Smart Cash for the Climate: Maximising Auctioning Revenues from the EU Emissions Trading System

Full report

An analysis of current reporting by Member States and options for improvement

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More information about the project can be found at www.maximiser.eu

Authors at Ecologic Institute:

Eike Karola Velten

Matthias Duwe

Elizabeth Zelljadt

Nick Evans

Marius Hasenheit

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Executive Summary

The European Emission Trading System (EU ETS) is one of the main policy instruments of the EU to reach its climate targets. It sets a cap on emissions for a range of large point sources, including power plants and industrial installations, as well as flights within the borders of the EU.

In the current third trading period (from 2013 to 2020), auctioning of emission allowances became the default mode. However, almost half of all allowances are still given for free to the manufacturing industries and, under a special exemption, to power generation in certain Eastern European Member States (MS).

Member States earned close to EUR 12 billion from EU Emissions Trading 2013-2015

MS each receive a specific share of the total allowances to be auctioned mainly based on their overall ETS emissions. From 2013 to 2015, Member States auctioned almost 2 billion allowances amounting to EUR 11.7 billion in revenues. Germany, the biggest emitter in the EU, received most of this money (over 20%) followed by the UK, Spain and Italy.

Member States agreed that at least half of these revenues should be used for climate action inside or outside the EU. They can decide whether they allocate the revenues from auctioning of allowances directly to a fund or support programme, a process known as earmarking, or count the auctioning revenues as an additional income stream to the state budget. Earmarking has the advantage of providing a transparent and consistent form of using auctioning revenues for climate finance.

Over 80% of the money so far spent on climate action – most of it in the EU

On average, Member States report to have spent 85% of the total auctioning revenues for climate purposes over the period 2013 to 2015. Of this money, the majority was allocated to domestic actions amounting to EUR 8,691 million (82%), whilst less than 9% was spent on international climate actions, amounting to EUR 1,048 million.

Figure 1 shows Member States reported spending shares and groups them in clusters of similar characteristics. Most Member States spent their auctioning revenues on

Misleading German reporting skews EU figures

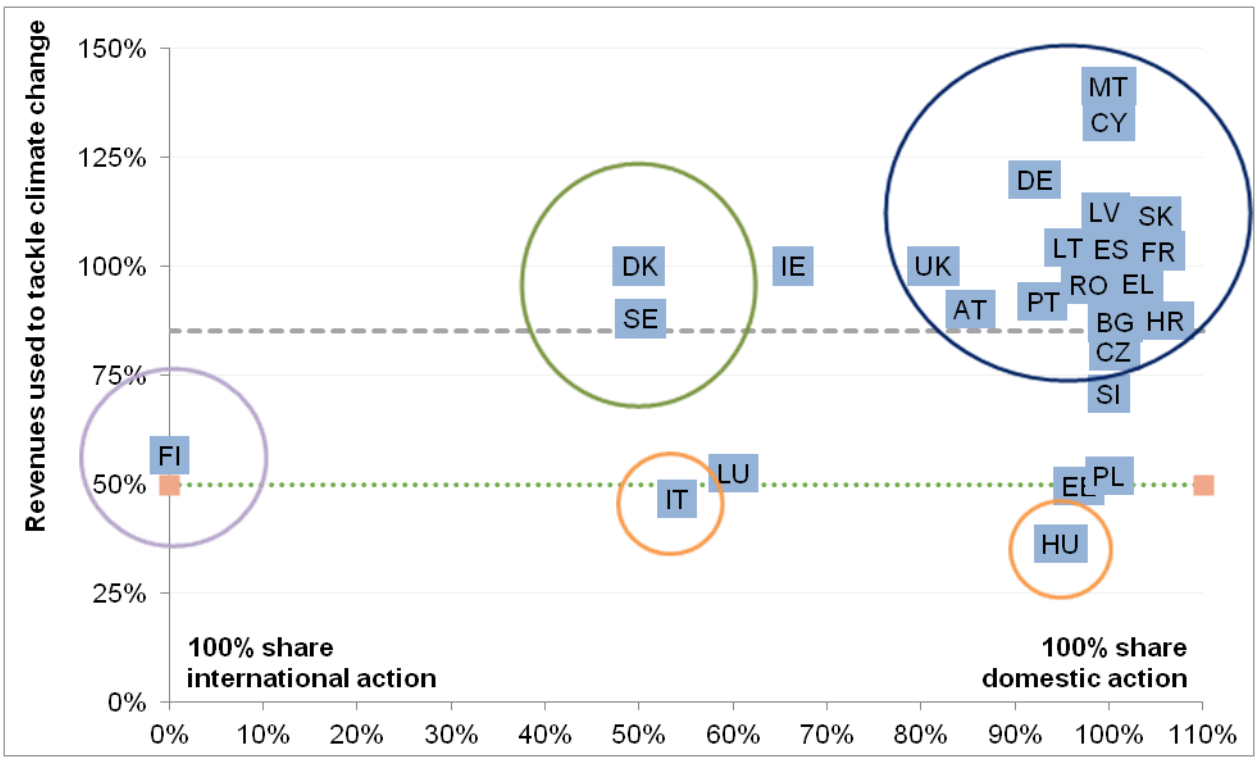
Germany reports all expenditure under its national Energy and Climate Fund as counting towards (domestic) climate action. It is not further differentiated into individual programmes and thus is counted fully as “cross-cutting”. The fund’s expenditure does contain payments to companies as compensation for the indirect cost of CO_2. This cost arises through an increased electricity price caused by the cost of carbon. Such state aid payments are allowed under the ETS Directive – but counting them as a mitigation measure is misleading at best, as the compensation eliminates the carbon price signal and may lead to additional emissions by the companies concerned. The respective payments amount to around EUR 700 million for the years 2013-2015, a quarter of Germany’s auctioning revenues and 6% of total EU wide revenues. Taking this amount off the EU wide sum reported as spent on climate, the share would not be 85% but 79% instead. This would be further reduced in the future if other Member States should emulate this practice going forward (e.g. Belgium (Flanders), Finland).

domestic climate action (upper right blue circle). Denmark and Ireland used (almost) 100% of their auctioning revenues for climate change actions, with 50% going to domestic actions and 50% going to international climate actions (upper middle green circle). Luxembourg and Italy also achieved an (almost) equal split between domestic actions and international actions over the 2013-2015 average (but only report around 50% of all revenues going to climate related expenditure). Only Finland uses 100% of the revenues for climate action to support international climate actions (middle left violet circle). There are only two Member States that reported to have spent less than 50% over the period 2013-2015: Hungary (36%) and Italy (47%) (see orange circles).

Funding goes to renewables, efficiency and cross-cutting programmes

Member States mainly financed domestic actions in the field of cross-cutting activities (39% of the revenues going to domestic action), renewable energies (32%) and energy efficiency (18%). Thirteen of the Member States finance international actions with a focus on cross-cutting actions which are either funds or bilateral support for projects and programmes that include climate mitigation and adaptation but also actions to reduce emissions from deforestation (29%) and mitigation activities (24%). A large share of international action is not further specified (41%).

Figure 1: Auctioning revenues and their use by Member States over the period 2013-2015



Source: based on Member States reporting under the MMR (EIONET 2016). Belgium and the Netherlands did not provide information on domestic and international use and so these Member States are not included.

NOTE: Positions of Member States labels in this graph are indicative of the general positioning but do not in all cases represent their accurate position, because the values for some Member States are the same. This graph has been adjusted to show all MS labels.
The full set of values is included in the annex to this report. The figure excludes shares not specified by Member States that are used for climate action. Details for the annual values of shares between domestic and international as well as unspecified amounts are included in Table 7.

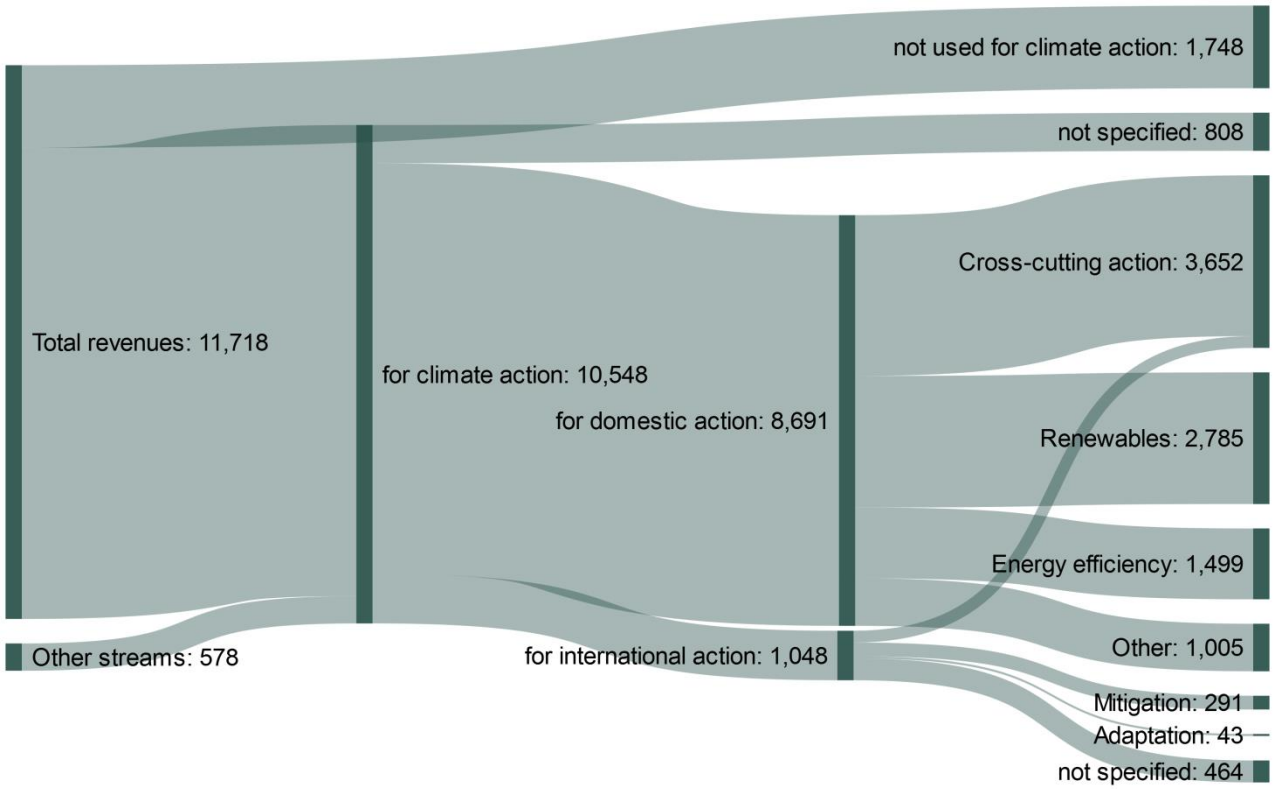
Some Member States reported to have spent more money on climate action than what they earned from auctioning of allowances. For example, Germany topped up their Energy and Climate Fund from the state budget (beyond the amount financed from the ETS) while Cyprus and Malta also reported to have spent 133% and 141% of their auctioning revenues on climate action.

National reports contain mistakes – no frequent quality review at present

Getting at this data is not an easy task, despite the fact that all annual reports submitted by Member States on their auction revenue usage are available online. Our assessment of these reports shows that the reporting on ETS auctioning revenues and their use suffers from deficiencies in the reporting framework and a lack of attention to detail in the preparation of reports, that hamper transparency, comparability and the aggregation (and thus analysis) of the data and can lead to misrepresentations, as in the case of indirect CO_2 cost compensation in Germany.

It is unclear why these weaknesses have not already been identified and appropriate corrections requested by the European Commission (or the EEA) as part of a quality review to ensure accuracy of the reporting and the data submitted through the system.

Figure 2: Main streams of auctioning revenues use in the EU over the period 2013-2015



Source: all numbers in million EUR; own compilation based on EIONET (2016), compiled using SankeyMatic ®

Structural surplus has depressed the carbon price and reduced auction revenue

Auctioning revenue is essentially a function of the volume of allowances available for sale at auction and the respective price paid for these allowances (which of course may change for each individual auction). In recent years, the price of European Union emission allowances

(EUAs) in the EU ETS has been low, due to a structural surplus built up due to an inflow of offset credits into the ETS and a decline in emissions from both power generation and manufacturing faster than anticipated when the cap was set. The low price has thus led to much lower than anticipated revenue from (an increasing volume of) EUAs being auctioned. To address the surplus, a new mechanism has already been adopted, the so-called Market Stability Reserve. However, negotiations are currently ongoing on the details of the EU ETS for the period 2021-2030 – and decisions taken in this process will determine future auction revenues.

Commission free allocation proposal represents an additional EUR 120 billion in lost revenue

The basis for political debate on the future design of the EU ETS beyond 2020 is the proposal published by the European Commission in July 2015. Implementing the proposal would increase auction revenue over current levels, as it contains a more stringent cap, which is expected to increase the carbon price. However, taking the conclusions from the Heads of State and Government Council of October 2014 as guidance, the Commission has done away with the existing sentiment of auctioning as the default mode for allocation and extends free allocation indefinitely. Compared to a scenario with the current phase-out of free allocation by 2027 (but a lower cap), this proposal threatens to lose around EUR 120 billion in auctioning revenues (based European Commission EUA price assumptions). Several stakeholders have made proposals on design elements relevant to auction revenues – and a broad selection of these is assessed in the report.

Recommendations to maximise revenue and usage for climate action

On the basis of the information gathered for this report, we have defined recommendations in three areas: 1. Increasing revenues, 2. Strengthening use, 3. Improving information.

1. Increasing revenues: increase both volume AND price

This assessment of the options leads to the conclusion that the most advisable strategy to increase revenues is a **combination of measures to increase the volume of EUAs available for auction and the carbon price**. This could be realised by

- **Reduce the level of free allocation** compared to the Commission proposal - move towards full auctioning as the current ETS Directive intended. A large and *growing* share of the allowances in circulation should be auctioned, rather than given to emitters for free.
- Create more scarcity, and thereby a higher carbon price, by reducing the amount of allowances in circulation with a **higher linear reduction factor** (= more rapidly declining cap), a **lower initial starting point for the cap** (so that its downward trajectory is lower to begin with), and **cancellation of surplus allowances** “stored” in the Market Stability Reserve.
- Implement measures at member state level to support the carbon price signal indirectly through national cancellation of surplus allowances or directly by setting a **carbon price floor** through implementing a minimum auction price.

2. Strengthening use: mandatory earmarking & a new EU Int'l Climate Finance Fund

There are several ways of strengthening provisions on the use of auction revenues in the ETS Directive – options that the Commission proposal fails to entertain.

- **Require that Member States earmark or specifically designate auction revenue to tackle climate action**. This is by far the most-effective way of ensuring transparency of and accountability for revenue use.
- **Require, rather than suggest, that the vast majority of auction revenue go toward climate action** by changing the wording in the Directive to "shall" rather than "should," and **increasing that required percentage towards 100%**.
- **No activities that can increase emissions** (such as electricity price compensation payments) should be allowed to count as contributing to the share specified for climate related purposes.
- **A distinct minimum share** should be formulated for revenues to be spent on **international climate action** (only receives 9% in current reported spending).
- Create a sizable new **EU International Climate Finance Fund** to ensure that a certain guaranteed minimum amount of funding is going towards supporting developing countries in tackling climate change and its impacts – in addition to expenditure for this purpose by Member States

As a fall-back option, to ensure improvement over the current text of the Directive and acknowledging good practice at Member State level right now, **the legislation should increase the use of funding for climate purposes and make this mandatory**.

3. Better information: enhanced template with automatic checks, quality review

Several very specific technical adjustments should be made to enhance the quality of the data generated by Member States under their reporting obligation. The main points are:

- An **improved template** with input fields and underlying calculations and value checks could help the Member States to submit consistent reporting while leaving enough room for Member States to report on their specific circumstances.
- Increase transparency by providing specific detail and additional information, including on: details on any earmarking, the committed and the disbursed value, past funding, individual programmes funded and their main purpose. Activities not contributing to adaptation or mitigation should not be allowed to count as climate related expenditure – or be reported separately from those types of actions.
- The Commission (directly or via the EEA) should request **updates or improvements** of the reports if information is contradictory or missing – installing a quality review. Summary reports should be published regularly with all necessary data available in a transparent fashion to empower stakeholders to verify national spending.

Table of Contents

1. Introduction

Moving towards a pathway consistent with keeping global temperature rise well below 2°C or even 1.5°C above preindustrial levels, as agreed under the international Paris Agreement, requires a radical transformation of the world's economies. This transformation must include a massive shift of public and private expenditure towards low-carbon investment.

For the EU, the decarbonisation of the economy will require additional investments of EUR 270 billion per year up to 2050; although this sum would likely be partially balanced out by savings in fuel costs (COM 2011). In addition, in the global arena, the EU and other industrialised countries have promised to mobilise international climate finance amounting to USD 100 billion annually from 2020 onwards and an even higher sum after 2025 (UNFCCC 2015). While a share of the USD 100 billion figure may come from the private sector, significant public funds will be required to leverage the total. In this context, innovative finance mechanisms are necessary to unlock additional investment in the EU and globally.

Revenues generated from pricing pollution and notably auctioning allowances in the European Emissions Trading System (EU ETS) **may constitute a crucial source of designated funding for climate actions**, including domestic and international mitigation and adaptation projects. Domestic climate action and living up to its UNFCCC commitments with regard to climate finance are key priorities for the EU. To this end, the effective mobilisation of funds is one of the important determining elements for achieving the EU's climate goals. Using revenues from the auctioning of allowances is especially attractive because they present a guaranteed source of annual funding; however, due to the variability of the carbon price auction revenues are also an unsatisfactory funding source for policies requiring fixed budgets or stable cash flow.

This study aims to give input to the discussions on how EU ETS auctioning revenues can be used to help finance the low-carbon transformation in Europe, currently taking place in light of EU commitments under the Paris Agreement, and the ongoing debate over EU ETS reform.

In this context, this report gives an overview on the current revenues from auctioning in the EU ETS and their use by the EU Member States (Chapter 3). Individual country sheets can be found in the Annex, and the underlying database is accessible on the internet to depict this data visually and comparatively for all EU Member States: visit www.maximiser.eu.

In addition, the report includes an assessment of proposals for a reform of the EU ETS and their effects on the amount of auctioning revenues based on a literature review (Chapter 4).

Recommendations for better reporting and improved use of auctioning revenues with respect to the EU ETS reform can be found in Chapter 5.

2. Background: The EU Emissions Trading System

Establishing a cap-and-trade system by setting a limit on emissions from a given set of emitters creates a new asset class or tradable commodity unit: the allowance or "permit" to emit a certain amount. For greenhouse gas cap-and-trade systems, this amount is usually one metric tonne of carbon dioxide equivalent (CO_2e). The government or regulator of the respective emissions trading program (ETS) issues a finite number of permits allowing the emission of one metric tonne of CO_2e.

In the EU ETS[1] these are called "European Union Allowances" (EUAs) and "European Union Aviation Allowances" (EUAAs) – the latter are issued for the aviation sector specifically. Over 1.5 billion allowances are issued per year. The regulator brings these units into circulation among emitters, who must then surrender one allowance for each tonne CO_2e they emitted during the relevant ETS timeframe back to the regulator. Allocating allowances can be done in two ways: allowances can be given to emitters for free or sold to them. The former is generally referred to as "free allocation" (the recipients are handed these assets based on some predetermined formula) while the latter is usually done via an allowance auction, the proceeds of which go to the respective government or regulator, or are directly recycled into the covered sectors. It is these proceeds – or *auction revenue* from the sale of EUAs and EUAAs, whose use is being studied in this report.

According to "pure" economic theory, the most efficient and revenue-maximising allocation method is simply to auction *all* allowances intended to go into circulation. No emitter should receive allowances for free, as that would constitute a government subsidy for some recipients as long as other allowance recipients had to pay for them (see Jouvet and Rotillon, 2005; Cramton and Kerr, 1998). From a revenue perspective, the value of the allowances given away for free constitutes money that the government cannot use for other purposes, e.g. climate change mitigation or adaptation. In practice, however, most cap-and-trade systems established around the world include an element of free allocation, as it is tied to other political factors influencing the debate, such as employment rates and the concern that emissions-intensive goods will simply be produced less in the region covered by the ETS and more in areas void of greenhouse gas (GHG) caps (see e.g. Keohane and Olmstead, 2016).

[1] The legal basis is the EU ETS Directive: Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

3. Country analysis on the use of auction revenues

For the third trading period of the EU ETS (running from 2013 to 2020), auctioning of allowances has been the default mode of allocating allowances to stationary installations i.e. industrial installations in the EU ETS. Allowances are mainly auctioned to the power sector as free allocation is still granted for the manufacturing industry. For aviation 15% of allowances are auctioned, 82% are granted for free to aircraft operators and 3% are held in a reserve (Article 3d of the ETS Directive).

EU Member States each receive a specific share of the total allowances to be auctioned pursuant to Article 10 and 3d of the ETS Directive. For allowances auctioned to stationary installations the following rules apply: 88% of allowances are allocated to Member States based on their verified emissions in 2005 or from 2005-2007 (the higher value applies), 10% are allocated to the least wealthy Member States, and 2% to Member States that reduced their greenhouse gas emissions by at least 20% by 2005 compared to the Kyoto base year, which is 1990 for most Member States ("Kyoto bonus"). For allowances auctioned to aviation, the allowances are allocated to Member States based on their share of aviation emissions two years prior to the year in which the auctions take place.

For the current third trading period, the European Commission estimates that around 57% of all allowances will be auctioned. For stationary installations, 8,176 million allowances are available for auctioning (COM 2016a). However, as another exception to the general principle of auctioning as the default mechanism, around 500 million allowances from this total amount will be allocated for free to electricity generators in some Member States[2] based on Article 10c of the ETS Directive, thus reducing the corresponding amount of revenues to those Member States. In addition, the estimates for allowances to be auctioned from 2019 onwards do not yet incorporate reductions due to the implementation of the Market Stability Reserve (MSR) (see also p. 37) (COM 2016a,b). For aviation, the amount of allowances to be auctioned depends on the overall aviation emissions (for annual numbers see below) with annual volumes to be auctioned summing up to 15% of the expected aviation allowances in circulation (COM 2016b).

EU Member States agreed in 2008 that at least half of the revenues from allowance auctions in the EU ETS should be used for climate actions (EU Council 2008). No higher share could be adopted due to political disagreement and some constitutional concerns. The Committee on Environment, Public Health and Food Safety (ENVI) of the European Parliament had originally envisaged that 100% of revenues should go into climate and energy measures, and 50% of these into *international* climate finance.

[2] These Member States have to have an electricity network that has no or only a limited connection to the UCTE network or more than 30% of the electricity is produced from a single fossil fuel and the gross domestic product (GDP) per capita has to be below the EU average.

3.1. Gaps and transparency of Member States' reporting on auctioning revenues

Article 17 of the Monitoring Mechanism Regulation (MMR)[3] requires Member States to submit annual reports on the revenues gained from auctioning allowances, as well as their use. These reports have to be submitted by the end of July of every year, with information on the year before. The template for this purpose (established under Implementing Regulation 749/2014) includes five tables[4] covering information on revenues from auctioning of allowances, the amount used for climate action, as well as information on domestic and international climate action. Member States have to submit these reports to the Reporting Obligation Database (ROD) which is managed by the European Environment Agency (EEA) as part of the European Environment Information and Observation Network (EIONET) (see EIONET 2016).

To date, reports for the years 2013, 2014 and 2015 had to be submitted. We have analysed the documents available through the ROD website archive on reports delivered, accessible online at *http://rod.eionet.europa.eu/obligations/698/deliveries*.

Our assessment of these reports shows that the reporting on ETS auctioning revenues and their use **suffers from deficiencies in the reporting framework and a lack of attention to detail in the preparation of reports**, that hamper transparency, comparability and the aggregation (and thus analysis) of the data. In the following table we highlight some of the main weaknesses including examples from Member States' reporting.

Table 1: Weaknesses of Member States reporting on auctioning revenues and their use

Type of reported information	Examples from Member States' reporting
Units MS should submit monetary values in 1000 EUR	**Finland** provided monetary values in EUR instead of 1000 EUR
Unit conversion MS should submit monetary values in Euro and in local currency	**The Czech Republic, Hungary, Poland and Romania** use different exchange rates to convert their auctioning revenues and the funds spent on individual domestic climate actions. Thus, local currency adds up while EUR-values do not.
Use of tables in the template There are five tables covering different information (see footnote 4).	**Portugal** listed funds spent on international climate action not only in the respective tables on international actions but also in the table on domestic actions. **Estonia** listed the same international climate action both as multilateral and as bilateral support.

[3] Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC

[4] Table 1 asks for revenues generated from auctioning, the amount spent on climate mitigation actions and carry-over from previous years; Table 2 contains specific information on domestic actions; Table 3 contains overall amounts spent on international actions; Table 4 asks for information on international support provided through multilateral channels and Table 5 asks for information on bilateral or regional support.

Type of reported information	Examples from Member States' reporting
Values do not add up There are five tables covering overall and more specific information (see footnote 4).	Six Member States provided values for total funds spent on individual types of climate action that are inconsistent with the funds spent on domestic and international climate action: e.g. **Austria** provides a list of projects that were financed by the state budget adding up to a higher amount than their auctioning revenues; **Germany** channels the money to a fund which had higher expenses than the auctioning revenues; and **Portugal** reported in the overall table only on disbursed values while in the table on domestic actions also committed values are included.
Committed vs. disbursed Member States should specify if funds are committed and/or disbursed for a specific (domestic or international) programme or project.	Where a programme received funds that have only partly been disbursed, Member States provide different kinds of reporting e.g. they provide committed values that include or exclude disbursed values. Thus, it needs to be checked if values can be simply added.
Carry over Member States should report on those funds not disbursed in the former years to be disbursed in the respective year.	About half of the Member States provided information that they carried over parts of the funds committed in former years. Member States, however, treat the carry over differently and most do not include the values in their reporting. A good example is **Lithuania**, which lists the respective amounts of "carry over" and the related projects and references the years when revenues were earned. **Germany** reports on a reserve for its fund.

Source: own compilation based on Member States' reporting under the MMR (EIONET 2016)

Table 2: Gaps in Member States reporting on auctioning revenues and their use

Type of reported information	Examples from Member States' reporting
Gaps on auctioning revenues	**Belgium, Cyprus, France and Poland** report to have no revenues from the auctioning of aviation allowances, but did receive revenues from the auctioning of aviation allowances (EEX 2016a).
No details on the use of auctioning revenues	**Belgium, Luxembourg and the Netherlands** did not provide any information on the use of auctioning revenues besides the overall amount, due to a variety of reasons (see country sheets in the Annex). **Cyprus and Romania** did not outline how they used certain parts of the revenues for climate action in individual years. **Denmark and Germany** used parts of their auctioning revenues to support international climate action, but did not provide further details on the projects.
No details on specific programmes and projects	**Germany** channels its auctioning revenues to its Energy and Climate Fund and reports the total amount to be spent by the fund on a range of purposes without specifying the specific amounts associated with the different programmes. This has significant repercussions on what is counted as "climate related" expenditure and includes activities that may lead to increased emissions (see more below). A good example is **Slovenia**, which also channels its auctioning revenues to a Fund but reports on each of the projects financed, in a transparent manner.

Type of reported information	Examples from Member States' reporting
Incomprehensible information on specific programmes and projects	**Bulgaria** reported that it transferred "funds from the budget of the Ministry of Environment and Water (MoEW) in the central budget account 'SEBRA' of the Ministry of Finance (MoF)", but did not provide any further details on how this relates to climate action. **Hungary** reported that it used funds for its "central budget according to 9. § (2), Act CCIV. of 2012. on the Budget of Hungary for 2013", but did not state how this relates to climate action. **Lithuania** spends funds on "Measures which do not result in quantitative CO_2 savings, but did not elaborate on what this means. **Germany** reported that it spent funds on a "grant from the federal budget" for its Energy and Climate Fund.

Source: own compilation based on Member States' reporting under the MMR (EIONET 2016)

The fact that Member States sometimes report expenditure beyond their actual revenues as relevant expenditure (see Table 1 on "Values do not add up") results in there being more than one overall total – in fact there are two different totals for overall expenditure and for expenditure for climate purposes. This is due to the fact that in some cases Member States report different totals or shares in different parts of the template (e.g. Germany and Austria, which reported 100% of revenue spent, but then provide numbers going beyond that 100% in the specific use sections of the report). Table 3 below has the calculations showing the differences (in bold and red) - see also the Sankey Visualisation of the different streams in Figure 5. In essence this leads to the calculation that an additional revenue stream of at least EUR 578 million is required to allow for the total expenditure reported by Member States. Comparability and analysis of revenue use is made more complex through this particular inconsistency.

Table 3: Comparison of different reported totals (period 2013-2015) to identify inconsistencies (= additional financing stream) (all figures in EUR thousand)

Total revenues generated		11.718.120
Revenue usage indication (amounts to 100% of revenues)	Sum of reported revenues used	11.718.120
	Not used for climate purposes	1.748.531
	Used for climate purposes	**9.969.589**
Specified use - split domestic and international (total does not match the above)	Used for domestic action	8.691.259
	Used for international action	1.048.409
	Use not specified	808.110
	Sum of usage	**10.547.777**
Difference to total revenue: Other financing streams		**-578.188**
Use reported relative to total revenue		104,93%

Source: COM (2016), own assessment of Member States' reporting on Article 17 of the MMR (EIONET 2016). Excluding 2015 data for Ireland as this has not been reported so far and Croatia only started auctioning allowances in 2015. Belgium, Cyprus, France and Poland reported to have no revenues from auctioned aviation allowances.

Some of the weaknesses listed can easily be identified and corrected, such as using the wrong order of magnitude (EUR instead of 1000 EUR). Other weaknesses, such as incomplete and

incorrect statements, require additional information from the respective Member State. However, even *identifying* incomplete or wrong information can require a good understanding of the EU ETS, the underlying reporting requirements, and/or national circumstances and budgetary systems.

This poses challenges also for the analysis of the reported data in this paper. We therefore used the reported information as provided, implementing only minor changes to the data.

Specially, we made the following adjustments:

- Converted EUR to 1000 EUR where required,
- Deleted programmes that were provided several times in different tables, and
- Used committed and disbursed values without double counting these values.
- Used bottom-up total expenditure figure (see Table 3 above) to calculate relative shares of revenue use

We did not include "carry over" in our assessment, as Member States' reporting was not consistent in this respect.

Where data was not provided or seemed incomplete, we checked other documents including the assessments of former years (COM 2014, 2015): for Luxembourg, which did not report on the use of auctioning revenues, we used information by the COM (2014, 2015) for the years 2013 and 2014 (which said that they spent half of their revenues on domestic climate actions). Latvia and Slovakia reported to have spent only a minimal amount of their auctioning revenues on climate actions, but COM (2014, 2015) states that they channel all their revenues into a fund where it is accumulated for later use; thus, we also included that these countries use 100% of their revenues for domestic climate actions. For Germany, we contacted the focal point as a comment on revenues used for climate actions contradicted the entry - the inconsistency turned out to be a typing error in the comment. We also clarified that the "grant from the federal budget" for the Energy and Climate Fund is not meant to be an expenditure, but the *source* of additional money for the fund. Thus, we added this amount to the revenues allocated to the Energy and Climate Fund.

It is unclear why these weaknesses have not already been identified and appropriate corrections requested by the European Commission (or the EEA) as part of a quality review to ensure accuracy of the reporting and the data submitted through the system.

3.2. Revenues from auctioning of allowances

From 2013 to 2015, almost 2 billion allowances were auctioned to stationary installations and aviation operators amounting to EUR 11.7 billion in revenues for Member States. Fewer allowances were auctioned in 2014 than in 2013 due to the "backloading"[5] of allowances to the end of the trading period. In 2013, no auctions were held for aviation allowances due to the "stop-the-clock" Decision.[6] Aviation auctions started again in 2014.

For stationary installations, allowances were auctioned at prices ranging from below EUR 3 in mid-2013 to around EUR 8.60 end of 2015 (EEX 2016a). On average, allowances were sold for

[5] Commission Regulation (EU) No 1210/2011 stipulates the reduction of the auctioning volume by 400 million allowances in 2014, 300 million allowances in 2015 and 200 million allowances in 2016.

[6] Decision No 377/2013/EU

almost EUR 4.50 in 2013, almost EUR 6 in 2014, and for EUR 7.60 in 2015 (own calculations and COM 2016c).

Auctions of aviation allowances are limited in number, with a price development similar to those for stationary installations and a selling price generally below the prices for stationary installations at the same point in time (EEX 2016a). The average selling price was EUR 6 in 2014 and EUR 7 in 2015 (COM 2016c).

Table 4: Number of allowances auctioned respective revenues

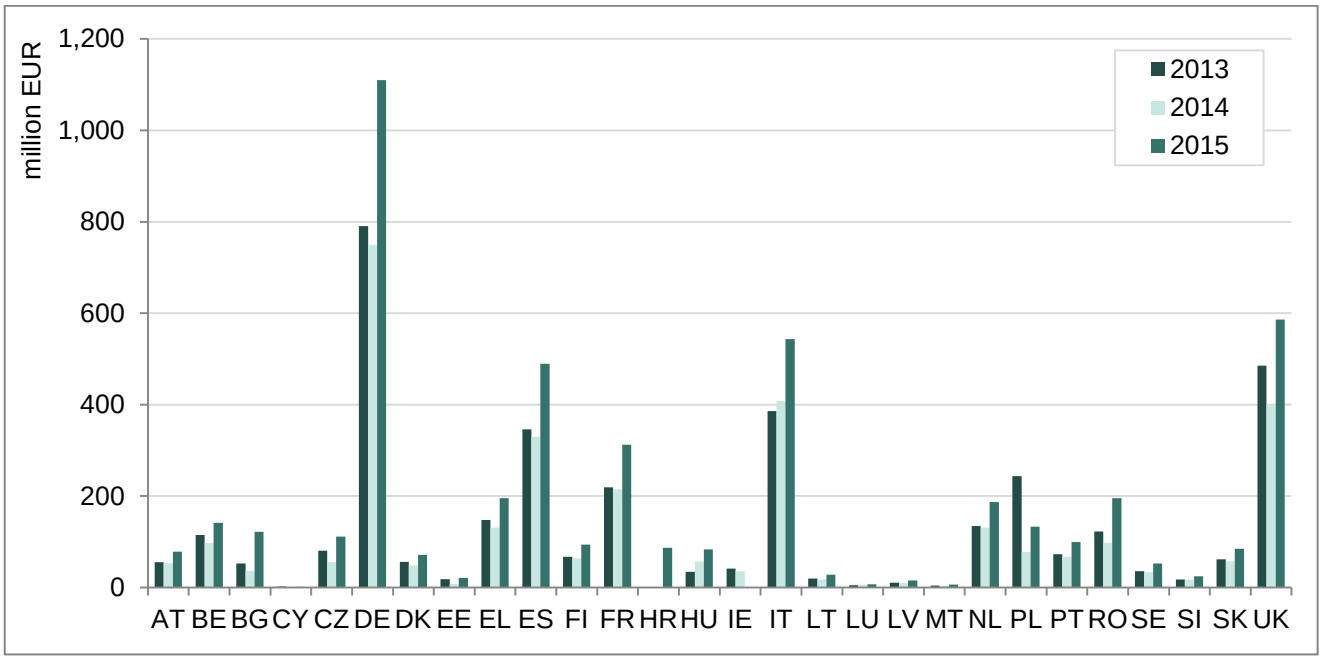
	Auctioned stationary installations allowances	Auctioned aviation allowances	Total revenues in million EUR
2013	808 million	-	3,627 million
2014	528 million	9 million	3,210 million
2015	633 million	11 million	4,881 million
TOTAL	1,969 million	20 million	11,718 million

Excluding 2015 data for Ireland as this has not been reported so far and Croatia only started auctioning allowances in 2015. Belgium, Cyprus, France and Poland reported to have no revenues from auctioned aviation allowances.
Source: COM (2016), own assessment of Member States' reporting on Article 17 of the MMR (EIONET 2016)

For almost all Member States, the trend of total revenues follows the overall EU28 trend: in 2014 less revenue was generated than in 2013, while in 2015 the revenues were higher than in 2013. The total amount of revenues for single Member States varied widely, just as their total emissions covered by the EU ETS do. Thus, small countries such as Malta and Luxembourg earned around EUR 4 million to 7 million per year, whilst the biggest emitter Germany had an income of up to EUR 1.1 billion (over 22% of the total), followed by the UK which generated almost EUR 600 million, Italy at EUR 550 million and Spain which earned almost EUR 500 million from auctioned allowances (all numbers for 2015) (see Figure 3 and Table 5).

Over the period of 2013-2015, the revenues were generated mainly from auctioning of allowances to stationary installations, whilst allowances auctioned to the aviation sector amount to a mere 1% of overall auctioned allowances (see also Table 4). In total, EUR 137 million were generated by the Member States from auctioned aviation allowances. Looking at individual Member States, the United Kingdom generated the largest amount of aviation related auctioning revenues (EUR 33 million), followed by Spain (EUR 23 million), and then Italy (EUR 20 million). Belgium, Cyprus, France and Poland reported to have no revenues from auctioning aviation allowances between 2013 and 2015; although revenues from auctioning are allocated to all Member States based on their annual aviation emissions. The exchange on which the aviation allowances were auctioned (EEX in Leipzig) lists those sales monthly and includes revenue figures by Member States: Belgium earned EUR 4.7 million; Cyprus EUR 1.7 million, France EUR 22.2 million and Poland EUR 3 million (COM 2016c, EEX 2016a).

Figure 3: Total revenues from auctioning of allowances for each Member State (2013-2015)



Excluding 2015 data for Ireland as this has not been reported so far; Croatia only started auctioning allowances in 2015.
Source: own assessment of Member States' reporting on Article 17 of the MMR (EIONET 2016)

Table 5: Member States' revenues from auctioning of allowances over the period 2013-2015

MS	Revenues from auctioning of allowances to stationary installations (in million EUR)	Revenues from auctioning of aviation allowances (in million EUR)	Total national revenues (in million EUR)	Share of Member State revenues in EU total
AT	184.4	3.5	187.9	1.6%
BE	353.7	0.0	353.7	3.0%
BG	209.7	1.1	210.8	1.8%
CZ	246.2	1.7	247.9	2.1%
CY	4.1	0.0	4.1	0.0%
DE	2,633.6	16.9	2,650.5	22.6%
DK	171.6	3.9	175.5	1.5%
EE	46.6	0.2	46.8	0.4%
EL	467.8	6.1	473.9	4.0%
ES	1,142.8	22.9	1,165.7	9.9%
FI	221.3	2.9	224.2	1.9%
FR	746.7	0.0	746.7	6.4%
HR	86.5	0.5	87	0.7%
HU	173.1	1.3	174.4	1.5%
IE	76.8	0.9	77.7	0.7%
IT	1,318.2	19.7	1,337.9	11.4%
LT	65.4	0.3	65.7	0.6%

MS	Revenues from auctioning of allowances to stationary installations (in million EUR)	Revenues from auctioning of aviation allowances (in million EUR)	Total national revenues (in million EUR)	Share of Member State revenues in EU total
LU	16.1	0.9	17	0.1%
LV	35.6	0.7	36.3	0.3%
NL	443.4	9.2	452.6	3.9%
MT	13.9	0.7	14.6	0.1%
PL	454.9	0.0	454.9	3.9%
PT	234.9	4.2	239.1	2.0%
RO	413.9	1.9	415.8	3.5%
SE	117.1	4.7	121.8	1.0%
SI	58.7	0.1	58.8	0.5%
SK	203.6	0.2	203.8	1.7%
UK	1,440.5	32.6	1,473.1	12.6%
EU28	11,581.2	137.0	11,718.2	100.0%

Excluding 2015 data for Ireland as this has not been reported so far and Croatia only started auctioning allowances in 2015. Belgium, Cyprus, France and Poland reported to have no revenues from auctioned aviation allowances.
Source: own assessment of Member States' reporting on Article 17 of the MMR (EIONET 2016)

3.3. The use of auction revenues

The EU ETS Directive stipulates that at least 50% of the revenues from auctioning of allowances to *stationary installations* or the equivalent in financial value of the revenues should be spent on different forms climate action, inside or outside the EU (ETS Directive, Article 10.3). Revenues generated from the auctioning of *aviation* allowances should be used to finance climate change actions (as per Article 3d of the ETS Directive). Both Articles have non-binding character but provide a clear indication to Member States, that they have all agreed to.

In the following we give an overview on how much of the auctioning revenues Member States spent on climate change action, and what types of actions were financed – as per their respective reporting. In analysing this data, one needs to take into account that Member States treat the revenues differently in their respective budgetary system i.e. some earmark revenues from the auctioning of allowances, while others allocate them to the state budget, which then finances climate change actions (see following section).

3.3.1. Earmarking of auctioning revenues

Assigning revenues directly to a specific purpose is known as earmarking, or hypothecation.[7] Member States that earmark their ETS auctioning revenues have identified a specific support programme or a fund that they will go towards, directly. These Member States report on the fund as a whole (e.g. Germany) or on the different programmes financed by the fund (e.g. Slovenia).

[7] Another synonym is "to ring-fence"

Member States that do not earmark their revenues report on climate actions, which were financed by the state budget by the same amount (i.e. same financial value) as their auctioning revenues. However, the flow of funding from the income generated through the auctioning to the financing provided for action on climate change cannot be established. This means that Member States can show mitigation or adaptation spending in their budget that is at the level of half their auction revenues as "proof" that they have used auction revenues toward the purposes laid out in the guidelines. This is the case even if that spending would or could have taken place without the additional ETS auction revenues.

Where earmarking is in place, it still does not mean a Member State is making the earmarked amount of money available for additional climate-related purposes: the money may simply be replacing amounts that previously came from the state budget. In other words, earmarking auction revenue for climate purposes does not imply an "all other spending stays the same" situation; instead cuts may be made to climate projects financed e.g. from the general budget precisely *because* there is new funding from ETS allowance auctioning. It was, however, beyond the scope of this report to assess the degree to which Member States' auction revenue use represents truly *additional* funding for climate-related projects. For the purposes of interpreting the information on revenues, earmarking being in place or not, does not suggest a qualitative difference with regards to additionality.

Table 6 shows a compilation of information on earmarking given by Member States in their reporting under the MMR (EIONET 2016). There are seventeen Member States that do not earmark their auctioning revenues, but instead finance climate actions from the state budget. As an example, the UK puts ETS auction revenue into the general budget, which already supports climate change mitigation and adaptation. A parliamentary document (DECC 2015) explains: "Like all Government receipts, ETS revenue is remitted to the consolidated fund to support general expenditure, allowing Government to allocate resources in the most efficient way across the economy. As a result, we have been able to spend more on support for low carbon technology and other action to mitigate climate change than has so far been raised by the ETS auctions."

Eleven Member States earmark their auctioning revenues by allocating the revenues to a specific support programme or to an existing or new fund. For example, France channels all auctioning revenues to the "Habiter Mieux" [live better] programme managed by the National Agency for Housing (Anah) – this programme and supports measures to improve the energy efficiency of housing. Latvia allocates almost all its revenues to an "Emission allowances auction instrument," but that programme has yet to finance any activities so revenues are accumulated in the fund.

Table 6: Earmarking of auctioning revenues as reported by Member States

MS	Financial instrument for the use of auctioning revenues
AT	No earmarking
BE	No cooperation agreement on the distribution of revenues between the federal government and the Flemish, Walloon and Brussels Capital regional governments
BG	No earmarking
CZ	State Environmental Fund of the Czech Republic
CY	No earmarking

MS	Financial instrument for the use of auctioning revenues
DE	Energy and Climate Fund
DK	No earmarking
EE	No earmarking
EL	Special Account for Renewable Energy Sources
ES	No earmarking
FI	No earmarking
FR	"Habiter Mieux" programme of the public housing authority as per a 2012 law
HR	Environmental Protection and Energy Efficiency Fund
HU	Large majority goes to the Green Economy Financial Scheme
IE	No earmarking
IT	No earmarking
LT	Lithuanian Environmental Investment Fund (LAAIF)
LU	No earmarking
LV	New “Emission Allowances Auction Instrument”
NL	No earmarking
MT	No earmarking
PL	No earmarking
PT	Carbon Fund
RO	No earmarking
SE	No earmarking
SI	Environmental Fund
SK	Environmental Fund
UK	No earmarking

Source: own compilation based on Member States’ reporting under the MMR (EIONET 2016); Esch (2013); IEA (2016), WWF personal communication.

3.3.2. How much of the total revenues were used for climate action in- or outside the EU?

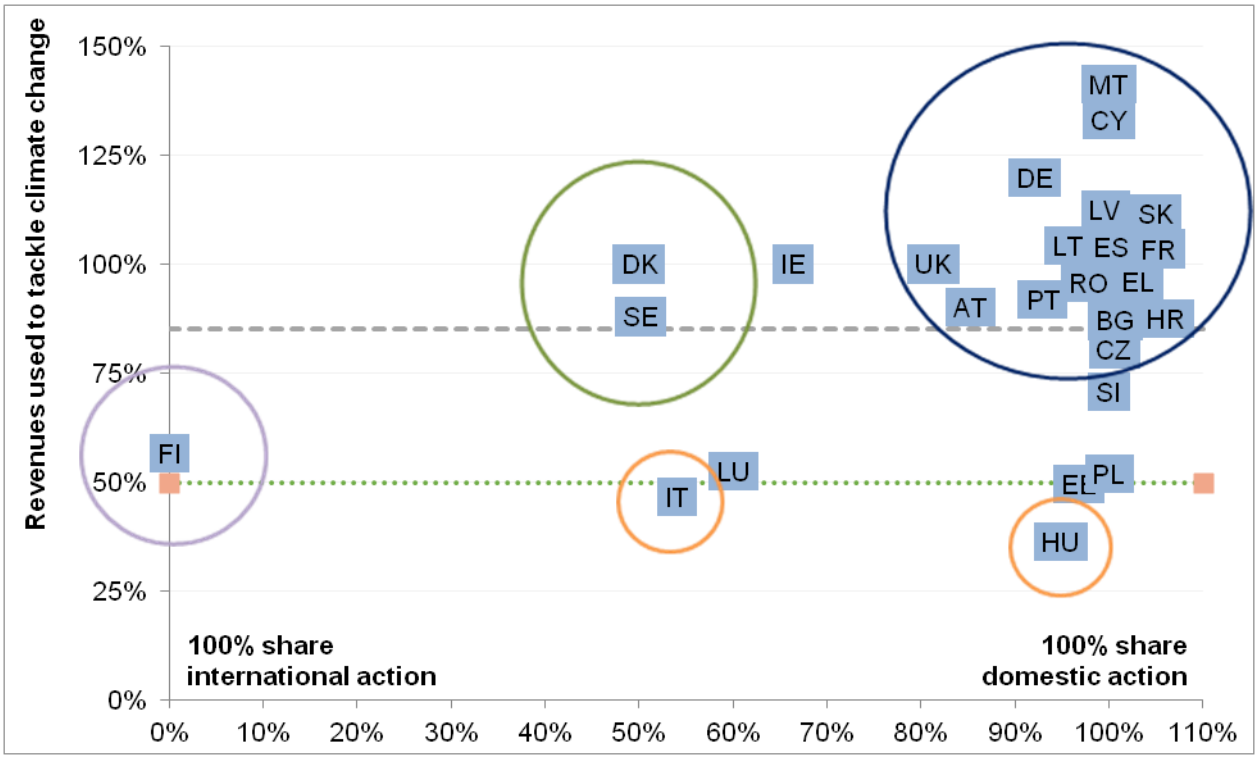
Member States can use the revenues from auctioning to fund climate action both inside and outside of the EU to reach the goal of at least 50% being spent on climate. Over the period 2013-2015, auctioned allowances generated about EUR 11.7 billion for EU Member States, of which, 85% was used for climate action inside and outside of the EU, according to Member States’ own reporting under the MMR (EIONET 2016).

As per Member State reporting, the majority of the revenues used for climate action (82%) were allocated to domestic actions amounting to EUR 8,691 million, whilst only close to 10% was spent on international climate actions, amounting to EUR 1,048 million. Another 8% (EUR 808 million) goes to unspecified climate related purposes.[8] Figure 4 shows the allocation of

[8] These figures are based on the bottom-up sums of reported usage by Member States – a total that is derived from aligning reported detailed usage with overall expenditure for climate purposes, which comes to EUR 10,547 million (see Table 3.

revenues at the Member State level and puts the split between domestic and international use in relation to the overall share of revenues spent on climate.

Figure 4: Allocation of the EU ETS auctioning revenues over the period 2013-2015 as reported by Member States



Source: based on Member States reporting under the MMR (EIONET 2016). Belgium and the Netherlands did not provide information on domestic and international use and so these Member States are not included.

NOTE: Positions of Member States labels in this graph are indicative of the general positioning but do not in all cases represent their accurate position, because the values for some Member States are the same. This graph has been adjusted to show all MS labels.
The full set of values is included in the annex to this report. The figure excludes shares not specified by Member States that are used for climate action. Details for the annual values of shares between domestic and international as well as unspecified amounts are included in Table 7.

The Figure shows that most Member States report to have spent significantly more than 50% of their auctioning revenues on climate change actions. Only two Member States report to have spent less than 50% of their auctioning revenues on climate change actions over the period 2013-2015: Hungary (36%) and Italy (47%). Malta (141%), Cyprus (133%) and Germany (120%) on the other hand report spending more than their actual revenues.

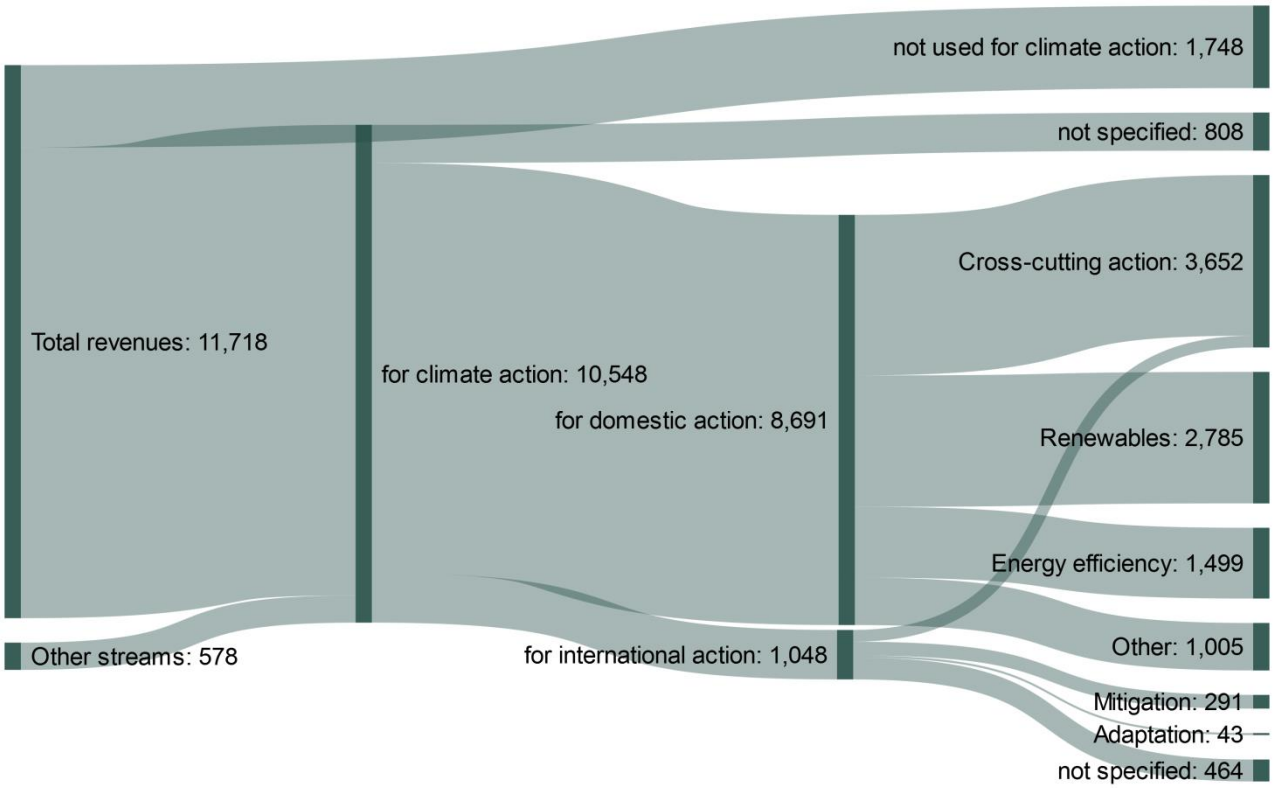
Of this expenditure, most Member States have spent the vast majority of their auctioning revenues on domestic climate actions (upper right blue circle). Denmark and Ireland used (almost) 100% of their auctioning revenues for climate change actions, with 50% going to domestic actions and 50% going to international climate actions (upper middle green circle). Luxembourg and Italy also achieved an (almost) equal split between domestic actions and international actions over the 2013-2015 average (but only report around 50% of all revenues going to climate related expenditure).

Only Finland has used 100% of the revenues for climate action to support international climate actions (middle left violet circle). Its government set an ambitious 2015 goal for official development aid that could not be met by the funding made available from the state budget in

the years leading up to 2015, so to bridge the financing gap, Finland's auctioning revenues went toward climate funding within the country's overall development cooperation (see also Esch, 2013).

Two Member States are not included in Figure 4: Belgium did not provide information on the use of auctioning revenues as the revenues are locked in an account. Funds should be distributed among the four governments (federal, Flemish, Walloon and Brussels Capital) but so far no agreement has been concluded on how to do so. The Netherlands reported that it was not able to fill out the tables on domestic and international actions, as they do not earmark revenues. However, the Netherlands report to spend an amount "that transcends many times [the] auction revenue to [climate change actions]." (EIONET 2016).

Figure 5: Overview on the auctioning revenues and their use in the EU over the period 2013-2015



Source: all numbers in million EUR; own compilation based on EIONET (2016) using SankeyMatic ®

Table 7: Share of auctioning revenues used for climate actions allocated to domestic and international climate actions for individual years

	2013			2014			2015		
	Share domestic action	Share international action	Share unspecified	Share domestic action	Share international action	Share unspecified	Share domestic action	Share international action	Share unspecified
AT	81%	19%	-	87%	15%	-	89%	13%	-
BE	n.a.								
BG	100%	-	-	100%	-	-	100%	-	-
CZ	100%	-	-	100%	-	-	99%	-	-
CY	28%	-	72%	55%	-	45%	100%	-	-
DE	94%	31%	-	113%	-	-	120%	-	-
DK	50%	50%	-	50%	50%	-	50%	50%	-
EE	100%	-	-	88%	12%	-	89%	3%	-
EL	100%	-	-	100%	-	-	100%	-	-
ES	113%	-	-	100%	-	-	100%	-	-
FI	-	100%	-	-	100%	-	-	-	100%
FR	100%	-	-	100%	-	-	100%	-	-
HR	n.a.						75%	-	25%
HU	101%	-	-	100%	-	-	90%	10%	-
IE	100%	-	-	7%	93%	-	n.a.		
IT	100%	-	-	46%	54%	-	23%	77%	-
LT	100%	-	-	100%	-	-	98%	2%	-
LU	50%	50%	-	50%	50%	-	n.a.	n.a.	n.a.
LV	100%	-	-	100%	-	-	100%	-	-
NL	-	-	100%	-	-	100%	-	-	100%
MT	100%	-	-	100%	-	-	100%	-	-
PL	100%	-	-	100%	-	-	100%	-	-
PT	97%	3%	-	96%	5%	-	96%	13%	-
RO	100%	-	-	69%	0%	31%	22%	-	78%
SE	50%	0%	50%	0%	100%	-	30%	28%	42%
SI	51%	0%	49%	110%	-	-	64%	-	-
SK	100%	-	-	100%	-	-	100%	-	-
UK	61%	39%	-	82%	18%	-	98%	2%	-
EU28	87%	16%	5%	87%	11%	6%	87%	7%	11%

Source: based on Member States reporting under the MMR (EIONET 2016).

3.3.3. What actions were financed with the auctioning revenues?

According to the ETS Directive, climate change actions include:

Domestic actions that reduce greenhouse gas emissions, such as the development of renewable energies, the development of technologies required to increase energy efficiency, the development of carbon dioxide capture and storage (CCS), measures to increase energy efficiency in households and industry covered by the EU ETS, measures to shift to low-emission and public transport, funding for aeronautics and air transport research and development, and measures to enhance forestry sequestration. Also included are actions in the field of climate change adaptation, such as research and development or demonstration of adaptation efforts. Covering the costs of administering the ETS also counts as a domestic action.

International actions to reduce greenhouse gas emissions and fund adaptation to climate change include avoiding deforestation and increasing afforestation and reforestation. Transfer of low-carbon technologies and support for CCS also counts, as do contributions to international funds like the Global Energy Efficiency and Renewable Energy Fund (GEEREF), the Adaptation Fund, the Special Climate Change Fund (SCCF), the Green Climate Fund under the UNFCCC, and the Least Developed Countries Fund.

For the purposes of presenting the data provided by Member States in this report, the following categories were defined to distinguish between different types of **domestic** actions:

- Cross-cutting actions including more than one type of action (e.g. a fund that finances mitigation and adaptation action)
- Renewable energy (RES)
- Energy efficiency (EnEf)
- Renewable energy and energy efficiency
- Carbon Capture and Storage (CCS)
- Transport
- Forestry
- Agriculture, including carbon sequestration in soils
- Adaptation
- Research, innovation and demonstration (R&D)
- Covering administration costs of the ETS
- Other actions (those programmes where Member States do not provide enough details) and unspecified actions

For **international** actions, the level of detail is limited. Therefore the data provided by Member States is represented in the following, smaller set of types of actions:

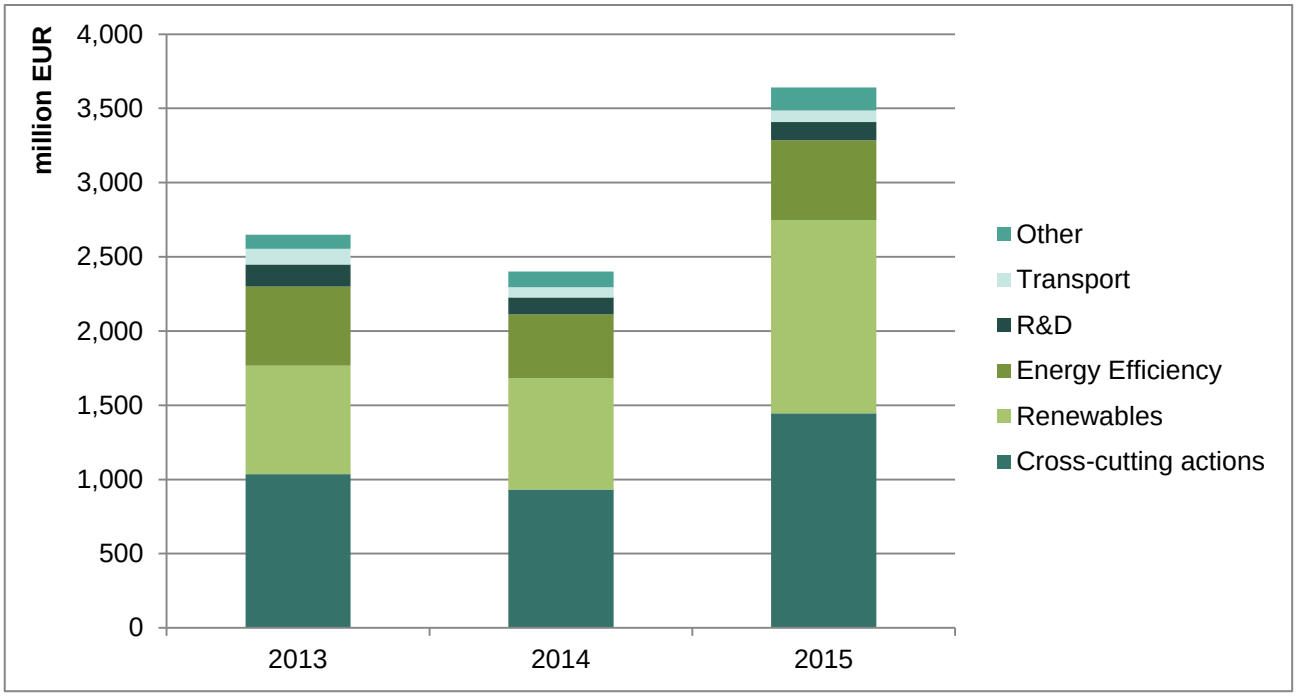
- Cross-cutting actions including more than one type of action
- Mitigation (i.e. the reduction of greenhouse gas emissions),
- Adaptation

Domestic climate actions

Member States spent most of their auctioning revenues on domestic actions that were cross-cutting (39% of revenues spent for domestic actions over the reporting period), followed by renewable energies (32%) and energy efficiency (18%). There are rather small changes in the distribution of funds for the different activities if compared over the period (see Figure 6). While the share of cross-cutting actions stayed at almost 40% over the period, the share of renewable

energies rose from 28% in 2013 to 36% in 2015 and the share of energy efficiency decreased from 20% to 15% over the same period of time.

Figure 6: Auctioning revenues spent on individual domestic climate actions



Source: own compilation on the basis of reported data.
Abbreviations: R&D: Research and Development, Other: Forestry, Agriculture, Adaptation, Carbon Capture and Storage, Costs to administer the ETS system.

The reason the cross-cutting category is so large is that Germany's actions (contributions to its Energy and Climate Fund) are listed as cross-cutting, since no further details have been reported (and this analysis is based on the information contained in MS submissions). Germany's auction revenue accounts for over one-fifth of the total EU revenue (22,6% for the period 2013-2015), and thus the categorisation of its expenditures has a strong impact on the total picture. Money going to the German Energy and Climate Fund makes up 84% of the whole amount spent on cross-cutting actions over the period 2013-2015. The amount spent on renewable energies comes from Spain (37% on average of the reporting period), the UK (26%), and Greece (17%). Spain and Greece report that they use the money to support renewable electricity generation, while the UK finances its renewable heat initiative. The revenues used for energy efficiency stem largely from France's spending on building energy efficiency improvements via its "Habiter Mieux" programme (50%).

The reporting by Germany presents a particular challenge in this regard. While the report does not provide differentiated figures for individual programmes, it does include a list of the possible purposes of the fund, and one of these are payments to electro-intensive companies as compensation for the indirect cost of CO_2, established through the ETS (that these firms have to pay through an increased electricity price). Such state aid payments are allowed under the ETS Directive (Article 10a (6)) – but counting them as a mitigation measure is misleading at best, as the compensation may in fact cause additional emissions by the companies concerned.[9] While

[9] Compensation payments to companies not covered by the EU ETS would not be subject to the so-called waterbed effect under the EU ETS (which implies that any additional emission related measures do not generate additional emissions or

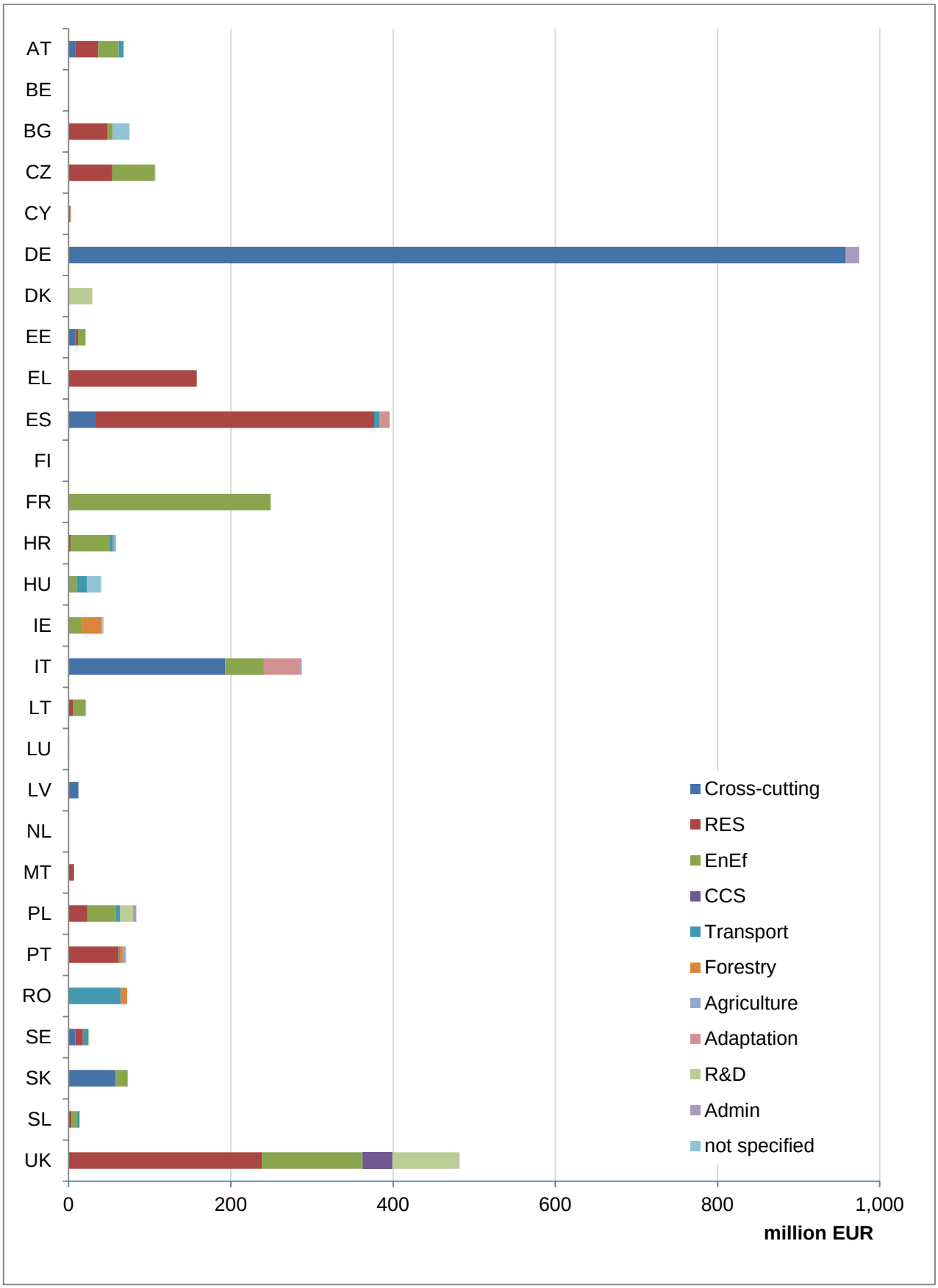
several other Member States have similarly chosen to make such payments to certain companies (e.g. UK, Belgium, Spain, Slovakia), the reports on auctioning revenue use submitted by these countries so far did not give an indication that they were using auctioning revenues directly as a source of funding and that this was claimed to be in conformity with the climate change related purposes listed under Article 10 (3) of the ETS Directive. Making the total amounts paid in this way transparent and linking them to auctioning revenues does enhance accountability for this choice of expenditure. However, that does not make such compensations equivalent to other programmes to finance emission reductions and adaptation activities.

The amount concerned is around EUR 700 million for the years 2013-2015, a quarter of Germany's auctioning revenues and 6% of total EU wide revenues. It is equivalent to the sum of all the auctioning revenues of the 11 Member States with the smallest revenues. Taking this amount off the sum reported to have been spent on climate, the respective EU wide share would not be 85% but 79% instead. While this represents a miscategorisation from our perspective, all figures in this paper count the data from Germany as reported, as the national reports present the basis for this study. Going forward, this should, however, be remedied.

The spending of individual Member States for domestic actions is shown in Figure 7. Member States that did not finance *any* domestic actions from their auctioning revenues include Belgium (the country has not spent auction revenue on anything yet) and Finland. The Netherlands did not provide any details. For more details on individual Member States, see Annex: Country Sheets.

reductions as all take place under the common cap of the EU ETS). The compensation payment is explicitly intended to suppress the carbon price signal generated by the EU ETS, which is, after all, the reason the system was created in the first place (= internalizing the external cost of carbon emissions and inducing change in production or consumption patterns on that base). Taking away this carbon price signal is likely to result in a situation in which the companies receiving the compensation (to the extent that they have direct GHG emissions) will have higher emissions than under a scenario where the carbon price signal would be passed on fully to them.

Figure 7: Average spending of auctioning revenues on domestic actions (period 2013-2015)



Source: own compilation based on Member States reporting under the MMR (EIONET 2016)

Box 1: Do Member States spend auctioning revenues on unsustainable practices?

While Member States report that the vast majority of their auction revenues goes toward "climate friendly" programmes and projects, it is still possible that EU ETS auction revenue indirectly finances activities that *increase* greenhouse gas emissions. There are several cases of Member States investing in fossil-fuel based energy systems including infrastructure and modernisation of existing fossil fuel based power and heat generation (Article 10c of the ETS Directive foresees this option explicitly); Dilba et al. (2015) highlight that large shares of the EU regional funds are used to finance "unsustainable" practices in Eastern EU Member States.

Whether Member States use ETS auctioning revenues to finance fossil-fuel based projects remains unclear, as so many Member States put auction revenue into their budgets, and those budgets fund all kinds of activities including fossil fuelled energy infrastructure. Member States did not list in their reports any projects or actions that directly subsidise fossil-fuel based energy systems, but that can hardly be expected in the context of a reporting obligation clearly focusing on climate mitigation and adaptation actions as stated in the ETS Directive (Articles 10 and 3d).

One might differentiate on this question between those Member States that earmark revenues and those that don't (the latter are arguably less transparent about revenue use), but this touches upon the question of additionality and substitution: even if auction revenues are earmarked for a climate-friendly programme, they are not necessarily additional to what the Member State would have spent on that programme without having auction revenue at its disposal. Indeed, putting auction revenue toward a climate-friendly project might free up funding in the rest of the state budget for other (potentially unsustainable) programmes. Thus it is not possible to say for certain whether auction revenues have ended up financing unsustainable practices (see also Section 3.3.1 on earmarking).

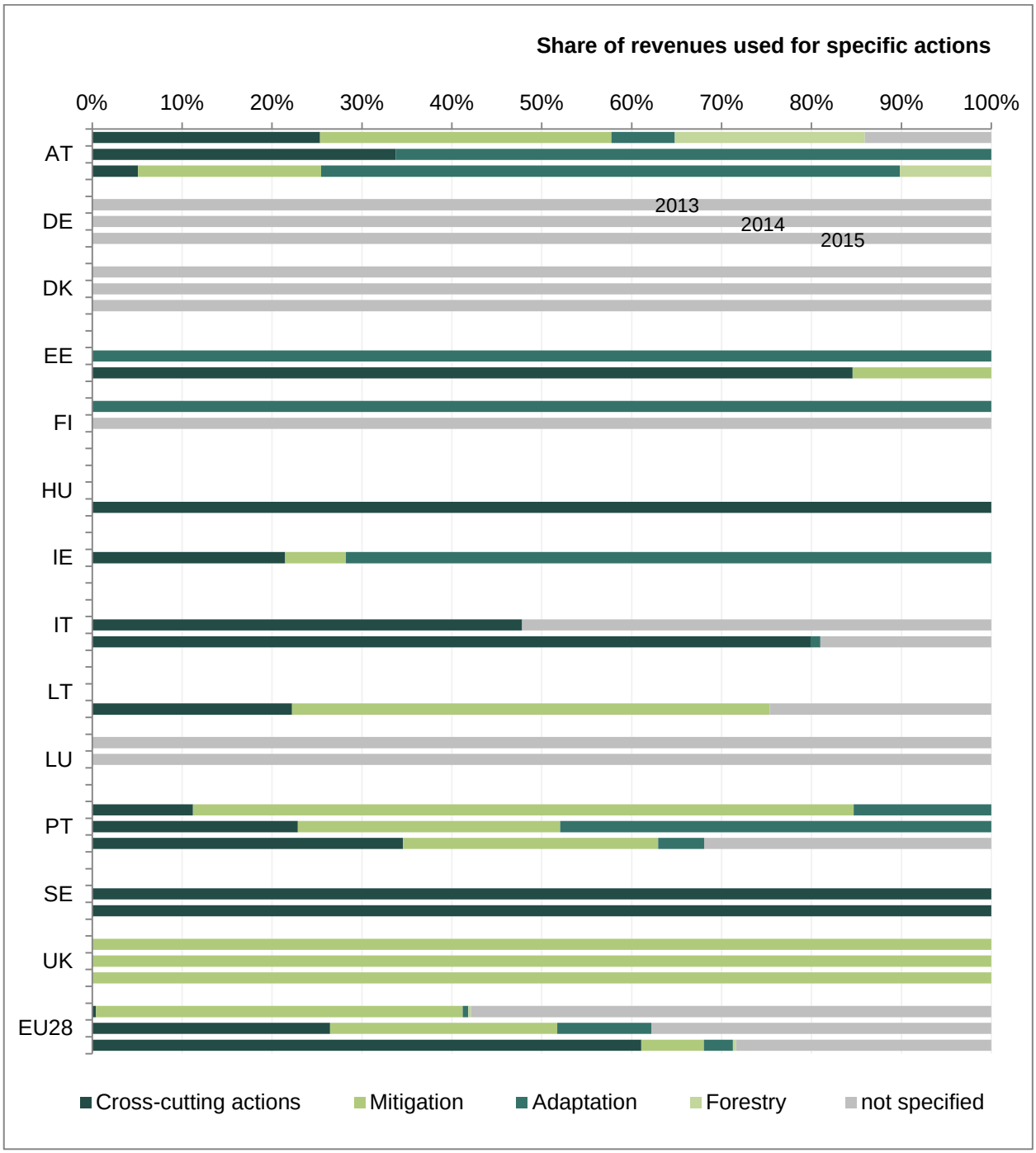
Financing payments for compensation of higher electricity cost (such as is explicitly done by Germany) may constitute such a case of bad practice of spending revenues on activities that may lead to higher emissions than would otherwise be the case (see section above).

International actions

There are thirteen Member States that used auctioning revenues to finance international climate actions in at least one of the years in the reporting period (2013-2015). This includes a large sum (32% over the period) coming from Germany, Denmark and Luxembourg. However, by and large Member States did not provide further details on how that money was spent.

Aside from "unspecified," the type of action on which most auction revenue for international action was used is "cross-cutting action" - basically a mix of mitigation and adaptation actions. In 2013, there was almost no support for this category, while it accounted for 26% of the money used for international action in 2014 and for 61% in 2015. Mitigation activities received 41% in 2013, 25% in 2014 and only 7% in 2015. Adaptation accounted for between 1% and 10% of international revenue use over the period. Figure 8 gives an overview on the activities financed by auctioning revenues in an international context by each of the Member States over the three reporting years.

Figure 8: Share of revenues used for specific actions outside the EU



The top horizontal bar for each country shows the international revenue use breakdown in 2013, the middle bar shows the breakdown for 2014, and the bottom bar for 2015. Some countries do not have 3 bars because they did not put auctioning revenue toward international programmes in all three years.
Source: own compilation based on Member States reporting under the MMR (EIONET 2016)

4. Options for a reform of the EU ETS and effects on auction revenues

In this chapter, we assess options for a reform of the EU ETS that affect auction revenues, with an eye to both (1) **increasing those revenues** (in order to have more money available for climate finance at the international and domestic levels) and (2) strengthening any provisions designed to ensure that **those revenues go toward climate action**. This analysis is based on existing literature.[10]

To that end, the review is structured as follows:

First, we provide an overview of factors influencing auctioning revenues and how to maximise them: What ETS design elements are associated with auctioning revenues, and what are their interactions and tradeoffs with other benefits? This section is largely theoretical, but provides a basis for understanding EU ETS reform proposals by putting both amount and use of auction revenue in the wider economic and political context.

Second, we discuss recent ETS reform ideas and how they might impact auction revenues: Many different stakeholders have put forward recommendations for how to change the EU ETS beyond 2020 – what would these proposals mean for the *amount* of auction revenue and for the way that revenue is *used*?

4.1. Overview of auction revenues and how to maximise them

4.1.1. What revenue is made of: volume and price

The theoretical formula for calculating the revenue from selling off allowances is relatively simple, as illustrated in Figure 9 below. The total sum of the revenue is the **product** of the number of allowances (**volume**) that are being auctioned and the **price** of the allowances when auctioned. These two factors, number of allowances and price, thus represent the key levers for maximising overall revenue. Having more allowances to sell can increase revenue if the price remains stable. An increase in the price – with the auctioning volume remaining the same – would have the same effect. However, measures to affect either one of the two factors may have an effect on the other, which could mean an accumulated positive impact on revenues as well as one that reduces it or turns it negative (see e.g. Milgrom, 2004; Neuhoff, 2007). Such interactions thus need careful consideration.

But first, some more specifics on the two main factors:

VOLUME: In the revenue equation, volume means the number of allowances available for auction. This number is determined by the overall quantity of allowances being distributed into the system for a given period and the process through which this is being done (the "allocation"). The overall number is decided by setting a specific limit on the maximum emissions allowed from covered sources. This limit is known as *the cap*. The *allocation rules*

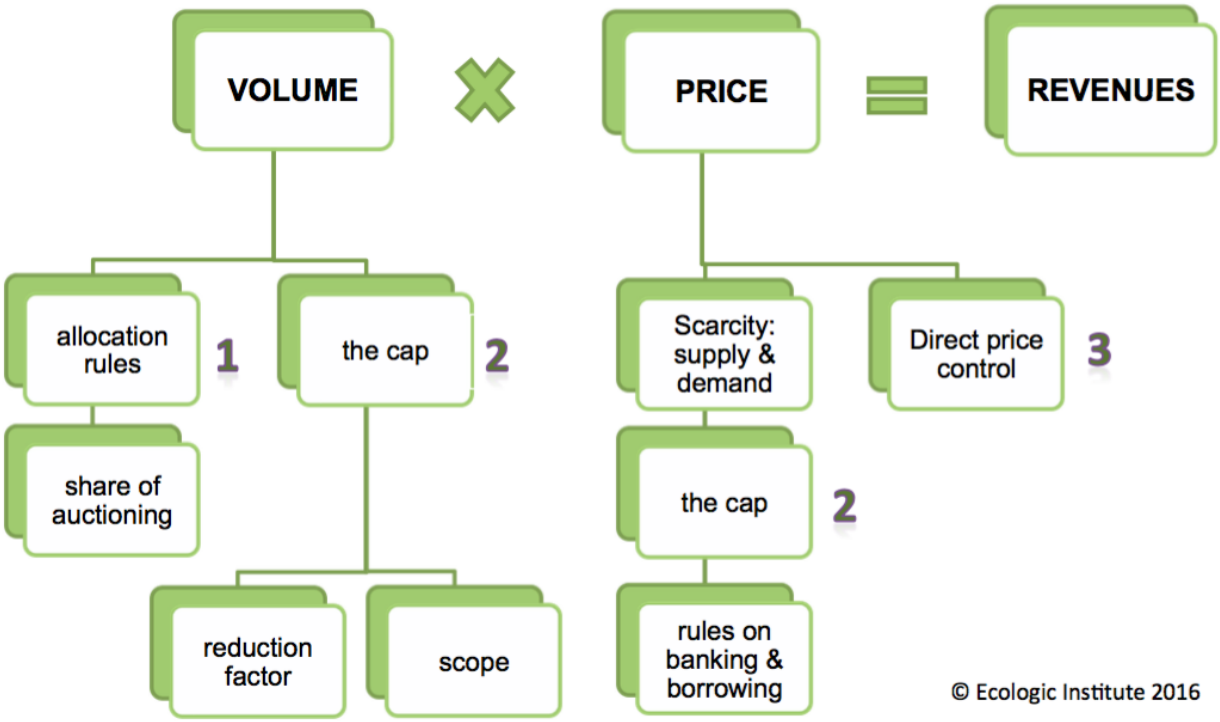
[10] Note that this report does not take account of individual proposals made in the form of detailed technical amendments tabled in the course of ETS review discussions in the European Parliament. However, most of the general approaches should be covered.

then determine how the allowances under the cap are disseminated – one option is to auction them.

PRICE: the price of an allowance is an expression of the perceived scarcity of the good being traded (the allowance), meaning the value attached to each allowance by market participants on the basis of the available supply (how many are there?) and demand (how many are needed?). Any factors influencing the amount available (supply) and the amount needed (demand) thus have a bearing on the price, and therefore on auctioning revenue. This includes fundamental components of ETS design such as the scope of the scheme (who is covered), but also economic factors like GDP fluctuations or the availability of technological options to reduce emissions (and their respective cost), and other external factors (including weather, which can influence conditions for electricity generation for example, and world market prices of key inputs to power and industrial production, such as coal).

Figure 9 below shows the key equation in its simplest form (volume times price equals revenue) and the most important different elements that can influence the two main factors volume and price. Three key elements (allocation rules, the cap, direct price control) are elaborated in more detail below.

Figure 9: Main elements influencing the two factors that determine auctioning revenue most



4.1.2. Element 1: allocation rules

As discussed above, allowances can be brought into circulation in two main ways: the government or regulator can give them to emitters for free or sell them – usually via an auction.[11]

Although economic theory dictates that auctioning is more economically efficient, political realities as well as economic factors related to trade with regions that do not have a carbon price can be used politically to justify some degree of free allocation. The EU ETS has shifted from primarily free allocation to auctioning the majority of allowances. In Phases 1 (2005-2007) and 2 (2008-2012) most allowances were given to installations for free (based on factors including historic emissions and benchmarking to reward efficiency improvements among emitters), but the last major amendment to the EU ETS Directive in 2009 put the ETS on a path toward increasing the ratio of allowances auctioned: over Phase 3 (2013-2020), 57% of the total amount of allowances will be auctioned compared to less than 10% in the previous phases (COM 2015).

For the current trading period until 2020, auctioning is now presented as the default method for allocating emission allowances in the EU ETS, but in sectors other than power generation, there is less clarity on the transition to auctioning. The current set of rules are as follows: electricity generators, which make up a large share of covered emissions, do not receive allowances for free – except for a special derogation under the Directive's Article 10c for modernising the power sector in new Member States primarily in Eastern Europe. The manufacturing industry, on the other hand, still received 80% of its allowances for free at the start of Phase 3. In principle, this proportion is meant to decrease gradually each year to 30% in 2020 (Article 10a (11) of the ETS Directive). However, due to exceptions made on the grounds of exposure to adverse impacts of international competition ("carbon leakage"), emissions from the vast majority of industrial sectors do not follow this trajectory of reduced free allocation (Article 10a (12) of the ETS Directive). More than 97% of the emissions from manufacturing industry installations are covered by free allowances.[12] The current allocation rules thus put limits on the volume of allowances available for auction – and in turn restrict this factor in the "revenue equation".

4.1.3. Element 2: the cap

The total number of allowances being put into circulation (the cap) is a key element in auction revenue for two reasons. It determines a) the total number of allowances potentially available for auction (= volume), as well as b) the overall scarcity of allowances (compared to expected emissions), which influences the price. Adjusting the cap can thus affect the amount of auction

[11] Auctioning was the method used in the US Regional Greenhouse Gas Initiative (RGGI), under which nearly all allowances in circulation are auctioned rather than allocated for free; when the EU moved toward auctioning (rather than freely allocating) its allowances as of 2013, with the aim of phasing out free allocation over time, regulators evaluated different ways of selling allowances and auctioning emerged as the preferred method. Other methods exist, such as delegating allowance sales to a financial entity. For instance, Germany tasked a bank with selling the few allowances not allocated for free in 2005-2012. The sales were done in essentially private transactions, an arrangement that fails to take advantage of the "price discovery" effect of a (transparent, public) auction.

[12] COM (2015, p.27) states that "the sectors which are deemed to be exposed to a significant risk of carbon leakage and which therefore receive more free allowances are included in the so-called "carbon leakage list" which the Commission is mandated to draw up every five years. At present, the sectors on the list represent more than 97% of industrial emissions under the ETS.

revenue through both main factors of the equation. However, their interaction can deliver both an increase and a decrease in revenue. If, for example, a reduction in the cap (e.g. to respond to higher reduction targets) does not raise prices as strongly as the allowance volume (for auction) is reduced, the impact on auctioning revenues could be low or even negative.

Similarly, *increasing* the cap by including more sectors in the ETS (= changing its scope) could affect auctioning revenues as well: more allowances would be brought into circulation and, to the extent that some proportion of them is auctioned, this could mean more revenue for the government. A small cap expansion occurred for the EU ETS with the inclusion of aviation emissions from 2011, for example. Depending on which sectors are newly included and what this does to the cap, the demand could also stay constant or even rise as more emitters are in need of allowances to cover GHG output, meaning scarcity might be increased and the price per allowance would not go down as a result of the higher supply, but up. Again, the impact on auctioning revenues would depend on the specifics, and could result in an increase or decrease.

The degree to which emitters are allowed to bank allowances from present to future compliance phases - or borrow allowances from future phases – also affects the amount emitters have at their disposal, and thus how many are in circulation. This is only indirectly linked to the cap itself, as it largely determines how allowances distributed under the cap can be handled – but it can have a significant impact on perceived scarcity of the allowances as the traded good (the available supply against a given demand), and thus their price.

Another factor affecting the amount of tradable units in circulation, albeit not the percentage auctioned, is the degree to which so-called *offsets* are allowed: when emitters can cover their GHG-output with units other than allowances (offsets), the demand for allowances goes down and with it the price, making for overall lower revenues from the proportion of allowances that is auctioned. Essentially supply is increased without a corresponding demand increase. Most ETS that allow offsets have limits on the extent to which they can be used, partially in order to prevent exactly this price-reduction effect (PMR and ICAP 2016). In the EU ETS, these credit limits varied by Member State in Phase 2 but averaged roughly 12% - in other words, installations were allowed to account for 12% of their cap with offset credits rather than allowances. Phase 3 simply extends the existing overall limit on offset use (roughly 1.6 billion tonnes during 2008-2012) to the time period through 2020, essentially spreading it out over the additional 8 years (see also COM 2015c). The impact that significant offset use can have on the allowance price was evident in the EU ETS – as the influx of these external credits is seen to have contributed significantly to oversupply and a low EUA price.[13]

While most possible measures to influence the price in a cap-and-trade system focus on managing the relationship between supply and demand (= scarcity), it is also possible to introduce rules that directly tackle prices. European policymakers have historically preferred volume-based policy intervention (meaning that they focus on the quantity of allowances to influence price) and no direct price control mechanisms exist in the EU ETS. Several non-European ETS[14], however, involve so-called price collars, or efforts to reduce price uncertainty for carbon market participants by setting “floor” and “ceiling” prices. The floor is a minimum

[13]“In the EU ETS, the availability of low-cost offsets from the CDM has contributed to low prices and the accumulation of an oversupply of allowances, which policy makers have sought to reduce in an effort to exacerbate scarcity in the system.” (see PMR and ICAP, 2016, page 84).

[14] Including RGGI and the California/Quebec ETS

allowance price at auctions, referred to as the auction reserve price: allowances may not be purchased at auction below a certain price, essentially guaranteeing a minimum revenue per allowance for the government (Wood and Jotzo, 2011). This can affect auction revenue in that many allowances simply go unsold if the market price is below the floor, as was the case for a long time in the over-allocated US Regional Greenhouse Gas Initiative (RGGI). RGGI's rules contain provisions for unsold allowances to be auctioned again (at later auctions) but that those left unsold after each three-year compliance period may be retired permanently. California's programme contains the provision that if this happens, unsold allowances are put into a reserve that is released after the market price has exceeded the auction reserve price for two consecutive auctions. The way such provisions are implemented affects overall auction revenue – and the time at which revenue is accrued – by changing scarcity conditions according to price.[15]

In the EU ETS, price control mechanisms have been discussed at the national level in a small number of Member States – due to the fact that such an intervention was not palatable at the EU level. So far, only the UK has implemented such a national minimum price guarantee by installing a carbon price floor: UK allowances are sold on a different exchange than those of other Member States (London-based ICE futures Europe rather than Leipzig-based European Energy Exchange), which does not sell an allowance for less than GBP 18.08/tonne. Designed as a mere "top-up" to the prevailing market EUA price, this floor is now well above the current secondary market EUA price of EUR 6 as it equals roughly EUR 20/tonne. Although the floor price raises revenues compared to Member States that do not use one, UK manufacturers contend it puts them at a competitive disadvantage to rivals in other Member States whose carbon costs are lower because their governments do not use a price floor (Garside, 2016).

4.2. Current ETS reform ideas and their relationship to auction revenues

The main reform ideas for Phase 4 involve tackling the demand/supply imbalance. At the start of Phase 3 there was a surplus of more than 2 billion allowances, mainly due to the use of offsets and the economic downturn in Europe throughout most of Phase 2 (COM 2012). As a result the allowance price has averaged around EUR 6 throughout Phase 3 (see Figure 10). This entails the risk that the carbon price signal does not incentivise low-carbon investment and it certainly leads to significantly lower revenues from auctioning of allowances for the Member States than had been anticipated at the last reform of the Directive adopted in 2009.

[15] In the EU ETS, auctions can also be cancelled if the auction price is "significantly under the prevailing secondary market price" (Preamble of Auctioning Regulation). This are then not cancelled or transferred to a reserve, but put up for auction as part of other scheduled auctions later on.

Figure 10: EUA settlement prices January 2013 – October 2016 (Phase 3 up until now)

Source: EEX 2016b

4.2.1. The Commission proposal

The starting point to consider options for changes to the EU ETS is the Commission's own legislative proposal to revise the system for the period after 2020, published in July 2015 (COM 2015b). The main elements of that proposal are based on the guidance from Heads of State and Government on the 2030 targets and policies (European Council 2014). The Commission's vision for a reformed ETS for 2030 addresses all three main factors (with one element already adopted prior to publication of the current proposal). Specifically, these are listed here and explained in more detail below:

- Direct adjustment of **the cap** through an increase of the Linear Reduction Factor
  - No change to the scope of the EU ETS
  - No use of offsets foreseen post-2020
- **Allocation rules:** implementation of the 2014 Council conclusions to maintain free allocation
- Only **indirect price control** mechanism through automatic demand-supply balancing tool (Market Stability Reserve) – already adopted as change to the ETS Directive

Adjustment of the cap:

The EU ETS' overall cap is set to decline through 2020 and beyond. The Commission's reform translates the EU's energy and climate policy framework target of cutting GHG emissions 40% below 1990 levels by 2030 into a cap that declines by an annual amount equal to 2.2% of 2005 emissions from 2021 onwards, as opposed to the 1.74% of 2005 emissions by which the cap declines through 2020. This increase in the so-called "linear reduction factor" (LRF), as the formula for drawing the line from 2013 to 2020 that defines the cap, corresponds to an

"additional" reduction of around 556 million tonnes of carbon dioxide in the period 2021-2030, according to the Commission's own estimates (COM 2015b). On the one hand, the proportion of those 556 million allowances that would have been auctioned represent "lost" revenue, as there are fewer allowances to be sold. On the other hand, the increased scarcity of allowances makes for increased allowance prices over the same period (same demand, lower supply). If prices are significantly higher due to this increased scarcity (tighter cap), the increased price per allowance could more than make up for the lower volume of allowances in terms of total revenue. Modelling by market analysts suggests that the proposal would indeed have an increasing effect, in combination with other elements (see Figure 11 below).

Scope:

The Commission's proposal does not consider an expansion of the *scope*, i.e. a cap *increase* (and corresponding expansion of auction volume), for the EU ETS in Phase 4. The effect on auctioning revenues cannot be assessed without looking at the specifics of any scope extension and the way it would influence the cap and scarcity and so this element of the proposal cannot be evaluated in this regard.

Offset use:

Allowing *offset use* would increase the cap without increasing demand. The current plan excludes use of international credits according to the EU's own documentation: EU lawmakers are looking to ban offset use in Phase 4. The Commission website states that the EU "does not currently envisage continuing use of international credits after 2020 "(DG CLIMA 2016). Taking the Commission proposal of July 2015 as a reform under which offset use is eliminated, it thus constitutes an auction revenue *raising* scenario compared to one in which use of international credits is retained: emitters will have access to fewer compliance units, while the same amount of allowances will be auctioned as in a scenario where offsets are allowed.

Allocation rules:

Beyond changes to the cap, the Commission's proposal also involves auction revenue impacting the allocation method. Here, the proposed reform actually contrasts with the EU's original intent as expressed in the last major amendment to the ETS Directive (from 2009) which is as a general rule to phase out free allocation by 2020 for industrial sectors not at risk of carbon leakage - and as an exemption describes a gradual transition to full auctioning by 2027 (for all industrial sectors, including those deemed to be at risk of carbon leakage.[16]

The Commission's 2015 proposal for phase 4, however, no longer refers to a total phase-out of free allocation anytime during phase 4 – it instead cites guidance from the European Council (2014) to continue free allocation[17] and recommends that the "share of allowances auctioned should not decline." This is a significant shift from the previously envisioned pathway, in which the portion auctioned should certainly not decline but in fact increase to encompass nearly all

[16] The COM (2015a, p.28) confirms: "According to the current legal provisions, higher free allocation for sectors deemed to be exposed to the risk of carbon leakage ends in 2020." The exemption is in Article 10a (11) of the ETS Directive, which stipulates that "free allocation shall decrease each year by equal amounts resulting in 30% free allocation in 2020, with a view to reaching no free allocation in 2027." The latter applies to those sectors deemed at risk of carbon leakage, which – as previously mentioned - is the vast majority under current rules.

[17] The European Council (2014) states explicitly that "free allocation will not expire; existing measures will continue after 2020 to prevent the risk of carbon leakage"

allowances issued. The new wording recharacterises free allocation in the EU ETS from a temporary *transitional* measure to a *constant*. This represents a significant reduction in potential auction revenues compared to a scenario under which all allowances are eventually auctioned somewhere in the 2021-2030 timeframe. The amount of auction revenue "lost" under the proposal has not been estimated specifically, but the European Commission states: "It is expected that around 6.3 billion allowances will be allocated for free to companies over the period 2021-2030 − worth as much as EUR 160 billion." (COM2015d) Although a significant share of this would have been allocated under current carbon leakage rules (over 1.5 billion or equivalent to EUR 40 billion), subtracting that share still results in **EUR 120 billion additional "loss" in auction revenue compared to a "phase-out by 2027" scenario**, assuming the Commission's average EUA price over that period (> EUR 25). Even at a more conservative EU average price of EUR 15, the lost revenue is at the order of EUR 70 billion.[18] Thus the change in allocation rules could come with a 12-digit price tag for Member States.

Price control – only indirectly:

Direct price control is not envisiged by the Commission. However, Phase 4 already now includes an automatic demand-supply balancing tool, in keeping with regulators' preference for quantity based solutions. That change in the EU ETS design has come about through the establishment of a *Market Stability Reserve (MSR)*, which was proposed by the European Commission in 2014 and approved by the Council in September 2015 (Decision (EU) 2015/1814 on the MSR). The implementation will have a bearing on both auction volumes and prices: the mechanism tackles the EU ETS's demand/supply imbalance by automatically removing surplus allowances from the market. Beginning in 2019, 12% of the "allowances in circulation" (the technical definition for surplus) will be removed each year and placed into the reserve, where they will not be available to emitters unless the amount of allowances in circulation goes below 400 million tonnes. This affects auction revenue directly, as the means for "removing" those allowances is not to auction them, i.e. to make several million tonnes fewer per year available to be purchased at EUA auctions (at least at that point in time – they can be brought back via auction later). 'Backloaded' allowances, whose auction was postponed from 2014-2016 to 2019-2020, will be placed directly into the reserve when it launches, and unallocated allowances from Phase 3 of the EU ETS (2013 to 2020) will be added in 2020 also. These actions reduce the volume of allowances available for auction, but have an increasing effect on price at the same.

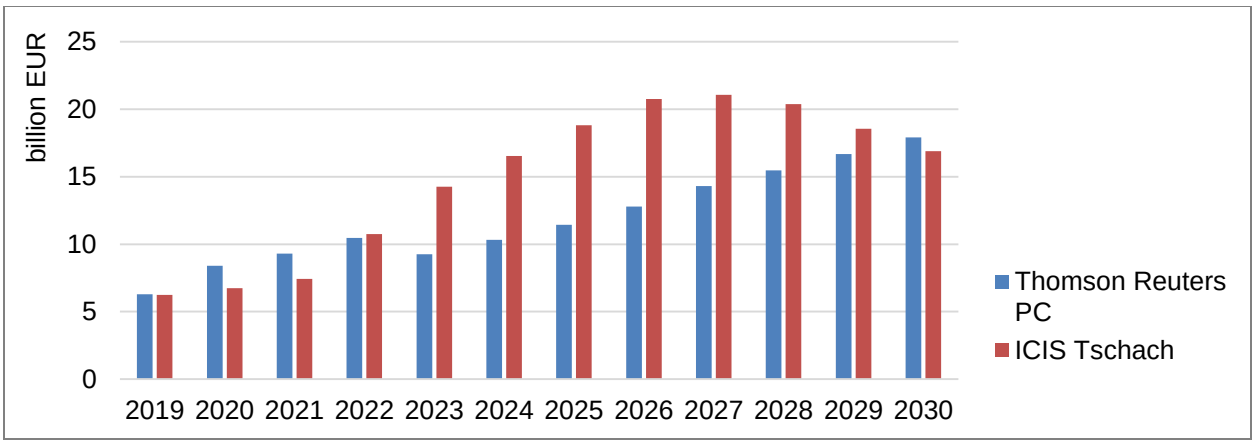
What is the overall effect for revenue generation? Analysts projected the effect of the MSR on allowance prices and the market balance (amount by which the EU ETS is oversupplied) back in 2014 when the Commission was proposing the mechanism. Modelling from Thomson Reuters Point Carbon at the time (Schjølset, 2014) estimated that the MSR would lead to significantly higher allowance prices (35% higher in 2021-2030) than would otherwise be the case. While the

[18] This calculation is based on the cap for stationary installations only, using the European Commission's figures for the 2013 start date and the corresponding absolute value for the LRF of 1.74% to implement the calculation of the cap through to 2030 (based on a 2.2% LRF from 2021). From this the volume of EUAs available for free allocation under a scenario of phasing out free allocation from 30% in 2020 to zero for 2027 was calculated. This results in just over 1.5 billion EUAs – which contrast to the 6.3 billion estimated by the Commission under its proposal. The difference of just under 4.8 billion EUAs would have been auctioned if the 2009 rules on allocation were to continue – and their value can thus be counted as lost revenue compared to the current rules. The figures could be further refined (integrating also the aviation sector), but are accurate enough to indicate the order of magnitude (EUR 70-120 billion in phase 4).

model did not explicitly project auction revenues with and without an MSR, its significant allowance price increase points to the MSR's revenue raising effect: implementing the MSR means more money for Member States.

Analysts have since attempted to model the influence on allowance prices of the MSR combined with the proposed LRF of 2.2% and other elements of the 2015 Commission proposal. Multiplying these in turn with the annual auction volumes implicit in the MSR's proposed structure enables a rough auction revenue projection beyond 2020. Two institutions that regularly generate carbon market price forecasts, Thomson Reuters Point Carbon and ICIS Tschach Solutions, have published allowance price projections through 2030 under a set of assumptions that take into consideration implementation of the MSR. Each forecaster's respective scenario models the EU ETS continuing as amended by the Commission with the MSR. Given that modellers' underlying assumptions differ with regard to timing and implementation of the MSR as well as other policies (renewable energy requirements, environmental taxes, political changes such as Brexit), the auction volumes and price forecasts generated vary among the two forecasters and are shown here not for comparison to each other, but to illustrate a range of potential auction revenue that shows the orders of magnitude involved: the models project that the EU ETS reforms proposed by the Commission (most importantly the MSR) will result in cumulative auction revenue for Member States between EUR 127 billion (Thomson Reuters) and EUR 165 billion (ICIS) over the decade 2021-2030. **Averaging somewhere between 13 and 16 billion EUR *per year*, this amount is tripling the roughly EUR 4-5 billion in revenue generated per year over the last three years after auctioning became the main mode of allocating allowances in 2013.**

Figure 11: Projected auctioning revenue developments under two analysts' "standard" scenarios for the Commission's Phase 4 proposal, both including the MSR



Source: Standard model price/volume results provided by Thomas Reuters and ICIS[19]

[19] Both forecasters' scenarios represent "base case" model runs that use various (differing) assumptions on factors such as EU GDP growth, rate of renewable electricity generation growth, etc. The average EUA price during 2020-2030 is EUR 23.30 under the ICIS Tschach forecast for the scenario used, that of Thomson Reuters is EUR 16.24 (nominal values, not 2016 Euros). Other inputs that differ between the models include the way in which separate funds are dealt with: Thomson Reuters volume projections assume an 'early monetisation' of the Innovation fund of 400 Mt in two 200 Mt tranches in 2021 and 2022, reflecting the pattern NER300 monetisation took during phase 3, while the ICIS model assumes a more "spread out" monetisation of 80 Mt/year over 5 years. ICIS projections also assume Brexit by 2021.

4.2.2. Other reform proposals

Sticking with our categorisation of EU ETS reform ideas, we continue with proposals addressing the cap (1), allocation method (2) and price control (3). In the following, only proposals that are likely to have an increasing effect on auctioning revenues (compared to the Commission's proposal) have been included.

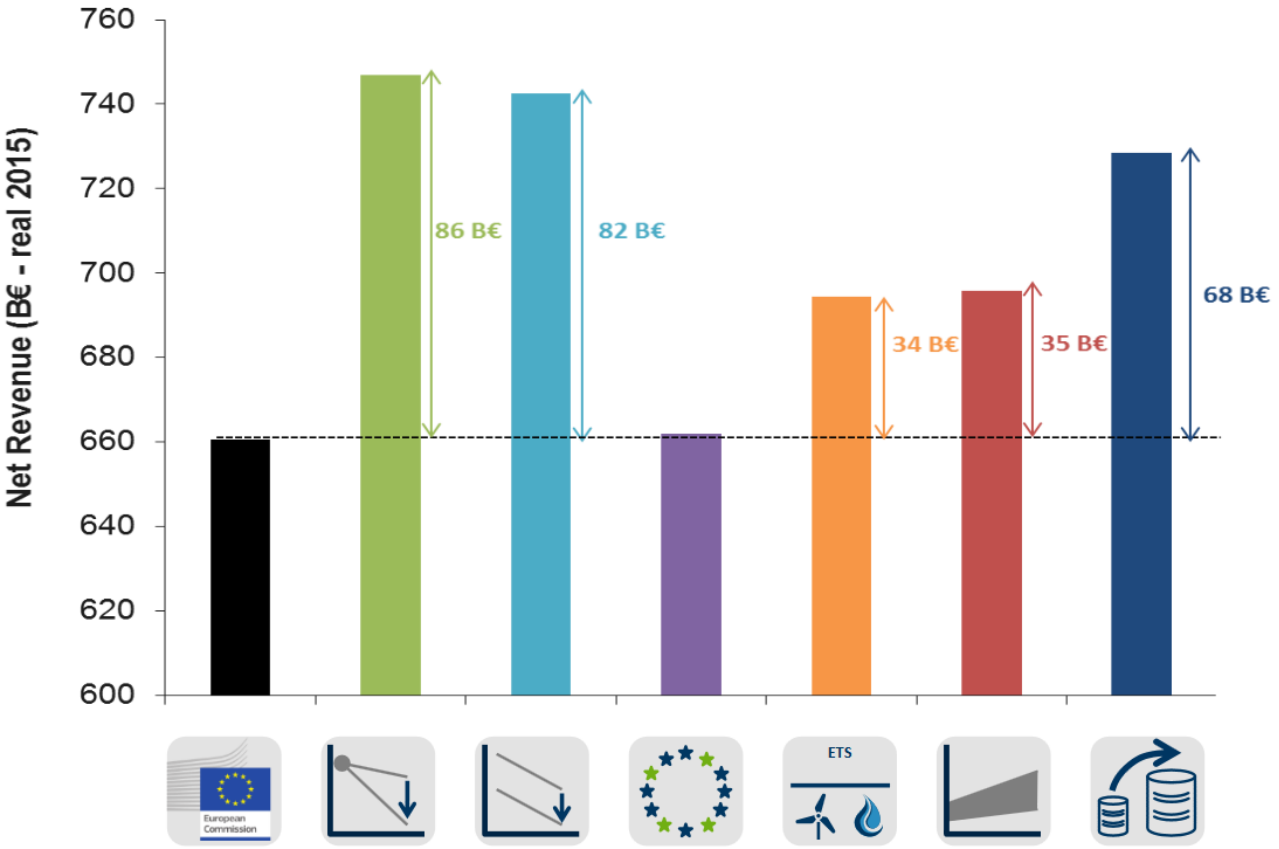
The cap

The Commission's reform proposal elicited responses from many stakeholders, several of which say the reforms do not go far enough and propose measures that would further "tighten" the overall cap (= reduce allowance supply).

A higher LRF: Stakeholders of all kinds have come forward recommending a higher LRF than the 2.2% proposed by the Commission. This includes e.g. the European Parliament's Development Committee, which in July 2016 proposed a LRF of 2.8% (Committee on Development 2016), a coalition of large European energy companies,[20] and CAN-Europe. Also several proposed amendments in the ENVI Committee include a higher LRF, ranging from 2.4 to 4.2% (as summarised in CAN-Europe 2016b). Analysis done by FTI Consulting (Roques et al. 2016) for the group of utilities mentioned characterises a change to an LRF of 2.8% as the one making the largest difference to auction revenue of several proposed ETS reforms – with EUR 86 billion additional revenue (see Figure 12 below).

[20] CEZ, DONG, EDF, EDP, enel, engie, Fortum, Iberdrola, Statkraft and Vattenfall. These call for a LRF "higher than 2.2%" (see CEZ et al., undated). Individual firms recommend specific percentages, e.g. Fortum suggests "at least 2.6%" (Fortum 2016)

Figure 12: FTI-Consulting assessment of auction revenue impact of several reform options



Source: slide presentation of main results from report by Roques et al. (2016) – available online at http://www.fticonsulting.com/~/media/Files/us-files/intelligence/intelligence-research/wake-up-launch-event-2016-presentation.pdf

New "starting point" for cap reduction: Similar in effect to increasing the LRF, amendments to the Commission proposal from the European Parliament's Environment Committee seek to change the 2020 level from which the LRF declines, i.e. set the "baseline value" for the cap trajectory to a lower initial amount – thereby increasing reduction ambition overall. Committee members have proposed amendments that would see the starting point for the new cap set against *emissions* around 2020 rather that the *number of allowances* to be issued in 2020 according to the remaining Phase 3 trajectory – the rationale is that ETS emissions are already lower than the allowance budget for 2020, and are expected to continue falling. Instead of starting the new carbon budget (or cap trajectory) where the old budget finishes as the Commission proposal does, the amendments would base the LRF starting point from a reference year or reference period, with later reference years (when emissions will be lower) being the most ambitious. Exactly how ambitious a "starting point change" (also known as "rebasing") is depends on what LRF it is combined with, as the reduction factor then constitutes a percentage of the new reference year it is drawn from rather than calculating the LRF based on the average Phase 2 cap as is currently legislated. An example of this combination is the amendment proposed by Committee member Michèle Rivasi from the Greens for a 4.2% LRF measured from 2021, with its "starting point" being 2020 emissions. A projection by CAN Europe estimates this would result in a cut to the cap by 73 million tonnes annually and thus reduce

total Phase 4 emissions by over 2 billion tonnes.[21] The analysis by FTI-Consulting (Roques et al 2016) shows that rebasing has the potential for a high increasing impact on auctioning revenues (see Figure 12 above).

Additional surplus reduction: CAN-Europe (2016) proposed the cancellation of 2 billion allowances by removing them from the MSR, so that they will not be available for reintroduction to the market later.[22] This cancellation would constitute a significant cut to the theoretical volume Member States could auction to emitters (therefore derive revenue from) – so its effect on auction revenue could be a reduction, except that such a large supply cut can also be expected to raise the allowance price and thus the amount of revenue Member States are able to obtain per auctioned allowance.

Similarly, the Swedish government (European Council 2016) as well as CAN Europe members including Sandbag (2015), Carbon Market Watch (2015) and WWF lament heavily the Commission proposal's plan to take the hundreds of million allowances destined for the Phase 4 New Entrants' Reserve and the Innovation and Modernisation Funds *out of the MSR rather than from the ETS cap* – the latter method would have made the cap more stringent while keeping 445 Mio tonnes out of circulation in the MSR, both measures that would increase the allowance price.

Although the groups provide no empirical modelling of the effects of this reform change on auction revenue in Phase 4, empirical analysis of previous EU ETS reform ideas involving decreasing volumes *support the assumption that decreasing the cap will increase overall Member State auction revenue*: Hermann and Graichen (2012) found that "removing" over one billion allowances from the market by not auctioning them (the "backloading" scenario under discussion at the time) would result in "auctioning revenues increasing in all sectors for all countries" in the EU ETS throughout Phase 3, due to the large allowance price increase brought about by corresponding allowance scarcity. This consideration is supported by calculations on the effect of faster take-up by the MSR (see below).

Allocation rules

The straight-forward way for changing allocation rules to increase auction revenue is to increase the share of auctioning vs. free allocation – and several stakeholders have argued for more auctioning.

Specifically, a proposal by the European Parliament's Development Committee (Committee on Development 2016, page 12) would change the allocation rules for the aviation sector: the total quantity of allowances allocated to air carriers would decrease annually by the same linear factor as the rest of the EU ETS, and all of them should be auctioned rather than given for free.

Most environmental groups have been asking for full auctioning since the beginning of the EU ETS and are still asking for a phase-out of free allocation for the current reform – in contrast to the Commission proposal (see e.g. CAN-Europe 2016, page 12).

Especially industry representatives are arguing for less auctioning and more free allocation to them instead, see e.g. the European cement industry association CEMBUREAU (2016) which

[21] CAN Europe 2016, pages 3-4

[22] CAN calls for "The permanent cancellation at the end of 2020 of around two billion surplus allowances that will have accumulated in the MSR by that point" (CAN 2016, page 5)

calls for 52.5% auctioning (instead of the 57% in the Commission proposal). Calculations by analysts from Thomson Reuters of a specific idea by the NGO Change Partnership (2016) to go for 52% auctioning[23] come to the counterintuitive result that such a move would lead to an increase in price large enough to increase auction revenue for Member States compared to a scenario where those allowances are auctioned. The explanation: industrial players are less active ETS market participants and the additional allocation to them could in effect remove the allowances from circulation (albeit still temporarily). This additional scarcity would be felt mainly by electricity generators, as these typically take part in the primary and secondary market, driving up average EUA prices enough to increase auction revenues (personal communication by the modellers). This would, however, be a temporary measure to raise the EUA price, and has no long-term effect on overall volume of allowances – and its effect would likely depend strongly on the development of other parameters influencing scarcity.

Direct price control

Price floor: Recommendations for the EU ETS to include a price collar similar to the North American ETS[24] mentioned above go back to the original design of the programme two decades ago, but experienced a revival after the financial crisis in 2008 and subsequent economic downturn throughout most of Phase 2 resulted in an oversupply that has left allowance prices below levels at which they would stimulate low-carbon investment and innovation. Academics have called in general for re-consideration of a "price collar" or "price band" - meaning floor and/or ceiling price (Edenhofer and Knopf, 2014; Burtraw, 2014) – more recently, either in addition to or instead of the MSR (Holt and Shobe, 2015).[25] The French think tank "The Shift Project" (2016) recommends a EUR 20 auction reserve price (adjusted upward on an annual basis through 2020 to rise to EUR 32.60 by 2030) to increase financing available for low-carbon investments. Though the report argues that revenue maximisation is a goal of this measure - it states that it would be implemented so that "Member States cannot sell their quotas at prices that are too low," and that "a price on carbon which is strong, predictable and steadily increasing makes it possible to guarantee foreseeable returns" - it does not include numerical estimates of the overall effect such a floor price would have on auction revenue to Member States. Given that allowance prices would not hit EUR 20/tonne until the mid-2020's under ICIS and Thomson Reuters price projections, whereas the EUR 20 minimum would become effective in 2020 according to The Shift Project's recommendations, it can be assumed that the mandatory price floor would *increase auction revenue* significantly if implemented in addition to the MSR – at least compared with the auction revenue effects of the Commission's proposal.

Following the example of the UK, which implemented a carbon price floor unilaterally, France has also announced its intention to establish a national price floor for utilities from 2017 onwards, at EUR 30.[26] Furthermore, it is arguing for the introduction of an EU level "soft price collar" in a Non-Paper published in February of 2016 (MEEM 2016).

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[23] This is meant to serve as a political sweetener for industry groups, as it would provide enough free allocation so that the cross-sectoral correction factor would not need to be applied – supposedly reducing political pressure from industry associations.

[24] Both the Regional Greenhouse Gas Initiative and the ETS of California and Quebec feature an auction reserve price.

[25] Using an auction reserve price and soft allowance price ceiling proved more efficient than the quantity-based stabilisation measure of an MSR in experiments run by economists Holt and Shobe (2015).

[26] Minister Segolene Royale talked about the proposal in May 2016 – see for example http://www.bloomberg.com/news/articles/2016-05-11/france-seeks-to-convince-germany-to-mirror-30-euro-carbon-price

A price corridor is concretely being advocated also by electric utility companies, who are weary of price uncertainty and low incentives for fuel switching and low carbon investments (CEZ et al 2016). The group has also commissioned a study into a range of possible reform options to strengthen the EU ETS, in which the introduction of a carbon price corridor is considered, with EUR 20 the lower end and EUR 50 the higher (Roques et al 2016). The analysts predict that this would have a strongly increasing effect on auction revenues (see also Figure 12).

MSR tightening: Several proposals address the specific design of the MSR and are directed at it functioning earlier or faster. CAN Europe (2014) for example proposed that "the Market Stability Reserve should set aside surplus emission allowances more rapidly than the suggested 12% of allowances in circulation annually", without specifying a rate.[27] Eurogas, the trade association representing EU gas sellers and distributors, also advocates for increasing "the rate at which surplus allowances are injected into the market stability reserve" (EUROGAS, 2016). The aforementioned group of large European energy companies also advocates for a MSR outtake rate above the 12% per year envisioned in the Commission proposal (CEZ et al, 2016). A specific recommendation along these lines was modelled by Thomson Reuters and showed a revenue increase: the NGO Change Partnership (2016) called for *doubling* the rate at which the allowances are taken into the MSR to 24%. This would bring more allowances out of circulation, and do so faster, making for a steeper allowance price rise earlier in Phase 4 – but it would also remove twice as many allowances from the amount otherwise destined to be auctioned by Member States. According to the modelling, this would cause an increase in total auction revenue to Member States because although the auction volume would go down roughly 9%, allowance prices would increase on average by more than 10% as a result of the increased scarcity. According to the model, the increase in total revenues for the period 2019-2030 would be around 6% (EUR 9 billion) compared to the Commission's proposal.[28]

A further reform to the MSR proposed by CAN Europe and its individual member NGOs is to *begin the MSR's function earlier in time* – under the original MSR plan, the reserve would not become operational until 2021, whereas the environmental groups advocated in 2014 already for a 2016 start to the mechanism (CAN Europe 2014; WWF 2015). While the exact effects on auction revenue of that (now hypothetical) start date have not been modelled, Thomson Reuters modelling (Schjølset, 2014) estimates that a 2018 start date would increase the average price of allowances by 23% on average through 2020 and by 12% on average in 2021-2030 compared to the 2021 start date scenario. While this leaves the exact impact on auction revenue uncertain, **it is highly likely that the effect of increased allowance prices would outweigh the effect of slightly lower auction volumes for a net revenue *raising* effect seen in other projections.** The MSR is now to become operational in 2019.

Table 8 summarises the key proposals and their proponents as well as their likely impact on auctioning revenues. This information will be used in Chapter 5 to draw up recommendations.

[27] Under the current design of the MSR (Decision (EU) 2015/1814), "an amount of allowances corresponding to 12% of the number of allowances in circulation […] should be deducted each year from the auction volumes and placed in the reserve" as long as the surplus allowances in the system are above the threshold.

[28] Note that the impact is on *total* revenue, including those feeding the Modernisation Fund and the Innovation Fund, rather than just revenues accruing to the Member States. It is only in comparison to projected revenues from the Commission proposal as shown in Section 2, with the same assumptions regarding allowance prices through 2030. Source: Personal communication with Thomson Reuters (Emil Dimantchev).

To conclude the discussion of ETS design elements that affect auction revenue, the "simple thought experiment" of Edenhofer et al. (2014) show the orders of magnitude involved. The paper laid out an ETS scenario that layered several potential reforms to show combined increases in funding available to Member States as a result of changing the ETS design elements explained above: introducing a floor price of EUR 20, expanding EU ETS sector coverage to 90% (by including e.g. the transport sector) while increasing auctioning to 80% would yield total revenues of about EUR 64bn per annum, nearly ten times the revenues achieved in the years 2013 and 2014 combined and still four times as much as has been modelled for average annual revenue (see Figure 11).

Table 8: Overview on influencing factors on auctioning revenues

Specific lever influencing revenues	Proposal	Proposed by	Likely influence on auctioning revenues	Effect on auction revenue
The cap				
Direct reduction of the cap	LRF of 2.2%	Proposed by the European Commission on the basis of the October 2014 Council Conclusions	Depends on interplay with other measures (MSR, allocation rules) – but projections show clear increase	Increasing effect
	LRF of 2.8% LRF at least 2.6%	European Parliament Development Committee Fortum Energy Company	All else being equal to the Commission proposal, this would likely increase revenues through a stronger EU price increase	Increasing effect
Adjusting the starting point (Rebasing)	Moving starting point to actual emission levels	ENVI amendments CAN-Europe	A means of avoiding further surplus - depends on interaction with corresponding auctioning volume reduction, but likely stronger effect on carbon price through increased scarcity	
Surplus reduction	Cancel 2 billion EUAs from MSR	CAN-Europe	Depends on interaction with corresponding auctioning volume reduction, but likely stronger effect on carbon price	Likely increasing effect
Scope changes	No changes to the scope	Proposed by the European Commission	As the impact of any change to the scope would depend on the specific design, the effect of not changing the scope must be considered neutral	Neutral – effect unclear
Scope changes	Include individual heating appliances in buildings	Fortum Energy Company	Depends on the specific design – impossible to say if it would increase scarcity or not	Effect unclear
Offset use	No access to offsets (from outside of the EU)	Proposed by the European Commission	Clear effect of higher revenue compared to a scenario with offsets included	Positive effect
Allocation rules				
Relation between auctioning and free allocation	Freeze auctioning ratio at 57% - maintain free allocation	Proposed by the European Commission on the basis of the October 2014 Council Conclusions	Depends on comparison – against current Directive text foreseeing a phasing out of free allocation this reduces auctioning revenue (significantly)	Negative effect compared to current rules

	Reduce auctioning ratio to 52% increase free allocation to industry	Change Partnership (some energy intensive industry associations ask for the same or similar reductions in auctioning)	Modelling indicates that a reduction in number of allowances in circulation might increase average prices enough to result in higher auction revenues than under a 57% auctioning scenario – which seems counterintuitive.	Possible temporary positive effect compared to COM proposal
	Move to full auctioning, phase-out free allocation	CAN-Europe	Compared to Commission proposal (maintaining free allocation) a clear increasing effect – against current Directive text (2009) it depends on speed of phase-out	Strong increasing effect
Source of allowances for NER (for free allocation)	Take NER from the cap and not the MSR	Several NGOs	Depends on interplay with other measures, but likely to have a positive effect	Likely increasing effect
Allowances for air carriers	EUAA for aviation should be calculated from same LRF as other sectors, all auctioned	European Parliament Committee on Development	Fewer allowances overall, but more auctioned	Increasing effect
Price control				
Indirect supply-demand balance mechanism	Market Stability Reserve	Already adopted in the form of amendments to the ETS Directive	Projections show clear increase – particularly in combination with a reduction in the cap	Increasing effect
Increase MSR uptake	Double the MSR uptake to 24%	Change Partnership	Modelling shows this could increase auctioning revenue due to stronger effect on price	Increasing effect
	Bring forward MSR start date	CAN-Europe et al	High likelihood to increase revenues through higher price	Increasing effect
Direct price control	Price floor at 20€	The Shift Project	Significant additional revenue compared to Commission proposal	Strong increasing effect

Source: own compilation, not exhaustive

4.3. Ensuring the use of auction revenues for climate finance

In the greater context, using ETS auction revenue to support climate change mitigation and adaptation - the focus of this analysis - represents only one of many options. Other uses of auction revenue may be considered desirable for their ability to support other (non-environmental) public policy goals, some of which are also endorsed by proponents of mitigation policies. The “cap-and-dividend” concept, for example, would return the money businesses pay for emission allowances to the households that have to pay more for e.g. electricity as a result of corporate allowance cost pass-through. Proponents of this approach argue that it increases public and political support for an ETS with ambitious caps, as the proceeds from the sale of allowances go to consumers rather than the government (Barnes, 2008). In a similar vein, scholars touting principles of economic efficiency argue that auction revenues should be used to lower labour and capital taxes, which decreases net policy costs by offsetting pre-existing distortionary charges (Burtraw and Parry, 2011). Auction revenues can also be used to offset higher costs resulting from low-carbon production as a compensatory measure, potentially instead of free allocation. In other words, industry that invests in new technologies could receive part of the auction revenues as remuneration for these costs (Schleicher et al. 2015). Further, the revenues from allowance auctions can help governments reduce public debt or to close

budget deficits, impacting economic growth by reducing interest rates and the need for tax increases to pay principle or interest on debt (CPLC, 2016).

A primary benefit of the use of revenues examined here - providing funding for investments into climate change mitigation – is thematic coherence: spending revenues from pollution control efforts (the EU ETS) to address the very problems that pollution causes (climate change) is appealing to the public for its corrective potential in terms of addressing equity concerns and adhering to the "polluter pays" principle. Challenges include limited flexibility and efficiency of allocating funds across dynamically changing mitigation and adaptation priorities, as well as the risk that programs tied to specific revenue sources are underfunded if revenues shrink unexpectedly (CPLC, 2016).

4.3.1. Current provisions

This context of a multitude of possible auction revenue use options makes the decision of EU Member States (EU Council, 2008), that "at least half" of the revenues from allowance auctions should be used specifically to tackle climate change, quite meaningful – even though the European Parliament Committee on the Environment, Public Health and Food Safety (ENVI) had originally envisaged that 100% of revenues should go into climate actions. The recommendation of committing 50% toward climate change mitigation funding, included in Article 10 in the ETS-Directive, is intentionally not binding: the extent to which the EU as an institution may prescribe to Member States how to use their revenue is the subject of legal and political debate, with stakeholders – including Member States - positing that so-called hypothecation of funds can set a precedent of the EU holding too much power over individual Member States' right to implement their own fiscal priorities. The UK Government's 2014 position on Phase 4 of the EU ETS, for example, states, "The UK has a clear position against the hypothecation of auction revenues. Member States should retain fiscal sovereignty and control of decision making on the use of revenues" (DECC 2014). The result of the UK's Brexit referendum, combined with the fact that Britain has been the most vocal opponent of hypothecation of funds, may open for revisiting the question whether guidelines (such as the current Directive's text) on the use of auction revenues should be non-binding.

In addition to being non-binding, the full text of the section on use of auction revenue in the ETS Directive is extremely flexible on what constitutes fulfilling the 50% requirement - funds already destined for or used in climate-related activities may be counted as auction revenue in order to be accounted for in budgeting processes. In other words, the 50% goal can be achieved with *equivalent financial value* rather than coming from auction revenues directly (see 3.3.1).

Even with this additional flexibility in designation of funds, the *variability* of revenue – due to fluctuating carbon prices – can be an obstacle to Member States' long-term financial planning, making them wary of binding revenue use requirements.[29] I4CE (2015) concluded that "in view of the current instability of carbon prices a legally binding framework to guide revenue spending may be more relevant in the future, when carbon prices and revenue streams can be predicted more accurately." Indeed, the differences in allowance price projections among forecasting institutions during the current state of flux around the design of Phase 4 attest to the uncertainty

[29] France, for instance, in 2013 directed expected auction revenues toward an energy-saving domestic housing retrofit program - due to carbon price fluctuations, the total revenue was less than forecasted, such that the French National Housing Authority had to seek alternative revenue sources for the programme to compensate for the shortfall. (I4CE, 2015, page 98).

around future auction revenue for Member States. However, the aforementioned assessment also noted that even in non-legally binding form, the guidelines "have inspired many (in fact most) EU countries to allocate a sizeable share of their revenues toward climate action." With net revenues clearly expected to increase in the coming years, Member States are devoting more attention and planning to their use, which inherently involves at least considering any EU guidelines on this issue. In such a context, making those guidelines mandatory may not be perceived as a great departure from Member States' existing financial planning processes. The July 2015 **Commission proposal, however, contains very few changes with regard to the language on auction revenue use compared to the current version of the Directive**. It does not change the amount of auction revenue Member States are recommended to use for climate finance purposes, nor does it establish additional measures or language to help the Member States deal with auctioning revenues according to what may be feasible in their political systems. It does, however, list three additional uses.[30]

Potentially such additional language could offer options as to the *nature of earmarking*, in the form of guidelines that (though non-binding) could serve to make auction revenue use more transparent by defining the way in which funds dedicated to climate-friendly purposes are allocated in each Member State. The main distinction here is between *political* and *budgetary* earmarking, with the latter involving a formal separation of the earmarked revenues from the national budget into an independently managed pool (e.g. the Czech Republic or Lithuania; see Chapter 3.3.1).[31] Political earmarking, in contrast, enables revenues and expenditures to be linked without an off-budget separation by declaring the political will to use the relevant revenues for certain expenditures in a separate law or legislative act – Hungary e.g. laid down in its National Climate Law that 50 % of auction revenues should be used for climate change related spending (Esch 2013). EU guidelines for Member States on what type of earmarking, if any, is most applicable in their legal and budgetary system could allow for increased transparency (and possible sharing of best practices) in auction revenue use.

4.3.2. Proposals

EU level set asides: With Member States' earmarking remaining a complex issue, specific proposals to increase the amount of auction revenue going toward climate-friendly purposes have focused on getting more auction volume (and therefore revenue) into the control of the EU rather than the Member States, so that earmarking discussions and correlating transparency issues apply to less of the overall revenue at stake and more revenue is managed by a body designated to channel it to climate-friendly purposes.

A proposal in this vein by CAN Europe (2016) and Oxfam International (2015) targets the certainty of revenue use by creating a set-aside similar to the New Entrant Reserve, the Modernisation Fund and the Innovation Fund. After 2020, a fixed percentage of the allowances to be auctioned would be put into an "ETS International Climate Action Reserve" before the

[30] The draft proposal lists the following three new uses for auctioning revenues that would be counted as what we have called "climate action" in this evaluation: 1) the accepted state aid payments for compensation of increased electricity prices (as already reported by Germany), 2) "climate financing actions in vulnerable third countries, including adaptation" and 3) around actions (e.g. skill training) to support a just transition.

[31] In this discussion of earmarking practices, Mueller (2008) posits an example of budgetary earmarking of ETS revenues under which a separate body "operates an off budget trust fund, and which legitimately, and without fear of precedent for general taxation, channels earmarked revenue streams, say to the UNFCCC financial mechanism (for climate change activities in developing countries), to the private sector, and/or to treasuries, for the benefit of domestic consumers."

remainder is auctioned on behalf of Member States. Revenues from the sale of this pool of allowances would be channelled to the Green Climate Fund or to other international carbon finance institution. The Institute of European Studies modelled this process using 10% of the allowances destined for auctioning in 2020-2030 and an average carbon price of EUR 22.50 per year, resulting in nearly EUR 35 billion over 2021-2030 going toward directly towards international climate finance.

In addition to that fund, CAN Europe suggests adding more allowances to the existing Innovation Fund – meaning the pool remaining to be auctioned by Member States is correspondingly smaller, but more climate action funding would be available at EU level.

The European Confederation of Trade Unions (ETUC) advocates for establishing a "Just Transition Fund" which would also remove allowances from the pool to be auctioned by Member States. This fund, to support workers negatively impacted by the transition to a low-carbon economy, was proposed in amendments to the Commission's ETS reform plan by the European Parliament's Committee on Industry, Research and Energy (Committee on Industry, Research and Energy 2016, page 12) and by CAN Europe.[32] Though the concept as yet includes no specific volume suggestions to combine with price forecasts that could estimate its effect on auction revenue, it could garner more support among European legislators given that it is backed by both labour and environmental groups.

Earmarking text: The EU Parliament's Committee on Industry, Research and Energy also suggested altering the text of the ETS Directive as concerns use of auctioning revenue – the Commission's proposal had left those parts unchanged. The industry committee (ITRE) text would not only change the percentage of auction revenue to be used for climate-friendly purposes from 50 to 80 percent, but would change the wording from "should" to "shall", making the guideline a binding *requirement*. It also specifically adds the Green Climate Fund as a recipient of auction revenues (Committee on Industry, Research and Energy 2016, page 19)

The Parliament's Committee on Development also recommends changing "should" to "shall." It further stipulates that 100% of auction revenue be spent on climate friendly activities, with 50% being specifically for climate action in vulnerable developing countries (Committee on Development 2016, pages 14-15)

Another reform addressing the use of auction revenues is the opinion on the Commission proposal by the Committee of the Regions (2016). This document calls for greater involvement of *local and regional* authorities in dealing with auction revenue, and recommends that Member States should reserve at least 20% of ETS auction revenues to be managed directly by local and regional authorities for mitigation actions and adaptation of energy infrastructure. Given that the minimum percentage threshold is not worded as *additional* to the Commission's already recommended 50%, following this recommendation would likely mean that a greater proportion of auction revenue for mitigation activities is spent domestically – even though results from the spending breakdown of 2013-2015 revenues indicate a large proportion of domestic (rather than international climate finance) spending already (see Chapter 3.3.2).

[32] A "Just Transition Fund," which would be intended to finance support measures for workers in regions and localities affected by the transition [to a low carbon economy], could be fed in part from […] the auctioning of a certain volume of emission permits." (ETUC 2015). The EU Parliament Committee on Industry's opinion suggests the following text: "The EU should also establish a Just Transition Fund to pool auction revenues to promote skill formation and reallocation of labour affected by the transition of jobs in a decarbonising economy"

Transparency: The industry committee of the EU Parliament proposed adding new text to the ETS Directive aimed at making Member States' auction revenue use more transparent: the current text says that Member States "shall inform the Commission as to the use of revenues," and the industry committee would add "That information shall be provided through a standardised template provided by the Commission, with a minimum level of detail allowing for transparency and comparability, including information on additionality of the funds. The Commission shall make this information available to the public on its website" (Committee on Industry, Research and Energy 2016, page 21).

Reducing uncertainty: A further reform idea that is as yet not quantifiable in terms of its effect on auction revenue addresses the uncertainty issue mentioned in the previous section: I4CE (2015), whose survey of Member States' use of auction revenues in 2014 concluded that governments' reluctance to earmark auction revenues for certain climate change mitigation purposes was at least in part due to unpredictability of revenues, suggests providing a form of "variability insurance" (Manasvini, 2015). Designed particularly for large-scale projects, this measure would involve multiannual planning and minimum funding guarantees. While it would likely have to be implemented at the Member State level, such a measure could be facilitated or standardised via an EU institution. With such funding guarantees in place as carbon price forecasts stabilize over the coming years due to greater certainty around the final components of Phase 4, a move to make the EU's auction revenue use guidelines legally binding may also be perceived as less objectionable.

Table 9: Overview of main options for enhancing revenue use

Type of change	Specific proposal	Proponent	Likely impact
Guidance on revenue use	Make earmarking mandatory (for parts or all of the revenues)	EU Parliament Industry Committee and Development Committee	Greater bindingness would lead to more dedicated spending towards climate action – with the likely effect for some Member States that additional money would be spent (overall impact on additionality cannot be estimated though)
	Increase amount to be used for climate action	EU Parliament Industry Committee and Development Committee	Could lead to more spending on climate action, but without means of enforcement, unclear effect.
	Specify amount for sub-national level entities	Committee of the Regions	Likely higher share spent domestically if this were implemented. If in addition to current 50% language, could lead to more spending of revenues on climate action – additionality cannot be estimated.
Increase transparency	Enhance reporting requirements	EU Parliament Industry Committee	Stricter (more detailed) reporting requirements or improved enforcement of reporting requirements might lead to Member States having to be more accountable for their expenditure and possibly spending more with a view to public perception
EU level set-asides	ETS International Climate Action	CAN-Europe et al, Oxfam	Fewer revenues would be available for the Member States but use of the revenues generated under the set-asides could be

Type of change	Specific proposal	Proponent	Likely impact
	Reserve	Parliament Committee on Development (except expanding Innovation fund) ETUC	more directly controlled, general oversight and transparency would be high.
	Expand Innovation Fund		
	Just Transition Fund		
Reduce uncertainty over revenues	Variability insurance (funding guarantee)	Idea by I4CE	Could help overcome concerns over predictability of funding, which can enhance effectiveness of the programmes concerned (e.g. DE experience with E&C Fund, which had to be filled from state budget).

Source: own compilation, not exhaustive

In conclusion, there are a range of possible options to enhance the use of auction revenues for climate-friendly purposes, ranging from making some degree of earmarking mandatory to enhancing existing provisions in the Directive that could at least facilitate better *transparency* around auction revenue use.

Furthermore, additional EU-level guidelines on international climate finance could be helpful to those Member States intending to apportion at least some of their revenue in that direction: the guidelines could offer selection criteria for international projects and/or comparisons among recipient institutions and funds including the GCF or various World Bank programs (I4CE 2015).

5. Conclusions and recommendations

On the basis of the analysis of the reported data and the proposals concerning ETS reform plus our understanding of the mechanisms influencing auctioning revenue and their use – and the relevant legislation - we consider what options exist to enhance the contribution that revenues from the auctioning of EUAs can make to financing the transition to a low carbon future.

The recommendations focus on three main areas in need of improvement:

1. **Increasing revenues**: changes to the EU ETS design that help **generate** more auctioning revenue for use towards climate finance.
2. **Strengthening use**: options to ensure that a **higher share** of the auctioning revenues is used towards facilitating the low carbon transformation
3. **Better information**: **improving the quality** of the data provided by Member States on their use of auctioning revenues

5.1. Increasing revenues

As detailed in Chapter 4, the total amount of revenues that can be generated is determined largely as a function of two factors: volume (of EUAs available for auction) and price (of the auctioned EUAs on average). Some measures that try to influence one of these two can also influence the other, possibly neutralising or reverting the effect on revenues.

The July 2015 proposal presented by the European Commission for the reform of the system for the fourth trading period is expected to have contradictory effects on the amount of auctioning revenues, but would increase overall compared to the current period up until 2020.

The net increase in ETS auctioning revenues is largely due to the introduction of the MSR (already adopted in co-decision prior to the current reform proposal) and the increase in the Linear Reduction Factor, to implement the ETS share contributing to the EU's 2030 greenhouse gas reduction target. Both measures increase (the perceived) scarcity and thereby drive up the EUA price. At the same time, however, they reduce the number of allowances available for auction – but modelling by market analysts suggest that the volume reduction will be outweighed by the correlating price increase and thus lead to higher net auctioning revenues.

The proposal also introduces changes that have a strong reducing impact on revenues – notably the change in the allocation rules (implementing the guidance from Heads of State and Government from October 2014). Regardless, the modelling suggests that revenues will increase over present circumstances – but without this change, revenues could have been much higher.

There are three main avenues for improving on this proposal (as the starting point of the current deliberations) with regard to auctioning revenues:

a. Changes to the allocation rules
b. Direct intervention in the EUA price
c. Measures to drive up the EUA price by increasing scarcity

A. Allocation rules

The first best option to enhance auctioning revenues on the "volume" side of the equation would be to move towards full auctioning – increasing the volume of EUAs that can contribute to revenue generation from around 57% to 100%. All else being equal (e.g. LRF change as per the Commission's proposal), this would maximise the use of the higher carbon price anticipated to materialise in the fourth trading period.[33] It is also the area in which the Commission's proposal implements changes that are worse than the status quo for revenue generation. Continuing free allocation in the way currently proposed implies lost auction revenue of up to EUR 120 billion over the set of rules foreseen in the last ETS reform in 2009.

While moving directly to full auctioning may seem politically unfeasible at present, adjustments to the allocation rules may be possible (as evidenced by proposals to both reduce and increase the share of auctioning). The modelling done on minor adjustments (including lower auctioning) is, however, inconclusive as to impact on auctioning revenues – contrary to expectations based on conventional wisdom of the revenue equation.

B. Direct price control

Most measures to drive up the carbon price through increased scarcity come with significant uncertainties concerning their impact on auctioning revenues, as many of them reduce auctioning volumes. Direct price control can provide certainty over the increasing effect on revenue generation. Specifically, installing a price floor would provide the guarantee of achieving a minimum level of auction revenue, acting as an insurance against downward price pressures. This option is thus preferable to indirect price control options in this specific context of revenue maximisation. Political support for this previously unexplored (and seemingly taboo) option is clearly growing, as evidenced by support from utilities and plans for a national floor in France. The European Commission has been careful not to be seen supporting direct price control – and the only MS to have implemented a carbon price floor, the UK, has taken itself out of the equation following the Brexit vote. Direct price control is thus a good option but not likely to directly materialise at European level. However, more Member States may decide to establish price floors – irrespective of progress EU wide, and thus start creating greater revenue for themselves and movement towards higher prices EU wide.

C. Increasing scarcity (and increasing price)

Several other proposals are likely to have an increasing effect on revenues by removing substantial additional EUAs from the system, thereby increasing scarcity and the EUA price. A cancellation of surplus allowances from the market (via the MSR) seems to be the most straight-forward and palatable option, as the structural oversupply of the EU ETS is clearly evident and widely accepted to have created problems for the system. It would be preferable for cancellation of surplus allowances to take place at EU level, but also Member States should be able to retain the right to cancel allowances individually (e.g. to avoid the 'waterbed' effect in light of retirement of high-emitting infrastructure).

[33] Except for a possible softening impact on scarcity due to lower demand from industry – if claims from some sectors that moving away from free allocation turns out to be correct and production and thus emissions were to be reduced as a result.

Adjusting the starting point would prevent further surplus from building up and would fall into the same category. Both of these attempts at undoing the structural surplus in the system could be combined with a higher than (Commission) proposed LRF adjustment as a means of increasing scarcity going forward. However, while the latter may be justifiable on the basis of the long-term trajectory towards 2050 implied by this change, the impact on the EU's overall 2030 target (whether this would be increased as a whole or only the division of effort between ETS and non-ETS sectors changed) is less foreseeable and at least on the surface currently politically difficult. Nonetheless, all three options would present a structural improvement with regard to the Commission's proposal (although that proposal in itself already increases scarcity over the status quo due to the reduced cap).

This assessment of the options leads to the conclusion that the most advisable strategy to increase revenues is a **combination of measures to increase the volume of EUAs available for auction and the carbon price**. This could be realised by

- **Reduce the level of free allocation** compared to the Commission proposal - move towards full auctioning as the current ETS Directive intended. A large and *growing* share of the allowances in circulation should be auctioned, rather than given to emitters for free.
- Create more scarcity, and thereby a higher carbon price, by reducing the amount of allowances in circulation with a **higher linear reduction factor** (= more rapidly declining cap), a **lower initial starting point for the cap** (so that its downward trajectory is lower to begin with), and **cancellation of surplus allowances** "stored" in the Market Stability Reserve.
- Implement measures at member state level to support the carbon price signal indirectly through national cancellation of surplus allowances or directly by setting a **carbon price floor** through implementing a minimum auction price.

In what combinations of these the auctioning revenue would be maximised could be a task for future modelling of various scenarios of ETS reform.

5.2. Strengthening use

In addition to finding ways to realise more revenues from the EU ETS to finance mitigation actions, the future system should strengthen how and where the funding is channelled. At present, EU Member States report to be spending 85% of their revenues for climate change purposes (average over the period 2013-2015). Eleven Member States directly earmark their auctioning revenues i.e. they allocate almost all revenues to a specific fund or support programme – the others do not, but still report spending on climate. Usage at the national level varies widely. On average, Member States mainly finance domestic actions (82% of the revenues used for climate actions) in the field of cross-cutting activities (39% of the revenues going to domestic action), renewable energies (32%) and energy efficiency (18%).

In the following we present three options for improving the use of auctioning revenues – they can complement/reinforce each other and are not mutually exclusive.

Option 1: Mandatory earmarking of revenues from auctioning of allowances

Member States have to allocate the revenues to a specific financial instrument, which finances climate mitigation and/or adaption actions. This does not mean that the money is necessarily additional as it could also substitute other finance streams for climate finance. However, in the long run and with an increasing amount of auctioning revenues, the earmarking of auctioning revenues provides a transparent and consistent form of using revenues from carbon pricing for climate finance.

This option is still politically problematic as Member States have budgetary sovereignty and several Member States have publicly voiced their unwillingness to introduce hypothecation. With the UK as a strong opponent somewhat out of the picture, this might become palatable – at least for a certain share of the revenues. A much weaker second best option to making it mandatory would be to put a stronger emphasis on earmarking as best practice into the Directive – as a recommendation to using this method over others. Commission guidance on the use of revenues could further emphasise this in implementation – and enhance transparency through more detail on what happens with revenues at the national level (see also section 5.3 below).

Option 2: Implementation of an EU level fund for climate mitigation and adaptation

Especially if and when mandatory earmarking at the national level should remain elusive, an alternative exists in taking this earmarking to the EU level instead, and prevent the revenues from ever reaching national budgets – and thus not affecting Member States' budgetary sovereignty. This option, implemented through setting aside a specific amount of allowances, would provide a high degree of transparency and general oversight on the use of auctioning revenues at the EU level. This has the advantage of already being established practice, with the current so-called NER300, which will turn into the "Innovation Fund" under the 2015 Commission proposal. And the EU Heads of State and Government agreed on the establishment of a second such set-aside, the Modernisation Fund. Establishing another Fund alongside these two may create additional complexity in the ETS landscape, but would also be by now relatively established practice and not an aberration.

However, this route would come with a whole set of questions to be answered, starting from determining what goals the money should be directed towards to whether there should be rules on the distribution (such as relatively equal shares per Member State) to who would be running its administration – and decide on which applications would be granted financing. Such a Fund could, however, fit well into the post-2020 Multiannual Financial Framework of the Commission. The current one (2014-2020) is committed to channelling 25% to climate purposes already – a figure that should be going up. A set-aside could establish ETS auction revenue as a dedicated income stream to higher EU climate finance – making the connection between the instrument that is cleaning up pollution and investing into sustainable technology with clear local benefits. Such a proposition could have wide public appeal.

Another option could be to very specifically have this fund be intended for international climate finance, as suggested also by several NGOs. This could help the EU as a whole to deliver on its respective commitments under the UNFCCC and the Paris Agreement. Since international climate finance promises have been difficult to live up to, opening up this revenue stream as an independent new source could – and would

A key remaining question would be the amount of allowances that would be set aside for such purposes. Member States may not be enthusiastic about relinquishing income to an EU mechanism – but the existing Funds indicate an acceptance of the principle. The size of the fund(s) would determine the magnitude of the benefits they can create. To contribute to the goals set out in a meaningful way, their size should be adequate to the task. For example a new EU International Climate Action Fund delivering 1% of the USD 100 billion annual commitment by Annex-I countries would need 40-65+ million allowances every year, or 2.5-4% of the average cap. Over the full fourth trading period of ten years, this would likely be larger than the currently foreseen Innovation Fund (around 450 million EUAs).

Option 3: Increase the climate share of auctioning revenues – and make it mandatory

If earmarking at either the national or the EU level should turn out to be difficult or insufficient, a more straight-forward way to increase pressure on Member States to spend the money on climate change actions would be to improve the respective language in the Directive. So far, the text says that Member States should spend at least 50% (or equivalent) of their auctioning revenues on climate change mitigation and adaptation actions. Most of the Member States reported to use already close to 100% of their revenues for climate actions. On average, Member States used 85% over the period 2013-2015. This could be used as an argument to increase the share of auctioning revenues that should be used for climate actions to at least 85% - or go straight to 100%. In addition, this provision (regardless of the level itself) could be made more forceful by replacing “should” with “shall” – thus making the stipulated share for climate mandatory. But even were the formulation in the ETS Directive to remain non-binding, it would serve as a point of reference to the Member States, certainly in their reporting – and a higher percentage would raise the bar for all.

Moreover, while Member States could still be left to decide largely on what aspect of their climate policy they would spend the money to ensure that this meets their respective national needs, current reporting indicates that a lack of attention is being given to using the revenues for meeting commitments to providing international climate finance (under 9% of all revenue). This has been notoriously difficult in the international negotiations (and proved again so in the first post-Paris summit in Marrakesh in November 2016). This indicates the need for a minimum share to be going specifically to international climate action.

Also, activities that may lead to increased emissions (such as compensatory payments for higher electricity prices, but also other direct support for fossil fuel use) should not be allowed to be counted towards the share of the revenues that is spent on climate related purposes – since it may indeed not add to climate change mitigation (or adaptation), even though it is connected to the impacts of a climate policy.

In conclusion, there are several ways of improving on the current state of the EU ETS with regard to provisions on the use of auction revenues – options that the Commission proposal sadly omits.

- **Require that Member States earmark or specifically designate auction revenue to tackle climate action**, rather than placing those funds in their budget and calculating retroactively how much of that budget went toward climate action. Several Member States have already set up mechanism for dedicating the revenues to climate action. This is by far the most-effective way of ensuring transparency of and accountability for

revenue use and making sure it goes to climate related purposes. Member States could still be left to decide on what aspect of their climate policy they would spend the money (domestic or international, and what sub-aspects), to ensure this meets their national needs.

- **Require, rather than suggest, that the vast majority of auction revenue go toward climate action** by changing the wording in the Directive to "shall" rather than "should," and **increasing that required percentage towards 100%**.
- **No activities that can increase emissions** (such as electricity price compensation payments) should be allowed to count as contributing to the share specified for climate related purposes
- **A distinct minimum share** should be formulated for revenues to be spent on **international climate action** (only 9% of currently reported spending).
- To support the EU's ability to deliver on its international climate finance commitments, a central EU level set aside should be created dedicated to this purpose. Such an **EU International Climate Finance Fund** could ensure that a certain guaranteed minimum amount of funding is going towards supporting developing countries in tackling climate change and its impacts. This Fund should be operating in addition to expenditure for this purpose by Member States.

As a fall-back option, to ensure improvement over the current text of the Directive and acknowledging good practice at Member State level right now, **the legislation should increase the use of funding for climate purposes and make this mandatory**.

5.3. Better information

The analysis of the data reported by Member States shows that it has significant room for improvement. In principle, the current reporting template already provides a good basis for comparable reporting of the EU Member States. However, more than half of the submitted reports include inconsistent, incomprehensible and/or intransparent information (see Chapter 3.1). The specific insights gained from the deep dive into the reports leads to the following distinct recommendations to improve the reporting done by Member States:

1) There are problems arising from **inconsistencies** that if solved could increase comparability and comprehension of the reporting. This includes e.g. the use of exchange rates and inconsistencies between the different tables. For this, a more enhanced template with input fields and underlying calculations and value checks could help the Member States to submit consistent reporting. Input fields could e.g. ask for the exchange rate as a quotient of the average of Euros earned at the exchange and the amount transferred to the bank account in local currency. Alternatively, Member States could use the same standardised source, such as the European Commission's exchange rate calculator[34]. All national programmes and projects could then be reported in the local currency and be automatically converted to EUR using the

[34] One such resource is available online at calculator for consistency purposes: http://ec.europa.eu/budget/contracts_grants/info_contracts/inforeuro/index_en.cfm

same exchange rate. Checking of input data in the different tables[35] (tables 2-5) should in the best case always add up to the summary table 1. Where numbers don't add up, the template could provide an error indication asking for corrections or for an explanation for why the error occurred. The template would thus leave enough room for Member States to report on their specific circumstances while also making clear that there seems to be an error in the reported values that requires justification. This could also lead to more details on domestic and international actions as for example an error would occur if a Member State reports to have spent revenues on international climate action (e.g. in table 3) while there are no further details provided in the following tables 4 and/or 5.

2) The definition and reporting on **committed and disbursed values** varies between the Member States. This could be solved by providing a definition, which explains that e.g. committed values include *or* exclude the disbursed amount. The template could be improved by including a column for both the committed value and the disbursed value. One could even think about including a column for money committed in previous years for the respective programme (see also "carry over" in next paragraph).

3) The reporting on **carry over** seems quite problematic. In general one would assume that all money committed but not disbursed e.g. in 2014 would have to be carried over to 2015. The amount carried over and reported in 2015 would in this case be the difference between the disbursed value and the committed value in 2014. For most of the Member States reporting this is not the case. In addition, the amount carried over from 2014 to 2015 would also have to show up as committed (if committed is defined as this) and probably as disbursed value. This is also currently mostly not the case. Thus, it might be a good first step to come to an easy definition of carry over and how it should be included in the reporting template. For example, the template could include the carry-over in its checks and provide a calculation of the carry over for the next year's reporting. The tables on the specific programmes and projects (e.g. table 2 on domestic actions) should include a column to include the transferred values from previous years (see recommendation 2) on "committed and disbursed values") or maybe an online system could provide this automatically.

4) For more transparency the reporting template could ask specifically if revenues are **earmarked** and through which financial instrument, including its legal basis. Ideally, the Member State would also provide a description of the specific financial instrument and its general support areas. The description of projects and programmes for domestic actions in table 2 (of the template) could then focus on the specific areas where the money was spent and provide detail per area. Any expenditure on actions that do not contribute to mitigation or adaptation (e.g. the German example of including the compensation payments for indirect CO_2 cost) should be reported separately (to allow for the transparency of publishing the specific amounts) – and rather than being included in the climate related expenditure, be deducted and excluded.

In this regard, California's procedures around revenue use could offer some examples applicable to EU Member States: in consultation with other agencies, the state's Finance Department draws up a spending plan for ETS auction proceeds that covers three year periods

[35] Table 1 asks for revenues generated from auctioning, the amount spent on climate mitigation actions and carry-over from previous years; Table 2 contains information on domestic actions; Table 3 contains overall amounts spent on international actions; Table 4 asks for information on international support provided through multilateral channels and Table 5 asks for information on bilateral or regional support (see also Chapter 0).

(currently 2016-2018), must undergo public consultation, and must be approved by the state legislature. The plan is required to include a “gap analysis” to show which emission reduction policies or programs are not already receiving financial support from other sources, as well as identification of “priority investments” that facilitate in-state greenhouse gas reductions most effectively in terms of cost per tonne reduced (Taylor, 2016). Following such procedures at the Member State level could provide increased transparency when it comes to auction revenue use in the EU.

5) There are already assessments of the Member States’ reports carried out by the Commission but there seem to be no **requests for updating or improving the reports** if information is contradictory or missing (otherwise there might not be such a large number of not entirely correct or complete reports). However, this would be a good option to improve reporting not only for the respective year but also for coming years as reports are similar over the years for most of the Member States – thus enhancing overall transparency on ETS auctioning revenue use. In addition, overview reports and the underlying data (in a corrected state) should be made available in an easily accessible and public fashion.

In conclusion, there are several very specific technical adjustments that should be made to enhance the quality of the data generated by Member States under their reporting obligation. These can be distilled into the following main points:

- **Improve the reporting template** Member States are given by including more input fields, more standardising features, and more guidelines for entering.
- **Provide specific detail and additional information**, including on: details on any earmarking, the committed and the disbursed value, past funding, individual programmes funded and their main purpose.
- **Install a quality review** of the annual reports to ensure transparency, consistency and completeness of reporting.
- Publish data regularly in a transparent fashion to empower stakeholders to verify national spending.

6. Literature

Auctioning Regulation: Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community

Barnes (2008): Cap and Dividend, Not Trade: Making Polluters Pay. Scientific American, December 1, 2008. Online available at: http://www.scientificamerican.com/article/cap-and-divident-not-trade/

Burtraw (2014): Fixing Emissions Trading Imbalances with a Price Floor. Blog post at Resources For The Future. Online available at: http://www.rff.org/blog/2014/fixing-emissions-trading-imbalances-price-floor

Burtraw and Parry (2011). Options for Returning the Value of CO2 Emissions Allowances to Households. Resources for the Future discussion paper. Online available at: http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-11-03.pdf

CAN Europe (2014): Position on the Market Stability Reserve. CAN Europe, October 2014. Available at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/can_europe_position_msr_30_10_2014.pdf

CAN Europe (2016): CAN Europe's position on the post-2020 ETS reform, April 2016 (updated October). Online available at: http://www.caneurope.org/docman/emissions-trading-scheme/2832-can-europe-ets-reform-position-april-2016

CAN Europe (2016b): Increasing environmental ambition in the EU Emissions Trading Scheme: a review of amendments in the ENVI committee. 10 November 2016, Online available at: http://www.caneurope.org/docman/emissions-trading-scheme/3013-can-europe-briefing-envi-amendments-10-11-2016/file

Carbon Market Watch (2015): "EU ETS review proposal earmarks €160 billion for Europe's largest polluters." Online media statement available at: http://carbonmarketwatch.org/media-statement-eu-ets-review-proposal-earmarks-e160-billion-for-europes-largest-polluters/

Carbon Market Watch (2014): "What's needed to fix the EU's carbon market Recommendations for the Market Stability Reserve and future ETS reform proposals." Carbon Market Watch Policy Briefing, July 2014. Online available at: http://carbonmarketwatch.org/wp-content/uploads/2014/07/ETS-POLICY-BRIEF-JULY-2014_final_1.pdf

CEMBUREAU (European Cement Industry Association) (2016): EU-ETS phase IV from a cement industry perspective. Eurobrief, April 2016. Online available at: http://www.cembureau.eu/newsroom/article/eu-ets-phase-iv-cement-industry-perspective

CEZ et al. (undated): Electricity sector wake up call on ETS. Online available at: http://www.politico.eu/wp-content/uploads/2016/06/ETS-electric-sector-wake-up-call-.-final-f.pdf

Change Partnership (2016): Reducing the EU ETS Surplus: The new deal between manufacturing industry and the climate. Online available at: http://www.changepartnership.org/wp-content/uploads/2016/06/160622-Reducing-the-ETS-surplus-FINAL.pdf

COM (2011): Impact assessment of the European Commission's "Roadmap for moving to a competitive low carbon economy in 2050. Staff Working Document, Accompanying Document to the Communication "A Roadmap for moving to a competitive low carbon economy in 2050", SEC(2011) 289 final. Online available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011SC0288&from=EN

COM (2012): Proportionate impact assessment accompanying the document Commission Regulation (EU) No .../.. of XXX amending Regulation (EU) No 1031/2010 in particular to determine the volumes of greenhouse gas emission allowances to be auctioned in 2013-2020. Online available at: http://ec.europa.eu/clima/policies/ets/auctioning/docs/swd_2012_xx2_en.pdf

COM (2014): Annex to the report from the Commission to the European Parliament and the Council progress towards achieving the Kyoto and EU 2020 Objectives (required under Article 21 of Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC). SWD(2014) 336 final. Brussels, 28.10.2014. Online available at: http://ec.europa.eu/transparency/regdoc/rep/1/2014/EN/1-2014-689-EN-F1-1-ANNEX-1.Pdf

COM (2015a): European Commission 2015. Impact assessment accompanying the document: Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments. SWD(2015) 135. Online available at: http://ec.europa.eu/clima/policies/ets/revision/docs/impact_assessment_en.pdf

COM (2015b): European Commission 2015. Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments" - COM/2015/0337. Online available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0337

COM (2015c): Technical Information to the Climate Action Progress Report accompanying the document Report from the Commission to the European Parliament and the Council Climate action progress report, including the report on the functioning of the European carbon market and the report on the review of Directive 2009/31/EC on the geological storage of carbon dioxide (required under Article 21 of Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC, under Article 10(5) and Article 21(2) of the Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC and under Article 38 of Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide). SWD(2015) 246 final. Brussels, 18.11.2015. Online available at: http://ec.europa.eu/clima/policies/strategies/progress/docs/swd_2015_246_en.pdf

COM (2015d): Detailed questions and answers on the proposal to revise the EU emissions trading system. Online available at: http://ec.europa.eu/clima/policies/ets/revision/docs/detailed_qa_en.pdf

COM (2016a): Auctioning of allowances. Website of DG CLIMA on the EU ETS. Online available at: http://ec.europa.eu/clima/policies/ets/

COM (2016b): Auctioning: FAQ. Website of DG CLIMA on the EU ETS. Online available at: http://ec.europa.eu/clima/policies/ets/auctioning/faq_en.htm

COM (2016c): Auctions by the Transitional Common Auction Platform. Monthly reports. Online available at: http://ec.europa.eu/clima/policies/ets/auctioning/documentation_en.htm

Committee on Development (2016): Opinion (Reporter: Jodi Sebastià) of the Committee on Development for the Committee on the Environment, Public Health and Food Safety on the proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments (COM(2015)0337–C8-0190/2015–2015/0148(COD)). 14.7.2016. Online available at: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-578.845%2b02%2bDOC%2bPDF%2bV0%2f%2fEN

Committee on Industry, Research and Energy (2016): Opinion (Reporter Fredrick Federley) on Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments. Adopted October 11, 2016. Online available at: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-582.103%2b04%2bDOC%2bPDF%2bV0%2f%2fEN

Committee of the Regions (2016): Committee of the Regions opinion (Rapporteur Marco Dus) on Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments. Adopted April 7, 2016. Online available at: https://toad.cor.europa.eu/corwipdetail.aspx?folderpath=ENVE-VI/007&id=23706

CPLC (Carbon Pricing Leadership Coalition) (2016): “What are the Options for Using Carbon Pricing Revenues?” CPLC Executive Briefing, September 2016. Online available at: http://pubdocs.worldbank.org/en/668851474296920877/CPLC-Use-of-Revenues-Executive-Brief-09-2016.pdf

DECC (UK Department of Energy & Climate Change) (2014): UK Vision for Phase IV of the EU ETS. Crown Copyright, 14 July 2014. Page 7. Online available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/329841/EU_ETS_vision_for_phase_IV_final_version.pdf

DECC (2015): Energy and Climate Change Committee - First Special Report; Linking emissions trading systems: Appendix: Government response. Online available at: www.publications.parliament.uk/pa/cm201516/cmselect/cmenergy/376/37604.htm

DG CLIMA (2016): Directorate-General for Climate Action of the European Commission: Use of international credits in EU ETS after 2020. Website of DG CLIMA on the EU ETS. Online available at: http://ec.europa.eu/clima/policies/ets/credits/index_en.htm

Dilba et al. (2015): Climate's infants terribles. Online available at: http://bankwatch.org/enfants-terribles

Edenhofer and Knopf (2014): Save the EU Emissions Trading Scheme: set a price band. Energy Post online, 21 October 2014. Online available at: http://www.energypost.eu/eu-emissions-trading-scheme-can-saved-price-band/

Edenhofer et al. (2014): Reform Options for the European Emissions Trading System. European Council of Academies of Applied Sciences, Technologies and Engineering. Online available at: http://www.euro-case.org/images/stories/pdf/position-paper/Euro-CASE-policy-paper-ETS-reform.pdf

EEX (2016a): EEX Market Data on EU Emission Allowances: Primary Market Auction and Secondary Market. Accessed: 19.08.2016. Online available at: https://www.eex.com/en/market-data/emission-allowances/

EEX (2016b): market data chart generating tool. Online available at: https://www.eex.com/en/market-data/environmental-markets/spot-market/european-emission-allowances#!/2016/10/07

EIONET (2016): Deliveries for Use of auctioning revenue and project credits. Online available at: http://rod.eionet.europa.eu/obligations/698/deliveries

Esch (2013): Using EU ETS Auctioning Revenues For Climate Action. What Is The Appetite For Earmarking Within Specific EU Member States? Germanwatch.

ETS Directive: Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. Online available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02003L0087-20140430&from=EN.

EU Council (2008): Council of the European Union final compromise regarding the energy and climate change package. Brussels, 12 December2008; 17215/08.

Eurogas (2016): “Eurogas President Klaus Schäfer urges European Parliament and Council to make the ETS work.” Brussels: 26 October 2016. Online available at: http://www.eurogas.org/uploads/media/Eurogas_Press_release_-_Eurogas_President_urges_European_Parliament_and_Council_to_make_the_ETS_work.pdf

European Council (2014): Council conclusions from meeting 23 and 24 October 2014. EUCO 169/14. Online available at: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf

European Council (2016): General Secretariat document 10237/16, non-paper from Sweden. Online available at: http://data.consilium.europa.eu/doc/document/ST-10237-2016-INIT/en/pdf

European Trade Union Confederation (2015): Position on the structural reform of the EU Emissions Trading System. Online available at: https://www.etuc.org/sites/www.etuc.org/files/document/files/etuc_position_ets_en.docx_1.pdf

Fortum (2016) EU's Climate Ambition To Be Aligned With The Paris Agreement - Fortnum’s position on the development of the EU climate Policy. Online available at: http://www.fortum.com/SiteCollectionDocuments/Public_affairs/160209%20Fortum%20position_EU%20climate%20policy%20after%20Paris.pdf

Garside (2016): UK Treasury mulling next move for divisive carbon price floor. Carbon-Pulse. 25 January 2016. Online available at: http://carbon-pulse.com/14664/

Hermann and Graichen (2012): The Cost of Inaction - Auctioning revenues under different climate ambition scenarios for the EU Emissions Trading Scheme. Report by Öko-Institut, November 2012. Online available at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/oko_institut__2012____the_cost_of_inaction___auctioning_revenues.pdf

Holt and Shobe (2015): Stabilizing Emissions Allowance Prices - An Experimental Analysis of the EU ETS Market Stability Reserve. RFF Discussion Paper, June 2015. Online available at: http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-15-29.pdf

I4CE (2015): Exploring the EU ETS beyond 2020. A first assessment of the EU Commission’s proposal for Phase IV of the EU ETS (2021-2030). Online available at: http://www.i4ce.org/wp-core/wp-content/uploads/2015/11/15-11-30-COPEC-FULL-REPORT.pdf

ICE (2016): Intercontinental Exchange (ICE) futures Europe EUA futures. Online available at: https://www.theice.com/products/197/EUA-Futures/data

IEA (2016): Energy Policies of IEA countries: Portugal. 2016 review. Online available at: https://www.iea.org/publications/freepublications/publication/Energy_Policies_of_IEA_Countries_Portugal_2016_Review.pdf

Jouvet and Rotillon (2005): Optimal growth with pollution: how to use pollution permits? Journal of Economic Dynamics and Control, Volume 29, Issue 9, September 2005, Pages 1597–1609
and Cramton and Kerr, 1998. Tradable Carbon Permit Auctions: How and Why to Auction Not Grandfather. Resources For The Future Discussion Paper 98-34, May 1998 Pages 9-15. Online available at: www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-98-34.pdf

Keohane and Olmstead (2016): Markets and the Environment. Washington DC: Island Press.

Manasvini (2015): Presentation “Recycling EU ETS carbon revenues for further emissions reductions.” Institute for Climate Economics. Paris, 9 November 2015. Online available at: http://www.i4ce.org/wp-

core/wp-content/uploads/2015/11/15-11-09-Session-1_VAIDYULA_EU-ETS-auction-revenus-experience1.pdf

MEEM (2016) Non Paper – A soft price collar for the European carbon market Online available at: http://www.developpement-durable.gouv.fr/IMG/pdf/0199_Non_paper_FR_soft_price_collar_EU_ETS.pdf

Milgrom (2004): Putting Auction Theory to Work. Cambridge University Press, Cambridge

MSR Decision: Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC". Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2015.264.01.0001.01.ENG

Müller (2008): To Earmark or Not to Earmark? A far-reaching debate on the use of auction revenue from (EU) Emissions Trading. Oxford Institute for Energy Studies EV 43. November 2008

Neuhoff (2007): Auctions for CO2 allowances – a straw man proposal. Climate Strategies Policy Paper, May 2007. Online available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.383.8452&rep=rep1&type=pdf

Oxfam International (2015): The EU's emission trading scheme as a source of international climate finance. Online available at: http://oxf.am/ZAXk

PMR and ICAP (2016): Partnership for Market Readiness; International Carbon Action Partnership. 2016. Emissions Trading in Practice : A Handbook on Design and Implementation. World Bank, Washington, DC. World Bank. Online available at: https://openknowledge.worldbank.org/handle/10986/23874 License: CC BY 3.0 IGO.

Roques, Fabien; Grand, Emmanuel; Duquesne, Guillaume; le Thieis, Yves (FTI Consulting) (2016) Wake up! Reforming the EU European Emissions Trading Scheme (ETS) – Evaluation of the different options for reform - Executive Summary. Available online at: http://www.fticonsulting.com/fti-intelligence/energy/research/carbon/wake-up-reforming-the-eu-ets *AND* Launch event presentation, online available at: http://www.fticonsulting.com/~/media/Files/us-files/intelligence/intelligence-research/wake-up-launch-event-2016-presentation.pdf

Sandbag (2015): The easy route to increased EU climate ambition. Morris (Author), Sandbag report, August 2015. Page 11. Online available at: https://sandbag.org.uk/site_media/pdfs/reports/Harder_better_faster_stronger_-_The_easy_route_to_increased_EU_climate_ambition_2.pdf

Schleicher et al. (2015): Scanning the Options for a Structural Reform of the EU Emissions Trading System, CEPS Special Report No. 107, May 2015, p.34.

Schjølset (2014): The MSR - Impact on market balance and prices. Presentation to DG-Clima. Online available at: http://ec.europa.eu/clima/events/docs/0094/thomson_reuters_point_carbon_en.pdf

Taylor (2016): Cap-and-Trade Revenues: Strategies to Promote Legislative Priorities. California Legislative Analyst's Office. LAO report January 21, 2016. Online available at: http://www.lao.ca.gov/reports/2016/3328/cap-trade-revenues-012116.pdf

The Shift Project (2016): Dinguirard, 2016: Strengthening the EU ETS price signal. The Shift Project position paper, Paris, April 2016. Online available at: http://www.theshiftproject.org/sites/default/files/files/the_shift_project_eu_ets_auction_reserve_price_20163_0.pdf

UNFCCC (2015): Decision of the Conference of the Parties to the United Nations Framework Convention on Climate Change, 1/CP.21,, UN Doc. FCCC/CP/2015/10, Add,1.

Wood and Jotzo (2011): Price floors for emissions trading. Energy Policy 39, 1746–1753.

WWF Deutschland (2015): Letzte Chance für den Emissionshandel. Position paper. Online available at: https://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/WWF-Positionspapier-Letzte-Chance-fuer-den-Emissionshandel.pdf

7. Index

Figures

Tables

Box

Annex: Allocation of auctioning revenues per Member State

Table 10: Underlying data for Figure 4: Allocation of the EU ETS auctioning revenues over the period 2013-2015 as reported by Member States

	Share of total revenues used for climate action	Revenues used for domestic action as a share of the sum of revenues for domestic and international action
AT	90%	85%
BE	n.a.	n.a.
BG	91%	100%
CZ	85%	100%
CY	133%	100%
DE	100%	92%
DK	100%	50%
EE	50%	97%
ES	95%	100%
FI	57%	0%
FR	100%	100%
EL	100%	100%
HR	89%	100%
HU	36%	95%
IE	100%	66%
IT	47%	54%
LT	100%	99%
LU	53%	60%
LV	100%	100%
NL	100%	n.a.
MT	141%	100%
PL	52%	100%
PT	92%	93%
RO	92%	100%
SE	88%	50%
SK	100%	100%
SI	71%	100%
UK	100%	81%
EU	85%	

Source: own calculation based on EIONET (2016); calculation excludes the amount spent on climate action but without specification if spent on domestic or international action.

Table 11: Share of revenues for climate action spent on domestic and international action and share not specified

	Share of revenues for climate action spent on domestic action	Share of revenues for climate action spent on international action	Share of revenues for climate action: not specified
AT	87%	15%	0%
BE	n.a.	n.a.	n.a.
BG	100%	0%	0%
CZ	100%	0%	0%
CY	68%	0%	39%
DE	110%	9%	0%
DK	50%	50%	0%
EE	89%	3%	0%
ES	104%	0%	0%
FI	0%	26%	33%
FR	100%	0%	0%
EL	100%	0%	0%
HR	75%	0%	25%
HU	95%	5%	0%
IE	57%	29%	0%
IT	54%	46%	0%
LT	99%	1%	0%
LU	45%	30%	33%
LV	100%	0%	0%
NL	n.a.	n.a.	100%
MT	100%	0%	0%
PL	100%	0%	0%
PT	96%	7%	0%
RO	52%	0%	36%
SE	32%	31%	31%
SK	100%	0%	0%
SI	70%	0%	16%
UK	81%	19%	0%
EU	87%	11%	8%

Source: own calculation based on EIONET (2016); Shares do not add up to 100% for all countries due to inconsistencies in the reporting (see Table 3).

Annex: Country Sheets

Ecologic Institute

Matthias Duwe
Head, Climate
Ecologic Institute
Pfalzburger Straße 43/44
10717 Berlin
E-Mail: Matthias.duwe@ecologic.eu

Eike Karola Velten
Fellow, Climate and Energy
Ecologic Institute
Pfalzburger Straße 43/44
10717 Berlin
E-Mail: eike.velten@ecologic.eu

WWF European Policy Office

Imke Lübbeke
Project Director - MaxiMiseR
Head of Climate and Energy Unit
WWF- European Policy Office
iluebbeke@wwf.eu
+32 2 743 88 18
Website: www.maximiser.eu
Twitter: @MaxiMiseREU

Jane Wallace-Jones
Project Manager - MaxiMiseR
WWF European Policy Office
maximiser@wwf.eu
Website: www.maximiser.eu
Twitter: @MaxiMiseREU

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More information about the project can be found at www.maximiser.eu

The EU and other industrialised countries have pledged to cut greenhouse gas emissions by at least 40% by 2030, and by 80-95% by 2050. EU Member States must produce 'Low Carbon Development Strategies' (LCDS) to show how they will do so. Ensuring that these LDCS are ambitious and of a high quality, and are developed in a participative, transparent manner is key to meeting the EU's emissions reductions goals. Helping this to happen is the aim of the MaxiMiseR project. www.maximiser.eu

The Ecologic Institute conducts inter- and transdisciplinary environmental research. The experts at Ecologic Institute also prepare political analyses and function as consultants. Ecologic Institute operates branches in Berlin, Brussels and Washington DC. In its role as a private, independent organization, Ecologic Institute is dedicated to the preparation of relevant sociopolitical aspects of sustainability research and contributing new knowledge to environmental policy. Innovative research methods, an orientation on practice and a transdisciplinary approach ensure scientific excellent and social relevance. The work done at Ecologic Institute covers the spectrum of environmental topics and includes the integration of environment-related issues into other political spheres. www.ecologic.eu

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.
The WWF European Policy Office The European Policy Office contributes to the achievement of WWF's global mission by leading the WWF network to shape EU policies impacting on the European and global environment. www.wwf.eu

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