

POLICY BRIEF

Social impact of Emissions Trading Systems: auction revenues and social expenditures in a changing world

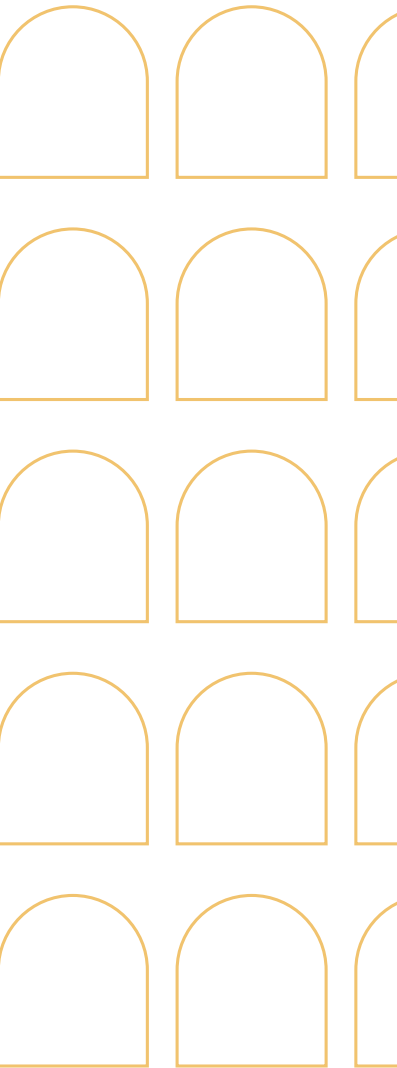
This brief is an extended version of a note prepared by the authors upon invitation of the European Commission for distribution in the context of the Florence Process Carbon Market Workshop 2022 in May 2022. The views expressed in this paper are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

Highlights

- Auction revenues from emissions trading systems (ETSs) have rapidly grown in recent years and are becoming an increasingly important consideration for policymakers.
- ETS revenues can play a key role in supporting the transition to net zero emissions by improving the political acceptability of ETSs, enhancing environmental outcomes of market-based instruments and consolidating jurisdictions' fiscal resources.
- Earmarking (designating funds or resources for a particular purpose) establishes a clear link between the costs of climate policies and the associated benefits, thereby contributing to increase public support for carbon pricing.
- A majority of ETSs earmark their revenues to finance programmes in favour of climate mitigation, industry competitiveness and innovation and social support.
- Studies show that allocating even a limited share of revenues to low-income households is sufficient to compensate for the negative effects of carbon pricing.
- Earmarking the EU ETS revenues could contribute to strengthening the European Union's own budget and to advancing the EU carbon neutrality objective by 2050.

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1. Introduction

Given the overwhelming evidence on climate change and the urgency to slow down ongoing global warming, in the last few years climate neutrality has rapidly become a common target for many jurisdictions worldwide. An increasing ambition of national climate policies, which aligns with the ratcheting-up mechanism underlying the Paris Agreement, has been largely shared and confirmed at the Conference of the Parties (COP26) held in Glasgow in November 2021. Most countries currently aim to achieve climate neutrality by 2050, followed by two giant and rapidly growing economies like China (aiming at the same target by 2060) and India (by 2070).

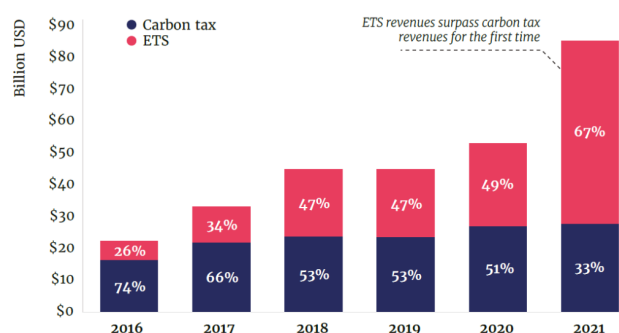
Achieving this ambitious target, however, requires increasingly stringent climate policies that, in jurisdictions with an Emissions Trading System (ETS), may lead to higher carbon prices in the whole economy affecting industries, end-users and households. Indeed, a rising trend in carbon prices has clearly emerged in the main carbon markets around the world in the last months, which may partly be attributed to higher ambition. This rapid increase has raised concerns about the social acceptability of more stringent climate policies, especially by the poorest sections of the population, who are most vulnerable to price changes. These concerns have been fuelled by the rise in energy prices, particularly after the outbreak of the war in Ukraine, which may seriously hit the poor and put at risk the prospects of a long-awaited post-pandemic economic recovery.

The viability of more stringent climate policies and the achievement of the climate neutrality goal also depend on the (re)distributional impact of such policies and on the way these are perceived by the population. In this context, ETS can play a key role by raising revenues that can be used for redistribution purposes. It is, therefore, relevant to examine the size of the ETS revenues and the related social expenditures performed by the governments of the main existing ETS.

Carbon revenues were about \$84 bln in 2021, including \$56 bln from ETSs (Figure 1). ETS revenues represent the revenues raised by an ETS jurisdiction when allowances are auctioned and sold to market participants. They are a function of the prices of the allowances, the scope of emissions covered by the ETS, the share of

allowances that are auctioned in the market and the size of the jurisdiction's economy.

Figure 1 Evolution of carbon revenues between 2016 and 2021 (World Bank, 2022)



ETSs can play a key role by raising revenues, and this is becoming an increasingly important consideration for policymakers. PMR (2019) details how ETS revenues can be instrumental in supporting the transition to net zero carbon emissions by:

- impacting positively or negatively the economic effectiveness of pricing mechanisms;
- improving the political acceptability of ETSs;
- influencing positively or negatively environmental outcomes; and
- consolidating fiscal resources of the jurisdiction's budget.

This policy brief first summarises the challenges and solutions in using ETS revenues and then provides an overview of the governmental revenue recycling programs implemented to address the potential distributional impacts of ETS on households and communities.

2. Possible use of ETS revenues

Steenkamp (2021) identifies multiple ways to classify carbon revenues by use based on;

- 1) whether they are used to directly support specific objectives or allocated to the general budget without earmarking;
- 2) whether they impact directly and immediately the beneficiaries (lump sum money, tax rebates) or more indirectly, with long-term effects through enhanced social spending or infrastructure investment;

3) public preferences concerning the final destination of the revenues (environmental, redistributive, or others);

4) thematic classifications identifying the type and sectors in which the expenditure takes place (e.g., social expenditure, competitiveness, climate mitigation).

This section highlights the primary policy considerations for using ETS revenues and distinguishes between earmarked and non-earmarked revenues.

Allocation to the general budget versus earmarking

When allocated to the jurisdiction's budget, revenues are fed directly into the general budget for any relevant expenditures. This option offers many advantages. It increases the resource availability for public spending and can become an opportunity for optimising the overall tax and spending framework. It provides ample margin for manoeuvre as it is considered simple and flexible. However, allocation to the general budget is often not the preferred option as it lacks visible and perceived impacts by the popu-

lation. Moreover, it carries several risks in itself, such as possible misuse, if not corruption, of a complex and indefinite administrative system (PMR, 2019).

On the other hand, earmarking corresponds to a legal or declared designation of funds or resources for a particular purpose. Earmarking of carbon revenues tends to increase support for carbon pricing, associating the costs directly with the benefits. This does not go without risk either: an overly strict earmarking rule could lead to underinvestment or unused resources if the sum of carbon revenues raised differs significantly from their planned use. A mechanism could be put in place to compensate for the gap between the planned use and actual expenditure of the revenues to limit such risk.

As described in Table 1 summarising some elements from PMR (2019), if earmarked, revenues can be targeted towards various categories of expenditures: Climate mitigation, Industry and innovation, Social support, Debt reduction, Tax reform and Other programmes.

Table 1 Overview of the carbon revenues end-uses.

(EU: European Union, Cal: California, Que: Québec, DE: Germany; RGGI: Regional Greenhouse Gases Initiative, CH: Switzerland, UK: United Kingdom)

End-use	Objective	Advantages	Limits and risks	Examples
Climate mitigation	Support companion policies to reduce emissions	-enhance climate policies -increase acceptability	-The use of revenues may not always be sufficient to address climate problems.	EU, Cal, Que, DE, RGGI, CH, UK
Industry & innovation	Support industry innovation & competitiveness	-limit carbon leakage -incentivise transformation	-possible windfall profits -social acceptability	EU, Cal, Que, RGGI, UK
Social support	Reduce distributional effects on households, companies & regions	-compensate negative effects -increase acceptability	-challenging to design and steer -distortive effects	Cal, RGGI, DE, EU
Debt reduction	Lower budget deficits and pay back the public debt	-free up resources for the future	-no short-term impacts -less transparent	Ireland, Indonesia (tax)
Tax reform	Increase economic growth by improving taxation	-double dividend -shift to a formal economy: upstream carbon pricing tends to better cover informal sectors than conventional taxes	-possible increased inequality since conventional taxes tend to be more progressive than carbon pricing without redistributive measures. -Less visible	Sweden, Finland (tax)
Other programmes	Support non-climate welfare and infrastructure	-useful & steady revenue base for development	-administratively complex	Que, UK, Cal, DE, CH

As illustrated in section 3, most ETSs earmark the majority of revenues towards climate mitigation as well as industry and innovation. Some already channel payments towards social support to marginalised and low-income communities, and it appears probable that these social expenditures will increase over time as the carbon price and energy costs increase. As shown in the table, the earmarking for debt reduction and tax reform has been associated mainly with carbon taxes rather than ETS revenues (e.g., Ireland, Finland, Sweden and Indonesia). Funding infrastructure or education programmes can be particularly relevant for developing countries. Although earmarking is generally the preferred option, some jurisdictions opt for allocation to the general budget or some hybrid forms that include both earmarked and non-earmarked uses (Krause et al., 2022). The end-use of the revenues matters, in particular to the extent to which they are administered in a functional and transparent manner.

Administration and communication of ETS Revenues

The use of auction revenues depends, above all, on the general objectives of fiscal policies. It should fit in the political arbitrage between 1) efficiency (reallocate resources); 2) long-run growth (increase productivity), and 3) equity (re-distribute income or opportunity), as detailed by PMR (2019). Jurisdictions should find their own recipe, taking into account their legal, institutional and administrative contexts, and the right ingredients bearing in mind that the proper mix of revenues use could:

- enhance climate policies or transform the economy, as carbon pricing tends to smoothen the transition towards a formal economy (i.e., carbon pricing is less easily evaded than traditional taxes) and towards a net-zero economy;
- increase acceptability among specific categories of stakeholders or population segments;
- compensate adverse effects of carbon pricing without becoming negatively distortive (e.g., windfall profits, non-functional funding);
- become directly visible in the short-run or have long-term expected impacts;

- improve the overall budget allocation, or identify thematic priorities.

The development of dedicated funds is considered one of the good practices for administering the allocation of revenues. First, it can provide transparency in funding. Second, it makes possible the management of revenues over several years with certain flexibility. Third, it represents an opportunity for regulators to engage with stakeholders, who can participate transparently in defining the types of programmes and actions to support or supervise the allocation and operation of the revenues. Fourth, it can be framed to ensure clear accountability for the use of the revenues (PMR, 2019).

The use and administration of revenues constitute core parameters to be optimised. In fact, the acceptability of carbon pricing policies also depends on how they are communicated (e.g. Carattini et al., 2017). In that respect, it is crucial to implement positive communication over the use of ETS revenues. This can be achieved by engaging directly with the communities and stakeholders in the design of the programmes and by reporting periodically on the achieved impacts. In addition, jurisdictions could label funded projects with an explicit mention of the origin of the money. For instance, this is what California is doing (see section 3) or what the European Parliament has proposed (a project label that reads “*funded by the European Union (EU Emissions Trading System)*”).

3. Overview of some ETS revenue recycling programmes

This section offers an overview of the ETS revenue recycling programmes of some major ETS jurisdictions, namely the European Union, California, China, Germany, New Zealand, Québec, Regional Greenhouse Gas Initiative, Switzerland and the United Kingdom.¹

The European Union

The EU urges its Member States to spend at least half of their ETS revenues for climate- and energy-related purposes. Recent estimates (European Commission, 2021a) show that this target is generally achieved, and in 2020 around 72% of the ETS revenues were actually devoted to climate and energy goals. The Fit-for-

¹ More details can be found in the Table annexed to this policy brief.

55 (FF55) proposal² set forth by the European Commission in July 2021 aims at further increasing this share, eventually devoting all auction revenues to climate and energy goals.

Most of EU ETS auction revenues are re-distributed to all Member States based on their share of verified emissions. For reasons of solidarity, 10% of revenues are distributed among the lower-income Member States (MS) only. Furthermore, 2% of the total allowances are auctioned to fund the Modernisation Fund. This fund aims at modernising energy systems, improving energy efficiency, and supporting a socially just transition to a low-carbon economy. Finally, the Innovation Fund will provide around EUR 38 billion of support from 2020 to 2030 (at EUR 75 / tCO₂), depending on the carbon price, for the commercial demonstration of innovative low-carbon technologies, aiming to bring to the market industrial solutions to decarbonise Europe and support its transition to climate neutrality.

Member States differ in terms of amount and shares of revenues aimed at climate and energy ends, as well as of specific measures undertaken. France, for instance, devotes up to €420 mln a year from the auctioning revenues to improving energy efficiency of private households and to financially support social needs of low- and middle-income households (Krause et al., 2022). Other countries (e.g. Hungary and Estonia) focus on transport using ETS revenues to fund electric charging installations and support the purchase of electric cars and buses. Germany devotes part of its revenues also to international, European, and national climate programs.

Another important difference concerns whether MS earmark their revenues or direct them to the general budget. The EU seems to be almost equally split in this respect, with ten MS earmarking auction revenues, eleven not earmarking and six using a hybrid approach (Krause et al., 2022). For Member States that do not earmark, it is difficult to say what percentage of their ETS revenues is spent on climate goals.

So far, most of the auction revenues were directed to implementing energy efficiency and renewable energy programs, particularly energy efficiency in buildings, renewable heat, and electric mobility (European Commission, 2017). As Wiese et al. (2020) have argued, efficiency

and renewable energy programs targeted to low-income households or communities help reduce energy and mobility poverty and they can have a long-lasting effect by significantly lowering their bills in the long-term.

The FF55 proposal aims at introducing changes in regulation that further protect the most vulnerable citizens and thus gain support to the implementation of more ambitious climate policies. In particular, the FF55 proposes to add an extra 2.5% of auctioned allowances to the Modernisation Fund, so as to finance the energy transition of low-income MS and support low-income households as well as the modernisation of energy systems.

The new ETS for buildings and road transport

The FF55 proposal also aims to extend emissions trading to buildings and road transport, in order to ensure these crucial sectors start making the emission reductions necessary to achieve -55% by 2030. Some experts argue that this might hit low- and middle-income households more severely (Feindt et al., 2021), although evidence on this issue is still mixed. The impact assessment of the FF55 concludes that “*while initial impacts [of the new ETS] can be mildly regressive, revenue recycling can, in theory, fully resolve the distributional issues which arise*” (p.129, European Commission, 2021b). The possible income loss of low- and middle-income households could in fact be counterbalanced by the proposed creation of a Social Climate Fund supporting vulnerable households and financed by ETS revenues. The Social Climate Fund is expected to provide approximately €72.2 bln of funding (25% of the auctioning revenues of this so-called ETS2) to Member States from 2025 to 2032. The actual distributional effects of the ETS2 could, therefore, be much lower than those perceived by public opinion. This calls for a more effective communication of the impacts of ETS2. In this regard, the proposal recently set forth by Cornillie et al. (2021) to anticipate the work of the Social Climate Fund should receive particular attention as this may help modify the negative perception of the ETS instrument.

² At the time of writing, the Fit-for-55 Package and measures proposed under REPowerEU are still under discussion in the trilogue involving the European Commission, the European Parliament and the European Council.

Figure 2: Earmarking approaches of EU ETS revenues by Member States

(Source: Krause et al, 2022)



REPowerEU: how should ETS revenues contribute to tackling the current energy crisis?

Within the REPowerEU strategy, the European Commission had proposed to unlock and auction part of the allowances (eq. to €20 bln) in favour of the Recovery and Resilience Facility (RRF) to promote the REPowerEU objectives. This was justified by the exceptional situation in the energy markets following Russian invasion of Ukraine, which requires mobilising all resources available to accelerate the transition away from Russia’s fossil fuels. However, it raised questions about whether the means are appropriate for the purpose and how to proceed to unlock the ETS revenues. Although initially planned as a release of allowances from the Market Stability Reserve, the current “frontloading” agreement between the European Council and Parliament is to anticipate to 2023 the auctioning of allowances otherwise scheduled from 2026 onwards (Montel, 2022).

California

The lion’s share of Californian auction revenues -that amount to almost \$4 bln in 2021 (Carbon Pulse, 2022)- goes to the Greenhouse Gas Reduction Fund (GGRF) to be used for Cali-

fornia Climate Investments. At least 35% of the GGRF must benefit disadvantaged and low-income communities and households. More precisely, at least 25% of the proceeds must support projects for disadvantaged communities and individuals, while at least 5% must go to projects located within those communities or low-income households statewide, and an additional 5% must benefit communities and households living within ½ mile away from the disadvantaged area (California Climate Investments, 2022; ICAP, 2019). Cumulatively, 50% of the fund, or \$5.2 bln, is actually benefiting priority populations, far beyond the statutory minimums. Finally, investor-owned utilities are allocated allowances, a portion of which must be auctioned (ICAP, 2022). These auction proceeds must be used by the energy utilities for ratepayer benefits via a reduction in electricity bills. California is the only ETS jurisdiction that has explicitly determined environmental justice as a final goal of ETS revenues recycling. This contributes to explaining the high visibility given to the activities financed by the ETS revenues (with the logo “Cap-and-trade dollars at work” on all grantees of the investment programs).

China

China's pilot ETS systems have generated \$255 mln in government revenues since 2013 (Carbon Pulse, 2022; ICAP, 2022). A new national ETS fund has been recently proposed. This should direct auction revenues to support GHG reduction projects and further develop the national carbon market in the years to come. However, the national ETS is still in its infancy. Therefore, the future steps of this process are still to be set. Although carbon price in China is still relatively low, given the expected dimension of China's ETS auction revenues could increase remarkably in the future, generating significant funds for redistribution policies. The European experience in setting up its own ETS might provide important insights for the Chinese ETS (Verde et al., 2021).

Germany

The German national emission trading system (nEHS), operational since 2021, covers the sectors of heat generation and transport. The auctioning revenues, complemented by other fiscal sources, are channelled to the Energy and Climate Fund (EKF) and used to finance relief and support measures (ICAP, 2022). The auctioning under the nEHS generated a revenue of \$8.4 bln in 2021. Various federal programs are intended to alleviate the burden from middle- and low-income households in the covered sectors. The Government intends to invest in public transport infrastructure and transport users will benefit from incentives for climate-friendly transport. More precisely, the tax-based mileage allowance has been increased and a mobility premium for those below the eligibility threshold for the allowance has been introduced. Direct support to households will be granted for energy-efficient renovations and renewable energy systems. In addition, ETS revenues are used to fund the renewables support schemes, previously paid by the consumers through the renewable energy levy, the so-called EEG, in order to reduce electricity prices (DEHSt, 2021; EEB, 2022; Clean Energy Wire, 2022).

New Zealand

New Zealand's ETS raised around \$1 bln in revenues in 2021 (Carbon Pulse, 2022). So far, New Zealand's cap-and-trade revenues were not earmarked but went to the general budget. From 2022 onwards, revenues will be used to achieve emissions reduction goals in the future, in line with

the country's National Emissions Reduction Plan presented in May 2022. A Climate Emergency Reduction Fund (CERF) of about \$ 4.5 bln over the period from 2022/23 to 2025/26 will use ETS revenues to meet emissions abatement targets (Government of New Zealand, 2021; Krause et al., 2022). About \$2.9 bln have already been allocated to the CERF to kick-start emissions reductions work. The Treasury has calculated an additional \$800 million will be generated from the Emissions Trading Scheme over the first period. All actions funded by the CERF should be included in the New Zealand Emissions Reduction Plan. Priority areas include transportation, agriculture and energy transition (Government of New Zealand, 2022).

Quebec

In the Quebec cap-and-trade system, auction revenues in 2021 amount to over \$900 mln (Carbon Pulse, 2022). All auction revenues in Québec go to the Electrification and Climate Change Fund (formerly known as Green Fund). The latter is managed by the Ministry of the Environment and the Fight against Climate Change and is entirely devoted to climate measures, including energy efficiency, electrification, and public transport actions. By law, two-thirds of revenues go to the transport sector as this is the largest emitter in the province (ICAP, 2019). In particular, resources are directed to finance several road transport programs (including incentives to electric vehicles programs) as well as to support projects in the rail and maritime transport sector.

In 2019, the largest share of the auction resources (90%) was directed to mitigation activities with particular emphasis to projects promoting innovative mitigation technologies such as carbon sequestration, transport electrification and intelligent logistics (ICAP 2019). This is expected to change in line with the Plan for a Green economy 2030 which focuses more on electrification of transport, industry decarbonisation and green and efficient buildings (ICAP, 2022). Although priority is given to local and indigenous communities, no specific policies are envisaged for distributional or social impacts, which are expected to be addressed through support to public transit and energy efficiency policies as well as other social policies.

Regional Greenhouse Gas Initiative

In 2021, RGGI raised about \$926 mln in revenues through quarterly auctions (ICAP, 2022). The RGGI states have full discretion over the use of their own revenues and the administration of RGGI-funded programs. Since 2016, RGGI has published yearly reports on “Investments of RGGI Proceeds” (RGGI, 2022). The last report released in June 2021 describes how the \$237 mln of proceeds have been invested in 2019. It gives a broad overview of the use of the proceeds in terms of actions, states and beneficiaries, as well as the estimated impacts of these investments for the stated year and in the long run in terms of GHG (avoided CO₂ emissions), energy savings (saved MWh and BTu) and energy bill savings (\$). Overall, 40% of the RGGI investments from 2019 were channelled to energy efficiency, 18% for clean and renewable energy, 15% for GHG abatement actions and 19% for direct bill assistance to households and businesses (RGGI, 2021).

Switzerland

The Swiss ETS has generated \$64 mln since 2019 (Carbon Pulse, 2022). The market is rather small and the share of auctioned allowances is still relatively low (slightly more than 10%).³ However, carbon prices have been remarkably increasing from the beginning of 2022, when the linkage with the EU ETS eventually became operational, which contributes to enhancing auction revenues. Such revenues are not earmarked but go into the federal government budget.

In June 2021, the revision of the Swiss CO₂ law was rejected by voters in a referendum. In the aftermath, the public discussion on the affordability of ambitious climate protection measures for low-income households was intensified. Social aspects may play a greater role in climate policy in the future to make it acceptable to the electorate. Indeed, Swiss public opinion showed support to the redistribution mechanism underlying the CO₂ levy applied to non-ETS sectors, therefore this issue might play a role for the use of ETS auction revenues in the future.

United Kingdom

For its first year of operation (2021), the UK ETS delivered nearly \$6 bln to the budget of the jurisdiction through its auctions (ICAP, 2022).

Revenues of the ETS are not directly ringfenced for energy and climate purposes. However, as reported in the ICAP ETS Status Report 2022, the UK Government indicates that the revenues support the UK’s Ten Points Plan for a Green Industrial Revolution. A consultation is currently open on the reform of the UK ETS, in which the use of auctioning revenues is also raised, particularly to decarbonise specific sectors, economic actors and industries.

4. Carbon pricing and distribution at the time of the war (and pandemic)

The combined effect of the Ukraine war and the still ongoing pandemic risk to generate a new period of stagflation if not promptly addressed with proper measures. What is more, the observed energy price hikes may affect public support to climate policies. On the one hand, the increase of energy prices shows the need to accelerate the transition process to set free from the current energy dependence. On the other hand, energy price records may hinder climate policies that tend to increase carbon prices.

Higher energy and carbon prices are likely to have regressive effects. In fact, lower-income households spend a bigger share of their income on energy- and carbon-intensive goods, and they face higher financial constraints to adopt low-energy and low-carbon technologies. In addition, they are more prone to losing jobs in energy- and carbon-intensive sectors. The extension of carbon pricing to new sectors (e.g., EU ETS 2) and the current energy crisis risk exacerbating inequalities. Tackling the distributional effects of carbon pricing is fundamental to the success of our carbon neutrality ambition.

In this context, can ETS revenues fix the distributional challenge of carbon pricing? It appears so: studies have estimated only a limited share of revenues allocated to low-income households compensates for the adverse effects of carbon pricing: 17% for Berry (2018) and 11% for Mathur and Morris (2014).

As argued in this policy brief, the present complex international scenario raises new questions both for policy and research for the future. In our opinion, EU ETS revenues should be earmarked in favour of climate mitigation, competitiveness

³ Switzerland auctions only an allowance reserve of 5% and the allowances that were previously allocated to entities that have reduced or closed their activity (ICAP, 2019).

and innovation and social redistribution at the European and Member State level. In today's world, the increase in revenues raised under the EU ETS represents a unique opportunity to reinforce the EU's green budget and contribute to the objective of reaching carbon neutrality by 2050. EU proposals are going in the right direction, but more attention should be devoted to the following policy questions in the future if we are to achieve carbon neutrality:

- i. How can we increase the social acceptability of higher carbon prices?
- ii. Should ETS revenues' destination be changed to address the challenges posed by the changing circumstances (higher prices, climate neutrality, new sectors)?
- iii. Should the share of ETS revenues devoted to social expenditures be increased?
- iv. How to improve transparency and effectively communicate the use of the revenues to public opinion?
- v. What can be learnt from the different approaches to revenue recycling adopted by different jurisdictions in terms of funding instruments, targeted beneficiaries, and forms of support?

Policy and research need to proceed hand in hand in addressing these key questions in the future to counterbalance the adverse distributional effects of climate policies, improve communication about carbon policies and foster a positive debate on the appropriate policy instruments.

References

- Berry A. (2018). Compensating households from carbon tax regressivity and fuel poverty: a microsimulation study. Policy Paper, CIRED. Available online at: <https://halshs.archives-ouvertes.fr/hal-01691088/>
- California Climate Investments (2022). Priority Populations. Available online at: <https://www.caclimateinvestments.ca.gov/priority-populations>
- Carattini, S., Baranzini, A., Thalmann, P. Varone F. & F. Vöhringer (2017). Green Taxes in a Post-Paris World: Are Millions of Nays Inevitable?. *Environmental Resource Economics*, 68, 97–128. Available online at: <https://doi.org/10.1007/s10640-017-0133-8>
- Carbon Pulse (2022). Better net zero alignment is driving recorded ETS prices and revenues – study. Published March 29, 2022. Available online at: <https://carbon-pulse.com/155153/>
- Clean Energy Wire (2022). Germany stops renewables funding via power bills to make electricity cheaper. Published April 29, 2022. Available online at: <https://www.cleanenergywire.org/news/germany-stops-renewables-funding-power-bills-make-electricity-cheaper>
- Cornillie, J., Delbeke, J. & Egenhofer, C. (2021). Tackling energy price shocks on the road to climate neutrality, STG Policy Briefs, 2021/17, European University Institute, Florence. Available online at: <https://hdl.handle.net/1814/72618>
- DEHSt (2021). The national Emission Trading System. Factsheet, Deutsche Emissionshandelsstelle, Umwelt Bundesamt, Berlin. Available online at: https://www.dehst.de/SharedDocs/downloads/EN/publications/Factsheet_national-emissions-trading.pdf?__blob=publicationFile&v=2
- EEB (2022). Lessons from the German Emissions Trading System for buildings and road transport. European Environmental Bureau, Brussels. Available online at: <https://eeb.org/wp-content/uploads/2022/03/German-Emissions-Trading-System-for-buildings-and-transport.pdf>
- European Commission. (2017). Analysis of the use of Auction Revenues by the Member States. Available online at: <https://www.gcca.eu/sites/default/files/2020-06/2017%20European%20Commission%20Analysis%20on%20the%20use%20of%20Auction%20Revenues%20by%20the%20Member%20States.pdf>
- European Commission (2021a). Speeding up European climate action towards a green, fair and prosperous future. EU Climate Action Progress Report. Available online at: https://ec.europa.eu/clima/system/files/2021-11/policy_strategies_progress_com_2021_960_en.pdf
- European Commission (2021b). Impact Assessment Report accompanying the Directive amending Directive 2003/87/EC, Decision (EU) 2015/1814 and Regulation (EU) 2015/757. SWD/2021/60. Available online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021SC0601>
- Feindt, S., Kornek, U., Labeaga, J. M., Sterner, T., & Ward, H. (2021). Understanding regressivity: Challenges and opportunities of European carbon pricing. *Energy Economics*, 103. Available online at: <https://doi.org/10.1016/j.eneco.2021.105550>
- Government of New Zealand (2021). Budget Policy Statement 2022. Available online at: <https://www.treasury.govt.nz/publications/budget-policy-statement/budget-policy-statement-2022>
- Government of New Zealand (2022). Summary of key Climate Emergency Response Fund initiatives. Available online at: <https://www.budget.govt.nz/budget/2022/wellbeing/climate-change/summary.htm>
- ICAP (2019). The use of auction revenues from Emissions Trading Systems. International Carbon Action Partnership, Berlin. Available online at: <https://www.adelphi.de/en/publication/use-auction-revenue-emissions-trading-systems>
- ICAP (2022). Emissions Trading Worldwide: Status Report 2022. International Carbon Action Partnership, Berlin. Available online at: <https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2022-icap-status-report>
- Krause, E., Roth, A. & Schäfer, M. (2022). Using carbon pricing revenues for social compensation. Guidehouse, Berlin. Publicly Available at: <https://guidehouse.com/insights/energy/2022/addressing-social-impacts-of-carbon-pricing-eu>

- Mathur, A. & Morris, A. C. (2014). Distributional effects of a carbon tax in broader U.S. fiscal reform. *Energy Policy*, 66, 326-334. Available online at: <https://doi.org/10.1016/j.enpol.2013.11.047>
- Montel (2022). European Parliament to support frontloading EUA sales – MEP. *Montel News*. Published September 27, 2022. Available online at: <https://www.montelnews.com/news/1354079/european-parliament-to-support-frontloading-eua-sales--mep>
- PMR (2019). Using Carbon Revenues. Partnership for Market Readiness Technical Note n°16. World Bank, Washington DC. Available online at: <https://openknowledge.worldbank.org/handle/10986/32247>
- RGGI (2022). Investments of Proceeds. Regional Greenhouse Gas Initiative. Available online at: <https://www.rggi.org/investments/proceeds-investments>
- RGGI (2021). The Investment of RGGI Proceeds in 2019. Report of the Regional Greenhouse Gas Initiative. Available online at: https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2019.pdf
- Steenkamp, L.-A. (2021). A classification framework for carbon tax revenue use. *Climate Policy*, 21:7, 897-911. Available online at: <https://doi.org/10.1080/14693062.2021.1946381>
- Verde, S., Galdi, G., Alloisio, I., Borghesi, S. (2021). The EU ETS and its companion policies: any insight for China's ETS?. *Environment and Development Economics*, 26, 302-320. Available online at: <https://doi.org/10.1017/S1355770X20000595>
- Wiese, C., Cowart, R. & Rosenow, J. (2020). The strategic use of auctioning revenues to foster energy efficiency: status quo and potential within the European Union Emissions Trading System. *Energy Efficiency* 13, 1677–1688. Available online at: <https://doi.org/10.1007/s12053-020-09894-0>
- World Bank (2022). State and Trends of Carbon Pricing 2022. World Bank, Washington, DC. Available online at: <https://openknowledge.worldbank.org/handle/10986/37455>

Use of auctioning revenues of the main ETS jurisdictions (Sources: 2022 ICAP Status Report, jurisdiction websites, LIFE DICET)

Jurisdiction	Revenues (in mln USD)	Channels	Allocation*	Current use of revenues
California	3 992.4 (2021) 1 699.3 (2020) 3 065.3 (2019)	Greenhouse Gas Reduction Fund + Utilities' programmes	Inno, Soc, CO2	Most auctioning revenue goes to the Greenhouse Gas Reduction Fund, of which at least 35 % must benefit disadvantaged and low-income communities. The fund also invests the proceeds in projects that reduce GHG emissions. In addition, investor-owned utilities are allocated allowances, a portion of which must be consigned to auction. These auction proceeds must be used for ratepayer benefit and for emissions reductions.
Quebec	902.2 (2021) 521.2 (2020) 727.7 (2019)	Electrification and Climate Change Fund	CO2, Inno	All auction revenues go to the Electrification and Climate Change Fund, which funds mitigation and adaptation measures that include energy efficiency, electrification (Québec's electricity is 99.7 % renewable), and public transport, stemming from the 2030 Green Economy Plan. Bill 44, passed by the National Assembly of Québec in 2020, devotes the Electrification and Climate Change Fund entirely to climate action and brings it fully under the direction of the Ministry of the Environment.
China	pilots: 255 (since 2013)	Budget	CO2	The Draft Interim Regulations propose to set up a national ETS fund channelling auction revenues to support the development of the national carbon market and key GHG reduction projects. There is currently no timeline for its implementation.
New Zealand	937 (2021)	Climate Emergency Response Fund	CO2, Other Prog	Previously, NZ ETS revenues were assigned to the general budget managed by the New Zealand Treasury. From 2022, NZ ETS revenues are ringfenced for further emissions reductions, in line with New Zealand's national Emissions Reduction Plan presented in May 2022.
United Kingdom	\$5,928 (2021)	Budget	Inno, Other prog	The Autumn Budget and Spending Review 2021 confirmed that, since March 2021, the UK will have committed a total of \$ 41.26 bln for the Green Industrial Revolution, supported in part by UK ETS revenue. Revenues from the Emissions Trading Scheme help to support these vital investments as well as other public services.
Switzerland	19.2 (2021) 8.3 (2020) 8.6 (2019)	Budget	CO2, Inno, Other prog	Revenues from auctioning allowances are fed into the federal government budget. These revenues, combined with 33% of those emanating from the federal carbon tax and 50% of those from a tax on plane tickets are fed into the so-called Fund for Climate. The Funds aims to support renewables and energy efficiency in buildings, transport infrastructure, innovation as well as climate adaptation in mountainous areas.
EU ETS	36 734.4 (2021) 21 881.5 (2020) 16 389.6 (2019)	MS national budgets + Innovation Fund + Modernisation Fund	Inno, CO2, Soc	In the EU ETS, auctioning revenues accrue to the budgets of Member States (MS). At least 50 % of revenues should be used for climate- and energy-related purposes. MS report to the Commission on how they spent the auction proceeds. Moreover, two EU investment funds are established: 1) the Innovation Fund supports innovative and breakthrough technologies in industry such as low-carbon hydrogen, as well as CC(U)S and best available technologies in renewable energy. The fund is monetised through the sale of at least 450 million allowances and the remaining budget from the NER300. 2) the Modernisation Fund supports investments in lower-income MS aimed at modernising energy systems, improving energy efficiency, and supporting a socially just transition to a low-carbon economy (e.g., upskilling/reskilling of affected workers). The fund is capitalised with the auction revenues of 2 % of the total allowances for Phase 4.
Germany	8 497 (2021)	Budget + Energy and Climate Fund	Soc, CO2	The auctioning revenues, among others, are partly used to support measures under the climate protection program such as incentivising climate-friendly transport (increased mileage allowance and a mobility premium), energy-efficient buildings, and partly re-distributed to consumers, e.g., as a way to re-finance renewable energy subsidies and reduce the "Renewable Energy Surcharge" on electricity (EEG).
RGGI	926.2 (2021) 416.3 (2020) 284.0 (2019)	RGGI States budgets	CO2, Soc, Inno	Auctions revenues are returned to the RGGI states and have been primarily invested in the following four categories: energy efficiency, renewable energy, direct energy bill assistance, and GHG abatement programs. The target groups of the programmes are local businesses, low-income communities, industrial facilities and households.

*Allocation: Soc (social support), CO2 (climate mitigation), Inno (Industry & innovation), Other prog (Other programmes)

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