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Getting the balance right

How today's ETS design choices shape supply, market stability, and the path to 2040 and beyond

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The debate about the ETS reform for the period after 2030 is dominated by the perceived need to increase supply. To this end, the Commission has already proposed to end invalidation of allowances in the Market Stability Reserve (MSR) and there is a push to use the New Entrants Reserve (NER) to co-finance the Industrial Decarbonisation Bank (IDB). In this brief, we show that these two modifications alone would already ensure a sufficient supply of allowances until 2040. If the Linear Reduction Factor (LRF), the parameter defining the cap and therefore supply of allowances, would be changed as well, there is a real risk of a new structural oversupply in the carbon market and the EU missing its 2040 climate target.

Key recommendations

- **Do not risk renewed carbon market oversupply:** While the policy discussion looks only at structural scarcity, there is a major risk of renewed oversupply in the EU ETS weakening the carbon price signal, undermining investments and endangering the 2040 climate target. This risk is especially high when multiple supply measures are combined.
- **Ensure balanced and well-coordinated EU ETS reforms:** Assess all proposed changes to ETS supply jointly. The interaction between changes to the Linear Reduction Factor, the Market Stability Reserve and IDB-related auctions determines overall market balance and the environmental integrity of the EU ETS. Decisions on the MSR invalidation clause should not be taken separately from the broader ETS reform proposal.
- **Improve TNAC accuracy** by adjusting the indicator governing the MSR so it better reflects the true supply–demand balance and enables a more responsive MSR in the early 2030s, while **keeping the LRF at 4.4% until 2035** to align the ETS cap with the 2040 target—recognizing that enhanced TNAC accuracy is the more effective tool for addressing market liquidity until then.
- **Refrain from discretionary measures that increase supply:** Auctioning NER allowances for the IDB could distort the carbon market by introducing additional supply outside the ETS's rule-based mechanisms, weakening the price signal and undermining confidence in the system and long-term investment certainty.

Introduction

The upcoming review of the EU Emissions Trading System (ETS 1), due on 15 July 2026, takes place amid an increasingly active policy debate on the system's future design. A wide range of reform options is currently under discussion, including adjustments to the Market Stability Reserve (MSR), the potential auctioning of allowances from the New Entrants Reserve (NER) for an Industrial Decarbonisation Bank (IDB), and changes to the Linear Reduction Factor (LRF). Against this backdrop, this paper aims to contribute evidence-based insights by presenting data and analytical results that inform and contextualise these policy proposals

Concepts and assumptions

- **Analytical approach:** Our assessment starts with an ETS emissions pathway based on the Commission's 2040 Climate Target Plan and compares allowance demand with supply under different reform options, using our in-house MSR & ETS model.[1]
- **Emission pathways:** We define two emission pathways based on the Commission's S2 scenario consistent with a domestic reduction of 88% by 2040:[2]
  - *Linear decline:* steady decline from 2030 to 2040
  - *Fast decline:* faster decline during 2030-2035 considering the expected decline in emissions from coal-fired power generation across the EU

  Both reach 250 Mt CO_2e ETS 1 emissions in 2040 and cover all emissions including aviation, shipping, Norway, and Iceland in the current ETS scope. In addition, we also look at emissions scenarios compatible with an EU-wide reduction of 85% and 90% below 1990. The cumulated 2031-2040 emissions of the 90% scenario fall between the 88% linear and fast decline scenarios.

  Cap implications of Article 6 use: The amended European Climate Law permits the use of international carbon credits under Article 6 for up to 5 percentage points of the binding 90% emissions reduction target by 2040. In this paper, we employ LRFs that are in line with both a 90% reduction target and an 85% reduction target until 2040.
  While an 85% domestic reduction target is discussed politically, it is likely that part of the Article 6 quota will need to be used as a safety reserve for the LU-LUCF sector and for Member State flexibility in fulfilling national targets. Therefore, the ETS cap should align with a domestic reduction in the range of 88-90%.[3]
- **Actual TNAC:** We use the actual total number of allowances in circulation (TNAC) as our measure for the surplus in the market. It corrects the official TNAC for historic net demand from aviation and ESR flexibility (equal to about 300 million EUA).

[1] For a description of the tool, see https://www.oeko.de/fileadmin/oekodoc/EU-ETS-and-2040-climate-target.pdf
[2] https://climate.ec.europa.eu/document/download/768bc81f-5f48-48e3-b4d4-e02ba09faca1_en?filename=2040%20Climate%20Target%20Impact%20Assessment_en_0.pdf
[3] For more information, see https://www.oeko.de/fileadmin/oekodoc/Using-international-carbon-credits-towards-EU-2040-climate-target.pdf

A new oversupply until 2040?

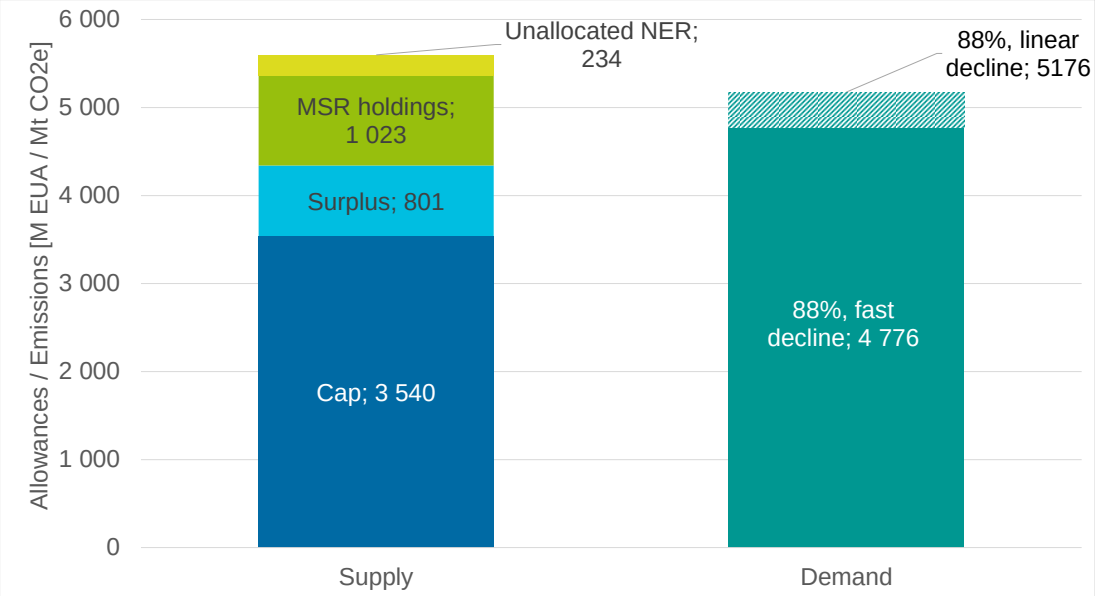
Supply and demand under current rules and two discussed reform options

The debate about the ETS reform for the period after 2030 is dominated by the perceived need to increase supply – however, in order to assess the overall supply, it is necessary to consider all sources of supply entering the market. Figure 1 shows the balance of allowance supply and demand in the fifth trading period (2031–2040) under the current LRF and two currently discussed reform options. It includes both allowances issued under the cap for this period and those carried over from the fourth trading period. The analysis assumes that the LRF remains at 4.4% until 2040, that invalidation of allowances from the MSR ends in 2026, and that 80 million EUA per year are auctioned for an Industrial Decarbonisation Bank (IDB) between 2028 and 2032 (i.e., in total 400 million EUA).

The results show that the total supply of allowances in the fifth trading period exceeds demand under emission pathways consistent with achieving the EU's 2040 climate target. Looking only at the cap relative to projected emissions gives an incomplete and potentially misleading picture: A comprehensive assessment must consider all sources of supply entering the market, including the surplus carried over into the fifth period (about 800 million EUA), allowances held in the MSR (about 1 000 million EUA),[4] and unallocated volumes from the NER (including the remaining 160 million EUA for IDB auctions in 2031 and 2032 in this analysis). Taken together, these sources significantly increase effective market supply despite the cap development which is considerably more ambitious than the EU climate target: if the LRF is left unchanged at 4.4%, the cap would reach zero by 2039.

If invalidation from the MSR is terminated and NER volumes are auctioned for the IDB, total EUA supply already exceeds demand for a 2040-aligned pathway.

Figure 1 **EU ETS supply and demand 2031-2040 with current LRF of 4.4%, no invalidation from MSR and NER auctions for IDB**



Source: Oeko-Institut MSR & ETS Tool

[4] 200 million EUA were transferred from the MSR to the NER at the beginning of the 4th trading period. According to the ETS Directive, these will be returned to the MSR if not used until the end of 2030.

Overall, the analysis shows that once all relevant sources are considered, allowance supply in the fifth trading period is already more than sufficient to meet demand under a 2040-aligned emissions pathway. The excess supply is even greater when accounting for the expected faster decline in emissions from the EU power sector during the first half of the 2030s. A linear emissions pathway consistent with a 90% domestic reduction target has cumulative emissions of 4 920 Mt CO_2e (see Table 1), thus falling between the 88% linear and 88% fast decline scenarios.

Theoretical supply may exceed 2040-aligned demand, but effective market availability depends on timing and reserve holdings.

While theoretical allowance supply in the fifth trading period exceeds demand under an emissions pathway consistent with reaching the EU's 2040 target, this does not automatically mean that all of this supply will be available to the market in practice. The timing of supply matters, as not all allowances enter the market when they are needed. In addition, some volumes may remain outside the market, for example in the MSR or other reserves. There is also continued uncertainty around the treatment of the remaining NER. Against this backdrop, it makes sense to consider targeted adjustments to the MSR that help ensure allowances reach the market when they are needed, without increasing overall supply beyond what is compatible with the EU's 90% target for 2040.

A weakened ETS: Combining discussed reform options with a lower LRF

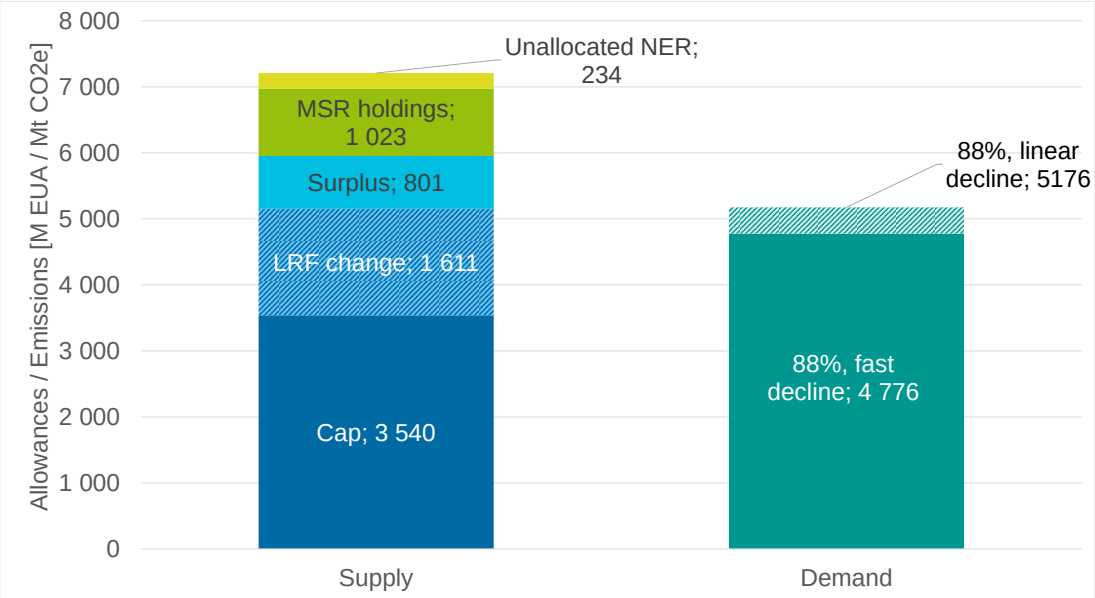
The LRF is the key parameter determining the supply of allowances under the EU ETS. Changing it is one of the issues the Commission is assessing and might include in the ETS reform proposal. In this section, we assess the implications of adjusting the LRF so that the cap reaches 290 million EUA in 2040, consistent with a domestic emissions reduction target of 85%. This assumes that the ETS does not contribute more towards the 2040 target than other sectors and that there would be no special reserve for LULUCF or similar. In many ways this is a high-risk scenario as it leaves no room for shortfalls or insufficient supply of high-quality credits.[5]

To achieve this level, we set the LRF to 2.2% for the period 2036 to 2040, effectively returning to the rate that applied at the start of the fourth trading period before the Fit for 55 reform. For the period 2031 to 2035, we reduce the LRF from 4.4 % to 3.2% so that the intended cap value for 2040 is achieved. All other assumptions remain unchanged: the invalidation of allowances in the MSR ends in 2026, and 400 million EUA are auctioned from the NER for the IDB.

Figure 2 shows that under this configuration, total allowance supply in the fifth trading period increases by more than 1.6 billion EUA, reaching around 7.2 billion EUA in total. This would put supply roughly 40% to 50% above demand over the same period, creating a substantial oversupply in the carbon market. This also holds for a linear scenario aligned with 90% domestic reduction with cumulative emissions 4 920 Mt CO_2e (see Table 1).

[5] See Footnote 3 for further information on this issue.

Figure 2 **EU ETS supply and demand 2031-2040 with LRF compatible with 85% domestic target, no invalidation from MSR and NER auctions for IDB**



Source: Oeko-Institut MSR & ETS Tool

It is important to note that our model is static. In practice, such a large surplus would likely depress the carbon price and lead to higher ETS emissions than assumed in the scenarios. This dynamic would substantially weaken the EU's central climate policy instrument and increase the risk that the EU would fall short of its binding 2040 target of a 90% emissions reduction.

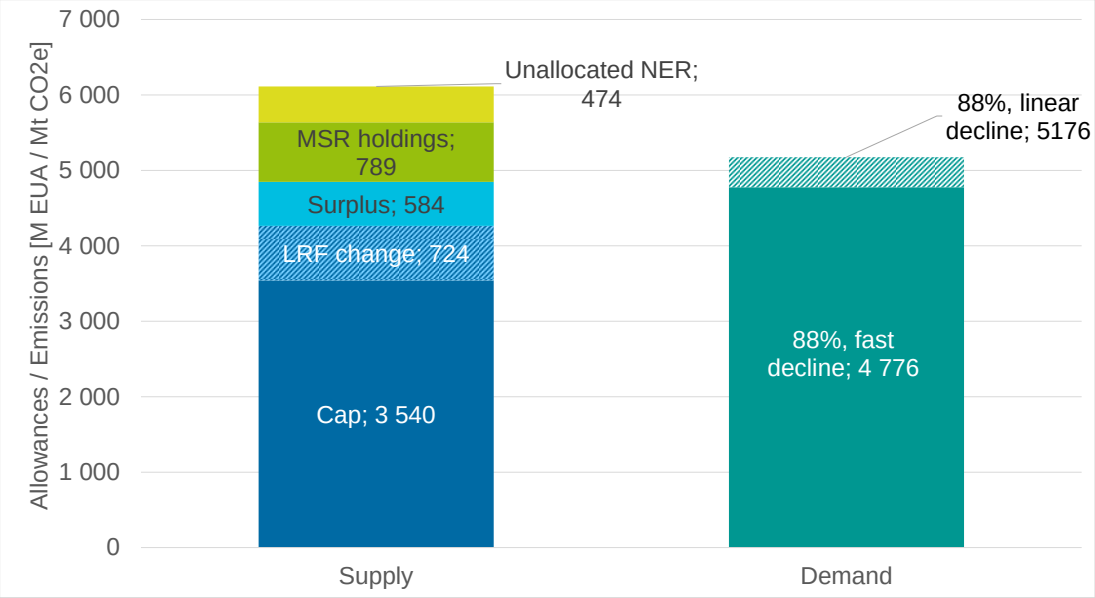
Combining ending MSR invalidation and auctioning 400 million EUA from the NER for the IDB with a lower LRF would create substantial oversupply in the ETS and put the 2040 climate target at risk.

The analysis therefore suggests that increasing supply through adjustments to the LRF leaves no possibility for adding further supply through other measures - such as changes to the MSR or auctions from the NER for the IDB - without putting the 2040 climate target at risk.

A balanced ETS with an LRF compatible with a 90% domestic reduction in 2040

The analysis above shows that the combination of reform options currently under discussion with a weakened LRF would create a new oversupply in the EU ETS and could jeopardise the achievement of the EU's 2040 climate target. We therefore set out an alternative scenario that is designed to i) maintain sufficient total supply until 2040, ii) ensure adequate annual supply in each year from 2031 to 2040, iii) avoid the build-up of a new surplus even under an emissions pathway reflecting the expected decline of coal-fired power generation in the EU, and iv) limit the volume of allowances carried over into the sixth trading period to a reasonable level.

Figure 3 **EU ETS supply and demand 2031-2040 in the balanced approach with LRF compatible with 90% domestic target**



Note: The text below the graph explains the ETS parameters and design choices. The balanced approach also ensures that the annual supply is sufficient in each year until 2040.
Source: Oeko-Institut MSR Tool

In Figure 3, the LRF is calibrated to align with a 90% net domestic reduction by 2040, remaining at 4.4% until 2035 and then falling to 1.85% from 2036 onwards to reach a cap level of 200 million EUA in 2040. Invalidation from the MSR ends in 2027 (assuming that changes to the MSR are not fast tracked but decided along with overall ETS reform), while no additional allowances are auctioned for the IDB in the period 2028-2032 and unallocated NER amounts remain in the NER (except 200 million EUAs transferred from the NER into the MSR at the end of 2030, see Footnote 4).

Combining the end of invalidation from the MSR with an LRF at 4.4% until 2035 and 1.85% thereafter, while triggering the MSR on the basis of a corrected TNAC, preserves both market liquidity and climate ambition.

From 2031 onwards, the MSR is triggered based on the corrected actual TNAC, i.e. adjusted for historic net demand from aviation and ESR flexibility, rather than the unadjusted indicator. This change leads to a situation where EUAs are released earlier, at a time when the actual TNAC falls below the lower threshold. These changes to the LRF and MSR ensure that there is sufficient supply in all years, which is not the case in the scenario based on current rules.

Market risks associated with auctioning NER volumes for the IDB

Auctioning NER volumes to finance an Industrial Decarbonisation Bank (IDB) could create significant market risks if large volumes of additional allowances are released too quickly, depressing carbon prices and undermining the business case for companies that have already invested heavily in decarbonisation. What is more, at depressed prices, even more allowances would have to be auctioned to achieve the financing goal for the IDB further disrupting the market.

Changes to allowance supply should only be managed through rule-based mechanisms such as the LRF and the MSR, which provide greater predictability and preserve market confidence. In particular, the auction quantities should not be altered over the three- to four-year horizon covered by the liquid forward market, as unexpected additional auctions during this period could increase volatility and weaken the ETS price signal.

ESMA (2024) [6] notes that the frontloading mechanism to finance REPowerEU auctioning 35 million EUA in 2023 had a noticeable impact on the ETS price in that year. A short-term introduction of an additional 400 million EUA in a smaller market would have unpredictable and likely large-scale impacts.

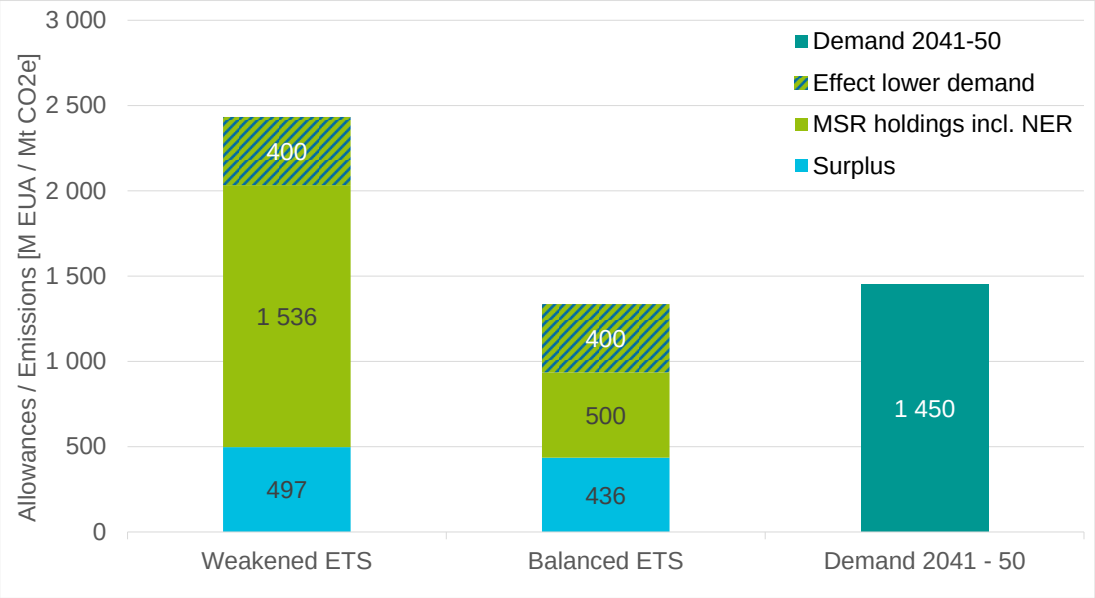
[6] https://www.esma.europa.eu/sites/default/files/2024-10/ESMA50-43599798-10379_Carbon_markets_report_2024.pdf

Looking beyond 2040

ETS reform choices made today will shape allowance availability well beyond 2040 through surplus and MSR carry-over.

Decisions on the design of the LRF, the MSR, and other potential sources of supply will shape market conditions well beyond 2040 through their impact on surplus and MSR holdings. Figure 4 compares the surplus of allowances entering the sixth trading period starting in 2041 under the two scenarios described above: the weakened ETS scenario and the balanced ETS scenario. In both cases, the stock of allowances carried from the fifth into the next period consists of the projected market surplus at the end of 2040 and the volume of allowances held in the MSR, which also includes remaining amounts from the current NER. This is compared to the demand from the Commission's S2 scenario which achieves 88% in 2040 and is compatible with climate neutrality in 2050.

Figure 4 Comparing the surplus of EUAs in 2040 with projected cumulated emissions 2041-50



Source: Oeko-Institut MSR & ETS Tool

Note: The effect of lower demand shows the combined increase of allowances in the MSR and the market surplus if the expected faster emissions decline in the European power section during 2031-35 is taken into account.

In the weakened ETS scenario, the stock entering the sixth trading period could exceed projected emissions by a wide margin.

Under a linear emissions pathway, the weakened ETS scenario results in a market surplus of around 500 million EUA and MSR holdings of roughly 1.54 billion EUA by 2040. In the balanced ETS scenario, the corresponding figures are lower, with a surplus of around 440 million EUA and MSR holdings of about 500 million EUA. If the analysis accounts for the expected faster decline in coal-related emissions in the EU between 2031 and 2035, the volume of allowances carried into the next trading period would increase by a further 400 million EUA in both scenarios.

These results imply that the stock of allowances entering the sixth trading period—beyond those issued under the Phase 6 cap—would already be very substantial. In the balanced ETS scenario, this carry-over is nearly as large as cumulative emissions projected for 2041-2050, while in the weakened ETS scenario it would exceed those

emissions by a wide margin.[7] This presents an additional argument to be careful in increasing the number of allowances and to jointly consider all changes to the ETS and the MSR.

Comparing ETS reform pathways

Comparing different ETS reform pathways shows that the relevant question is not only how the cap evolves, but how the different elements interact, i.e. how much supply is effectively available taking the existing surplus, MSR holdings, the treatment of the New Entrants Reserve (NER), and the timing of auctions into account.

Table 1 contrasts five alternative ETS and MSR reform scenarios across four emission pathways. Scenarios 1 (current rules), 2 (weakened ETS) and 3 (balanced ETS) are those analysed in the previous sections, while Scenario 4 illustrates a situation where the LRF is compatible with an 85% domestic reduction target but invalidation from the MSR remains in place and no NER volumes are auctioned for the IDB. Scenario 5 is similar to Scenario 3 but invalidation from the MSR only stops in 2030.

The comparison of reform scenarios shows that a major risk lies not in too little supply, but in overlapping reforms that recreate surplus and weaken the ETS.

A first clear result from the comparison is that the scenarios combining a weaker cap trajectory with additional supply measures are those most at risk of creating a renewed oversupply. Scenarios with a lower LRF, the end of MSR invalidation, and the auctioning of NER volumes for the IDB generate substantially more allowances than are needed under 2040-aligned emission pathways. This is especially true under faster-decline emissions scenarios, where the expected decline of emissions from coal-fired generation is accounted for. These configurations therefore risk depressing the carbon price, weakening the investment signal, and carrying a large stock of unused allowances well beyond 2040.

By contrast, the scenarios that are sometimes perceived as posing a supply risk do not point to a structural shortage of allowances in aggregate. Rather, they show that the main issue is one of timing and accessibility: some allowances remain in the MSR or other reserves, and uncertainty around the remaining allowances in the NER affects how much supply can realistically reach the market when needed. In other words, the table suggests that concerns about insufficient supply are less about total volume and more about the functioning of supply release mechanisms. This is why targeted MSR adjustments—rather than a broad loosening of the cap or new discretionary supply injections—appear to be the more proportionate response. These findings hold true even in a high-emission scenario compatible with a 85% domestic target for 2040.

[7] Emissions from 2041 to 2050 are based on the S2 scenario as well (see box on concepts and assumptions).

Table 1 **Key parameters of ETS and MSR scenarios under alternative emission pathways**

Scenario	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Invalidation ends	2026	2026	2027	Never	2030
IDB auctioning 2028 - 32	yes	yes	no	no	no
LRF 2031 to 2035	4.40%	3.20%	4.40%	3.20%	4.40%
LRF 2036 to 2040	4.40%	2.20%	1.85%	2.20%	1.85%
TNAC correction	No	No	from 2031	from 2031	from 2031
Supply during the 5th trading period					
Total	**5 598**	**7 209**	**6 112**	**6 810**	**5 922**
MSR & NER beginning of 2031	1 256	1 256	1 263	1 074	1 074
Surplus beginning of 2031	801	801	584	584	584
Cap 2031 to 2040	3 540	5 152	4 265	5 152	4 265
88% compatible emissions, linear decilne, demand of 5 176 M EUA					
Allowances entering 6th TP	**422**	**2 033**	**936**	**1 397**	**509**
MSR & NER	989	1 536	500	774	474
Surplus	-567	497	436	623	273
88% compatible emissions, fast decline, demand of 4 776 M EUA					
Allowances entering 6th TP	**822**	**2 433**	**1 336**	**1 797**	**909**
MSR & NER	1 205	1 769	900	877	474
Surplus	-383	664	436	920	436
85% compatible emissions, linear decline, demand of 5 403 M EUA					
Allowances entering 6th TP	**194**	**1 806**	**708**	**1 169**	**282**
MSR & NER	985	1 532	500	674	474
Surplus	-790	274	208	495	-192
90% compatible emissions, linear decline, demand of 4 920 M EUA					
Allowances entering 6th TP	**677**	**2 289**	**1 191**	**1 652**	**1 002**
MSR & NER	1 093	1 565	700	874	511
Surplus	-416	724	491	779	491

Note: A negative surplus for example in Scenario 1 means that not enough allowances enter the market despite remaining quantities in the MSR. These are counterfactual emission developments, due to high prices emissions would decline to avoid a negative supply.
Source: Oeko-Institut MSR & ETS Tool

Taken together, the comparison supports a balanced reform approach. The results suggest that existing and already discussed measures can provide sufficient supply through 2040, but that combining too many supply-expanding reforms would create a clear risk of oversupply. The most robust configurations are those that keep the LRF aligned with the 90% target for 2040, improve the MSR trigger by using the actual TNAC, and avoid adding further volumes through NER-based IDB auctions.

Conclusions

- The analysis shows that the current risk for the EU ETS in the period to 2040 is not a structural shortage of allowances, but the emergence of a new and potentially persistent oversupply. When the different reform elements currently under discussion are assessed together—not in isolation—it becomes clear that the combined effect of ending MSR invalidation, bringing additional NER volumes to the market for the IDB, and adjusting the LRF downward already from 2031 on could substantially increase allowance availability beyond what is needed under 2040-aligned emissions pathways. This result is particularly pronounced where supply-expanding measures are layered on top of one another. The findings therefore underline the importance of evaluating all changes to ETS supply jointly and refrain from ad-hoc changes that risk undermining the effectiveness of the ETS to deliver the EU's 2040 climate target.
- A second key result is that the scenarios sometimes perceived as creating a supply risk do not point to a lack of allowances in aggregate. Rather, they point to a problem of timing and accessibility. A significant share of theoretical supply may remain outside the market for part of the period, for example in the MSR or other reserves. This is why the comparison of scenarios suggests that targeted adjustments to the MSR, such as correcting the TNAC, are as relevant as broad-based increases in supply. In a shrinking market, this also implies that MSR thresholds should evolve accordingly, including possible refinements such as a smoothing zone around the lower threshold to reduce abrupt changes in intake and release behaviour.
- The overall conclusions are robust even under more supply-constrained assumptions on emissions. A higher-emissions pathway consistent with an 85% domestic reduction in 2040 would increase cumulative demand by only around 225 million EUA relative to the 88% scenario used in the core analysis. This does not materially alter the central finding that the cumulative supply available under current rules and currently discussed reforms is ample, and in several cases excessive. At the same time, the analysis has not yet included the possible integration of technical carbon dioxide removals into the ETS. If, in line with the Commission 2040 impact assessment, around 150 Mt CO_2 were to be contributed through BioCCS and DACCS by 2040, this would further increase effective supply. This means that the oversupply risk identified here is, if anything, likely to be conservative.
- Looking ahead, an important analytical implication is that choices made in this review will shape the ETS beyond the fifth trading period. Surplus allowances and MSR holdings do not disappear at the end of 2040; they carry forward into the next phase and can strongly influence market conditions after 2040. A well-calibrated combination of cap setting and reserve management appears sufficient to maintain market balance through 2040 and to limit the risk that today's reform decisions create distortions for the period thereafter.

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