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Enhanced flexibility in the EU's
2030 Effort Sharing Agreement:
issues and options

Final Report

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About the Project

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Table of Contents

Table of Contents.....	1
Executive Summary.....	2
1. Introduction	3
1.1. Cost-effectiveness, solidarity, and transformation: guiding principles.....	3
1.2. The need for an enhanced flexibility mechanism.....	4
1.3. Enhanced flexibility within the broader transformation	5
2. Non-ETS sectors and progress towards 2020 targets	6
2.1. Non-ETS sector emissions and reduction potentials	6
2.2. The state of progress towards the 2020 non-ETS targets	7
2.3. A need to catalyse action at Member State level.....	9
3. Flexibility: a different challenge in the post-2020 period	10
3.1. Required abatement, cost-effectiveness and its implications	10
3.2. Member State trading of AEAs will be different in the post-2020 period.....	16
4. Project-based flexibility mechanisms: theory and practice	17
5. Proposal for a new flexibility mechanism	21
5.1. An AEA Clearinghouse for visibility, transparency and administrative efficiency	21
5.1.1. Advantages for buyer Member States	23
5.1.2. Advantages for seller Member States.....	23
5.1.3. Advantages for project developers.....	24
5.2. The role of the private sector and carbon prices	25
5.3. Administration and transaction costs	26
5.4. Managing delivery risks at the clearing house	27
5.5. Setting project baselines	27
5.6. Project selection criteria.....	28
5.7. Relationship between the AEA Clearinghouse and bilateral trades	29
5.8. Relationship between the AEA Clearinghouse and other actions in non-ETS sectors	30
6. Conclusions	31
References.....	33
Annex. Summary of targets and reduction baseline assumptions used in the report.	35

Executive Summary

Reducing emissions from sectors not covered by the European Union Emissions Trading Scheme (EU ETS) will be crucial to achieving Europe's emissions reduction goals for 2030 and beyond. In 2012, these "effort sharing agreement" sectors accounted for approximately 60% of EU greenhouse gas emissions. Last October, the European Council set a goal of reducing emissions in the non-ETS by 30% (relative to 2005 levels) by 2030.

To be effective, the EU's 2030 Agreement on non-ETS sectors will need to do several things at once. Firstly, it will need to ensure that all Member States reduce emissions in these sectors. The long run transformation towards a low-carbon European economy cannot succeed unless all Member States are engaged and take ownership of the transition. Actions taken before 2030 will fundamentally determine what is possible to achieve cost-effectively by 2050. However, engaging all countries in transformative actions is impossible if non-ETS targets are assigned based on GDP/capita or even short term cost-effectiveness criteria.

At the same time, the Agreement will need to respect the principles of fairness and solidarity, acknowledged by the European Council. The EU's Member States have widely varying financial capacities and policy priorities when it comes to reducing emissions in the non-ETS sectors. The 2030 Effort Sharing Agreement must therefore make the most of innovative financial tools and EU funds to help catalyse and scale up action in the Member States with more limited means.

Finally, the 2030 Effort Sharing Agreement must balance the need for solidarity (and hence different targets for different Member States) with the need for cost-effectiveness, to ensure that it actually achieves its 2030 targets. In the 2030 Agreement, it is possible that some Member States will face steep costs of reducing emissions in line with their targets in the short run (due to issues like the need for cross border coordination on transport policy or policy delays), while there is an inevitable policy failure in some of the 28 Member States. To help ensure that the 2030 Effort Sharing Agreement delivers the EU's -30% target, there is a need for Member States to have an "insurance policy" to fall back on, in case the cost of meeting their targets domestically becomes prohibitive in the short term. This will inevitably be needed in some Member States.

An enhanced flexibility mechanism can make an important contribution to meeting these three challenges in the 2030 Effort Sharing Agreement. It can help reduce compliance costs at the margin for high income Member States, while providing much needed financial flows to help catalyse abatement in lower income Member States (who tend to have lower cost abatement options).

Moreover, by limiting the portfolio of projects to be financed to those with major strategic transformative potential – such as deep energy efficiency retrofit of buildings, support for biomass development to replace gas and coal in heating, development of low carbon agricultural practices, subsidising the initial uptake of electric, hybrid or fuel efficient vehicles – an enhanced mechanism can contribute to strategic transformation goals and help to avoid lock-in of high-carbon energy systems post-2030.

However, to do this, the existing flexibility mechanism as designed under the 2020 Effort Sharing Decision (ESD) will need to be significantly modified and enhanced. This is because the demands placed on the 2030 flexibility mechanism will be different from those of the 2020 ESD.

Unlike the the flexible trading mechanism in the 2020 Effort Sharing Decision, the 2030 version will need to do more than just allow Member States to trade a pre-existing surplus of AEA quotas between themselves. We estimate that the mechanism must also be capable of generating new low-carbon projects and tradeable emissions reduction units in the order of 110-510MtCO₂eq. It must do so despite the fact that many potential ‘seller’ Member States may be reticent to host such projects (due to perceived compliance risk and other factors).

Moreover, buyer Member States are likely to be reticent to buy simply on the basis of cost-reduction arguments – the political realities of financing investment abroad mean that projects must not only be about cost-effectiveness, but also about supporting broader national aims of driving low-carbon transformation beyond a nation’s borders. The risks of failing to address these concerns have been amply demonstrated by previous flexibility mechanisms. A new design is therefore needed.

A potentially attractive way to address the concerns of both buyer and seller Member States could be to create a Clearinghouse for transformational projects that generate emissions reductions in strategically important non-ETS sectors to catalyse actions necessary for the low carbon transformation in Member States of more limited means. Together with specific rules to protect seller Member States, this Clearinghouse approach would increase market visibility for potential buyers and sellers of AEAs, provide fair and transparent reference prices for abatement, and reducing transaction costs of using the market for Member States. By helping to Europeanise the approach to decarbonising non-ETS sectors, the Clearinghouse approach could be an important practical component of a European Energy Union. This approach is therefore worth exploring further as an option for inclusion within the EU’s 2030 Effort Sharing Agreement.

1. Introduction

1.1. Cost-effectiveness, solidarity, and transformation: guiding principles

Reducing emissions from sectors not covered by the European Union Emissions Trading Scheme (EU ETS) will be crucial to achieving Europe’s emissions reduction goals for 2030 and beyond. In 2012, these sectors accounted for approximately 60% of EU greenhouse gas emissions (EEA, 2014). In October 2014, the European Council’s conclusions on the 2030 Climate and Energy Framework set a goal of reducing non-ETS emissions by -30% by 2030 compared to 2005 levels. This will form a major part of the EU’s broader goal of reducing total greenhouse gas (GHG) emissions by at least a 40% relative to 1990 levels.

The European Council also concluded that this target should be achieved while respecting certain principles:

- In keeping with the principles of *solidarity* and *fairness*, Member States would adopt differentiated national targets as a function of their GDP/capita, which will range from -40% to 0% in 2030.

- In keeping with this principle of *cost-effectiveness*, Member States with a GDP per capita above the EU average would have their non-ETS targets adjusted to reflect the different costs they faced when reducing their emissions¹.
- Finally, the Council's conclusions implied a need to catalyse the *low carbon transformation* of non-ETS sectors, as part of the EU's commitment to keep global temperature rises below 2°C.

But while the guiding principles are clear, there are a number of new and important practical challenges that remain.

1.2. The need for an enhanced flexibility mechanism

The EU's 2030 Agreement on non-ETS sectors will need to ensure that all Member States reduce emissions. The long-run transformation towards a low-carbon European economy cannot succeed unless all Member States are engaged in and take ownership of the transition. Particularly for sectors with lumpy capital intensive investments, like building renovations and transport, and even the development of new low-carbon agriculture methodologies, actions taken before 2030 will fundamentally determine what is possible to achieve cost-effectively by 2050.

However, for fairness reasons, emissions targets for Member States are still set based on GDP per capita, rather than an assessment of where they need to be in 2030 to decarbonise their economies by 2050. A continuation of the pre-2020 approach to reducing emissions in the non-ETS sectors therefore risks failing without specific mechanisms to help catalyse action in all Member States. Rather than implying that fairness should be ignored, this implies that new approaches must be found that can help to reconcile fairness and long run strategic effectiveness.

Another critical challenge of the 2030 will be how to ensure that Member States are able to comply with their obligations in an environmentally robust way. This will be more difficult in the 2030 Framework than it was in the 2020 Framework because the overall emissions cuts required are deeper, but Member State targets are still differentiated largely based on GDP/capita. Consequently, meeting targets domestically to 2030 and beyond looks likely to become more challenging for several high GDP/capita Member States than it was in the 2013-2020 period. This in turn leads to a number of risks for the environmental effectiveness of the 2030 and future Effort Sharing Decisions. The most troublesome scenario is some Member States may simply fail to meet their targets, potentially calling into doubt the achievement of the EU's non-ETS targets more generally.

A third task for the 2030 framework for non-ETS sectors is to provide the necessary resources for the low-carbon transformation to poorer Member States. A barrier for many - particularly lower GDP/capita - Member States in the 2020 Effort sharing framework is that, while they have high potentials to reduce emissions cheaply, they often lack the necessary financial, institutional and private sector resources to catalyse large scale abatement. This lack of funding is not improved by the scarce demand for AEAs, although it should be noted that the upcoming 2015-2020 ESIF funds will greatly improve the funding for the transition to a low-carbon economy.

¹ The text appeared to imply that a rebalancing would occur of targets for Member States above the EU average GDP/Capita level, but not for those below. However, this remains to be clarified.

The triple challenge outlined above – transformation, fairness, and cost effectiveness – suggests a potentially important role for a significantly enhanced flexibility mechanisms to the success of the 2030 Effort sharing framework. To date, however, the EU’s experience with international and EU flexibility mechanisms has been disappointing. Prominent examples of this are the experience of the Kyoto Protocol’s CDM and JI mechanisms and the failure of flexibility mechanisms under the Renewable Energy Directive. Moreover, while experience with flexibility in the 2020 Effort Sharing Decision is limited to date, there are good reasons to think that the flexibility mechanism in the 2020 Effort sharing framework could easily fail to meet the different demands placed on it by the 2030 framework (see Sections 3 and 4).

The goal of this paper is therefore to explain these issues and explore options for the design of an enhanced flexibility mechanism for the post-2020 effort sharing framework. An approach based around the idea of a Clearinghouse for strategically valuable projects for low-carbon transformation, while using the experience of knowledge of European private sector companies. It is argued that such an approach could be a useful example of the EU Energy and Climate Policy Union in practice, while only requiring a minimal role for additional European administration.

1.3. Enhanced flexibility within the broader transformation

Of course, if it is to be a success, the 2030 non-ETS sector framework will need to have a scope that is bigger than the flexibility issue. Flexibility mechanisms can, after all, only provide a portion of the financing and incentives that will be required to bring about the low carbon transition. A rough, back-of-the-envelope calculation suggests that financing flowing through the project based flexibility mechanism could amount to roughly 7.2 billion € during the period². This compares to an envelope in the order of 70 billion € that is to be dedicated to climate-related activities and investments under the 2014-2020 MFF³. Moreover, for the EU’s longer term climate goals to be achieved, all Member States will need to put into place policies that aim at low-carbon transformation in the non-ETS sectors.

This implies that flexibility mechanisms should be seen more as catalysing instruments, to demonstrate and build expertise with what can be done with the larger sums rather than as a magic bullet solution. This paper therefore concludes by noting that the effectiveness of flexibility instruments as catalysing instruments ultimately depend on the extent to which Member States and the EU implement effective policies, incentives and financing frameworks for scaling up the transition and exploiting experience and expertise gained via flexibility instruments in the non-ETS sector.

However, before discussing these issues, Section 2 provides an overview of the non-ETS sectors as well as the current state of progress reducing emissions within them.

² Assumes an average carbon price of 20€/tCO₂e and that 360Mt of abatement are delivered under the mechanism throughout the phase.

³ Assumes that 20% of MFF funds (totalling 360 billion €) are spent on climate related activities and investments.

2. Non-ETS sectors and progress towards 2020 targets

2.1. Non-ETS sector emissions and reduction potentials

The non-ETS sectors currently cover GHG emissions from the following sources:

- *Residential and commercial buildings sector (direct emissions)*
- *Land Transportation*
- *Industrial installations (below the thresholds for inclusion in the ETS, or otherwise exempted)*
- *Agriculture*
- *Waste emissions*

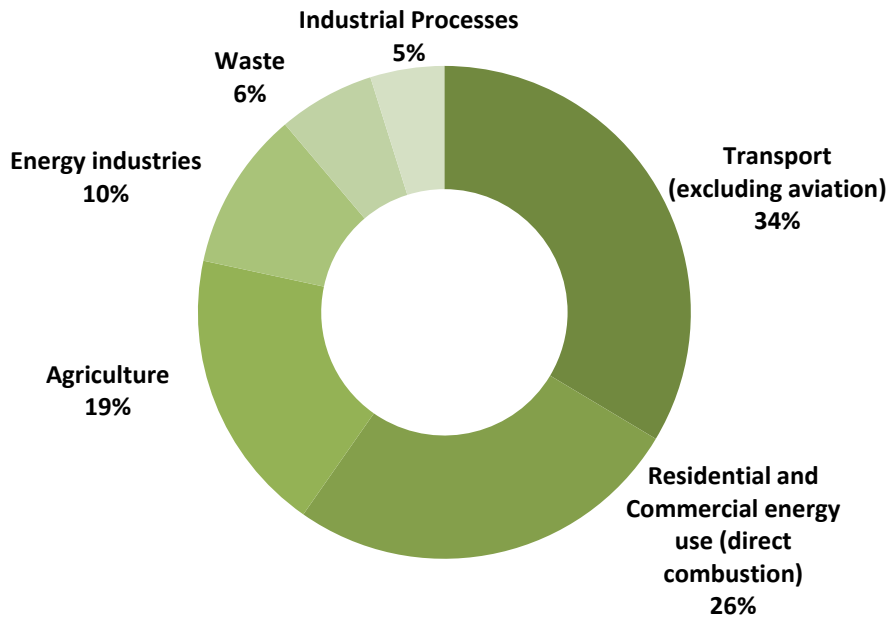
The relative share of emissions from each of these sectors is given in Figure 1. The main sources of emissions are from transport, followed by direct energy in use in buildings, followed by agriculture and then industry. Excluding LULUCF, these emissions represent together approximately 60% of the EU's gross emissions of GHGs (EEA, 2014), or 2646 MtCO₂eq in 2013.

Even assuming that current EU policies are implemented effectively, significant abatement potentials exist in all of these sectors, with the possible exception of waste (AEA, 2012; EC, 2014; EC, n.d.). Reported potentials vary substantially across studies depending on the assumptions used. However, to give a sense of some of these potentials, Eurostat has estimated that given the right policy settings, non ETS-related energy efficiency potentials in the order of 100-150 million tons of oil equivalent (toe) exists in both the buildings and transport sectors, while non-negligible potentials (~40 million toe) also exist in the non-ETS industrial sector. Depending on the composition of the energy used, these savings could amount to between 340 and 510 MtCO₂ per year⁴. Significant potentials are also estimated to exist at EU level for reducing non-CO₂ emissions in industrial processes and the agriculture sectors. For instance, the European Commission's Impact Assessment on the 2030 Climate and Energy Framework suggested that the agriculture sector could reduce emissions by 23.1% in a 2030 scenario with average carbon prices of 35€/t⁵.

Figure 1. Share of EU-27 non-ETS emissions by sector (2012)

⁴ The figures assume a CO₂ factor of 3.4tCO₂eq per ton of oil equivalent.

⁵ Estimated potentials are subject to uncertainty and may vary across Member States.



Source: Authors based on data from EEA (2014)

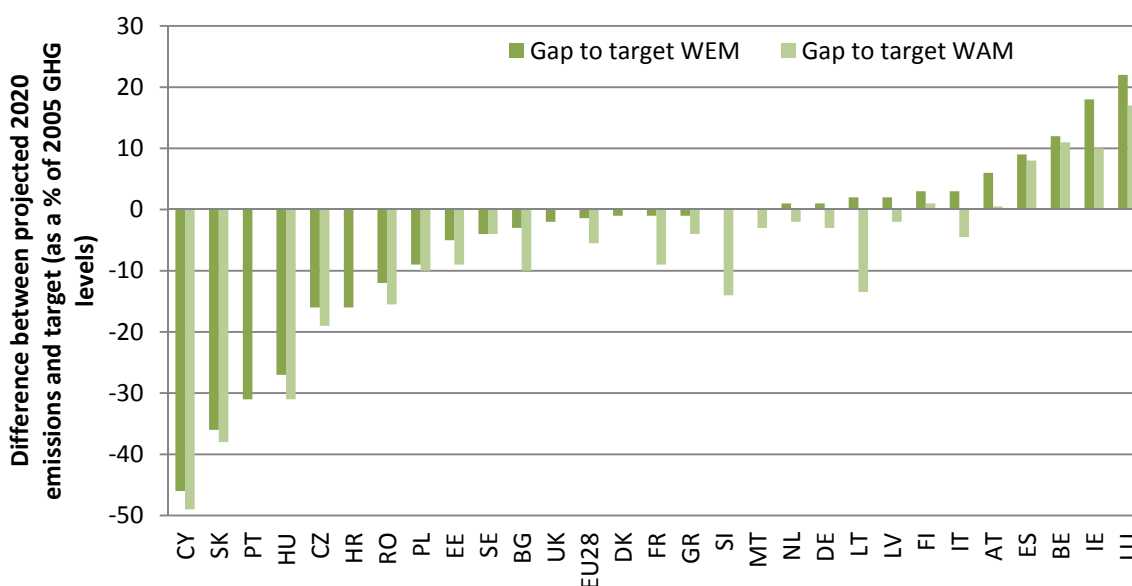
Note: Excludes emissions from LULUCF, which were not included in the 2020 Effort Sharing Decision. LULUCF accounted for -303MtCO₂ of net emissions in 2012 in the EU28 (~-12.3% of non-ETS emissions).

2.2. The state of progress towards the 2020 non-ETS targets

The Effort Sharing Decision of the 2020 Climate and Energy Package set a target of reducing emissions in the non-ETS sectors by 10% compared to 2005 levels (European Commission, 2009). These targets are differentiated by Member State based on GDP/capita and are reflected by an allocation of (tradable) Annual Emissions Allocations (AEAs) to each Member State.

Figure 2 shows Member States' progress towards meeting their 2020 targets based on the latest projections of their 2020 emissions (EEA, 2014). The blue bars show the difference between a Member State's target and its projected 2020 emissions with existing policies and measures (WEM scenario). The red bars show the same assuming additional policy measures proposed by the Member State are implemented (WAM scenario). A negative bar means that a Member State was on track to meet its national target; a positive bar means that a Member State was on track to miss its target at the time of the evaluation (i.e. early 2014). Figure 2 thus suggests that the EU28 as a whole is expected to exceed its 2020 target, achieving reductions between 11 and 15% below 2005 levels.

Figure 2. Difference 2020 ESD targets and emissions projections for Member State as of end 2013



Source: Authors based upon EEA data, 2014. Note that WAM scenario estimates were not available for some Member States.

However, there are large differences between Member States. While a number are expected to meet their targets, around eleven will need to make additional efforts to meet their targets domestically. At least four Member States are expected to significantly overshoot their national targets. These will need to purchase AEAs from other Member States to comply with the Directive or purchase international offset credits. As the EU as a whole is expected to reduce by more than its aggregate target of -10%, there should be sufficient available AEAs from other Member States available for purchase. Moreover, since buying Member States also have the option of resorting to international Kyoto credits such as CERs and ERUs, which are extremely cheap (often sold for less than 1€/tCO₂eq), it is likely that AEAs will be sold very cheaply to be competitive with ERUs and CERs. Thus buyer Member States are expected to have no trouble buying AEAs or Kyoto credits for compliance.

A number of factors explain this result. Firstly, EU and Member State policies are expected to play a partial role in reducing emissions to 2020. Based on existing measures as of 2013, emissions from the residential and commercial sector were forecast to decline by approximately 100 MtCO₂ between 2005 and 2020 (~3.4% of EU 2005 non-ETS emissions). Additional measures planned in 2013 were expected to further reduce emissions in this sector by ~50 MtCO₂ by 2020 (1.7% of EU 2005 non-ETS emissions). Most of these reductions are related to Energy Performance in Buildings Directive (2010) and the Energy Services Directive (2006) (EEA, 2014).

Policies in the transport sector (such as the Biofuels Directive and CO₂ regulations for cars) are projected to maintain a flat emissions level to 2020, while around 45 MtCO₂ (~1.5% of EU 2005 non-ETS emissions) of additional reductions are forecast by 2020 if additional policies are implemented. Small contributions have also been made from additional but often non-climate-related policies in the waste (Landfill Directive and methane capture policies), industry and agriculture sectors (e.g. nitrates directive).

New pieces of EU legislation such as the Energy Efficiency Directive (2012/27/EU), the revised F-gas Regulation (517/2014), CO₂ and Cars Regulation (333/2014), Vans Regulation (253/2014), and further implementation of the revised Ecodesign legislation for boilers and hot-water heaters (Regulations 813/2013 and 814/2013) are expected to increase the impact of policy further⁶.

However, the data also shows that the prolonged economic crisis in the Eurozone has significantly contributed to the reductions in current and projected emissions. This is particularly true in the transport and industry sectors. For instance, measures of EU28 freight transport by Eurostat confirm that the number of tonne kilometres for freight transport fell by 11% between 2005 and 2013⁷. Similarly, broad measures of industrial output for the EU28 show that the EU's output from mining, manufacturing, stream electricity and gas, and construction fell by approximately 5% between 2005 and 2013. Furthermore, the economic recession is expected to exacerbate the fact that some Member States were allocated targets that allowed for growth in emissions due to the principle of solidarity according to which 2020 non-ETS targets were allocated.

2.3. A need to catalyse action at Member State level

While the EU as a whole is on track to meet and even exceed its non-ETS targets for 2020, progress has nevertheless been uneven across Member States and across non-ETS sectors. A number of Member States have taken significant actions. For instance, the ODYSSEE MURE database of Member States energy efficiency policies reveals that, as of 2014, the 28 EU Member States had collectively implemented 82 policy measures in the residential sector, 70 policy measures in the tertiary sector and 69 measures in the transport sector. Nevertheless, the database rates the average effectiveness and impact of these measures as varying substantially across Member States⁸.

Differences in the level of policy engagement across Member States were also found to exist by other studies. For instance, a desktop study of existing policy “readiness” of different Member States to reduce emissions in non-ETS sectors in 2012 found that, 4 years after the adoption of the Decision and on the eve of the compliance period, only 10 of the 27 Member States were judged to have “good” readiness to address the objectives of the ESD within their borders (Fraunhofer, 2012).

Other reports also suggest that some Member States have inappropriate or missing regulatory incentives and investment frameworks for encouraging large scale abatement actions in non-ETS sectors - such as fossil fuel energy price subsidies, taxes, an absence of public guarantees for lending to projects, and a lack of engagement of national public development banks in the financing of low carbon projects (OECD 2011; Gula et al. 2012; EU Commission 2014).

These differences may be explained by several factors. Firstly, as shown above, many Member States are expected to meet their 2020 targets easily, lowering incentives for action. Secondly, spending on emissions reduction and energy efficiency in non-ETS sectors competes with other budgetary priorities. In some EU countries, spending priorities have therefore tended to focus on other basic

⁶ The largest of these measures in terms of emissions reductions is expected to be the Energy Efficiency Directive (the impact of which is expected to reduce emissions by ~400 Mt cumulatively by 2020). However, it is uncertain what share of these reductions will take place in the non-ETS sectors.

⁷ Similar results are also suggested by the data for the passenger transport sector, although data is incomplete.

⁸ <http://www.measures-odyssee-mure.eu/successful-measures-energy-efficiency-policy.asp>

infrastructure (such as roads and housing) rather than climate mitigation. Thirdly, a number of barriers to project financing and the successful absorption of EU funds for climate related actions have also been identified in the literature. These include a lack of institutional resources and readiness to absorb funds, mismatches between type and scale of financial instruments offered and those required, and minimum up-front financing thresholds that indebted (local) governments could not meet (Medarova-Bergstrom et al. (2013)).

This discussion highlights the need for mechanisms that can help to catalyse action in non-ETS sectors across all Member States and all non-ETS sectors while overcoming these specific barriers. In particular, they suggest an important role for mechanisms to not only provide finance, but also to leverage the experience of European companies and to create economic incentives for the private sector to unlock abatement potentials that governments with limited capacity may be slow to develop. In this context, there may be a valuable role for project based flexibility mechanism to be a catalysing instrument. We turn to this subject next.

3. Flexibility: a different challenge in the post-2020 period

While the experience of the 2020 Effort Sharing Decision so far is instructive, it is also important to think about what factors are likely to be different in the post-2020 period. Some of these factors are likely to require that significant changes be made to the EU system for regulating the non-ETS sectors for it to be environmentally effective and cost-efficient.

3.1. Required abatement, cost-effectiveness and its implications

One such novelty is the implications of the deepening of the EU non-ETS target from -10% to -30%. Under a reference scenario, non-ETS sectors are expected to have reduced their emissions by -20% compared to 2005 levels by 2030 (assuming LULUCF is excluded)⁹. Assuming this is correct, we calculate that the EU28 would need to find roughly 876 MtCO₂eq of further abatement during the 2021-2030 period to meet the -30% target. The implied additional abatement amounts each year are shown in Figure 3¹⁰. Note that we assume that there is no carryover of AEAs from the 2013-2020 phase as the current Effort Sharing Decision makes no allowance for this. We also assume that ERUs/CERs will not be permitted to use for compliance as the EU Council noted that the EU's reductions under the 40% target would be achieved domestically¹¹. For this (and for most of the calculations in this paper) we also assume that LULUCF is not included in the post-2020 ESD.

The negative figures in the years 2021, 2022 and 2023 reflect our assumption that the EU's collective target will decline to -30% starting from the -10% level set for 2020. However, as explained in relation to Figure 2 above, the EU28 is expected to already have emissions below that level in 2020

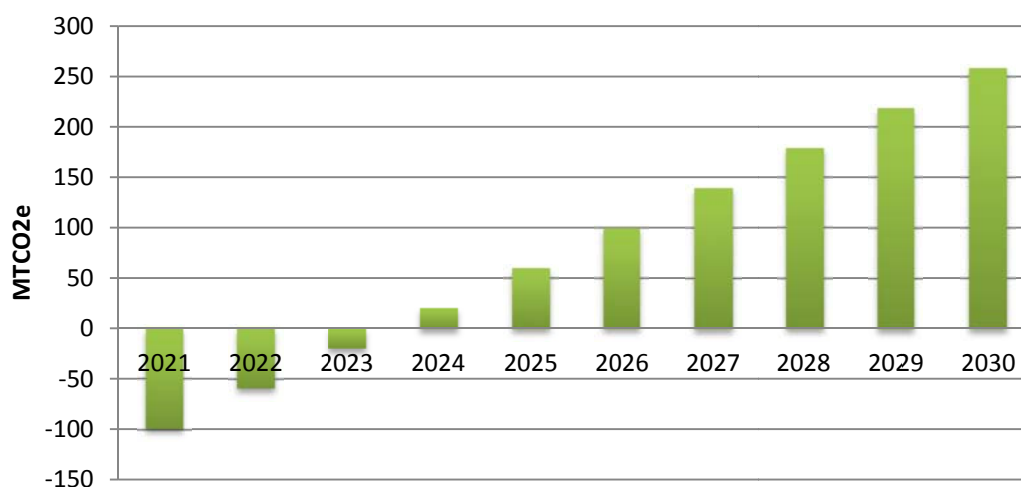
⁹ The Impact Assessment of the European Commission accompanying its Communication on the 2030 Climate and Energy Framework. Note: this assumes that all currently planned policies are implemented.

¹⁰ The baseline is assumed to fall in a linear fashion from approximately -15% in 2020 to -20% 2030. Note that for simplicity it assumes no transfers from EU ETS to non-ETS sectors (or vice-versa) and does not include LULUCF emissions within effort sharing framework.

¹¹ Thus, the 750Mt of ERUs/CERs that exist in Member State accounts is not accounted for and is not assumed to be part of any domestic flexibility.

(i.e. under the WAM scenario, emissions would begin at -15% in 2020, rather than -10%). Thus, the EU as a whole would begin the post-2020 period below the new annual targets for the first 3 years. Note that this surplus, which adds up to approximately 180 MtCO₂, could be smaller if the EU does not overachieve its 2020 targets by the amounts expected in the WAM scenario. This highlights the importance of pre-2020 actions by Member States with which they would be able to meet their post-2020 targets. This point is worth remembering when one considers the potential impact of further actions between now and 2020 on post-2030 compliance. Indeed, for Member States expecting to be net sellers of AEAs in the post-2020 period, greater success reducing emissions pre-2020 can lead to higher surplus allowances post-2020 and thus higher potential profits from selling AEAs.

Figure 3. Estimated additional EU28 abatement vs EC Reference scenario to meet -30% target*



Source: Author's calculations, based on data from European Commission Impact Assessment, the European Environment Agency, and the 2014 October 24 EU Council Conclusions

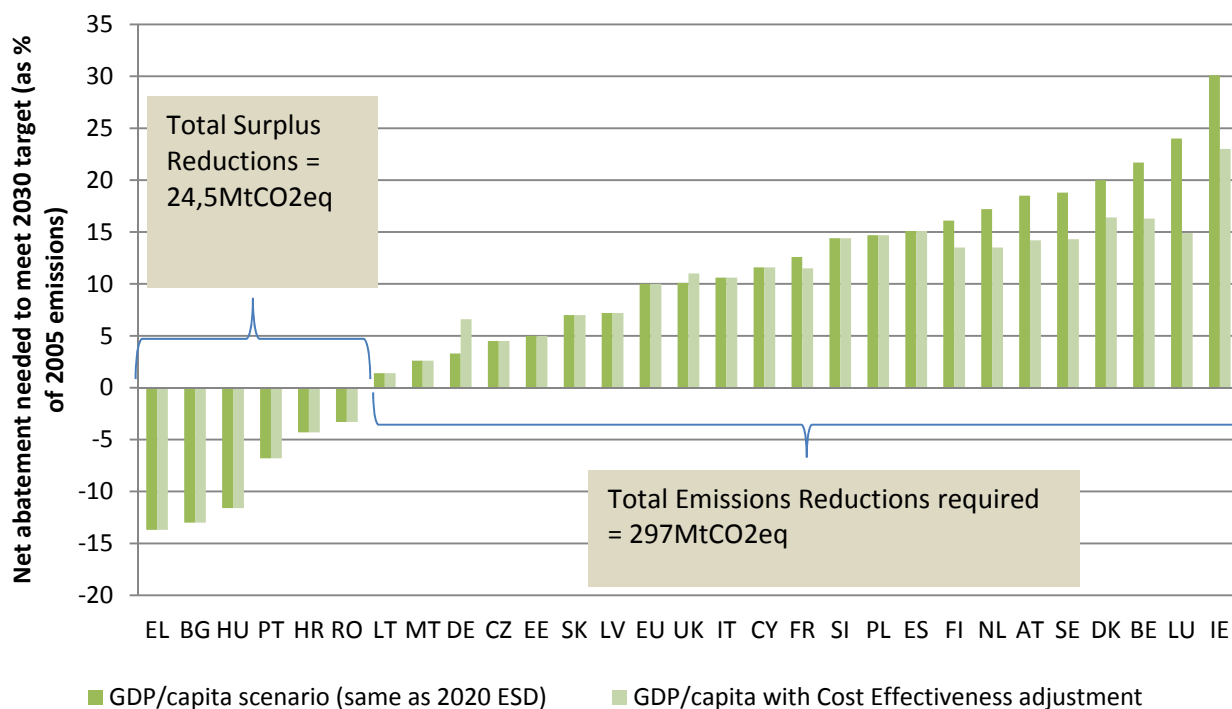
Figure 4 shows a first approximation of the additional abatement that individual Member States would need to make in the year 2030 to meet their 2030 targets. Two scenarios are shown:

- One which assumes all targets are distributed based on GDP/Capita in exactly the same way as was done in the 2020 Effort Sharing Decision, but based on a target of -30%¹².
- Another which assumes that these targets are adjusted to reflect cost-effective abatement potentials. Targets for Member States with GDP/Capita above the EU average are calculated based on the arithmetic average of the GDP/Capita targets and the minimum cost-effective abatement potentials described in the Commission's Impact Assessment. These targets for Member States with GDP/capita above the EU average are then all adjusted upwards by 0.9 percentage points to ensure that the sum of the targets meets the overall 30% EU target.

The targets associated with both of these scenarios are included in the Annex to the paper.

¹² This assumes that the Member State with the lowest GDP/Capita is set a target of 0% reduction, and the top two Member States are given -40%. Two lines are then fitted relating GDP/capita to reduction targets, one for Member States with GDP/capita above the EU average, another for those below the EU average, so that targets add up to -30% for the EU as a whole. One line therefore stretches from -40% to -34%, while the second stretches from -28.1% to 0. This is done using the exact same methodology as the 2020 ESD.

Figure 4. Abatement gap in the year 2030 by Member State, assuming an identical distribution of targets as the 2020 Effort Sharing Decision



Source: Authors' calculations based on EC, Impact Assessment, 2014.

The figure and the underlying data help to illustrate two points.

- 1) Significant additional abatement will still need to be found if the EU is to meet its goals; if one adds up the net reductions of emissions that would need to be made (~272 MtCO₂eq in 2030 alone). The majority of this burden will need to be borne by higher GDP/capita Member States in both scenarios. **Thus, it is unlikely that lower GDP/Capita Member States would significantly engage their low carbon transformations of non-ETS sectors before 2030!**
- 2) The surplus of AEAs created by Member States that are currently forecast to emit below their targets (~24.5 MtCO₂eq) would be much smaller than the potential demand from Member States with positive abatement needs (~297 MtCO₂eq in the two scenarios)¹³. **This suggests that net deficit Member States would need to meet the lion's share of these reductions domestically unless other Member States decided to reduce their emissions significantly beyond their target levels.**

Point 2 above is even more striking if one considers an estimate not just of 2030 but of the supply/demand balance over the entire period (i.e. 2021-2030). We therefore calculate this assuming linear reduction pathways between 2020 Emissions levels and the final point reached in 2030 under the Commission's reference scenario (as reporting its 2030 Framework Impact Assessment). Doing this we find that the balance between supply and demand is 445Mt of surplus

¹³ This difference is also apparent for the period as a whole: Member States with an expected surplus during the 2021-2030 period could expect to hold around 486MtCO₂eq worth of surplus AEAs; while the "deficit" Member States under the reference scenario could expect to have a deficit of around 1.3GtCO₂eq before abatement.

AEAs vs. 1325Mt of demand for abatement. This would give net abatement demand for the entire period of 876Mt.

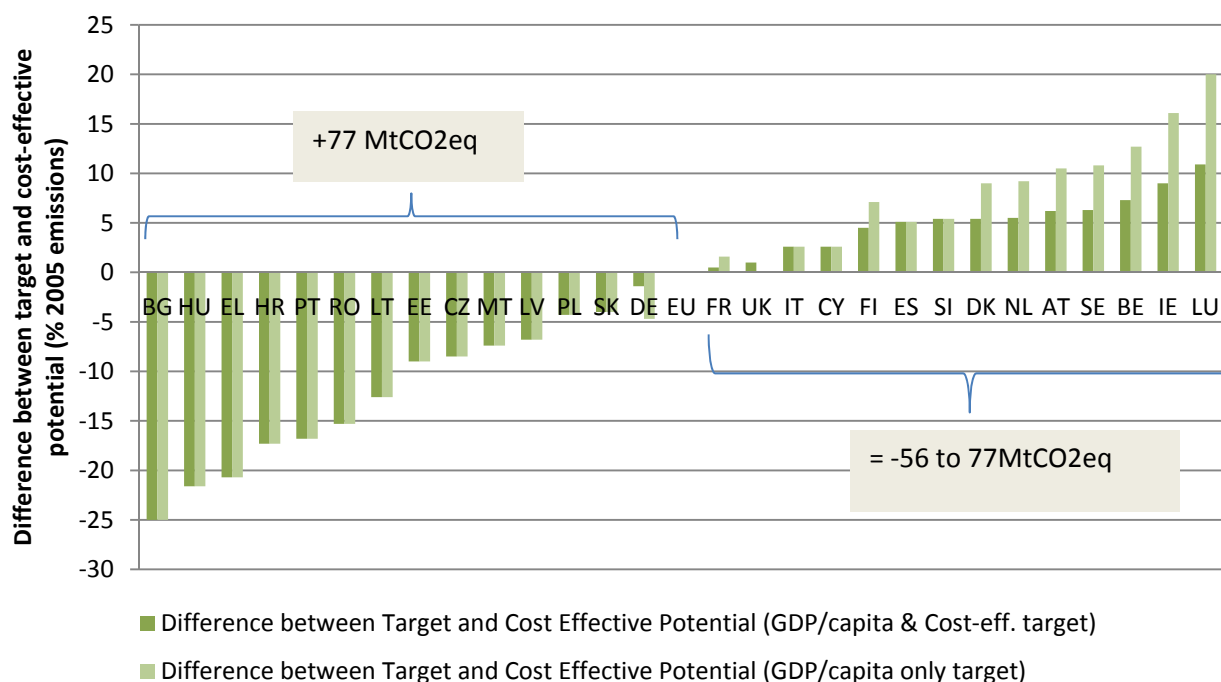
This last point raises an important question: will Member States currently forecast to have a deficit of AEAs be able to meet their obligations via domestic abatement alone? Or are they likely to require other Member States to reduce their emissions further and sell them AEAs to complement domestic action?

There are strong reasons to think that Member States may need to access abatement beyond their borders to comply with their targets. An analysis of the cost effective potentials of Member States to reduce emissions suggests that even if all Member States reduced their emissions to levels consistent with their “cost-effective” potentials to 2030, as defined in the Commission’s Impact Assessment, 14 Member States would still not meet their targets domestically. Of course, many Member States will probably be able to go beyond their “cost-effective” reduction level if they wish to put in place the necessary policies to do so. However, in practice, it is likely that the costs of doing so for some or other political, economic or practical barriers (e.g. coordination needs between Member States) will mean that on average they won’t. This is indeed the experience of the 2020 Effort Sharing Agreement.

Once this is taken into account, then the role of flexibility becomes important to ensuring that the EU meets its collective goals. Now, if one assumes that on average high income Member States reduce emissions in line with their cost-effective potentials (with some above and some below) these Member States would still need to make up for 56 to 77MtCO₂eq in missing abatement in 2030 alone (see Figure 5).

Moreover, this is between 2 and 3 times the amount of surplus allowances that are currently forecast to be immediately available without any effort from overshooting Member States (24.5MtCO₂) (see discussion above). This scenario would thus imply that some Member States would need to host projects specifically to reduce emissions in order to sell them to “short” Member States and hence that a flexibility mechanism will be required. As Figure 5 shows, there is an enormous amount of cost-effective abatement potential across the EU –particularly in Member States in Central and Eastern Europe. The challenge is to enable Member States to access it on just terms and to ensure that it contributes to broader decarbonisation strategies in these Member States.

Figure 5. Difference between targets and cost-effective reduction potentials in 2030



Source: Author's calculations, based on data from European Commission Impact Assessment, the European Environment Agency, and the 2014 October 24 EU Council Conclusions

Furthermore, it should not necessarily be assumed that all Member States with net reduction needs will automatically meet their cost-effective reduction potentials. Thus, it is possible that some Member States will not reduce by the amounts implied by Figure 5, making the total demand for AEs higher. For instance, in the 2020 Effort sharing framework, between 6 and 11 Member States are currently forecast to emit more than their non-ETS targets, even if they are economically easier to meet than the 2030 targets will be.

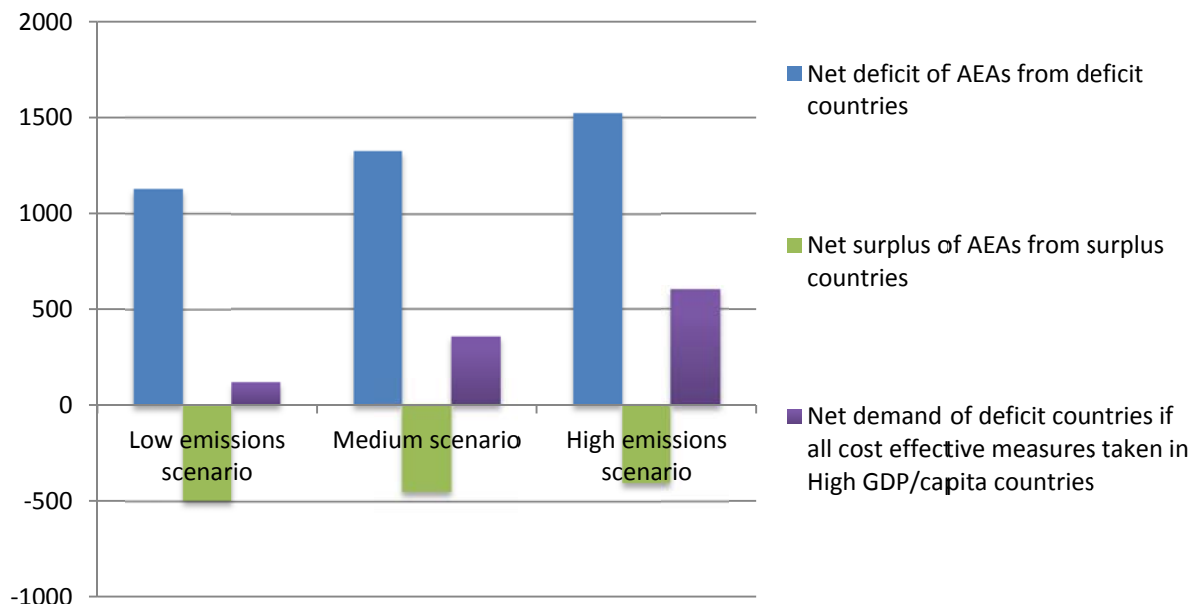
Indeed, it should be emphasized that there is significant uncertainty about what Member States' true emissions baselines will be and thus how much effort Member States will need to make to reduce their emissions in line with the 2030 targets. The effects of this uncertainty are on the supply/demand balance of AEs for entire phase are shown in Figure 6. The Figure shows what happens to the ex-ante AEA positions of the different Member States and thus the potential demand and supply of AEs in the non-ETS "market" for the whole 10 year period. It shows 3 different scenarios:

- A lower than expected emissions scenario (baseline emissions fall 2% faster than expected in the Commissions Impact Assessment reference scenario during the 2021-2030 period)
- Currently forecast emissions scenario (emissions are the same as in the reference scenario)
- A higher than expected emissions scenario (baseline emissions grow 1% faster than in the reference scenario during the 2021-2030 period).

To interpret the Figure, note that a "net deficit" of AEs is equivalent to the demand for emissions reductions or AEs, while a "net surplus" of AEs is equivalent to an initial supply of AEs. The total

difference between the supply and demand is thus an estimate of the amount of abatement that would need to be generated by an enhanced flexibility mechanism.

Figure 6. Demand and supply scenarios for AEAs over the 2021-2030 period



In all three scenarios the demand is significantly larger than the supply before abatement efforts (this is shown by the difference between the red and blue bars), suggesting that it is likely that some demand for flexibility via project-linked AEAs would exist in all scenarios.

Moreover, if one assumes that Member States with an AEA deficit undertake 510 Mt of abatement during the 2021-2030 period (which corresponds to their cost-effective potential as reported in the Impact Assessment), then the purple bar shows their residual demand for AEAs after abatement measures. The Figure thus shows that, while their residual unmet demand would be quite low in the low emissions scenario (around 110 MtCO₂eq), it would nevertheless be positive. However, the demand could be relatively high in the Medium and High emissions scenarios (between 360-600MtCO₂eq).

These results underscore the extent to which uncertainty about the future pathway of emissions increases the importance to the EU of a robust flexibility mechanism. This is because we don't know what the true emissions baseline will be and therefore how strong the residual demand for AEAs will be. This residual demand will need to be met through a flexibility mechanism that undertakes emissions reduction projects, since there will be no CERs or ERUs allowed for flexibility purposes in the post-2020 ESD. Now, if emissions baselines are lower than expected, the demand for flexibility project-linked AEAs will exist, even if it is low (around 110MtCO₂eq). Thus a flexibility mechanism is necessary but somewhat marginal. However, if the emissions baseline is as expected or higher than expected, the demand for flexibility project-linked AEAs will be high or very high (between 360-600MtCO₂eq). Therefore a flexibility mechanism would be either important or extremely important to ensuring that the total supply of AEAs meets the demand and thus that the EU meets its non-ETS

targets. Hence, an enhanced flexibility mechanism is necessary as a kind of insurance tool to make sure the EU can meet its targets.

Another important source of uncertainty is the possibility that the LULUCF sector could be included in the post-2020 ESD framework. Net EU LULUCF emissions were approximately -258MtCO₂ in 1990 reflecting the fact that they were a net sink of CO₂ (UNFCCC, n.d.). The most recent projections by the Commission suggest that this balance is projected to gradually fall to -214MtCO₂ in 2030. Thus, if the LULUCF sector were included in the ESD target and required to achieve a target equivalent to -40% below its 1990 levels (as required by the European Council's October Conclusions) this would imply the need for additional reductions in the LULUCF sector of approximately 147MtCO₂ in 2030. Previous analysis by the Commission has suggested that these abatement potentials exist in the LULUCF sector but vary significantly across Member States (cf. European Commission, 2012). Moreover, the nature of reductions/emissions in the LULUCF sector would mean that the emissions of this sector would be quite volatile. Emissions sinks created from reforestation projects, for instance, do not necessarily reduce emissions in a linear manner. Therefore, if LULUCF were included in the post-2020 ESD, this could imply stronger needs on the part of Member States to trade AEAs to balance their differing LULUCF potentials on an annual basis.

Taken together, these results underscore the extent to which a combination of more ambitious targets, differences in cost-effective potentials, and random policy implementation risks could create a demand for trading of AEAs in order for Member States to meet their targets in the absence of Kyoto credits (CERs and ERUs). This suggests that an effective flexibility mechanism for trading between Member States will be essential to helping the EU meet its non-ETS targets. These results also highlight the fact that large cost-effective potentials exist in many Member States that could be used to meet this demand from “high-cost” Member States (cf. Figure 5). Thus, prima facie it appears plausible that the EU could meet its collective targets via inter-Member State flexibilities alone. It therefore does not need other, less environmentally robust, options (e.g. allowing for large transfers of ETS allowances into the non-ETS sectors).

3.2. Member State trading of AEAs will be different in the post-2020 period

The above analysis also suggests that the supply side of the market for AEAs could potentially be very different in the post-2020 period to what is expected in the 2013-2020 period. This could be very important for the functioning of flexibility mechanisms in the post-2020 Effort sharing framework.

In particular, in the 2013- 2020 period, the EU as a whole is already expected to have a surplus of AEAs. Thus, while some Member States who will fall short of the targets will need to purchase AEAs, there will be a ready supply of AEAs from surplus Member States to meet this demand (see Figure 2 and related discussion above).

However, one cannot assume that this would be the case in the 2030 Effort sharing framework. This can be seen from Figure 6 above, which shows that the market as a whole will be strongly “short” of allowances over the 2021-2030 period, and that significant additional abatement efforts will be needed to reach the EU's overall targets. This means that **in the post-2020 period, potential buyers cannot expect to have a readily available market surplus of AEAs to draw from if they fall short of**

their targets. On the contrary, if AEs are to be made available on the scale demanded from potential buyers, potential seller Member States would actively need to develop additional reductions domestically, expressly for the purpose of creating surplus AEs to sell to buyers.

This raises an important new question for the post-2020 framework: will potential seller Member States be willing to host such emissions reductions activities, and, if so, on what terms? Indeed, past experience of Member State-based trading of quotas linked project-based CO₂ reductions or renewable energy have shown very mixed results, despite strong theoretical arguments for their economic efficiency. This issue is therefore discussed in section 4.

4. Project-based flexibility mechanisms: theory and practice

In principle, Member State trading of AEs linked to emissions reductions in non-ETS sectors has a number of important advantages. In many ways they offer an attractive mechanism to address core principles outlined in the European Council's Conclusions:

- *Cost-effectiveness*: By allowing Member States with prohibitively high abatement costs in the short term to pay to reduce emissions at lower cost outside their borders but still within the EU.
- *Fairness and solidarity*: The promotion of local knowledge, including both technological and institutional learning spill-overs from successful projects, facilitating the replication of similar projects in the host country.
- *Resources for transformation*: Financing for low-income Member States to invest in energy efficiency and low-carbon technologies, as these Member States have larger low-cost reduction potentials but lower ability to finance them.

However, past experience with project-based flexibility mechanisms has been mixed. A significant amount of experience exists from other flexibility mechanisms involving international trading of project linked credits (e.g. GHG emissions under the Kyoto flexible mechanisms, renewable energy-related rights). This experience suggests that project-based mechanisms can reduce costs of compliance for Member States and can have valuable spill-over benefits for project hosts. For example, Clapp et al, 2011, highlights the spill-overs that accrued to projects in a number of project host countries under the Kyoto mechanisms in terms of demonstration projects that showed how emissions could be reduced.

But, on the other hand, the experiences also suggest a number of ways in which flexibility mechanisms can fail to produce the expected benefits of theory:

1. **Potential seller countries can be reticent to host projects.** This can occur for two (related) reasons. One is that the potential project host country does not perceive the benefits of hosting projects, since the emissions reductions will lead to a forfeit of an equivalent amount of quotas. It may therefore appear to a prospective project host that hosting projects is a zero sum game, even though in reality there are significant spill-over benefits (foreign investment, private-sector and institutional learning about emissions reduction opportunities and implementation, non-credited emissions reductions). Moreover, while potential host countries may perceive the benefits, national governments are arguably more motivated by risk aversion than profit

maximisation. Thus, potential hosts are primarily concerned about ensuring that their national quota account is sufficient to cover their compliance obligation, rather than about maximising the profits it could make from selling surplus quotas. In particular, they may fear that if they give away, say, AEs to another country, but the related projects do not reliably produce the intended emissions reductions relative to business as usual, then they will be increasing (rather than decreasing) their net liability.

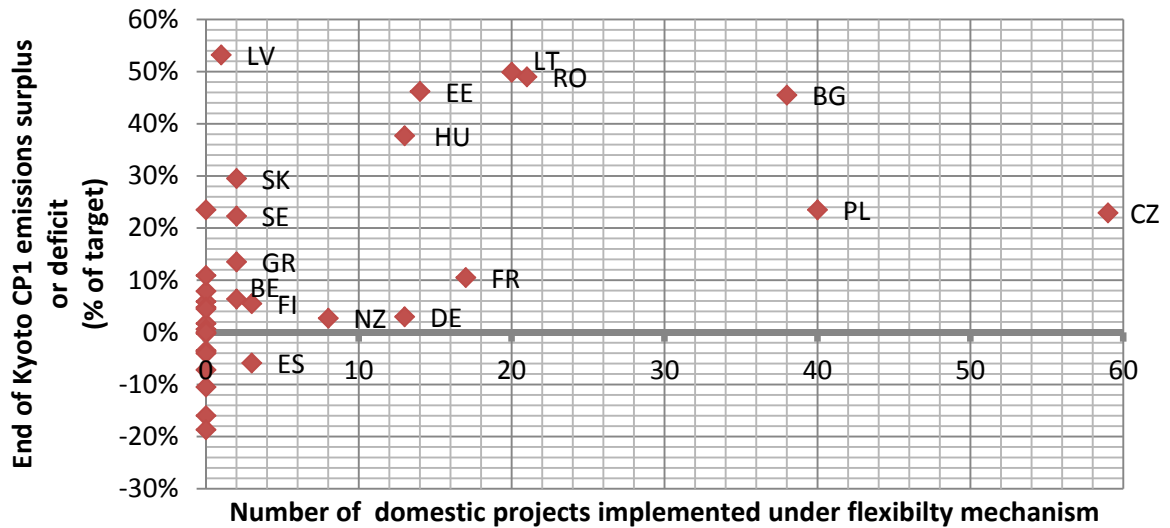
The combined effects of these two concerns can be that only countries that expect to have a large “safety buffer” of surplus of quotas (or AEs in the ESD context) to be willing to host projects. Evidence of this can be seen in Figure 7 below. It shows that in the first compliance period of the Kyoto Protocol (2008-2012), there was a strong correlation between countries that had (large) surpluses and countries that hosted the most projects under the main flexibility mechanism for Annex I countries (known as “Joint Implementation”)¹⁴. It also shows that some countries with potentially large reduction potentials (and large surpluses) did not appear to see the benefits of hosting projects and therefore developed surprisingly few projects (e.g. Latvia and Slovakia). Finally, it shows that many countries did not host projects at all, while some countries which did host JI projects, such as France, also appear to confirm the rule: France only began hosting projects after a long delay, and then only once it was clear that it would be in surplus and that it could apply conservative emissions baselines to project crediting¹⁵. A similar conservative approach to crediting was applied in Hungary.

If this behaviour were to repeat in the context of the post-2020 Effort Sharing Decision, it could mean that there may be a very low level of supply of AEs relative to the demand for AEs. This would mean that AEA prices would rise. However, in the context of trade in emissions reductions between Member States, rising prices may not be sufficient to ensure that the market for AEs clears. There are a number reasons for this. Firstly, in a market of AEA trades between 28 Member States, it is likely that trading will be illiquid and non-transparent (as it was in the Kyoto Protocol market for AAs). There thus would not necessarily be a clear reference price which would serve as a price signal for the supply side of the market to react. It should be remembered that there are high transaction costs involved with 28 MS governments trying to find demand and supply and agree on individual trades through bilateral negotiations.

Figure 7. Annex I countries only hosted projects if they were expecting a large surplus of AAs under the first commitment period of the Kyoto Protocol

¹⁴ Note that this graph does not include the two countries that were found to be selling a large number of so-called ‘hot air’ projects (Russia and Ukraine).

¹⁵ France only credited 9 out of 10 emissions reductions per project in order to give itself a margin of safety to protect its national compliance position.



Source: authors, Data: UNEP Risoe/CDM-JI Pipeline

Secondly, as argued above, Member State governments are not rational economic actors seeking to maximise profits. Rather they seek to minimise risks of non-compliance. Since the private sector cannot generate AEAs on their own, this means that supply would probably be relatively unresponsive to rises in AEA prices – at least until they became very high.

Thirdly, both reporting of verified emissions and emissions reductions take significant lead times. Thus, there may be an important lag (potentially of several years) between price rises and the responsiveness of Member States to opportunities to sell allowances.

For all these reasons, a market of trading between Member States may prove neither efficient nor reliable as a means of balancing the supply and demand for AEAs. In a worst case scenario, this could lead to Member States failing to comply with the post-2020 effort sharing decision.

- Potential buyer countries may lack visibility on the expected supply of quotas (AEAs) to be issued from flexibility mechanisms during the compliance period.** Past experience suggests that a lack of visibility on how many quotas will be available to be purchased (and at what price) can lead to potentially interested buyers to give up on flexibility mechanisms and instead focus on achieving compliance via more expensive or complicated domestic actions.

There is evidence that this occurred in the case of the EU’s Renewable Energy Directive. Faced with a concern that it might not meet its national renewable energy production targets in 2020, some Member States, such as the UK, began to examine the possibility of purchasing so called “statistical transfers” (i.e. renewable energy generation credits) from projects in other Member States. After a lengthy exploration of options and public consultation, this option was ultimately rejected by the UK government. One of the main reasons it gave was that:

“it is clear from respondents and wider discussions in Europe that the potential cost and contribution of statistical trading remains unknowable at this stage. The EU Commission recently concluded that “further measures will be needed at Member State level in order to stay on the trajectory [to 2020] and for the targets to be achieved”. This suggests that the availability of any surplus renewables effort across Europe – and hence the cost or indeed feasibility of statistical

*transfer – will remain unclear for some time. We also note the range of negative issues raised in responses...In the light of [this], the Government does not believe that it is possible to make plans for engaging in statistical transfer at this stage.*¹⁶

- 3. Investor visibility.** A similar argument to the above could also be made about visibility for investors in specific projects (i.e. the project developers). Indeed, the experience of the collapse of the Kyoto markets for emissions offsets is likely to have reinforced investor risk aversion to uncertainties about the balance of supply and demand in international markets for carbon quotas. Providing sufficient transparency about supply, demand and prices to encourage private investors to participate in a new mechanism may therefore be a more significant challenge in the wake of the CDM-JI experience. **It is essential that investors perceive that that they can reliably benefit from the AEA reductions they generate for their governments AEA account so that they have an added incentive to undertake these emissions reductions.**

- 4. Economic nationalism & concern among stakeholders about the environmental integrity of quotas purchased from other Member States.** One of the reasons for the unwillingness of actors to revive the CDM and JI after these markets collapsed was the widespread (and well-founded) concern among environmental stakeholders and policy-makers that these project-based mechanisms were to a significant extent based on the development of spurious or low strategic value emissions reduction projects. As such, it was both difficult for governments to overtly participate in these markets and when demand for these credits collapsed, there has not been political willingness to reform the markets so that they could be kept as a tool for future use.

This is all the more important if one considers the politics of using flexibility mechanisms for buyer Member States. In general, flexibility mechanisms are often perceived by domestic environmental stakeholders as a way of dodging domestic responsibilities, or as pure rent seeking behaviour of little environmental value. **Thus, to be politically workable for buyers an enhanced flexibility mechanism for non-ETS sectors must ensure that on balance it delivers clear long term climate benefits, as opposed to short term rent seeking opportunities for private with limited transformative value for the host member states involved. This implies that the types of projects to be supported by the mechanism should have high environmental integrity. They should have not only short term cost reduction benefits, but should also have clear long term transformative potential for the host-Member State.**

With that said, it should be noted that the environmental risks of sponsoring non-additional projects in the EU Effort Sharing Decision are lower and different than under the CDM. Under the CDM, countries issuing credits have not emissions cap. Under the post-2020 ESD, however, all countries will have caps and these caps will be binding on their emissions levels. Thus, non-additional projects would simply mean that countries issuing AEAs not backed by reductions would be tightening their own cap without reducing their emissions. As a consequence, there would be a zero-sum accounting game, whereby non-additionality of a given project would not mitigate the need for the EU to reduce emissions in other ways to meet its targets.

¹⁶DECC 2014

5. Transaction costs of project approval, finding buyers/sellers and signing contracts. The other side of the environmental integrity coin is transaction costs and administrative burden in particular. **For a flexibility mechanism to work the transaction costs and approval processes must appear manageable to project developers.** This was, for instance, a major and persistent criticism of the CDM. It must also be capable of delivering quotas (or AEs in the case of the ESD) to potential buyers on a reasonable time-frame for their compliance.

The preceding discussion suggests a number of important building blocks for the design of an enhanced flexibility mechanism in the post-2020 non-ETS sectors:

- **Enhanced visibility and transparency about aggregate demand, supply and prices of AEs.**
- **Clear safeguards and benefits for Member States from hosting projects.**
- **A focus on projects in strategically important sectors with high potential to catalyse action to ensure stakeholder buy-in.**
- **A minimal of administrative burden for individual Member States and local governments.**
- **The exploitation of economies of scale and standardised safeguards, to the extent possible, to limit administrative costs while ensuring environmental integrity**

5. Proposal for a new flexibility mechanism

5.1. An AEA Clearinghouse for transformative projects, transparency and administrative efficiency (making the Energy Union concrete)

One way of reflecting the above building blocks in the design of an enhanced flexibility mechanism could be to develop an AEA Clearinghouse for emissions reduction projects.

The AEA Clearinghouse could effectively act as market-maker or broker between Member States in order to generate visibility about supply and demand, clear reference prices for AEs, transparency about project types, and also reduce the administrative burden for Member States via economies of scale. This approach could be viewed as a pooling of Member State interests as part of the European Energy Union

An AEA Clearinghouse would also have the important advantage that it could identify project developers or projects directly via a centralised process, match them to demand from buyers and create transparent reference prices for the market. This mechanism would also mean that the supply of AEs for flexibility purposes would no longer rely on the initiative of host Member States to generate emissions reductions to sell allowances to potential buyers.

The Central Clearinghouse could work in the following way:

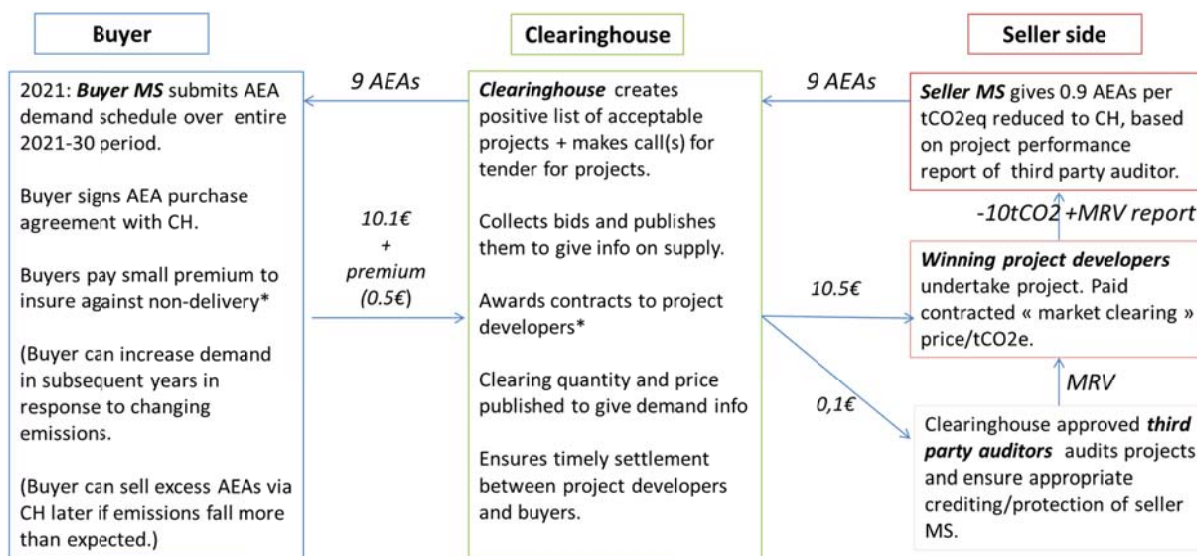
1. **At the beginning of the post-2020 period, it would call for Member States who are interested in buying AEs to submit their AEA demand schedules for the remainder of the period (2021-**

2030). These would detail how much the Member States were looking to buy and what price it was willing to pay per AEA.

2. **The Clearinghouse would then make a call for emissions reduction projects or programs of activities in ESD sectors that are achieved by public or private actors within the territory of the EU.** These reduction projects (or programs) would need to meet its project selection criteria, discussed further below and should aim at projects with high catalyzing potential. Deep building retrofits, development of new low-carbon new agricultural practices and transport projects should be given approval priority under the selection process. The project submissions would be third party-verified by a project auditor. It would also come with approval of the Member State focal point managing the Member State's AEA account, to state that the project tender is backed by a promise to transfer AEA for 9 out of 10 verified emissions reductions achieved. 90% crediting would help to ensure a margin of safety in the estimation of baselines for host Member States.
3. **The Clearinghouse would then select projects on a competitive basis until the expected emissions reductions from the aggregated list of selected projects matched the quantity of AEA demanded by the buyer Member States.** Competition between projects could be based either on price criteria based on a positive list of desirable projects or a broader set of criteria, as was done under a similar approach taken in the New Zealand Projects to Reduce Emissions Scheme¹⁷ (see below). The Clearinghouse could also double-check that baseline calculations reflected the intended division of benefits between both buyers and sellers (i.e. 9 out of 10 reductions).
4. **The details of the tender results, including the purchased amount of AEA, the clearing price for AEA, and the number of AEA reductions offered by project developers would be published. AEA would be allocated pro-rata to buyer Member States.** The Clearinghouse would also issue regular public calls to ensure that buyers are able to satisfy their AEA demand as their compliance position expectations evolved over the course of the period. This would also ensure greater transparency about the evolution of the demand and supply of projects, as well as the evolution of the price of AEA.
5. **Member States that purchase AEA could be required to submit a partial upfront payment for a percentage of their intended purchase amount, with the remainder to be paid on delivery** as verified emissions reductions were reporting by the project auditor during the crediting period of the project. An option would be, for regions with low ability to finance upfront project costs, upfront payment could be passed onto the project developers to help start the project. This may be helpful to overcome the paradox of absorption in some regions, however it would require the associated risks to be managed appropriately.

Figure 8. Schematic diagram of the role of the AEA Clearinghouse

¹⁷ <https://www.climatechange.govt.nz/reducing-our-emissions/projects-to-reduce-emissions.html>



*Regarding design options on these two points, see discussion in section 5.4

5.1.1. Advantages for buyer Member States

The introduction of an AEA Clearinghouse for projects presents a number of important potential benefits for buyers, sellers and project developers compared to a decentralized market model:

For Member States interested in buying allowances, a centralised call for tender process could help to provide much needed information about the potential supply of AEA for sale over the compliance phase. A central price discovery process would help to send a transparent signal about the cost of purchasing AEA, which can in turn be compared to domestic abatement costs. This could provide much needed information about the extent to which domestic abatement could be complemented by support for emissions reductions in other Member States and thus facilitate planning for compliance. (This can be contrasted with a decentralized approach, based on bilateral trades, under which each Member State would lack transparency about the cost of AEA purchases, the potential supply of AEA, and face significant search costs in identifying project developers, Member States willing to trade AEA, and negotiating individual purchase agreements.)

Moreover, by ensuring that projects selected are chosen partly on the basis of their strategic importance for low-carbon transformation in the host countries, the buyer would find it easier to justify the use of the flexibility mechanisms domestically.

Finally, by pooling all AEA generating projects into a common Clearinghouse, the AEA delivery risk related to the failure of any individual project would be reduced for buyer Member States. This is because, in contrast to a bilateral trading approach, risk would be pooled across all accepted projects. For a further discussion on the bearing of risk and options for sharing it or not sharing it, see Section 5.4 below.

5.1.2. Advantages for seller Member States

A centralized approach could also provide significant benefits for potential seller Member States. Firstly, by centralizing the selection of projects and fixing a common European price for AEA, it could provide greater visibility about the amounts of foreign investment money that would be directed to low carbon projects on their territory. It would also help to protect sellers, by ensuring that they received a fair price for their AEA sales. Secondly, a centralized approach to project selection, backed by third-party private sector verification, would save Member States a significant share of the administrative burden of identifying projects, establishing crediting rules, verifying baselines and emissions performance, etc. A more effective market would also help to increase the number of projects on their territory, thus stimulating greater private sector investment and greater domestic emissions reductions from the mechanism. Thirdly, a centralized approach also potentially allows for a harmonized application of rules that would protect seller Member States from over-crediting projects that do not reduce emissions by the amount of credited AEA. For instance, a harmonized rule that would credit only 9/10 emissions reductions, could help to provide sufficient safety margins and ensure that, in addition to the project spill-over benefits, part of the emissions reductions of projects also accrue to host countries.

5.1.3. Advantages for project developers

At present, developers of projects with reductions in the ESD sector have no way of capturing the value of the GHG reductions – they all accrue to the host country government. In principle, the host country could set up a scheme to share the AEA generated, but as private persons are not allowed to hold AEA, and in any case, there is no liquid market for AEA, this would still be a rather risky proposition. As a result, potential GHG reductions do not play any role at present in incentivizing private sector investments in the ESD sector.

An AEA clearinghouse can change that by turning the AEA reductions into an additional revenue stream, with a reliable market and a reference price.

An AEA clearinghouse could also help to provide greater visibility about the demand for emissions reductions, as well as the price at which emissions reductions can be sold. Such a reference price could help to encourage European companies to evaluate their operations and look for opportunities to reduce emissions that previously there was no incentive to identify. Moreover, the importance of a central market maker to create a visible reference price for project developers should not be underestimated in the post-2020 context. During the CDM and JI, it should be remembered that a visible reference price was largely established by the EU ETS, which quoted secondary CER and ERU prices and trading volumes on a daily basis. However, in the absence of these reference prices, a Member-State to Member State market could potentially be non-transparent with respect to the price of AEA.

Finally, approval by a European central Clearinghouse could potentially be an important stamp of approval for projects seeking to increase their bankability and leverage additional funds from the private sector (or via EU structural and cohesion funds)¹⁸.

5.2. The role of the private sector and carbon prices

There are several reasons why there would be important advantages to involving the private sector in the new flexibility mechanism. As indicated above, a key problem of trading between governments is that governments seek to minimize risks instead of maximizing profits. Thus there is a high risk that there will be insufficient emissions reductions created for Member States looking to buy allowances if trading is left to governments alone.

Moreover, private sector participation is crucial for emission reductions in Member States where the ESD targets are relatively easy to meet and therefore, there may be little perceived incentive for the government to develop complex schemes to reduce emissions. In these countries, private sector initiative could complement government efforts and stimulate action.

In the context of discussing the possible role of flexibility mechanisms in these sectors, it is important to ask: are these sectors responsive to carbon prices? It is sometimes assumed that they are not and that is why these sectors were excluded from the EU ETS. However, while this may be true of the transport sector, this is not necessarily an accurate assessment of the other sectors.

For instance, many non-ETS industrial actors are excluded from the ETS simply because, although the sectors are often the same, the non-ETS installations are below the thermal rated capacity or emissions thresholds to qualify for inclusion. The tertiary and household sectors are excluded mainly because of the fact that emissions sources are highly diffuse and small scale, making systematic MRV and compliance with a market instrument impossible, although a number of non-price barriers to abatement (e.g. the landlord-tenant problem, lack of information about potential economic savings, etc) are also identified as reasons for their exclusion from the ETS. The agriculture sector is excluded due to complications with the number of potential land plots that would need to be monitored and because the measurement of emissions and sinks is less precise than the other sectors in ETS.

However, while these barriers make individual actors in these sectors less suited to inclusion in a *mandatory ETS*, they do not necessarily mean that these sectors would be completely unresponsive to other forms of carbon price mechanisms if designed in the right way. For instance, a key challenge is to incentivize companies to find ways to aggregate diffuse emissions sources into individual projects to achieve the required economies of scale to make projects economical. In fact, this principle has already been used in a number of Member State, EU and international policies, including the UK Carbon Reduction Commitment program, the Australian Carbon Farming Initiative, the EU's Energy Services Directive, and the requirement under the EU's Energy Efficiency Directive that Member States oblige energy suppliers or retailers to achieve 1.5% final energy savings per year for their consumers. Enabling projects that consist of programs of activities that bundle small scale GHG savings into large projects within a flexibility mechanism for non-ETS sectors could thus help to

¹⁸ If projects sponsored by EU Structural funds also received funds from the Clearinghouse (CH) mechanism they would still need to demonstrate additionality of the emissions reductions linked to the provision of CH funds.

circumvent some important (although certainly not all) barriers to the effectiveness of carbon price signals in these sectors.

Moreover, the limitations of carbon price signals as a tool to drive the transition in non-ETS sectors are less troublesome if one considers that the goal of a carbon price-based flexibility mechanism in non-ETS sectors should not be to serve as the main driver of decarbonisation of non-ETS sectors. Rather, it should serve firstly to provide necessary flexibility in the achievement of short term targets between Member States. Its secondary purpose should be to catalyse action by demonstrating what is possible to achieve via specific projects and by providing a source of economic profit to incentivize the private sector to build up capacity to undertake these actions. When viewed in this context, the limitations of prices as drivers of the transition in these sectors are less of a concern.

5.3. Administration and transaction costs

To exploit the efficiency gains of the clearinghouse, its role should be kept to as light a touch as possible while fulfilling its necessary functions.

In setting up the mechanism, the EU would have a large amount of existing experience on which to base its mechanism design. These could include: a revision of the large number of project methodologies and administrative practices already created under various carbon crediting mechanisms, several which have involved centralized calls for tender (e.g. Gold Standard, VCS, Kyoto Protocol, Green Investment Schemes in Eastern Europe, energy efficiency protocols developed as part of the various Energy Efficiency Obligation mechanisms currently being established in the EU, the Australian Carbon Farming Initiative, the New Zealand PRE Scheme) to determine a positive-list of acceptable methodologies with which to begin.

In terms of day to day operations, the Clearinghouse's main role would be to match buyers and sellers and provide transparency to the market. It would therefore make annual calls for buyer Member States to submit demands for AEA purchases and publish the information, perform annual calls for tender for projects, review the tenders and select projects, and ensure settlement (payment) for verified emissions reductions and publish related information.

To minimize administration costs, reduction projects that seek to provide AEAs for the clearinghouse should have the actual reductions monitored and verified by an independent and accredited third-party auditor. The Clearinghouse should not perform individual project audits, although it could call for more information if it detected irregularities.

One option for limiting the additional administrative burden for the Commission would be to make the Clearing House itself a task to be performed by a private sector party – such as the auctioning platform under the EU ETS.

The most administratively burdensome aspect of the Clearinghouse's role would most likely be the review and awarding of contracts to project developers. However, a centralized approach, which

could exploit economies of scale and apply standardized rules, would nevertheless be more efficient than a decentralized one in this regard.

5.4. Managing delivery risks at the clearing house

Depending on its design, the use of a central clearinghouse could have an important advantage for buyer Member States in terms of risk management. In particular, if the central clearinghouse were able to pool the AEs delivered from projects into a common 'pot' for distribution to buyers, this would – as with clearinghouses for other products – help to mitigate delivery risk for buyers (and ensure timely payment for sellers).

In some cases, delivery of emissions reductions would not take place as expected due to normal project risks. This could be dealt with in different ways. One option would be take the clearinghouse approach to its logical conclusion and to pool risk across Member States by delivering AEs pro-rata based on prior purchase commitments and payment; For the remaining share of undelivered AEs, the clearinghouse could require a small insurance premium to be paid by all buyers, which could in turn be used by the clearinghouse to purchase a reserve margin of AE projects to manage this risk. This would be akin to the way clearinghouses pool risk in other markets.

However, it is possible that such an approach – while economically efficient – would be unpalatable to some Member States. In this case, it would be necessary to assign individual project risks to individual Member States. In this scenario, specific contracts would need to be signed between a Member State and project developer. This raises a question of how projects would be allocated. One possibility is that project tenders could be posted at the clearinghouse and contracts assigned on a competitive bidding process among buyers *per tender*.

This latter approach could have a number of advantages. One is that it would reduce the administrative burden on the central clearinghouse (although it would add to it for Member States). It could also allow for more tailored contracting for buyers and sellers. For instance, it may allow for early purchase agreements to allow for upfront financing, specific risk sharing arrangements, etc.. However, this approach also comes with important drawbacks. In particular, how to ensure that contracting between the parties remained transparent to the market, in order to avoid losing the necessary transparency for the market to function efficiently. It would be necessary for all contract details to be published and for covert "out of contract" agreements between parties to be policed. This approach would be less efficient than the alternative outlined above and expose Member States to a higher level of delivery risk on their individual purchases. There is also an important risk that a bilateral approach would mean that the quality of projects would not be enforced.

5.5. Setting project baselines

A key to the success of the new flexibility mechanism would be the methodologies for setting project crediting baselines. These must be set in a way that gives confidence to host member states that there is no risk of crediting more AEs than are actually reduced from the project, and that it is they

will improve their national compliance position by hosting projects. This is also important for the perceived environmental integrity of the mechanism.

Therefore, we suggest that a default rule could be adopted that crediting baselines should be set so that 10% of the reductions in any project should benefit the host country's AEA budget (this is a rule that worked in the past for JI in many Member States). This would be essential in ensuring the support of host Member States for the project and simplifying the approval of projects.

To minimize administrative burden for project developers, verifiers, host Member States, and the Central Clearinghouse, standardized project baselines should be used wherever possible. Standardised baselines could be particularly valuable in sectors where estimating precise baselines is complex and involves high transaction costs (e.g. in the buildings sector). Experience with energy efficiency support programs in Europe suggests that defining standardized abatement actions (rather than actual realised energy savings, which also depends on behavior of home occupants) can be much more administratively efficient, can help to scale up action, and, if done conservatively, can still ensure environmental integrity (Reichel and Kollman, 2010). A future European flexibility mechanism could also build on what is now a considerable mass of experience to develop a lean but robust set of baselines for numerous project types.

5.6. Project selection criteria

An important design element of the flexibility mechanism would be the criteria it should use to select projects. For the reasons outlined above, it is essential that projects should not be selected purely on the basis of emissions reductions/price ratio.

A pure price-based approach has a number of important drawbacks. Projects with the lowest reduction costs/unit of emissions reduced may not necessarily be the projects with the greatest benefits for the host Member State in terms of its long run energy transition. For instance, large scale, but relatively superficial energy efficiency measures in buildings, such as replacing lights or windows, filling cavity walls with cheap insulating material, etc. may be the cheapest "low hanging fruit" in terms of emissions reductions in the short run. However, such projects can also run the risk of lock-in effects that significantly lower the longer run abatement potential. Recent research suggests that these effects may be quite large and thus the depth of retrofit should be privileged over the scale of retrofit (Korytarova and Urge-Vorsatz, 2011).

Secondly, potential host Member States are likely to resist the idea that the cheapest emissions reductions are cultivated for sale to other Member States, while they must undertake more expensive reductions to achieve their own compliance with the effort sharing decision.

Thirdly, past experience with flexibility mechanisms has shown that potential buyer Member States face a political barrier to investing in emissions reductions abroad rather than at home, purely for economic reasons. Indeed, domestic stakeholders sometimes perceive this as "avoiding responsibilities". A project selection criteria based purely on the lowest-priced emissions reductions may feed this negative perception of a non-ETS flexibility mechanism. Ironically, a focus on the

lowest cost projects may therefore actually make it more difficult to potential buyer Member States to fully capture the economic benefits of flexibility.

An alternative approach is therefore to use additional criteria, along with price, for project selection. In order to ensure transparency and predictability for investors, as well as ease of administration, the best way to do this would probably be to draw up a list of accepted project types and to set quotas of how many of each project type would be sought by the call for tender. This latter approach was the approach followed by New Zealand's PRE Scheme in the early 2000s as part of its efforts to ensure that domestic JI projects contributed to strategic transformation goals. This approach also made qualitative assessments of projects benefits for private sector learning along with quantitative additionality assessments¹⁹.

One could imagine various criteria for setting quotas on project types. However, in our view, particular emphasis should be placed on sectors/options with high strategic importance for decarbonisation and which are likely to have the greatest spill-over benefits in terms of early learning and private/public sector experience-building are given priority. In practice, this could include:

- Deep energy efficiency retrofitting for buildings.
- Development of renewables-based heating alternatives
- Promotion of low carbon agricultural practices.
- Support for low-carbon transport alternatives (such as subsidizing energy efficient, hybrid or electric vehicle purchases,.)

Focusing on project types that are genuinely transformative would potentially raise the costs of AEA in the market. However, this cost would most likely be compensated by a stronger support for the mechanism by host countries and buyer country stakeholders, thus facilitating greater use of flexibility in the short and longer term.

5.7. Relationship between the AEA Clearinghouse and bilateral trades

The Clearinghouse mechanism should not in principle preclude bilateral trading between Member States. After all, not all trades of AEAs will be backed by projects. It is essential that this trading be allowed to take place.

However, an important lesson from the experience of the Joint Implementation mechanism was that a combination of two different approval processes for projects can be unsustainable. This is because the centralized mechanism ends up subsidizing bilateral project implementation without receiving any of the processing fees for these projects. The JI supervisory committee therefore ultimately recommended to the UN Secretariat that only that the two tracks for project approval be merged into one (JISC, 2011). Moreover, allowing for bilateral project agreements linked to trading of AEAs could undermine the efficacy of the central Clearinghouse that is needed for the market to function efficiently.

¹⁹ <https://www.climatechange.govt.nz/reducing-our-emissions/projects-to-reduce-emissions.html>

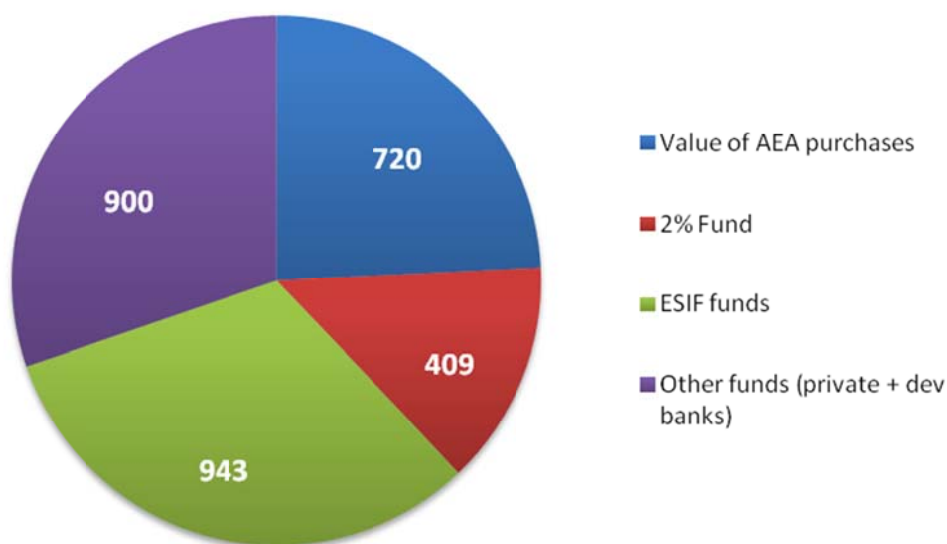
It may therefore be preferable to require that all trading of AEA be done via the Central Clearinghouse, or that all trades contribute to the upkeep of the Clearinghouse through a share of proceeds, regardless of whether it was done through the Clearinghouse or not. Trading of AEA that is not related to project-based activities could also be notified to the Clearinghouse (in order to preserve transparency about prices and volumes exchanged) but could be made flexibly between Member States at any time and price.

5.8. Relationship between the AEA Clearinghouse and other actions in non-ETS sectors

This paper has focused on the importance of flexibility mechanisms but there is much more to the decarbonisation effort in non-ETS sectors than flexibility. There are three reasons for this.

Firstly, the amount of funds delivered by the flexibility mechanism described above, although potentially significant for demonstrating potentials and building experience, is likely to be insufficient to tackle the scale of required investment in for the long term transition of Member States non-ETS sectors. A rough, back-of-the-envelope calculation suggests that financing flowing through the project based flexibility mechanism could amount to roughly 7.2 billion € during the period²⁰. This compares to an envelope in the order of 70 billion € that is to be dedicated to climate-related activities and investments under the 2014-2020 MFF²¹. Not all of this 70 billion € will be dedicated to project development, nor just to non-ETS sectors. However, the amounts are nevertheless highly significant.

Figure 9. Comparison of the different potential sources of funds for non-ETS sectors post-2020 (millions of € of annual funding)



Source: authors' calculations, based on ESIF data and Commission Impact Assessments

²⁰ Assumes an average carbon price of 20€/tCO₂e and that 360Mt of abatement are delivered under the mechanism throughout the phase.

²¹ Assumes that 20% of MFF funds (totalling 360 billion €) are spent on climate related activities and investments.

This is shown in Figure 9, which compares estimates of the share of annual funding for low carbon investment that would be provided by a flexibility mechanism (assuming an average CO₂ price of 20€/t and 360Mt of demand for AEAs) in the non ETS sectors and other potential sources of financing. These other sources include:

- Public EU funds allocated to climate related projects under the European Regional Development Fund and Cohesion Funds under the 2014-2020 MFF – note that it is assumed that these funds continue to be allocated in a similar way post-2020 for non-ETS sectors in many Member States;
- The amount of public funds that would be allocated if half of the proposed 2% of ETS allowances to be set aside for modernisation of energy systems were used in the non-ETS sector²². This assumes EUAs are sold at a carbon price of 25€.
- The estimate of the amount of funding available from other sources, including the private sector, national development banks, other funding sources under the MFF.

These estimates suggest that even with a large amount of AEA trading under a future flexibility mechanism, over ¾ of the funds available to many Member States would still come from other sources. This implies that flexibility mechanisms should be seen more as catalysing instruments, to demonstrate and build expertise with what can be done with the larger sums, rather than as a magic bullet solution. It also implies that Member States would benefit by making the most of the investment opportunities created by the pre-2020 financing arrangements to set themselves on a pathway to meeting their post-2020 non-ETS targets.

Furthermore, while individual projects can help to develop knowledge of abatement potentials and experience with implementing low carbon technologies, these important potential spill-overs from these projects can be lost unless they can be further exploited by accompanying national policies and programs that seek to leverage them. Finally, long run decarbonisation of the European economy requires going beyond projects that are cost-effective in the period to 2030 to avoid lock in and to open up longer term decarbonisation possibilities.

For all these reasons, it is essential that short term actions to meet the 2030 non-ETS targets are embedded within a credible medium and longer-term decarbonisation policy strategy within the Member States.

6. Conclusions

The European Council has set out the basic principles upon which the post-2020 Framework for emissions reductions in non-ETS sectors will be based. A key challenge for putting it into practice will be to reconcile the principles of fairness and cost-effectiveness in a practically workable and environmentally robust way. It will be important that Member States taking on higher targets are able to comply with their obligations at reasonable economic cost. Equally, it will be important that Member States taking on lower targets because of their lower financial capacity are given the resources they need meet their 2030 targets and to catalyse action that enables a deeper transition post-2030.

²² This idea was proposed in the EU Council's October Conclusions.

Even at this early stage it is clear that there will be a need for a transparent and efficient market in AEA trading between Member States. This must not simply be a question of short-run economic optimisation. Nor should it be seen as Member States seeking to weaken Member State targets. It is more fundamentally a question of whether the EU can coordinate actions so as to progress its low-carbon transition in a unified and mutually reinforcing way for the Member States. Indeed, unless this is achieved, there is a genuine risk that some Member States could fail to comply with the post-2020 effort-sharing decision, either by 2030 or, more importantly, beyond 2030.

The simple analysis provided in this paper suggests that an enhanced flexibility mechanism facilitating project-based trading between Member States could be one way of addressing this problem. If designed well, such a mechanism could have several important advantages. It could help to catalyse action and stimulate investment in Member States with lower financial and institutional capacity to reduce emissions in non-ETS sectors. It could thus help to ensure that all Member States undertake the transition towards a lower carbon economy side by side. Meanwhile, it could provide much-needed short term flexibility to Member States looking to purchase AEAs to complement domestic abatement.

Experience with previous flexible trading mechanisms in the areas of emissions and renewable energy strongly suggests that national governments on their own could fail to create an efficiently functioning market in AEAs in the post-2020 non-ETS sector. To tackle this problem we propose an option of a Clearinghouse for emissions reduction projects in order to boost visibility about supply and demand, and clarity on prices. This mechanism could also help to make use of the European private sector's greater price responsiveness (than Member States) to help match supply and demand for AEAs and stimulate projects of high strategic benefit to Member State's low-carbon transitions.

However, while this paper has focused on the importance of flexibility mechanisms, there is much more to the decarbonisation effort in non-ETS sectors than flexibility. The amount of funds delivered by the flexibility mechanism described above, although potentially significant for demonstrating potentials and building experience, is likely to be insufficient to tackle the scale of required investment in for the long term. This implies that flexibility mechanisms should be seen more as catalysing instruments, to demonstrate and build expertise with what can be done with the larger sums, rather than as a magic bullet solution. It is therefore essential that short term flexibility actions to meet the 2030 non-ETS targets are embedded within broader decarbonisation policy strategies within the Member States to leverage their full benefit.

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Annex. Summary of targets and reduction baseline assumptions used in the report.

	2020 ESD Target	2020 Projection WEM	2020 Projection WAM	Gap to 2020 target WEM	Gap to 2020 target WAM	2030 target before adjustment for cost effective potentials	2030 target including adjustment for cost effective potentials
DK	-20	-21	NA	-1		-40	-36,4
LU	-20	2	-3	22	17	-40	-30,9
IE	-20	-2	-10	18	10	-37,1	-30
SE	-17	-21	-21	-4	-4	-39,8	-35,3
UK	-16	-18	NA	-2		-35,1	-36
FI	-16	-13	-15	3	1	-37,1	-34,5
NL	-16	-15	-18	1	-2	-37,2	-33,5
AT	-16	-10	-15,5	6	0,5	-37,5	-33,2
BE	-15	-3	-4	12	11	-36,7	-31,3
DE	-14	-13	-17	1	-3	-36,3	-39,6
FR	-14	-15	-23	-1	-9	-35,6	-34,5
IT	-13	-10	-17,5	3	-4,5	-33,6	-33,6
EU	-10	-11,4	-15,5	-1,4	-5,5	-30	-30
ES	-10	-1	-2	9	8	-28,1	-28,1
CY	-5	-51	-54	-46	-49	-22,6	-22,6
EL	-4	-5	-8	-1	-4	-18,3	-18,3
PT	1	-30	NA	-31		-17,2	-17,2
SI	4	4	-10	0	-14	-19,4	-19,4
MT	5	5	2	0	-3	-19,6	-19,6
CZ	9	-7	-10	-16	-19	-14,5	-14,5
HU	10	-17	-21	-27	-31	-7,4	-7,4
HR	11	-5	NA	-16		-7,7	-7,7
EE	11	6	2	-5	-9	-14	-14
SK	13	-23	-25	-36	-38	-13	-13
PL	14	5	4	-9	-10	-7,7	-7,7
LT	15	17	1,5	2	-13,5	-10,4	-10,4
LV	17	19	15	2	-2	-10,2	-10,2
RO	19	7	3,5	-12	-15,5	-2,7	-2,7
BG	20	17	10	-3	-10	0	0



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