

Unilateral Approaches and sector actions in Germany and the EU



Unilateral approaches and sectoral actions

Konrad Raeschke-Kessler

E 1.6: Climate protection projects (CDM/JI DNA/DFP)

German Environment Agency/DEHSt

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Addressing N₂O emissions: from unilateral to sectoral approaches

- Industrial N₂O emissions from nitric and adipic acid production in e.g. France, Germany, Spain were addressed in JI projects from 2008 onwards.
- Those projects used baselines based on best available technologies developed under EU pollution control legislation => similar to a benchmarking approach
- Other pre-ETS-approaches to reduce N₂O emissions significantly below the levels of best available technologies
 - N₂O pay-for-performance contracts in Portugal
 - N₂O EU-ETS opt-in in UK, Austria, Norway, Finland (different benchmarks were used)

Addressing N₂O emissions: from unilateral to sectoral approaches

- Those emissions are now (since 2013) all integrated into the ETS
- Unilateral approaches allowed early exploration of the reduction potentials *in practice*
- Data gathered from unilateral approaches helped determine (and significantly lowered) ETS benchmarks => increased environmental robustness, reduced windfall profits from free allocation under the ETS

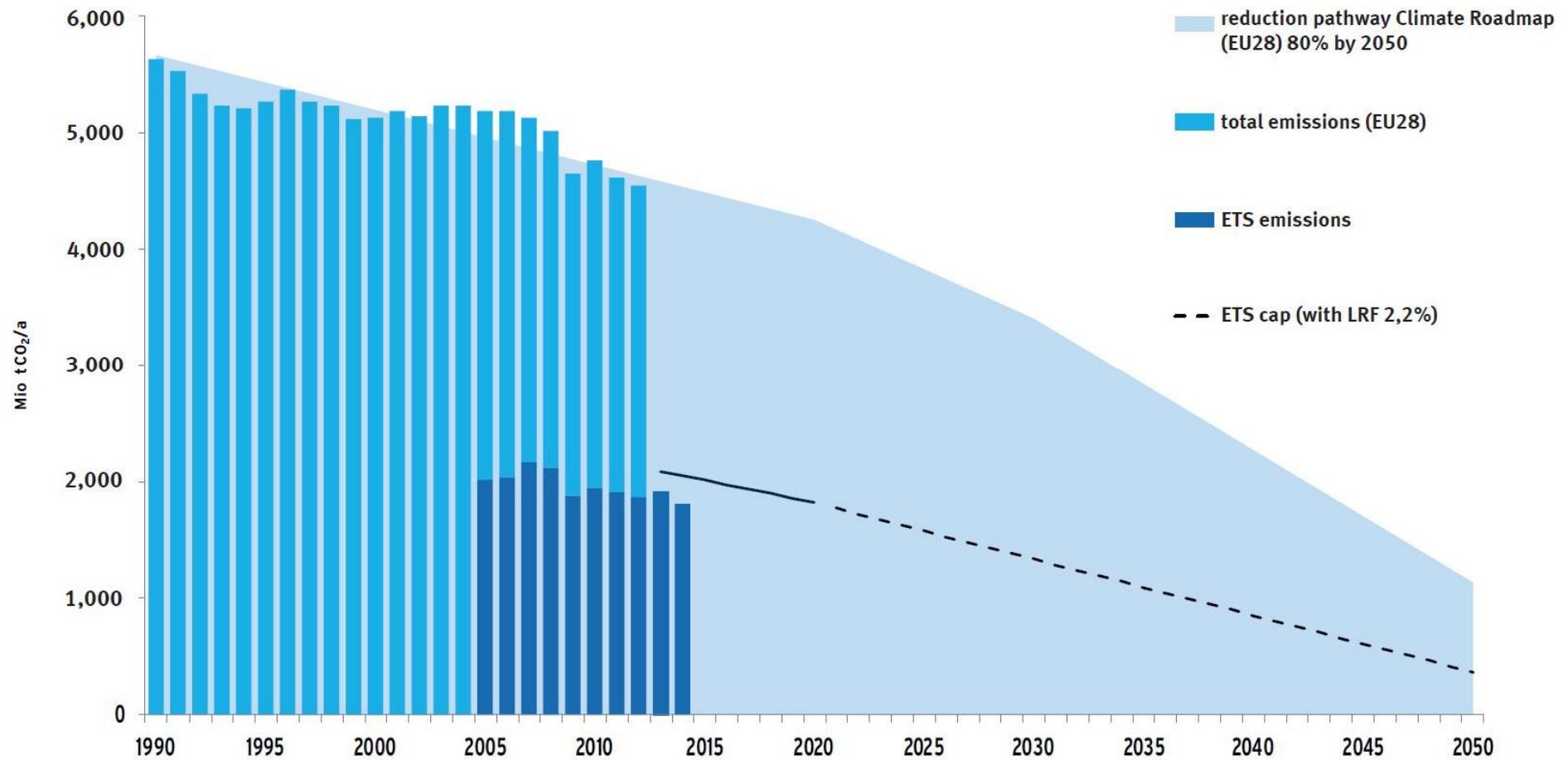
Joint Implementation (JI) in Germany as a quasi-unilateral approach: Lessons learned

- JI went beyond a zero-sum game when not all reductions were credited. Benefits for Germany occurred e.g. by using ambitious baselines or even (sometimes counterfactually) assuming full implementation of existing legislation or sectoral reform policies. Together with a limited crediting period, this led to an added value for Germany.
- Standardised approaches to baseline setting (e.g. best available technology as baseline) were helpful.
- Emission reductions could in some cases be clearly reflected in the national GHG inventory and be used to refine the inventory (i.e. increase the tier level, e.g. from tier 1 to tier 3 methods) or verify and increase the quality of inventory data.

JI as unilateral approach: more lessons and questions

- If considered as a functional equivalent to voluntary free allocation in emissions trading, JI provided an additional source for emission rights, similar to auctioning or sale of certificates
- Offset quotas effectively enlarged the cap
 - lowered the abatement cost for ETS participants significantly
 - but reduced necessity of domestic mitigation effort
 - only provided for supply, not for demand on carbon markets
- Ongoing issue: how to re-balance supply and demand on carbon markets?

EU 2050 roadmap (update required for mid-century strategy) and ETS pathway



Without consideration of aviation.
source: EEA

Why emissions trading?

- Ecologic integrity through fixed emission caps: access large reduction potentials for greenhouse gas emissions in energy and industries sectors
- Economic efficiency through trading possibility: market price signal allows to identify least-cost emission reductions
- Enables operators to act flexibly within the cap
 - Creates comparative advantages for renewable energies and fuel switch
 - What gets measured gets managed: ETS puts exploring options for emission reductions on top-level management agenda
- But some impatience with the ETS: proposals for more effort and incentives for emission reductions (i.e. enhancing scarcity on the markets by e.g.
 - cutting back on carbon leakage list;
 - reflecting overachieving complementary policies;
 - reflecting production reductions due to economic crises; and
 - reflecting Paris Agreement.

Combining the ETS with other policies, i.e. national and regional measures

- Emissions trading could ensure EU compliance with the reduction targets on its own.
- But parallel national instruments for climate protections (cf. ETS Directive Recital 23), deviations and more stringent protective measures from the Directive could be justified; cf. Art. 193 TFEU.
- Complementing national or regional measures may impact the EU ETS by more reductions (surpluses) stemming from the policy mix
- => integration measures needed in order to ensure a long-term price signal which encourages the necessary transformative long-term investments
- Even today, long-term investments are made on the basis of hypothetical higher future prices (conservative assumption required by capital markets laws); higher prices needed in order not to invalidate those investments

The Paris Agreement and phase 4 of EU ETS

- Long-term target of well below 2°C, efforts for 1.5°C below pre-industrial levels
- Transparency and accountability: Robust common rules
 - improved benchmarking, reduced fall-back approaches
- How to raise ambition in both the EU ETS and non-ETS sectors regarding the five year progression cycle?
 - Revision clause to raise the ambition without changing the Directive via full co-decision procedure? E.g. by cancelling any surpluses via the MSR, thereby facilitating progression in the domestic NDC of the EU for the EU ETS sector.

Thank you for your attention!

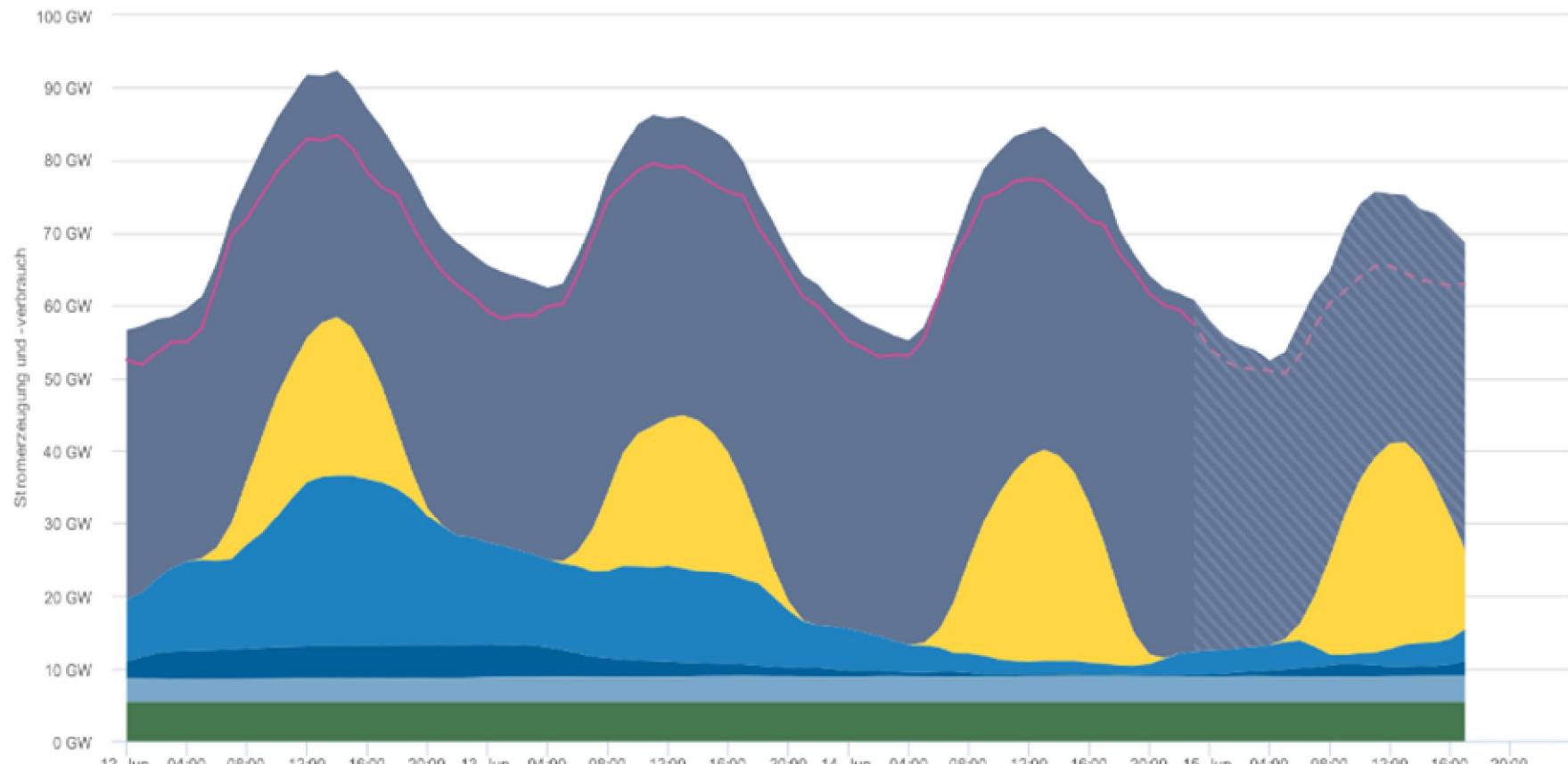
Konrad Raeschke-Kessler

E-Mail: German.dna.dfp@dehst.de

Internet: www.dehst.de

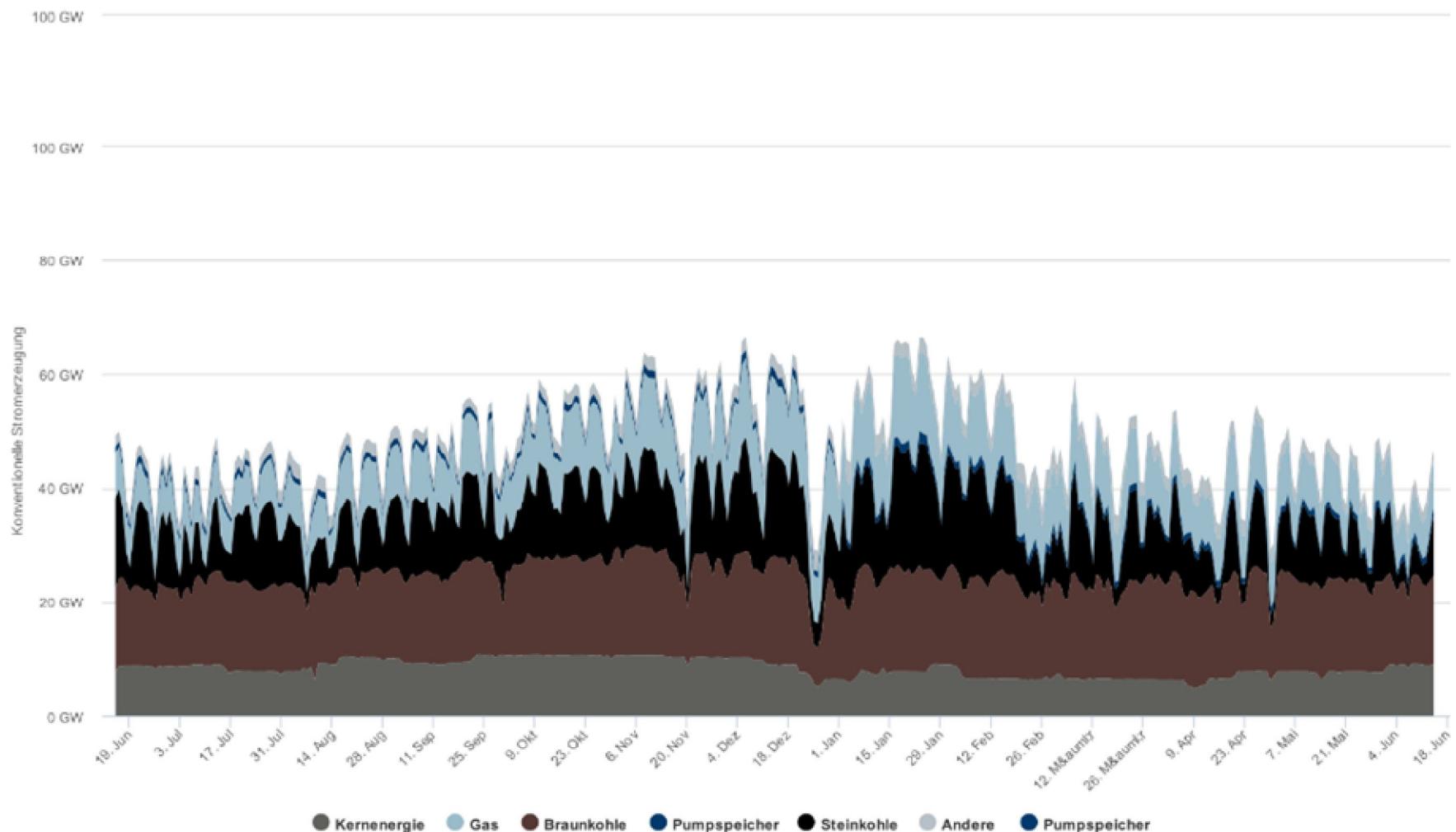


electricity sector - renewables policies as unilateral approaches



● Konv. Kraftwerke ● Konv. Kraftwerke (Vorläufig) ● Solar ● Wind Onshore ● Wind Offshore ● Wasserkraft ● Biomasse — Stromverbrauch — Stromverbrauch (Vorläufig)
● Steinkohle ● Braunkohle ● Kernenergie ● Pumpspeicher ● Erdgas ● Andere

Remaining challenges in the electricity sector: decarbonization, synchronization of supply and demand on different timescales: sectoral couplings



EU ETS compliance cycle - monitoring and reporting



Monitoring Plan The operator describes the methods used for monitoring and calculating the emissions of the installation or aircraft. He continuously checks whether the plan still corresponds to the situation of the plant or if it must be revised.

Validation The competent authority examines and validates the monitoring plan.

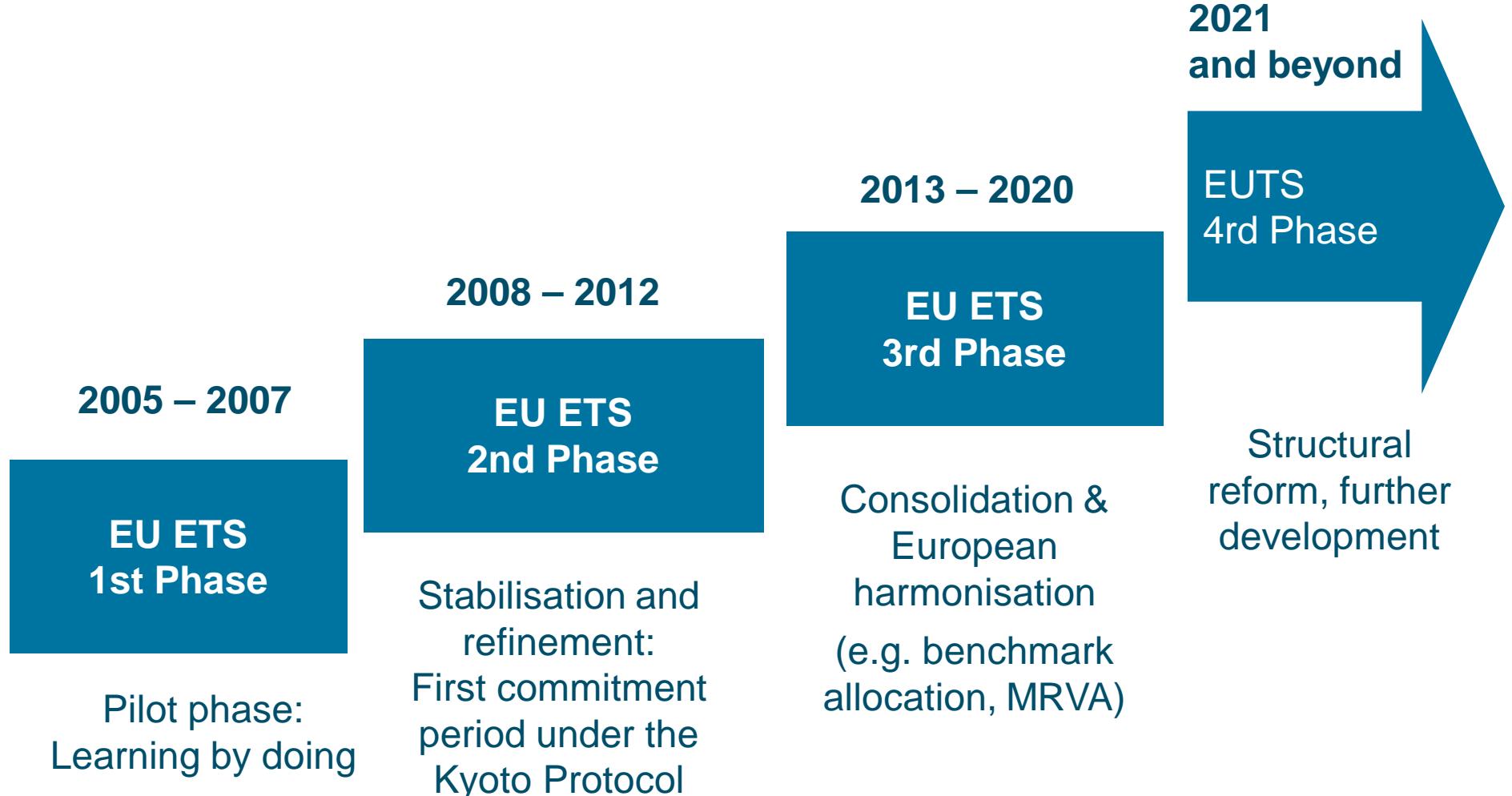
Monitoring and Reporting The operator continuously monitors and calculates the emissions of the installation according to the monitoring plan. The resulting data are summarized in the annual emissions report.

Verification The verifier examines the emissions report's data as independent third party and submits the report to the national competent authority.

Surrendering Allowances The operator surrenders EU Emissions Allowances (EUA) corresponding to the amount of verified emissions, and thus offsets the emissions of the installation.

Enforcement (Sanctions) The competent authority checks the operator's emissions report and the amount of surrendered certificates. It imposes financial sanctions in case of incorrect or incomplete information as well as missing emissions allowances.

EU ETS learning curve

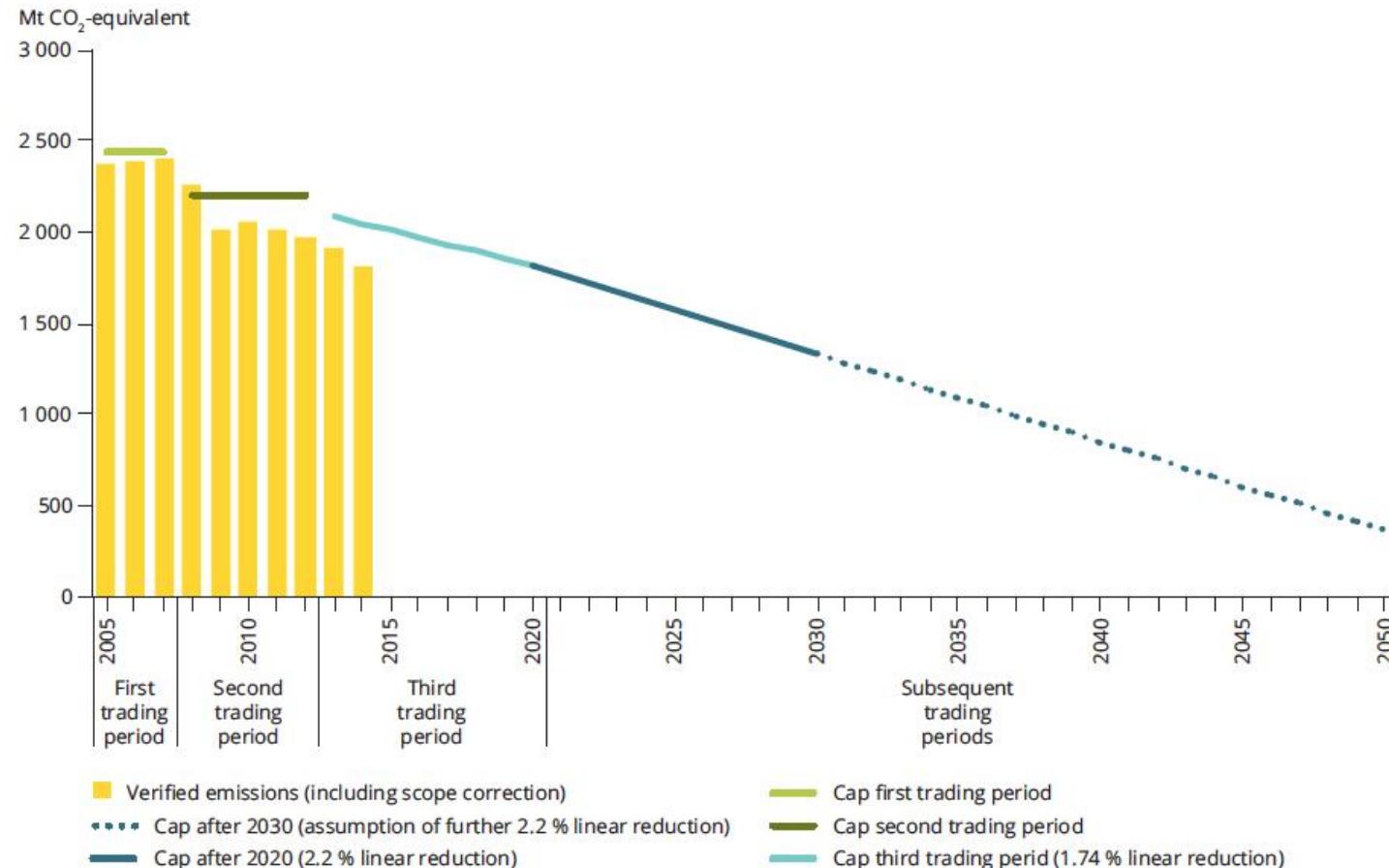


Amending Directive 2003/87/EC

Suggested improvements for EU ETS, inter alia:

- Differentiate the existing carbon leakage sectors, e.g.:
 - low, middle and highly exposed sectors
- Adjust benchmark values according to real data collected by MS/CA:
 - Provides a level playing field for all sectors.
- Develop more benchmarks in a transparent process to reduce allocations via fall-back approaches.
- Facilitate ambition raising in 2023 for application from 2025 onwards.

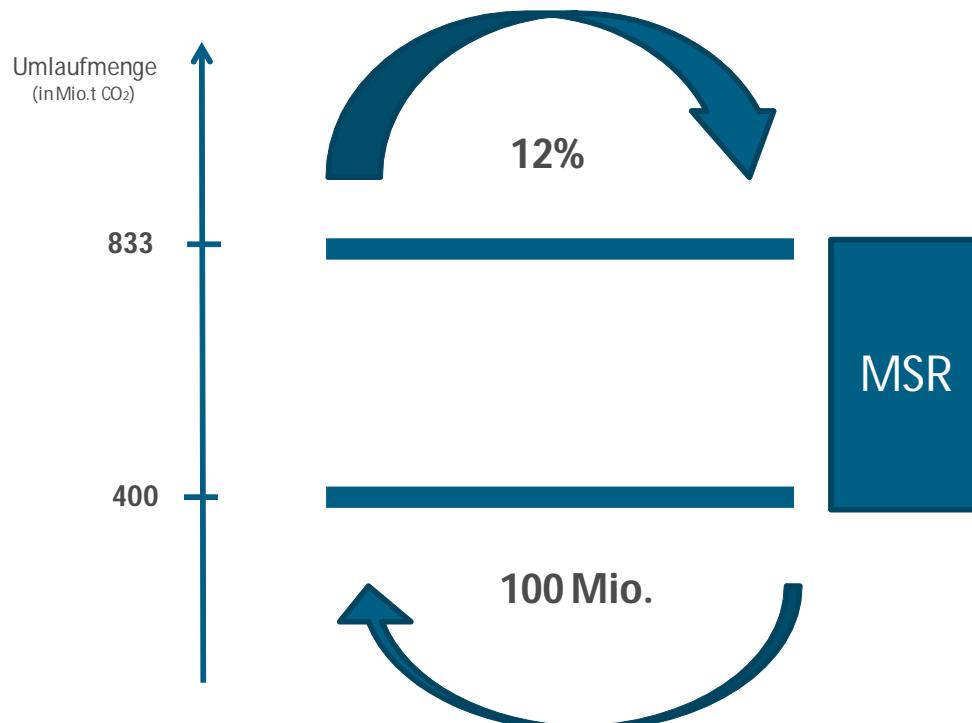
EU-ETS emissions and the EU 2050 roadmap



Source: EEA, 2015d.

EU-ETS reform: the Market Stability Reserve (MSR)

Rule based mechanism for the auctioning budget

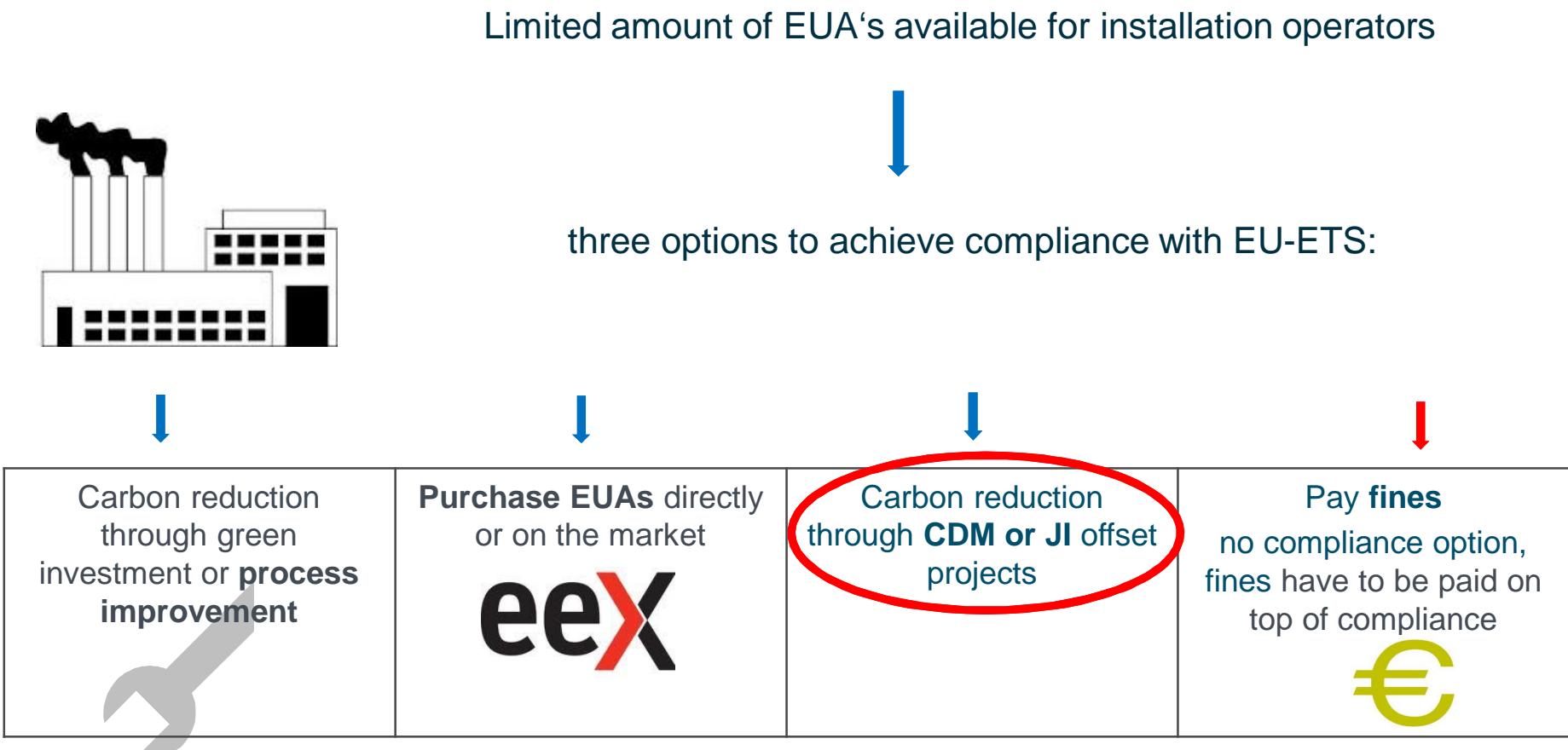


Auctioned EUAs are automatically:

- **Reduced by 12% of the surplus, if surplus > 833 Mio. EUA**
- **Raised by 100 Mio. EUA, if surplus < 400 Mio. EUA**

The surplus is calculated as the aggregated market surplus since 2008, including offset use.

EU ETS and Kyoto Mechanisms: Incentivising Clean Development Mechanism and Joint Implementation



CDM/JI as “detection tool” for reductions

- initial impulses optimize product and process cost/benefits over the lifetime
- provide an incentive for new technology and emission reductions in sectors or countries not required to reduce emissions by a specific reduction target (cap)
- traditional approach to additionality (as strict causality) derived from the necessity not to waste public resources: allocation only if necessary, i.e. if the reduction will be enabled by crediting. With this approach, even if a technology can in principle generate credits, not each implementation of this technology in a developing country can claim credits
- can build capacity and political support for climate change mitigation throughout all sectors of the economy.
- Emissions Trading Benchmarks and CDM / JI methodologies can serve as “open source” toolbox for optimizations

Clean Development Mechanism

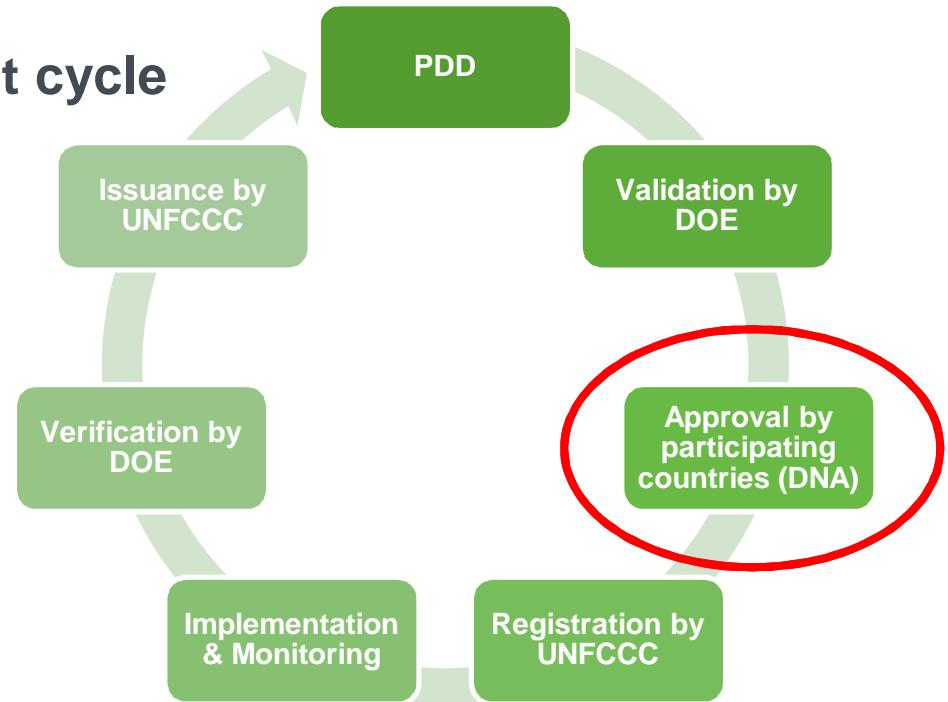
Transaction costs

Estimated costs for the CDM project cycle

- PDD ~ 15.000 to 30.000 €
- DNA approval ~ 500 €
- Validation ~ 10.000 €
- Registration ~ 5.000 to 30.000 US\$
- Administration ~ 0,2 US\$ / CER
- Verification ~ 5.000 € per turn

up to ~ 50.000 US\$

→ CER prices of 0,5 €/t CO₂ equivalent,
the **viability threshold** of projects is at ~ 100.000 CERs/years



The Paris Agreement

- long-term target: well below 2°C above pre-industrial levels; pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels
- Climate Policy Pledges (INDCs) by 189 (of 196) countries
- Provides a framework for increasing ambition
 - Five-yearly reviews: voluntary in 2018, mandatory from 2023 onwards
- Distinction of the convention between developed and developing countries modified to reflect evolved “common but differentiated responsibilities and respective capabilities, in the light of different national circumstances” (Art. 2): “all Parties are to undertake and communicate ambitious efforts”
- Transparency and accountability: common rules including compliance mechanism

Paris Agreement – Art. 6 Mechanisms

- Cooperative Approaches (Art. 6.2, 6.3)
 - decentralized with parties as main actors (“bottom-up”)
- Mechanism for mitigation and sustainable development (Art. 6.4 – 6.7)
 - centralized (“top-down”)
- Non-Market Approaches (Art. 6.8, 6.9)
 - non-market based
 - Development in relation to NDCs
 - Optimally contribute to increased ambition in the implementation of the NDCs

Cooperative Approaches - Features

- Open to all parties for bi- or multilateral mitigation actions and transfers
- Could harmonize and combine various decentralised initiatives
- The guidance which is to be developed could provide minimum standards for the transfer of mitigation outcomes that are used under the agreement
- Using transferred mitigation
 - Standards for transfers from credits generated in decentralised offsetting systems outside the framework of UNFCCC
 - Linking emissions trading systems

Cooperative Approaches - Internationally Transferred Mitigation Outcomes

- Voluntary international transfers and use towards NDC mentioned
- Authorization of parties required for use to achieve NDC
- „Outcomes“ not „units“, but existing schemes trade „units“
- Accounting rules to be decided to ensure environmental integrity

Cooperative Approaches - Environmental Integrity

- UNFCCC authority and monitoring is not stipulated
- But robust accounting and transparency following to-be developed CMA guidance are necessary
 - Buyer and seller countries need to add or subtract transferred outcomes to their reported emissions
 - Tracking and documentation of transfers is necessary
 - Oversight by national regulators

Cooperative Approaches – Some Issues

- Robust accounting challenging with NDCs with other metrics than GHG emissions, only sector related NDCs or single-year targets
- NDCs which are not ambitious might generate hot air
- Level of international involvement and regulation as well as party decisions need to be decided

Art. 6.4 Mechanism

Paris Agreement Art. 6.4 – 6.7

- mitigation of greenhouse gas emissions while fostering sustainable development
- under the authority and guidance of the CMA for use by parties on a voluntary basis
- supervised by a body
- participation authorized by each party involved
- real, measurable, and long-term benefits
- specific scopes of activities
- additional emission reductions
- verification and certification of emission reductions by DOEs
- overall mitigation in global emissions
- emission reductions can be used towards NDCs (if not used by another party to demonstrate achievement of its NDC)

Art. 6.4 Mechanism - Features

- All parties with NDCs have access to the mechanism and can use the output
- Centrally governed under the CMA
 - Modalities and Procedures need to be developed
- Crediting mechanism for a to-be defined scope of activities (projects, programmes, policies)
- International transfer of emission reductions
 - Applicability of cooperative approaches governance?
- Similarity to CDM
 - But also differences: open to all parties, net mitigation, double counting/need for robust accounting scheme
 - Use of existing infrastructure
 - A mandate for assessment of the existing rule set

Art. 6.4 Mechanism – Transition of CDM/JI projects

- Transformation only when activities meet requirements of the mechanism
- Update of baselines to account for overall mitigation of global emissions
- Faster operationalisation of the Art. 6.4 mechanism, learning by doing, gaining experiences for new actions
- Positive signal for the market and private sector

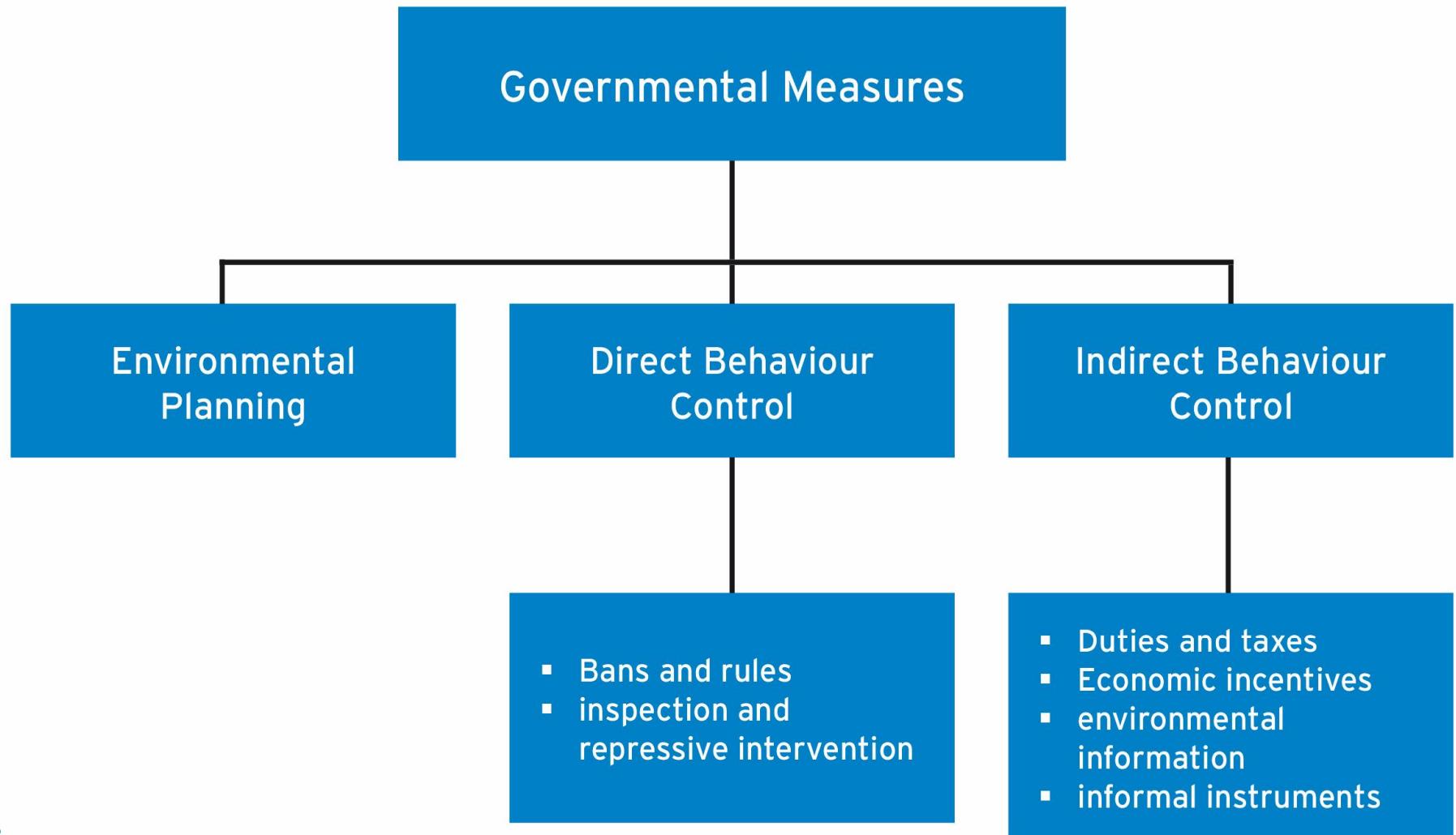
Art. 6.4 Mechanism – Overall mitigation in global emissions

- No zero sum game like the CDM
- Only positive results possible if accounting is robust and NDCs do not produce hot air
- Potential ways: cancellation of certain portions of credits, not generating credits for parts of the reductions, discounting, baselines under business as usual
- Which party makes the contribution to the environment?

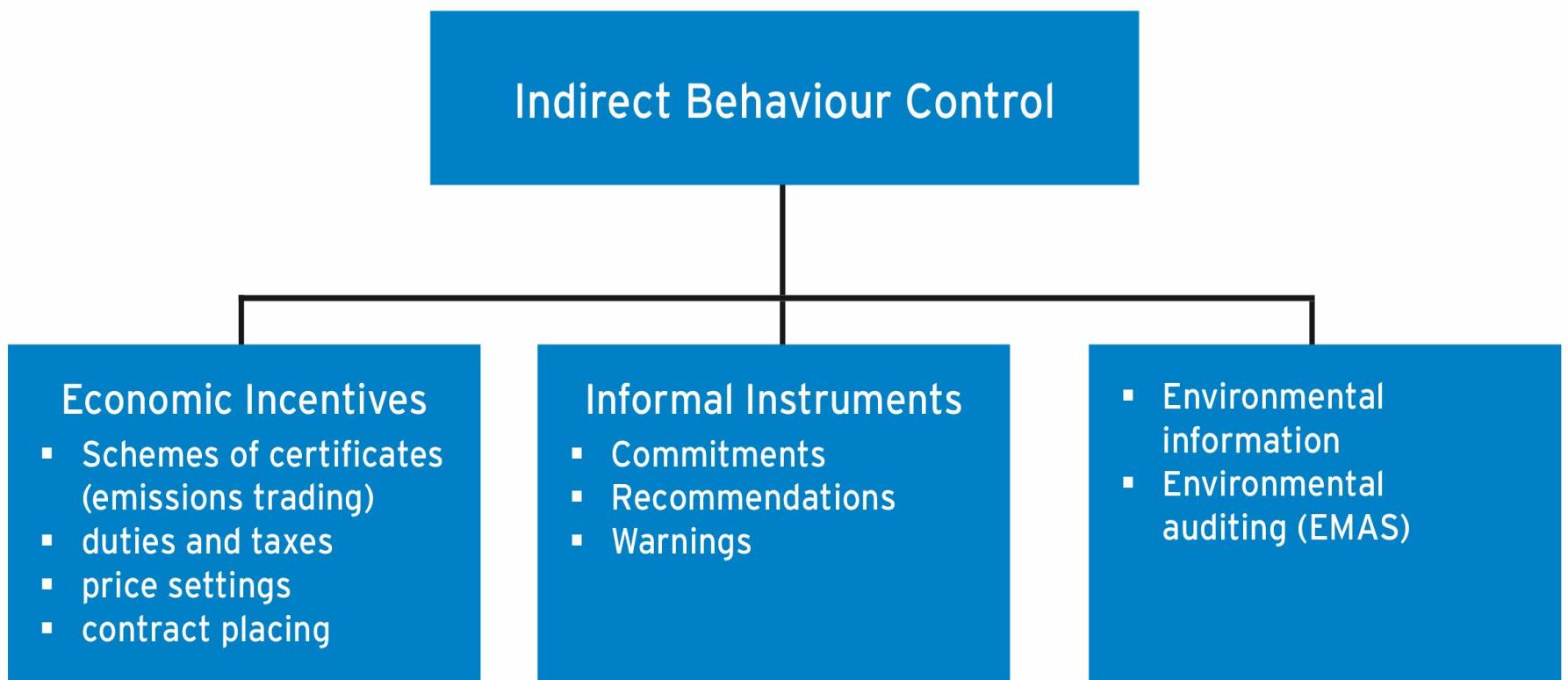
Art. 6.4 Mechanism – Some issues

- Competition with the Cooperative Approaches
 - Less international oversight for the Cooperative Approaches
- Implications of NDCs (sectors/economy-wide, different metrics, reference points, related to BAU) on baselines and additionality
 - Less stringent baselines in NDCs could generate more credits
 - Baseline revision in case of ambition raising
- Definition and implementation of sustainable development
- Implementation with projects/programmes or sectors

Getting from reduction potentials to actual reductions: The Policy Toolbox



Indirect measures including economic incentives



The Policy Mix for Carbon Emissions: management by objectives and/or by incentives and barriers

- Macro management: **quantitative limits** for emissions leading to long-term reduction goal (2° target) broken down to economic sectors directly (e.g. ETS), leaving details to the market. Issues to consider:
 - Sufficiently ambitious mitigation targets (embodied in caps)
 - Sufficiently steady internalization of external costs (predictable price signal, investment certainty)
- Micro management: influence **specific economics** of activities involving emissions in order to reach quantitative objectives indirectly. Issues to consider:
 - potentially incomplete / asymmetric information on effects
 - How to ensure transparency
 - How to tap potential of markets to assess information and to innovate

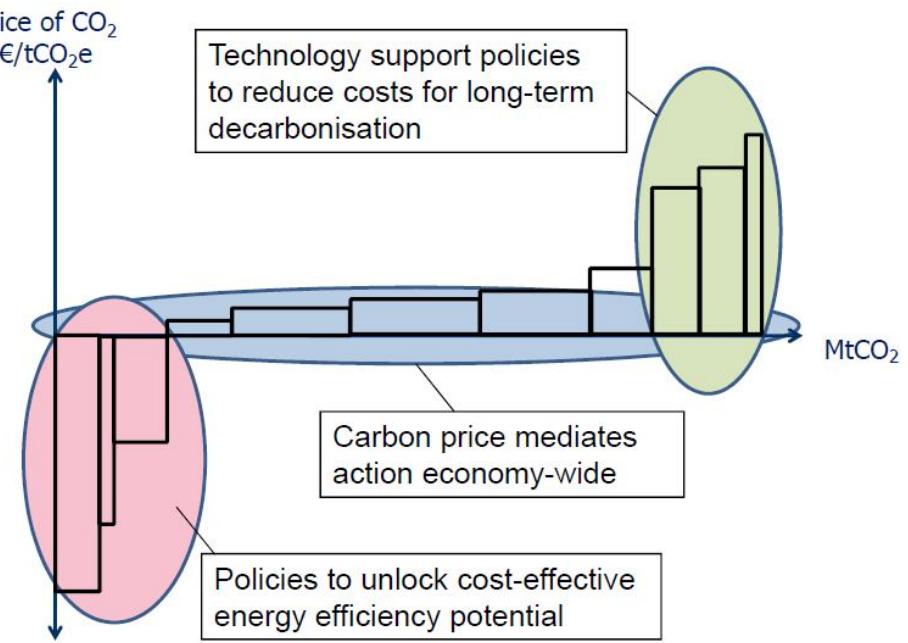
The Policy Mix for Carbon Emissions: management by objectives and/or incentives and barriers

- Manage **specific economics** of activities involving emissions
 - Introducing incentives for low-carbon-activities (e.g. price-based instruments such as feed-in tariffs; subsidies)
 - Removing disincentives / economic barriers for low-carbon activities (e.g. taxes on low-carbon products)
 - Removing incentives for carbon-intensive activities (e.g. scrapping fossil-fuel subsidies)
 - Introducing disincentives / economic barriers for carbon-intensive activities (e.g. specific greenhouse gas taxes)
- Remove **non-economic barriers** for low-carbon activities; e.g. Informational barriers (by product labelling / online tools / info campaigns...), legal barriers (e.g. safety standards for solar panels on buildings instead of general prohibition)
- Introduce **non-economic barriers for specific high-carbon / obligations for specific low-carbon activities** (e.g. fuel quality standards, fuel use prescriptions (e.g. CNG use obligations for certain vehicle types))

Optimizing the Policy Mix: choosing a viable combination of measures

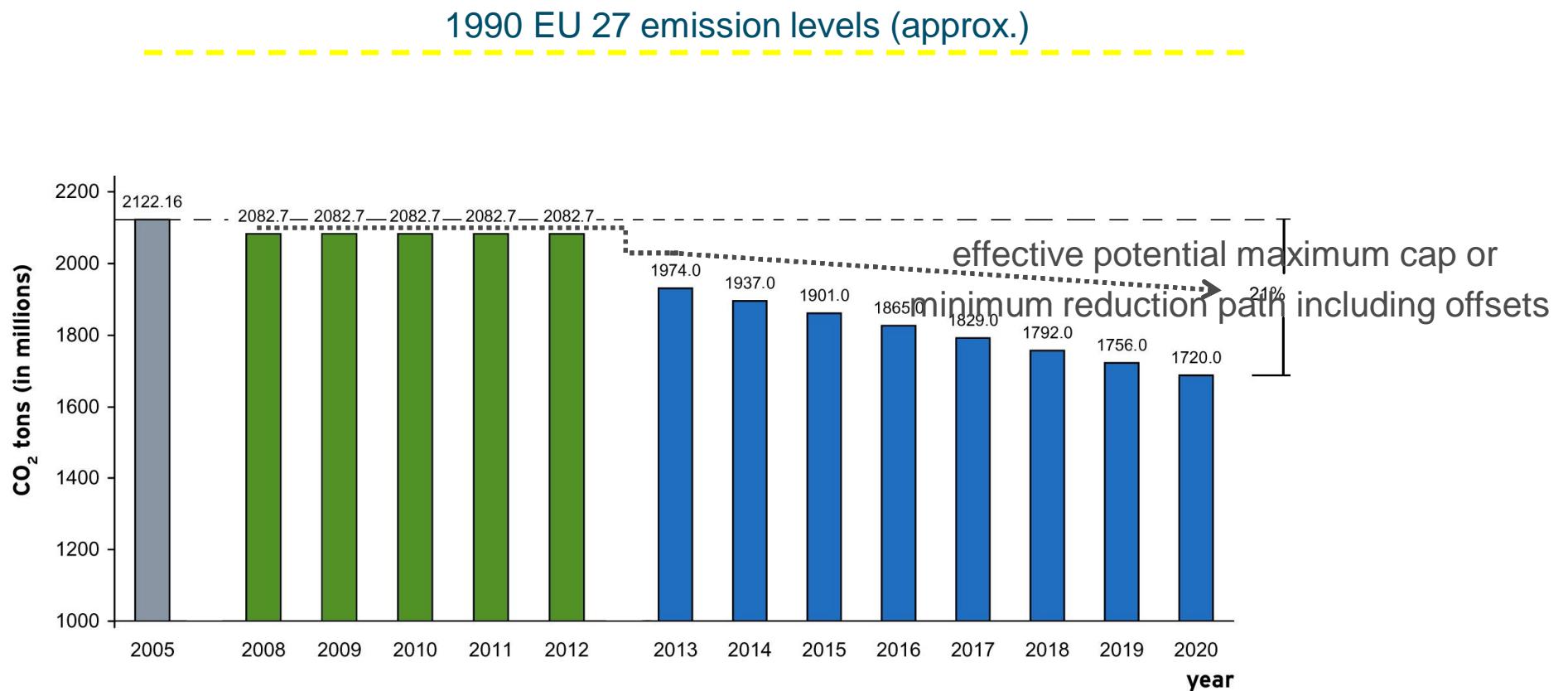
- As usual: no “silver bullet”
- An ETS can be combined with other instruments of climate policy (e.g. promotion of renewable energies, greening of the tax system, efficiency standards)
- Regarding effects of other instruments on the capped emissions, e.g. on the high end of the cost curve (bringing down long-term overall reduction costs) and the low end of the cost curve (addressing non-economic barriers), the cap needs to be adjusted to harmonize the instruments

Figure 1 The core policy mix: a carbon price, energy efficiency and technology policies



source: Summing up the Parts (IEA, 2011)

Effects of Offsets for the EU ETS Cap until 2020



Supplementarity: offset use limited to 50 % of the reductions compared to 2005

(i.e. only approx. 15 to 25 % of the reductions compared to 1990 => 75 % to 85 % percent of reduction effort happen domestically inside of the EU)