

THE EU ETS AND LOW-CARBON FUNDING MECHANISMS

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KEY MESSAGES

- **Financing the transition to a low carbon economy** - Finance is one of the key issues that must be addressed to ensure that emissions reduction targets, which limit global warming to 2°C, are met. One of the main results of the January 2014 Impact Assessment is that the cost of the energy system will rise from 12.8% of GDP in 2010 to 14% in 2030.
- **Funding mechanisms in the proposal for a revised EU ETS directive** - The European Commission have defined funding mechanisms to transform and modernize the EU energy system. Some of these mechanisms have been based on previous designs with minor adjustments while others are new: transitional free allocation, the Modernisation Fund, the Innovation Fund, auction revenues, auctioned allowances for solidarity amongst Member States.
- **Auctioning revenue forecasts in Phase IV** - According to the Institute for Climate Economics' research, Member States will auction close to 15 billion EUAs from 2013 to 2030 (EU ETS Phase III and IV). In its Phase III, the EU ETS generated auction revenues worth €74.12 billion. Assuming a gradually increasing carbon price, revenues could total between €230-320 billion from 2015 to 2030. This is roughly equivalent to the energy investment gap (€313 billion between 2014-2035) to shift from the EU New Policies Scenario to an EU 2°C scenario. The scale of these revenues has the potential to contribute to the necessary low-carbon transition in an effective manner. Can we expect Member States to use auctioning revenues differently post 2020? While some provisions have been added to strengthen the proposal of the revised EU ETS directive, these provisions have limited legal force.
- **Use of auction revenues in Phase III** - Based on public information and on an Institute for Climate Economics survey amongst Member States, in 2013 and in 2014, direct spending of auction revenues have largely funded domestic mitigation actions: primarily for small-and medium-scale projects using mature technologies in the areas of renewable energy (38%) and energy efficiency (25%). A small proportion has been spent on climate action in developing countries and an even smaller share on adaptation efforts.
- **North American revenue spending experiences** - ETS Programs implemented in North America i.e. California, Québec and RGGI provide interesting case studies when examining the use of auctioning revenues and could offer useful insight to European Member States. California and Québec have developed detailed, customized, multi-annual investment plans that focus on long-term, low-carbon infrastructural investment, particularly on heavily emitting sectors. Inclusion of social criteria in decision-making channels investment to groups vulnerable to the low-carbon transition.

a. This chapter on the EU ETS low-carbon funding mechanisms is based on analysis developed in the workshop of the COPEC research program organized on 24th September 2015. The authors would like to thank the participants of the COPEC workshop for their feedback and Godefroy GROSJEAN (Potsdam Institute for Climate Impact Research (PIK)) and Christian FLACHSLAND (Mercator Research Institute on Global Commons and Climate Change (MCC)) for sharing their insight on the topic of utilisation of EU ETS auction revenues.

Financing the transition to a low-carbon economy will be one of the key issues in ensuring that emission reduction targets are met, and that global warming is limited to 2°C. In this chapter, section 1 identifies challenges to transitioning to a low-carbon economy on an EU level, the importance of finance to achieve this transition, and some funding mechanisms that can help facilitate this shift, that are derived from the EU ETS. Section 2 examines the usage of ETS revenues accrued by Member States, particularly which sectors benefit from the revenues allocated and pinpoints some lessons that can be learned from Member States' decision-making. Lastly, section 3 focuses on the experiences of ETS revenue spending models in North America (California, RGGI and Québec) and leverages some of their best practices to provide recommendations that could improve the potential of Member States' EU ETS revenues as a financing mechanism to support the low-carbon transition.

1. LOW-CARBON FINANCING IN THE EU COMMISSION'S PROPOSAL FOR A REVISED EU ETS DIRECTIVE BY 2030

Challenges to financing the EU low-carbon transition by 2030

The European Union's low-carbon pathway was unveiled in the 2050 roadmap¹ in March 2011 wherein milestones for achieving 80-95% emissions reductions by 2050 are defined. In order to achieve the proposed GHG emissions target by 2030², according to the 2030 Energy and Climate Communication Impact Assessment (January 2014)³, significant investments will be needed before 2050 to transform and modernise the energy system. In particular:

- Total investment in clean and energy-efficient technology would require an investment of €270 billion over the period 2010-2050.⁴
- Full implementation of the Strategic Energy Technology plan^b could require additional investment of €50 billion over the 2011-2020 period. It highlights the use of auction revenues and cohesive policies as instruments that could be used to achieve this transition.⁵

One of the main results from the Impact Assessment (January 2014) is that the cost of the energy system will rise in both the Reference and GHG 40 scenarios, from 12.8% of GDP in 2013 to 14.3% in 2030. Differences between the costs incurred in these two scenarios are not significantly different. This is largely due to ageing energy infrastructure which will need to be replaced during this timeframe. However, in the case of higher renewable and energy efficiency targets, the annual costs of the energy system would increase by nearly €0.4 billion (between the Reference and GHG40, EE30/RES30 scenarios) between 2011-2050, as described by Table 1.

Overall, the macroeconomic impact of different targets depends on the assumptions made in terms of carbon revenues recycling. In the context of revenue recycling to consumers, and with both ambitious energy efficiency and renewable targets, the E3ME model⁶ outlines an increase in employment with 568,000 jobs in 2030 compared to the GHG40 scenario. Another model (GEM E-3), focusing on employment related to investments in the power sector and energy efficiency, estimates an increase of 219,000 jobs in the GHG40 scenario compared to the reference scenario in 2030, and 83,000 additional jobs in the case of the GHG40/EE/RES30 scenario compared to the GHG40 scenario. Comparatively, more ambitious targets can yield higher GDP growth in the long run. As a result, more ambitious targets concerning energy efficiency and renewable energy give rise to substantial macro-economic benefits in the long term, while less ambitious targets are cheaper in the short-to-medium term. The Impact Assessment study outlines that choosing EE and RES targets encourage policy makers to find the right balance between these two facets.

In consequence, the issue of financing the low-carbon transition is deeply complex, as it involves an array of sectors and a multitude Member States. Nevertheless, careful financial planning for future investments is of paramount importance to ensuring an achievable and cost effective sustainable development pathway in the EU.

However, serious considerations for the following issues will need to be accommodated in future planning to achieve an EU-wide low carbon future:

b. The SET-Plan, adopted by the European Union in 2008, aims at establishing an energy technology policy for Europe. It is the principal decision-making support tool for European energy policy. The SET-Plan has two major timelines: for 2020, the SET-Plan provides a framework to accelerate the development and deployment of cost-effective, low-carbon technologies in line with the 2020 energy and climate package; for 2050, the SET-Plan is targeted at limiting climate change to a global temperature rise of no more than 2°C, in particular by matching the vision to reduce EU greenhouse gas emissions by 80-95%.

Table 1 - Comparison of Reference scenario and concrete EE measures scenario.

| Indicators | Reference Scenario | | GHG40/EE/RES30 Scenario | |
|--|--------------------|--------------|-------------------------|--------------|
| | 2030 | 2050 | 2030 | 2050 |
| Total system costs in bn €'10 (annual average 2011-30/2031-50) | 2,067 | 2,520 | 2,089 | 2,891 |
| Total system costs as % of GDP (annual average 2011-30/2031-50) | 14.30 | 13.03 | 14.45 | 14.95 |
| Total system costs as % in 2030/2050 (2010 value: 12.76%) | 14.03 | 12.30 | 14.56 | 15.35 |
| Investment expenditures in bn €'10 in Reference and change compared to Reference (average annual 2011-30/2031-50) | 816 | 949 | 63 | 384 |
| Industry | 19 | 30 | 18 | 122 |
| Residential and Tertiary | 50 | 38 | 34 | 183 |
| Transport | 660 | 782 | 2 | 59 |
| Grid | 37 | 41 | 3 | 6 |
| Generation and boilers | 50 | 59 | 5 | 13 |

Note: 'Reference' refers to a scenario with no additional climate and energy policies relative to the trajectory of the 2020 objectives; 'GHG40' refers to the scenario with a 40% GHG target, 'RES30' refers to the scenario with a 30% EU-level renewable energy target in the final energy consumption. 'EE' indicates the presence of explicit energy efficiency policies (at various levels of ambition) in the scenario, whereas the absence of EE means that the scenario does not include such energy efficiency policies but are based on "carbon values" providing a price signal driving GHG reductions (also achieving higher levels of energy efficiency improvements or RES deployment than Reference).

Source: I4CE – Institute for Climate Economics, based on EU Impact Assessment of "A policy framework for climate and energy in the period from 2020 up to 2030", January 2014.

- **Present EU policies are insufficient to reach long-term climate goals** (in the context reducing 80-95% of emissions by 2050, relative to 1990 levels). On comparing the needs between the reference conditions (that will not produce required emissions reductions)⁷ and enabling conditions (that will produce required emissions reductions), and despite ongoing investment, more funding will need to be channeled into energy efficiency and RES to meet 2°C scenario conditions. Furthermore, current policy initiatives and regulatory frameworks are insufficient in creating assurances for the post-2020 period that would encourage greater levels of investment. Careful policy planning to develop an overall low-carbon strategy and create credible and complementary investment signals to promote low-carbon technology investment needs to be undertaken.⁸
- **Due to the long investment cycles of energy infrastructure and technological transitions** in industrial and building sectors, investment decisions taken now will have far-reaching effects beyond 2030. In view of this, a strong policy framework that fosters positive investment signals is essential throughout the planning period. Part of this investment shift has already begun materialise since the 2013 EU Reference scenario. However, the projected energy roadmap scenarios indicate that a much larger shift is needed. In view of current policies, a relatively low EUA

carbon price, a surplus of allowances, and increasing debate over the inclusion of non-ETS sectors, the current investment climate evokes a level of uncertainty that could delay necessary investments. Delaying the necessary investment that could transform current infrastructure to be more energy efficient and less carbon intensive can lead to larger investment costs in the future. Some of these risks can be mitigated by the current MSR control process and by the projected increase in EUA prices towards 2030. However, the carbon price signal is still too low to encourage development of non-mature technologies such as Carbon Capture and Storage (CCS).⁹ This could mean that they remain less attractive to investors and will stay underdeveloped in the short and medium-term.

- **Planning investments for an effective transition should take into account an increase in energy costs and facilitate access to affordable energy especially to vulnerable groups.** Over the 2010-2030 period, average electricity prices are on an upward trend (increasing till 2020 and then stabilising), and are projected to increase by 31%, from €131/MWh to €172/MWh. If the increase in energy prices are not matched by the same level of fuel savings (through energy efficiency investments), costs will effectively be passed through to households and installations, and could have negative impacts on vulnerable groups in both divisions.

To summarise, it is in the interest of the European Union to establish a long term climate policy framework that can facilitate a positive investment climate that incentivizes investments in renewable and energy-efficiency infrastructure. At the same time, these policies must account for vulnerable groups and other potential conflicts in the redistribution of carbon revenues. Based on the 2030 energy and climate framework Impact Assessment current policies will be insufficient at catalyzing the necessary energy shift required to limit warming to 2°C. Current policies fall short of meeting the level of investment required to achieve the necessary emissions reductions. While the 2050 roadmap provides key pathways and options that can facilitate a practical transition, an appropriate climate policy framework that is compatible with the 2050 goals needs to be put in place to overcome the potential for shortfalls.¹⁰

Low-carbon technology funding mechanisms at the EU level

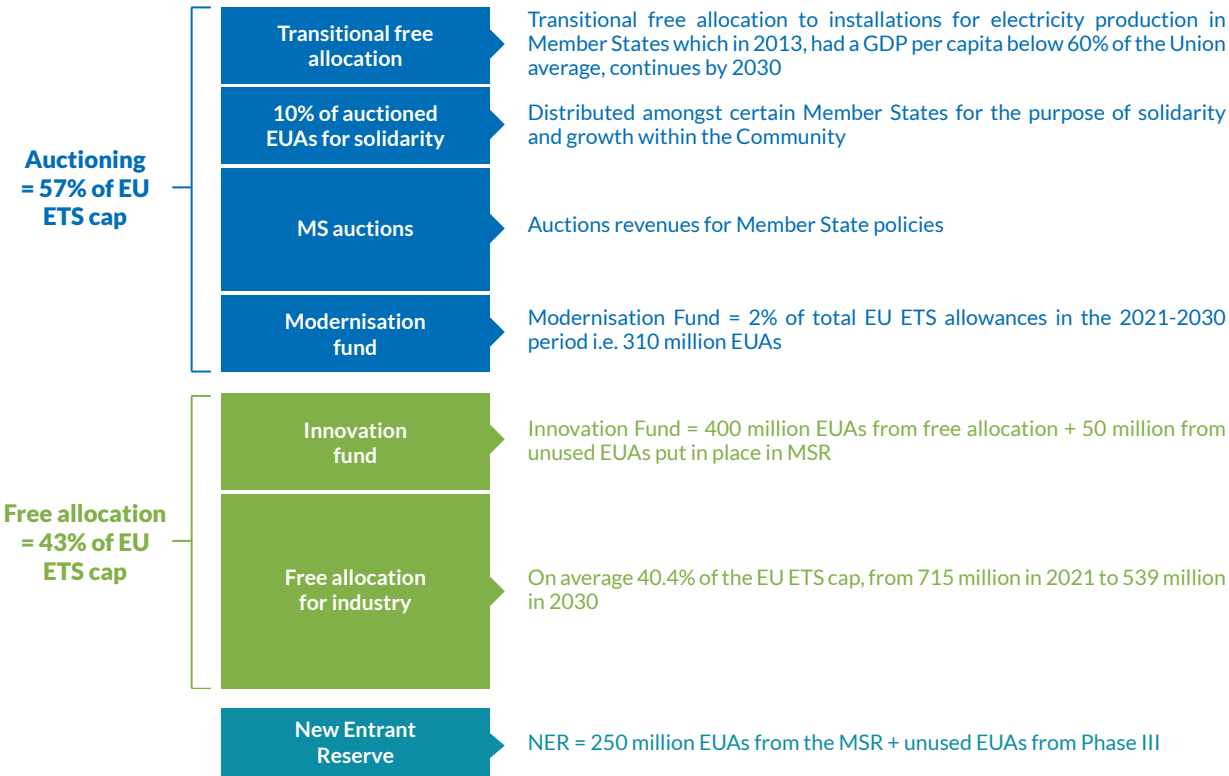
In the proposal for a revised EU ETS directive,¹¹ the European Commission defines new funding mechanisms based on previous mechanisms supplemented with some new arrangements.

The (re)designed Innovation Fund

The Innovation Fund¹² is an extension of the NER 300 fund, as described by the October 2014 EU Council, and promotes “innovation in low-carbon industrial technologies and processes and support for demonstration projects for the development of a wide range of CCS and innovative renewable energy technologies that are not yet commercially viable”. This fund will be furnished with 450 million allowances: 400 million allowances will be extracted from the free allocation budget and 50 million will be derived from allowances that remain unused between 2013 and 2020 (which otherwise would have been placed in the Market Stability Reserve in 2020).¹³ The Fund would be available to projects in all Member States and target primarily, large-scale projects.¹⁴

In the third Phase of the EU ETS, the NER 300 was funded by the New Entrants’ Reserve (NER) using 300 million auction allowances. In the first and second round of proposals, the NER 300 financed 38 projects worth €2.1 billion, out of which €2.86 million was raised from private capital, some of which was channeled towards CCS and renewable energy projects. The NER 300 is managed by the European Commission which draws

Figure 1 - EU ETS based funding mechanisms in the proposal of the EU ETS revised directive.



Source: I4CE – Institute for Climate Economics, 2015 based on EU Proposal for a revised EU ETS directive, 2015.

on the European Investment Bank's (EIB) expertise to evaluate project proposals submitted by Member States. The EIB, under the direction of the EC, also manages the sale of the allowances on behalf of the Member States among whom the revenues are then distributed for project implementation.

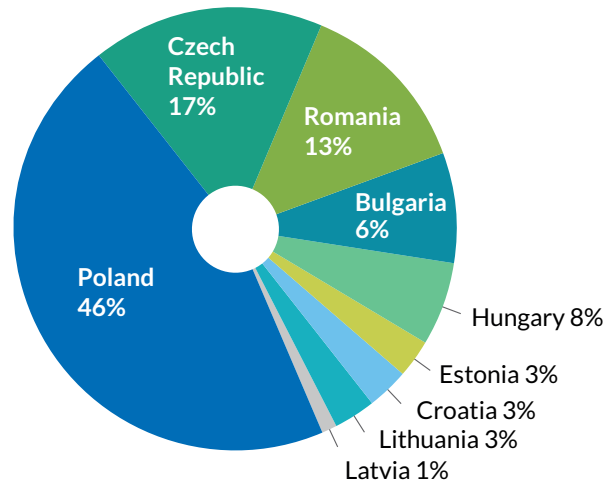
The rules that administer the Innovation Fund are still under development; however, some options for project funding have been described in the Impact Assessment.¹⁵ Option 1 considers a more tailored approach for industry projects by examining the impacts of increased funding rates; however, more extensive market testing is needed for RES, CCS and industry. Option 2 suggests project funding be carried out through the support of a permanent financial body and by replacing the current performance-based grant system with other financial instruments.

The new Modernisation Fund

The Modernisation Fund is a new fund¹⁶ which will be established to support investments that modernise existing energy systems and improve their energy efficiency. The fund will be composed of 310 million EUAs which amount to 2% of total EU ETS allowances in the 2021-2030 period. The Fund will be applicable to the ten lowest-income EU States with a GDP per capita of less than 60% of the EU average in 2013. The fund is managed by beneficiary Member States with the European Investment Bank overseeing project selections¹⁷; criteria for project eligibility will be reviewed in 2024. While the Innovation Fund targets (a priori) large-scale energy projects, the Modernisation Fund will target small-scale investment projects in the energy and energy efficiency sectors. To this end, the investment board should develop guidelines and eligibility criteria specific to such projects. The proposal by the European Commission specifies that criteria for eligibility will be determined using data that combines two elements: a 50% share of verified emissions and a 50% share of GDP.

Similar to the Innovation Fund, several options have been considered in the Impact Assessment on governing the Modernisation Fund.¹⁸ In all three options, the Commission helps in administration and the EIB performs due diligence. Option 1 affords large discretion and responsibility to beneficiary Member States so that the Fund can be tailored to specific national needs. A Steering Board comprised of these beneficiary Member States would define eligibility criteria and projects. Option 2 is a more cooperative approach in which

Figure 2 - Distribution of the capitalisation of the Modernisation Fund up to December 31st 2030.



Source: EU Proposal for a revised EU ETS directive, Annex, 2015.

investment guidelines are agreed upon by a Steering Board of all Member States and the Commission. The EIB plays an enhanced role as a fund manager and is accountable to the Steering Board. In option 3, a pipeline of projects to be funded is identified by beneficiary Member States using financial instruments which must conform to eligibility criteria set in the implementing legislation.

Transitional free allocations for the power sector in low-income Member States

To aid in the modernization of the energy sector, transitional free allocation¹⁹ to electric power installations (in Member States with a 2013 GDP per capita below 60% below the EU average) will continue through 2030.²⁰ To select projects that will be financed using free allocation, the European Commission recommends Member States to organise a competitive bidding process for projects that will be worth an investment total exceeding €10 million. Among the eligibility criteria, such as the additionality of the energy project, Member States are also expected to select projects based on a cost-benefit analysis to achieve maximum CO₂e emissions reductions.

By June 30th 2019, Member States are expected to publish a detailed national framework setting out the competitive bidding process and provide selection criteria for public comment. Lastly, transitional free allocations will be deducted from the quantity of auctioned allowances for Member States. The total free allocation will not amount to more than 40% of the allowances which the beneficiary Member State receives in the period 2021-30.

For optional free allocation, the main aspects assessed²¹ are selection of investments and reporting, volume and timing of allowances to be auctioned. Based on these aspects, three options are considered. Option 1 proposes a streamlined approach with more consistent rules and procedures, limiting delays for investments and number of reports published by the Commission. This approach aims to reduce differences in methodologies adopted by Member States while maintaining core principles. Option 2 proposes changes that focus on a competitive and open selection of investments. Open competition reduces the potential risk of market distortion for large investments. Smaller investments could be approved under a possible general block exemption for state aid rules in the future. Auctioning of unused allowances can be delayed by 1 or 2 years. Lastly, option 3 proposes a high degree of standardisation by providing a fixed percentage of free allocation on an annual basis. This approach helps enhance market predictability and the selection of all eligible investments would be done through open competition based on value for money. There are trade-offs in the options considered and the European Commission has no apparent preference at the current stage of the proposal.

Auctioned allowances for enhanced solidarity amongst Member States

10% of the total quantity of allowances to be auctioned will be distributed amongst certain Member States as a means by which to enhance

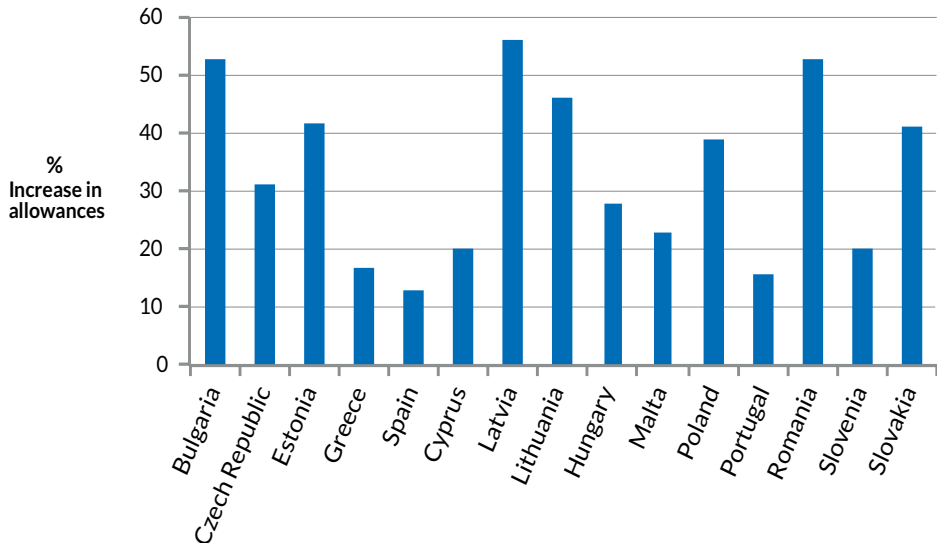
the prospect for greater solidarity and growth within the Community.

Key issues to be addressed to enhance the effectiveness of low-carbon funding mechanisms

The Impact Assessment identifies three issues or inter-linkages that require special attention from European Commission so that the effectiveness of low carbon technology funding mechanisms can be enhanced.

The first issue is related to the monetisation of each fund. The Impact Assessment highlights the need for timely monetisation of allowances from the Innovation Fund and the Modernisation Fund to avoid creating adverse impacts on the EU ETS supply-demand balance. Member states are currently calling specially for early monetisation of the Modernisation Fund seeing as high investments are needed to achieve 2030 energy and climate targets. Indeed, monetising the Innovation Fund early would reduce the period in which no-support is being provided for investments in Phase IV. Thus, in this case, frontloading of allowances might be needed to collect money for projects. However, this could undermine the effect of the Market Stability Reserve that aims to restore short-term scarcity of allowances. The Impact Assessment emphasises that a spread in monetisation over a longer time period can minimise price risk as well as price impact.

Figure 3 - Increases in the percentage of allowances to be auctioned by Member States for the purpose of solidarity and growth in order to reduce emissions and adapt to the effects of climate change.



Source: European Commission, Proposal for a revised EU ETS directive, Annex, 2015.

The second issue relates to the scope of investments for each low-carbon funding mechanism. Similarities exist in potential investments made under the Modernisation Fund and optional free allocation to the power sector (i.e. energy efficiency and energy modernisation). Therefore, there is a need to widen the scope of targeted investments to avoid potential accumulation of funds among certain industries. The third issue is the potential impact caused by transposing and implementing these rules on beneficiary Member States.

Auction revenues

The third source for low carbon technology funding leverages carbon revenues from Member States via EU ETS auction proceeds. The next section will address this source of funding more carefully, analyzing its potential and the current utilization of these revenues by Member States. The proposal for a revised EU ETS directive strengthens some previous orientations for the use of auction revenues and introduces new (non-binding) provisions such as:

- **Indirect cost compensation** - The other potential use of ETS revenues discussed in the revision of the EU ETS Directive, was indirect cost compensation. According to this mechanism, a portion of auction revenues could be used in compensating installations for the indirect costs they have incurred as a result of the EU ETS.
- **Supporting jobs development during the energy transition** - In achieving a decarbonised economy, the economic and energetic transition should not have adverse impacts on vulnerable sectors and groups. To this effect, using auction revenues to promote skills development, reallocation of labour and close coordination of efforts with social partners are being discussed.
- **Scaling up finance for international climate action** - The issue of auction revenues supporting international finance was highlighted in the recently revised EU ETS directive. With the upcoming COP21 conference in Paris, EU leaders are eager to demonstrate action to reach a successful climate agreement. One of the key issues in the negotiation process for determining the COP21 text has been that while pledges for climate finance funding have been made, developed countries have yet to prove that they will be able to match these funds in practice. The figure that needs to be matched by the international community is \$100 billion per year by 2020. The EU share of this \$100 billion is estimated to be one-third or \$33 billion per year by 2020.²²

The estimated annual EU-wide auctioning revenues from 2016 onwards are projected to be €23 billion, reaching €25 billion in 2020 and €52 billion in 2030. Despite falling short of the \$33 billion target a share of these annual figures could still contribute significantly to funds supporting international climate change action. The advantage of utilizing EU ETS revenues as a financing mechanism is that they are a guaranteed source of annual revenue to Member States. The primary issue in allocating revenues for international climate aid however, remains the unpredictable variability in the flow of auction revenues. A guaranteed revenue sum needs to be established on an annual or other fixed-term basis to ensure that planning activities for international climate finance can continue without uncertainty or interruption. A solution offered by the European Parliament in the past was to secure and allocate a percentage of a Member States' auction revenues towards use for international climate finance. This would help fulfill some part of national obligations towards international climate action.

The analysis on the use of revenues by Member States in 2013 can be useful insofar as providing recommendations to improve the efficiency of this revenue source towards low-carbon investments.

2. EU ETS REVENUES IN PHASES III AND IV: LESSONS FROM MEMBER STATES' FIRST EXPERIENCES

During Phase II of the EU ETS, Member States auctioned about 3.5% of their allowances while the rest were freely allocated. In Phase III, auctioning became the main tool to distribute allowances among sectors that were not exposed to the risk of carbon leakage.

In 2013 and 2014, the EU ETS has generated auction revenues worth €74.12 billion. According to our estimates, Member States will auction close to 15 billion EUAs from 2013 to 2030 (EU ETS Phase III and IV). Assuming a gradually increasing carbon price, revenues could total between €230 billion-€320 billion²³ from 2015 to 2030. This amount is roughly equivalent to the energy investment gap (€313 billion between 2014-2035) needed to shift from the EU New Policy Scenario to an EU 2°C scenario.²⁴

Due to the scale of these proceeds, revenue sources such as these have been strongly acknowledged as a potential financial mechanism to fund climate action and contribute to the billions needed annually to transition the economy to a lower-carbon future.

Table 2 - Phase III auction revenue forecasts.

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | TOTAL |
|--|------|------|------|------|------|------|------|------|--------------|
| Average and forecasted carbon price (€) | 5 | 6 | 8 | 10 | 13 | 15 | 17 | 19 | |
| Total revenue (billion €) | 3.5 | 3.1 | 5.3 | 7.7 | 12.6 | 14.6 | 12.9 | 14.5 | 74.2 |
| Allowances to be auctioned* | 902 | 531 | 659 | 763 | 969 | 976 | 758 | 766 | 6,322 |

* forecasts of allowances exclude those allowances that are distributed through transitional free allocation under Article 10c.

Source: I4CE – Institute for Climate Economics, 2015.

EU ETS revenue spending guidelines: a lenient framework

Current guidelines of the EU ETS directive (2003/EC/97, Article 10) already encourage Member States to invest their revenues on a low-carbon economy. Specifically, the EU guidelines recommend that Member States spend at least 50% of auction revenues on reducing GHGs. The recommended applications for revenues described in the directive are quite general and non-binding. It features a variety of mitigation and other options: from conservation to investing in renewables, energy efficiency, adaptation in developing countries etc. At present there are no guidelines that recommend minimal contributions towards a specific action e.g. minimum spending on climate action in developing countries. There are also no guidelines that help to evaluate or determine the estimated GHG reductions coming from these investments. Overall, the framework guiding Member States' spending decisions is quite lenient. Ultimately, it is up to the countries to decide how and where to spend their auction revenues.

It is worth noting that originally, in 2008, the environmental committee of the EU Parliament attempted to legally mandate²⁵ that *all* auctioning revenue be used for climate action, with at least 50% being used to finance *international climate action* and the remaining to fund domestic European actions. However, determining the best use of auctioning revenues was and still is a complicated issue that has stimulated much political debate. Many of the newer EU states and some countries like the UK opposed it while the EU

Council of Finance Ministers expressed a strong aversion to hypothecation of auction proceeds.²⁶ This finally led to the Commission declaring that the use of these revenues would be left to the discretion of Member States, in accordance with their budgetary and constitutional needs.

As mentioned previously in this section, the scale of these revenues is indicative of their potential and useful contribution in funding the European transition towards a low-carbon economy. In view of this, it is pertinent to ask, what direction and shape will this financial mechanism take in the future? At this stage, all that can be expected is that this question will become increasingly relevant as revenues continue to accrue between 2020 and 2030. To this effect, the EU ETs is projected to raise revenues of approximately €205.17 billion in Phase IV as shown in Table 3 and Figure 4. In order to inform better decision making in the future, it is important to explore Member States experience and learn from existing practices. For this purpose, I4CE – Institute for Climate Economics identified some questions to guide the examination of this issue:

- Do countries allocate revenues differently?
- What quantity of ETS revenue is being used to fund climate action?
- What sectors within the climate action sphere are receiving the most support?
- What are the motivations behind decision making among Member States?
- Are countries using this revenue to leverage other sources of investment? and finally,
- How can the auction revenue be used more effectively towards enhancing climate action?

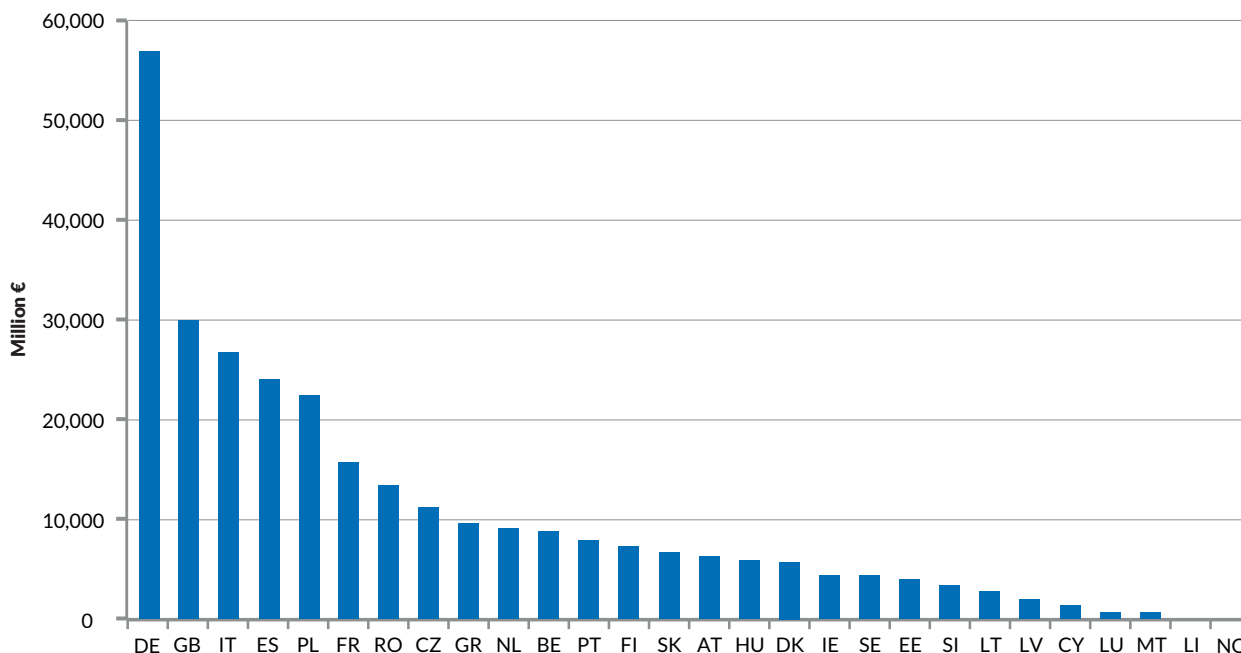
Table 3 - Phase IV auction revenue forecasts.

| | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | TOTAL |
|------------------------------------|------|------|------|------|------|------|------|------|------|------|--------------|
| Forecasted carbon price (€) | 20 | 21 | 23 | 24 | 25 | 26 | 27 | 29 | 30 | 31 | |
| Total revenue (billion €) | 16.6 | 17.2 | 17.7 | 18.2 | 18.8 | 19.4 | 20 | 23.1 | 23.2 | 23.3 | 198 |
| Allowances to be auctioned* | 823 | 802 | 783 | 767 | 752 | 740 | 728 | 809 | 780 | 751 | 7,734 |

* forecasts of allowances exclude those allowances that are distributed through transitional free allocation under Article 10c.

Source: I4CE – Institute for Climate Economics, 2015.

Figure 4 - Forecasts of 2015-2030 auction revenues of EU Member States.



Source: I4CE – Institute for Climate Economics, 2015.

Auction revenue spending in Phase III: lessons from Member States' first experiences in 2013

Categorising Member States into Non-Earmarkers and Earmarkers

The revenue decisions are examined according to two groups of Member States: Earmarkers and Non-Earmarkers.

- Earmarkers are the countries that have planned in advance, how and where their auctioning revenues will be spent. Countries that partially earmark their revenues will be referred to as earmarkers for the purpose of this study. These revenue allocation decisions are usually enshrined in law, or distributed through a dedicated fund or plan (such as Flanders' Climate Policy Plan or the Environmental Fund of Slovakia wherein auction revenue usage is managed). Under such laws or funds, in the case of EU Member States, beneficiaries are generally those engaged in climate action. Earmarker Member States usually have separate and specific decision-making processes or criteria that direct monies to a predefined climate action. Since the money has been earmarked and thus safeguarded for climate action, there is some level of guarantee that funds will be available for such a use in future years as well.

- In the case of non-earmarkers, the money is directly channeled into the general budget. In this case, no distinct decision making process or criteria exist for spending auction revenues specifically. Resultantly, there is less of a guarantee that the same proportion of money will be safeguarded towards the targeted objectives.

Member States use diverse decision making practices to allocate revenues

While the EU provides guidelines for ETS revenue spending on climate action, ultimate decision-making rests with the sovereign choices of Member States and no specific coordination with the EU Commission is required to justify their national strategies.

Most countries make these decisions based on multi-ministerial discussions and the final decision is voted by the Parliament. However, this process can vary across each country. The UK has chosen to appropriate all revenues towards the General Budget and do not conduct any earmarking. France has committed all revenues to fund one public authority (on housing) through a multi-ministerial decision led by the Ministries of Environment and supported by Ministries of Finance and Economics. Germany allocates revenues to a specific fund (the Energy and Climate Fund). The decision making process involves multiple ministries, but the final authority

Methodology of the study

The Institute for Climate Economics conducted a study regarding the use of auction revenues. While some countries have collected auction revenues between 2011-2012 of Phase III, the analysis is focused on auction revenues earned in 2013. This period of time was chosen due to two reasons: only few countries participated in the auctions before 2013 and thus, relatively less money and allocation decisions are available for examination. The second reason is the availability of allocation reports. In 2014 (most of the) Member States reported on their allocation of 2013 ETS revenues for the first time under the EU Monitoring Mechanism Regulation (M.M.R). This is an annual reporting requirement which is used to publish a summary of EU auction revenues spending in the **Kyoto and EU 2020 progress report**.

The Institute for Climate Economics research analyzed the submitted country reports to examine which sectors and types of programs are being supported. In addition, a survey was distributed to Member States. Finally, some interviews were also conducted to understand the motivations behind state decision-making in different countries. All in all, 12 country responses were collected through the survey and 7 interviews were conducted. The interviewees included five member states (Belgium, Czech Republic, France, Germany, and Slovakia), a member of the California Environmental Protection Agency (CalEPA) and the French National Housing Agency (ANAH) which is the sole beneficiary of all of France's auction revenues.

lies with the Ministry of Finance. The Ministries of Economy, Environment and Development play a supporting role and receive the disbursements of auction revenues. Through the special fund, these ministries receive funds for their climate projects. Belgium has three decision-making processes for the national revenues, which are distributed amongst the three regions (Brussels, Flanders and Walloon) whose regional governments vote how revenue is to be allocated.

The information provided through EU annual reports only describes how the money has been spent in the past year and not the planned use of revenue in the future (even by countries' that perform earmarking). If there are separate national, public communications justifying the use of revenues or informing the metrics used for selection of beneficiary programs, no reference to this information is provided in the EU reports. This could largely be due to the fact that countries have only been reporting on auction revenues since 2014. Indeed, in 2014, some countries were still in the initial stages of decision-making and parliamentary approvals of finalizing a revenue spending plan. However, according to the I4CE – Institute for Climate Economics survey, the majority of surveyed countries reported not having any national communications on the allocation of their auction revenues, whether current or future.

Non-earmarker and earmarker revenues spending: which sectors benefit the most?

Non-earmarkers: reported spending largely benefiting international climate efforts

Out of the 28 EU Member States which form the basis of the EU ETS, nine countries do not earmark their ETS revenues; these revenues are directed into their respective national treasuries. These non-earmarker countries are Austria, Denmark, Finland, Greece, Ireland, Netherlands, Poland, Sweden and the UK.

Figure 5 represents *reported* auction revenue spending and not actual non-earmarkers spending. The choice of reported sectoral spending is representative of the expectations set by the EU revenue spending guidelines (i.e. to spend it on climate action). Figure 5 reflects the sum of expenditures whose monetary value forms a share or whole of the sum of auction revenues earned.

From the 2013 reports, it can be deduced that the sector receiving the majority of auction revenue is international aid (mostly through established Funds). In this sector, most revenues reportedly come from the UK (80%); other countries that allocate revenues towards international support include Denmark, Austria and Finland. Most (reported) funding is channeled through international funds such as the Green Climate Fund (GCF), Least Developed Countries Fund (LDCF), Climate Investment Funds (CIFs) etc. International climate

support is an important issue, particularly for the higher income EU nations in the context of the COP21 international climate negotiations. Thus far, developing countries have been lobbying for developed countries to establish concrete means for raising the required levels of finance for the low carbon transition. Developing this flow of revenue to developing countries could be a key to unlocking greater participation among developing in terms of signing an effective international climate treaty.

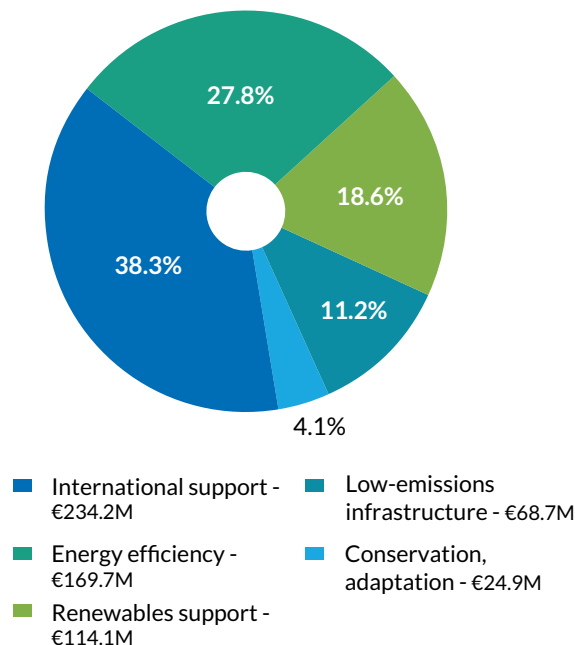
After supporting International aid, non-earmarking nations seem to favour funding is energy efficiency measures, in particular programs based on the housing sector, with some support for industrial energy efficiency in Sweden.

Earmarkers: domestic mitigation and household support are the largest beneficiaries of auction revenues spending

For the other 18 earmarking countries^c, the main sectors receiving auction proceeds are the renewables sector and the energy efficiency sector. Overall, the majority of support goes towards domestic mitigation on small-scale projects using mature technologies, predominantly aimed at supporting household GHG reductions.

Of the support going to renewables, most countries choose to provide support to the household sector in the form of rebates and subsidies. However, most spending, which is conducted by Spain (60% of the €628.2 million), is in the form of RES generation compensation given to utilities. Among most earmarking countries, the energy efficiency sector receives 80% of spending, which is largely directed towards improving energy efficiency in the housing sector. The choice to direct the majority of ETS auction revenues towards households is interesting insofar as the fact that this trend can also be observed in North America. One of the reasons to account for this trend could be that energy efficiency retrofitting is recognized as low-hanging fruit in terms of achieving cost effective GHG reductions. Another explanation could be that there is usually public support for using public carbon revenues towards tangible economic benefits to households. Many household energy efficiency programs also focus on helping low-income households; this kind of spending allows states to mitigate the adverse effects of a low-carbon transition on socio-economically vulnerable groups.

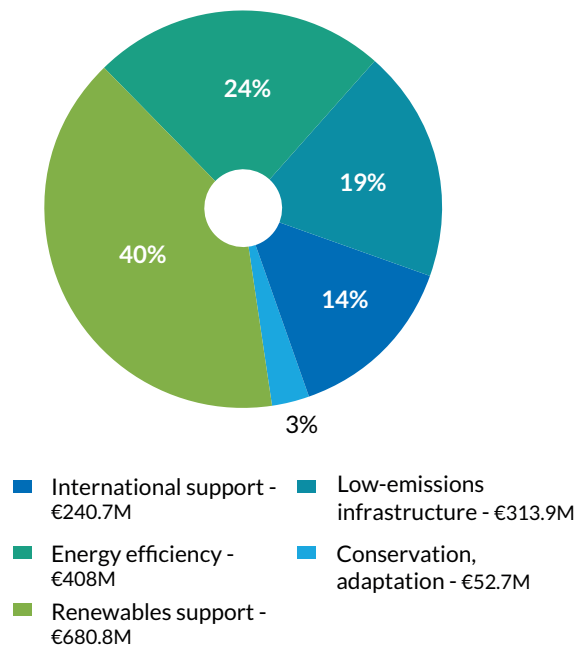
Figure 5 - 2013 Sectoral spending: non-earmarkers.



Not accounted for: Denmark's non-sector specific research and development efforts, Greece and Netherlands (no sector-specific efforts mentioned), Poland's information.

Source: I4CE – Institute for Climate Economics, 2015.

Figure 6 - 2013 sectoral spending: earmarkers.



Not accounted for: Belgium, Croatia, Italy, Latvia and Luxembourg who have not disclosed 2013 revenue allocations in the EU reports (either because revenue allocation decisions had not been made or information could not be provided at the time of submission) and some funds whose sector-specific spending could not be ascertained.

Source: I4CE – Institute for Climate Economics, 2015.

c. Earmarker countries include Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, Portugal, Romania, Slovakia, Slovenia and Spain. These countries have either already earmarked revenues or are in the process of doing so. Croatia has not yet decided on their revenue allocation method.

It is important to mention as well that Figure 6 below is not necessarily representative of all earmarking nations' spending behaviour. For example, despite international support claiming a 14.5% share of 2013 revenues spending, only two countries actually earmarked revenues for international climate action; Germany (99% or €240.7 million) and Portugal (the remaining 1%).

What is also important to note is that, in 2014 and 2015, international climate support has received significantly less share of auction revenues in Germany; subsequently, the current share of international spending from auction revenues is quite low.

Key questions on EU ETS auction revenue spending

After analyzing these of auction revenues by Member States in 2013, some key questions emerged that address the issue of improving the current revenue spending system.

Should earmarking be a legally enforceable guideline in the EU ETS directive?

There is a valid case for earmarking in that it facilitates traceability of ETS revenues in that it provides the opportunity to track ETS proceeds spending behaviour over time. It also ensures continued and pre-prescribed investment for climate action. Earmarking of revenues usually requires setting metrics or having project selection criteria which could improve how these public revenues are spent in the future. However, it is also important to note that many non-earmarking countries allocate funds towards climate action that exceed the sum of revenue proceeds.

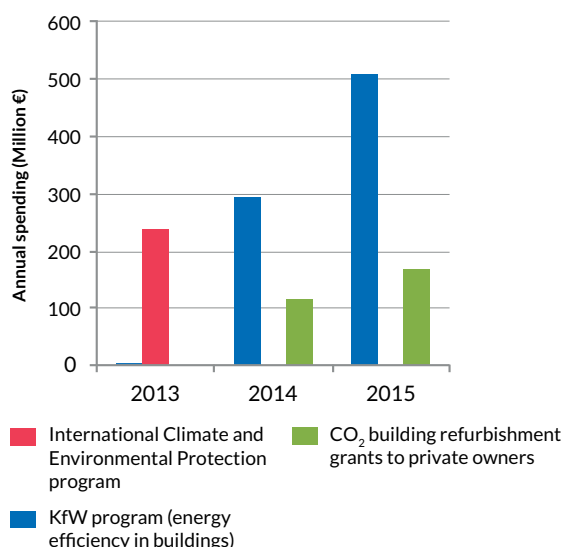
In view of the aforementioned points and the fact that there are strong Member State opinions against hypothecation of revenues, at this time, it would be unrealistic and infeasible to enforce a legal mandate on all Member States to earmark revenues towards climate action. Current guidelines, even in non-legally binding form, have inspired many (in fact most) EU countries to allocate a sizeable share of their revenues toward climate action. 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 revenues streams can be predicted more accurately.

Variability in revenue allocations: an obstacle to long-term planning?

There are two forms of uncertainties creating variability in revenue spending. The first form of uncertainty is dependent on external factors (the EU ETS), in particular carbon prices, that impacts annual revenue from year to year. This variability was directly observed in the case of France in 2013 when a legal decision assigned auction revenues up to €590 million to L'Agence National de l'Habitat (ANAH) or the National Housing Agency. Due to market fluctuations the total actual revenue earned however, was much less than what was forecasted; furthermore, the auction revenues formed a large part of ANAH's revenue sources. ANAH only managed to secure a sum nearly half of what it planned to receive (€219 million). Due to the long-term nature of housing renovation projects supported by ANAH, and the organization was forced to seek alternative funding to compensate for this shortfall and ensure the continuation of its projects. To this effect, the Cour des Comptes (the French Court of Auditors) published a report in 2013 wherein they commented on the vulnerability of ANAH to fluctuations in carbon markets.

The second type of uncertainty creating variability enters when revenue spending decisions are changed from year-to-year. This variability can result in an increased or decreased level of spending allocated to projects. It is useful, for the purposes of project planning, to have some certainty as to the sum of revenues that can be expected. For instance, as shown in Figure 7, the International

Figure 7 - Variation in annual spending through EKF budget, 2013-2015.



Source: I4CE – Institute for Climate Economics, based on the EKF Budget Report, 2015.

Climate and Environmental Protection program (IKI) that received the largest share of Germany's 2013 auction revenues (allocated through the Energy and Climate Fund (EKF)) was no longer to be supported by these funds in 2014 and 2015. While this program is being supported through other means, variability in earmarked revenues on a year-to-year basis presents an obstacle to planning longer-term program spending.

Inconsistencies in reporting: how can EU-level reports be improved?

Currently, various inconsistencies in the scope and content of the information countries report exist. For example, Germany's country report shows that the main recipient of funding is the Energy and Climate Fund (EKF). However, we are unable to ascertain which sectors the money is being allocated to exactly and on what type of projects; only a general description of the Fund's broader objectives are provided. In another example, Poland's (a non-earmarking country) report for 2013 spending provides around 200 examples of uses of the auction revenue in Polish with no translation available. In some cases, figures on reported spending on climate action (in the EU MMR reports) do not correspond to the percentage of total revenues claimed to be spent on climate action (as reported in the Kyoto Preparedness document). Improving reporting guidelines and public communications on revenue usage should be made with an objective to improve transparency of country decisions. This could also help governments make more informed spending decisions in the future.

Should there be more specific guidelines on how to spend revenues?

The current key focus on revenue spending is on small-scale support and to the household sectors. While there are no minimum guidelines or recommendations to direct revenue spending by Member States, there are some areas that could benefit from EU-level guidelines. One such area is support for vulnerable groups such as low-income households. By including minimal social support guidelines, better support could be afforded to groups susceptible to the adverse effects of energetic transition (e.g. rising energy costs). Such social support standards have already implemented in the North American ETS through their revenue spending guidelines (see section 3). Another area that could benefit from minimal spending guidelines, and was alluded to in the recent proposed EU ETS revision is international climate

action support. As mentioned previously, raising climate finance (towards developing countries) is a key issue in the COP21 negotiations for which developed countries must demonstrate action. Also, simple project selection guidelines, despite the issue of enforcement, could offer simple a way to measure the effectiveness of certain investment at reducing GHGs. Such minimal guidelines could assist countries in making optimal decisions on how best to recycle their carbon revenues.

Baring in mind the EU ETS experience and the key questions discussed earlier in this section, the next section will go on to explore the revenue spending allocation decisions of ETS' from North America. While difficult to compare any of these ETS' to the EU, the following analysis attempts to examine if the North American model encounters similar challenges to those facing the EU Member States and whether or not the North American experience offers any insight to overcoming these challenges.

3. LESSONS FROM NORTH AMERICAN AUCTION REVENUES SPENDING PLANS: CALIFORNIA, RGGI AND QUÉBEC EXPERIENCES

It can be useful to refer to the experiences of other emissions trading schemes when assessing funding mechanisms based on carbon pricing. Programs implemented in North America; California, Québec ETS and RGGI have had an interesting experience on the use of auction revenues that could be useful for the European Member States.

Examining the revenue spending experiences of California, RGGI and Québec

California: a comprehensive revenue allocation process supported by a dedicated Fund and an Investment Plan

California's climate change strategies are derived from the Global Warming Solutions Act (AB32), which has been in force since 2006. Financing the low carbon transition with the use of revenues from California's cap-and-trade system is also defined within this law; wherein the goal of the recycling of auction revenues is to reduce emissions or, in broader terms, to "further the objectives of AB32."²⁷ These objectives not only include climate change and air pollution mitigation but should also address the need to support of disadvantaged communities and economic growth in the state.

Table 4 - Design features of the revenue spending model in California, RGGI, and Québec.

| | California | RGGI | Québec |
|---|---|--|--|
| Authority overseeing revenue allocation | Finance Department; State Legislature conducts the revenues allocation. | RGGI, Inc. oversees day-to-day but State Administrations responsible for collection and distribution of revenues. | Ministry of Sustainable Development, Environment And the Fight against Climate Change. |
| Investment criteria | Reduce GHG emissions (as per GHG reduction law), support for vulnerable groups and targeted towards long-term economic growth. | Consumer benefit and sustainable energy strategy purposes. | GHG emissions reduction is the primary indicator, but for projects that cannot be quantified in GHG reductions, other indicators are chosen. |
| Guarantees for revenues | The price floor acts as a minimum guarantee and is used to plan auction revenue spending. | Price floor in place; no mention of using it as a minimum guarantee for revenue. 25% of revenues should be spent on energy and consumer benefit. | The price floor acts as a minimum guarantee and is used to plan auction revenue spending. 100% of revenues go into Green Fund for sustainable development use. |
| Result (revenues reinvested in the compliance period, GHG reduction estimation from reinvestments) | \$969M invested in GGRF from 2013-2015; GHG reductions from multi-year investments (past, present and future) for all projects estimated at 375,105MtCO ₂ . ^d | \$1 billion from 2008- 2013 reinvested; 1.3MtCO ₂ avoided to date, from reinvestment projects. ²⁸ | C\$107M invested in the Green Fund between 2013 and mid-2015 ²⁹ (Over C\$3 billion to be invested in 2013-2020 fund); 5.3MtCO ₂ estimated GHG reductions between 2006 and 2012 from reinvestment projects. ³⁰ |

Source: I4CE – Institute for Climate Economics, 2015.

The revenues spending process is comprehensive: the State Finance Department in consultation with other State Agencies, the California Environmental Protection Agencies (CalEPA) and the California Air Resources Boards (CARB) are responsible for putting forward a revenues spending plan. After public consultation and using the technical expertise of the agencies involved, a needs assessment allows the State to understand where ETS revenues can best be used to reduce GHGs. A gap assessment ensures that funds are allocated to projects that are not already supported by other State programs. The Investment Plan is triennial and the latest one was presented in 2013 for the 2013-2016 period. The next will be released in January 2016 for the next three-year interval.

The auction proceeds are placed in the Greenhouse Gas Reduction Fund (GGRF) through which funds are allocated to State agencies and programs via a Budgeting process. After the Investment Plan is approved by the Legislature, different projects can apply for funding via the State Departments responsible for the related projects.

Guidelines governing spending

The distribution of proceeds in California's investment plans is strategically positioned to support low-carbon public transportation (high-speed rail, intercity rails) to meet the needs of a growing population. The effects of potentially rising energy costs or transport costs to vulnerable communities are lessened through investing in affordable housing, energy efficiency in housing and focusing rail lines development in socio-economically vulnerable parts of California. At least 25% of auction revenues are required to be used towards benefiting disadvantaged communities, with 10% of funds being focused on activities within those communities. California has also earmarked funds towards reforestation and waste diversion.

Tools that improve monitoring and the efficiency of the revenues expenditure

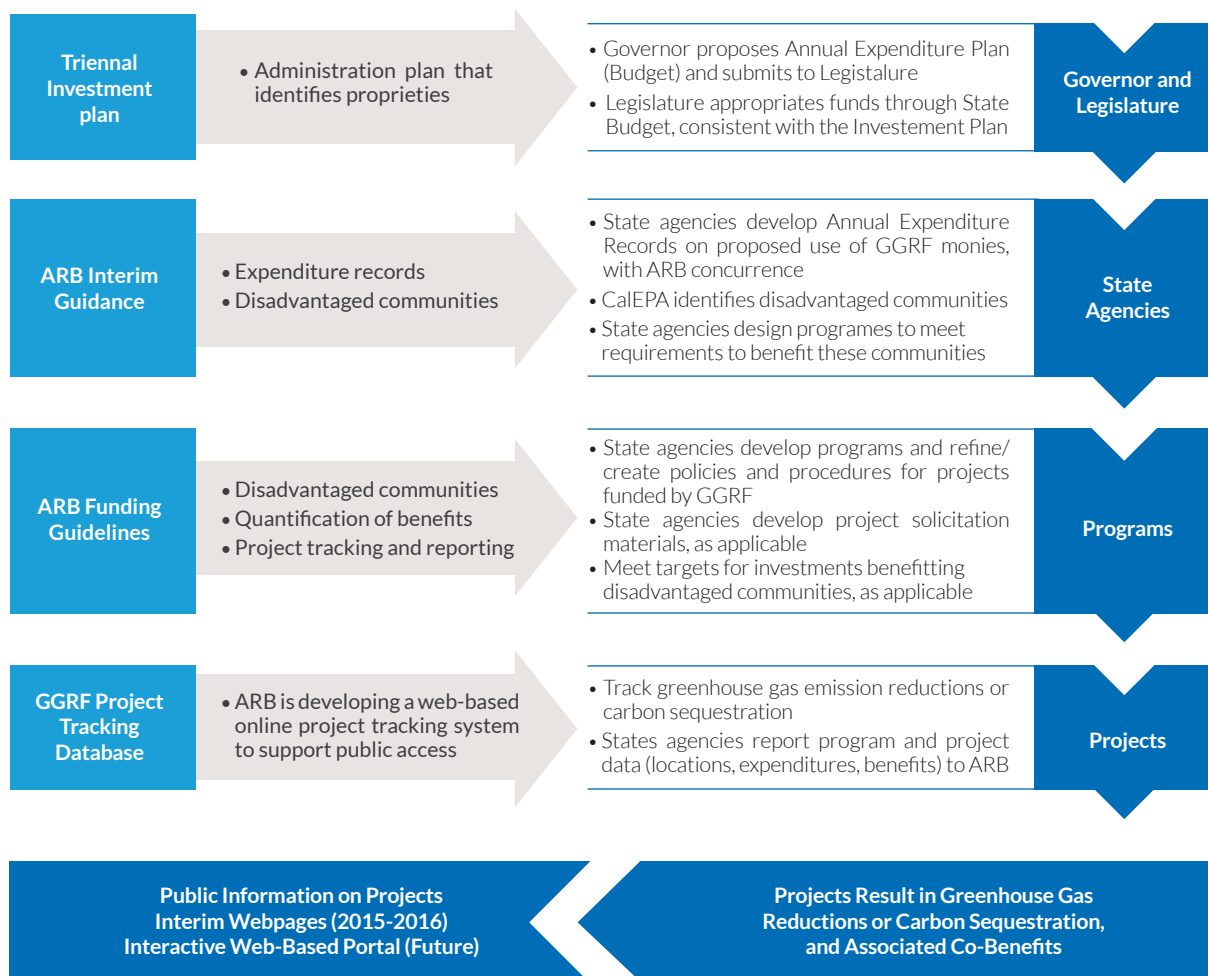
- **Project selection guidelines:** California's ETS revenue spending portfolio is highly customized to its needs and thus, it sets criteria that go beyond

d. According to the 2015 *CARB Annual Report to the Legislature* (page 36), this figure is indicative of reductions from past, present and future investments.

emissions reductions alone (such as employment growth, support given to disadvantaged communities etc.). To aid in selecting projects that fit this criteria, California uses simple metrics such as 'miles avoided' or 'kWh avoided' to evaluate projects according to their GHG reduction potential. In an innovative approach to the challenge of raising capital for the low-carbon transition, California also created a points system whereby a project is assigned greater points (thus increasing their chances of receiving ETS revenues) if they can prove they are able to further raise capital using private investment. Finally, California state agencies like CARB and CalEPA have created a tool that identifies where the most disadvantage communities are located. This tool helps to assess the potential of support projects can provide to such vulnerable communities. This tool was key to developing the maps for the High Speed Rail project which is primarily supported through the GGRF.

• **Reducing risks of variability in revenue allocations:** California's use of a carbon price floor serves as the primary measure to reduce the risk of revenue variability and ensures revenues can be estimated more accurately. In view of the fact that California spends revenues on long-term large-scale projects like infrastructure development and affordable community housing programs, revenue guarantees, on an annual basis, for such projects are important. California employs a system where 60% of revenues for the High Speed Rail, Transit and Intercity Rail, Low Carbon Transit Operations, Affordable and Sustainable Communities' Housing programs are ensured revenues. The first 60% of GGRF funds are allocated first to these programs. This significantly reduces uncertainty in the funding of such projects and allows for more reliable timelines for project completion. The remaining programs (that receive the other 40% of revenues) still face uncertainty in the sum of revenues they will receive.

Figure 8 - Greenhouse Gas Reduction Fund (GGRF) financing process.



Source: GGRF Annual Report to Legislature, 2015.

Finally, since the revenue spending plans are multi-annual (established every three years), projects are guaranteed revenues on a three year basis. The chances of projects continuing to receive this spending in subsequent Implementation Plans are relatively secure as long as their performance adheres to the standards and criteria for project selection.

- Reporting and Communications:** California reports on its performance to the Legislature in an Annual report and uses the pre-set funding guidelines as a reference to why projects were chosen and how successful they have been. If a project no longer meets these criteria or fails to meet them, the Annual reports take note of this when deciding future allocation plans. California actively consults with the public and industry in drafting their Implementation Plans, which are publicly available. Between Implementation Plans, they continue public consultations to ensure that other sectors that require support will not be excluded.

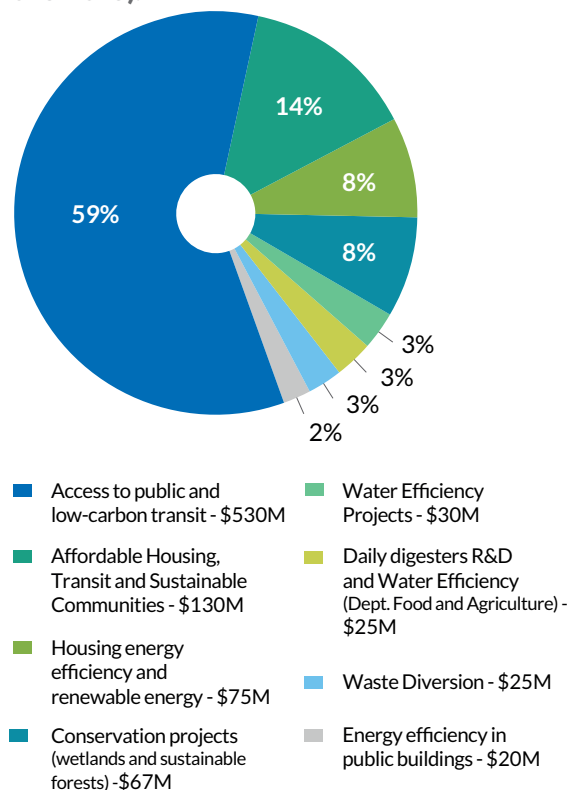
Regional Greenhouse Gas Initiative: strong guidelines supporting energy efficiency

RGGI, over its implementation period, is projected to save 48.7 million mMBTU (1 million British Thermal Unit, equivalent to 293.3kWh) of fossil fuels and 11.5 million kWh of electricity, resulting in the emission reduction of 10 million tons of carbon pollution (40% reduction since 2005).³¹ As of 2015, RGGI states have participated in 27 quarterly auctions which have cumulatively accrued over \$1.5 billion in auction revenues, out of which nearly \$290 million has been reinvested.³²

Guidelines governing spending

Guidelines for the use of auction revenues are detailed in the first Memorandum of Understanding (MOU) between participating states, signed on December 20th 2005, which implements the RGGI cap-and-trade program. Under the MOU, RGGI states are expected to allocate 25% of allowances for consumer benefit or strategic energy purposes (as advised in the RGGI Model Rule 8/15/2006, section XX 6.4). Consumer benefit purposes include allocations that would directly mitigate impacts to electricity taxpayers such as investing in energy efficiency. Strategic energy purposes include promotion of renewable or non-carbon emitting energy technologies and purposes that stimulate investment for innovative carbon reduction programs.

Figure 9 - California auction revenue spending (2013-2015).



Source: I4CE – Institute for Climate Economics, 2015 and California Air Resources Board, 2015

The remaining 75% of allowances can be auctioned or managed and used according to the State’s discretion. However, the revenues generated must still be spent towards the aforementioned purposes. Each state has independent regulations governing the use of revenues that are based on the RGGI Model Rule. States are required to provide state-specific rules and regulatory certainty for the revenues spending.³³ RGGI states have allocated at least 67% of auction revenues towards energy efficiency between 2008-2013 as can be seen below in Figures 10 and 11.³⁴ Residential energy efficiency (29%), commercial energy efficiency (22%) and low-income efficiency projects (16%) form the 67% of energy efficiency spending share.

The more specific criteria under which all states’ revenue spending is reported are divided into the following: energy efficiency, GHG abatement, clean and renewable energy, direct bill assistance, administration and RGGI, Inc. The establishment of this criteria allows for easy comparison between States’ efforts whose revenues spending are reported in the same format in their publicly released report, ‘Investment of Auction Proceeds Through 2013’.

Sectors receiving spending

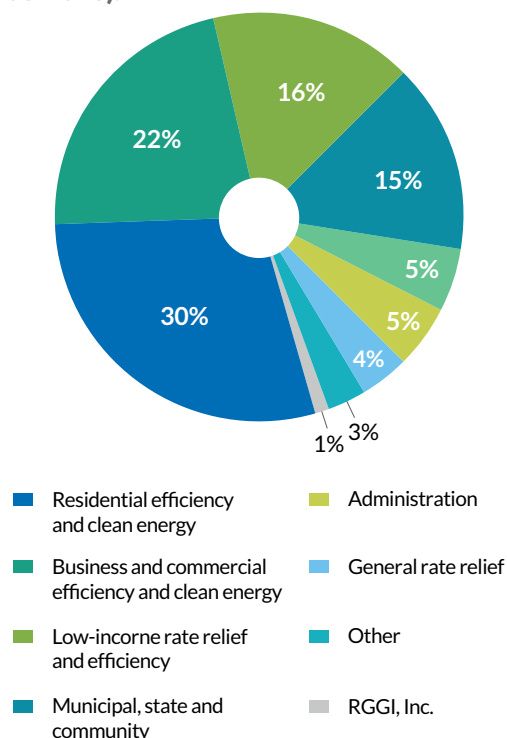
Energy efficiency criterion applies to programs that benefit participating households and businesses. Examples of programs include energy saving initiatives such as modernising heating and cooling appliances, upgrades to HVAC equipment, weatherizing and insulation of buildings and improvement of industrial processes. GHG abatement refers to research and development programs for advanced energy technologies, reduction of vehicular miles travelled and GHG reduction in other sectors. Clean and renewable energy funding is available in the form of grants or low-interest financing to businesses and homeowners that wish to install on-site renewable or clean-energy systems. Direct bill assistance aims to provide energy credits to consumers to offer 'rate relief' or some form subsidy on energy costs. Low-income families and small businesses are also specifically targeted by many programs under direct bill assistance.

Québec: comprehensive revenues spending process based on a dedicated Fund and a detailed spending Plan

The Ministry of Sustainable Development, Environment And the Fight against Climate Change (MDDELCC) are responsible for the Québec auctions and the redistribution of revenues. Like California, Québec releases a long-term investment plan (the Climate Change Action Plan or PACC) for usage of revenues and like California, it focuses on its highest polluting sector: transport.

Québec allocates all auction revenues directly to their Green Fund which issues proceeds according to a seven-year implementation plan that is set by the MDDELCC and is approved by the National Assembly. The criteria established by Québec are again, similar to that of California and focus on long-term sustainable growth, reductions in emissions and protection of vulnerable groups from negative economic impacts from this energetic transition. The PACC also recognizes that some projects cannot be quantified in potential GHG reductions and so have selected socioeconomic and other relevant indicators.³⁵ A detailed spending plan of Québec's auction revenues specifies a diverse range of programs from building public awareness on climate change to technology development and creating greener transit options. Breakdown of Quebecois revenue spending can be seen in Figure 12 below.

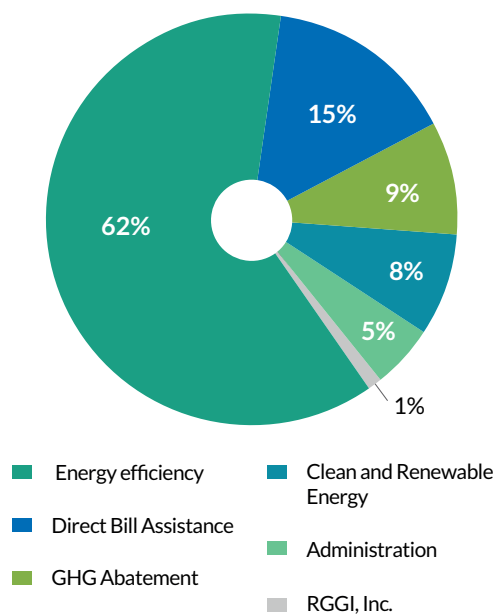
Figure 10 - RGGI investments by program type (2008-2013).



The categories of sectors have been taken from the official RGGI report of auction revenue distribution.

Source: Investment of RGGI Proceeds Through 2013, 2015.

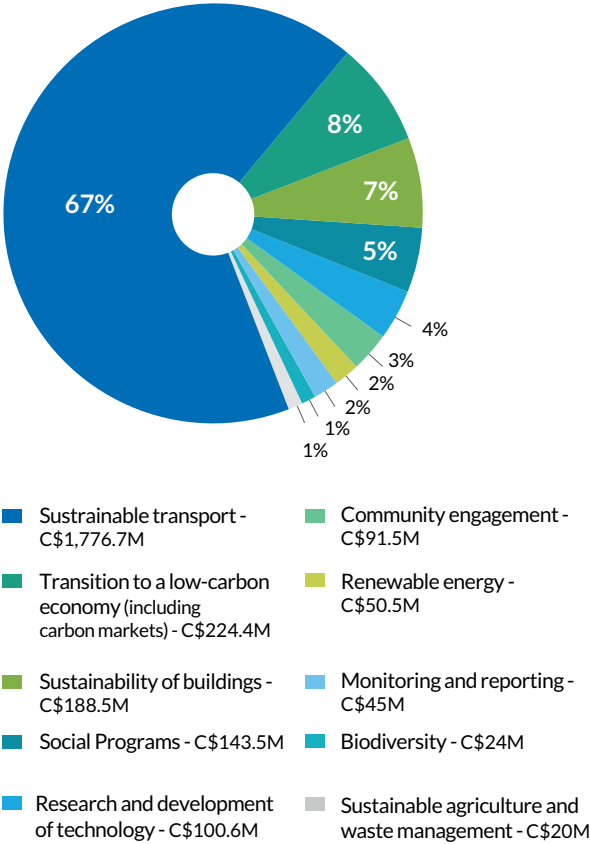
Figure 11 - RGGI investments by category (2008-2013).



The categories of sectors have been taken from the official RGGI report of auction revenue distribution.

Source: Investment of RGGI Proceeds Through 2013, 2015.

Figure 12 - Québec auction revenue spending plan (2013-2020).



The categories of sectors have been taken from the official Québec report of auction revenue distribution.

Source: I4CE – Institute for Climate Economics, 2015 and Québec MDDELCC.

Common trends in revenue spending models between California, RGGI and Québec

Based on the above examples of California, RGGI and Québec, we can observe some trends that differ to the EU ETS model:

- **Long-term planning strategies:** While many EU countries have variable or annual allocations for their Funds, North American Funds such as California and Québec have set long-term strategies (three-year and seven-year plans respectively). A reason for this is that these two States are using auction revenues to strategically fund low-carbon infrastructure for the future by investing in projects like the electrification of public transit.
- **Reporting and public information:** RGGI reports include simple, standardized infographics such as energy bill savings, tons of CO₂ avoided, workers trained and equivalent cars off the road.

This facilitates measuring the impacts of the revenues spent with greater transparency. It also helps to determine if revenue spending is aligned with broader economic and environmental goals of the RGGI program. Through this reporting, we can observe that decision-making for auction revenues spending is largely justified through economic benefits and benefits to the public.

- **Criteria Focus:** there is a focus in the North American model to have set criteria that can justify to the public the rationality behind spending decisions. The criteria do not only allude to greenhouse gas emissions reductions but also emphasise the socio-economic benefits underpinning revenue spending decisions. Among EU Member States’ reporting under the EU ETS, no justification is provided on why certain programs have been chosen. California uses specific criteria, to determine exactly which projects will receive funding and this decision-making is reported in its Assessment Reports.

Recommendations and conclusions

As the amount of EU ETS auction revenues is expected to increase by 2030, steps could be taken to ensure that auction revenues continue to effectively finance actions aligned with the low-carbon, climate resilient transition. From the areas of improvement identified in section 2, and from the lessons learned from other auction revenue planning systems in section 3, some key recommendations for the EU ETS revenue spending model can be identified. These recommendations can be organized into three main areas: i. addressing the variability of the carbon revenues to programs; ii. improving reporting standards and communication on use of revenues; and iii. leveraging private finance to enhance the potential of this public revenue resource.

- **Reducing the risk of variability of revenues:** While future ETS revenues are expected to be relatively more stable, variability in carbon prices and thus revenues could still affect project allocations. Firstly, the information on expected carbon prices should be better communicated between the EU and Member States as well as between Member States and program recipients. By effectively communicating carbon price forecasts between the EU and Member States and Member States and revenue, ministries and recipients can better prepare for potential shortfalls in revenue. Secondly, some form of “variability insurance” could be provided

to programs. Some of these programs have multiannual commitments for which long-term certainty on expected allocations is essential. One type of variability insurance could be a minimal percentage guarantee on revenues, especially for long-term or large-scale projects. As seen in section 3, California has implemented this concept to assure revenues are first allocated to their priority projects (high-speed rail construction and affordable housing programs).

- Improving transparency in reporting and communications:** Utilising auction revenue reporting in its current form provides a very general and sometimes vague idea of how countries are planning their energetic transitions. With better reporting and quality standards, the EU could have greater visibility in the planning decisions that are adopted using such public revenues. EU level guidelines could recommend that governments submit revenue spending reports and adequately communicate to the public on the rationale behind their decision making. To ensure that projects that reduce GHGs most effectively receive the most funding, a basic metrics system could be applied in the EU reporting guidelines that acts as a barometer against which GHG reduction efforts are assessed. As utilised by RGGI, even simple metrics such as 'kWh reduced', tons of GHGs avoided could allow (the EU) to compare efforts of programs across different Member States. Improved transparency on best practices and efficiency of euros spent for tons of GHG reduced could in turn, improve the broader alignment of the future revenue usage with the EU 2030 GHG reduction goals.
- Leveraging private finance using public proceeds:** Public investment alone will not be able to fulfill the low-carbon transition demands for a 2°C scenario, both at the domestic and international level. Blending of public and private resources offers positive signals to encourage future investment and provides opportunities for new and innovative funding mechanisms for climate action. For instance, the NER 300 program has funded nearly 38 projects in innovative low-carbon technologies with €2.2 billion from auction revenues and €2.86 billion from private sources. The benefits offered by the ETS revenues to potential investors are that they are guaranteed annual revenue whose allocation is expected to be aligned with broader long-term, national policies, particularly on low-carbon investment. In this regard, ETS revenues offer low-risk investment opportunities for investors who want to

Table 5 - Standardised reporting units to measure impact of RGGI revenue investments.

| Reporting Units | Result (2008-2013) |
|---------------------------------------|---|
| Participating Households | To date: 3.7 million |
| Participating Businesses | To date: 17,800 |
| Workers Trained | To date: 3,700 |
| Energy Bill Savings | To date: \$395 million Lifetime: \$2.9 billion |
| Megawatt Hours Saved | To date: 1.8 million Lifetime: 11.5 million |
| mmbTU saved | To date: 2.9 million Lifetime: 48.7 million |
| Short Tons of CO ₂ Avoided | To date: 1.3 million Lifetime: 10.3 million |
| Equivalent Cars Off Road | To date: 254,000 million Lifetime: 1.9 million |

Source: Investment of RGGI Proceeds Through 2013, 2015.

fund national climate actions. As in California some incentives could be provided that encourage programs to leverage private capital and in doing so, increase their chances in being selected as auction revenue beneficiaries.

Moving forward, European discussions on how to use auction revenues should thus address these three issues -variability, reporting, and guidelines to support specific action- to efficiently and effectively, strengthen ETS revenues' role in funding the EU's low-carbon transition and fulfilling international commitments. Some lessons learned from other experiences can provide ideas and inspiration that would make the EU ETS revenue spending model more transparent and effective as a financial mechanism. In view of the current proposal to revise the EU ETS Directive, it is an opportune time to open this debate among EU Member states in order to maximise the potential of the EU ETS to succeed in meeting 2030 objectives.

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