

EU ETS reform: Comparative evaluation of the different options

Presentation for BusinessEurope

Final Report

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Executive summary

A series of economic and political factors have led to a surplus of ETS allowances.

■ The cumulated surplus of allowances resulted from a combination of :

- Significant imports of international credits ;
- The reduction in industrial demand during the recession that followed the 2008 crisis ; and
- The implementation of EU and national overlapping policies to support e.g. renewables and energy efficiency that have decreased emissions outside the ETS market.

EU ETS emissions (stationary installations)



This study aims at assessing quantitatively the impact of different ETS reform propositions, and their effect on the industrial sectors.

Objectives of the study

- Use proprietary **model of the ETS market** to evaluate the impact of the possible reforms.
- Assess **potential effects** of the EC, Parliament and Council positions on:
 - The supply of free allowances for sectors on the carbon leakage list and the impact of the CSCF.
 - The carbon price, taking into account the potential strategic behaviour by market participant.
 - The evolution of the allowances in the MSR in Phase IV.

Deliveries

- Clear **understanding of reform options** on the table and associated trade offs.
- **Provide fact-based evidence** by modelling the impact of different positions on ETS reform, based on in-house proprietary models.
- Assessment of **support mechanisms** and **carbon leakage mitigation measures**.

Key findings of the study

1

The (temporary) **doubling of MSR intake rate** from 2019 envisioned by the Parliament and the Council positions as well as the BusinessEurope preferred compromise **would lead to higher carbon prices as early as 2017**, favouring coal-gas switching in the power sector.

➔ The (temporary) doubling of MSR intake rate would facilitate the market re-balancing as early as 2017 with agents taking speculative positions in anticipation of higher carbon prices in the future.

2

In all scenarios, irrespective of changes regarding increased flexibility of free allowances or changes to the MSR, **emission reductions will stay in line with the EU decarbonisation targets trajectory**.

➔ The (temporary) doubling of MSR intake rate would facilitate the market re-balancing.

3

The **carbon leakage framework envisioned by the EC and Council would trigger the CSCF before 2030**, implying allowances cuts even for best performers over Phase IV and **therefore additional costs (€20.8b and €11.0bn respectively)**, whilst the Parliament position and the BusinessEurope preferred compromise would not lead to the CSCF activation before 2030.














➔ A higher share of (free) allowances to be entitled for carbon leakage protection would not alter supply and demand and would have no impact on carbon prices, but it would limit the burden on industrial sectors.

4

The **cancellation of allowances envisioned by the Council and Parliament would limit the growth of the MSR** in the long term, but it would have only a limited impact (if any) on prices and emissions over Phase IV.

➔ MSR would not release allowances before 2030.

European Commission, Parliament and Council have different views on how to set the key features of the ETS for phase 4.

		Key features	EC proposal 	Parliament position 	Council position 
Restore demand/ supply balancing		Higher Linear reduction factor	2.2% from 2021	≈ 2.2% from 2021 with option for 2.4% from 2024. 	2.2% from 2021.
		Doubling of MSR intake rate and cancellation	12%, starting in 2019, <ul style="list-style-type: none"> 12% of oversupply (>833 million) to be withdrawn ; 100 million to be release if oversupply <400 million. 	≠ Doubling to 24% until the market balance has restored, starting in 2019. 800 million allowances cancelled in 2021. Only (temporary) doubling 	≠ Doubling to 24% for 5 years, starting 2019. Starting 2024, allowances in the MSR above allowances auctioned during the previous year no longer valid.
Mitigating carbon leakage risk and preserving competitiveness	Structural measures	Ratio of auction vs. free allocation share	57%, no shift.	≠ 57% up to 5% from auctioned to free allowances if the binary CSCF is triggered. 	≠ 57%, up to 2% shift if CSCF is triggered.
		Carbon leakage list	Binary approach. Narrowing to 50 sectors (from 177 initially).	≠ No tiered approach. 30% is gone except for district heating. 	≈ Binary approach. 30% sectors are included.
		Benchmarks	Subject to the average improvement rate = 0.5% - 1.5% depending on industry. No caps.	≠ Subject to the average improvement rate compared to the past performance. With caps: 0.25% and 1.75%. 	≠ Same as Parliament, but with lower caps: 0.2% and 1.5%. <i>But not convince of flat rate</i>
		New Entrance Reserve (NER)	250 million allowances from MSR, plus unallocated Phase III allowances.	≠ 400 million, taken from free allowances under Phase IV. 	= 250 million from MSR, plus unallocated Phase III allowances.
	Support funds + NER	Indirect costs	No EU fund. To be compensated through optional national State Aids.	≠ EU fund : 465 million allowances funded with auctioned (2/3) and free (1/3) allowances. Continuous degredation of notational indirect cost compensation. Optional national top-up. 	= Same as EU proposal.
		Innovation Fund	400 million funded with free allowances, plus 50 unallocated allowances MSR.	≠ Increase from 400 to 600 million, paid from auctioned allowances. 	= Same as EU proposal, 400 million funded with free allowances, plus 50 unallocated allowances MSR.
		Just Transition Fund	Not mentioning.	≠ 2% of auction revenues. 	= No mentioning.
		Modernisation Fund	2% of auctioned allowances.	= 2% of auctioned allowances. 	= 2% of auctioned allowances.

KEY:  BusinessEurope's preferred compromise  Different from EC proposal  Same as EC proposal  Roughly the same as EC proposal

We have assessed quantitatively each ETS reform option, using eight indicators.

Main assumptions

- Growth 1% p.a, aggregated view of the industrial sectors.
- Benchmark average flat rate: 0.5% p.a; parliament position without waste gas inclusion.
- No regulation overlap impact.
- Hedging behaviour taken into account.
- No Brexit effects.
- Out of the scope:
 - Qualitative assessment
 - Dynamic allocation
 - PRODCOM vs. NACE
 - Degressive nature of indirect costs
 - Small emitters
 - Borders adjustments

Concerns at stake

1

Restore supply/demand balance

2

Mitigate carbon leakage risk and preserve competitiveness

Indicators

EU ETS carbon prices

Emissions under EU ETS

Surplus

MSR

Free allowances to industrial sectors

Cross-sectoral Correction Factor (CSCF)

Support funds + NER

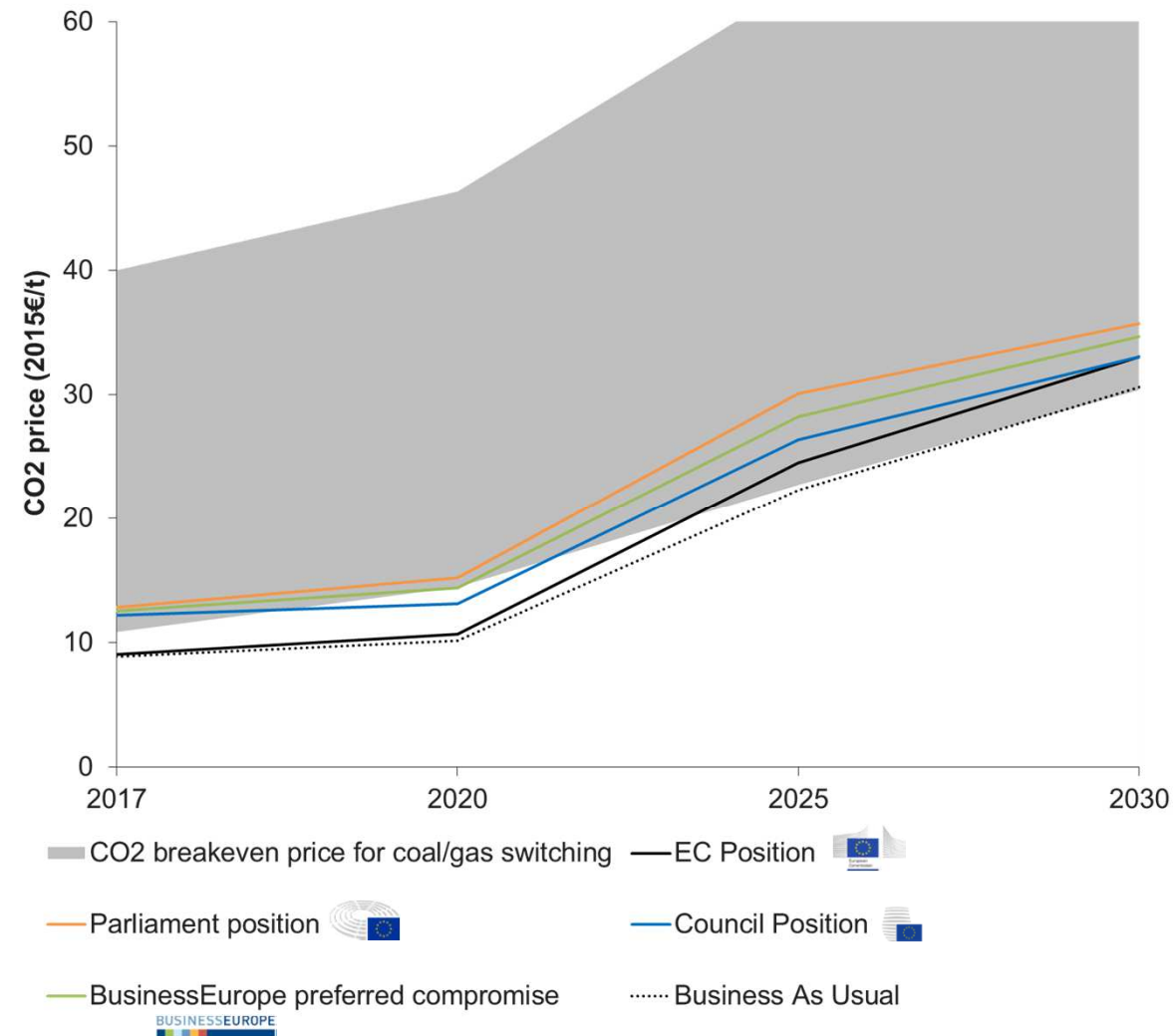
Costs for industrial sectors

1 Restore supply/demand balance: Efficient carbon price signal

A doubling of MSR intake rate would lead to higher carbon prices until 2030, favouring coal-gas switching in the power sector.

- The doubling of MSR intake rate envisioned by all positions (but EC position) would **lead to higher carbon prices until 2030**, favouring coal-gas switching.
 - The speed at which carbon **prices increase depends on the level of MSR intake rate**, i.e. speed at which the market rebalances.
 - The EC position may lead to some coal-to-gas switching after 2025, but only for the least efficient installations.
- The **higher carbon prices in the Parliament position and BusinessEurope preferred compromise are due to difference in funds and NER**.
 - In the Parliament position, the **NER is furnished with free allowances that are in the market, taken from Phase IV budget**, while in Council and EC positions as well as BusinessEurope preferred compromise unallocated allowances from Phase III. The ETS market is thus tighter for the Parliament position.
 - Parliament and BusinessEurope envision an EU indirect costs fund and a larger innovation fund, which affects the amount of allowances available in the market each year.
- The **ratio of auction vs. free allocation share has no material impact on the evolution of carbon prices**.
 - Parliament and BusinessEurope propose to increase allowances available for free allocation by 5 percentage points (Council 2%) to avoid the use of the CSCF. This **does not alter the balance between supply and demand**, but only the distribution of allowances.

EU ETS carbon price (real 2015)



1 Restore supply/demand balance: Meeting EC emission targets

In all options, emissions reductions would stay in line with the ambitious trajectory for 90% reduction by 2050.

All options meet the ambitious EU emissions reduction targets in 2020 and 2030.

- **Market participants** anticipate higher prices and buy additional credits for future use which drives price up and emissions down.

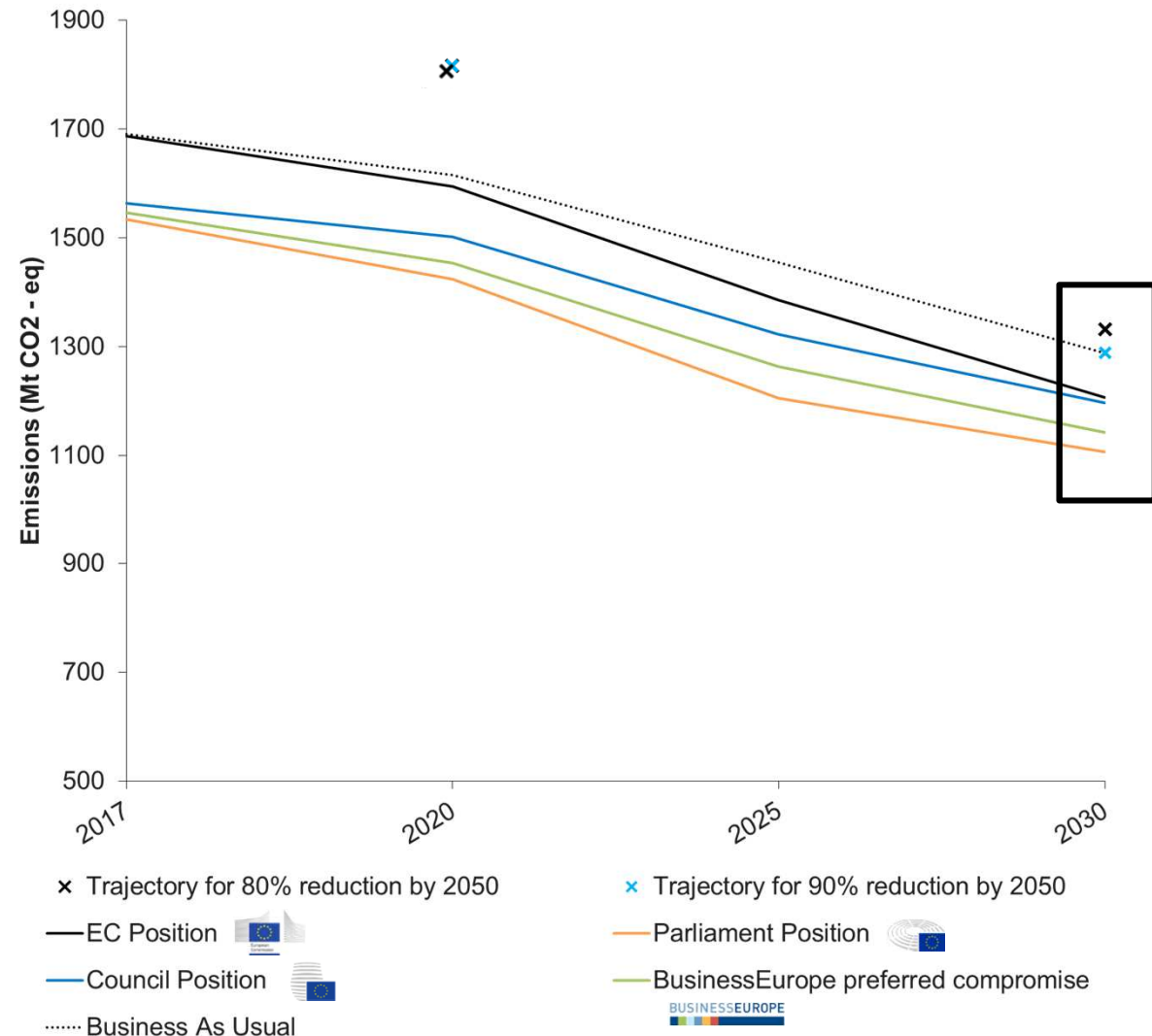
The lower emissions levels in the Parliament position and BusinessEurope preferred compromise is due to difference in funds and NER.

- In the Parliament position, the **NER is furnished with free allowances that are in the market, taken from Phase IV budget**, while in Council and EC positions as well as BusinessEurope preferred compromise unallocated allowances from Phase III are used. The ETS market is thus tighter for the Parliament position.
- Parliament and BusinessEurope envision an EU indirect costs fund and a larger innovation fund, which affects the amount of allowances available in the market each year.

The ratio of auction vs. free allocation share has no material impact on evolution of emissions.

- The increase in allowances available for free allocation **does not alter the balance between supply and demand**, but only the distribution of allowances.

Overall emissions under the ETS



Note : (i) EU ETS targets calculated based on the verified emissions for ETS sectors as of 2005, and the EU emissions reduction targets expressed in % 2005 emissions reduction. (ii)

Business As Usual : same as EC but for LRF = 1.74%.

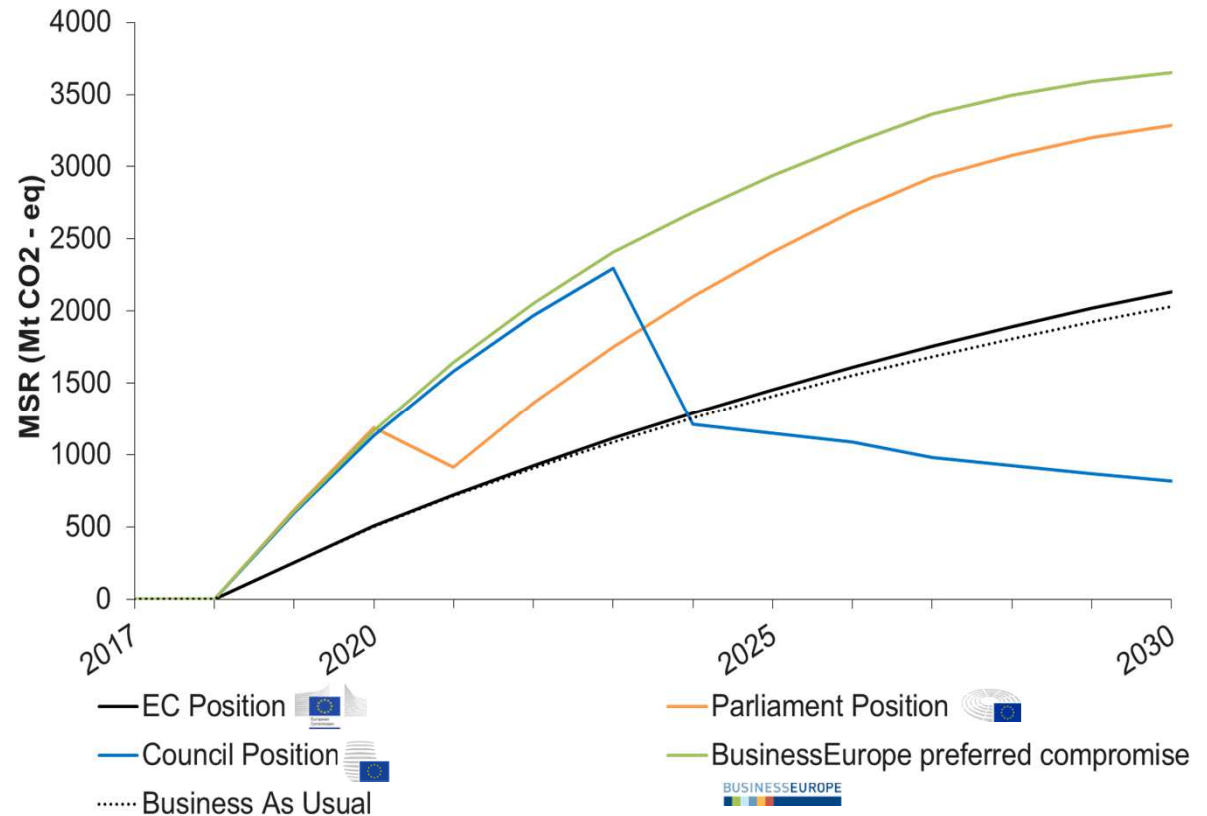
Source: European Commission, "Impact assessment 2014 - A policy framework for climate and energy in the period from 2020 up to 2030", p. 105, footnote 122.

1 Restore supply/demand balance: MSR growth

In all ETS reform options, but the Council position, the MSR will quickly grow to several billion allowances.

- In all reform options, the MSR would still be activated by 2030.
- The cancellation of allowances envisioned by the Council and to some extent the Parliament would limit the growth of the MSR.
- The size of the MSR has however no impact (before 2030) as no allowance would be released to the market before 2030.
- The doubling of MSR intake rate envisioned by the Parliament and the Council positions as well as BusinessEurope preferred compromise leads to a more pronounced increase of the MSR before 2025, because a greater number of allowances is removed from the market.

MSR



2 Mitigate carbon leakage risk and preserve competitiveness : free allowances

Over phase IV, up to 6,841 million of allowances would be allocated for free to stationary installations.

Up to 6,841 million of allowances are to be allocated for free over Phase IV:

- **EC proposal:** 6,267 million of free allowances + 700 million funds (excl. modernisation fund) and NER.
- **Parliament position:** 6,578 million of free allowances including used CSCF buffer + 1,465 million funds (excl. modernisation fund) and NER.
- **Council position:** 6,577 million of free allowances including used CSCF buffer + 700 million funds (excl. modernisation fund) and NER.
- **BusinessEurope preferred compromise :** 6,841 million of free allowances including used CSCF buffer + 1,315 million funds (excl. modernisation fund) and NER.

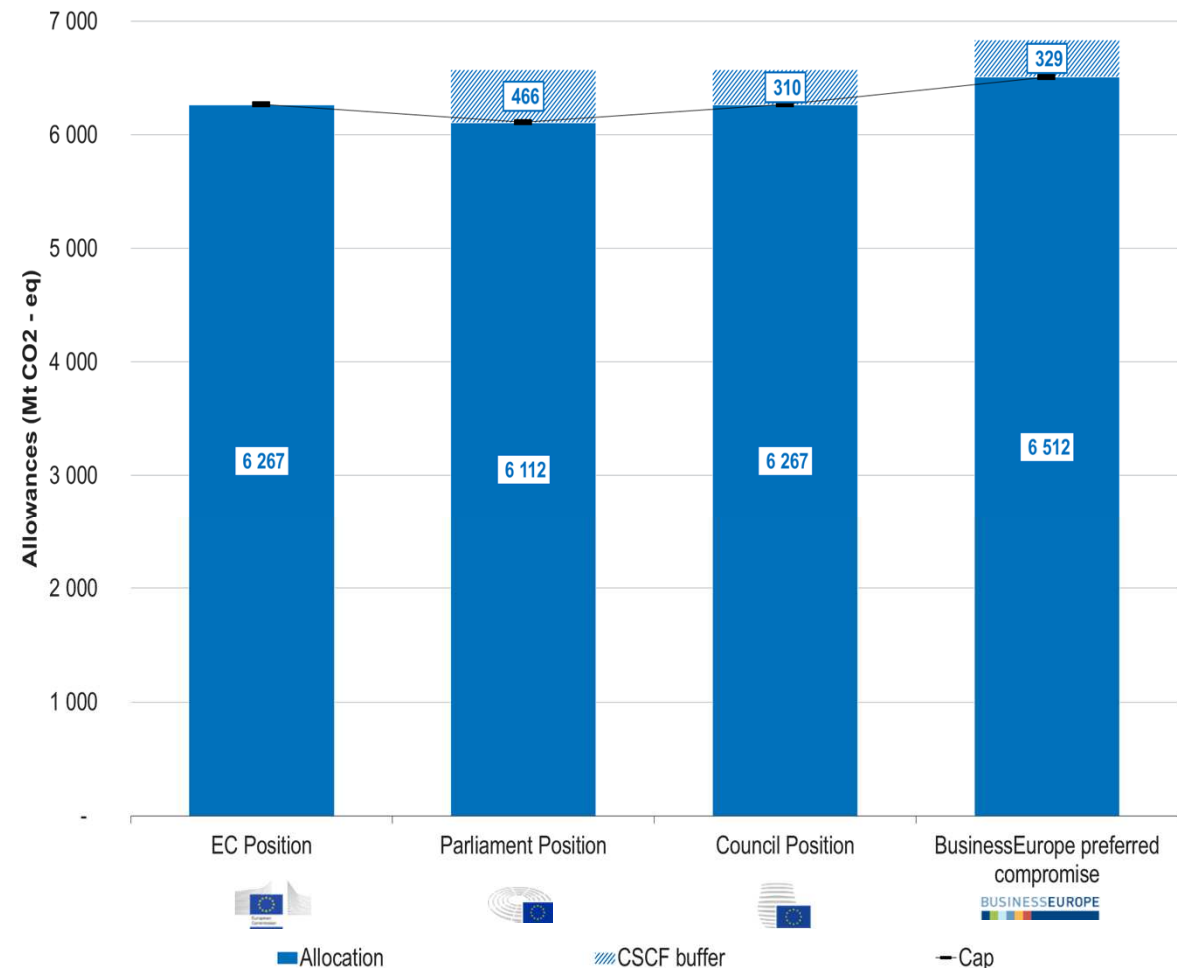
Ratio of auctioned vs. free allocation shifts up to 2 percentage points for Council, 5 percentage points for Parliament and BusinessEurope.

- **This delays the application of the CSCF** (and free allowances cut), increasing the number of allowances to be allocated for free.

The way funds are funded may reduce the number of free allowances allocated to industrial sectors.

- Innovation fund are funded with auctioned allowances for Parliament; free allowances for Council and EC (reducing the amount available for industrial sectors).
- No indirect costs funds for EC and Council positions.
- Within the Parliament position, NER furnished with free allowances from Phase IV, so it reduces allowances available for industry.

Free allowances under Phase IV, Stationary installations



Note : (i) Industrial growth : 1%; Benchmark updates : 0.5%. (ii) CSCF buffer = Allowances to be effectively shifted from auctioned to free. (iii) We do not model the qualitative assessment which could increase the entitlements for free allowances. Therefore, the figure here are lower bounds.

2 Mitigate carbon leakage risk and preserve competitiveness : CSCF and Costs for industrial sectors

EC and council positions would trigger the CSCF before 2030, implying allowances cuts even for best performers over Phase IV.

■ Up to 758 million of allowances to be cut over Phase IV:

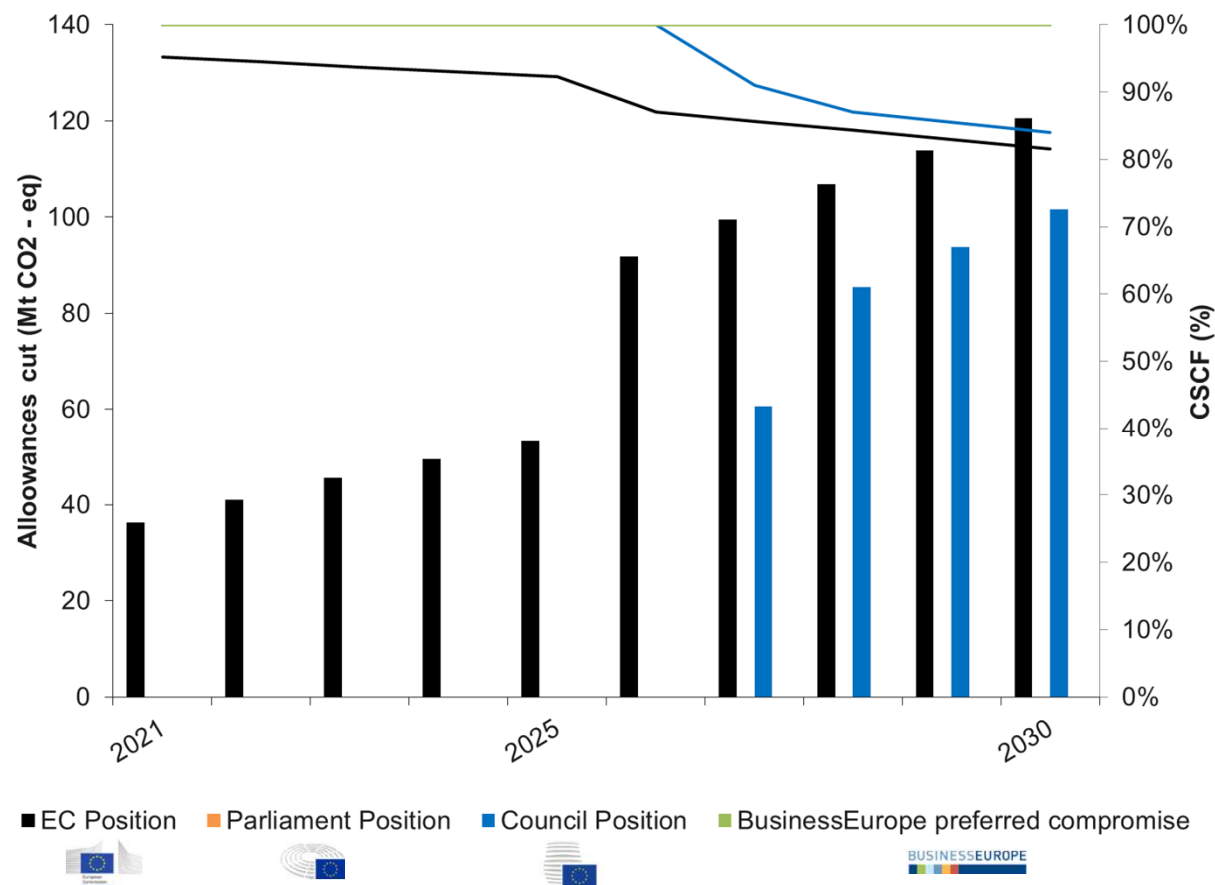
- **EC proposal:** 758 million of allowances.
- **Parliament position:** 0 million of allowances.
- **Council position:** 341 million of allowances.
- **BusinessEurope preferred compromise :** 0 million of allowances.

■ The Parliament position prevents a cut in free allowances.

- **Auction vs. free allocation share ratio shift** up to 5 percentage points for Parliament **prevents the application of the CSCF** and therefore free allowances cuts.
- **Mid-term benchmark update** based on actual performances of best performers would **offset the need to trigger the CSCF**.

■ EC and Council positions cause additional costs due to allowances cuts for stationary installations of 20.8 billion € (EC) and 11.0 billion € (Council) respectively over Phase IV⁽ⁱⁱ⁾.

Allowances cut under Phase IV, Stationary installations



Note : (i) Industrial growth : 1%; Benchmark updates : 0.5%. (ii) Calculated as the sum product over Phase IV of annual allowances cuts and corresponding annual carbon price. Not expressed as a net present value – i.e. no discounting.

Summary

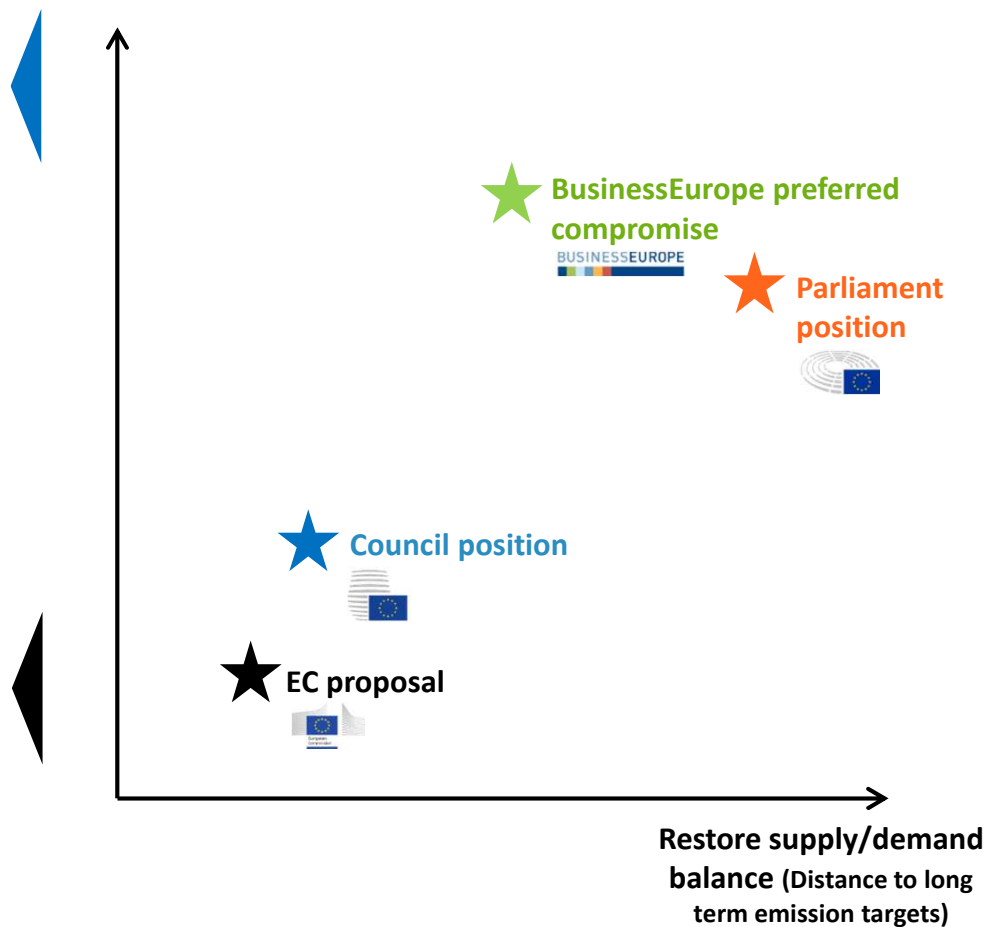
Council position

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,577 million of allowances to be allocated for free over Phase IV. (42% of emissions cap)
- Funds (excl. modernisation fund) +NER: 700 million of allowances.
- Additional cost: 11.0 billion €.

EC position

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,267 million of allowances to be allocated for free over Phase IV. (40% of emissions cap)
- Funds (excl. modernisation fund) +NER: 700 million of allowances.
- Additional cost: 20.8 billion €.

Number of free allowances + funds / NER
(Mitigate carbon leakage risk)



BusinessEurope preferred compromise

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,841 million of allowances to be allocated for free over Phase IV. (44% of emissions cap)
- Funds (excl. modernisation fund) +NER : 1,315 million of allowances.
- Additional cost: 0€.

Parliament position

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,578 million of allowances to be allocated for free over Phase IV. (42% of emissions cap)
- Funds (excl. modernisation fund) +NER : 1,465 million of allowances.
- Additional cost: 0€.

All options lead to a carbon price by 2030 of about 33-36€/t

1. Context and objectives of the study

A series of economic and political factors have led to a surplus of ETS allowances.

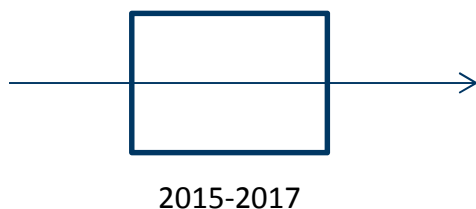
■ The cumulated surplus of allowances resulted from a combination of :

- Significant imports of international credits ;
- The reduction in industrial demand during the recession that followed the 2008 crisis ; and
- The implementation of EU and national overlapping policies to support e.g. renewables and energy efficiency that have decreased emissions outside the ETS market.

EU ETS emissions (stationary installations)



Background to the ongoing 'Triologue' on the ETS reform.



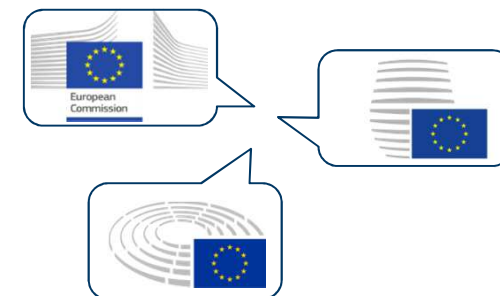
A current window of opportunity to reform the EU ETS

- July 2015 **Commission proposal for reforming the EU ETS** marked the beginning of 2 years work and reflection from Parliament, Council and Commission.



Changed context since Commission tabled proposal

- **Paris climate Agreement committing EU to pursue efforts** towards a more ambitious +1.5°C target above pre-industrial levels.
- **Spread of uncoordinated Member States interventions** to decarbonise their national electricity sector, displacing the EU ETS as the central tool to decarbonise the EU ETS sectors.



Interinstitutional trilogue negotiations

- **Finalisation of their respective position** in February 2017, negotiations starting.
- The three main elements concerning phase 4 of the ETS are a **more ambitious linear reduction factor**, **new rules for free allocation and carbon leakage** and provisions for funding innovation and modernisation.

This study aims at assessing quantitatively the impact of different ETS reform propositions, and their effect on the industrial sectors.

Objectives of the study

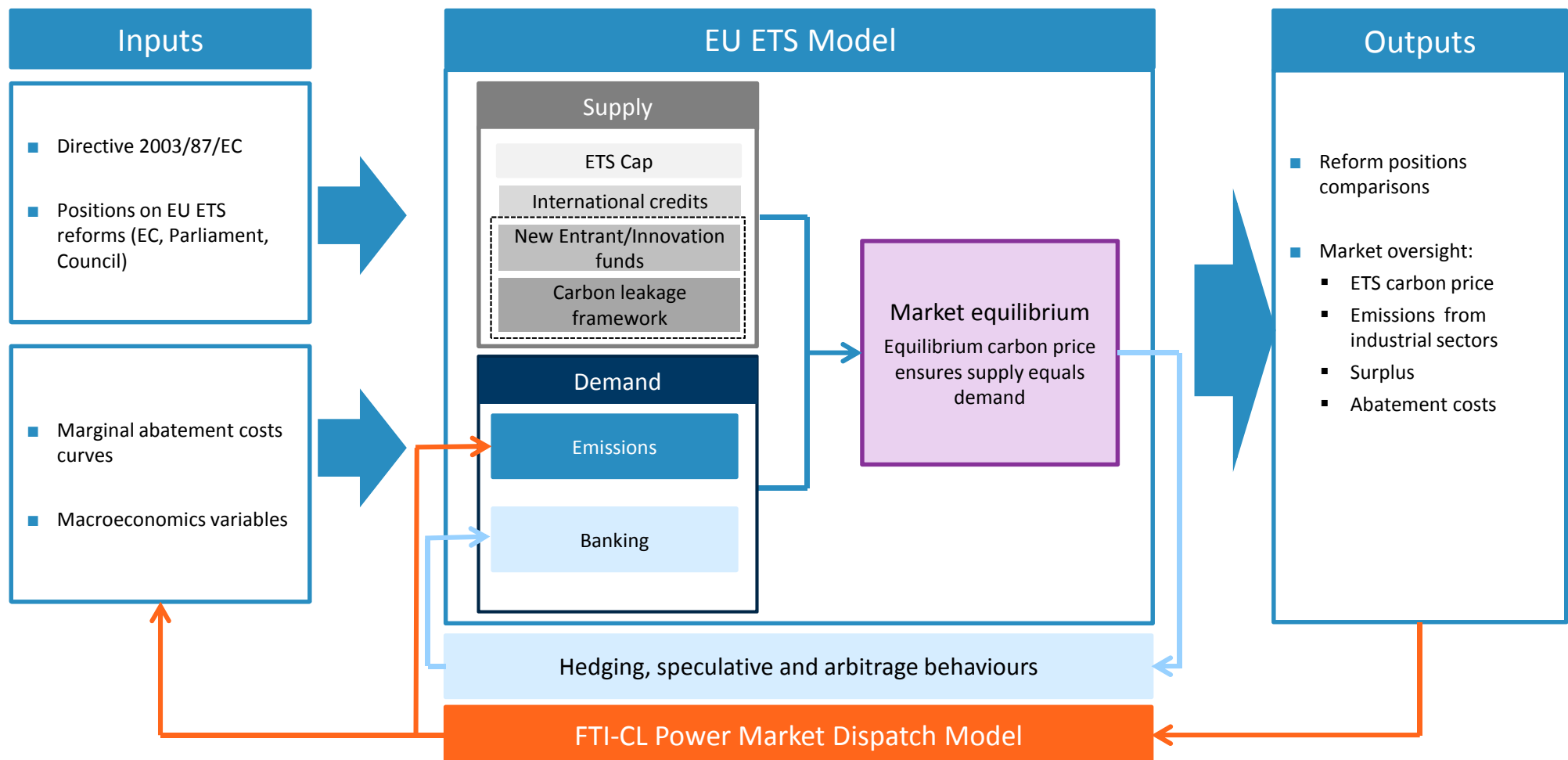
- Use proprietary **model of the ETS market** to evaluate the impact of the possible reforms.
- Assess **potential effects** of the EC, Parliament and Council positions on:
 - The supply of free allowances for sectors on the carbon leakage list and the impact of the CSCF.
 - The carbon price, taking into account the potential strategic behaviour by market participant.
 - The evolution of the allowances in the MSR in Phase IV.

Deliveries

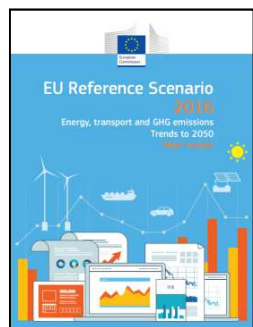
- Clear **understanding of reform options** on the table and associated trade offs.
- **Provide fact-based evidence** by modelling the impact of different positions on ETS reform, based on in-house proprietary models.
- Assessment of **support mechanisms** and **carbon leakage mitigation measures**.

Our impact assessment is based on an in-house ETS model supported by a plant-by-plant EU power market dispatch model.

- The **EU ETS model** calculates the **EU ETS carbon price and emissions from the power and industrial sectors**, based a detailed representation of ETS market supply and demand fundamentals.
- The **EU ETS model factors in the inter-temporality and anticipations from the different market participants**, which are crucial to appreciate the effective impact of a reform.



Our ETS model is based on a robust set of landmarks assumptions.



- FTI-CL **baseline scenario is based on the recent EC Reference Scenario 2016**, but differs on some key parameters.

- **EU ETS Cap:** 1.74% p.a. for stationary installations until 2020, 2.20% p.a. after. Aviation cap set at historical level.
- **Emissions:** Marginal abatement costs curves (MACC) for power sector derived from in-house power model. Marginal abatement costs curves for industry derived from the EC 2016 Reference scenario to 2050 and rescaled to reflect BusinessEurope view on potential for emissions reductions in the industrial sector (max 1.5%-2% annual emissions reduction).

- FTI-CL **EU ETS model factors in the inter-temporality and anticipations** from the different market participants actually observed in the ETS market.

- **Banking:** Hedging and speculative behaviors are properly taking into account (cf. Neuhoff, 2012). Myopic agents (3-5 years horizon) to reflect actual behaviors observed in the ETS.

- FTI-CL's detailed **power sector model is based on the latest announcements from TSOs, regulators and market participants.**

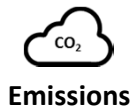
- **Demand:** Latest TSOs reference scenario outlooks, ENTSOE MAF 2016 Expected progress scenario and Median long-term Vision 2 & 3 of ENTSOE TYNDP 2016.
- **Supply** (RES, Nuclear and thermal capacity): Latest announcements on national plans and operators' decisions.
- **Commodity price assumptions:** Forwards until 2020 converging to WEO 2015 New Policy by 2040.



2. Presentation of options on the table and associated trade offs

Dialogue has started, with the aim of restoring demand/ supply balancing while addressing competitiveness and carbon leakage risk.

The EU ETS reform aims at restoring demand/ supply balancing...



Emissions

Surplus of auctioned allowances – largely driven by overlapping policies.



Prices

Too low to provide efficient signal for carbon abatement.

Several levers for restoring demand/ supply balancing have been considered, notably (i) a **higher linear reduction factor** and/or (ii) the **doubling of MSR intake rate**.

... While addressing competitiveness issues and carbon leakage risk.

Several levers for (direct or indirect) compensations have been considered, ranging from **structural measures** to **support funds**.

Structural levers

- **Ratio auction-free.**
- **Carbon leakage list** - The list of sectors receiving the highest share of free allocation because of a genuine risk of carbon leakage.
- **Benchmarks** - Reference value for emissions used to determine the level of free allocation that each installation within each sector will receive.















Support funds

- **Indirect costs** – Subsidies for emission costs passed on in electricity prices.
- **New Entrance Reserve** for new installations and installations that increase capacity.
- **Innovation Fund** to support innovation in low carbon industrial technologies and processes in industrial sectors.
- **Just Transition Fund** to support workers which would be negatively impacted by the transition to a low carbon economy.
- **Modernisation Fund** to support Member States modernising their power sector.

Key features of envisioned reforms aim at restoring ETS' supply/demand balance and/or mitigating carbon leakage risk.

		Key features	Likely impact on EU ETS balance	Likely impact on industrial sectors emissions and free allowances	
Restore demand/ supply balancing		Higher Linear reduction factor	<ul style="list-style-type: none"> ▪ Limited impact before 2020, due to market players' limited foresight and gradual impact of reform. ▪ Restore balance between supply (incl. surplus) and demand by 2030, triggering emissions reductions through higher carbon price. 	<ul style="list-style-type: none"> ▪ MSR enhances emissions reductions for all industrial sectors as long as the MSR is activated. ▪ Higher LRF enhances emissions reductions for all industrial sectors by 2025, with a tighter market. ▪ Indeterminate compensation effect, several effects to be considered : <ul style="list-style-type: none"> – Sectors on the carbon leakage list would receive the same amount of free allowances (if CSCF not triggered) or a smaller number of free allowances ; <u>but</u> + Allowances would have higher value (due to the tightness of the market). – Increase in the cost burden for some ETS installations due to higher carbon prices. 	Levers for rebalancing the market
		Doubling of MSR intake rate and cancellation	<ul style="list-style-type: none"> ▪ Positive impact before 2020 as doubling of MSR intake rate rebalances market faster. ▪ The strength of the MSR has limited impact after 2025 as MSR does not alter supply and demand balance, but only determines the speed at which balance is restored. 		
Mitigating carbon leakage risk and preserving competitiveness	Structural measures	Ratio of auction vs. free allocation share	<ul style="list-style-type: none"> ▪ Indirect short term impact : <ul style="list-style-type: none"> – No static effect as overall annual supply (free and auctioned allowances) and demand equilibrium is not modified. – Intertemporal effect through hedging behaviors (industrials anticipating higher or lower levels of free allowances). It may lead to prices increase in the short term, and thereby, to foster abatement. ▪ Intertemporal effect by modifying supply of allowances during phase IV (depending if taken from free-auctioned allowances) <u>and</u> available allowances (free and auction) each year. 	<ul style="list-style-type: none"> ▪ Strong compensation effect as sectors on the carbon list would receive a certain number of free allowances <u>but</u> with always the "same" value (at first order). ▪ The application of the CSCF increases the cost burden for ETS installations. ▪ Value is transferred from industrial sectors on the carbon leakage list to Members States auction revenues (and <i>vice-versa</i>). 	Levers to compensate for carbon leakage risk through allocation of free allowances, whose value depends on carbon prices
		Carbon leakage list			
	Benchmarks				
	NER				
	Indirect costs				
Support funds + NER	Innovation Fund	<ul style="list-style-type: none"> ▪ Extend of the compensation effect depends on how funds are funded, <ul style="list-style-type: none"> – If funded with free allowances, sectors on the carbon list would receive a lower amount of free allowances (but possibly with higher value). – If funded with auctioned allowances, no direct impact. 	Levers to compensate for carbon leakage risk through direct financial support		
	Just Transition Fund				
	Modernisation Fund				

European Commission, Parliament and Council have different views on how to set the key features of the ETS for phase 4.

Key features		EC proposal 	Parliament position 	Council position 	
Restore demand/ supply balancing	Higher Linear reduction factor	2.2% from 2021	≈ 2.2% from 2021 with option for 2.4% from 2024. 	2.2% from 2021.	
	Doubling of MSR intake rate and cancellation	12%, starting in 2019, <ul style="list-style-type: none"> 12% of oversupply (>833 million) to be withdrawn ; 100 million to be release if oversupply <400 million. 	≠ Doubling to 24% until the market balance has restored, starting in 2019. 800 million allowances cancelled in 2021. Only (temporary) doubling 	≠ Doubling to 24% for 5 years, starting 2019. Starting 2024, allowances in the MSR above allowances auctioned during the previous year no longer valid.	
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		Just Transition Fund	Not mentioning.	≠ 2% of auction revenues. 	≈ No mentioning.
		Modernisation Fund	2% of auctioned allowances.	≈ 2% of auctioned allowances. 	≈ 2% of auctioned allowances.

KEY:  BusinessEurope's preferred compromise  Different from EC proposal  Same as EC proposal  Roughly the same as EC proposal

Positions differ in the way they are (i) restoring market balancing and (ii) mitigating carbon leakage risk.

Restore demand/
supply balancing

Mitigating carbon leakage risk and preserving
competitiveness

Structural measures

Support funds + NER

EC reform



- **Emissions** : In line with the ambitious trajectory for 90% reduction by 2050.
- **Carbon price** : **Too low** to provide efficient signal for carbon abatement via coal-gas switching and investment in clean technologies.

- **Compensation** : No shift of the ratio of auction vs. free allocation share if the CSCF is triggered could not fully protect industrial sector on the carbon leakage list.
- **Sharing of the burden between industrial sectors**: Sectors not on the carbon leakage list receive free allowances.

- **Effect on compensation (indeterminate)** : Innovation fund funded with free allowances. NER furnished with MSR and Phase III unallocated allowances

Parliament



- **Emissions** : In line with the ambitious trajectory for 90% reduction by 2050.
- **Carbon price** : **Doubling MSR intake rate could lead to higher carbon price** (providing efficient signal for carbon abatement and preventing lock-in).

- **Compensation** : **5% shift** of the ratio of auction vs. free allocation share if the CSCF is triggered would strongly protect industrial sector on the carbon leakage list.
- **Limited sharing of the burden between industrial sectors** : Sectors not on the carbon leakage list do not receive free allowances.

- **Effect on compensation (indeterminate)** : Innovation fund funded with auctioned allowances. NER and (part of) indirect costs fund with free allowances.

Council



- **Emissions** : In line with the ambitious trajectory for 90% reduction by 2050.
- **Carbon price** : **Temporary doubling MSR intake rate could be not sufficient to lead to higher carbon price** providing efficient signal for carbon abatement and preventing lock-in.

- **Compensation** : **2% shift** of the ratio of auction vs. free allocation share if the CSCF is triggered would **not fully protect** industrial sector on the carbon leakage list with no *a priori* burden for other sectors.
- **Sharing of the burden between industrial sectors**: Sectors not on the carbon leakage list do not receive free allowances.

- **Effect on compensation** : Innovation fund funded with free allowances and MSR. NER furnished with MSR and Phase III unallocated allowances

BusinessEurope BUSINESSEUROPE

- **Emissions** : In line with the ambitious trajectory for 90% reduction by 2050.
- **Carbon price** : **Doubling MSR intake rate could lead to higher carbon price** providing efficient signal for carbon abatement and preventing lock-in.

- **Compensation** : **5% shift** of the ratio of auction vs. free allocation share if the CSCF is triggered would strongly protect industrial sector on the carbon leakage list.
- **Sharing of the burden between industrial sectors**: Sectors not on the carbon leakage list receive free allowances.

- **Effect on compensation (indeterminate)** : Innovation fund funded with free allowances. NER furnished with MSR and Phase III unallocated allowances

3. Multi-criteria assessment of European Commission, Parliament, and Council positions as well as BusinessEurope preferred compromise

We have assessed quantitatively each ETS reform option, using eight indicators.

Main assumptions

- Growth 1% p.a, aggregated view of the industrial sectors.
- Benchmark average flat rate: 0.5% p.a; parliament position without waste gas inclusion.
- No regulation overlap impact.
- Hedging behaviour taken into account.
- No Brexit effects.
- Out of the scope:
 - Qualitative assessment
 - Dynamic allocation
 - PRODCOM vs. NACE
 - Degressive nature of indirect costs
 - Small emitters
 - Borders adjustments

Concerns at stake

1

Restore supply/demand balance

2

Mitigate carbon leakage risk and preserve competitiveness

Indicators

EU ETS carbon prices

Emissions under EU ETS

Surplus

MSR

Free allowances to industrial sectors

Cross-sectoral Correction Factor (CSCF)

Support funds + NER

Costs for industrial sectors

1 Restore supply/demand balance: Efficient carbon price signal

A doubling of MSR intake rate would lead to higher carbon prices until 2030, favouring coal-gas switching in the power sector.

■ The doubling of MSR intake rate envisioned by all positions (but EC position) would **lead to higher carbon prices until 2030**, favouring coal-gas switching.

- The speed at which carbon **prices increase depends on the level of MSR intake rate**, i.e. speed at which the market rebalances.
- The EC position may lead to some coal-to-gas switching after 2025, but only for the least efficient installations.

■ The **doubling of MSR intake rate would not affect the carbon price in the long term** (after 2030).

- It **does not alter supply and demand balance** as the MSR would **not release allowances in the market before 2030**.

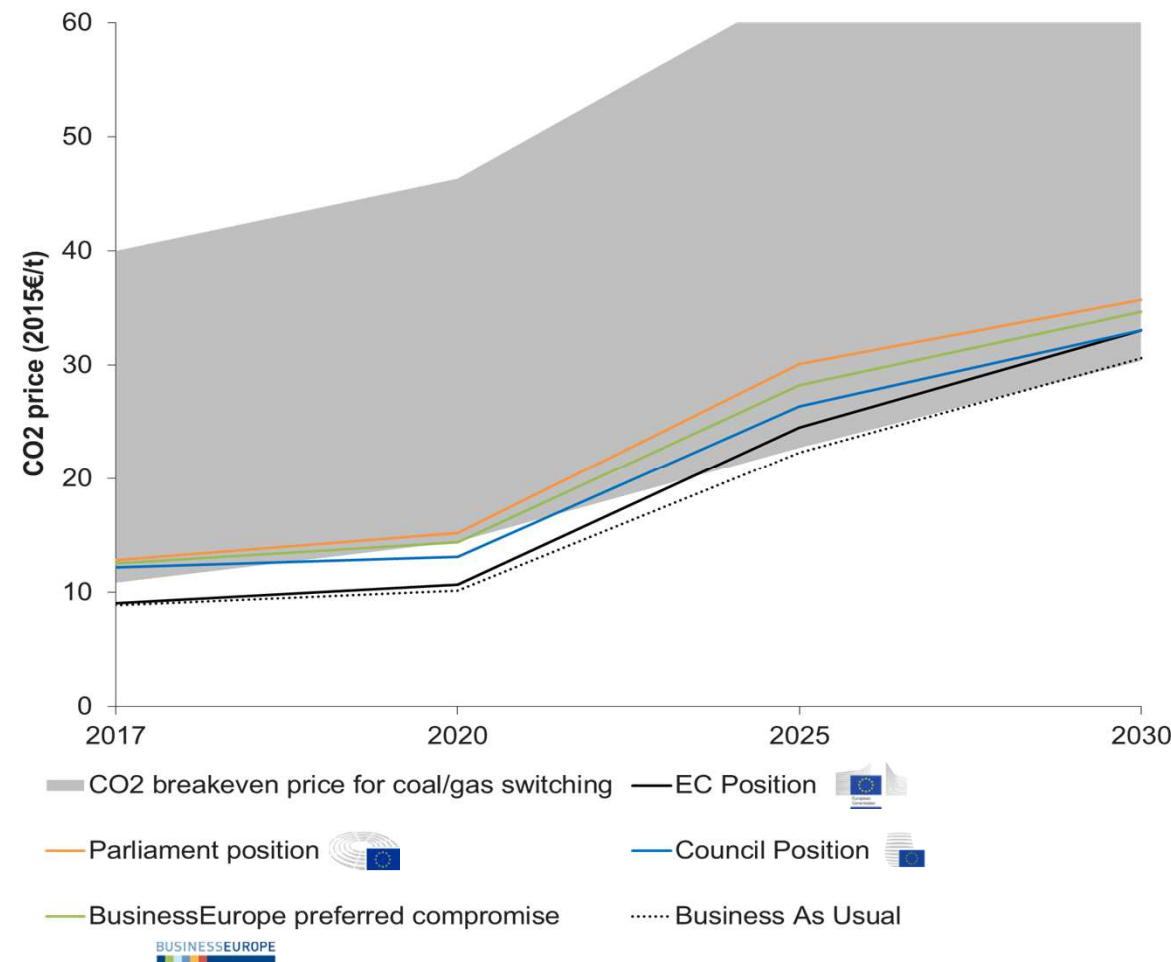
■ The **higher carbon prices in the Parliament position and BusinessEurope preferred compromise are due to difference in funds and NER**.

- In the Parliament position, the **NER is furnished with free allowances that are in the market, taken from Phase IV budget**, while in Council and EC positions as well as BusinessEurope preferred compromise unallocated allowances from Phase III are used. The ETS market is thus tighter for the Parliament position.
- Parliament and BusinessEurope envision an EU indirect costs fund and a larger innovation fund, which affects the amount of allowances available in the market each year.

■ The **ratio of auction vs. free allocation share has no material impact on the evolution of carbon prices**.

- Parliament and BusinessEurope propose to increase allowances available for free allocation by 5 percentage points (Council 2%) to avoid the use of the CSCF. This **does not alter the balance between supply and demand**, but only the distribution of allowances.

EU ETS carbon price (real 2015)



Note: (i) CO2 breakeven price for coal-gas switching is represented by a price range due to the range of efficiencies of existing plants. (ii) MSR under Parliament is considered permanent (until market balance has restored) and temporary under Council position and BusinessEurope preferred compromise. (iii) Business As Usual : same as EC but for LRF = 1.74%.

1 Restore supply/demand balance: Meeting EC emission targets

In all options, emissions reductions would stay in line with the ambitious trajectory for 90% reduction by 2050.

All options meet the ambitious EU emissions reduction targets in 2020 and 2030.

- **Market participants** anticipate higher prices and buy additional credits for future use which drives price up and emissions down.

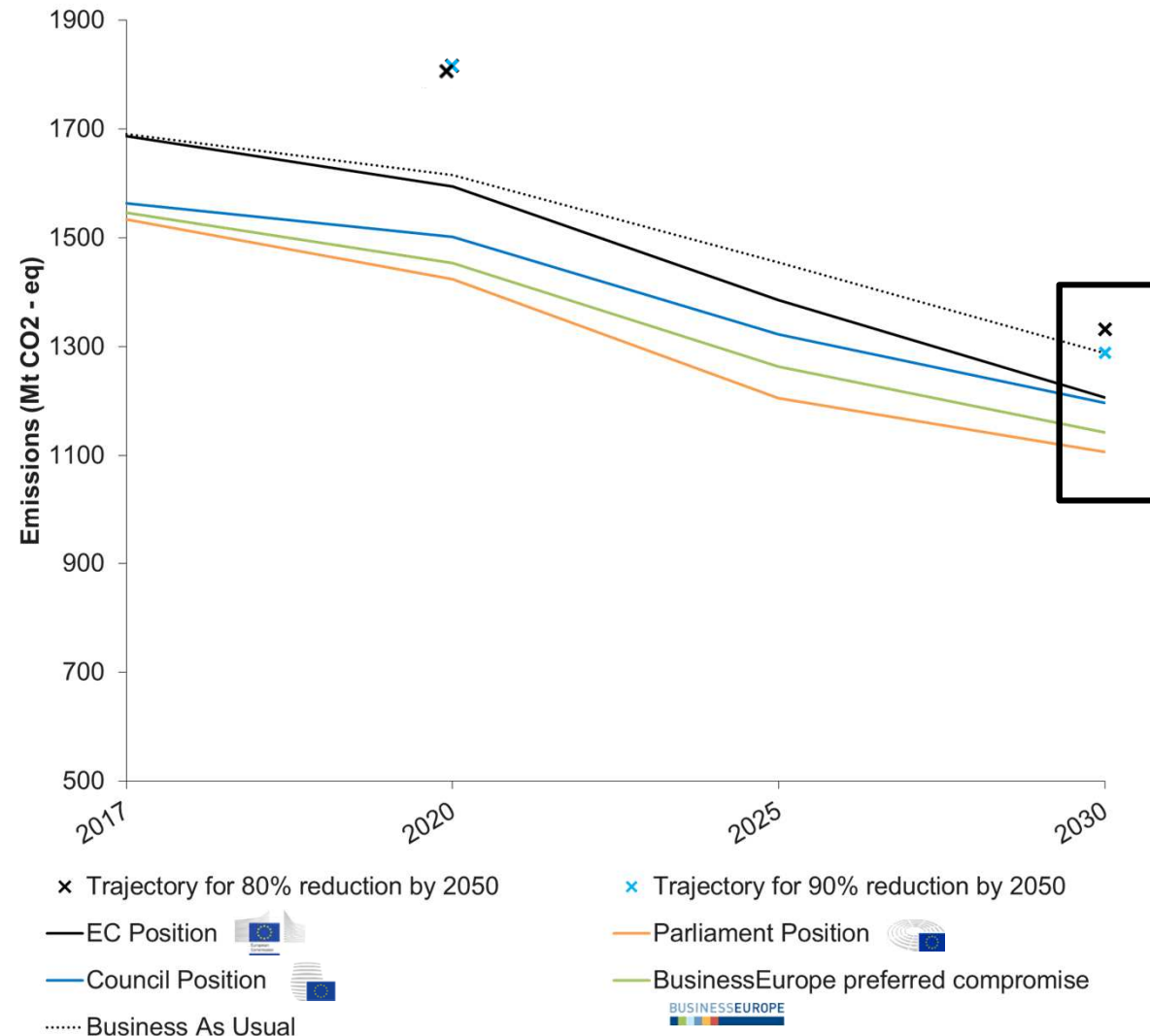
The lower emissions levels in the Parliament position and BusinessEurope preferred compromise is due to difference in funds and NER.

- In the Parliament position, the **NER is furnished with free allowances that are in the market, taken from Phase IV budget**, while in Council and EC positions as well as BusinessEurope preferred compromise unallocated allowances from Phase III are used. The ETS market is thus tighter for the Parliament position.
- Parliament and BusinessEurope envision an EU indirect costs fund and a larger innovation fund, which affects the amount of allowances available in the market each year.

The ratio of auction vs. free allocation share has no material impact on evolution of emissions.

- The increase in allowances available for free allocation **does not alter the balance between supply and demand**, but only the distribution of allowances.

Overall emissions under the ETS



Note : (i) EU ETS targets calculated based on the verified emissions for ETS sectors as of 2005, and the EU emissions reduction targets expressed in % 2005 emissions reduction. (ii)

Business As Usual : same as EC but for LRF = 1.74%.

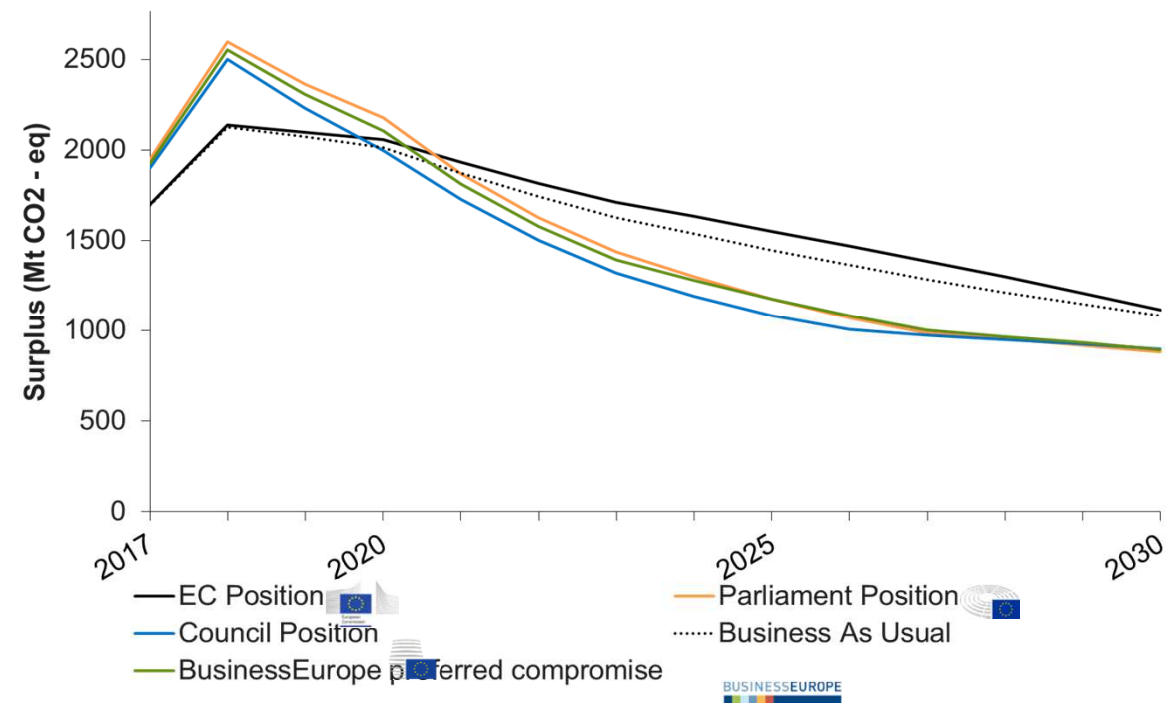
Source: European Commission, "Impact assessment 2014 - A policy framework for climate and energy in the period from 2020 up to 2030", p. 105, footnote 122.

1 Restore supply/demand balance: Surplus reduction

In all options, the surplus increases strongly in the short run, followed by a progressive decline toward a “stationary” level.

- All reform options show a strong increase of the surplus before activation of the MSR, reaching between 2 and 3 billions allowances. Once the MSR is activated (2019), the surplus starts declining slowly. Several effects are at work.
 - Before the activation of the MSR, Market participants anticipate the activation of the MSR from 2019, and thus buy additional credits as they anticipate the ETS price increase.
 - Once the MSR starts removing allowances from the market, investors start selling their speculative positions as soon as the MSR is implemented; and the MSR starts absorbing allowances from the ETS market, which in turn leads sectors to decrease their emissions – reducing their hedging needs.
- Parliament, BusinessEurope and Council options show a stabilisation of the size of the surplus by 2025, corresponding mainly to allowances put aside for hedging needs by both the industrial and power sectors.

Surplus



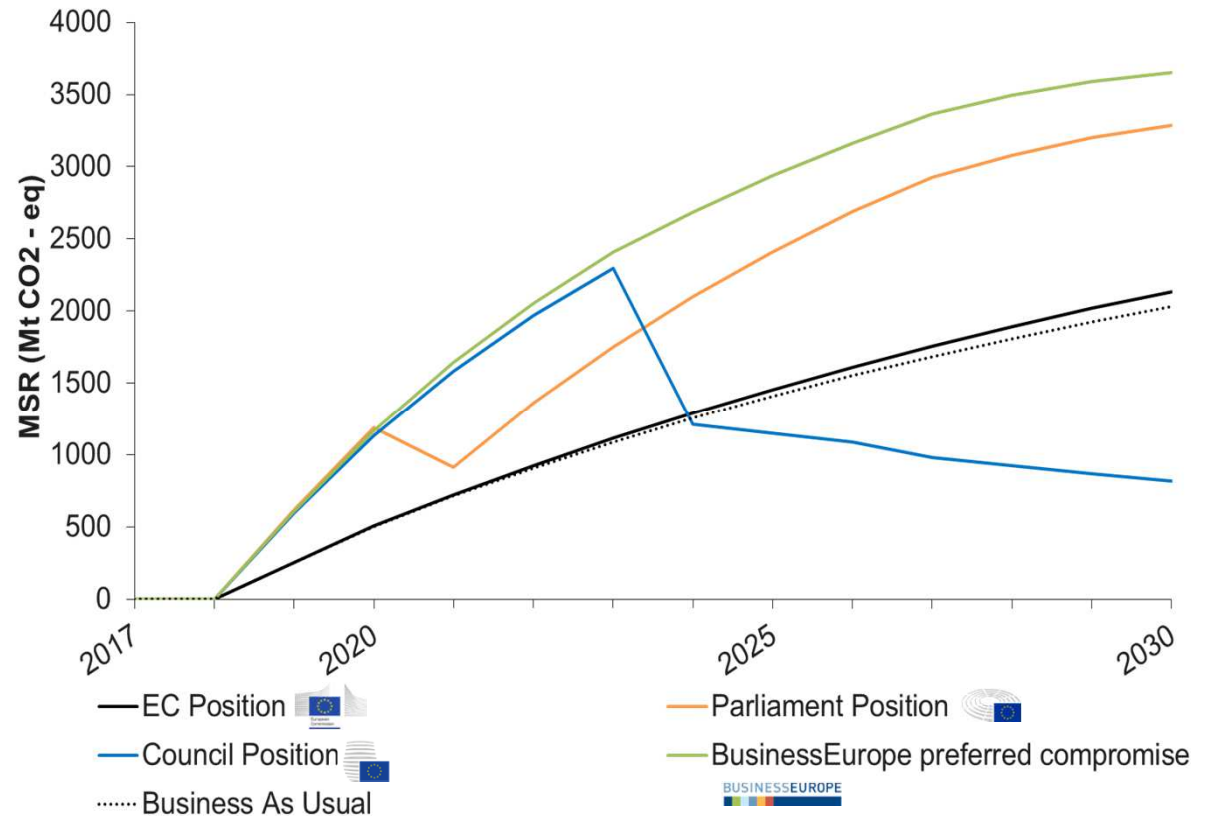
Note : (i) Business As Usual : same as EC but for LRF = 1.74%.

1 Restore supply/demand balance: MSR growth

In all ETS reform options, but the Council position, the MSR will quickly grow to several billion allowances.

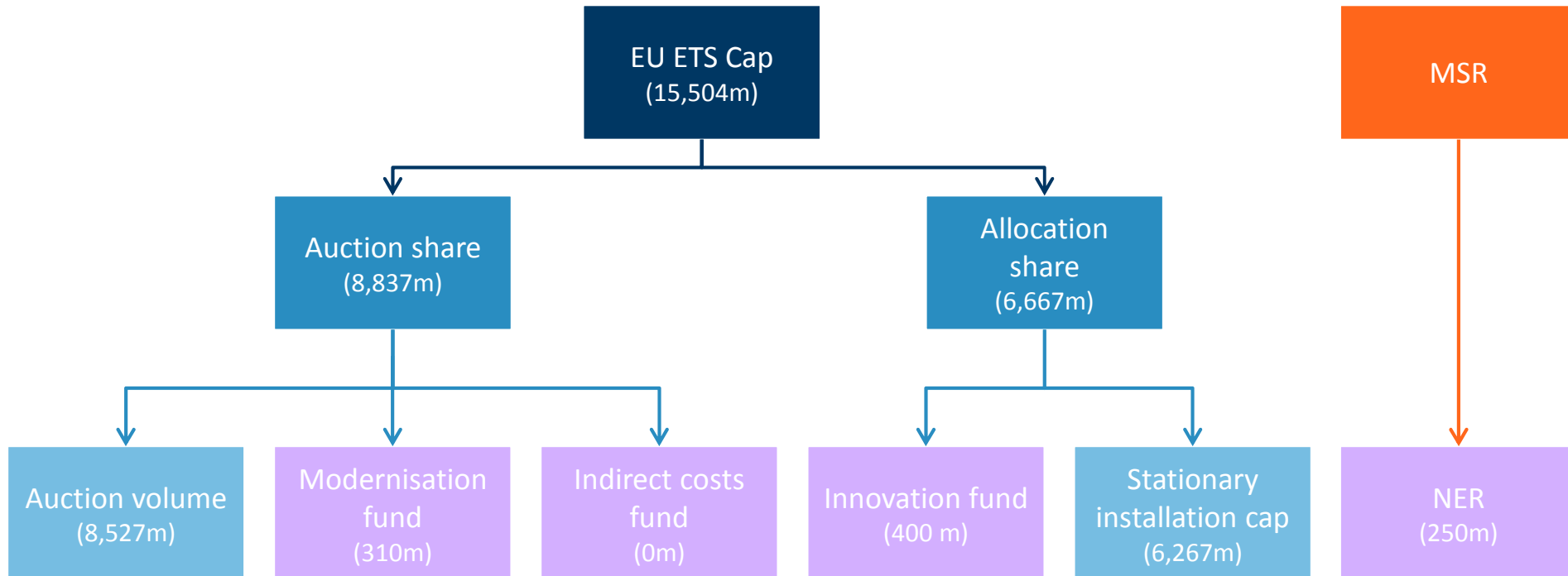
- In all reform options, the MSR would still be activated by 2030.
- The cancellation of allowances envisioned by the Council and to some extent the Parliament would limit the growth of the MSR.
- The size of the MSR has however no impact (before 2030) as no allowance would be released to the market before 2030.
- The doubling of MSR intake rate envisioned by the Parliament and the Council positions as well as BusinessEurope preferred compromise leads to a more pronounced increase of the MSR before 2025, because a greater number of allowances is removed from the market.

MSR



2 Mitigate carbon leakage risk and preserve competitiveness : free allowances

EC position : Over phase IV, the stationary installations cap amounts 6,267 million of allowances of allowances.

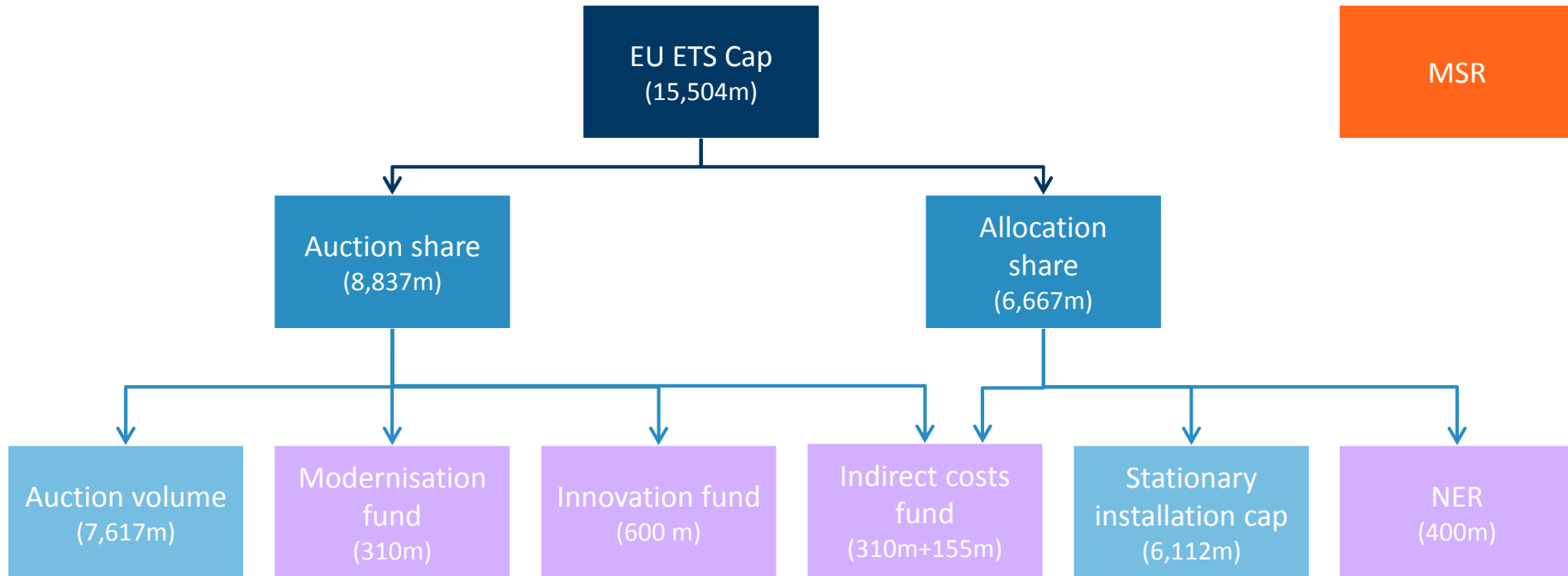


■ The cap for phase IV is shared between different allowance pots:

- Allowances to be auctioned : **8,527m**
- Cap for allowances to be allocated for free to stationary installations : **6,267m**
- Free allowances earmarked for funds : **400m**
- Auctioned allowances earmarked for funds : **310m**
- NER : **250m from MSR**

2 Mitigate carbon leakage risk and preserve competitiveness : free allowances

Parliament position : Over phase IV, the stationary installations cap amounts 6,112 million of allowances.

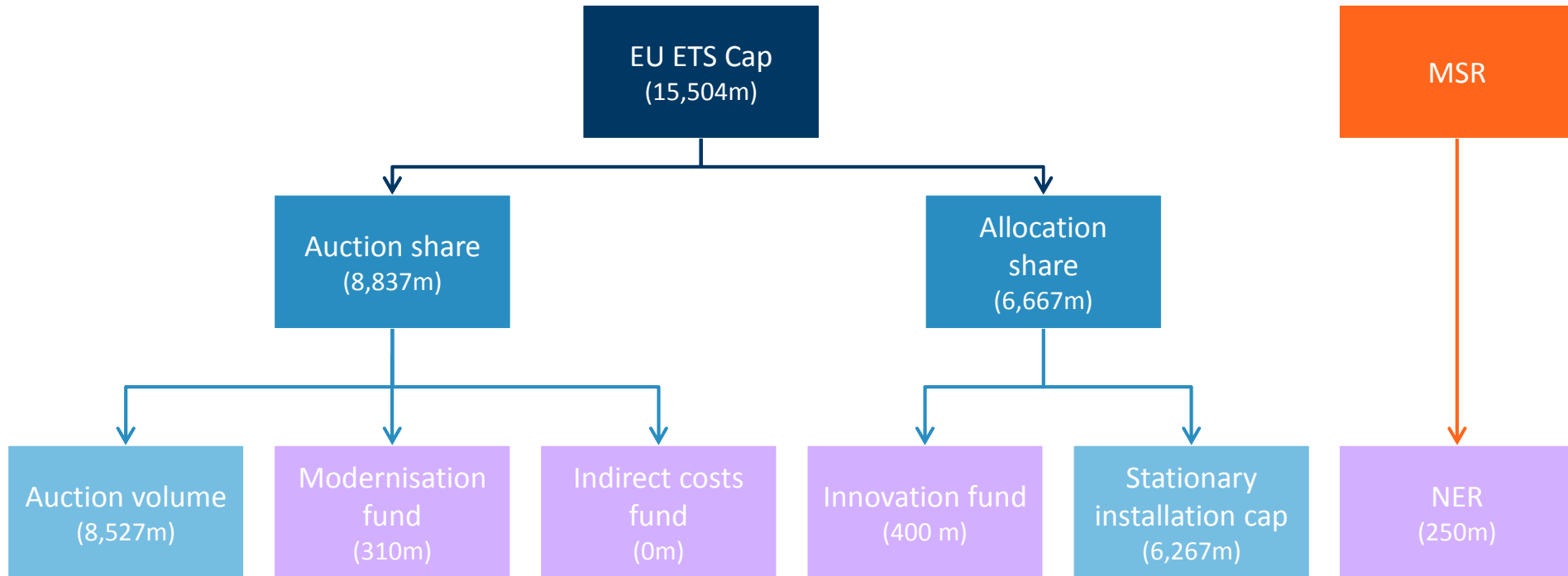


■ The cap for phase IV is shared between different allowance pots:

- Allowances to be auctioned : **7,617m**
- Cap for allowances to be allocated for free to stationary installations : **6, 112m**
- Free allowances earmarked for funds : **555m**
- Auctioned allowances earmarked for funds : **1,220m**

2 Mitigate carbon leakage risk and preserve competitiveness : free allowances

Council position : Over phase IV, the stationary installations cap amounts 6,267 million of allowances.

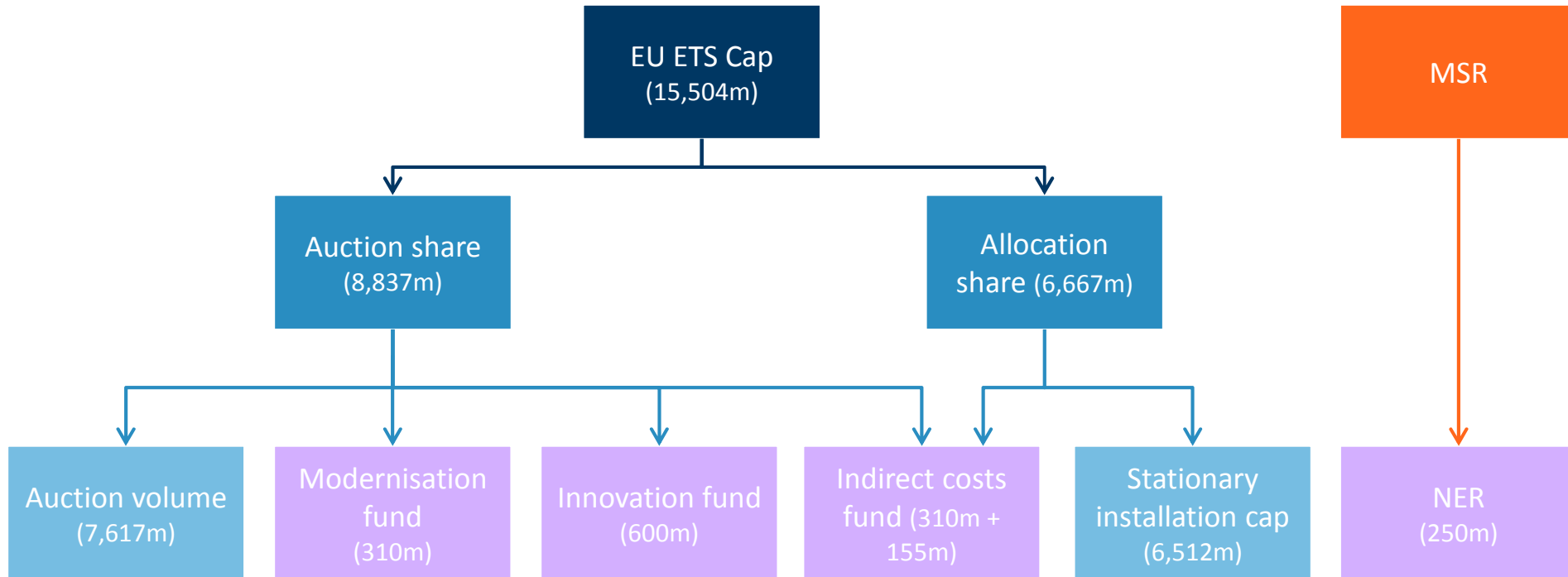


■ The cap for phase IV is shared between different allowance pots:

- Allowances to be auctioned : **8,527m**
- Cap for allowances to be allocated for free to stationary installations : **6, 267m**
- Free allowances earmarked for funds : **400m**
- Auctioned allowances earmarked for funds : **310m**
- NER : **250m from MSR**

2 Mitigate carbon leakage risk and preserve competitiveness : free allowances

BusinessEurope preferred compromise : Over phase IV, the stationary installations cap amounts 6,512 million of allowances.



■ The cap for phase IV is shared between different allowance pots:

- Allowances to be auctioned : **7,617m**
- Cap for allowances to be allocated for free to stationary installations : **6, 512m**
- Free allowances earmarked for funds : **155m**
- Auctioned allowances earmarked for funds : **1,220m**
- NER : **250m from MSR**

2 Mitigate carbon leakage risk and preserve competitiveness : free allowances

Over phase IV, up to 6,841 million of allowances would be allocated for free to stationary installations.

Up to 6,841 million of allowances are to be allocated for free over Phase IV:

- **EC proposal:** 6,267 million of free allowances + 700 million funds (excl. modernisation fund) and NER.
- **Parliament position:** 6,578 million of free allowances including used CSCF buffer + 1,465 million funds (excl. modernisation fund) and NER.
- **Council position:** 6,577 million of free allowances including used CSCF buffer + 700 million funds (excl. modernisation fund) and NER.
- **BusinessEurope preferred compromise :** 6,841 million of free allowances including used CSCF buffer + 1,315 million funds (excl. modernisation fund) and NER.

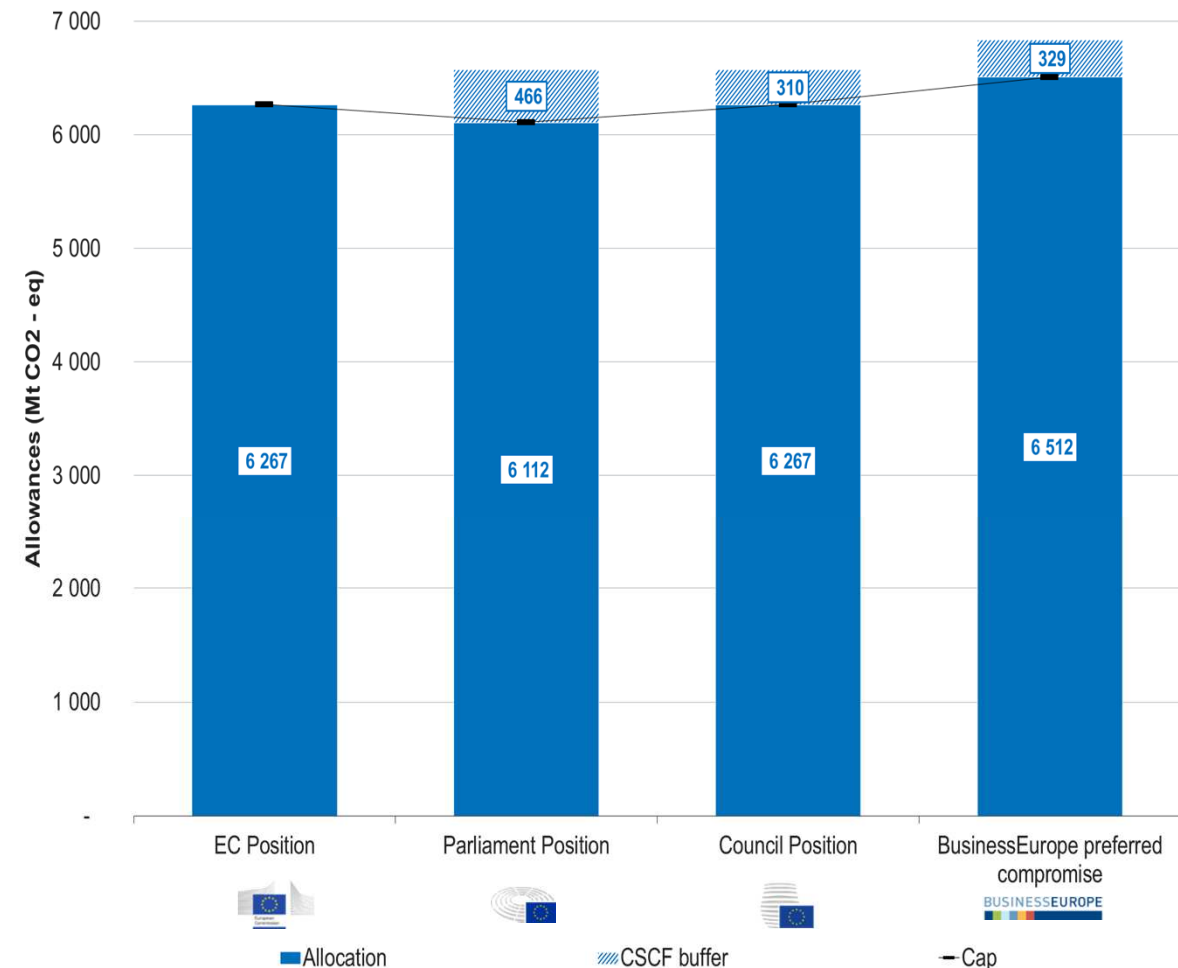
Ratio of auctioned vs. free allocation shifts up to 2 percentage points for Council, 5 percentage points for Parliament and BusinessEurope.

- **This delays the application of the CSCF** (and free allowances cut), increasing the number of allowances to be allocated for free.

The way funds are funded may reduce the number of free allowances allocated to industrial sectors.

- Innovation fund are funded with auctioned allowances for Parliament; free allowances for Council and EC (reducing the amount available for industrial sectors).
- No indirect costs funds for EC and Council positions.
- Within the Parliament position, NER furnished with free allowances from Phase IV, so it reduces allowances available for industry.

Free allowances under Phase IV, Stationary installations



Note : (i) Industrial growth : 1%; Benchmark updates : 0.5%. (ii) CSCF buffer = Allowances to be effectively shifted from auctioned to free. (iii) We do not model the qualitative assessment which could increase the entitlements for free allowances. Therefore, the figure here are lower bounds.

2 Mitigate carbon leakage risk and preserve competitiveness : CSCF and Costs for industrial sectors

EC and council positions would trigger the CSCF before 2030, implying allowances cuts even for best performers over Phase IV.

■ Up to 758 million of allowances to be cut over Phase IV:

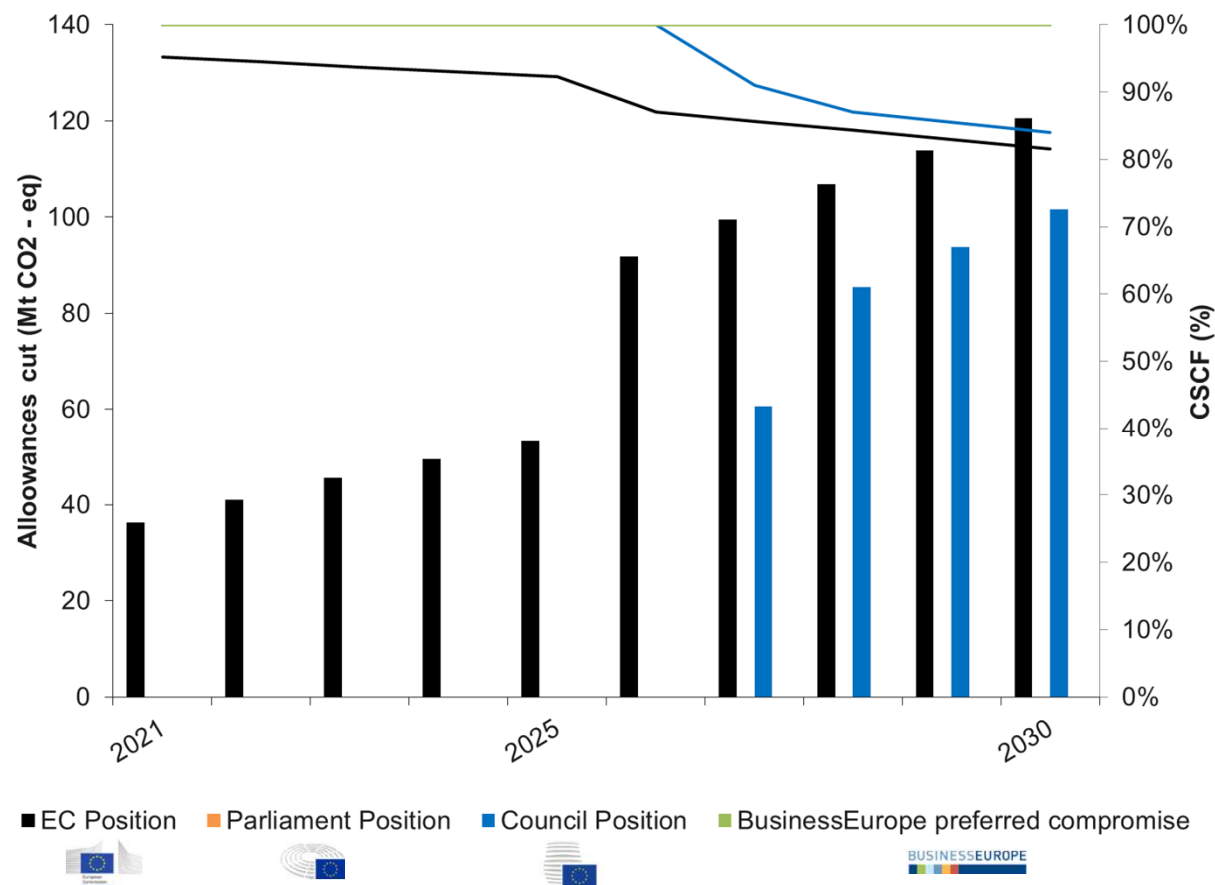
- **EC proposal:** 758 million of allowances.
- **Parliament position:** 0 million of allowances.
- **Council position:** 341 million of allowances.
- **BusinessEurope preferred compromise :** 0 million of allowances.

■ The Parliament position prevents a cut in free allowances.

- **Auction vs. free allocation share ratio shift** up to 5 percentage points for Parliament **prevents the application of the CSCF** and therefore free allowances cuts.
- **Mid-term benchmark update** based on actual performances of best performers would **offset the need to trigger the CSCF**.

■ EC and Council positions cause additional costs due to allowances cuts for stationary installations of 20.8 billion € (EC) and 11.0 billion € (Council) respectively over Phase IV⁽ⁱⁱ⁾.

Allowances cut under Phase IV, Stationary installations



Note : (i) Industrial growth : 1%; Benchmark updates : 0.5%. (ii) Calculated as the sum product over Phase IV of annual allowances cuts and corresponding annual carbon price. Not expressed as a net present value – i.e. no discounting.

4. Conclusion

Summary

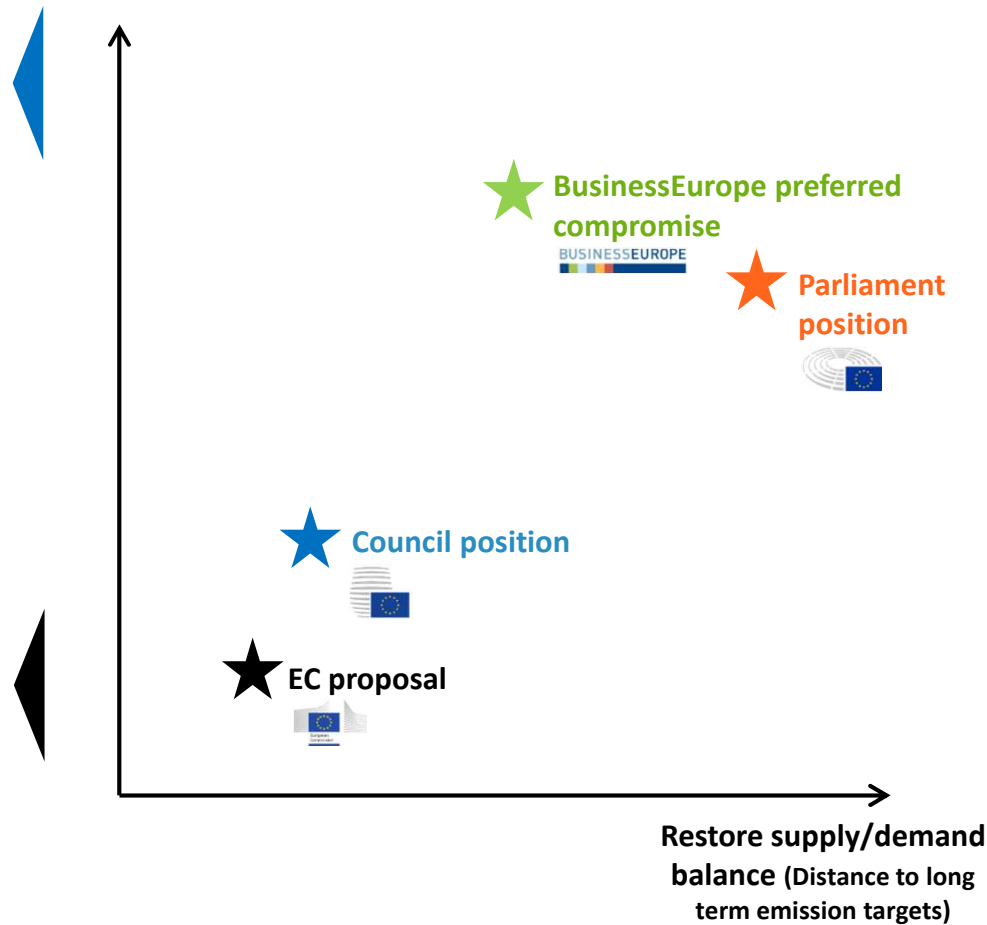
Council position

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,577 million of allowances to be allocated for free over Phase IV. (42% of emissions cap)
- Funds (excl. modernisation fund) +NER: 700 million of allowances.
- Additional cost: 11.0 billion €.

EC position

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,267 million of allowances to be allocated for free over Phase IV. (40% of emissions cap)
- Funds (excl. modernisation fund) +NER: 700 million of allowances.
- Additional cost: 20.8 billion €.

Number of free allowances + funds / NER
(Mitigate carbon leakage risk)



BusinessEurope preferred compromise

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,841 million of allowances to be allocated for free over Phase IV. (44% of emissions cap)
- Funds (excl. modernisation fund) +NER : 1,315 million of allowances.
- Additional cost: 0€.

Parliament position

- Meets the EU emissions reduction targets in 2020 and 2030.
- 6,578 million of allowances to be allocated for free over Phase IV. (42% of emissions cap)
- Funds (excl. modernisation fund) +NER : 1,465 million of allowances.
- Additional cost: 0€.

All options lead to a carbon price by 2030 of about 33-36€/t

Note : (i) Graph is not to scale; (ii) BusinessEurope preferred compromise = combination of Commission, Parliament and Council positions.

If you have any question about this presentation,
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