

CARBON MARKET ANALYST

EU ETS Phase 4 Proposal: Learning to Share

TO THE POINT

Free allocation remains capped. The Commission's proposal envisions a share of auctioning equal to 57 percent of the phase 4 cap. The remaining 43 percent will be available for free allocation to industrial and heat producers, but the 400 million allowances in the Innovation Fund will be deducted from this amount. This split between auctioning and free allocation is in line with the relative shares of the two allocation methods in phase 3.

Most unallocated allowances will end up in the MSR and NER. We estimate the unallocated allowances to be about 700 million. Of these, 250 million will be used to establish the phase 4 new entrant reserve, 50 million will be used to establish the innovation fund before 2021, while the remaining share (400 million) will remain in the MSR. Therefore, 250 million unallocated allowances will be used to effectively increase the phase 4 cap, indirectly making more allowances available for auctioning and free allocation.

Cap distribution in practice. The 57 percent auctioning pot will be split between ordinary auctioning (47 percent), Modernisation Fund (2 percent), allowances that may be given out for free to power producers (4 percent), and allowances that will go into the MSR (4 percent). Industrial and heat producing sectors will be eligible to receive 40 percent of the cap for free, while the remaining 3 percent will make up the Innovation fund. The phase 4 cap will be increased by an additional 3% available for free allocation to new entrants and installations that increase production.

A cross-sectoral correction factor will limit the free allocation to industry and heat producers in phase 4. According to our analysis, the amount of allocation calculated on the basis of the new benchmarks and production levels will exceed the maximum amount of free allocation allowed in phase 4. However, due to the new benchmarks, the correction factor will likely be applied less aggressively in phase 4.

We forecast the European carbon price at €16/t in 2020 and €30/t in 2030. Our forecast is up one euro for the years 2017-2020 as the Commission's proposal envisions less free allocation to be given out in phase 4 than expected. The cap on the amount of free allocation sends a strong signal to the beneficiaries of free allowances that they, too, will be expected to reduce emissions in line with the EU ETS cap, which may induce some to hold onto their current surplus allowances.

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Introduction

The European Commission's proposal for revising the ETS directive outlines the rules for phase 4 of the European carbon market, which will run from 2021 to 2030. The proposal puts the EU's climate target, a 40 percent emission reduction by 2030 compared to 1990, into legislative wording by increasing the linear cap reduction to 2.2 percent per year from 2021. The linear reduction factor, together with the Market Stability Reserve (MSR), determine the total supply of allowances in the period up to 2030. The other main aim of the EU ETS review is to decide how to share the emissions cap between auctioning and free allocation and how to further distribute the amount of free allocation among industrial producers.

In this analysis we outline the key provisions in the Commission's proposal and explain significant changes compared to the current legislation. A full overview of all elements in the proposal is given in Annex 1 of this report.

Auctioning versus free allocation

The Commission is proposing to fix the share of auctioning at 57 percent of the total phase 4 cap. The auctioning share includes the Modernisation Fund, equal to two percent of the total phase 4 cap (or 310 million allowances), which will be used to finance energy efficiency improvements and to modernise the energy systems in low-income member states. The allowances to be allocated for free to electricity production under article 10c are also included in the auctioning share.

The rest of the phase 4 cap, 43 percent, will be allocated for free to industry sectors and producers of heat. However, the 400 million allowances to support innovation in low carbon technologies in industry sectors (the Innovation Fund) will be deducted from this amount, reducing the share of allowances to be allocated for free. After this deduction, free allocation to industrial and heat producing companies will be in the order of 6.3 billion allowances over the 2021-30 period, according to the Commission's estimate, or 40 percent of the overall cap.

The explicit definition of a share of auctioning is a new provision in the EU ETS directive. In phase 3, the share of auctioning is implicitly embedded in the legislation as the free allocation to industry sectors is capped at their relative share of phase 1 emissions (and the subsequent application of the cross-sectoral factor). However, according to the impact assessment accompanying the EU ETS review, the actual share of auctioning in phase 3 is also expected to be around 57 percent.

“ Industry and heat installations can receive 40% of the cap for free in addition to EUAs from the NER

Unallocated allowances

According to the MSR decision the unallocated allowances in phase 3 will be transferred directly to the MSR. However, in a statement attached to the MSR decision the Commission states that it will “consider whether unallocated allowances should be used for addressing the risk of carbon leakage”.

We estimate the unallocated allowances in phase 3 to be in the order of 700 Mt. According to the Commission's proposal these allowances will be distributed as follows: 50 Mt will be monetized before 2021 as an early start of the Innovation Fund, 250 Mt will be used to set up the New Entrant Reserve (NER) for phase 4, while the rest (400 Mt according to our estimate) will be transferred to the MSR.

Therefore, the Commission is proposing to use the unallocated allowances to support carbon leakage indirectly by increasing the phase 4 cap. As NER allowances no longer have to come from the phase 4 cap, the proposal results in a greater amount of allowances left over for auctioning and free allocation to existing installations.

Free allocation for industry

The main aim of the changes to the free allocation in phase 4 is to update the benchmark values in order to reflect technological progress realised over time and to align the free allocation with up to date production data in the different sectors.

The starting point for the free allocation will be the existing 52 product benchmarks, which are based on the average performance of the 10 percent most efficient installations in a certain sector or sub-sector in the years 2007-2008. In line with expected technological progress/efficiency improvements, the benchmark values will, as a general rule, be reduced by one percent per year from 2008 to the middle of the period for which free allocation is decided. The Commission is proposing to have two periods for free allocation in phase 4: 2021-25 and 2026-2030.

This implies that the benchmark allocation will decrease by 15 percent for the 2021-25 period and 20 percent for the 2026-30 period compared to the current benchmark. However, the Commission can decide to adjust the annual benchmark reduction by up to 0.5 percent up or down on the basis of information submitted by member states in the National Implementation Measures (NIMs). The NIMs for the 2021-25 period shall be submitted by 30 September 2018 and be based on data from the five preceding calendar years. In order to have the benchmark value set to 0.5 percent, the actual data in the NIM would have to demonstrate that the sector has had an annual improvement rate lower than 0.5 percent. Correspondingly, for the sectors where the data in the NIMs shows an annual improvement rate of more than 1.5 percent per year, the product benchmark for these sectors will

be reduced by 1.5 percent each year. In aggregate, the range of expected efficiency improvements will thus be between 7.5 percent and 22.5 percent over the first free allocation period (2021-25).

The Commission will at a later stage put forward an implementing act to outline the detailed application of the benchmarks. This secondary legislation will be adopted in comitology, i.e. based on a qualified majority agreement among member state representatives. As the member states will submit their NIMs by as late as 30 September 2018, it will be very close to the start of phase 4 before individual sectors will know the value of their respective benchmarks.

The declining benchmark allocation in phase 4 is, at least in principle, different from the current system, where the free allocation is based on a constant benchmark over phase 3. However, due to the cross-sectoral correction factor (CSCF) the allocation to all industry sectors is in practice declining in line with the overall 1.74 percent reduction factor. To keep the auctioning share at 57 percent in phase 4, a similar cross-sectoral correction factor could apply in phase 4.

Will a correction factor be applied?

The maximum free allocation in phase 4 will be equal to 43 percent of the total cap, minus the 400 million allowances that will go to the Innovation Fund. If the sum of the free allocation based on the benchmark values exceeds this “industry cap”, a cross-sectoral correction factor will have to be applied. Three factors will determine whether and when such a CSCF will apply in phase 4.

Firstly, it will depend on the how the benchmark values are set. If most of the 52 product benchmarks are reduced at a rate of 1.5 percent per year, this will imply a lower free allocation and thus less need to apply a correction factor. However, if most benchmarks are reduced by a rate of 1 or even 0.5 percent, the CSCF will likely have to be applied from the start of phase 4 (see Figure 1 below).

Secondly, the phase 4 allocation will be based on production

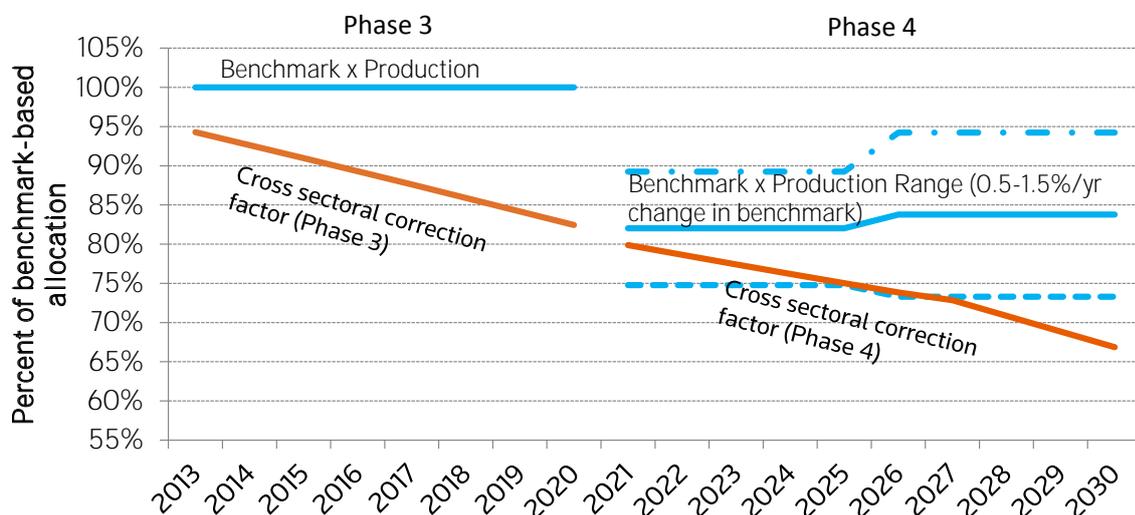
levels in the five years preceding the submission of the NIMs. As mentioned above, there will be two separate NIMs for phase 4, one for 2021-25 and one for 2026-30. The production data used to calculate free allocation will be based on the 2013-17 period for the first NIM and the 2018-22 period for the second NIM. This is different from the current allocation method, which is using production data from 2005-08 or 2009-10, whichever is higher. Thus, the production levels in the 2013-17 period will also determine to what extent a CSCF will be needed in order to keep the free allocation below the “industry cap” at the start of phase 4.

And thirdly, it will depend on the number of industry sectors that are included on the carbon leakage list, as the sectors considered to have a high risk of carbon leakage will receive 100 percent of their product benchmark, while other sectors will get 30 percent of their benchmark allocation.

Together, the benchmarks, the production levels and the carbon leakage criteria will determine the bottom-up preliminary allocation amount. As in phase 3, this will be compared to the top-down allocation amount determined by the “industry cap”, which is in turn determined by the fixed 57 percent auctioning share. If the sum of the (bottom-up) benchmark allocation should be lower than the (top-down) limitation, the “remaining” free allocation will be banked and potentially soften the impact of the cross-sectoral correction factor in later years. If, however, the bottom-up calculation ends up higher than the “industry cap”, a CSCF will be applied to cut allocation across all plants.

We have estimated the stringency of the bottom-up rules and the top-down industry cap in phase 3 and 4 and illustrated this in Figure 1. The vertical axis measures the percentage of free allocation that the industry sector will receive with respect to the product of the phase 3 benchmark and baseline historical activity levels (the latter being based on 2005-08 data). The blue lines represent the amount of free allocation based on the benchmark values and the historical/expected production levels for each allocation period. In phase 4, these lines are based on the respective benchmarks and expected activity levels applicable to each allocation period, 2021-2025 and 2026-2030. They increase in the second half of phase 4 because the expected production

Figure 1: When will the CSCF kick in?



levels used in the calculation will be higher, in line with expected industrial production growth. The orange lines represent the cross sectional correction factors applicable to each period.

In 2013, the industry sector received 94 percent of its benchmark allocation due to the application of the phase 3 CSCF. This percentage is poised to drop to 82 percent by 2020 as the CSCF tightens in line with the reduction of the phase 3 cap. In phase 4, the benchmark allocation will drop, as explained above, in line with the assumed improvement in the benchmarks and in line with our expectation for future industrial production growth. The dashed blue lines show the range of the possible benchmark allocation levels depending on the annual rate of improvement for the industry benchmarks.

As the figure shows, we estimate that the phase 4 “industry cap” cap will be lower than the benchmark allocation in most cases. Thus, we believe that the CSCF will be applied in phase 4, implying that the amount of free allocation to industrial installations will be equal to the maximum “industry cap” in the 2021-30 period. The only scenario where this is not the case is one where all product benchmarks improve by 1.5 percent per year.

Carbon leakage provisions

The Commission is proposing to simplify the formula for assessing the risk of carbon leakage in phase 4. Sectors/sub-sectors will now be deemed to have a high risk of carbon leakage if their trade intensity multiplied with the emissions intensity exceeds 0.2. A qualitative assessment will be made for the sectors where the above formula yields a result above 0.18. Sectors on the carbon leakage list will receive 100 percent of their product benchmark, while other sectors will receive 30 percent of their benchmark allocation.

According to an initial analysis from Ecofys, the new criteria reduce the number of sectors on the list from 152 to around 50 in phase 4. But in terms of emissions the coverage decreases only from 97 percent to 94 percent. A new implementing act to update the carbon leakage list shall be adopted by the Commission by 31 December 2019. The new list will be based on data from the three most recent years available preceding its adoption.

The Commission’s proposal also states that member states should use auctioning revenues to compensate for significant indirect cost for industries exposed to carbon leakage. In the current legislation it is stated that member states “may” compensate for indirect costs. This is thus a clear strengthening of the legal wording. However, “should” still gives some leeway for member states to decide to what extent they will compensate for indirect costs.

“Member states will auction 47 percent of the phase 4 EU ETS cap

Free allocation for power

The transitional free allocation for electricity production will continue in countries with a GDP per capita below 60 percent of the EU average in 2013. Ten member states will qualify to continued free allocation under article 10c. The free allocation is capped at 40 percent of these member states’ relative share of their phase 4 auctioning volume (excluding the 10 percent of the auctioning volume which is redistributed for solidarity purposes). The free allocation will be distributed in equal annual allocations over the 2021-2030 period. The purpose of the free allocation should be to modernise the energy sector, and member states must organize a competitive bidding process to select the investments to be financed with free allocation under article 10c. A national framework for this bidding process shall be published by the member states by 30 June 2019.

According to the current EU ETS directive, any transitional free allocation for electricity production will be phased out by 2020. As there are no provisions to change this in phase 3 in the Commission’s proposal, the gradual decline in free allocation under article 10c will continue, with zero allocation in 2020, before being ramped up to 40 percent from 2021 onwards.

If the derogation is utilized to the full extent, the volume could in theory amount to 664 Mt in phase 4. Based on our price forecast for phase 4, the corresponding reduction in the auctioning revenue would be in the order of €16 billion for these member states.

New entrant reserve

The New Entrant Reserve (NER) in phase 4 will be made up exclusively of allowances issued in phase 3 and will consist of three elements. Firstly, the NER will be filled with 250 Mt from the amount of unallocated allowances that will be initially transferred to the MSR in 2020.

The second element is unallocated allowances initially set aside for allocation to non-carbon leakage industry sectors in phase 3. According to the Commission’s impact assessment (page 225), this volume would be in the order of 145 million allowances. We have not been able to replicate this calculation, but we assume that this is based on the fact that non-carbon leakage sectors only will receive 80 percent of their product benchmark in 2013, decreasing to 30 percent in 2020. The 145 million allowances could be the estimated difference between a 100 percent benchmark allocation and the actual 80 to 30 percent these sectors will receive. Importantly, these “unallocated allowances” are not the same as the unallocated allowances from closures and NER surplus in phase 3 that will be transferred to the MSR.

And thirdly, unallocated allowances due to closures and installations with partially ceased operations in phase 4 will be added to the NER throughout the 2021-30 period.

Given how phase 2 and 3 ended up with a significant surplus in the NER, it seems likely that the 400+ million allowances in the phase 4 NER will be sufficient to cover allocation to new installations, capacity extensions, and significant production increases.

Putting the pieces together

Most of the elements discussed above relate to how the phase 4 allocation is shared between auctioning and free allocation and how the free allowances are shared among the industry sectors. Figure 2 aims to explain how this comes together in the main steps in the allocation process. As the figure shows, the first step is to set the initial split between auctioning and free allocation, with the Modernisation Fund included in the auctioning pot and the 400 allowances in the Innovation Fund included in the share of free allocation.

The second step is to distribute the auctioning revenue among member states. When excluding the allowances in the Modernisation Fund, 90 percent of the allowances will be distributed according to the verified emissions in 2005 or 2005-07, whichever is higher, while the remaining 10 percent will be distributed among member states whose GDP per capita did not exceed 90 percent of the EU average in 2013.

In step three, some allowances will be "transferred" from auctioning to free allocation. This is the case for the allocation to electricity production under article 10c.

In line with the "limited, one-off" mechanism set up by the European Council in October, some countries will have the possibility to cancel a part of their auctioning volume and use a corresponding amount for compliance with their domestic targets under the Effort Sharing decision. The operation of this mechanism will be addressed in the review of the Effort Sharing decision which is scheduled to start in 2016.

And finally, as a fourth step in the allocation process the operation of the MSR will likely take out a share of the phase 4 auctioning volume. Our current estimate suggests that 991 million phase 4 allowances will be transferred to the MSR from 2021 to 2025. We project that the first allowances to be released from the reserve will come to the market in 2033. Thus, the actual share of auctioning will be further reduced by the MSR, to 47 percent of the phase 4 cap.

In Figure 3, we show our estimates for the actual cap distribution. As the figure shows, the combined volume of auctioning by member states and of allowances in the Modernisation and Innovation funds might not reach the headline figure of 57 percent in any year. The initial estimate shown in the figure does not include any transfer of allowances from the EU ETS to the non-trading sector under the "limited, one-off" mechanism. We also did not account for any unallocated allowances due to cessations in phase 3 or 4. The 10c derogation displayed in the chart represents the theoretical maximum allocation to electricity producers.

Figure 2: How to share the cake

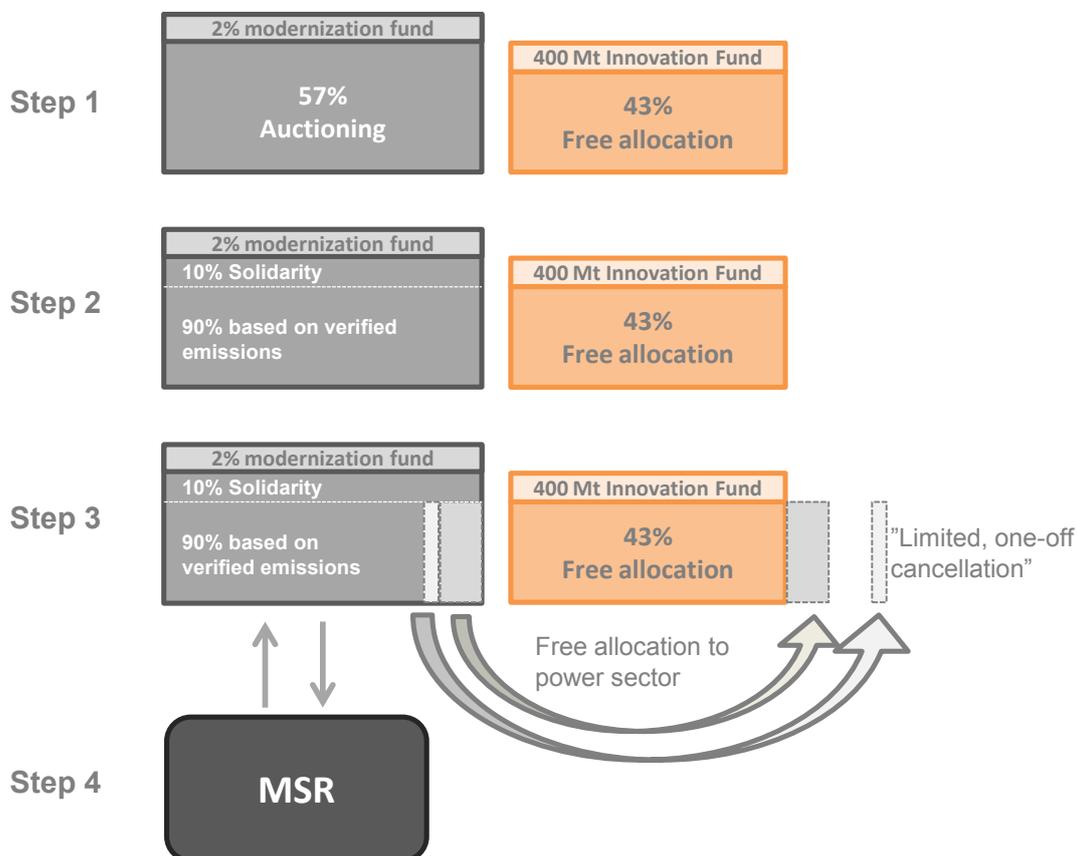
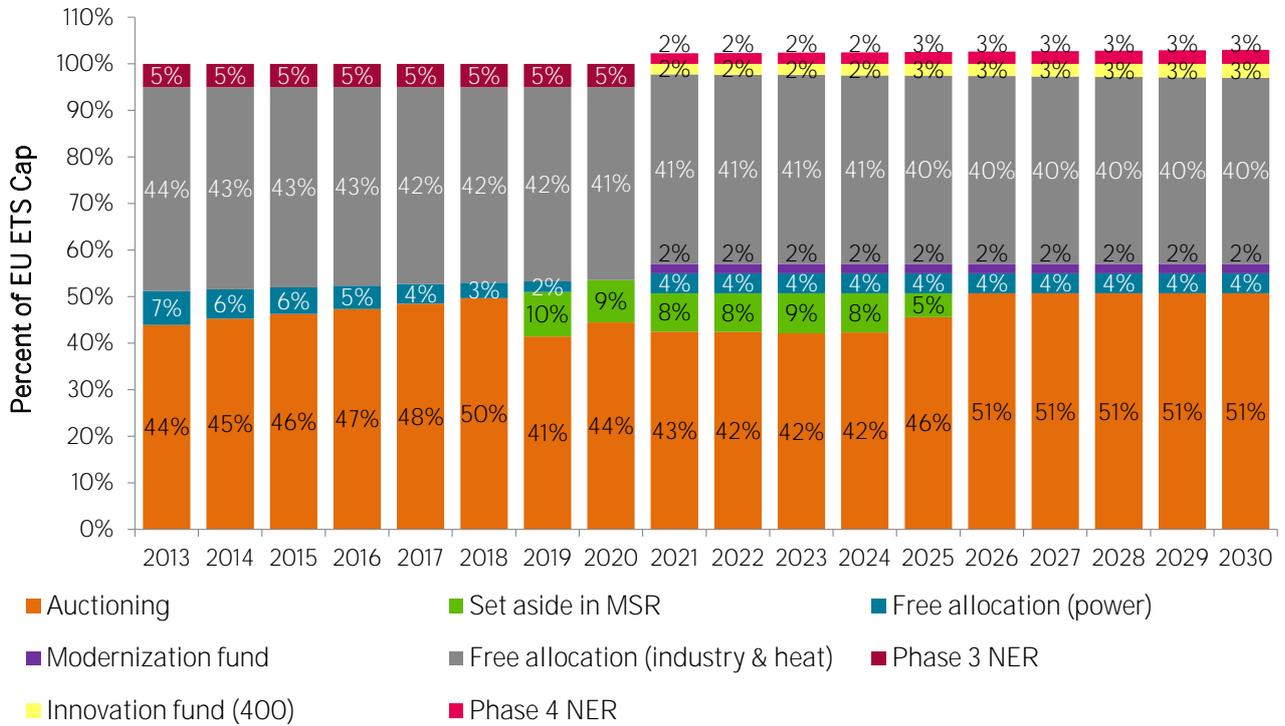


Figure 3: Slicing the phase 4 cap



What's left?

In addition to the secondary legislation that will be adopted at a later stage to set the detailed rules for the product benchmarks and the update of the carbon leakage list, a number of other issues are left out of the EU ETS review.

The rules for the aviation sector will likely be addressed after the ICAO's Assembly in 2016. The potential transfer of allowances under the "limited, one-off mechanism" will be decided in relation to the review of the Effort Sharing decision.

Another element that remains unclear in the Commission's proposal is when the allowances in the Modernisation and Innovation funds will be monetized. The preamble of the Commission's proposal states that the allowances in the Modernisation Fund will be auctioned according to the same rules as other allowances, but this is not further specified in the articles related to the operation of the fund.

Table 1 gives an overview of some of the elements that will be decided at a later stage, either in secondary legislation to be adopted in comitology or as actions to be taken by member states. The table is not comprehensive.

Table 1: To be decided

Deadline	Decision to be made
Not specified	Decide the volume to be transferred to the non-trading sector through a one-off, limited cancellation. This will be decided in the review of the Effort Sharing decision which is scheduled to take place in 2016-17.
Not specified	The Commission shall adopt an implementing act to specify the use of benchmarks
30 Sept 2018	The member states shall publish the NIMs, including a list of the covered installations for the 2021-25 period and their production activity in the five preceeding years.
31 Dec 2018	The member states shall transpose the revised EU ETS directive into national legislation.
30 June 2019	Member states who want to use article 10c must publish a national framework setting out the rules for the competitive bidding process and the criteria for selecting the projects eligible for free allocation.
31 Dec 2019	The Commission shall adopt an implementing act specifying the sectors to be included on the carbon leakage list.
30 Sept 2023	The member states shall publish the NIMs, including a list of the covered installations for the 2026-30 period and their production activity in the five preceeding years.

Changes to our price forecast

The proposed changes in the EU ETS review have led us to slightly increase our carbon price forecast for the near term up to 2020. This upward revision is due to several modest changes in the amounts of free allocation and auctioning, compared to our previous assumptions.

Our free allocation forecast for 2021-2030 is now lower by 261 Mt. Previously, we had assumed that the phase 3 industry cap would continue through phase 4, with the only change being that the linear reduction would increase from 1.74 percent to 2.2 percent from 2021. In addition, we assumed that 350 Mt, taken from the amount of unallocated phase 3 allowances, would be allocated to the industry sector in phase 4 to compensate for indirect carbon costs. This assumption resulted in a industry allocation forecast of 6,378 Mt in 2021-2030. However, the Commission's proposal indicates that this amount will in fact be 6,117 Mt, based on the phase 4 "industry cap".

Our auctioning forecast for 2021-2030 is now 290 Mt higher, before the application of the MSR, compared to our previous assumption. We had previously assumed that auctioning would continue its trend from phase 3, adjusted for the increase in the linear reduction factor. However, the Commission's proposal indicates that the phase 4 NER will not come from the overall cap. This leaves more allowances to be auctioned and allocated for free to existing installations. This, in combination with the rule that 57 percent of the phase 4 cap will be auctioned, leads to a greater amount of auctioning than we previously assumed.

We have also updated our estimate for the phase 4 NER, which will

be equal to 395 Mt according to the Commission, slightly higher than our previous projection of 375 Mt.

As a result of the changes, we forecast a one euro higher average carbon price for the period 2017-2020. This is largely the result of lower industrial free allocation in phase 4, which we expect to affect the willingness of industrials to sell allowances and to act as the marginal source of supply of allowances for the market. The cap placed on industrial free allocation in phase 4 sends a strong signal to manufacturers, which may encourage more and more of them to plan for the long term and save the allowances they have on their books for the future. Our model captures this behaviour by assuming that companies' willingness to sell is dependent on their expected surplus of allowances, given a certain forward-looking horizon.

The two bullish effects described above are somewhat counteracted by the higher-than-expected auctioning volume in phase 4. This begins to take effect from 2021 and as a result, we forecast slightly lower prices in the second half of phase 4.

Now what?

The political debate on the ETS review has been going on for some time already, with stakeholders and policy makers positioning themselves and getting ready for the legislative process.

The Commission's proposal now kicks off the formal legislative process on the directive review – the so-called "ordinary legal procedure". The proposal enters the hands of the Council and the European Parliament as the two lawmaking institutions in the EU. The revised directive will be adopted once these institutions come to an agreement on the legal wording. While there is no time-limit for this procedure, the process normally takes one to two years depending on the political and technical complexity of the legal proposal.

In the case of the EU ETS review, the proposal is both technical and complex. However, it will not necessarily be politically controversial. In fact, most key elements (the total cap, the fixed share of auctioning, the distribution of auctioning revenue and key aspects of the allocation method) have already been endorsed by the European Council. In addition, some controversial issues like the benchmark values for each sector will be decided in comitology at a later stage. Thus, we don't expect the final legislation to be very different from the Commission's proposal. We also find it likely that there could be a first reading agreement between the Council and the Parliament. In this case, the legislative process might take around a year.

Figure 4: EUA Price Forecast
Prices in real 2014 euros

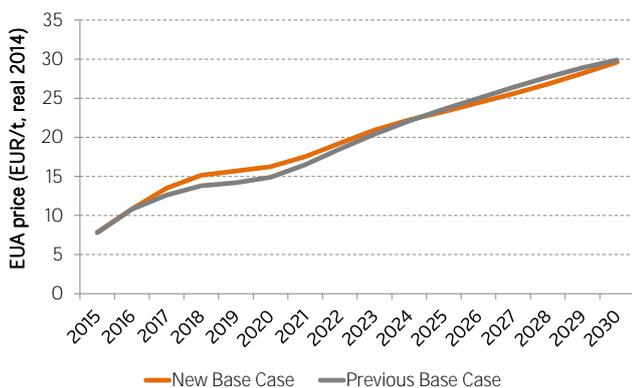


Table 2: EUA long-term price forecast (average annual price)

€/t	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real ('14 euros)	7.8	10.8	13.5	15.2	15.7	16.2	17.5	19.2	20.9	22.2	23.3	24.4	25.6	26.8	28.2	29.6
Nominal	8.0	11.3	14.3	16.4	17.3	18.3	20.1	22.6	25.0	27.1	28.9	31.0	33.1	35.4	37.9	40.7

Conclusion

The revision of the EU ETS directive has implications for all of the carbon market's diverse stakeholders. As the pie of carbon allowances gets progressively smaller, the question of how to share it becomes ever more important.

For industry sectors, the Commission's proposal sends a strong signal that they, too, will be expected to reduce emissions in line with the reduction of the overall emissions cap. The application of the phase 4 cross-sectoral correction factor, which we see as likely, will mean that industry and heat producing sectors are eligible to free allocation equal to 40 percent of the overall cap.

Yet, there is also relief for industry sectors in the proposal. The new rules for the New Entrant's Reserve indicate that companies may receive allowances for significant increases in production levels. Therefore, more industrial producers might be eligible to receive an additional allocation from the phase 4 NER, allowances that come on top of the 2021-30 cap.

We estimate that industrial and heat producing sectors will receive ordinary free allocation valued at 147 billion (in real 2014 euros) and

potentially an additional 10 billion euro worth of free allowances from the phase 4 NER.

Finally, industrial consumers of energy will likely receive greater amounts of compensation for indirect costs that may be borne as a result of the way the carbon price affects energy prices, as the proposal encourages member states to use auctioning revenue towards such compensations, using a stronger language than in the current legislation.

Power producers in ten relatively poor member states will be able to apply for free allocation if they invest in the diversification and modernisation of their infrastructure. We estimate that allowances worth 16 billion could be given away from 2021 to 2030 if member states take full advantage of this option. In addition, the Modernisation Fund will support investments in the energy systems and energy efficiency in the same member states.

For governments, the proposal suggests that significant revenues will flow to national coffers. As we expect the carbon price to rise in phase 4, we estimate that the 31 nations participating in the EU ETS will be able to raise 171 billion euro from 2021 to 2030.

Annex I: The essentials of the ETS review proposal

EU ETS Element	Commission proposal	Our comment (monetary values in real 2014 euros)
Length of phase 4	10 years (2021-2030)	This aligns the EU ETS with the overall 2030 framework.
Cap reduction factor	2.2% or an annual reduction in the order of 48 Mt.	Compared to 1.74%, or 38 Mt annual reduction in phase 3.
Unallocated allowances	250 Mt to the phase 4 NER, 50 Mt to be monetized before 2021 as an early start of Innovation Fund, the remainder to stay in MSR.	Only 50 Mt of unallocated allowances will go directly to market at the start of phase 4. The 250 Mt in the NER will be allocated if needed due to new entrants/ extensions or production increases. The the remaining amount (estimated at 400 Mt) will come to market according to the parameters of the MSR – most likely after 2030.
Size of the NER	The phase 4 NER will initially be around 400 Mt. 250 Mt from the unallocated allowances in the MSR, and some 145 million “unused allowances” from non-carbon leakage allocation in phase 3 (according to Commission’s impact assessment). The NER will be refilled by unused allowances in phase 4 due to closures and partial cessations.	The phase 3 NER was set to 5% of the total cap, or 780 Mt. Of this, 300 Mt was monetised under the NER300 mechanism, leaving 480 Mt for new entrants and capacity increases.
Innovation Fund	The new Innovation Fund will be monetized by auctioning 400 million allowances. These allowances are not included in the 57% auctioning share and will thus be deducted from the pot for free allocation. It is not specified when the 400 million allowances will be monetized. In addition, 50 Mt of the unallocated allowances in the MSR will be monetized before 2021 to allow for an early start of the Innovation Fund.	The size is comparable to the NER300 in phase 3. However, while the NER300 was taken from the phase 3 NER, the 400 million allowances in the Innovation Fund are taken from the share of free allocation in phase 4.
Modernisation Fund	2% of the total allocation will be set aside in the Modernisation Fund. This adds up to 310 million allowances that will be auctioned according to the same rules as other allowances.	This is a new mechanism in phase 4. We expect the Modernisation Fund to raise 7.6 billion euro if the allowances are auctioned in equal manner across phase 4.
Benchmarking system	New benchmarks are based on current benchmark values, reduced by 1% per year from 2008. However, if justified by the data provided in the NIMs, the benchmark improvement could be set to 0.5 or 1.5% per year.	The benchmarks will get tighter to reflect technological/ efficiency improvements compared to the current benchmarks which are based on data from 2007-08.
Production data	There will be two periods of free allocation in phase 4: 2021-25 and 2026-30. The allocation in the first period will be based on production data from 2013-17, while the second period will be based on data from 2018-22.	In phase 3 the allocation is based on production data from 2005-08 or 2009-10, whichever is higher. By multiplying the benchmark values with more updated production data, the free allocation in phase 4 will be better aligned with the activity levels in the respective sectors.
Carbon leakage	Sectors have a high risk of carbon leakage if their trade intensity multiplied with the emissions intensity exceeds 0.2. A qualitative assessment is made if the formula yields a result above 0.18. Carbon leakage sectors get 100% of their benchmark, other sectors get 30% of the benchmark.	The criteria for carbon leakage assessment are simplified. There is no assumption on the carbon price as part of the criteria. The new criteria will reduce the number of sectors on the carbon leakage list, but the coverage of emissions is only expected to reduce from 97% to 94%.
Compensation for indirect carbon costs	Member states should adopt financial measures to compensate sectors exposed to a risk of carbon leakage for indirect costs in accordance with state aid rules.	The wording in favor of support for indirect cost has changed from “may” in phase 3 to “should” in phase 4. This will encourage member states to compensate indirect cost, but there is still no harmonization at EU level.
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Annex I: The essentials of the ETS review proposal (continued)

EU ETS Element	Commission proposal	Our comment (monetary values in real 2014 euros)
Free allocation for power sector	Member states which in 2013 had a GDP per capita below 60% of the EU average can provide free allocation to electricity generation installations. The selection of investments is based on a competitive bidding process. The total free allocation to the power sector is limited to 40% of the member states' auction volume (excluding the 10% solidarity volume) and will be spread out in equal annual volumes over phase 4.	According to phase 3 rules, any transitional free allocation to the electricity sector will be phased out by 2020. Thus, there will be no allocation under article 10c in 2020, while this can be increased to 40% from 2021 and thereafter be constant in phase 4.
Distribution of auctioning revenue	90% will be distributed among the member states based on their relative share of emissions in 2005 or the average 2005-2007 emissions, whichever is higher. 10% will be redistributed to certain member states for the purpose of solidarity and growth.	The distribution key is the same as in phase 3, with the exception of the current 2% redistribution of auctioning volume based on "early reductions". This element is deleted in the revised directive.
Use of auctioning revenues	At least 50% of the revenues should be used for climate and energy related purposes. Three new options are added: climate finance to vulnerable third countries, indirect cost compensation and promotion of skill formation/reallocation of labor.	Within what's politically possible, the Commission is encouraging member states to compensate for indirect carbon cost and contribute to international climate finance.
Limited, one-off reduction of ETS allowances	In line with the guidance from the European Council, some countries will have the possibility to cancel a part of their auctioning volume and use a corresponding volume to comply with domestic targets under the Effort Sharing decision. The EU ETS revision does not address the operation of this mechanism.	The "one-off" mechanism will lower the phase 4 cap, but the volume will only be decided in the review of the Effort sharing decision which is scheduled to take place in 2016. We have not taken any volume cancelled under this mechanism into account in our updated price forecast.
Allocation of aviation allowances	The Commission proposal does not address the aviation sector in the EU ETS review.	The assessment of potential revisions related to aviation will likely be done after the ICAOs Assembly in 2016.
Linking/Use of credits	International credits can not be used for EU ETS compliance after 2020. The Commission is requested to set up new provisions to allow for "mutual recognition of allowances" to facilitate linking with other emission trading system.	Any provisions to allow for mutual recognition of allowances will take place in a revision of the Registry Regulation.

Annex II: The Point Carbon price forecasting model

Our price forecasting model consists of three modules (see flowchart below).

The first module is an econometric price forecasting model. This model relates historical EUA prices with the historical “perceived” EU ETS supply and demand balance to simulate how changes to the market’s supply and demand influence the carbon price. The perceived market balance is calculated as ‘Actual Demand’ minus ‘Perceived Supply’.

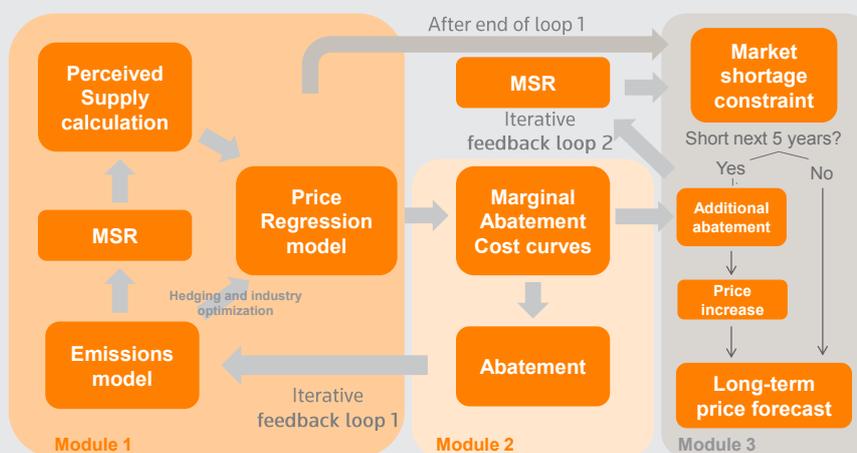
We calculate ‘Actual Demand’ on the basis of historical verified emissions as well as our forecast for future emissions. Emissions in the power sector have been adjusted for forward hedging needs to reflect the actual demand of utilities in any given year. Forward hedging is done up to three years ahead and is calculated on the basis of public financial reporting by the major utilities. In the industrial sectors, demand is based on the sector’s balance between emissions and free allocation accumulated for the length of companies’ planning horizons. The planning horizon is assumed to increase from two years in 2014 to three years in 2015 to four years in 2016 and five years from 2017 onwards.

‘Perceived Supply’ represents the future EU ETS cap as well as market participants’ expectations about any potential changes to the cap. We expect market participants to evaluate different scenarios regarding the potential future cap changes and weigh them based on probabilities, representing their expectations for the chance of each scenario. We construct the future ‘Perceived Supply’ based on current legislation as well as in-house policy analysis regarding any potential legislative changes. The future ‘Perceived Supply’ is based on a 40 percent greenhouse gas target, a 27 percent renewable energy target and a 27 percent energy efficiency target for 2030. Our base case forecast also reflects the design of the MSR as agreed to by the Parliament and the Council on 5 May and the Commission’s ETS review proposal.

The second module of our price forecasting model simulates the interaction between the future EUA price expected by the market and the amount of abatement in the EU ETS. We use a feedback loop to estimate the impact of abatement on the carbon price and to forecast the future carbon prices and abatement levels. Our model uses marginal abatement cost curves for the power and industry sectors. Fuel switching abatement in the power sector is calculated by a power dispatch model, while abatement in the industry sector is based on currently available abatement options and takes into account inter-temporal effects of investment decisions.

The third module provides a constraint, which specifies that market participants cannot be short of EUAs for their annual compliance needs. The module simulates the market’s reaction to a potential future shortage by calculating companies’ abatement assuming they aim to minimise costs. We assume that market participants would begin to cover shortages by beginning to abate emissions five years in advance. The higher abatement needs caused by any impending shortages has a bullish effect on the price on the basis of our marginal abatement cost curves.

EUA price model illustration



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