# EU ETS

filip.cernoch@gmail.com

# Climate dimension of EEP

Energy sector (extraction, transport, combustion and distribution) has significant environmental impact.

- Climate change – efforts to reduce GHGs emissions include the EU ETS, measures for GHGs outside the EU ETS, RES, energy efficiency, and new technologies like carbon capture and storage (CCS).
- Local environment protection – primarily managed through EU environmental policy, addressing air, land, and water pollution; noise and light pollution; industrial (energy) waste; biodiversity protection; and non-conventional energy sources.

# Climate dimension of EEP

Two interlinked processes:

- International regime of climate change mitigation (EU plays a leading role).
- Interlinked but independent climate policy of the EU (part of the EU energy policy).

# 2009 Energy and Climate Package (2020 targets)

- 20% reduction in EU greenhouse gas emissions from 1990 levels.
- Increase renewable energy share to 20% of EU consumption.
- 20% improvement in the EU's energy efficiency.
- EU ETS (2009/29/ES), CCS (2009/31/ES).

# 2030 Climate and Energy Policy Framework (2014)

- 40% reduction in GHG emissions (from 1990 levels) – binding EU target.
- RED II (2018/2001/EU) – 32% renewable energy share, binding EU target, no national targets. Countries must submit 10-year National Energy and Climate Plans for RES.
- 32.5% improvement in energy efficiency – non-binding, with indicative national targets.
- Reform of the EU ETS.
- Interconnection of isolated energy markets – Baltic states, Spain, Portugal.

# Climate change mitigation tools

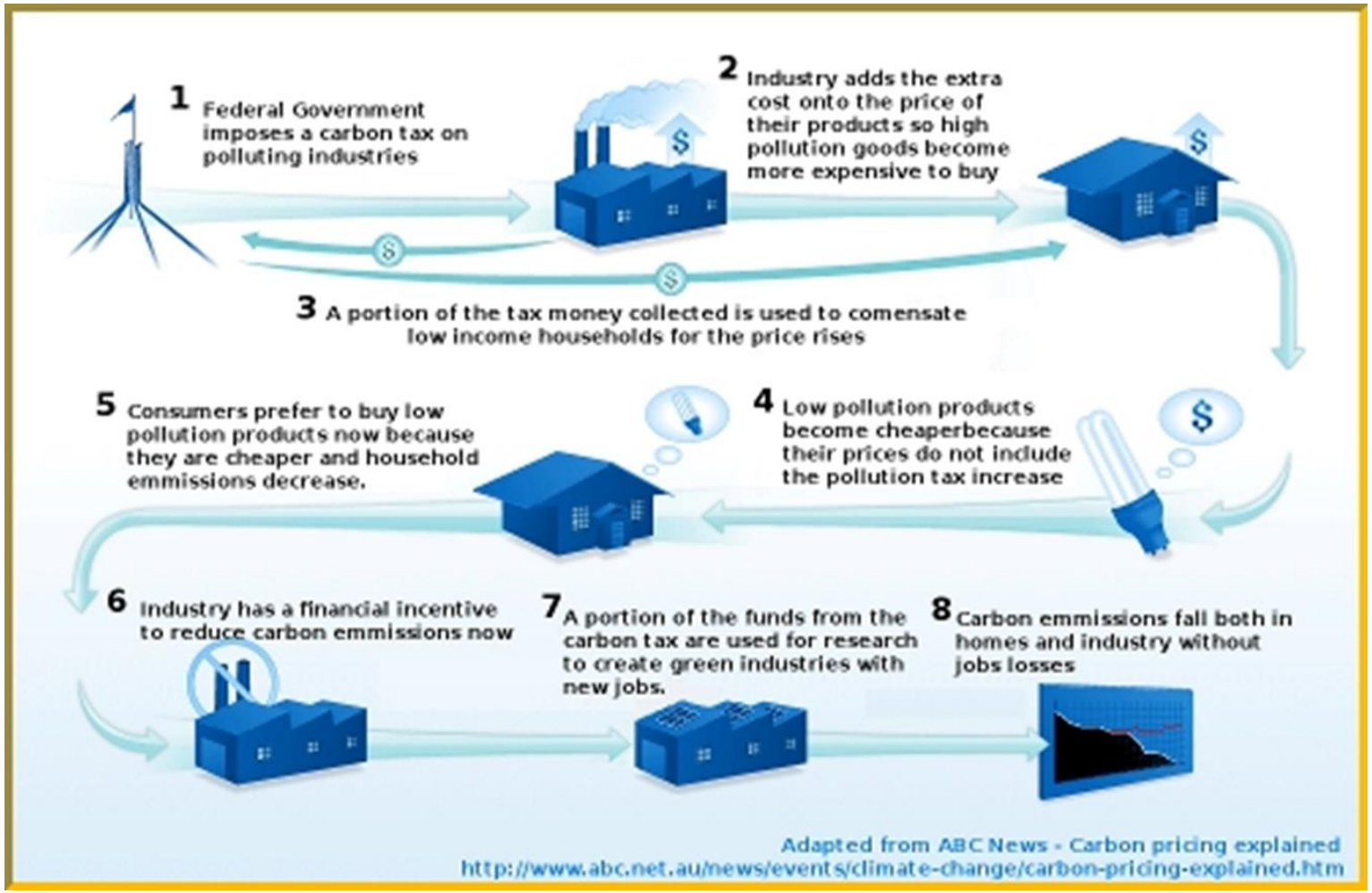
General tools to reduce GHG emissions:

- EU ETS
- Individual targets for MS in non-EU ETS sectors (housing, agriculture, transport, waste)
- CCS

Measures to transform energy sectors:

- RES
- Energy Efficiency
- Research and development, new technologies

# Carbon tax


1 Federal Government imposes a carbon tax on polluting industries
2 Industry adds the extra cost onto the price of their products so high pollution goods become more expensive to buy
3 A portion of the tax money collected is used to comensate low income households for the price rises
4 Low pollution products become cheaperbecause their prices do not include the pollution tax increase
5 Consumers prefer to buy low pollution products now because they are cheaper and household emmissions decrease.
6 Industry has a financial incentive to reduce carbon emmissions now
7 A portion of the funds from the carbon tax are used for research to create green industries with new jobs.
8 Carbon emmissions fall both in homes and industry without jobs losses
Adapted from ABC News - Carbon pricing explained
http://www.abc.net.au/news/events/climate-change/carbon-pricing-explained.htm

# Mechanism of emission trading

Central authority … sets a limit …on the amount of pollutant that can be emitted … the cap is sold/allocated …. as permits ….companies are required to hold those permits …if they need to increase this volume…they have to buy those permits or pay the fee.

- The buyer is paying a charge for pollution, which encourages the investments in cleaner technologies.
- Used in situations where emission can be accurately measured, reported, and verified.

# Kyoto protocol (COP3)

- Aim to lower atmospheric GHG concentrations to levels that prevent dangerous climate interference.
- Parties categorized into Annex I (37 industrialized countries + EU15) and Non-Annex I (developing countries).
- Target to cut GHG emissions by 5.2% from 1990 levels during 2008–2012 (revised to 4.2% after U.S. withdrawal).
- Flexible mechanisms - Emission Trading, the Clean Development Mechanism (CDM), and Joint Implementation (JI).
- Article 4 outlines a burden-sharing agreement within the European Community.
- The first commitment period concluded in 2012.
- Principle of common but differentiated responsibility.

# Main principles

- It creates a dynamic monetary incentive, allowing companies to sell their allowances to other producers and make profit.
- This incentives are based on real needs (scarcity) of allowances and on adequate monitoring and enforcement.
- This system, at least in theory, offers certainty of emission reduction corresponding to the stringency of the cap.
- Unlike domestic schemes, effective international systems are more difficult to establish.
- Even a well-designed system will not work if it is not implemented correctly by the participants in the system (MS).

# EU ETS: The first phase (2005-2007)

| Country | Mil. EUAs | Share of the overal amount of EUA | Number of incl. facilities | The aim of Kyoto |
|---|---|---|---|---|
| Belgium | 188,8 | 2,9 | 363 | -7,5 |
| Czech Republic | 292,8 | 4,4 | 435 | -8 |
| Denmark | 100,5 | 1,5 | 378 | -21 |
| Estonia | 56,85 | 0,9 | 43 | -8 |
| Finland | 136,5 | 2,1 | 535 | 0 |
| France | 469,5 | 7,1 | 1 172 | 0 |
| Ireland | 67 | 1 | 143 | +13 |
| Italy | 697,5 | 10,6 | 1 240 | -6,5 |
| Cyprus | 16,98 | 0,3 | 13 | - |
| Luxembourg | 10,07 | 0,2 | 19 | -28 |
| Lithuania | 36,8 | 0,6 | 93 | -8 |
| Latvia | 13,7 | 0,2 | 95 | -8 |

Zdroj: Massai, 2012, s. 174

# The first phase (2005-2007)

- Covers only $CO_2$ from power generators and energy-intensive industries.
- Most allowances provided for free; penalty set at EUR 40/t $CO_2$.
- Member States set caps (NAPs submitted to EC for approval) without verified historic emissions data, leading to estimates.
- Emissions often overestimated, with exceptions in Germany and Slovenia (4% surplus).
- Drop in allowance prices with limited impact on GHG emissions.
- No banking allowed, creating a surplus of 150 million EUAs.

**Figure 2: EU ETS emissions allowance prices: April 2005 - December 2009**

# The first phase (2005 – 2007)

Calculations are challenging due to:

- Propensity for cheating.
- Fluctuations in industrial production levels.
- Changes in energy pricesIncreased RES deployment (target cannibalism).
- Permit stockpiling.
- Weather variability.
- Other influencing factors..

Stability of EUA prices, along with GHG reduction, is essential!

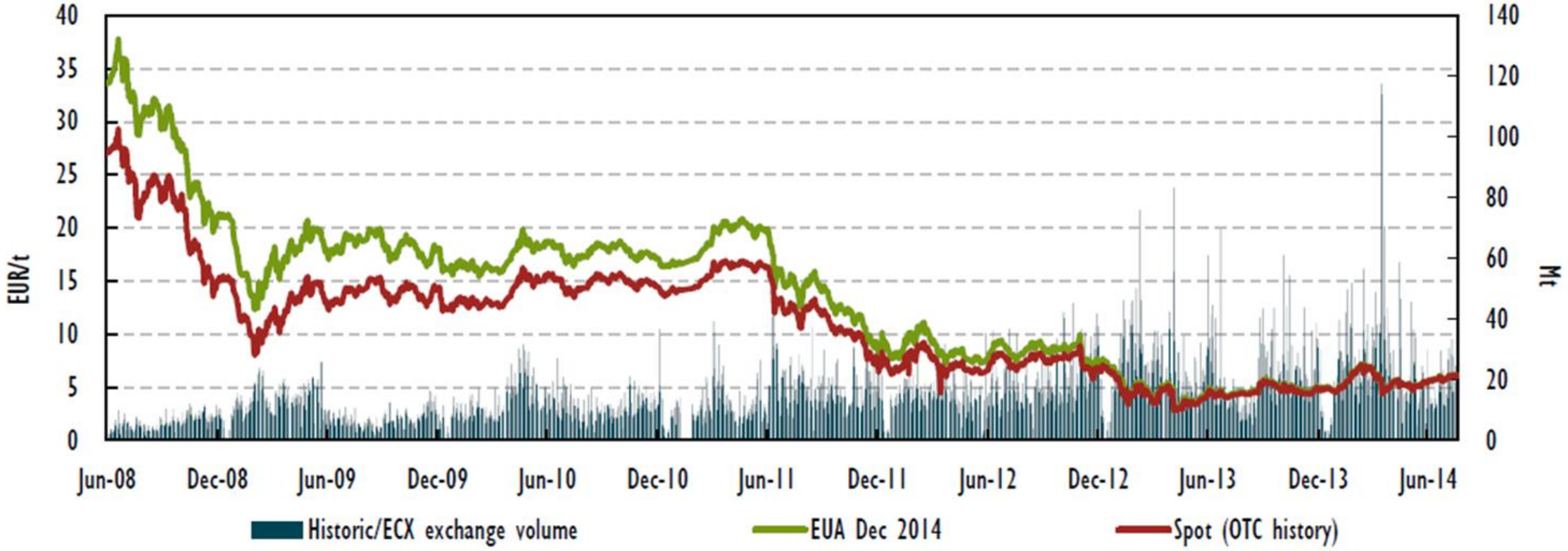
# The second phase (2008 – 2012)

- Cap lowered by 6.5% compared to 2005 production levels.
- Iceland, Liechtenstein, and Norway joined the EU ETS.
- Aviation included, but only for EU flights.
- Free allocation dropped to around 90%, with some countries auctioning the remaining 10%.
- Penalty increased to €100/t $CO_2$.
- Banking of allowances from phase II to phase III allowed.
- EC took a stricter approach, cutting NAPs (led to litigation at ECJ), but cap-setting remained decentralized.

# The second phase (2008 – 2012)

- Between 2008 and 2012, $CO_2$ prices fell from around €20 to €8 per ton.
  - Reduced energy demand due to the 2008 financial crisis.
  - Influx of international credits (CERs from the CDM).
  - Impact of other EU policies, such as RES and energy efficiency initiatives.
  - Rising fuel prices.
- EU ETS design prevents adjustment of EUA supply in response to demand changes.
- Banking allowed between the second and third trading periods, resulting in a surplus of 900 million EUAs.
- Increased pressure to reform the system.

# EUA prices


EUR/t
Mt
40
35
30
25
20
15
10
5
0
140
120
100
80
60
40
20
0
Jun-08
Dec-08
Jun-09
Dec-09
Jun-10
Dec-10
Jun-11
Dec-11
Jun-12
Dec-12
Jun-13
Dec-13
Jun-14
Historic/ECX exchange volume
EUA Dec 2014
Spot (OTC history)

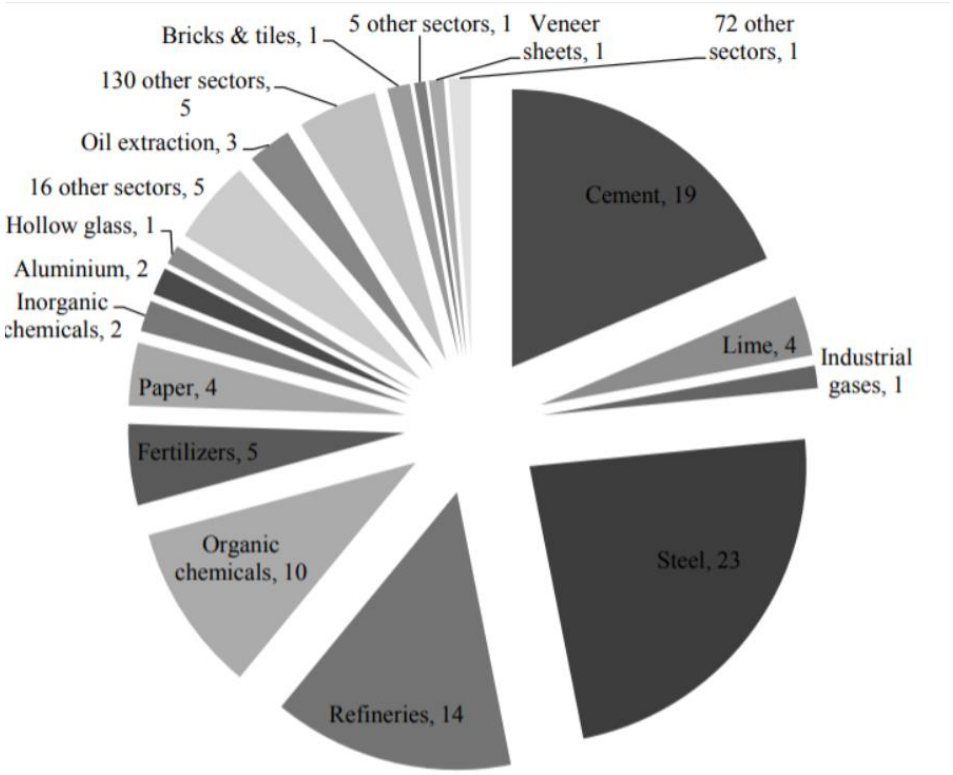
# The third phase (2013 - 2020)

- EU-wide emission cap replaced NAPs, with a linear reduction factor of -1.74% per year.
- Auctioning became the default method, with over 40% of EUAs auctioned in the first year of the 3rd period, increasing annually.
- Free permits for the power sector ended, with other sectors progressively shifting to auctioning.
- 300 million EUAs allocated in the New Entrants Reserve to fund innovative RES technologies and CCS.
- Expanded restrictions on the use of credits from the CDM.

# The third phase (2013 - 2020)

- Inclusion of CCS installations, petrochemical production, ammonia, non-ferrous and ferrous metals, gypsum, aluminum, etc.
- International aviation requirements for extra-EU flights temporarily suspended.
- Distribution of auction revenues: 88% to Member States, 10% to low per capita income Member States, and 2% to Member States that achieved a 20% emission reduction by 2005 (Kyoto Protocol base).
- At least half of these revenues designated for climate change mitigation efforts.

# Share of free allocation (%) based on carbon leakage list 2015 - 2020



# Surplus of allowances

- End of the 2nd period saw a surplus of 900 million EUAs.
- Additional factors included leftover national phase 2 allowances, new entrant reserves, early auctioning for sector hedging, and forward selling of phase 3 allowances for NER300 funding.
- Surplus grew to an estimated 2–2.2 billion EUAs in the 3rd period.

- Backloading: Delayed auctioning of allowances from 2014–2016 to 2019–2020 (now directed to MSR).
- Market Stability Reserve (MSR), introduced in 2019, addresses EUA surplus (over 822 million EUAs in circulation) by automatically adjusting auctioned supply.

# Revisions for the phase 4 (2021 – 2030)

- Based on the EU's 2030 Climate and Energy Policy Framework (2014–2016).
- EUA reduction rate increased to 2.2% annually from 2021, aiming for a 43% cut from 2005 levels.
- Enhanced Market Stability Reserve.
- Better-targeted free allowances - updated benchmarks for technological progress.
- Phasing out free EUAs for less exposed sectors by 2030.

- Innovation Fund for new technologies.
- Modernization Fund to improve energy efficiency in power sectors of 10 lower-income Member States.

# Fit for 55 (2021)

- Stricter targets: 62% reduction in EU ETS by 2030 (vs. 2005).
- One-off reduction in allowances; annual reduction factor raised to 4.3–4.4%.
- Introduction of Carbon Border Adjustment Mechanism (CBAM).
- Full auctioning for aviation; maritime gradually included.
- New emissions trading for road transport and buildings (from 2026).
- Increased funding for Innovation, Modernization, and Social Climate Funds (25% of new area revenues).

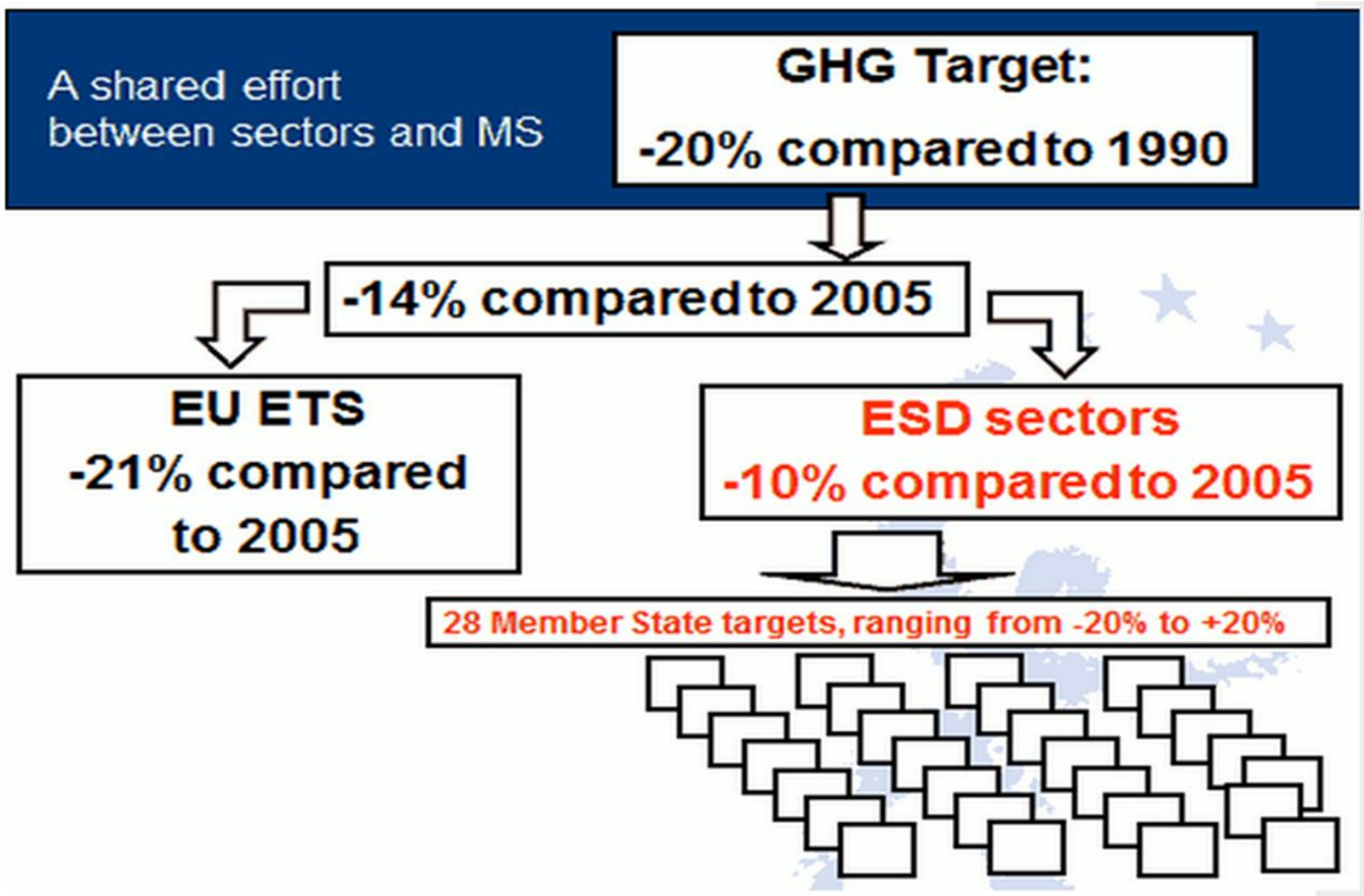
# Assessment

- Operates at a technical level as the largest international allowance trading scheme.
- Involves 30 countries (EU27 + Iceland, Liechtenstein, Norway).
- Central pillar of EU climate policy, covering over 11,000 installations and 45% of EU GHG emissions.
- Modest impact on carbon emissions.
- Generates revenue to support climate change initiatives.

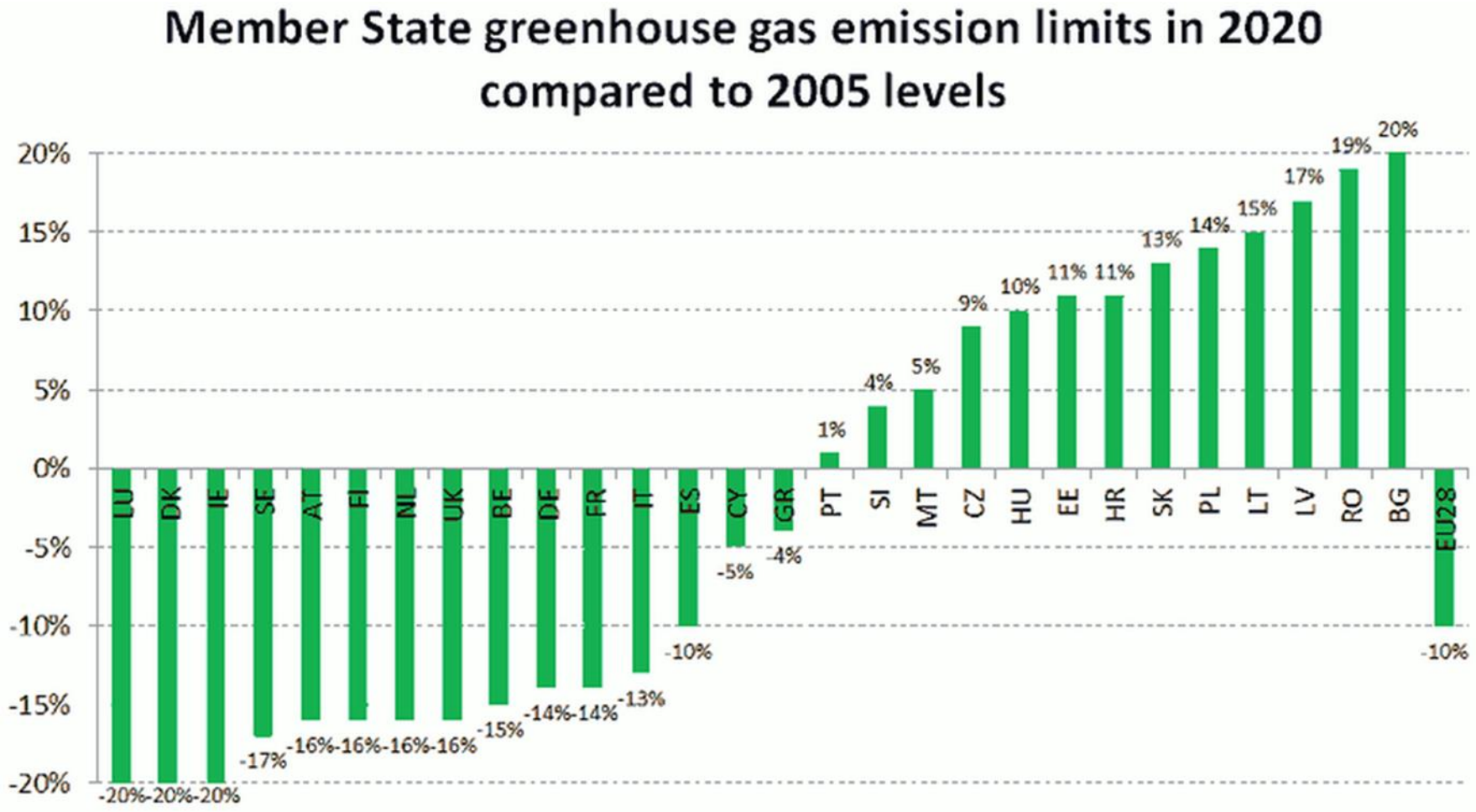
# Assessment

- Conflicts with other instruments.
- Perceived competitiveness issues.
- Credibility concerns.

= A high price is essential for the profitability of low-carbon technologies (CCS, nuclear, renewables).


A shared effort
between sectors and MS
GHG Target:
-20% compared to 1990
-14% compared to 2005
EU ETS
-21% compared
to 2005
ESD sectors
-10% compared to 2005
28 Member State targets, ranging from -20% to +20%

# Individual MS´ targets



# Effort Sharing Decision (by 2020)

- 20% target split: 21% reduction for EU ETS emissions and 10% for non-ETS (vs. 2005), based on Member States' GDP per capita.
- Covers Kyoto gases ($CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, $SF_6$) and $NF_3$.
- Non-ETS target divided into national sub-targets, with measures like public transport, biofuels, urban planning, and eco-design.
- EU support: vehicle emission standards, fuel quality, eco-design.
- Flexibility mechanisms: banking, borrowing, trading allowances between states.

# Effort Sharing Regulation (for 2021 – 2030)

- 30% reduction target for non-EU ETS sector by 2030 (vs. 2005).
- National targets range from 0% to -40% based on GDP per capita and cost-effectiveness.
- Includes Iceland and Norway.

# Fit for 55 proposals

- More ambitious national targets (40% reduction by 2030 vs. 2005), aligned with EU-wide goals.
- Stricter rules on flexibility mechanisms for meeting national targets.

# Increase in targets due to the Fit for 55 Package