The EU Emissions Trading System: from understanding its design to discussing its revision

Online Briefing Session specially prepared for MEPs and Political Groups Advisers

in cooperation with the EEF Associate Members

Our event will start soon

@EEF_EnergyForum #EEF_BriefingSession

Please keep the **Chatham House rule** in mind when tweeting, thank you!

IN-HOUSE RULES

Chatham House Rule: one can mention what is said, but not quote anyone. Please keep it in mind when tweeting (@EEF_EnergyForum. #EEF_BriefingSession)

Mute mode: all participants are on mute mode and not visible during panellists' initial interventions

Debate time: all participants are encouraged to ask for the floor to visibly provide their insights or ask their questions. To do so :

- Use the «Raise Hand» function at the bottom of the participants tab
- When given the floor, you will be unmuted and have the option to turn on your camera
- Please introduce yourself and be brief
- The use of camera while asking a question is advised for a better, livelier interaction
- We will take 3 questions at a time

Technical explanation of the EU ETS

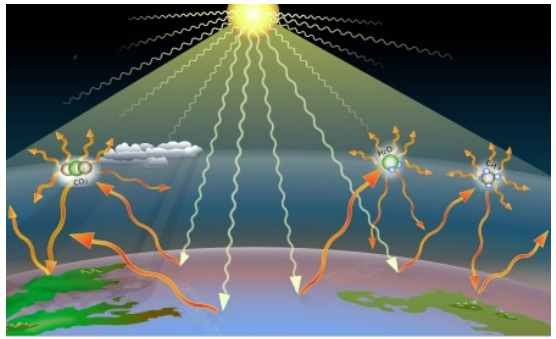
Setting the scene: what is the EU ETS?

Presented by

Nerea Cabarcos Ibañez, European regulatory analysis and positioning expert, ***Iberdrola***

Climate Action & Carbon Pricing Options (1)

The emission of Greenhouse Gases (GHG) into the atmosphere is the main cause of global warming

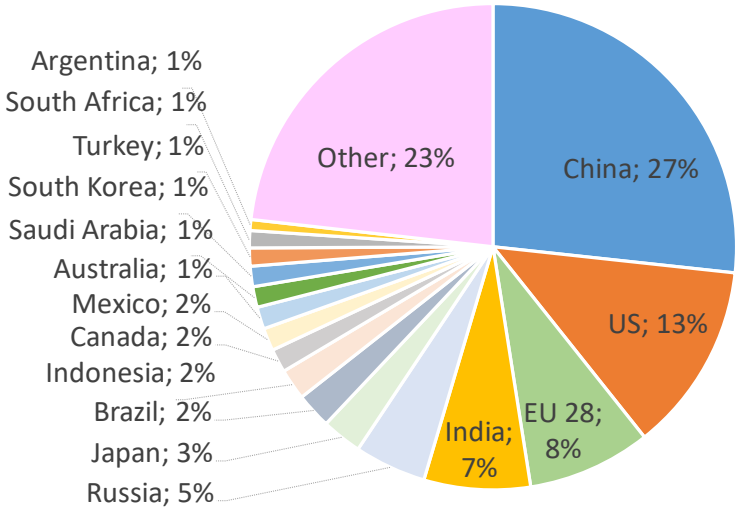


Which are GHG*?

- Carbon Dioxide, CO_2 (74.4%)
- Methane, CH_4 (17.3%)
- Nitrus Oxide, N_2O (6.2%)
- F-Gases, HFC-CFC-SF6 (2.1%)

** GHG emissions are also colloquially called CO_2 equivalent*

Global GHG Emissions in 2019: 52,4 Bill ton



Source: PBL Netherlands Environmental Assessment Agency

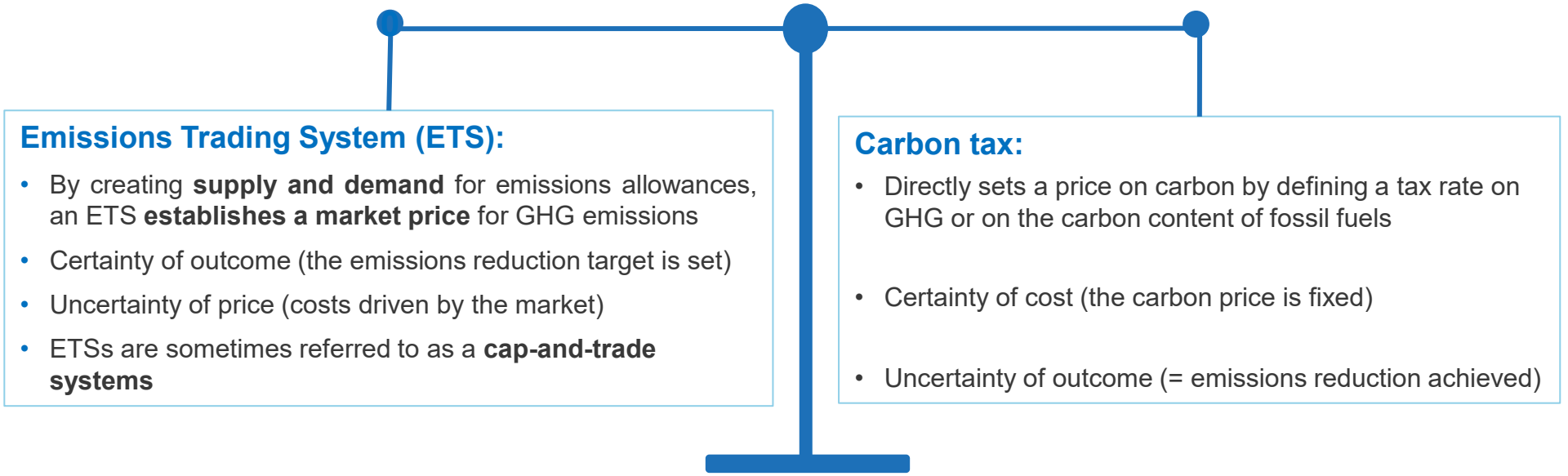
Vast majority of human activities' GHG emissions come from combustion of fossil fuels

Slide provided by Iberdrola

Climate Action & Carbon Pricing Options (2)

Polluter-Pays Principle:
the polluter should bear the costs of pollution prevention and control measures, i.e. measures decided by public authorities to ensure the environment is in an acceptable state (OECD, 1972)

Carbon price gives an economic signal and polluters decide for themselves whether to reduce emissions or continue polluting and pay for it. There are **two main types of carbon pricing**:



Emissions Trading System (ETS):

- By creating **supply and demand** for emissions allowances, an ETS **establishes a market price** for GHG emissions
- Certainty of outcome (the emissions reduction target is set)
- Uncertainty of price (costs driven by the market)
- ETSs are sometimes referred to as a **cap-and-trade systems**

Carbon tax:

- Directly sets a price on carbon by defining a tax rate on GHG or on the carbon content of fossil fuels
- Certainty of cost (the carbon price is fixed)
- Uncertainty of outcome (= emissions reduction achieved)

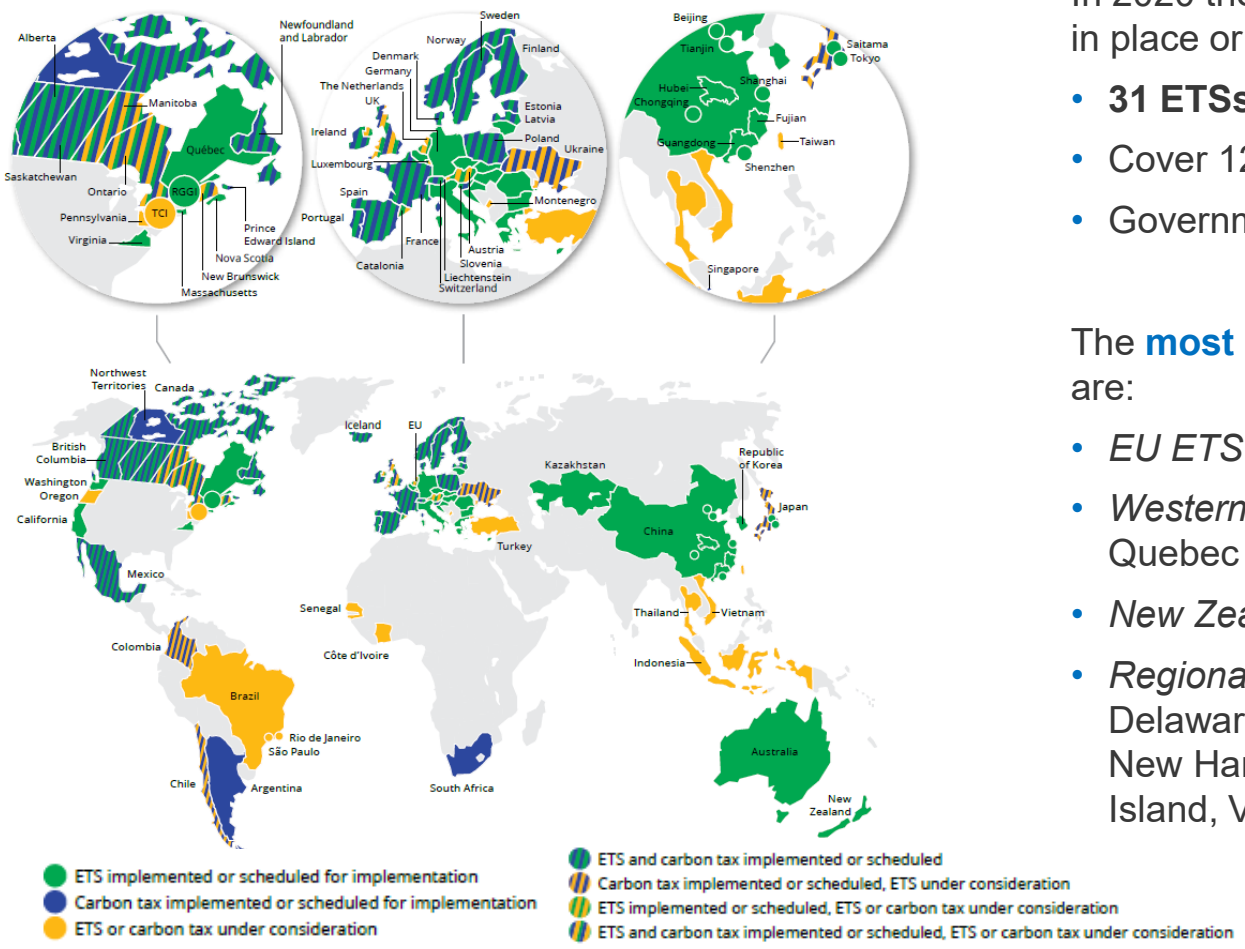
The choice of the instrument will depend on national and economic circumstances.

Slide provided by Iberdrola

Climate Action & Carbon Pricing Options around the world (3)

Carbon pricing initiatives have been strengthened as jurisdictions around the world adopt more ambitious mitigation targets and introduce associated policy tools

Global carbon pricing initiatives in 2020
(implemented, scheduled and under consideration)



Source: World Bank

In 2020 there were **61 carbon pricing initiatives** in place or scheduled for implementation:

- **31 ETSs** and **30 carbon taxes**
- Cover 12 $GtCO_2eq$ (≈22% of global GHG)
- Governments raised ≈ $45 billion (2019)

The **most important ETSs** in the world by size are:

- *EU ETS* (≈40% EU's GHG emissions)
- *Western Climate Initiative (WCI)* in California-Quebec (≈80% of states's GHG)
- *New Zealand ETS* (≈50% of country's GHG)
- *Regional GHG Initiative (RGGI)* in Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, NY, Rhode Island, Vermont (≈18% of total CO_2)

Slide provided by Iberdrola

The EU ETS

The EU ETS brings certainty about CO_2eq reduced, cost-effectiveness and is a source of revenue for governments

Why did the EU decide to choose an ETS Structure?

- A tax does not guarantee that the GHG emissions reduction **target will be achieved**
- **Unanimity** would be required across all countries on the right price for carbon (taxation requiring unanimity in the Council)

The benefits:

- **Key benefits** of cap-and-trade are:
  - **certainty about result** (amount of emissions reduced) to ensure compliance with the relevant commitment
  - **cost-effectiveness**: all firms face the same carbon price and it ensures that emissions are cut where it costs least to do so
  - a **source of revenue for governments**, at least 50% of which must be used to fund measures to tackle climate change

Slide provided by Iberdrola

How does the EU ETS work?

Presented by

Nerea Cabarcos Ibañez, European regulatory analysis and positioning expert, ***Iberdrola***

EU emissions reduction targets

The EU has set itself climate targets – GHG (CO_2eq) direct reduction, renewables and energy efficiency improvement – **to progressively reduce its GHG emissions**

The 2020 package: set by EU leaders in 2007, and enacted in legislation in 2009, set 3 targets for 2020

- **CO_2eq: -20% vs 1990**
  ETS -21% vs 2005
  Non-ETS -10% vs 2005
- **RES: +20%**
  RES-T: +10%
  Renewable energy Directive (RED)
- **EE: +20%**
  Energy Efficiency Directive (EED)

The 2030 package: set by EU leaders in 2014, and enacted in legislation in 2018, set 3 targets for 2030

- **CO_2eq: -40% vs 1990**
  ETS -43% vs 2005
  Non-ETS -10% vs 2005
- **RES: +32%**
  RES-T: +14%
  Renewable energy Directive (RED)
- **EE: +32,5%**
  Energy Efficiency Directive (EED)

European Green Deal (2021-23?): EC proposed in 2020 to raise the 2030 ambition

- **CO_2eq: -55% Vs 1990***
  (including emissions & removals)
  ETS ≈-63% vs 2005**
  Non-ETS ≈-40% vs 2005**
- **RES: ≈+38-40%****
  RES-T: ≈+24%**
  Renewable energy Directive (RED)
- **EE ≈ +36-40%****
  Energy Efficiency Directive (EED)

** Under negotiation in the Climate Law trilogues*

*** Not established yet, source EC Impact Assessment on 2030 Climate target*

By 2050, Europe aims to become the world's first climate-neutral continent

EU needs to review its climate targets to reach Green Deal's higher decarbonisation ambition

Slide provided by Iberdrola

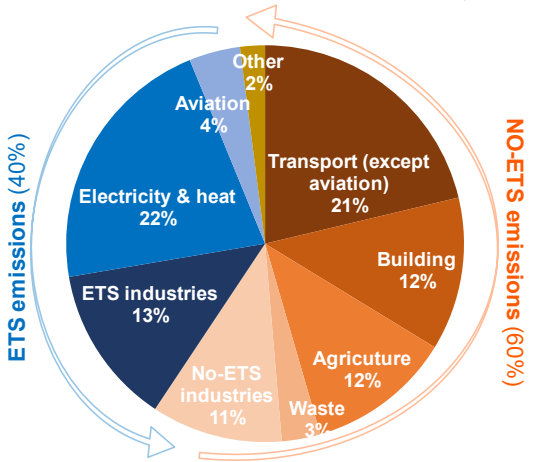
EU Emissions split

40% of European emissions participate in the ETS while 60% are covered by national objectives and measures

EU CO_2eq REDUCTION TARGETS

EU Targets	2020	2030	2030 Green Deal
GHG (CO_2eq)	**-20% vs 1990**	**-40% vs 1990**	**-55% vs 1990** (including emissions & **removals**)
CO_2eq ETS	**-21% vs 2005**	**-43% vs 2005**	**≈-63% vs 2005***
CO_2eq Non-ETS	**-10% vs 2005**	**-30% vs 2005**	**≈-40% vs 2005***

EU GHG Emissions in 2018: 4,2 Bill ton



Data source: EEA, graph own elaboration

The GHG (CO_2eq) reduction target is split in 2 targets that apply to 2 groups of sectors that have its own regulation:

- *European Emission Trading System* (EU ETS) *Directive:*
  - Sectors: **electricity sector**, ETS **industry** and intra-EU **aviation**
  - Sets a market that puts a price on GHG emissions
  - All eligible installations are obliged to participate
- *Effort Sharing Regulation ("Non-ETS"):*
  - Sectors: **transport***, **buildings**, Non-ETS **industry**, **agriculture** and **waste**
  - Sets national targets
  - Each country will develop actions and national regulations to jointly reduce emissions in these sectors (i.e. national CO_2 price mechanisms)

Land Use, Land Use Change and Forestry (LULUCF)

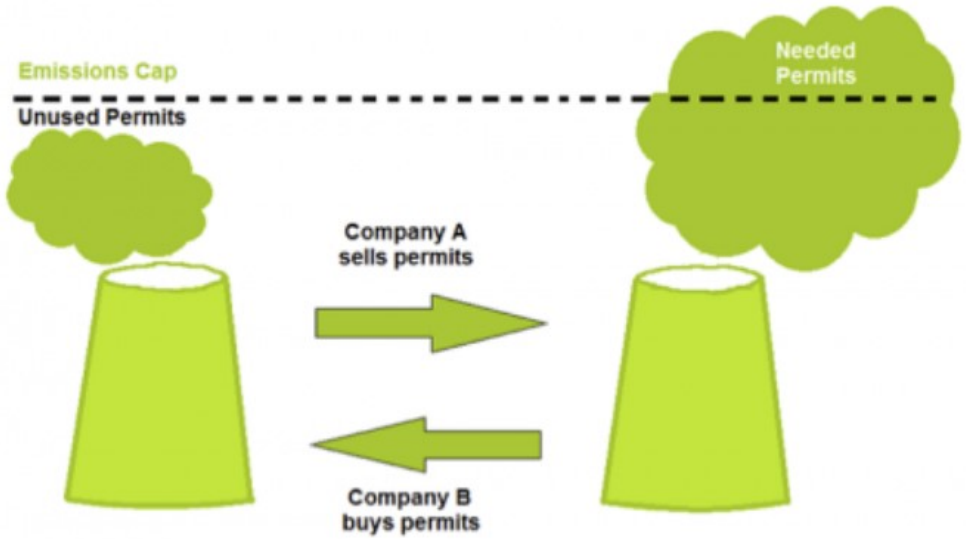
Emissions of the facilities included in the EU ETS represent an increasingly smaller share of the total European emissions (currently around 40%)

** Except for intra EU aviation*

Slide provided by Iberdrola

Cap & trade

“Trading” brings flexibility that ensures emissions are cut where it costs least to do so

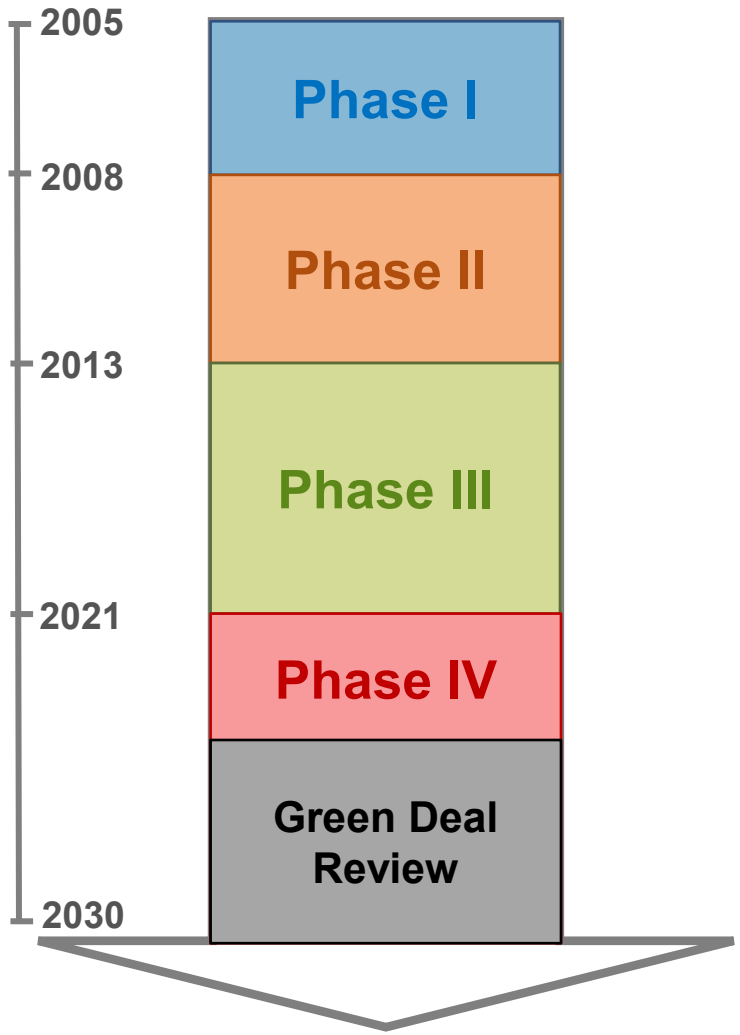


- The EU ETS works on the **“cap and trade” principle**:
  - a **cap is set** on the total amount of GHG that can be emitted by installations covered by the ETS
  - the **cap is reduced** over time to cut emissions accordingly to emission reduction target established
  - **carbon price is set by the market** (demand/supply)
- Within the cap, companies can **obtain the emission allowances** they need by:
  - **Free allocation:** for industry to preserve its international competitiveness
  - **Auctions**: EC spreads remaining allowances among MSs mainly according to their historical emissions (2008-12)
  - **Secondary market:** companies can sell spare allowances

Slide provided by Iberdrola

Scope & phases

The EU ETS is a major tool of the European Union on its efforts to meet emissions reduction targets now and in the future

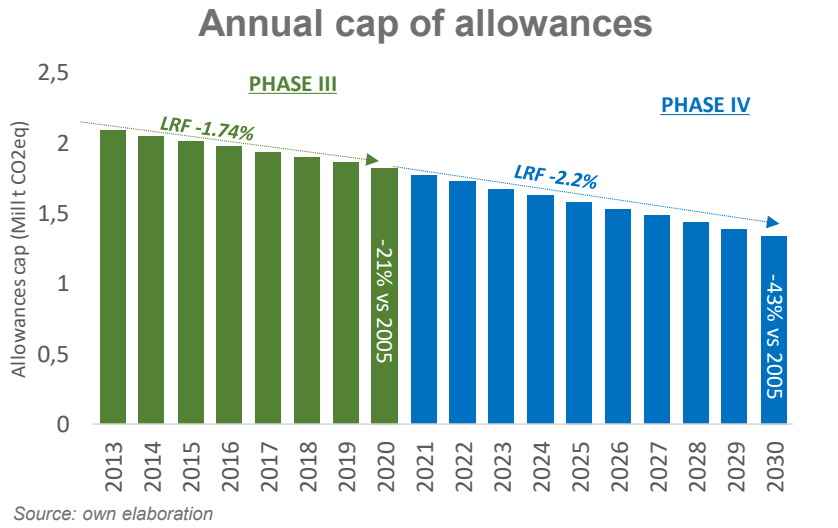


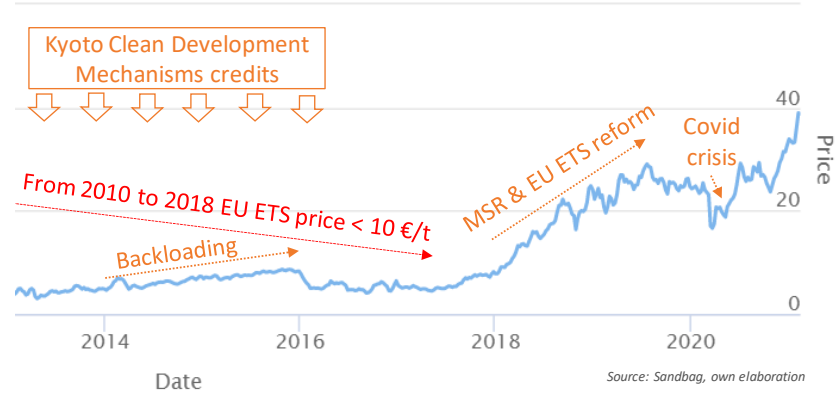
- The EU ETS was created in 2005, but it really started working on 2008
- **Operates** in EU countries plus Iceland, Liechtenstein, Norway
  - Switzerland's ETS linked in 2020
- **Covers** around 40% of the EU's GHG emissions from **electricity sector**, part of the **industry** and intra-EU **aviation**
- **GHG** covered are CO_2, N_2O, PFCs ("CO_2eq")
- **Limits** emissions from ≈11,000 power stations & industrial plants, and airlines operating between the EU ETS countries
  - Each included installation must surrender **1 emission allowance ("*EUA*") for each ton of GHG emitted** (if not, penalty)

Slide provided by Iberdrola

The EU ETS tools

Several tools are available to balance the supply and demand in order to set the carbon price signal that contributes to decarbonise the economy





- The **emissions cap:** is set according to the average historical emissions (2008-12)
  - Yearly reduced by **Linear Reduction Factor** (LRF) to achieve the EU ETS emissions reduction targets
- **Voluntary cancellation of allowances** by countries if they close a fossil installation by national regulatory measures
- **Flexibilities** for included installations:
  - *Banking*: if a company reduces its emissions, it can keep the spare allowances to cover its future needs
  - Limited amounts of *international credits* from emission-saving projects around the world (till 2020): Kyoto's Clean Development Mechanisms that allow to implement an emission-reduction project in developing countries to earn certified emission reduction (CER)
- **Backloading (2014-16)** will be explained in detail later
- **Market Stability Reserve (MSR, 2019)** will be explained in detail later

Slide provided by Iberdrola

The EU ETS main regulatory pieces

European CO_2 market is not only regulated by the EU ETS Directive, but also by additional EU legislation

EU ETS Regulatory pieces:

- *Free allowances*
- *Auctioning of allowances*
  - Member states' auction share
- *Market Stability Reserve*
- *Report on the functioning of the European carbon market*
- *EU ETS state aid guidelines*

Slide provided by Iberdrola

Key issues for the EU ETS revision

Green Deal new ambition needs the review of the EU ETS main tools to be aligned with the increased ambition

Over the next few months, discussions on the reform of the EU ETS will focus on:

- **Increase the EU ETS target** from -43% vs 2005 to ¿?¿?
- **Strengthen the allowance cap** to reach the more ambitious target (available tools: *rebasing & LRF*)
- **Avoid overlapping impacts on the EU ETS** (tools?)
- **Non-ETS sectors** (60% of EU's emissions) need to be decarbonise (how?)

(Also on MSR, industry protection & decarbonisation,… that will be explained in detail later)

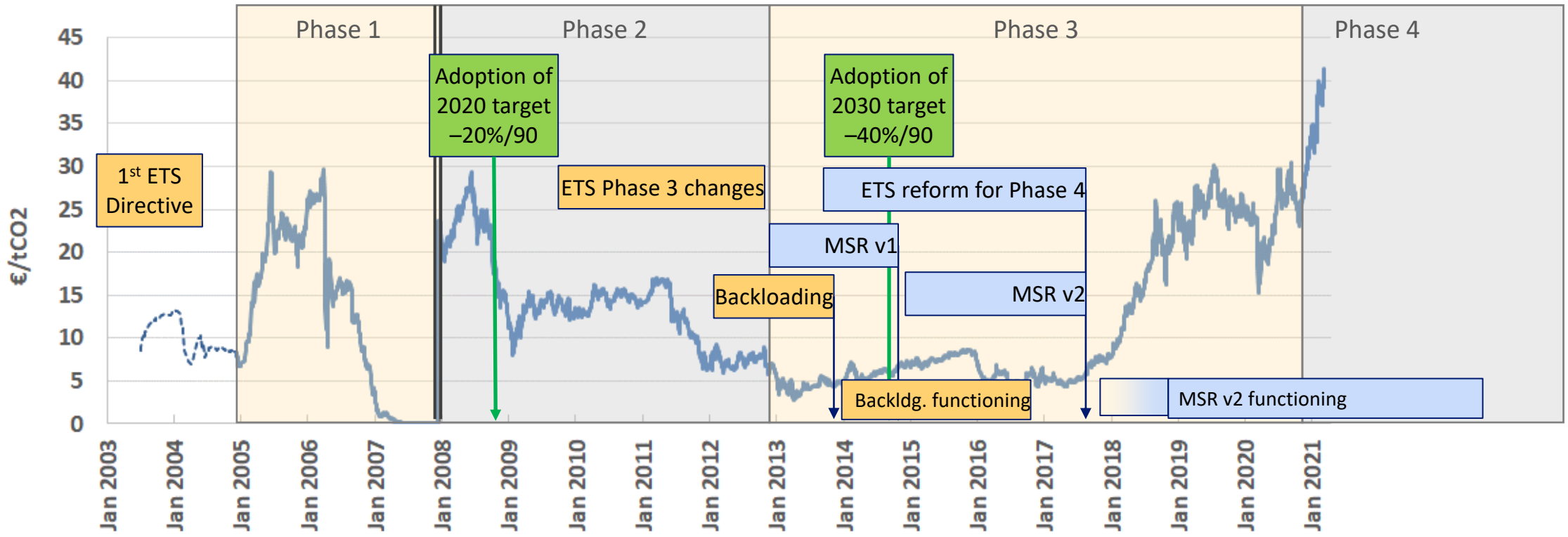
Slide provided by Iberdrola

Market Stability Reserve (MSR): why was it introduced and how does it work?

Presented by

Florent Le Strat, Climate policy Expert, EDF

Link between the ETS regulation and the CO_2 price



NAP1s (M.S.)
Flat cap
Free alloc. for all

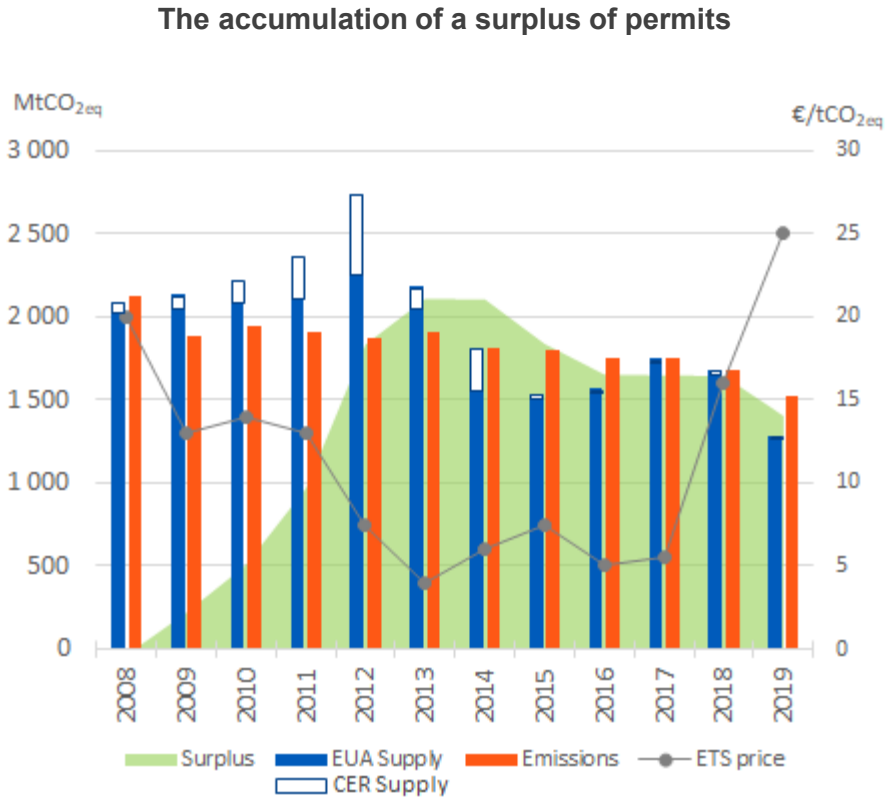
NAP2s (M.S. & EC's comments)
Flat cap
Free alloc. mainly (5% max of auctioning)

Cap decided at EC level
Decreasing cap => LRF 1,74%
Auctioning for Power (except Art. 10.c)
Free alloc. for Industry exposed to carbon leakage
Backloading in 2013-2014-2015

New LRF
Auct. Power
F.A. Industry

Slide provided by EDF

Reduction of CO_2 emissions and accumulation of a surplus of permits



Until 2017, emissions reductions due to 2 main causes

- Overlapping policies (e.g. RES targets)
- Economic crisis

Supply was independent from the regulatory and economic context

Because of surplus accumulation, adjustment of EUAs needed

- To compensate with the effects of overlapping policies
- To improve the stability of the EU ETS in case of an exogenous shock

The Market Stability reserve (MSR) was introduced from 2019

Slide provided by EDF

MSR and its control parameters: how does it work ?

The key notion for the functioning of the MSR is the total number of allowances in circulation (TNAC)

TNAC = supply of quotas – (emissions + allowances in the MSR)
(Cumulative from 2008)

TNAC

Calculated each year by the EC based on verified emissions.

TNAC > 833 Mt → Auctions reduction equivalent to 24% of the TNAC

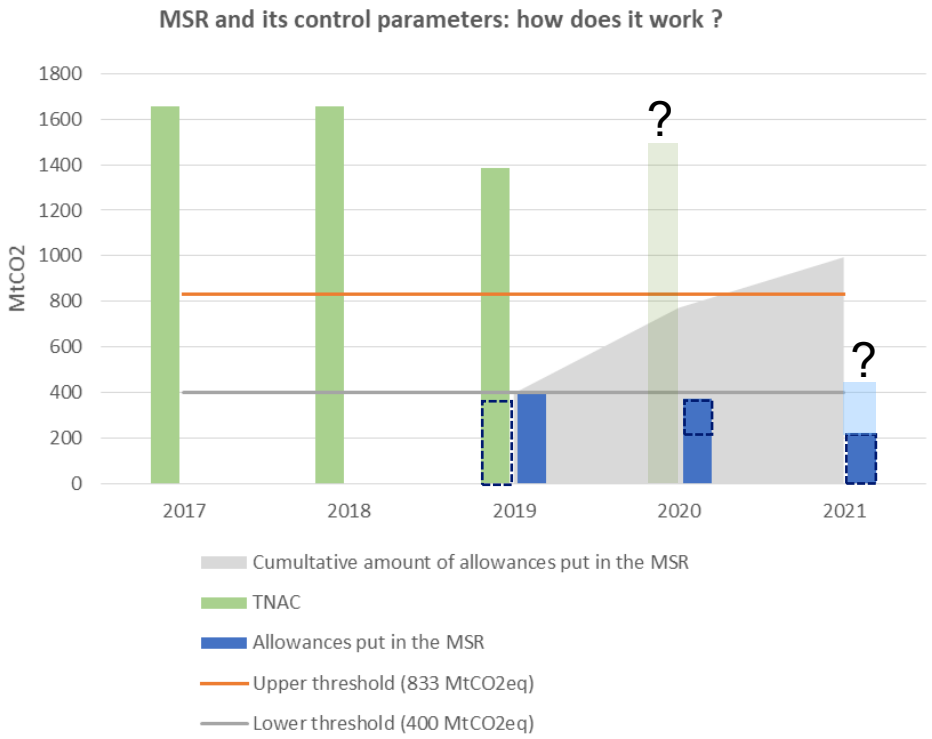
Volume placed in the reserve. Intake rate reduced to 12 % from 2024.

TNAC between 400 and 833 Mt → No action

TNAC < 400 Mt → Auctions increase by 100 Mt

Quotas released from the MSR.

Since the start of the MSR, 995 M EUA were transferred in the reserve while the TNAC decreased by 308 M EUA.



From 2023 MSR is not being cap neutral anymore because of cancellation of the resulting excess of permits *if MSR volume ≥ previous year auctions volume*

Slide provided by EDF

MSR design : A wide range of possibilities to modify the MSR

	Nature	Level	Evolution	Current ETS
Thresholds	Quantity or price ?	Values ?	Constant or evolving?	Constant, volume based 400 – 833 $MtCO_2eq$
Actions (rates)	Absolute or percentage ?	Value ?	Constant or Evolving ?	Constant, relative & absolute Absorption : 24% until 2023, then 12% Injection : 100 Mt/y
Cancellation	Criteria ?	Value ?	Constant or evolving ?	Based on auctioning trajectory From 2023 onwards, volume de reserve not higher than the volume of auctioning of the previous year : Excess of permits cancelled

Need for a 'natural surplus' (the lowest threshold of the MSR is therefore not zero)

- All companies need to be able to bank allowances
- Currently, mainly the power sector requires additional volumes for hedging strategies
  - The deeper the decarbonisation of the electricity sector is, the lower the emissions and the corresponding need for hedging will be
- On the contrary, the stronger decarbonisaton (more constraints to reduce emissions and less free allocation) on industrial emitters could lead to higher need of permits for their hedging

Changing the MSR can change the EU-ETS carbon cap

- Cancelling permits in the MSR reduces the EU-ETS carbon cap

Challenge of the MSR revision:
how to adapt the MSR to the enhanced target of the Green Deal?

Slide provided by EDF

Carbon leakage and how to ensure industry competitiveness

Presented by

Lorenzo Esposito Caserta, Climate Policy & Market Mechanisms, Eni

Carbon leakage (CL) definition

CARBON LEAKAGE DEFINITION

"As long as many international partners do not share the same ambition as the EU, there is a **risk of carbon leakage, either because production is transferred from the EU to other countries with lower ambition for emission reduction, or because EU products are replaced by more carbon-intensive imports.**

If this risk materialises, there will be **no reduction in global emissions, and this will frustrate the efforts of the EU and its industries** to meet the global climate objectives of the Paris Agreement"

(EC Green Deal Communication, 2019)

Slide provided by Eni

Measures to protect carbon leakage sectors

COST INCURRED TO BE COMPENSATED	MEASURE FOR COMPENSATION	CONDITIONS AND IMPLEMENTATION RULES
Direct cost due to need to purchase allowances for the ETS compliance	*Free allowances* 	**Is the sector* included in the carbon leakage list?** → **YES** → **100% of the free allowances** calculated according to the sectoral benchmarks; **NO** → **30% of the free allowances** calculated according to the sectoral benchmarks up to 2026. Between 2027 and 2030 free allowances linearly reduced to zero
Indirect cost due to higher electricity prices which internalize the CO_2 cost	*Financial compensation* 	**Is the sector included in the list specified in the state aid guidelines?** → **YES** → **Financial compensation may be granted** and it is **calculated according to the formula** set in the state aid guidelines; **NO** → **No financial compensation** is granted

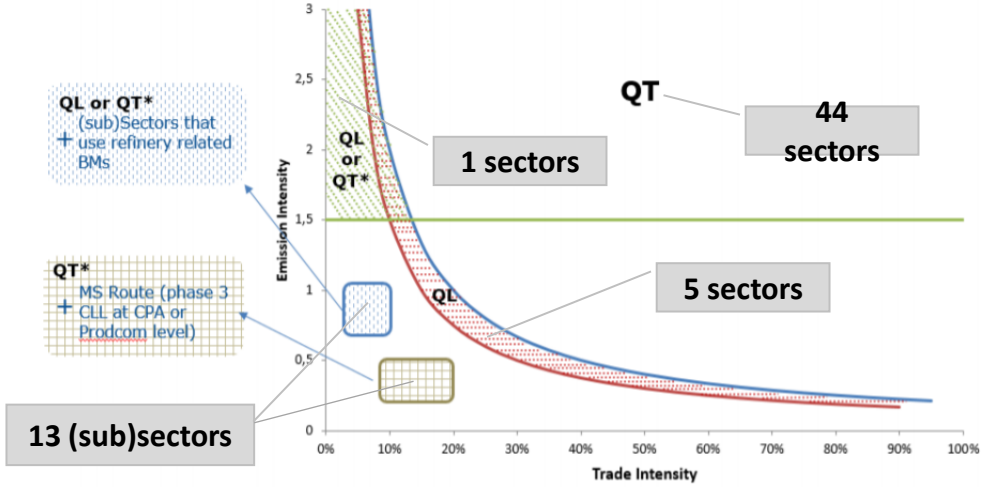
** Electricity production does not receive free allocation*

Carbon leakage (CL) assessment for 2021-2030

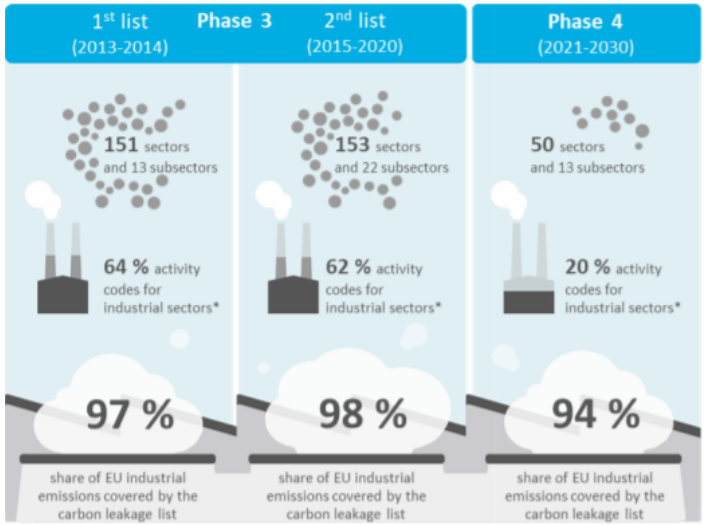
Index (I) = **Emission Intensity** $\frac{\text{Emissions}^1\ (kgCO_2)}{\text{Gross Value Added}^2\ (€)}$ **x** **Trade Intensity** $\frac{\text{Exports (€) + Imports (€)}}{\text{Annual turnover}^3\ (€) + \text{Imports (€)}}$

- **I > 0.2** → Sector directly included in the CL **(Quantitative Assessment, QL)**
- **0.15 < I ≤ 0.2** → Sector may be included in the CL list with a **Qualitative Assessment (QT)**
- **Outliers** (see chart below) → (Sub) sector may be included in the CL list with a **QL or QT**

Outcome of the assessment



Source: European Commission Stakeholder Meeting 16 May 2018



Source: ECA, based on EU legislation and European Commission data.

1 Includes direct and indirect (i.e. from electricity used in the production process) emissions; 2 Output value minus value of goods and services consumed as inputs (excl. fixed assets); 3 Value of production

Slide provided by Eni

Free allowances allocation methodology

Free allowances calculation

Historical activity level **X** *Benchmark* **X** *Carbon leakage factor* **X** *Cross sectoral correction factor*

Average production level in the baseline periods (2014 – 2018 and 2019 – 2023)

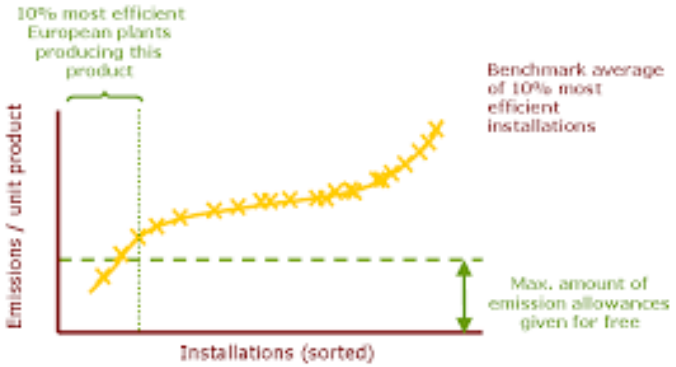
Applicable benchmark calculated in the reference periods (2016-2017 and 2021-2022)

CL sectors: **100%**

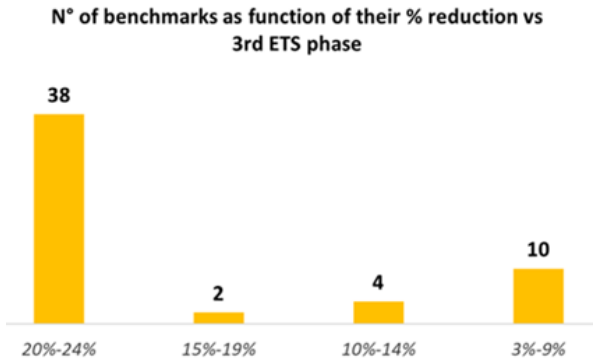
Non CL sectors**: 30% (up to 2026)**

To be defined by the European Commission **consistently with the cap for free allowances**

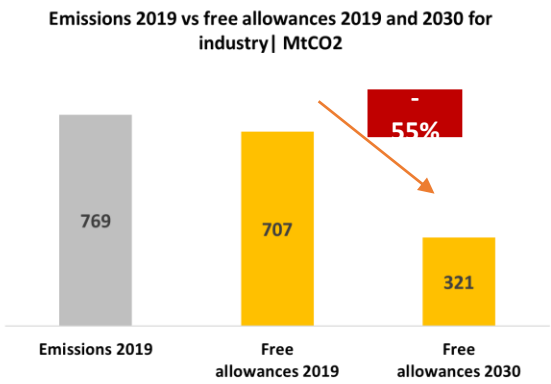
BENCHMARK CALCULATION METHODOLOGY



BENCHMARK (BM) CHANGE Vs PHASE III



EMISSIONS AND FREE ALLOWANCES



Source: Elaboration on Refinitiv data

Slide provided by Eni

Indirect cost compensation rules

EU ETS Directive 2003/87/EC

"MSs should adopt financial measures […] in favour of sectors […] which are exposed to a genuine risk of carbon leakage due to significant indirect costs […], provided that such financial measures are in accordance with State aid rules, […].

State aid measures in the context of the ETS post-2021

SECTORS

10 sectors and the 20 *sub-sectors most at risk of carbon leakage:*

- *sectors with significant international trade exposure*
- *sectors significantly impacted by energy costs and with limited ability to pass on higher electricity costs*
- *sectors with profit margins under pressure at international level*
- *sectors with limited potential for improving their energy efficiency*

COMPENSATION LEVEL

75% (max) X Electricity emission factor X CO_2 price X Product electricity intensity X Product output

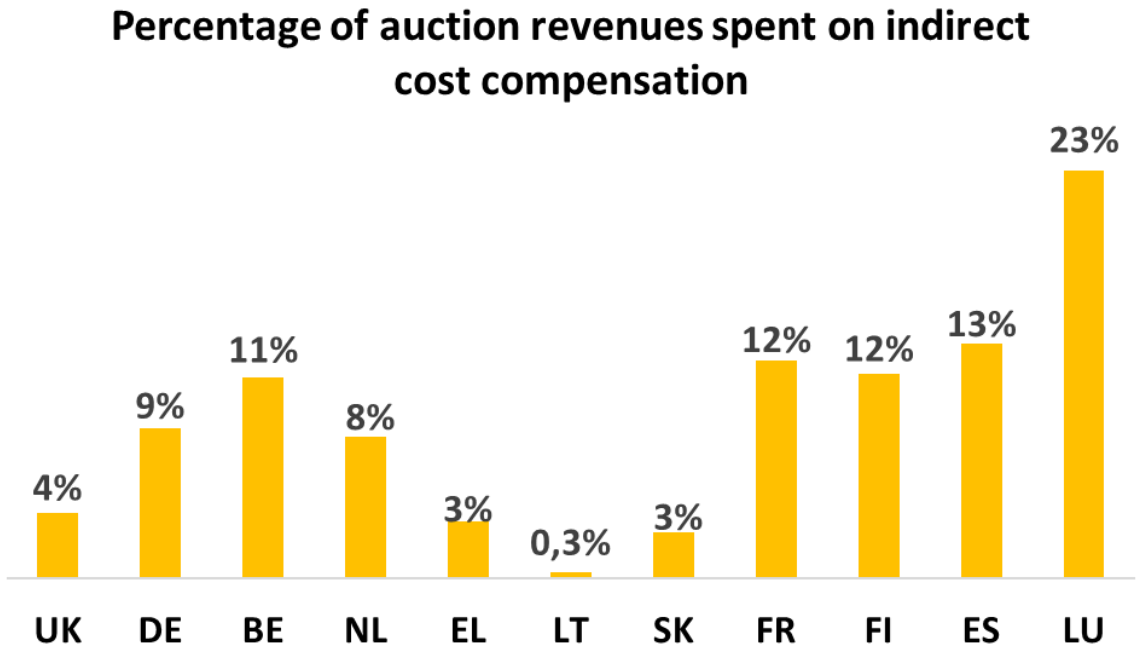
CONDITIONALITY

The compensation will be ***conditional to decarbonisation efforts*** *by companies, such as:*

- *conducting energy audits*
- *implementing energy audit recommendations*
- *reducing the carbon footprint of their electricity consumption*

Slide provided by Eni

Indirect cost compensation spent so far



Source: Carbon report 2020 European Commission

- **Only 11 MSs decided to spend money for indirect cost compensation so far (656 M€ in 2019)**
- **Very different amount spent for each MS**

Annexes

Annex: EU's national CO_2 price mechanisms

Each MS can decide to nationally include other CO_2 price instruments besides European carbon market

Some countries have also implemented national CO_2 Price mechanisms to improve their emission reductions both in Non-ETS and ETS sectors:

- *France:* introduction of a carbon component (CCE) that taxes energy based on its CO_2 content (2014)
- *Sweden:* CO_2 tax on Non-ETS sectors (1991)
- *Finlandia:* CO_2 tax on heating and transport fuels
- *Portugal:* a tax on fossil fuels indexed to EU ETS price
- *Irlanda:* CO_2 tax on Non-ETS sectors
- *Germany:* CO_2 market with a fixed price at the begining, and a Price corridor (cap and floor) from 2026 for transport and heating sectors
- *Netherlands:* CO_2 floor price on ETS emissions (electricity and industry)

Slide provided by Iberdrola

EU ETS trading periods (1/3)

EU ETS is organised in trading periods (or phases), of which 4 are currently decided and more may follow

2005 – 2007 Phase I: pilot of 'learning by doing'

- 100% free allocation of allowances
- Tested price formation in the carbon market
- Establish the necessary infrastructure for monitoring, reporting and verification of emissions
- Emission reduction units generated under the Kyoto Protocol mechanisms clean development mechanism (CDM) and joint implementation (JI) to meet their obligations under the EU ETS were allowed
- **PROBLEM: no banking → price ≈ 0 €/t**

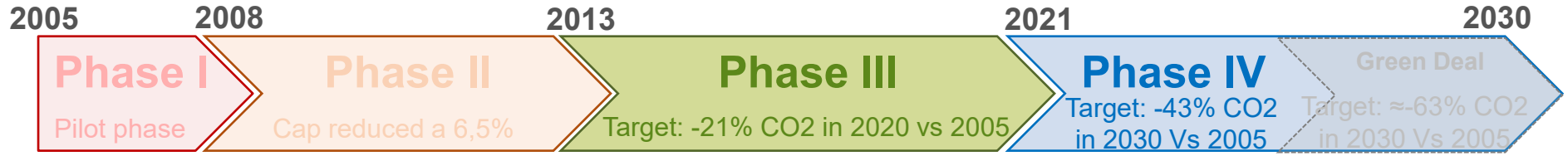
2008 – 2012 Phase II: EU ETS started working to ensure that MSs met their commitments under the Kyoto Protocol

- 6.5% lower cap on allowances vs 2005, based on actual emissions (national caps)
- Free allocation share reduction (≈90% of allowances)
- Some auctions were held (≈10% of allowances)
- Non-compliance penalty increased (€100/t)
- International credits were limited (to ≈1.4 bill t)
- Scope of the EU ETS expanded by including aviation from 2012
- **PROBLEM: economic crisis + Kyoto credits → allowances excess**

Slide provided by Iberdrola

EU ETS trading periods (2/3)

EU ETS is organised in trading periods (or phases), of which four are currently decided and more may follow



2013 – 2020 Phase III: auctioned allowances' quota increased

- A single, **EU-wide cap** on emissions (vs national caps):
  - Set based on average historical emissions (2008-12)
  - Annually reduced by 1,74% (Linear Reduction Factor)
- Allowances' allocation by auctioning method (≈30%)
- Harmonised allocation rules for free allocation (≈70%)
- NER 300 (innovation fund)
- **ALLOWANCES EXCESS' SOLUTIONS**:
  - Backloading 2014-16 (900 Mt)
  - Market Stability Reserve (MSR) came into effect the 31th of December, 2018

From 2021 Phase IV: EU ETS strengthened

- Cap set based on average historical emissions (2008-12)
  - Annual allowances' pace reduction increased (2.2%)
  - Market Stability Reserve* reinforcement
- Increased share of allowances' allocation by auctioning method (≈57%)
- Free allocation of allowances focused and reflect technological progress (≈43%)
- Low-carbon funding mechanisms (Innovation & Modernisation Fund)
- **Green Deal's ambition increased**

Slide provided by Iberdrola