterbed effect’ and putting the right measures in place to avoid it:** Particularly relevant for cap-and-trade systems, it refers to the phenomenon where efforts to reduce emissions in one area can lead to an increase in emissions elsewhere within the system, due to the overall cap on emissions. Theoretically, subsidies to green investments could reduce demand for carbon allowances in an ETS, thus reducing the price incentive to reduce emissions (less demand leading to lower prices). The materiality of such an effect remains discussed in the EU-ETS framework. But there are ways to offset the ‘waterbed effect’ that should be considered as part of the design of ETSs, such as mechanisms that allow to adjust the supply of allowances.
- 3. Public preferences on the use of carbon revenues and acceptability of carbon pricing:** Some studies suggest public support is higher when carbon revenues are given specific purpose, as this allows the public to see clearly what they are funding. Other studies have focused on public preferences for specific types of uses, finding that using carbon revenues for climate action is a widely preferred option in high-income countries. This preference has been explained in the literature by the underlying logic of ‘thematic matching’ between the aim of a fiscal policy and the use of its revenues (Kim 2017, Mus *et al.* 2023). But public preferences remain context-dependant and may not always align with climate action.

Ultimately, the decision on how to use carbon revenues should be tailored to a jurisdiction’s context and objectives. Preferred options on carbon revenue use cannot be generalized, as they can vary depending on the political context, and must be adapted to each jurisdiction’s specific factors³⁸.

Policy objectives for carbon revenue use can address environmental, social, or economic aspects to maximise the benefits of carbon pricing and minimise negative impacts on society and the economy. Figure 5 illustrates these three spheres in line with proposals to represent the pillars of sustainable development³⁹.

FIGURE 5. POLICY OBJECTIVE SPHERES



Source: I4CE based on Wanamaker 2018 in Mensah 2019.

The spheres and their intersections represent the different aims that can be pursued. The environmental sphere refers to the broader aim of accelerating the ecological transition – including preventing carbon leakage; the economic to a focus on issues of competitiveness and fiscal stability; and the social to addressing issues faced by citizens through the redistribution of revenues. The intersections show a combination of objectives across two or three spheres.

Economic and social objectives can focus on offsetting the impacts of carbon pricing and the climate transition, but not only. When addressing transition-related socio-economic issues, these would be in the intersection with the environmental sphere and can include support to households or to firms to adopt clean technologies or reduce their vulnerability to climate change. Socio-economic issues not related to the transition can include support to households and firms to offset the impact of carbon pricing, government aims such as debt reduction, and other context related.

Policy makers can also decide not to define a specific purpose to have more flexibility on the use of carbon revenues. In this case, carbon revenues feed into government budgets. From there they can serve different purposes, but there is no commitment to pursue a certain aim. This dilemma of whether to earmark or not has taken a lot of space in the discussion on carbon revenue use, with claims of inefficiency due to lack of flexibility of earmarking versus arguments in favour of the practice arguing it increases policy efficiency and public support⁴⁰.

Based on an extensive review of the literature on the topic⁴¹, Table 1 presents the **approaches to decision-making on policy objectives for carbon revenue use identified**.

TABLE 1. DECISIONS ON CARBON REVENUE USE: WHAT WE MEAN BY EARMARKING

Decision type \ Strength level	Soft	Strong
Earmarking: having a purpose or objective	Earmarking-soft: political commitments communicated in documents such as strategies and plans without legal force	Earmarking-strong: objectives or purposes stated in laws, regulations, budgets, and other official documents with legal force
Hybrid : part of the revenues are assigned a purpose or objective	Hybrid-soft: a political commitment to use a share of revenues for a specific aim, leaving the rest with no objective to feed public budgets	Hybrid-strong: legally earmarking of a share of revenues and leaving the rest without a specific aim to feed public budgets
No earmarking : no purpose or objective stated		

Source: I4CE based on a literature review and inputs from experiences analysed.

To safeguard their diversity, the proposed approach is to present policy objectives as stated in official documents of jurisdictions analysed. A review of legislations, decrees, national strategies, and other relevant documents was carried out for this purpose and to determine under which category each jurisdiction fits. The scheme presented above was used for illustrative purposes, to locate jurisdictions within spheres based on their choices of policy objectives for carbon revenue use.



3.2. Operationalisation: Defining the ‘how’

Decisions on institutional and administrative arrangements for the use of carbon revenues should consider possible trade-offs and be based on the choice of policy objectives.

The next question to answer is how to do it, or what to use or put in place to achieve the stated objectives for carbon revenue use. This involves deciding on the institutional and administrative arrangements, including means to channel carbon revenues that could better serve the purpose. These can be existing or created specifically for this purpose.

Choosing one channel over another can have different implications in terms of administrative burden, as well as on potential advantages. Box 5 below presents some of the pros and cons of the options identified⁴². These reflect existing channels for revenue use in several jurisdictions (e.g. UK through the general budget, California with a special-purpose fund, Switzerland with social security system, and Canada with the tax system).

Decision-making on carbon revenue allocation can involve a number of actors and a strong inter-institutional coordination is required. Implementing and managing an efficient use of proceeds policy is at its core a public coordination issue, requiring significant inter-ministerial and inter-agency collaboration. It raises questions as to the separation of powers between the executive and the legislative branches, as some jurisdictions choose to handle the revenues outside of the budgetary process. Hence, it can also challenge traditional public spending processes and require specific oversight and control organisations.

Measures to foster stability and predictability of carbon revenues can help ensure policy objectives for carbon revenue are attained. Revenue volatility is not unique to carbon revenues, but revenues can be particularly volatile under an ETS due to potential fluctuations in auction prices and due to changing political and economic conditions in the case of carbon taxes⁴³. Measures used to address the ‘waterbed effect’ such as market stability reserves, and decreasing caps, among others, can help reduce volatility.

The proposed approach to analyse operationalisation practices is thus threefold. First, institutional, and administrative channels are presented in connection with objectives they serve. Second, decision-making processes and inter-institutional coordination mechanisms put in place are discussed. And third, if enough information is available, experiences regarding mechanisms put in place to manage revenue volatility and guarantee predictability are included in the analysis.

BOX 5. DISCUSSING THE IMPLICATIONS OF DIFFERENT OPTIONS FOR INSTITUTIONAL AND ADMINISTRATIVE ARRANGEMENTS

	Pros	Cons
Government budgets	Simple No extra burden	Limited transparency
Special purpose funds	Increased transparency, visibility, and stability	Complex to set up and manage
Other (social security, tax system, etc.)	Increased transparency Easier to set up than options like funds	Some administrative costs Less visible than other options

Jurisdictions can channel revenues through the general budget, which is simpler from an administrative standpoint than other options. However, this may not maximize efficiency and can be less transparent depending on the mechanisms in place to track the use of revenues.

Channelling revenues through the general budget can be combined with special accounts or the allocation of revenues to specific programmes in budget plans or laws, to address issues of transparency and accountability.

Using existing revenue allocation structures in place is another option to ensure a low administrative burden – such as the social security or tax system. This option is better suited for purposes like supporting households affected by carbon pricing with transfers or tax credits, but also in terms of transparency despite less effective in terms of communication and visibility.

Special-purpose funds are also an option to channel carbon revenues ensuring transparency and high visibility of the benefits of funded programmes and projects – a key aspect to ensure public support. Yet, they are complex to set up and manage as they require cross-government coordination and collaboration.

Source: I4CE based on a review of experiences and World Bank 2019.



3.3. Implementation: Making it work

Using carbon revenues

This step entails using carbon revenues as planned but considering transparency and communication as key aspects to ensure public support. At this stage, revenues will be spent or directed to fund initiatives depending on the policy objective chosen. Policy makers will need to reflect on and define the best way to report on how the money is used, and the strategies and channels best suited to ensure effective communication and foster acceptability of carbon pricing.

Given the wide diversity of options for carbon revenue use, several typologies have been proposed with different approaches, the most widely used being to use thematic categories⁴⁴. Other approaches include proposals of broad categories with sub-categories under each, such as: i) unconstrained and constrained uses, with thematic sub-categories for the latter⁴⁵; and ii) revenue neutral recycling – with options for revenue redistribution including tax reform and transfers, and revenue raising expenditures – with thematic sub-categories⁴⁶. An additional approach focuses on public preferences, using as broad categories: environmental, redistribution and others⁴⁷.

The selected approach is to apply a set of thematic categories for carbon revenue use to analyse international experiences. Based on a review of the options found in the literature and other sources, the proposal presented in Table 2 includes categories found in reports by specific jurisdictions, such as international climate finance (European Commission 2023). It also includes the category ‘Other-context specific’, which was conceived to cover uses that are particular to a country’s reality. Thus, it is also built with a bottom-up approach to consider a wider diversity of uses.

The categories presented will serve to provide a broad perspective of carbon revenue allocation or execution (when data is available). Presenting actual uses is only possible for jurisdictions with thorough reporting in place. Hence, transparency practices will largely determine the accuracy of the picture presented on how proceeds from carbon pricing have been used.

TABLE 2. CATEGORIES OF SPECIFIC PURPOSES FOR CARBON REVENUE USE

CATEGORIES	DESCRIPTION
Climate & nature	Climate change mitigation and adaptation; and other environmental objectives (nature, biodiversity).
Development priorities	Infrastructure, health, education, etc. Not directly addressing climate or environment.
Support to social actors	Transfers to households with a focus on just transition. Not conditional on climate action.
Support to economic actors	Transfers to firms with a focus on competitiveness or preventing carbon leakage. Not conditional on climate action.
Tax reform	Reduce other taxes or provide tax credits to offset the burden of carbon pricing.
Debt reduction	Reduce existing debt levels.
International climate finance	Support other (developing) countries to advance on climate objectives.
Other - contex-specific	Other national priorities or objectives not included in previous categories.
Unspecified - general budget	No specific purpose of carbon revenue use stated. Revenues go to the general budget.

Source: IACE based on World Bank 2019.

■ Transparency and communication

“Trust in carbon pricing cannot be separated from public trust in how the revenues are spent.” (PMR and CPLC 2018)

To generate trust and increase public support, both transparency and effective communication on the use of carbon revenues are key. Visible use of carbon price revenues is often essential to ensure acceptability of carbon pricing. This can also apply to revenue forgone in the case of ETSs with free allocations, where revenues that could be collected are being used to support a smooth implementation of carbon pricing to avoid negative socio-economic impacts. Thus, reporting on how revenues are used is an aspect that merits thorough consideration.

People are more likely to accept a carbon price when the use of revenues generated is aligned with their preferences. These can include uses consistent with the goals pursued with the policy, of high public concern, or addressing affordability by redistributing revenues to citizens. In some jurisdictions, the use of revenues should be the dominant narrative instead of complex and highly technical arguments in favour of the policy⁴⁸. This is particularly relevant in contexts where narratives around negative impacts of carbon pricing can be easily used for political purposes in times of elections.

Preferred options on carbon revenue use cannot be generalized, and the choice of communication strategies and narratives must be adapted to each jurisdiction’s context. Understanding public opinion on carbon pricing is a key step that will help governments decide whether they should pursue an active or passive communications strategy. Some jurisdictions may prefer to limit public outreach to avoid attracting attention to carbon pricing⁴⁹, while others can choose to communicate actively on carbon revenue uses and ensure transparency by making all relevant information available and accessible.

Specific narratives can be used to frame communications on the use of carbon revenues. The Guide to Communicating Carbon Pricing highlights three that have worked well to frame communications around carbon pricing more broadly – fairness, balance, and shift to clean energy, alongside others that have been less effective – cost, expert consensus, and threat of climate change⁵⁰.

Beyond communication narratives, ensuring trust on how revenues are spent is also a matter of transparency. This involves reporting on revenue use and making information available and accessible for the public. Hence, the proposed approach is twofold:

1. to assess practices on transparency considering on levels of publicly available information based on the criteria on Table 3, and
2. to highlight good practices amid jurisdictions analysed.

No ranking of jurisdictions considering levels of publicly available information will be carried out. The assessment of transparency regarding carbon revenue use is a natural step in the research process, and the levels detailed in the table above will only help identify good practices.

TABLE 3. ASSESSING TRANSPARENCY ON CARBON REVENUE USE

Overall level of publicly available information	Description
High: detailed level of information	Reports and detailed information available on the use of revenues, including amounts allocated, programmes/projects funded, funding conditions, beneficiaries, etc.
Medium: key information missing	General information provided without key details and no thorough reports available.
Low: limited	Information is limited or not easily accessible.

Source: I4CE.



3.4 Evaluation: Assessing outcomes

A final stage in the process is to assess outcomes and their alignment with policy objectives pursued. There are two dimensions to this step. The first involves evaluation processes for accountability, and the second refers to external oversight focused on control and audit.

Accountability processes can include evaluations or assessments of the impact towards the achievement of policy objectives. This would represent an additional step to efforts on reporting and transparency. Evaluating carbon revenue use is intended to ensure that revenues are being used effectively, beyond only making information available on factual or intended uses.

External oversight involves the participation of independent bodies in evaluation procedures. These can include ex post assessments or audits. Independent committees, state agencies, parliament, civil society, or international organizations are some of the actors that can be involved.

An additional key dimension that can be assessed as part of the outcomes is the issue of acceptability. When possible, based on data availability, findings on public support for carbon pricing and identified connections with the use of revenues in jurisdictions studied will be discussed.

The proposed approach is to present identified evaluation practices and arrangements for control and oversight in jurisdictions covered, as well as elements on acceptability of carbon pricing and the potential connection with carbon revenue use.

4. THERE IS NO ‘ONE-SIZE-FITS-ALL’: EXPLORING DIVERSE EXPERIENCES FROM THE FIELD WITH A FOUR-STEP APPROACH

KEY TAKEAWAYS

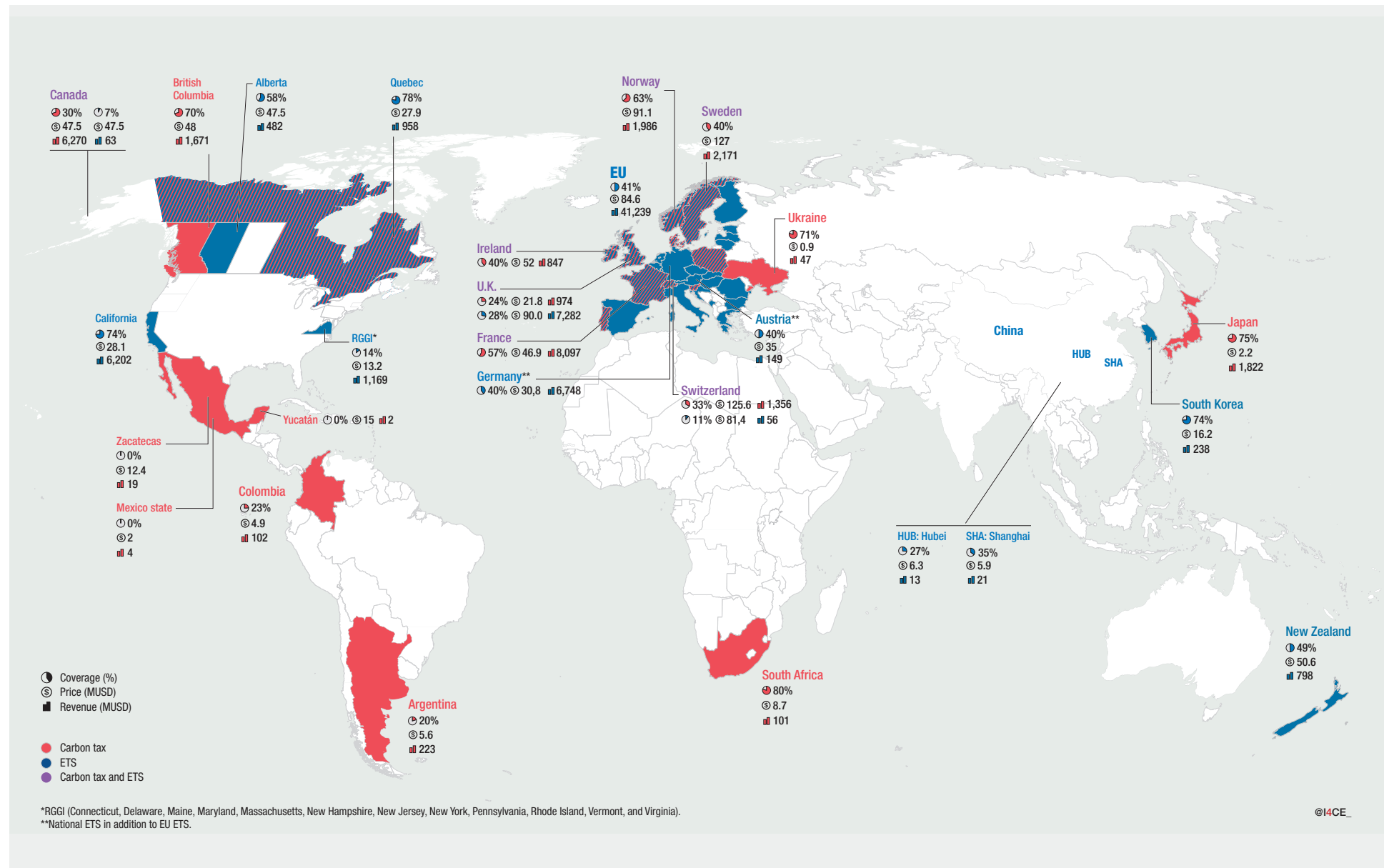
- Most jurisdictions – 21 out of 30 – have chosen to define policy objectives using some form of earmarking – strong as legal or soft as political commitments – for all or part of revenues.
- At least one channel other than the general budget has been used to facilitate revenue use in 10 out of 14 jurisdictions with ETSs, while in most jurisdictions with carbon taxes – 9 out of 16 – revenues are channelled through the general budget.
- Around 55% of carbon revenues – close to USD 50 billion – have been used for climate and nature, with half of the jurisdictions analysed dedicating all or a part of revenues for this purpose.
- Accountability processes rarely land in the needed assessments of the impact of decisions on carbon revenue use, few jurisdictions carry out ex-post evaluations or audits, and assessments of the impact of carbon revenue use in connection with acceptability of carbon pricing are needed.

Using the proposed four-step approach – strategy, operationalisation, implementation, and evaluation, selected international experiences were analysed and are presented in this section. Jurisdictions to be analysed were chosen using specific criteria including: 1/ carbon taxes and emission trading systems in place and generating revenues, 2/ availability of data on carbon revenue use for the 2022 fiscal year, 3/ even geographical coverage, and 4/ diversity of contexts and revenue uses. In addition, jurisdictions targeted by the EUCDs project – as part of which this work has been developed – were also included if complying with key criteria.

A total of 30 carbon pricing instruments in 27 jurisdictions, which together make 94% of global carbon revenues, are covered by this analysis – 16 carbon taxes and 14 ETSs⁵¹. Out of these carbon pricing schemes, 20 are national, 9 subnational, and one supranational – EU-ETS.

Both quantitative and qualitative research methods were used, with most quantitative data collected by I4CE and qualitative data coming from the literature, interviews, and workshops. A literature review was the starting point, followed by semi-structured interviews with key stakeholders including researchers and practitioners in selected jurisdictions, international organizations, and academia. These were complemented by inputs from four workshops carried out in September and October 2023, gathering over 200 government officials and experts (see Annex 3).

FIGURE 6. THE 2022 LANDSCAPE OF SELECTED JURISDICTIONS: PRICES, COVERAGE, AND CARBON REVENUES



Note: Based on the methodology of the Global Carbon Accounts report by I4CE. Revenues may be overestimated in the case of Argentina due to inflation and currency devaluation.

Source: I4CE.

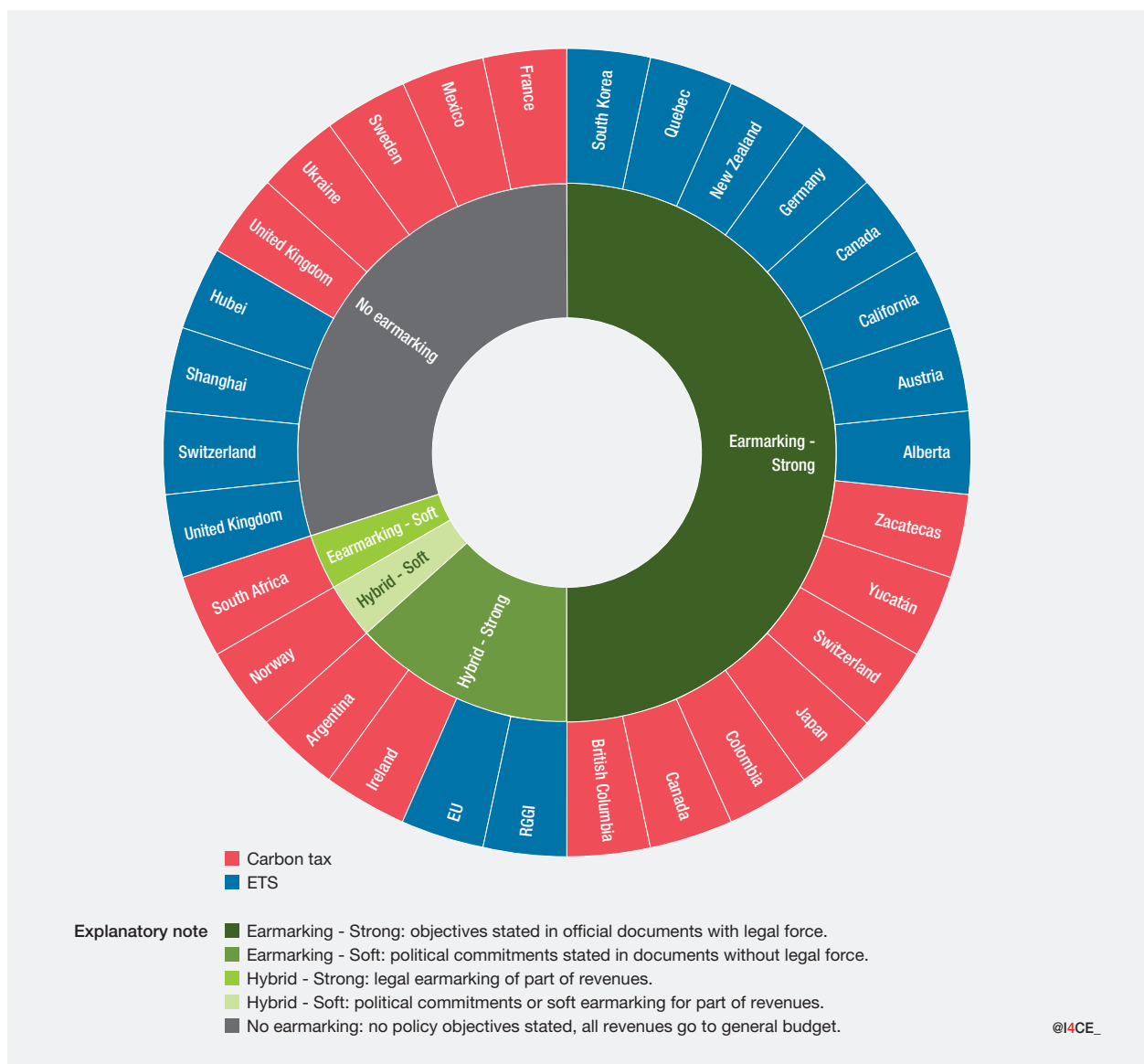
4.1. Diversity of policy objectives: a matter of contexts and priorities

Policy objectives for carbon revenue use in jurisdictions analysed are as diverse as contexts and priorities, and differences can be observed between the choice for ETSs and carbon taxes. Two extremes have been identified. The first, jurisdictions where no objective has been stated, and the second, jurisdictions where more than one policy objective has been defined targeting a mix of beneficiaries with different aims. In between, there are also cases where jurisdictions define a purpose for only part of revenues and the rest is left to feed governments' budgets.

Most jurisdictions – 21 out of 30 – have chosen to define policy objectives using some form of earmarking – strong as legal or soft as political commitments – for all or part of revenues. However, there are differences among choices for carbon taxes and emission trading systems. Strong earmarking has been adopted by 7 carbon taxes and 8 ETS, while other 4 and 2 respectively opted for other forms of earmarking or hybrid approaches. No policy objectives have been stated in 5 CTs and 4 ETS.

Environmental objectives for carbon revenue use are common to both ETSs and carbon taxes, with differences found mainly in the combination with social and economic aims. Out of 14 ETSs, 10 have stated objectives for carbon revenue use, 9 of which include environmental and economic aims, while only 6 focused on social concerns. Out of 16 carbon taxes, 11 have stated objectives, with an equal number choosing environmental, social, and economic objectives (9).

FIGURE 7. APPROACHES TO DECISION-MAKING ON CARBON REVENUE



Note: The figure shows the number of schemes and does not consider the volume of revenues.

Source: I4CE based on data collected from official documents

Out of 30 carbon pricing instruments analysed, 21 have stated policy objectives for all or part of carbon revenues generated

Strong earmarking has been adopted by 15 jurisdictions, and soft earmarking by one, while 9 jurisdictions have no stated objectives. Hybrid approaches have been chosen by 3 jurisdictions with carbon taxes, out of which 2 had strongly earmarked and one had soft earmarked a share of revenues generated, having the rest feed public budgets. Figure 7 shows the split among choices made.

The following approaches for the definition of policy objectives for carbon revenue use have been identified:

For carbon taxes

→ *Half the jurisdictions with carbon taxes have left part or all revenues generated without a defined purpose*

8 out of 16 jurisdictions decided not to commit legally or politically to use revenues generated for a specific purpose. Some jurisdictions made this choice for the entirety of revenues, including **France, Mexico, Sweden, Ukraine, and the United Kingdom**. Others – **Argentina, Ireland, and Norway** – opted for hybrid approaches.

→ *Yet strong earmarking carbon tax revenues is almost as frequent*

In 7 out of 16 jurisdictions, revenues were strongly earmarked for different aims. These include **British Columbia, Canada, Colombia, Japan, Switzerland, Yucatan, and Zacatecas**. More often than in the case of ETs, policy objectives were defined in legislations.

→ *Soft earmarking is only present in the case of carbon taxes and is the least popular choice*

Only one jurisdiction, **South Africa**, adopted this approach on its own. However, **Norway** has also partially opted for soft earmarking, with its commitment stated in its climate action plan to use the foreseen increase in carbon tax proceeds for a specific purpose.

For emission trading systems

→ *Strong earmarking is the predominant choice of jurisdictions with ETs*

In 10 out of 14 ETs analysed, revenues generated were strongly earmarked. These include **Alberta, Austria, California, Canada, Germany, New Zealand, Quebec, and South Korea**. Commitments were included in diverse official documents with legal force including legislations, regulations, and budgetary documents.

→ *In regional systems, hybrid approaches can be observed as the choice is left to each participating jurisdiction*

This is the case of **RGGI**, where the specific use of auction revenues is determined by the individual participating states, and thus, the legal earmarking of these funds varies by state. As well as that of the **EU**, where the vast majority of revenues go to Member States, which are only constrained to use 50% for specific purposes.

→ *Less than a third of jurisdictions with ETs chose not to define a purpose for the use of revenues generated*

Only four jurisdictions decided not to commit legally or politically revenues generated by their ETs. These include the two Chinese pilots – **Hubei and Shanghai**, **Switzerland**, and **the United Kingdom**.

TABLE 4. POLICY OBJECTIVES FOR REVENUE USE OF SELECTED ETSS

Jurisdiction	Stated policy objectives (2022)	Objectives per category			
		Environmental	Social	Economic	Unspecified
Alberta	Climate resilience, support industry to reduce emissions & invest in clean technology to stay competitive, job creation, debt reduction.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Austria	Redistribution to individuals with a consideration for geographical circumstances.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
California	While pursuing environmental goals, maximising co-benefits of green investments to deliver economic, environmental, and public health benefits for citizens. By state law a minimum percentage must go to disadvantaged and low-income communities and households.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Canada	To incentivise the long-term decarbonization of Canada's industrial sectors by supporting clean technology and electricity projects.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EU	To tackle climate change in the Union and third countries, inter alia, for mitigation, adaptation – especially in developing countries, R&D, low-emission transport, just transition, and to cover administrative costs of the EU ETS. Most revenues go to Member States, which should spend at least 50% of revenues on specific purposes detailed in the Directive and can use up to 25% for financial measures supporting industries to address carbon leakage risks due to indirect costs.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Germany	To invest in energy, transport, and industry decarbonisation, and alleviate electricity prices for energy intensive industries.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hubei	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
New Zealand	To support mitigation and adaptation measures, and initiatives that address the distributional impacts of these measures, including support for households and businesses/industry.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Quebec	To support companies & citizens to reduce GHG emissions, adapt the economy and become more resilient to climate change.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RGGI	To support businesses & households through investments in energy efficiency, renewable energy, direct bill assistance, beneficial electrification, GHG abatement and climate change adaptation. Only limited strategic guidance is provided by RGGI to its participating members on the use of funds.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Shanghai	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
South Korea	To reduce GHG emissions (support industry, public sector), build a low carbon ecosystem (green finance, support start-ups, professional manpower training), guarantee a just transition (support vulnerable territories and population groups), and foundation for carbon neutrality (finance R&D and regulatory support).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Switzerland	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
UK	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Source: I4CE based on data collected from official documents.

■ 9 out of 14 ETSs have environmental policy objectives combined with economic aims

Out of 10 ETSs with stated objectives for carbon revenue use, 9 focused on environmental combined with economic aims. Out of these, 5 have included environmental, economic, and social objectives, and 4 have focused exclusively on support for the transition of economic actors – industry and businesses. Only 1 jurisdiction opted for a redistribution of revenues targeting citizens.

Building on jurisdictions' statements reviewed and presented in **Table 4**, the following choices for policy objectives have been identified in the case of ETSs:

→ *Combining environmental with social and economic aims*

The **EU-ETS, California, New Zealand, Quebec, RGGI and South Korea** have defined policy objectives with mix of environmental, economic, and social components. Although all of them have stated as an aim to achieve climate objectives, support for businesses and households is stated as the means to attain them. In the case of the California ETS, for instance, the Legislature has appropriated funds for programs that directly support businesses and households in reducing GHG emissions, and there are investment minimums for low-income communities and low-income households, among other types of support.

→ *Prioritising support for decarbonisation of energy and industrial sectors*

Canada and Germany show a strong focus on economic aspects of the transition, stating support for industry decarbonisation as key policy objectives for carbon revenue use. However, there are some differences among them:

- **Canada** stresses a long-term perspective in its aim to use carbon revenues for decarbonisation of industrial sectors, with a specific focus clean technologies and electricity.
- **Germany's** stated objective is investing in the decarbonisation of energy, transport, and industry, but includes explicit support for energy-intensive industries to alleviate electricity prices.

→ *Choosing diverse objectives and integrating climate resilience*

Alberta has a greater diversity of policy objectives and is one of the few to state a specific focus on climate resilience, along with **Quebec** and the **EU**, but also other economic objectives such as job creation and debt reduction.

→ *Putting citizens first: redistributing revenues to individuals*

Austria is a special case among ETSs, with its objective to use carbon revenue use exclusively for redistribution to individuals. The country has a two-tier system in which individuals get a first amount irrespective of their condition and may get an additional amount to compensate for their geographic situation and the disproportionate impact of carbon pricing on people without easy access to public transport.

→ *Feeding public budgets without defined purposes*

Among ETSs without defined policy objectives for carbon revenues we can find **Hubei, Shanghai, Switzerland, and the United Kingdom**. These jurisdictions have not defined a purpose for all revenues generated by their respective ETSs and they go to the general budget increasing overall government revenues.

TABLE 5. POLICY OBJECTIVES FOR REVENUE USE OF SELECTED CARBON TAXES

Jurisdiction	Stated policy objectives (2022)	Objectives per category			
		Environmental	Social	Economic	Unspecified
Argentina	To support infrastructure (water and transport) and social housing development, mitigate the increased cost of public transport, support the social security system, and feed national and provinces budgets.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
British Columbia (Canada)	To provide relief for households from increased costs linked to the carbon tax, and work with industry to reduce pollution, improve efficiency, and adopt new technologies.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Canada	To return proceeds to provinces of origin, offset the cost of the federal pollution pricing for households, and support SMEs, and indigenous peoples, farmers and other recipients reduce their energy use, costs, and greenhouse gas emissions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Colombia	To support actions for environmental protection, and substitution of illicit crops	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
France	No stated objective. Only feeds the general budget and some parts are allocated to local authorities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ireland	To support social welfare and prevent fuel poverty to ensure a just transition, invest in retrofitting and green farming. This applies only to part of revenues collected and the rest feeds the general budget.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Japan	To support renewable energy projects and enhance energy-savings measures and clean and efficient use of fossil fuels. Explicitly stated targeted groups include businesses, SMEs, and local governments.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mexico	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Norway	To offset tax increase by reducing other taxes. Only for a share of revenues.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
South Africa	Soft revenue recycling in place with three axes: i) tax shifting: reducing or not increasing other taxes, ii) tax incentives: including the Energy Efficiency Savings Tax Allowance, iii) budget allocations: to enhance free basic energy, electricity programme, and improved public transport. Support focused on businesses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sweden	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Switzerland	To redistribute revenues to the population through transfers, promote energy efficiency measures in buildings, and support for technology development through the promotion of innovative companies.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
UK	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ukraine	No stated objective. Only feeds the general budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Yucatan (Mexico)	To support actions to provide a healthy environment for the population and to protect them from natural disasters.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zacatecas (Mexico)	To invest in areas with the greatest environmental vulnerability and social needs, including on disaster risk management.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Source: I4CE based on data collected from official documents.

■ 9 out of 16 carbon taxes included environmental, social, and economic aims

Out of 11 CTs with stated objectives for carbon revenue use, 9 opted for environmental, social, and economic aims, with some mixing aims or including very context-specific ones. Out of these, 5 have combined environmental, social, and economic objectives, 2 focused on environmental and economic issues, and other 2 on social and economic concerns. Amid those with unspecified policy objectives, 3 have defined aims for a share of their revenues.

Based on statements reviewed and presented in Table 5, the following choices for policy objectives have been identified in the case of carbon taxes:

→ *Redistributing to offset negative impacts of carbon pricing on citizens*

Argentina, British Columbia, Canada, Ireland, Norway, and Switzerland aim to address distributional concerns, supporting households and vulnerable groups with transfers, tax credits and other mechanisms to prevent fuel poverty and ensure a just transition.

→ *Combining environmental with social and economic aims*

Canada, Ireland, Norway, and Switzerland have a mix of aims with the transition at the core. Canada chose to provide support for households, SMEs, indigenous peoples, and farmers to reduce energy use, costs, and GHG emissions. Ireland to invest in retrofitting and green farming. Norway's tax credit can benefit economic actors. And Switzerland to support energy measures buildings and promote technology development.

→ *Supporting the decarbonisation of the industrial sector and energy measures*

British Columbia has stated as an aim to work with industry to reduce pollution, improve energy efficiency and adopt clean technologies, while **Japan** to support clean energy and energy efficiency measures, mainly for economic actors including carbon intensive industries and SMEs.

→ *Easing the tax impact on businesses and promoting clean investments*

South Africa aims to address competitiveness concerns by easing the impact of carbon pricing through tax exemptions, tax free allowances, tax deductions, and other incentives such as increasing carbon offset allowances. A share of revenues is also intended to support clean investments in the energy sector.

→ *Mixing environmental and social aims*

Yucatan and Zacatecas chose to invest in areas with the greatest environmental vulnerability and social needs, including on disaster risk management.

→ *Pursuing environmental aims more broadly*

Colombia aims for environmental protection and ensuring a healthy environment, yet target groups are not explicitly stated.

→ *Including context-specific socio-economic objectives unrelated to offsetting the regressivity of carbon pricing*

Argentina and Colombia include policy objectives for carbon revenue use with socio-economic aims not linked to the carbon pricing policy. The first uses an important share of revenues to fill fiscal gaps to invest in infrastructure and support the social security system. The second uses a share for actions aiming for the substitution of illicit crops.

→ *Leaving a share of revenues without a defined purpose*

Argentina, Ireland, and Norway have a share of revenues feeding public budgets without stated objectives for their use. The first includes a share for provinces.

→ *Feeding public budgets without defined purposes*

Five jurisdictions – including **France, Mexico, Sweden, the UK, and Ukraine** – have no defined policy objectives for all their carbon tax revenues. In all cases, revenues feed the general budget. In the case of France, a share goes to local authorities.

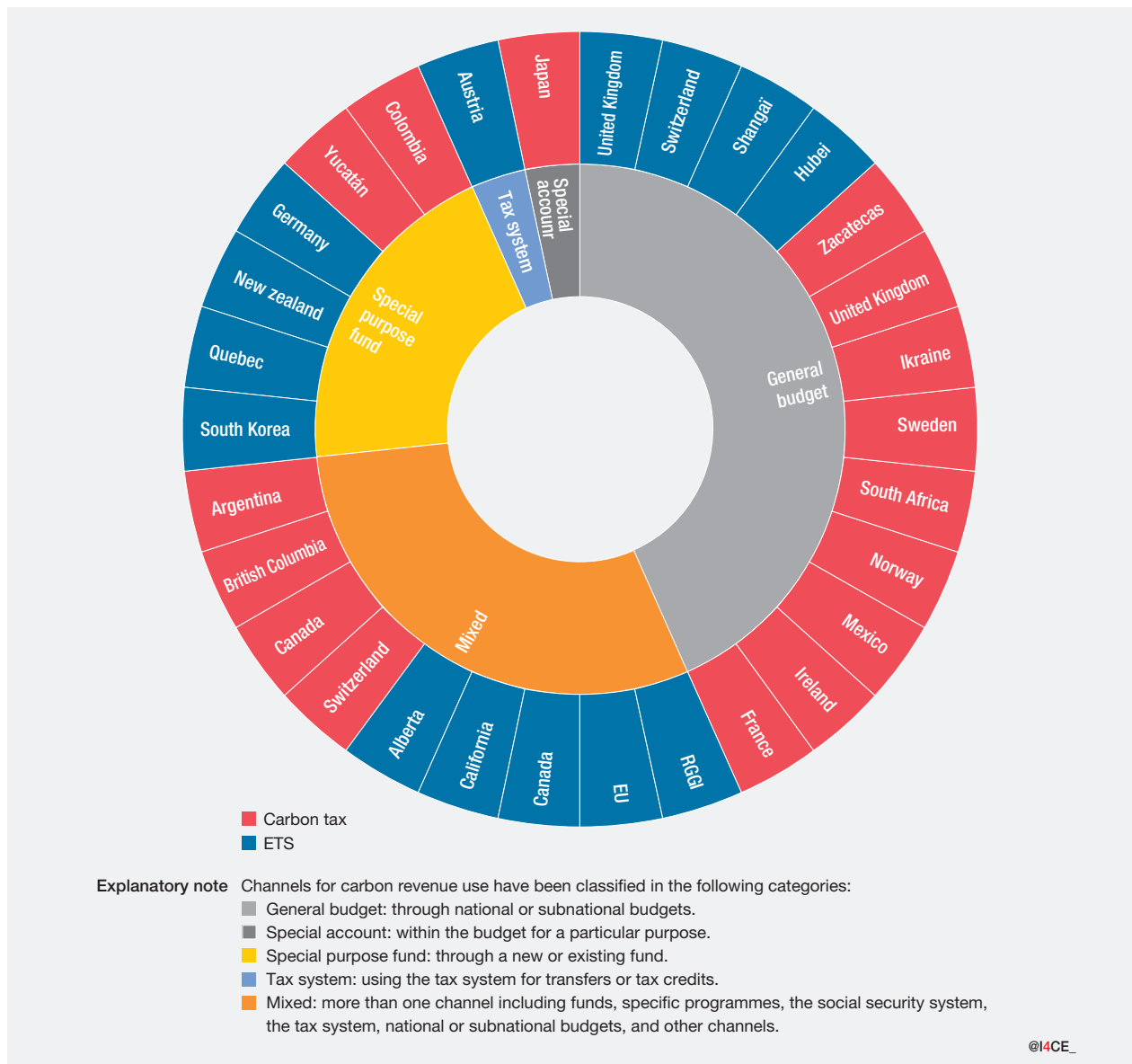
4.2. Diversity in operationalisation: a wide array of institutional and administrative arrangements

Choices on institutional and administrative arrangements, or channels for revenue use, are diverse and distinct for ETSs and carbon taxes. In the case of ETSs, they are more heterogeneous, and jurisdictions have opted almost equally for the budget process, special purpose funds and other mixed options. In the case of CTs, the choice of a majority of jurisdictions has been to use revenues through public budgets, even when they have stated policy objectives.

The operationalisation of carbon revenue use is ultimately a question of governance involving a complexity of actors, roles, and interactions. Observed practices on decision-making processes for the allocation of carbon revenue show the need for coordination among different institutions, with a key role of Ministries of Finance or their equivalent depending on the jurisdiction, as well as of the legislative power. Roles and interactions can complexify when specific structures such as funds are involved in channelling revenues, even more in cases where other steering or coordination instances such as boards take part in decision making.

Ensuring stability and predictability of carbon revenues is a key step in the process, and several measures have been identified particularly in the case of ETSs. These practices are strongly linked to the determinants of carbon revenues: prices and coverage. They can include increases in prices and scope in the case of CTs, and several others in the case of ETSs including back-loading of allowances, market stability mechanisms, decreasing caps, and phasing out of free allocations.

FIGURE 8. CHANNELS FOR CARBON REVENUE USE PER CARBON PRICING INSTRUMENT



10 out of 14 ETSs use channels other than the general budget to facilitate carbon revenue use

Mixing channels to manage ETS revenues has been the choice of 5 jurisdictions, while other 4 have opted for special purpose funds or the general budget. Only one jurisdiction exclusively uses the tax system to redistribute revenues. Choices made by jurisdictions are detailed below:

→ Using multiple channels according to the purpose

- **Alberta:** Technology, Innovation and Emissions Reduction Fund (TIER) collects compliance payments, which are then appropriated as part of the budget process to different initiatives and entities in line with stated objectives. These include Emissions Reduction Alberta (ERA) and the Canadian Energy Centre, among others.
- **California:** A share of proceeds go to the Greenhouse Gas Reduction Fund (GGRF) to be used for California Climate Investments (CCI). The California Air Resources Board (CARB) proposes an investment plan and develops guidance for state agencies that receive appropriations for CCI programs. The State Legislature decides on allocation to State agencies. Another share is channelled through the California Public Utilities Commission (CPUC) for credits to firms and households and energy programs.
- **Canada:** Funds raised through the OBPS are collected in the OBPS Proceeds Funds and then either transferred to the jurisdiction of origin or channelled through the Decarbonization Incentive Program (DIP) and Future Electricity Fund (FEF).
- **EU:** Revenues are managed outside of budgetary process of the EU. Most revenues, around 77%, went to EU Member States, while the Innovation Fund and to the Modernisation Fund had around 8% and 14% respectively. Other countries part of the EU ETS received the remaining share of approximately 1%, including EFTA countries–Iceland, Liechtenstein, Norway, and Switzerland –and Northern Ireland. All countries receiving EU ETS revenues could decide whether to channel them through their national budgets or other means such as special purpose funds.
- **RGGI:** Each state decides on its own institutional and administrative arrangements for revenue use. Some entities appointed as administrators include the Connecticut's Energy Efficiency Board (CEEB), Delaware Sustainable Energy Utility (SEU), Efficiency Maine Trust, Maryland's Strategic Energy Investment Fund (SEIF), New Hampshire's Energy Efficiency Fund (EEF), among others.

→ Channelling revenues through a special purpose fund

- **Germany:** The Climate and Transformations Fund (KTF), a special fund managed by the Ministry of Finance (MoF), is in charge of managing ETS revenues. But the funds' allocation decision process is interministerial. The draft economic and financial plan for the KTF with a planning horizon until 2027 is submitted with the federal budget.
- **New Zealand:** At Budget 2022 the Government established the Climate Emergency Response Fund (CERF) as a permanent feature of the annual Budget process to support climate change objectives. The CERF was set up as a long-term vehicle funded by the proceeds of the NZ ETS.
- **Quebec:** The Electrification and Climate Change Fund (ECCF) was set up by law as a special fund entirely dedicated to fighting climate change. Its financing comes from ETS revenues and other sources. It is managed by the Ministry of the Environment but has separate accounts and a distinct reporting obligation.
- **South Korea:** K-ETS revenues are channelled through the Climate Action Fund, set up by law and managed by the Ministry of Economy and Finance (MOEF). The MOEF has the authority to decide on the allocation of the Fund, and the Centre for Climate Action Fund under the Korea Environment Corporation has been designated as the trusted agency to support the operation of the Fund.

→ Using revenues through the general budget

Hubei, Shanghai, Switzerland, and the United Kingdom channel revenues through public budgets without specific objectives.

→ Redistributing through the tax system

In **Austria**, the Office for National Emissions Certificates Trading –an independent unit within the Customs Authority under the Ministry of Finance– manages the ETS and payments to end-beneficiaries are made through the tax system.

9 out of 16 carbon taxes channel carbon revenues solely through the general budget

While in some cases the general budget is also used in jurisdictions to pursue specific objectives (3), most of those using this channel only have carbon tax funds blend with other resources and then allocate them as part of the budget process without specific constraints on their use. Other 4 jurisdictions have combined different channels, 2 have exclusively used special purpose funds, and 1 uses a special account within the budget. Choices made by jurisdictions are detailed below:

→ Using revenues through public budgets

In **France, Mexico, Sweden, Ukraine, the UK, and Zacatecas** revenues feed budgets without specific objectives, but 3 other jurisdictions with policy objectives also use this channel:

- **Ireland:** Carbon tax funds are part of the national budget, but since 2020 additional revenue raised by the tax increase each year is tracked independently and ring-fenced for allocation to specific policy objectives through various Ministry Departments and State agencies such as the Department of Environment, Climate and Communications (CECC), the Sustainable Energy Agency of Ireland (SEAI), among others.
- **Norway:** Proceeds feed the general budget, but a share is used to provide a compensation for the rise in the carbon tax rate by reducing road use duty.
- **South Africa:** Revenues are channelled through the general budget and then allocated to different measures such as the 'Energy Efficiency Savings Tax Allowance'. However, it is not possible to determine the share of carbon revenues that contributes to them.

→ Using multiple channels according to the purpose

- **Argentina:** As determined in the carbon tax law, revenues are channelled through the Social Security System (28.69%), Transport Infrastructure Trust (28.58%), Water Infrastructure Trust (4.31%), National Housing Fund (15.07%), National Treasury (10.40%), Provinces (10.40%), and Public Transport Compensation (2.55%).
- **British Columbia:** Climate Action Tax Credit and Clean BC Program for Industry, which includes both the CleanBC Industry Fund (CIF) and the Clean BC Industrial Incentive Program (CIIP).
- **Canada:** Recycled by the Canada Revenue Agency. Individuals and families receive 90% of fuel tax proceeds through the Climate Action Incentive Payment (CAIP), a tax-free amount paid on a non-selective basis to offset the cost of the federal pollution pricing. The rest is allocated to SMEs and indigenous communities.
- **Switzerland:** Two thirds of revenues are redistributed through the social security system using payments by health insurers for citizens and local pension insurance compensation funds for businesses, one third – no more than 450M Francs each year – are appropriated for energy efficiency projects in buildings, and 25M Francs are allocated through the Technology Fund for the promotion of innovative companies.

→ Channelling revenues through an existing fund

- **Colombia:** 50% of proceeds channelled through the Colombia in Peace Fund (FCP) for the substitution of illicit crops and 50% through the National Environmental Fund (FONAM) until 2022.
- **Yucatan:** Revenues are transferred to the Environmental Fund of the State of Yucatan.

→ Using a special account within the budget

- In **Japan**, funds go to the General Account and are checked by the MoF. They are then transferred to a Special Account for Energy Measures. Part of that account is flagged for the Modernisation of the Energy Supply/Demand structure and is managed by the Ministry of Environment (MoE) and by the Ministry of Economy, Trade, and Industry (METI).

Measures to ensure stability and predictability of carbon revenues: managing price volatility and broadening the scope of CPIs

Several jurisdictions have implemented measures that can contribute to ensure the stability and predictability of carbon revenues. These focus on key determinants of carbon revenues – prices and coverage – to ultimately encourage further emission reductions and provide more predictable revenue streams. Some relevant practices identified are detailed below comparing carbon taxes and emission trading systems:

For carbon taxes

→ *Increasing tax rates overtime*

- **British Columbia:** tax rates are increased by USD 15 per tonne of CO₂e annually until reaching USD 170 per tonne of CO₂e in 2030.
- **Canada:** Canada committed to increase the price on carbon pollution annually at a rate of USD 15 per tonne from 2023-2030.
- **Ireland:** The Irish Government has committed to increasing carbon tax year-on-year until it reaches €100 per tonne in 2030.
- **Norway:** Norway's Climate Action Plan 2021-30 proposes to raise the carbon tax from NOK 590 (USD 69) per tonne of CO₂-eq in 2021 to NOK 2 000 (about USD 233) by 2030.
- **South Africa:** the carbon tax rate is set to progressively increase every year in order to reach USD 20 per tonne by 2025.

For emission trading systems

→ *Back-loading of allowances*

Introduced in the **EU-ETS** as a **short-term measure** by which the auctioning of 900 million allowances was postponed to 2019-2020. This approach aimed to rebalance supply and demand, reducing price volatility without significantly impacting competitiveness.

→ *Introducing market stability measures*

The Market Stability Reserve (MSR) was introduced in 2019 as a **long-term measure** to address the surplus of allowances and improve resilience of the **EU ETS** to major shocks by adjusting the supply of allowances to be auctioned. Back-loaded and unallocated allowances are transferred to the MSR instead of being auctioned. The operation of the MSR is strictly rule-based, with no discretion for the Commission or Member States in its implementation. From 2019-2023, the percentage of allowances in the reserve was temporarily doubled from 12% to 24% when the threshold of 833 million allowances was exceeded, demonstrating a proactive approach to managing supply and stabilizing prices that would ultimately have an impact on revenues.

→ *Decreasing the cap overtime*

The **EU ETS** has a cap that decreases over time, ensuring that total emissions from sectors covered by the system reduce. The system has moved to its fourth trading phase (2021-2030), with a strengthened Linear Reduction Factor (LRF) from -2.2% per year from 2021 to 4.3% for 2024-2027 and 4.4% for 2028-2030, indicating a faster decrease in the cap and thus, a tighter limit on total emissions. This tightening of the cap is expected to contribute to a higher carbon price, encouraging further emission reductions and providing more auctioning revenue.

→ *Phasing Out Free Allocation*

From 2026 onwards, the number of free allowances handed over to industries in the **EU-ETS** will be reduced gradually, moving towards auctioning all allowances by 2034.

→ *Broadening the scope*

The EU extended the coverage of its ETS to incorporate the maritime sector, as part of the broader **EU ETS** reform that came into force in June 2023. This represents a 3 to 4% increase on CO₂ emissions coverage.

→ *Annual increases in auction reserve prices*

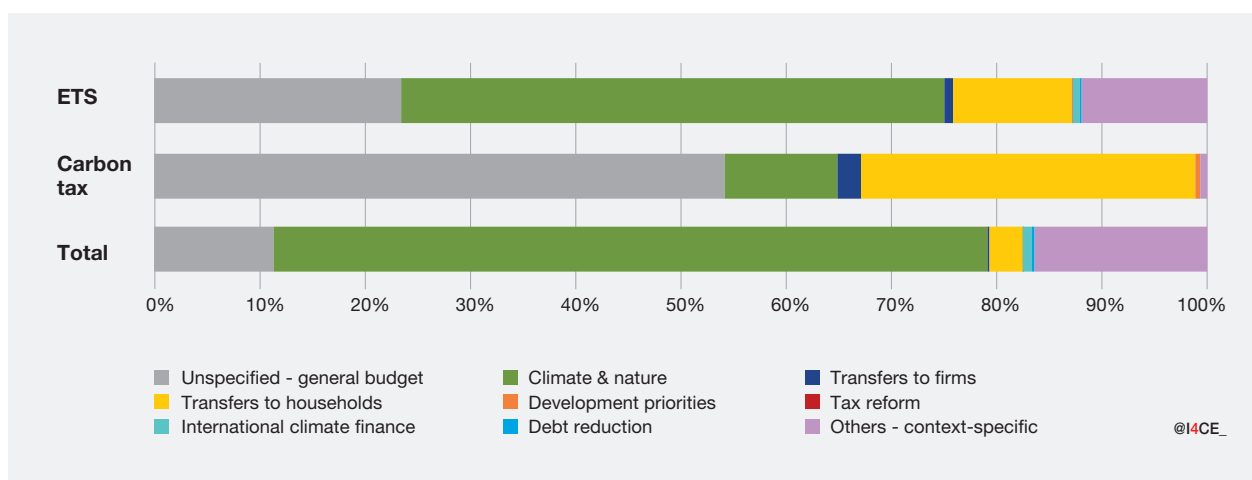
In **California**, the Auction Reserve Price for carbon allowances was set at USD 22.21 per allowance in 2023. This price is subject to annual increases by 5% plus inflation as measured by the Consumer Price Index.

4.3. Diversity of implementation paths: the key role of transparency and communication

Carbon revenue uses are strongly linked to decisions made on policy objectives and operationalisation, and hence reflect those choices. In the case of ETSs, revenues are mainly used for climate action targeting different beneficiaries including firms and households through a wide array of programs. For carbon taxes, the landscape is even more diverse, yet still half of the jurisdictions have used revenues for climate and other environment related actions.

Transparency and communication are key determinants of the findings of implementation phase, and some good practices have been identified. The picture on carbon revenue use varies from one jurisdiction to another depending on the quantity and quality of publicly available information. Thus, for some jurisdictions, findings can reflect a more accurate overview of actual revenue uses, while for others it can just rely on the assumption that they have used revenues as stated on policy objectives.

FIGURE 9. AGGREGATED SHARES OF CARBON REVENUE USE PER CATEGORY



Source: I4CE based on data collected from official documents and reports of different jurisdictions analysed.

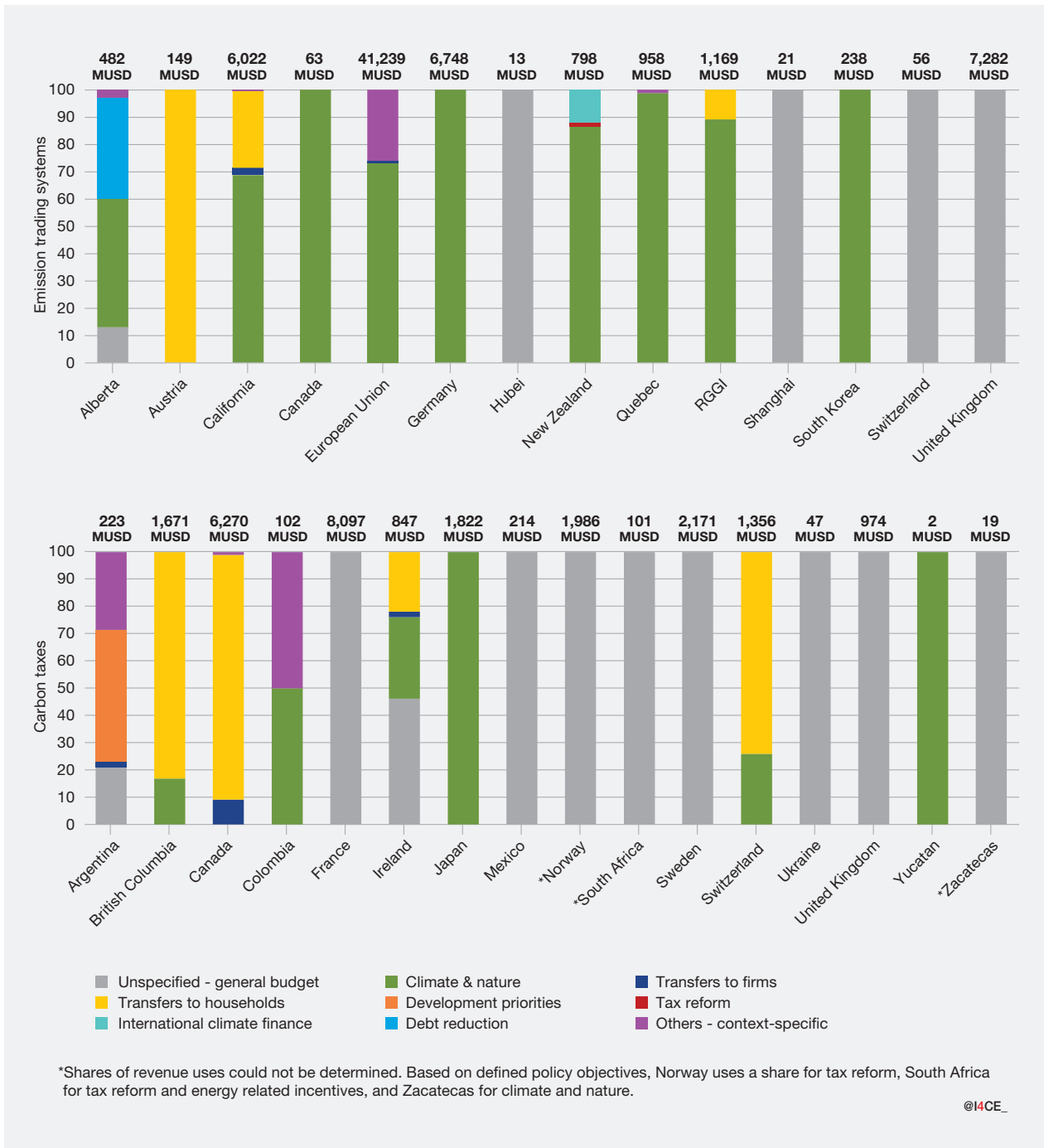
From an aggregated perspective, around 52% of carbon revenues – close to USD47 billion – have been used for climate and nature related purposes. But when looking at each carbon pricing instrument separately, there are clear differences.

On the ETSs side, around 68% of revenues or USD44 billion have been used for climate action, while this category represents only around 11% or USD3 billion in the case of carbon taxes. However, the important weight of the EU ETS should be considered to read this number. Its share represents around 64% of the total share for climate and nature – USD30 billion.

Most carbon tax revenues, around 54% or USD14 billion, have no specified use, which means they feed into governments budgets without any sort of earmarking. The share of ETS revenues sorted in this category is of close to 11% or USD7 billion.

Yet an important share of carbon tax revenues, around 32% or USD8 billion, was used for transfers to citizens or households. In the case of ETSs, the share for this category was only of around 3% or 2 billion.

FIGURE 10. SHARES OF CARBON REVENUE USE PER JURISDICTION AND TYPE OF CARBON PRICING INSTRUMENT



Note: Shares of revenue use per category provide a picture of allocations or reported uses depending on data availability.
 Source: I4CE based on data collected from official documents and reports of different jurisdictions analysed.

Carbon revenues are primarily used for climate action in 9 out of 14 ETSs

ETS revenues have been used for climate in 9 jurisdictions – 5 fully and 4 partially, and, out of these, 3 have used revenues for international climate finance. Additionally, 4 jurisdictions have other uses, including transfers to firms, transfers to households, and debt reduction. In contrast, 6 ETSs have unspecified uses for all (4) or part (2) of revenues generated. Details on revenue uses per jurisdiction based on Figure 10 are provided below:

→ *Nine jurisdictions using most revenues for climate action*

- **Alberta:** Around 47% (MUSD 226) for programs supporting emission reductions and initiatives that help communities become more resilient to a changing climate, and for the Canadian Energy Centre.
- **California:** Close to 70% (MUSD 4,254) to finance California Climate Investments programs that are reducing GHG emissions, strengthening the economy, improving public health and the environment, and providing meaningful benefits to the most disadvantaged communities, and other clean energy and energy efficiency programs financed through the CPUC.
- **Canada:** 100% (MUSD 63) used for clean technology projects to reduce GHG emissions and clean electricity projects and/or programs through the merit-based DIP and the FEF, respectively.
- **EU:** Around 73% (30,104 MUSD) for climate action. Member States reported using an average of 75% of revenues for domestic climate purposes. While the Innovation Fund and the Modernisation Fund spent around 96% and 58% for climate. More detailed information, including specific uses are provided in Annex 4.
- **Germany:** 100% (MUSD 6,486) for energy-efficient refurbishment of buildings, the decarbonization of industry and the expansion of renewable energies, electromobility and the charging infrastructure through the KTF.
- **New Zealand:** 100% (MUSD 798) through the CERF for public investment on initiatives included in an Emissions Reduction Plan – or directly supporting emissions reductions (domestically or internationally), and for those supporting a te ao Māori approach to the climate response.
- **Quebec:** 99% (MUSD 947) to finance measures outlined in the 2030 Plan for a Green Economy as well as ongoing commitments made under the 2013-2020 Climate Change Action Plan.
- **RGGI:** Close to 90% (MUSD 1,040) for energy efficiency, beneficial electrification, GHG abatement, and clean and renewable energy.
- **South Korea:** 100% (MUSD 238) for decarbonisation of industries, energy efficiency, carbon sinks, green finance and investments, circular economy, support for vulnerable regions in adaptation and vulnerable groups in transition, research and technology development, and regulation support.

→ *Six jurisdictions with unspecified and other context-specific carbon revenue uses*

Hubei, Shanghai, Switzerland, and the United Kingdom have unspecified uses for all ETS revenues, while Alberta has a share of 19% (MUSD 7,835) without a specific use. In the EU ETS, a share of 26% of auctioning revenues was used for other non-climate and energy purposes or remained unspent.

→ *Three jurisdictions using revenues for transfers to households and firms*

- **Austria:** 100% (MUSD 149) to pay the Klimabonus to everyone with main residence in the country, plus a regional allowance for those living in regions with poorer infrastructure and less public transport.
- **California:** Around 29% (MUSD 1,770) for the Electric Climate Credit and Natural Gas Climate Credit given to customers of utility companies, and 3% (MUSD 177) for the Small Business Electric Credit and Electric Industry Assistance for business customers of utilities.
- **RGGI:** Around 11% (MUSD 129) for direct bill assistance in Delaware, Maryland, New Hampshire, and Rhode Island.

→ *Three jurisdictions using revenues for international climate finance*

- **EU:** Around 1% (MUSD 412) of Member State's EU ETS revenues for international climate finance.
- **New Zealand:** Around 12% (MUSD 96) of CERF funds for international climate finance, in line with the country's commitment of providing 840 million for developing countries under the Paris Agreement.
- **Quebec:** Around 1% (MUSD 11) for capacity building and technology transfer in French speaking countries vulnerable to climate change.

→ *Less frequent uses of revenues: tax cuts, debt reduction & others*

- **Alberta:** Around 37% (MUSD 178) for debt reduction and 3% (MUSD 14) for administrative purposes.
- **New Zealand:** Close to 2% (MUSD 12) for tax cuts – temporary decreases in fuel excise duty, road & railway track charges, and public transport fares.

■ Half of the carbon taxes covered used revenues fully or partially for climate and nature

In 8 out of 16 carbon taxes, revenues have been used for climate & nature – 5 fully and 4 partially, while the same number have unspecified revenue uses – 5 fully and 2 partially. In addition, 9 jurisdictions have used revenues for transfers to firms, transfers to households, development priorities, and other context specific purposes. Details on revenue uses per jurisdiction based on figure X are provided below:

→ *Eight jurisdictions using revenues for climate & nature*

- **British Columbia:** 17% (MUSD 284) to support industry and other actors to reduce pollution, improve efficiency and adopt new technologies.
- **Colombia:** 50% (MUSD 51) to manage coastal erosion; reduce and mitigate deforestation; preserve water sources; protect, preserve, restore, and sustainably use ecosystems; among others for climate action. At least 15% for conservation projects in the Amazon.
- **Ireland:** 29% (MUSD 242) to invest in residential retrofit through the DECC and other departments to finance green transition.
- **Japan:** 100% (MUSD 1,822) for domestic business innovative low-carbon technologies, energy-saving equipment for SMEs, and financial assistance for local governments for energy-saving and renewable energy.
- **South Africa:** the specific share to enhance free basic energy, electricity programme, and improved public transport could not be determined.
- **Switzerland:** 25% (MUSD 337) to promote CO₂ efficient measures in the buildings sector and for the Technology Fund.
- **Yucatan:** 100% (MUSD 2) for works, infrastructure, preservation, restoration, management, or remediation of the ecological equilibrium, sustainable development, prevention and attention of natural disasters, relocation of the inhabitants of risk zones, and health services.
- **Zacatecas:** 100% (MUSD 19) should be used for health services; restoration or remediation of the ecological balance; inspection and surveillance of pollutants and compliance with environmental provisions; natural disasters, sustainable development projects, and relocation of inhabitants of at-risk areas. The actual share they represent could not be determined.

→ *Seven jurisdictions with unspecified carbon revenue uses*

France, Mexico, Sweden, Ukraine, and the United Kingdom have unspecified uses for all revenues, while **Argentina** and **Ireland** have only a share of 21% (MUSD 46) and 47% (MUSD 390), respectively, without a specific use.

→ *Four jurisdictions using revenues for transfers to households and vulnerable communities*

- **Canada:** 90% (MUSD 5,643) returned to households on a non-selective basis through the Climate Action Incentive Payment (CAIP). And additional share of 1% (MUSD 63) for indigenous communities.
- **British Columbia:** 83% (MUSD 1,387) for the Climate Action Tax Credit for low- and moderate-income individuals and households.
- **Ireland:** 21% (MUSD 177) for the electricity credit, the Public Service Obligation (PSO) rebate, the VAT rebate, and for the Depart of Social Protection for an increase of the Qualified Child Payment for low-income families, the Living Alone Allowance for the elderly, the Fuel Allowance for lower income households, and the Working Family Payment.
- **Switzerland:** 75% (MUSD 1,003) redistributed to the population through non-targeted direct transfers.

→ *Three jurisdictions using revenues for tax cuts and transfers to firms*

- **Canada:** 9% (MUSD 564) to support SMEs, notably those operating in emissions-intensive and trade-exposed sectors and farmers.
- **Ireland:** 2% (MUSD 15) to redistribute to businesses and farmers through tax exemptions and rebates.
- **South Africa:** the specific share for tax shifting, reducing or not increasing, as well as tax incentives – such as the Energy Efficiency Savings Tax Allowance – could not be determined.

→ *Less frequent context specific uses of revenues*

- **Argentina:** 48% (MUSD 107) for development priorities including investments in infrastructure, and 31% (MUSD 70) for social security obligations. Revenues may be overestimated due to currency devaluation.
- **Colombia:** 50% (MUSD 51) for the financing of the National Integral Programme for the Substitution of Illicit Crops.

■ Good practices on transparency and communication of carbon revenue use to learn from

Certain practices on transparency and communication worth highlighting have been identified in 10 out of 27 jurisdictions covered, based on their levels of publicly available information. Other jurisdictions have been identified as having medium and low levels of publicly available information for several factors, particularly when revenues are channelled through the general budget with no mechanism to track them. Selected good practices of specific jurisdictions are detailed below:

- **Austria:** has a dedicated webpage where the mechanism for the redistribution of revenues is explained in detail. The transparency portal gives citizens access to the revenue and expenditure from the NEHG (ETS).
- **British Columbia:** has a dedicated webpage with the programs financed and publishes a Climate Change Accountability Report annually. The most recent one includes information on progress and actions for 2022-2023 and actions underway or planned for 2023-2024. Strong communication on the tax's revenue-neutrality when it was first introduced to emphasise that tax's costs could be offset by income tax reductions. This strategy has changed, as carbon tax revenues above USD30 per tonne are not revenue neutral.
- **Canada:** has a dedicated section on the government website for 'carbon pollution pricing proceeds programming and use of proceeds', along with specific sections for the OBPS and Federal Fuel Charge proceeds.
- **California:** detailed information is available on revenue use under the California Climate Investments (CCI) and California Public Utilities Commission (CPUC). The California Air Resources Board (CARB) requires administering agencies to report project status and expected benefits and relies on agencies to provide accurate project-level data, but also supports them in project tracking and reporting efforts by supplying program-specific reporting templates and aggregating the data reported.
- **EU:** Member States are required to report the use of ETS auctioning revenues to the Commission in line with the Directive and regulation. Data on auctioning revenue is publicly available in the Reportnet platform for all Member States except Bulgaria, Estonia, Hungary, which decided to restrict their data from public view. In addition, dedicated websites of the Innovation Fund and Modernisation Fund provide information about projects financed, the first through a project dashboard.
- **Ireland:** each year, an annex of the budget is prepared by the Department of Public Expenditure and Reform on the use of carbon tax funds, which is made publicly available through a government website.
- **New Zealand:** the Minister of Finance publishes the yearly budget for the CERF. Any agency that receives CERF funding is required to provide regular monitoring and reporting updates to the Treasury. Financial reporting is required on a quarterly basis and non-financial information is required annually. The information is provided at the initiative level and published on the Treasury website.
- **Quebec:** has dedicated webpages that provide general information about the ETS, and there are two main sources of information on Quebec's carbon market revenues: i) Revenue collection: a section of the ministry's website dedicated to explaining the carbon market, including results from auctions; and ii) Revenue usage: A governmental webpage (in French) on the use of the funds, including annual climate action reports and a dashboard where the progression of every action of the 2030 Plan for a Green Economy are detailed.
- **Switzerland:** the Federal Office for the Environment (FOEN) website publishes a yearly information sheet on environmental levies taken in and the amount residents can expect in refunds. The Swiss Federal Office of Energy (SFOE) is responsible for communication of the programme to reduce CO₂ emissions in buildings. The cantons are required to publicise the funding programme and draw appropriate attention to the fact that part of the funding comes from the proceeds of the CO₂ levy.
- **RGGI:** has a dedicated website with a section on the investment of proceeds where reports can be found starting 2014, yet the latest report released in June 2023 is for proceeds of 2021. However, information on revenue uses can also be found on the websites of each participating state.

4.4. Diversity of outcomes: the need to strengthen evaluation practices

Few jurisdictions have taken a step further with measures to assess the impact of decisions on carbon revenue use and external oversight. In general, these are the same which have been identified as having good practices on transparency and communication. However, they differ on the scope of what is evaluated, in some cases remaining quite general as evaluations or auditing of carbon pricing mechanisms themselves and not establishing a direct connection with revenue use.

Assessments that explore specifically the impact of carbon revenue use are not frequent, yet they are necessary to make a strong case on how carbon revenues can maximise benefits of carbon pricing or, on the contrary, to determine the need to rethink the strategy. Based on the experiences reviewed, accountability processes rarely land in these needed assessments, as few jurisdictions carry out ex-post evaluations or audits by external actors. But at least one good practice has been identified in the case of Canada where an external analysis of distributional impacts of the carbon tax has been carried out providing valuable insights⁵².

Another angle that is underexplored is the one of acceptability of carbon pricing in connection with carbon revenue use. Most academic work on the issue is focused on public preferences in specific contexts, mainly high-income countries. Outside the academic sphere, analysis on the topic generally take the form of surveys often carried out in conjunction with political cycles with a broad focus on the acceptability of carbon pricing.

Assessments of the impact of carbon revenue use in connection with acceptability of carbon pricing are currently absent and should be included in formal evaluation processes. This is not only to ensure their input is considered by policymakers, but also to anticipate any political backlashes that may threaten the overall climate policy and to adapt communication strategies to face these challenges in a timely manner. Outcomes in terms of acceptability of carbon pricing related to carbon revenue use are highly influenced by choices on communication strategies and political contexts.

Accountability processes rarely land in the needed assessments of the impact of decisions on carbon revenue use

Jurisdictions identified as having processes in place to assess the impact of decisions on carbon revenue use and external oversight are not numerous. These generally match those with good practices on transparency and communication but can be different in scope, with some being broadly focused on outcomes of climate change or carbon pricing policies, and others more specific to revenue use. Selected practices of specific jurisdictions are detailed below:

- **British Columbia:** climate accountability legislation requires the government to present the latest information every year on progress to emissions targets. The 2023 Climate Change Accountability Report⁵³ provides information on carbon revenues and outcomes of climate change policies but does not explicitly explore the connection between the two.
- **California:** The Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds⁵⁴ is released each spring and describes the status of funded programs and lists the projects funded. This report provides cumulative and annual outcomes including fiscal information, estimated GHG emissions reductions, information on benefits to disadvantaged communities and low-income communities and households (collectively referred to as priority populations), and estimates of co-benefits attributed to California Climate Investments programs. Throughout the report, project highlights demonstrate how these funds are improving lives across the state. The appendices provide summary statistics, budgetary expenditures, and data on leveraged funds and competitive proposals. The 2023 Annual Report shows a majority of California Climate Investments funds are benefiting disadvantaged communities and low-income communities and households in the state. CARB estimates projects are expected to reduce GHG emissions across nearly every sector in the economy.
- **Canada:** the Parliamentary Budget Officer (PBO) supports Parliament in oversight processes by providing economic and financial analysis to raise the quality of parliamentary debate and promote greater budget transparency and accountability. In March 2023, the PBO released a report that provides a distributional analysis of the federal fuel charge under the Canadian Government's 2030 Emissions Reduction Plan⁵⁵. The report has found that, considering only fiscal impact, most households will see a net gain as they receive more in rebates from the Climate Action Incentive Payment than the total amount they pay in the federal fuel charge – except in the case of Nova Scotia, and a net loss when both the fiscal and economic impacts are considered. Yet it also shows the tax has progressive impact, meaning net costs are larger for higher income households.
- **EU:** Member States are required to report every year to the Commission information on the use of revenues generated by the auctioning allowances pursuant to Article 10(1) and Article 3d(1) of Directive 2003/87/EC, but compliance and quality control is needed. The Commission must report annually to the Climate Change Committee, the EU Council and to the European Parliament on progress in implementing the Innovation Fund. Its first progress report was released in 2022 with results of the first 2 calls for proposals. The Commission also chairs the Investment Committee of the Modernisation Fund and is in charge, among other tasks, of adopting disbursement decisions and reviewing and evaluating its performance.

- **Quebec:** the 2030 Plan for a Green Economy establishes a governance framework for accountability. The Auditor General, supported by the Sustainable Development Commissioner, was given a new mandate directly linked to the ECCF, which manages carbon revenues. Moreover, a Climate Change Advisory Committee is in place to issue public reports on all matters related to climate action. As revenues grew, the way the money was spent and the results were scrutinised, and the Auditor General had criticised the effectiveness of the investments. This led to changes in the accountability mechanisms to make them more focused on impact.
- **Switzerland:** the cantons must monitor and report results of the correct use of global contributions from the CO₂ levy. The SFOE is the institution in charge of carrying out spot checks on the use of funds, financial accounting, and quality control in the cantons.
- **New Zealand:** in the Well Being Budget 2022, the government states that “all initiatives that receive funding through the CERF will be subject to new monitoring and reporting arrangements, to ensure that dedicated CERF funding is contributing sufficiently towards meeting the Government’s climate change commitments. As part of this monitoring and reporting it is expected that the financial performance and impact of these initiatives will be publicly accounted for on a regular basis.

Assessments of carbon revenue use in connection with acceptability of carbon pricing missing

The issue of acceptability of carbon pricing in connection with carbon revenue use is a largely underexplored angle. Most academic work on the issue is focused on public preferences in specific contexts, mainly high-income countries, and non-academic analysis generally take the form of surveys often carried out in conjunction with political cycles and a general focus on acceptability of carbon pricing. Insights on the topic for specific jurisdictions are detailed below:

- **British Columbia:** When the tax was established, the government strongly emphasized its revenue-neutrality, although it is not clear if this feature of the tax did much to enhance public support. Over the years, however, public support for the tax gradually increased⁵⁶, in line with studies suggesting that people tend to grow acceptability of environmental taxes as they get used to them⁵⁷. Yet this picture seems to be changing due to the political context in the country. A recent poll has found that 43% of British Columbians think the carbon tax should be scrapped if the federal one is abandoned, while 40% would prefer to keep it. According to the same poll, three-in-five (62%) consider the carbon tax has negatively affected the finances of their household⁵⁸.
- **Canada:** the Federal Fuel Charge revenues have for the most part being used for rebates to households through Climate Action Incentive Payment. A study published in 2022 found that, although the policy had been in place for over ten years, only 12% of respondents knew tax revenues were redistributed to the public, and globally (i.e. across all provinces) people were underestimating their rebates by 9 to 40%⁵⁹. The same study found that telling people about their true tax rebates did not significantly change their support for the carbon pricing mechanism. Yet the current strategy of the Liberal government to respond to a strong political campaign by the Conservative party under the slogan “axe the tax” has been to introduce tax exemptions and increase rebates for certain actors considered mostly affected by the tax, amid raising opposition and criticism on the effectiveness and fairness of the carbon pricing policy.
- **EU:** a recently published policy brief argues the EU-ETS has “increasingly matched environmentally effective and economically efficient purposes” a change that has been “accompanied by a greater use of revenue recycling options” seeking to balance fairness with four dimensions: environmental, economic efficiency, social/developmental and competitiveness⁶⁰. Hence, efforts to ensure fairness and acceptability in the EU ETS are strongly tied to revenue use. No specific study on public support in connection with auctioning revenue use has been identified.
- **Germany:** a study found that a majority of respondents (around 73%) would accept carbon pricing, 42% only if there was also compensation, 28% even without, and only 25% rejected a carbon tax⁶¹.
- **Ireland:** a study has found 85% of Irish respondents support the ‘polluter pays’ principle – considering the carbon tax an application of it, with almost 47% believing the tax should be higher and 31% that it should be lower. Moreover, despite most people (around 93%) reporting that they were unaware of how the revenue from the carbon tax is used, reading about its use did not affect the belief in its effectiveness⁶². Another study suggest nine in ten Irish residents strongly or somewhat support spending revenue from the carbon tax on further development of clean energy sources (95%), funding improvements to transport infrastructure (95%), helping pay for energy efficiency improvements in low-income households (94%), funding programmes to help communities prepare for and adapt to the impacts of climate change (93%) and assisting workers in the fossil fuel industry who may lose their jobs (90%), while around 63% support returning the money to all Irish households in equal amounts⁶³.
- **Switzerland:** a study has found 60 % of the respondents would like to see the tax revenues used to finance environmental projects, social cushioning comes second, while tax rebates to households and firms are supported by a small minority only⁶⁴. Another one found providing personal rebate information increased support for the existing policy⁶⁵.

5. A KEY PIECE OF THE PUZZLE: CARBON REVENUES AS PART OF FINANCING PLANS FOR THE CLIMATE TRANSITION

KEY TAKEAWAYS

- Carbon revenues are already playing a role in the financing of the climate transition and there is potential for them to be further used to fill climate investment deficits, yet they are not often integrated in climate strategies such as NDCs and LTSs.
- Carbon pricing mechanisms should integrate a broader discussion on how to finance climate and development strategies, as part of the development and implementation of financing plans for the transition.
- There are opportunities in key milestones of the UNFCCC process for carbon revenues to join the broader discussion of how to finance the climate transition, notably the NCQG at COP29 and revised NDCs at COP30.
- The landscape of carbon revenue use worldwide will certainly evolve in the years to come, as some jurisdictions have plans to change certain choices that could strengthen their contribution to climate action and to maximise socio-economic benefits.

The review of experiences in the previous section showed the diversity of choices made by jurisdictions for the use of carbon revenues at each step of the process, yet a key finding resonates. **In 2022, over 50% of carbon revenues generated in the jurisdictions analysed were used to finance the climate transition**, as well as to fill broader fiscal gaps (32%) – share that goes to the general budget and could also be serving partly for climate objectives – and to offset the burden of carbon pricing for citizens and provide support for their transition (11%).

Carbon revenues are hence already playing a role and should integrate a broader discussion on how to finance the climate transition. On one hand, carbon pricing as behavioural tools are useful only if the conditions are sufficiently supportive for actors to change their behaviours and redirect investments, and this is ultimately also a funding discussion. On the other hand, carbon revenues are a part of the overall funding picture. This broad perspective is key for carbon revenues to be used in the most effective way.

The integration of carbon revenues in climate and development strategies, as part of their financing plans, is a key step on the way. These plans are tools that provide a clear picture of the investments needed, policy and funding options to fill the investment gap, and macroeconomic implications.

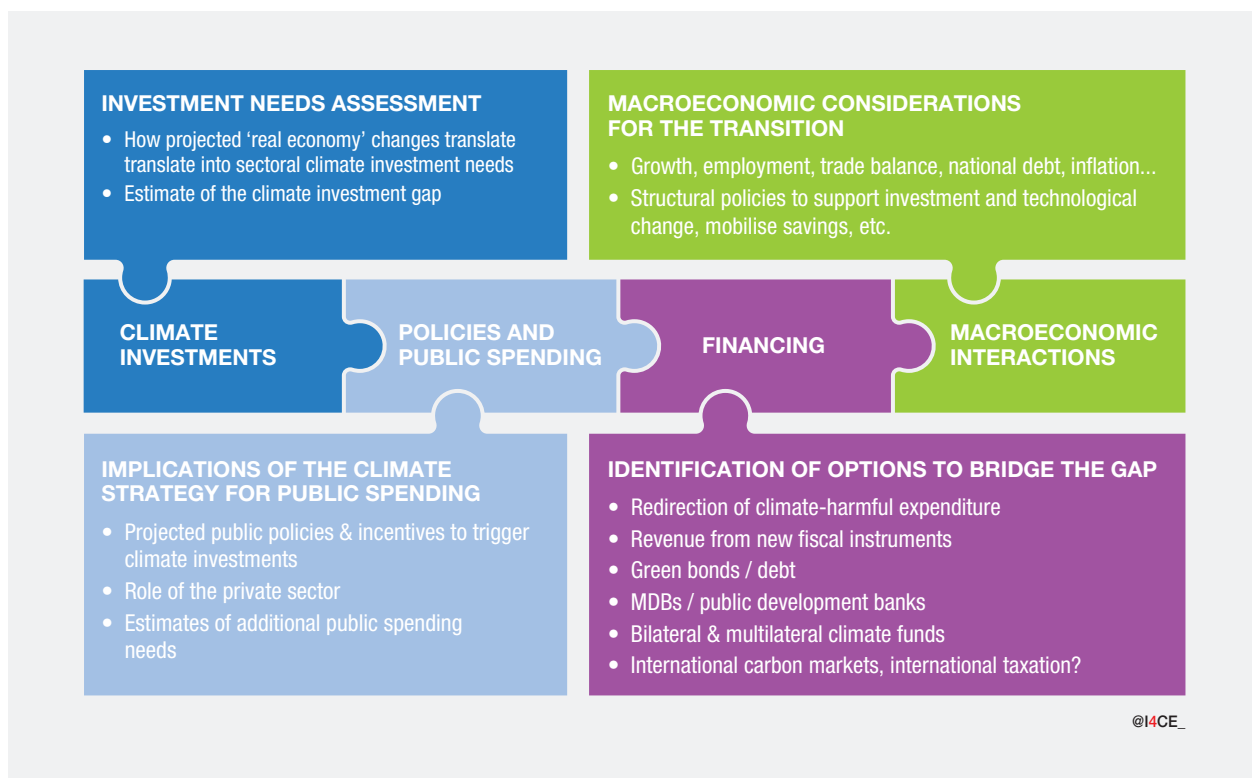
The picture of carbon revenue use is evolving and foreseen changes in the landscape show potential to strengthen their contribution to fill the climate finance gap. And now is the right time to do it as the 'New Collective and Quantified Goal' (NCQG)⁶⁶ is due to be adopted at COP29 this year and new NDCs should be presented next year at COP30⁶⁷. Their integration can be a potential avenue to help address the issue of predictability of financial flows, breaking the yearly pledge status quo on the delivery of climate finance from developed to developing countries.

This section intends to provide some final reflections and a broad perspective on how carbon revenues fit in the climate finance landscape. For this purpose, it starts presenting the framework of financing plans for the transition and where carbon revenues fit, an assessment on the need to integrate them in climate strategies, an overview of changes ahead to strengthen their contribution to the climate transition, and a final sub-section with overall conclusions.

5.1. Carbon of revenues in the broader context of financing plans for the climate transition

Carbon revenues are a key piece of the puzzle of how to fill the climate finance gap. Climate investment needs are increasing, and in the global south alone (excluding China) USD 2,400 billion per year until 2030 are needed to finance climate action⁶⁸. These investment needs, consistent with climate strategies or national pathways for low-carbon and climate resilient development, are the starting point of a process to arrive to the needed financing strategies and plans⁶⁹, as illustrated in the scheme below.

FIGURE 11. FINANCING PLANS: KEY BUILDING BLOCKS



Source: I4CE.

The investment needs figure needs to be broken down to determine the share of different actors. What share of projects should be led by the State, by public agencies, or subnational governments? Which investments should be triggered by households or by companies? This question is about national choices of who should bear the burden.

Reflecting on how to support and/or encourage these investments is the next logical step. The answer can be a mix of regulation, price signals, capacity building, co-investment, loans, subsidies, enabling investments, de-risking interventions, among others. Depending on sectors and project holders, the policy mix is grounded in a country’s context at a given point in time, which could include carbon taxes and ETSs.

“How to fund public action” is the next question and where carbon revenues enter the picture. This should cover both direct public investments, and the cost of the supporting policies for the private sector. The crucial point here is to be able to integrate these financing sources as part of an orderly funding picture, not a project-by-project basis where the overall efficiency is undermined by a lack of consistency in public action. Funding sources include debt instruments such as green or sustainable bonds, international climate and/or environment finance, and, when it comes to domestic sources, fiscal tools. One of the most prominent of these tools is carbon pricing.

5.2. The need to integrate carbon revenue use with climate and development strategies

Considering the broad perspective of financing plans is key for the discussion on how to use carbon revenues in the most effective way, and it has as a starting point a climate strategy. These plans should be based on targets set out in NDCs and LTSs – which should be submitted to the UNFCCC by all countries as per Art. 4 of the Paris Agreement. By December 2023, only 68 out of 191 countries had submitted their LTS and updated their NDCs.

Complementing these NDCs and LTSs with financing plans is still a challenge. Most often, costing elements are not in place, and funding is not structured. Moreover, carbon revenues are not often integrated in climate strategies:

- Only 4 countries explicitly refer to the use of carbon pricing revenues as part of their NDC, based on a high-level keyword analysis of the documents submitted to the UNFCCC: Canada, North Macedonia, Gabon, and the United Arab Emirates. Most references remain high-level and provide limited information on the exact mechanism in place or under consideration.
- Out of the 68 LTS published, 23 mention the use of carbon pricing revenues. The level of integration of these revenues in the overall strategy remains generally superficial with a few exceptions. EU countries often discuss the allocation of EU-ETS revenues that results from the common European framework.

Yet there are examples of jurisdictions that have moved forward integrating carbon revenues with their climate strategies. Quebec has, for instance, aligned the use of revenues generated by its ETS with the objectives set in its 2030 Plan for a Green Economy. The European Union is an emblematic case of carbon revenues being used for the climate transition (see Annex 4), although not yet with an integrated perspective as part of a financing plan.

There are opportunities in key milestones of the UNFCCC process for carbon revenues to join this broader discussion on how to fill the climate finance gap. At COP29, the new climate finance goal will be defined – commitment of financial support from developed to developing countries, and updated NDCs are due in COP30. It is thus a good time for carbon revenues to be considered among funding options within these new NDCs and to comply with international climate finance commitments.

5.3. Changes ahead to strengthen the contribution of carbon revenues for climate?

The landscape of carbon revenue use worldwide will certainly evolve in the years to come, as some jurisdictions have plans to change certain choices or have defined aims for the use of revenues of new carbon pricing instruments. Identified plans of jurisdictions covered are detailed below:

- **British Columbia:** On April 2024, British Columbia starts implementing its Output-Based Pricing System, which was announced in 2023. Revenues from this new system will be dedicated to supporting industry decarbonization, while revenues from the existing carbon tax will be dedicated to the Climate Action Tax Credit and new green initiatives under the CleanBC Plan.
- **Canada:** The Prime Minister announced that from April 2024, the rural top-up rate CAIP will double to 20%. This decision comes along with others related to the tax to respond to the campaign against it led by opposition parties, including a three-year tax exemption for home heating oil. According to the Canadian Federation of Independent Business (CFIB), a majority of businesses (85%) now oppose the tax, as concerns a potential reduction of the share earmarked for SMEs. In terms of communications, the government revealed plans of a new branding strategy to highlight the carbon tax offers rebates and that 80% of Canadians benefit more from them than what they spend. The CAIP will now be named the Canada Carbon Rebate.
- **Colombia:** A law passed in 2022 established changes in the distribution of carbon tax revenues. Since 2023, the split is 80% for environmental purposes and 20% for the substitution of illicit crops, and the Fund for Sustainability and Climate Resilience (FONSUREC) is created to manage proceeds, rebranded as the Fund for Life and Biodiversity in Law 2294 of 2023. Until it becomes operational, revenues continue to be administered by FONAM. Colombia is also developing its own ETS system. Law 1931/2018 establishes the National Program of Emission Tradable Quotas (PNCTE) as an ETS. It is still under design and to be regulated. Article 262 of Law 2294 established that resources generated by this new ETS would be used for the purposes set in Article 223 of Law 1819 of 2016, and for the operation of the PNCTE.
- **China:** Currently there is only free allocation of allowances. The Draft Interim Regulations clarified that auctioning is to be introduced and gradually expanded and proposed to set up a new national ETS fund, channelling auction revenues to further support the development of the ETS and key GHG reduction projects. yet there is no timeline for this⁷⁹.

- **European Union:** In May 2023, amendments related to the EU ETS in Directive (EU) 2023/959 included several changes, furthering auctioning revenues' contribution for the climate transition in the current system and creating a new one: ETS2. For the first, among several other modifications, the share of revenues to be used for climate purposes went up from 50% to all revenues, except those to address indirect carbon costs. While in ETS2, Member States will receive 75% of estimated revenues, and the remaining would go to a newly created Social Climate Fund. These and other foreseen changes are further detailed in Annex 4.
- **Germany:** From 2024, revenues will also be used for the establishment of a hydrogen economy and the promotion of semiconductor production.
- **Japan:** In 2023, the Green Transformation (GX) scheme was launched to drive economic growth through emission reductions, in addition to the existing scheme of carbon tax revenue use. Under the concept of “growth-oriented carbon pricing”, it has been designed with two pillars: i) upfront investment support through GX Transition Bonds that will be issued for industry decarbonisation, backed by carbon pricing revenues, and ii) measures to promote emission reductions, including carbon pricing composed of the GX Surcharge to be implemented in 2028 targeting fossil fuel importers, and of the GX-ETS to be implemented in phases, first through the launch of voluntary trading among GX League launched in April 2023. From 2033, auctioning of allowances will begin, particularly in the power sector. The plan is to allocate GX funds to a special account of the national budget to boost transparency around the usage and outcomes of GX bond investments. Bond issuances and government investments will be managed by the GX implementation council, which is presided by the Prime Minister and will continuously evaluate the progress of the GX policy. Proceeds will be used to reimburse GX bonds.
- **Mexico:** SEMARNAT, the Ministry of Environment in Mexico in charge of the ETS, may auction allowances from the auction reserve and is developing institutional arrangements to manage revenues during the operational phase. But no auctions had taken place as of the end of 2022, although preliminary activities for the implementation of auctions are currently being prepared⁷¹.
- **New Zealand:** According to the Budget 2023, eligible activities were to include those in a National Adaptation Plan or directly reducing vulnerability or exposure to climate change. However, following political issues caused by a price increase within the ETS that impacted households, the government reconsidered the decision and now plans to use revenues for tax rebates⁷².
- **Ukraine:** From 2024, the fiscal code has been modified to create the “State Fund for Decarbonisation and Energy Efficiency Transformation”. The Fund will be replenished with revenues from carbon tax.

5.4. Lessons learned and ways forward

- Carbon pricing revenues have been increasing along with the expansion of carbon taxes and emission trading systems and changes in prices and coverage of existing schemes, and the upward trend could continue in the medium-term, raising the relevance of making good decisions on their use.
- Policy makers are confronted with a chain of decisions on the use of carbon revenues, with consequences in terms of effectiveness and acceptability of carbon pricing. These decisions can be seen as part of a four-step process, similar to the policy or budget cycle: strategy, operationalisation, implementation, and evaluation. Based on the review of international experiences on the use of carbon revenues using this approach, the following key messages stand out for each of the four-steps:
 - 1. To define policy objectives**, there is no ‘one-size-fits all’ and decisions should be based on country contexts and priorities, striving for policy coherence and alignment with broader climate and development strategies. This step goes beyond the ‘earmarking’ or ‘no earmarking’ debate or the dilemma between having all revenues feed public budgets or serve a particular purpose. It entails seeing carbon revenues as part of the funding options that can help achieve a wide range of economic, social, and economic policy objectives in line with countries’ or jurisdictions’ needs and goals.
 - 2. To operationalise decisions** on policy objectives for carbon revenue use, there is a need to assess trade-offs between different options – keeping objectives in mind – and to design appropriate governance structures ensuring effective coordination. The use of the general budget as a channel is a legitimate choice that has often been supported by claims of flexibility and efficiency, yet its use should be coupled with tools to track expenditure – as green budget tagging – to avoid it becoming a sort of black box. A wide array of options of institutional and administrative arrangements – such as special-purpose funds, the tax system or even the social security system – should also be considered and analysed contrasting pros and cons against how they can serve stated policy objectives.
 - 3. To implement decisions** on objectives for carbon revenue use and means to achieve them, transparency and effective communication are key to raise awareness and increase public support, as well as to face political backlashes. Practices on transparency and communication have yet to improve, particularly on reporting

actual uses. A lack of data and of clarity on methodological choices limits the possibility of assessing the real contribution of carbon revenues for the climate transition and other objectives, a key piece to evaluate the overall policy effectiveness.

4. To evaluate the effectiveness of carbon revenue use and improve accountability, more ex-post evaluations and audits are needed, along with assessments on the link between revenue use and acceptability of carbon pricing. Few jurisdictions have taken this key step, which is very much needed to feed the overall process and make new decisions if needed for each previous steps based on the lessons learned.

- Good decisions on the use of carbon revenues can maximise benefits of carbon pricing and help ensure public support, but the potential trade-off with effective decarbonisation and the overall achievement of climate objectives must be considered to ensure policy coherence. Using revenues to support citizens or households that need it the most is a way to ensure the overall carbon pricing policy is socially fair, and supporting businesses to safeguard competitiveness is a choice that can be defended. Yet the devil is in the details, so how this is done and the consequences of these choices should be carefully analysed.
- Carbon revenues are already playing a role in the financing of the climate transition and there is potential for them to be further used to fill climate investment deficits. Around half of carbon revenues in selected jurisdictions –that represent 94% of global carbon revenues– have been used for climate and the overall environmental transition. Yet they are not often integrated in climate strategies such as NDCs and LTSs, which is a needed step.
- Carbon pricing instruments and their revenues should integrate a broader discussion on how to finance climate and development strategies, as part of financing plans for the transition. These are tools that provide a clear picture of the investments needed, policy and funding options to fill the investment gap, and macroeconomic implications. Key milestones of the UNFCCC process are opportunities for carbon revenues to join the broader discussion of how to finance the climate transition – notably the NCQG at COP29, the revised NDCs at COP30, and the Sharm el-Sheikh Dialogue on the operationalization and implementation of Article 2, paragraph 1(c) of the Paris Agreement.
- The landscape of carbon revenue use worldwide will certainly evolve in the years to come, as some jurisdictions have plans to change certain choices or have defined aims for the use of revenues of new carbon pricing instruments, which could strengthen their contribution to climate action and other development goals.

ANNEXES

Annex 1. Revenue-generating carbon pricing instruments covered by the analysis - 2022 data

Jurisdiction	Carbon pricing instrument	Type	Coverage (%)	Price (MUSD)	Annual Revenue (MUSD)
Argentina	CO ₂ Tax	CT	20%	5.6	223
British Columbia (Canada)	Carbon Tax	CT	70%	37.8	1,671
Canada	Canadian Federal Fuel Charge	CT	30%	37.8	6,270
Colombia	National Carbon Tax	CT	24%	4.8	102
France	Climate-energy contribution	CT	35%	46.9	8,097
Ireland	Carbon Tax	CT	40%	43.1	847
Japan	Special Tax for Climate Change Mitigation	CT	75%	2.2	1,822
Mexico	Carbon Tax	CT	46%	3.6	214
Norway	CO ₂ Tax	CT	63%	79.7	1,986
South Africa	Carbon Tax	CT	80%	8.6	101
Sweden	Carbon Tax	CT	40%	118.6	2,171
Switzerland	CO ₂ Levy	CT	33%	125.6	1,356
Ukraine	Carbon Tax	CT	71%	0.9	47
United Kingdom	Carbon Emissions Tax	CT	24%	21.8	974
Yucatán (Mexico)	Gas Emissions to the Atmosphere Tax	CT	0%	12.9	2
Zacatecas (Mexico)	Gas Emissions to the Atmosphere Tax	CT	0%	12.4	19
Alberta (Canada)	Technology Innovation and Emissions Reduction (TIER) Regulation	ETS	58%	37.8	482
Austria	National Certificate Trading System	ETS	50%	31.2	149
California (USA)	California Cap-and-trade System	ETS	74%	28.1	6,022
Canada	Output-Based Pricing System (OBPS)	ETS	7%	37.8	63
European Economic Area	EU Emission Trading System (EU ETS)	ETS	41%	84.6	41,239
Germany	National Emissions Trading System	ETS	40%	30.8	6,748
Hubei (China)	Emissions trading system	ETS	27%	6.3	13
New Zealand	New Zealand Emissions Trading Scheme (NZ ETS)	ETS	49%	50.6	798
Québec (Canada)	Cap-and-trade	ETS	78%	26.3	958
Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Virginia (USA)	Regional Green House Gas Initiative (RGGI)	ETS	14%	13.2	1,169
Shanghai (China)	Emissions trading system	ETS	35%	5.9	21
South Korea	Korean Emissions Trading System (K-ETS)	ETS	74%	16.2	238
Switzerland	National Emissions Trading System	ETS	11%	81.4	56
United Kingdom	Emissions trading system	ETS	28%	90.0	7,282

Sources: I4CE data on coverage, price and revenues gathered for the elaboration of the Global Carbon Accounts report 2023.

Annex 2. Using carbon revenues for climate action in the European Union

In 2005, the European Union launched the world's first international emissions trading system, the EU ETS. **Since auctioning of emission allowances started in 2008, EU ETS revenues increased each year and reached a total of EUR 38.8 billion in 2022**⁷³. This amount represents around 44% of global carbon pricing revenues –revenues from carbon taxes and emission trading systems.

From a domestic perspective, **auctioning revenues of the EU ETS are equivalent to around 10% of the real-economy climate investments in key sectors that reached EUR 407 billion in 2022**, and of the European climate investment deficit estimated at EUR 406 billion per year⁷⁴.

Not only the numbers, but the long experience of the European Union with its ETS makes it an interesting case to explore. **Using the proposed analytical framework, the experience of the EU with the use of carbon revenues is presented here with findings sorted for each of the four steps.** The main focus is on the landscape in 2022, but foreseen changes from 2023 onwards are provided when available.

1. Strategy: the purpose

In 2022, the EU had defined policy objectives for a share of EU ETS auctioning revenues, a decision-making approach categorized as hybrid-strong earmarking.

The stated objective in 2022 per EU Directive 2003/87/EC was to tackle climate change in the Union and third countries. The list of climate-related purposes in Article 10(3) of the Directive included, inter alia, mitigation, adaptation – especially in developing countries, R&D, low-emission transport, just transition, and to cover administrative costs of the EU ETS.

Member States receiving the majority of revenues were required to spend at least 50% on climate-related purposes and could use up to 25% for financial measures supporting industries to address carbon leakage risks due to indirect carbon costs.

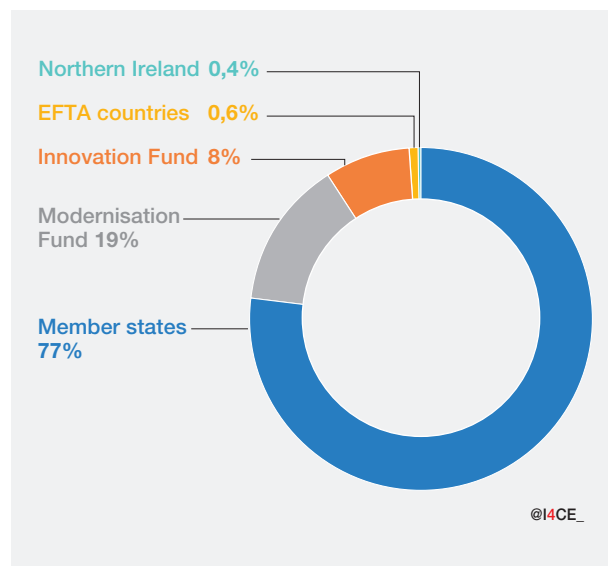
2. Operationalisation: the 'how'

A mix of institutional and administrative arrangements have been put in place to operationalise carbon revenue use in the EU ETS.

Most revenues, an estimated total of EUR 29.7 billion, went to EU Member States. Other countries, non-Member States, that are part of the EU ETS also received a share. These included EFTA countries –Iceland, Liechtenstein, Norway, and Switzerland – with EUR 239 million, and Northern Ireland with EUR 168 million. All countries receiving EU ETS revenues could decide whether to channel them through their national budgets or other means such as special purpose funds.

Other shares went to the Innovation Fund (EUR 3.2 billion), EU fund for climate policy with a focus on energy and industry, **and to the Modernisation Fund** (EUR 5.4 billion), a programme to support 13 lower-income Member States to meet energy targets by helping to modernise energy systems and improve energy efficiency. The European Climate, Infrastructure and Environment Executive Agency (CINEA) manages the first; and the European Commission, the European Investment Bank, and beneficiary Member States the second.

FIGURE A2-1. DISTRIBUTION OF AUCTIONING REVENUES OF THE EU ETS



Source: I4CE based on EEA data.

In May 2023, amendments related to the ETS in Directive (EU) 2023/959 increased the share of revenues for the climate transition in the existing EU ETS and included revenue uses for a newly created ETS2, among other changes further detailed in Box I.

BOX A2-1. FORTHCOMING CHANGES IN CARBON REVENUE USE IN THE EU ETS AND PERSPECTIVES FOR ETS 2

EU ETS: 100% of auctioning revenues to be used for climate from 2024

- **Member States shall use all revenues for climate-related purposes**, except those for the compensation of indirect carbon costs referred to in Article 10a(6), and consider the need to continue scaling up international climate finance in vulnerable third countries when deciding on uses.
- **The list of climate-related purposes in Article 10 (3) of Directive 2003/87/EC should be expanded** to cover additional purposes with positive environmental impact and include financial support to address social aspects in lower- and middle-income households by reducing distortive taxes and targeted reductions of duties and charges for renewable electricity.
- **Considering the inclusion of maritime transport in the EU ETS**, Member States are encouraged to increase the use of revenues to contribute to the protection, restoration, and better management of marine-based ecosystems, in particular marine protected areas.
- **The scope of the Innovation Fund** is expanded to support low- and zero-carbon technologies and processes linked to fuel consumption in the buildings, road transport and additional sectors - including public transport, and to decarbonise maritime transport.
- The scope of the **Modernisation Fund** should be aligned and investments consistent with the most recent climate objectives of the EU, eliminating the support to any investments related to energy generation based on fossil fuels, with some exceptions. The share devoted to priority investments should be increased to 80%.
- To address the distributional and social effects of the transition in low-income Member States, an additional amount of 2,5% of allowances from 2024 to 2030 should be used to fund the energy transition of the Member States with GDP per capita below 75% of the Union average in the years 2016 to 2018, through the **Modernisation Fund**.
- Reporting shall be sufficiently detailed to enable the Commission to assess Member States. To increase **transparency and assess impact**, the Modernisation Fund and Innovation Funds are required to report annually to the Climate Change Committee on experience with the evaluation of investments.

ETS2: 25% for a new Social Climate Fund

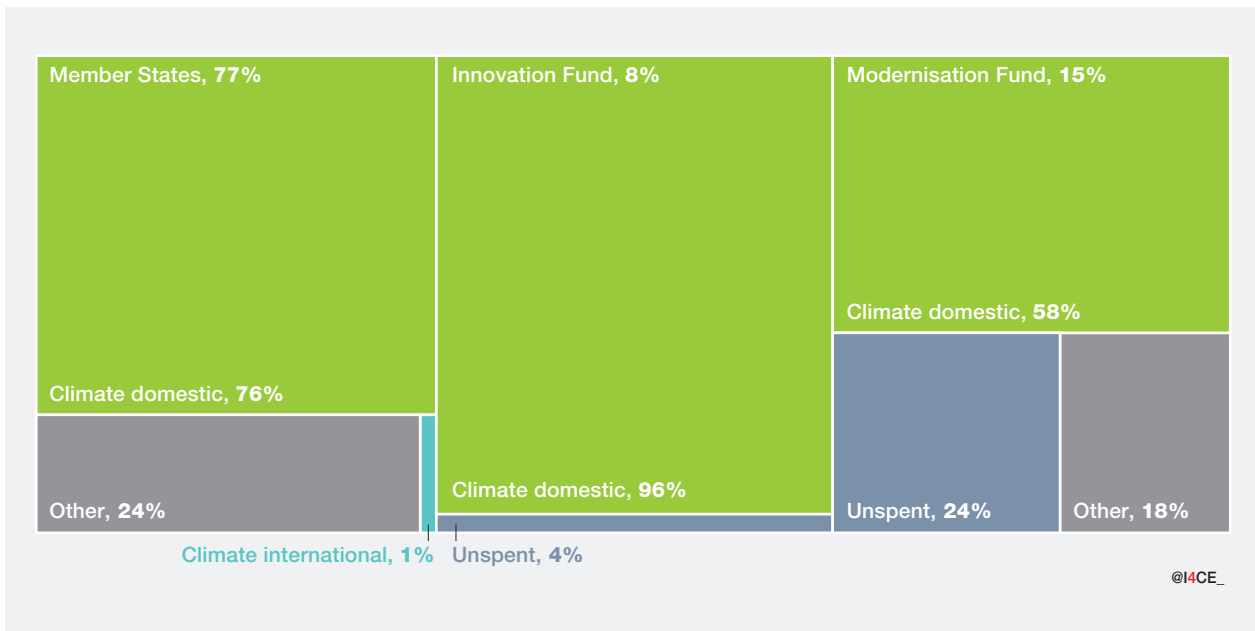
- **ETS2 is a new and separate ETS** covering fuel combustion in buildings, road transport and additional sectors (mainly small industry not covered by the existing one).
- The Social Climate Fund (SCF) will be established a year before the implementation of the ETS 2 to provide dedicated funding to Member States **to support the most affected vulnerable groups, especially households in energy or transport poverty**, and facilitate clean investments to mitigate the burden.
- The SCF will pool revenues from the auctioning of allowances from the ETS2, as well as 50 million allowances from the existing EU ETS. The SCF final regulation text fixes the total sum to be available to the SCF in EUR 65 billion, which equals to **25% of revenues under a price of EUR 45 per tCO₂**. **Together with a mandatory 25% contribution of the Member States to their Social Climate Plans, the SCF should mobilise at least EUR 86.7 billion over the 2026-2032 period.**

Source: Based on Directive (EU) 2023/959 of May 2023 which includes amendments of Directive 2003/87/EC.

3. Implementation: making it work

In 2022, around EUR 28.5 billion or 73% of auctioning revenues of the EU ETS were used for climate-related purposes, which represents 64% of all revenues used for climate and nature in selected jurisdictions. Member States reported having used an average of 76% of their revenues for climate related purposes, 75% domestically and 1% internationally. While the Innovation Fund and the Modernisation Fund spent 96% and 58% of their respective revenues on climate that year. Both in the case of Member States and the funds, the share not used for climate could have remained unspent to be used in later years or have gone to general budgets and used for multiple purposes.

FIGURE A2-2. USES OF EU-ETS AUCTIONING REVENUES IN 2022 BY MEMBER STATES AND EUROPEAN FUNDS



Note: In the case of Member States, the 'Other' category can include several non-climate related uses and unspent revenues.
Source: I4CE based on a review of official data sources and the 2023 Climate Action Progress Report of the European Commission.

Member States are required to report the use of ETS auctioning revenues to the Commission in line with the Directive and Regulation (EU) 2018/1999, pursuant to Article 10(1) and Article 3d(1) of Directive 2003/87/EC. Data on auctioning revenues is publicly available in the Reportnet platform for all Member States except Bulgaria, Estonia, Hungary, which decided to restrict their data from public view. Based on this data, Figure III presents the specific purposes auctioning revenues have served, sorted in 17 categories in line with the reporting template.

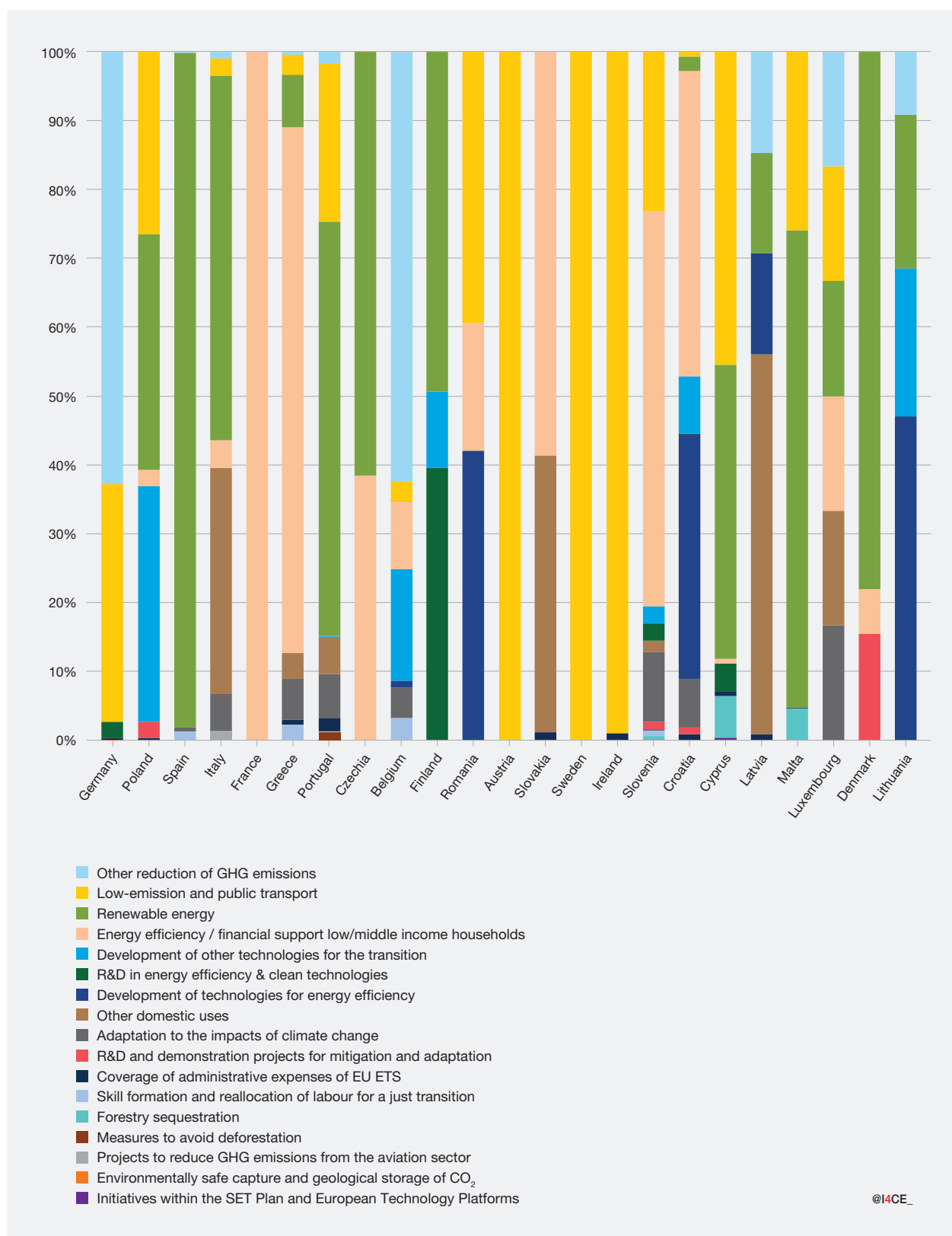
The largest share of Member States revenues has reportedly been used for 'Other reductions of GHG emissions' (34%), followed by 'Low-emission and public transport' (29%). Other relevant uses include 'Renewable energy' (17%) and 'Energy efficiency / financial support for low- and middle-income households'. This distribution presented in Figure III does not include reported uses for international climate finance.

In addition, dedicated websites of the Innovation Fund and Modernisation Fund provide information about projects financed, the first through a project dashboard. Figure II provides information based on these sources.

Yet the heterogeneity of reporting practices of EU Member States makes it difficult to have a real estimate of revenue uses per fiscal year. Some countries report only the equivalent financial value, considering limitations to establish a direct link between revenue and expenditure. Moreover, in other cases countries report more than they actually got in revenues due to the use of revenues of previous fiscal years that had not been disbursed, or less if they left a share to be disbursed in coming years. Thus, the numbers provided must not be seen as precise estimates.

Reporting challenges are not particular to the EU, but being a supranational CPI adds an extra load of complexity. For sorting out some of the challenges, tools such as Climate Budget Tagging (CBT) could help in cases where a direct link between revenues and expenditure cannot be established. This would allow to see the weight of auctioning revenues when contrasted with an overall climate expenditure estimate. The EU, through the EEA, is currently working improve reporting practices regarding the use of auctioning revenues.

FIGURE A2-3. SPECIFIC USES OF REVENUES FOR CLIMATE REPORTED BY EU MEMBER STATES



Source: I4CE based on Reportnet data.

Directive (EU) 2023/959 of May 2023 also brought changes in practices regarding transparency and communication, detailed below:

- Member States, as well as the Innovation Fund and the Modernisation Fund, are required to provide sufficiently detailed information to increase transparency.
- To acknowledge the contribution of EU ETS revenues to the climate transition, an EU ETS label should be introduced. Among other measures to ensure the visibility of funding from the EU ETS, Member States and the Commission should ensure that projects and activities supported through the Modernisation Fund and the Innovation Fund are clearly indicated as coming from EU ETS revenues by displaying an appropriate label.

4. Evaluation: assessing outcomes

Member States are required to report every year to the Commission on the use of revenues, but improvements on the quality of the data provided are needed to be able to assess compliance. The Commission must report annually to the Climate Change Committee, the EU Council and to the European Parliament on progress in implementing the Innovation Fund. Its first progress report was released in 2022 with results of the first 2 calls for proposals. The Commission also chairs the Investment Committee of the Modernisation Fund and is in charge, among other tasks, of adopting disbursement decisions and reviewing and evaluating its performance.

No studies by the European Commission have been identified on the connection between public support and auctioning revenue use. A recently published policy brief argues the EU-ETS has “increasingly matched environmentally effective and economically efficient purposes”, a change that has been “accompanied by a greater use of revenue recycling options”, seeking to balance fairness with four dimensions: environmental, economic efficiency, social/developmental and competitiveness⁷⁵. Hence, efforts to ensure fairness and acceptability in the EU ETS are strongly tied to revenue use.

Directive (EU) 2023/959 of May 2023 establishes changes to improve the capacity of the Commission to assess member states and the two European Funds on auctioning revenue use. It determines that reporting shall be sufficiently detailed to enable the Commission to assess Member States. Moreover, to increase transparency and assess impact, the Modernisation Fund and Innovation Funds are required to report annually to the Climate Change Committee on experience with the evaluation of investments.

5. Future perspectives

There is still potential for carbon revenues in the EU to help fill the climate investment deficit and to comply with international commitments of climate finance for developing countries. Definitions for the recently created ETS2 regarding the use of auctioning revenues provide a clearer picture of what their potential contribution could be, yet there is still work to do with the proposal of revision of the Energy Taxation Directive (ETD) and the CBAM, which do not address revenue recycling⁷⁶. Thus, there are pending definitions which could be crucial, not only to increase support for domestic climate action, but also international climate finance – a highly relevant topic this year with the definition of the NCQG due at COP 29.

Annex 3. List of interviewees and workshop participants

Name	Institution	#	Interview / Workshop
Germany	Adelphi	1	Both
France	Brazilian Embassy in Paris	1	Workshop
Ukraine	Cabinet of Ministers	1	Workshop
United States	California Air Resources Board (CARB)	2	Both
Canada	Canadian Climate Institute	1	Interview
Argentina	Centre for the Study of the Energy Regulatory Activity (CEARE)	3	Both
Quebec	Climate and Energy Transition Office (BTCE)	5	Workshop
Argentina	Cultural Association for Integral Development (ACDI)	1	Workshop
Denmark	Danish Ministry of Taxation	2	Workshop
Australia	Department of Climate Change, Energy, the Environment and Water	1	Workshop
United States	Department of Ecology Washington State	1	Both
Canada	Department of Finance Canada	1	Both
Ireland	Department of Public Expenditure	1	Workshop
France	Direction Générale de l'Energie et du Climat	2	Both
Turkey	Directorate of Climate Change	9	Workshop
France	Ecole Normale Supérieure - Paris (PSL)	1	Workshop
Australia	Embassy of Italy	1	Workshop
Canada	Environment and Climate Change Canada	7	Both
Brazil	Environmental Company of the State of São Paulo (CETESB)	1	Workshop
Argentina	EU Climate Dialogues (Argentina, Colombia, China, EU, Mexico and South Africa)	6	Both
European Union	EU Delegation to Canada (2), Argentina (2), Brazil, Japan, South Africa (3)	9	Workshop
European Union	European Commission	12	Workshop
European Union	European Environment Agency (EEA)	2	Workshop
France	Expertise France	1	Workshop
Morocco	Expertise France	1	Workshop
Switzerland	Federal Office for the Environment (FOEN)	1	Both
Canada	Finance Canada	1	Interview
Canada	Finance Canada	1	Interview
Italy	Florence School of Regulation, European University Institute (EUI)	2	Both
Germany	Frankfurt School of Finance and Management	1	Workshop
France	French Development Agency (AFD)	3	Workshop
France	French Development Agency (AFD) - Cambodia	1	Workshop
Argentina	Fundación AVINA	1	Workshop
Argentina	Fundación ProYungas	1	Workshop
Argentina	Fundación Torcuato Di Tella	2	Both
Cambodia	General Department of Taxation	4	Workshop
Australia	German Embassy Canberra	1	Workshop
Brazil	GIZ	1	Workshop
China	GIZ	3	Both
Mexico	Global Green Growth Institute (GGGI)	1	Workshop
China	ICF	1	Interview
Indonesia	Indonesian Directorate General of Taxes (DGT)	1	Workshop
Japan	Institut Montaigne	1	Both
Japan	Institute for Global Environmental Strategies (IGES)	1	Interview

Name	Institution	#	Interview / Workshop
International Organisation	International Carbon Action Partnership (ICAP)	2	Both
International Organisation	International Monetary Fund (IMF)	2	Both
South Korea	Korea Environment Corporation (K-eco)	2	Both
China	LSEG	2	Both
Hong Kong SAR	LSEG	1	Workshop
Mexico	MEXICO2	3	Both
Brazil	Ministry of Development, Industry, Trade and Services	1	Workshop
Cambodia	Ministry of Economy and Finance	26	Workshop
Japan	Ministry of Economy, Trade and Industry (METI)	2	Workshop
Cambodia	Ministry of Environment	1	Workshop
Argentina	Ministry of Environment and Sustainable Development	1	Workshop
Colombia	Ministry of Environment and Sustainable Development	3	Workshop
Japan	Ministry of Finance	6	Both
Vietnam	Ministry of Finance	1	Workshop
Mexico	Ministry of Finance and Public Credit	5	Both
Japan	Ministry of the Environment	1	Workshop
Brazil	Ministry of the Environment and Climate Change	3	Workshop
Japan	Mission of Japan to the EU	2	Workshop
Vietnam	National Institute for Finance, Ministry of Finance	1	Workshop
Colombia	National Planning Directorate (DNP)	1	Workshop
Argentina	Netherlands Embassy in Buenos Aires	1	Workshop
United States	New York State Energy Research and Development Authority (NYSERDA)	2	Both
France	Organisation for Economic Cooperation and Development (OECD)	4	Workshop
China	People's Bank of China (PBOC)	6	Workshop
Indonesia	PT JJB Sustainergy Indonesia	1	Workshop
Academia	Resources For the Future	1	Interview
Australia	Rimor Equity Research	1	Workshop
China	SinoCarbon	1	Workshop
Morocco	The General Treasury of the Kingdom (TGR)	1	Workshop
International Organisation	The World Bank	1	Both
Colombia	Transforma	2	Both
Argentina	Universidad de Buenos Aires	1	Workshop
Canada	University of British Columbia	1	Workshop
United States	Washington State Department of Ecology	1	Workshop
Australia	Waste Management and Resource Recovery (WMRR) Association	1	Workshop
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The EU Climate Dialogues (EUCDs) project aims to support the EU's bilateral relations with external partners on climate related policies and to promote the effective implementation of the Paris Agreement. Its objective is to foster ambitious climate policies and investment in economies outside the EU, and exchange practices on policy experience in the area of climate-related economic activity. Additionally, the project seeks to reinforce climate related bilateral trade, investment, and innovation while enhancing public awareness, including in the business community.

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