

EXECUTIVE SUMMARY

Wake up!

Reforming the EU European Emissions Trading Scheme (ETS) – Evaluation of the different options for reform

The challenge: an urgent need to reform the ETS

A number of economic and political factors have led to a significant surplus of allowances and low price levels in the ETS. The ETS **requires urgent and decisive reform** if it is to remain as the cornerstone of EU's decarbonization strategy and to align the ETS with the ambition of the Paris climate agreement.

The **current depressed and uncertain carbon price signal does not support investment in clean technologies and efficient emissions reductions**. Decarbonization is instead driven by national regulations and financial support for some specific technologies, in a vicious circle that risks undermining further the credibility of the ETS and ultimately threatening the ETS mere existence.

The study: 6 options identified and assessed to strengthen the ETS

The ETS reform should be more ambitious than the EC proposal since this would not lead to a decarbonization path that (1) is underpinned by efficient short and long term price signals (2) in line with the objectives of the Paris agreement, (3) robust to overlapping policy interventions, (4) supportive of investment in low-carbon technologies, and (5) avoids lock-in of conventional fossil fuel technologies.

We assessed the impact of the ETS reform tabled by the EC as well as 6 alternative options:

- **Reduction of emissions cap** through a stronger Linear Reduction Factor (LRF)
- **Rebasing of emissions cap** based on the most recent emission data
- **Voluntary allowance cancellation** by some Member States
- **Adjustment for overlapping policies** (energy efficiency, renewables, mandated plant closures, etc.)
- Establishment of a **price corridor**
- Strengthening of the **Market Stability Reserve (MSR)**

The 6 alternative options modelled all contribute in different ways to address the current ETS issues: some have positive effects in the short or long-term, or in improving the ETS robustness to potential shocks or overlapping policies. **A combination of several options is therefore required for a comprehensive ETS reform.**

The policy recommendations: An increased ambition required

We recommend an **ambitious yet realistic ETS reform based on a combination of options** supported by:

- **A European market based approach** in order to drive decarbonization at least cost, support investment in clean technologies, and avoid uncoordinated national interventions;
- **A comprehensive answer** to both short term and long term issues, addressing the overlap of policies, thereby strengthening the robustness and credibility of the ETS;
- **Appropriate compensation mechanisms** in place for sectors at risk of carbon leakage.

1. Context and objectives of the study

The EU established an Emissions Trading Scheme (ETS) in 2005 as the cornerstone of its climate change policy. Yet a series of economic and political factors have led to a structural imbalance of supply and demand and depressed carbon prices. **This risks increasing the costs of mitigating climate change and potentially missing emission targets. The mere existence of the ETS is threatened** as another decade of low prices would likely undermine its credibility and lead to further implementation of national policies and/or regulations or financial support for some specific technologies.

The policy debate on the phase 4 of the ETS represents **a unique window of opportunity to reform and rebuild confidence in the ETS**. Accordingly, 11 European energy companies rang an alarm bell in June 2016, stressing the urgency to restore the credibility of the ETS and the EU decarbonisation strategy.

In that context, we have been mandated by 7 sponsor companies (CEZ, EDF, EDP, ENEL, ENGIE, Fortum, Iberdrola) to conduct a study to provide **fact-based evidence by modelling the impact of different approaches for reform of the ETS**, using our own proprietary models of the ETS¹ as well as the European power sector. The study's results are summarised hereafter.

2. The European Commission's proposed reform is not ambitious enough to address the EU ETS structural issues

In July 2015, the European Commission (EC) issued a proposal for amending the EU ETS, with the following major measures:

- An increase in the speed of decline of the annual emissions cap (the "Linear Reduction Factor") from -1.74%/year to -2.20%/year;
- An enhanced carbon leakage framework to preserve the competitiveness of the European industry.

Furthermore, the EC introduced at the end of 2015 the Market Stability Reserve (MSR) which could park annually 12% of the surplus allowances accumulated in the previous years.

Our modelling shows that **the ETS reform should be more ambitious than the EC proposal** since this would not lead to a decarbonization path that is (1) underpinned by efficient short and long term price signals, (2) in line with the objectives of the Paris agreement, (3) robust to overlapping policy interventions, (4) supportive of investment in low-carbon technologies, and (5) avoiding lock-in of conventional fossil fuel technologies (see Table 1 summarizing our assessment).

Table 1: Main issues and impact of the European Commission's proposals for ETS reform

Issues	Impact
Short term signal ineffective to affect operational decisions	<p>ETS carbon price will remain too low to provide adequate short-term economic signal for carbon abatement via operation of existing plants:</p> <ul style="list-style-type: none">▪ Carbon prices will only reach levels that support switching away from coal to gas after 2030 (Switching range increases from 15-50€/t in 2020 to 30-80€/t in 2030)▪ Coal and lignite plants will keep operating at comparable high capacity factors to today (about 45%-68% in 2016) until well beyond 2030 and gas plants' capacity factor will also increase from 30% to 38% in 2040.

¹ FTI-CL ETS model is inspired from the Zephyr model developed by Raphaël Trotignon & Boris Sollier from the Climate Economics Chair of Dauphine University. Their help is gratefully acknowledged.

Issues	Impact
<p>Long term signal too weak to drive efficient investment</p>	<p>EU ETS carbon price too low to provide adequate long-term economic signal for decarbonization:</p> <ul style="list-style-type: none"> Price too low to drive investment in clean technologies leading to continuation of need for targeted support for specific technologies: estimates of the efficient carbon price for decarbonisation range are 20-70€/t in 2020, and 40-110€/t in 2030 – these levels are not achieved. Low carbon price would maintain significant fossil fuel technologies in the mix: about 360 GW of fossil fuel plants still in operation in 2040. Carbon prices below 20€/tonne by 2020 and 25€/tonne by 2025 would drive lock-in of emissions via re-investment in 187 GW of fossil technologies over 2025-2040 (52 GW of coal and lignite power plants lifetime expansions, and 137 GW of gas new capacity). <p>Current emissions trajectory not in line with the goal of limiting global warming to 2°C, and a fortiori, with the ambition of limiting it to 1.5°C:</p> <ul style="list-style-type: none"> ETS emissions 85 Mt above (+11%) a 2040 emission target which would correspond to 90% reduction in 2050 vs. 2005 emissions
<p>Overlap with energy and climate policies and vulnerability to shocks</p>	<p>ETS a residual market for abatement with vulnerability to market and policy shocks, such as impact of overlapping policies which administratively reduce demand for allowances:</p> <ul style="list-style-type: none"> Other low carbon policies, mainly related to energy efficiency, are to reduce demand by 148 Mt in 2030 (11% of cap) National policies such as regulatory driven coal/lignite phase-out plans could further reduce demand

Source: FTI-CL Energy.

3. Fixing the EU ETS: Six alternative options for reform have been modelled, several combinations of reforms could address the ETS issues

We have modelled the impact of six main alternative options for reform of the ETS:



Reduction of emissions cap through a stronger Liner Reduction Factor (LRF). Setting the LRF at a higher rate (e.g. 2.6% in our modelling) from 2021 would result in a faster decreasing amount of EU-wide carbon emission allowances.



Rebasing of emissions cap based on actual emissions. Setting the cap for 2021 based on recent historic emissions rather than continuation of trajectory set on 2008-2012 emissions would lower the cap. For this option, the LRF is set to the EC proposed level, i.e. 2.2% from 2021.



Voluntary allowance cancellation by some Member States. Member states could be allowed to voluntarily cancel surplus carbon permits that result from the success of national policies, such as ambitious national ‘green’ plans that are aimed at more stringent carbon compliance terms, in parallel to other decarbonisation measures. This option is modelled by assuming that a “Green Club” of countries continuously purchase allowances. The Club removes a maximum of 1,489 Mt CO₂ over 2021 – 2030, as we assume a budget constraint of €745 million/year (0.007% of participant GDP, same as the current Swedish approach).



Adjustment for overlapping policies. Another option would be to allow the adjustment of the emissions cap, taking into account EU and complementary national energy and climate policies. Forward-looking, the yearly allowance supply could be automatically adjusted based on a pre-agreed methodology for assessing the impact of various new policies, such as energy efficiency, coal phase-out and renewables support. This option is modelled by reducing the emission allowances cap by 810Mt over 2021-2030, which would neutralise the impact of the more ambitious 2030 energy efficiency and renewable targets.



Establishment of a price corridor. A price corridor could be introduced into the EU ETS between which the actual price of carbon permits can oscillate. This option is modelled by setting a floor and/or a cap for ETS prices over 2021 – 2040. The corridor could be implemented through unlimited purchase or sales of ETS credits by the EC at the floor or cap price, respectively. The choice of the floor and cap is key to let the ETS market play within a sufficiently wide range of possible prices and reinforce its credibility and resilience to shocks. We model a price corridor at 20-50 €/t starting in 2020 and growing at 5%/year.



Strengthening of the Market Stability Reserve. The MSR outtake rate is currently set at 12%, but it could be modified to reabsorb current emission credit surplus faster. This option is modelled by removing 24% of total surplus from the market as soon as surplus exceeds 833 Mt (from 2019). 100 Mt are to be released each year if the oversupply is below 400 Mt.

Each option has its own purpose and would face different implementation challenges – which is not the focus of our study. The **6 alternative options all contribute in different ways to addressing the current ETS issues**: some have positive effects in the long-term (Reduction of cap, Adjustment for overlapping policies), in the short-term (Reduction of cap, Price corridor, Stronger MSR) or in improving the ETS robustness (Price corridor, Stronger MSR). **We find however that no single option can address all the issues of the ETS (see Table 2).**

Table 2: Assessment of ETS reform options, compared to baseline of European Commission’s proposals

Options		Short term	Long term
Reduction of emissions cap	✗	Limited short-term impact , due to market players’ limited foresight and gradual impact of reform	Growing impact as the market is drying up post-2020. LRF $\geq 2.6\%$ required to have a material impact.
Rebasing of emissions cap	✓	Strong short-term impact as rebasing in 2021 leads market to rebalance and to significant banking	Moderate impact in the long run as most effect is reduction of initial surplus
Voluntary allowance Cancellation	✗	Limited impact due to budget constraint: increase of carbon price limits the amount of credits that are removed from the market under a set budget. In order to make it effective Member States would have to invest growing amounts.	
Adjustment for overlapping policies	✓	Positive impact in short/medium term as cap is gradually reduced	Impact depends on implementation of adjustment

	Price corridor	<p>Price floor supports short-term carbon prices, stimulates investment in clean technologies and prevents lock-in of fossil plants</p> <p>✓</p>	<p>Impact depends on values of cap and floor; in any case strengthening credibility of ETS and its robustness to potential future shocks</p>
	Stronger MSR	<p>Positive short-term impact as stronger MSR rebalances market faster; higher carbon prices support investment in clean technologies and prevents lock-in of fossil plants</p> <p>✓</p>	<p>Limited impact as stronger MSR does not alter supply and demand balance in the long term when surplus has been cleared</p> <p>✗</p>

Source: FTI-CL Energy.

As no single option can address all the issues of the ETS, **a range of combinations of options for the ETS reform have been modelled in order to address both short-term and long-term issues².**

Our modelling demonstrates that these combinations of options can efficiently address both short term and long term issues of the ETS, and improve its robustness and credibility. In addition, the implementation of one of the suggested combination of options could bring up to 86 bn Euros in additional auction revenue to Member States that could be in part used to ensure a proper compensation for carbon leakage risk, an essential pre-requisite of any ambitious ETS reform.

In summary, we recommend **an ambitious yet realistic ETS reform based on a combination of options** anchored into the **following underlying principles**:

- A **European market based approach** in order to drive decarbonization at least cost, support investment in clean technologies, and avoid uncoordinated national interventions;
- A **comprehensive answer** to both short term and long term ETS issues, addressing the overlap of policies and improving its resilience to shocks, thereby strengthening the robustness and credibility of the ETS;
- **Appropriate compensation mechanisms** in place for sectors at risk of carbon leakage.

CONTACT

An extended presentation of our study is available on our website: <http://www.fticonsulting.com/fti-intelligence/energy/research/carbon>. If you have any question about this study, please reach to Fabien Roques: froques@compasslexecon.com; +33 1 53 05 36 29.

DISCLAIMER

This document has been prepared by Fabien Roques, Emmanuel Grand, Guillaume Duquesne, and Yves le Theis. It reflects the views of its authors and not necessarily those of the study sponsors or of FTI.

² (i) Reduction of emissions cap + Price corridor; (ii) Reduction of emissions cap + Adjustment for overlapping policies ; (iii) Reduction of emissions cap + Stronger MSR ; (iv) Rebasing of emissions cap + Price corridor; (iv) Rebasing of emissions cap + Adjustment for overlapping policies ; (vi) Rebasing of emissions cap + Stronger MSR.