

Cap Setting in the EU ETS



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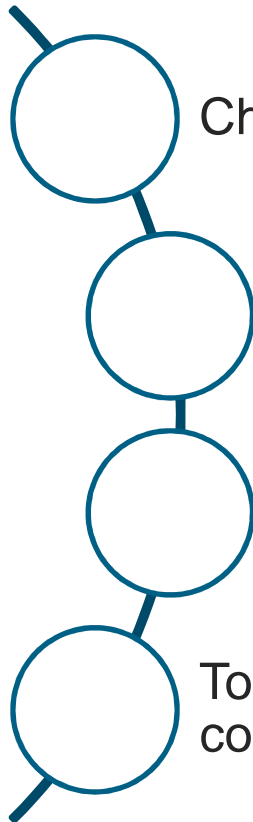
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DEHSt – German Emissions Trading Authority

E 2.3 – Economic Aspects of Emissions Trading, Monitoring, Evaluation

12/12/2017

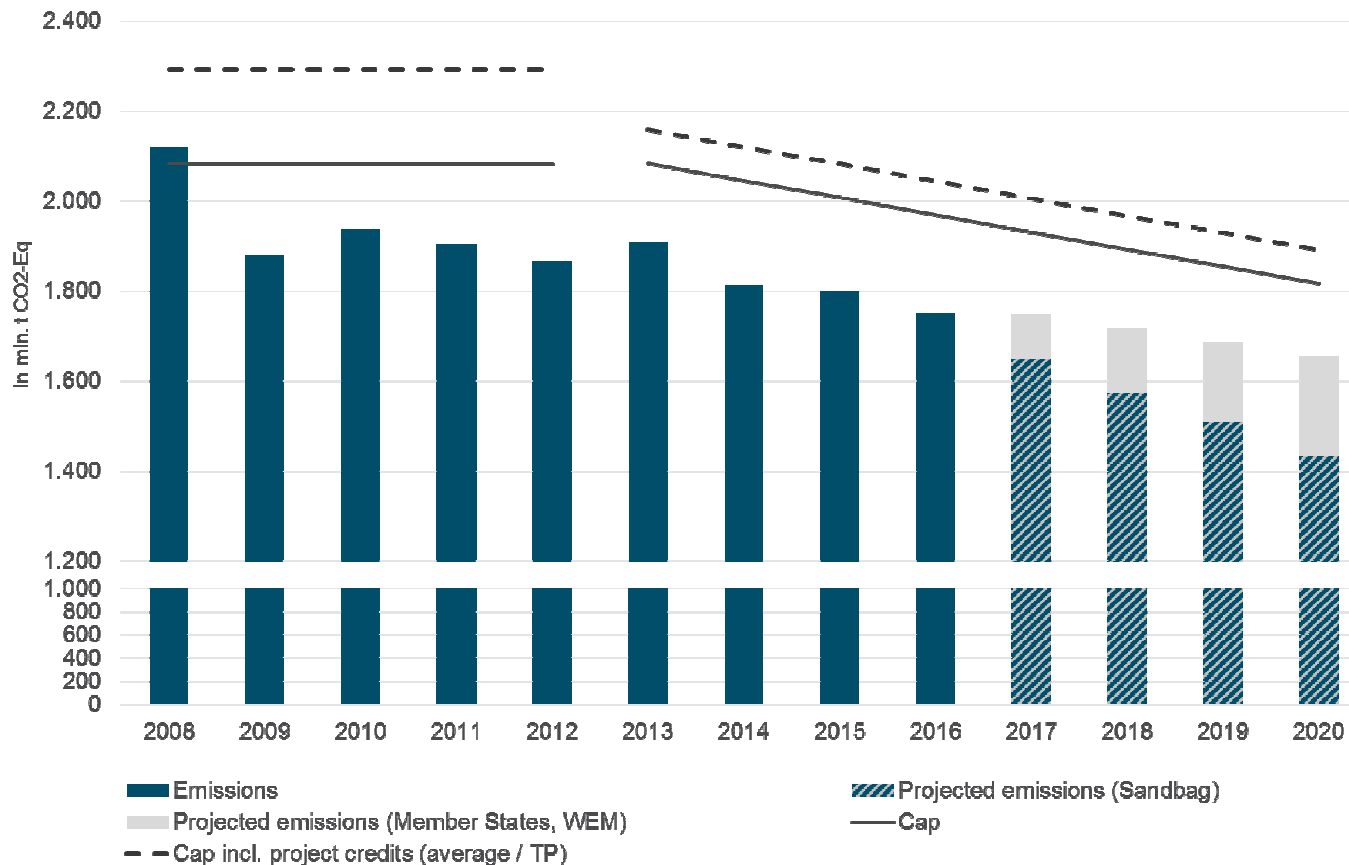
Topics

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- Challenges of Matching Supply and Demand in EU ETS
 - Structural Reform: Market Stability Reserve and Outcome of Trilogue Negotiations
 - Bottom-up cap setting: scope and data
 - Top-down cap setting: long-term targets, interaction with complementary policies

Supply and Demand in EU ETS

What are the Challenges?

Structural Imbalance of Supply and Demand in EU ETS



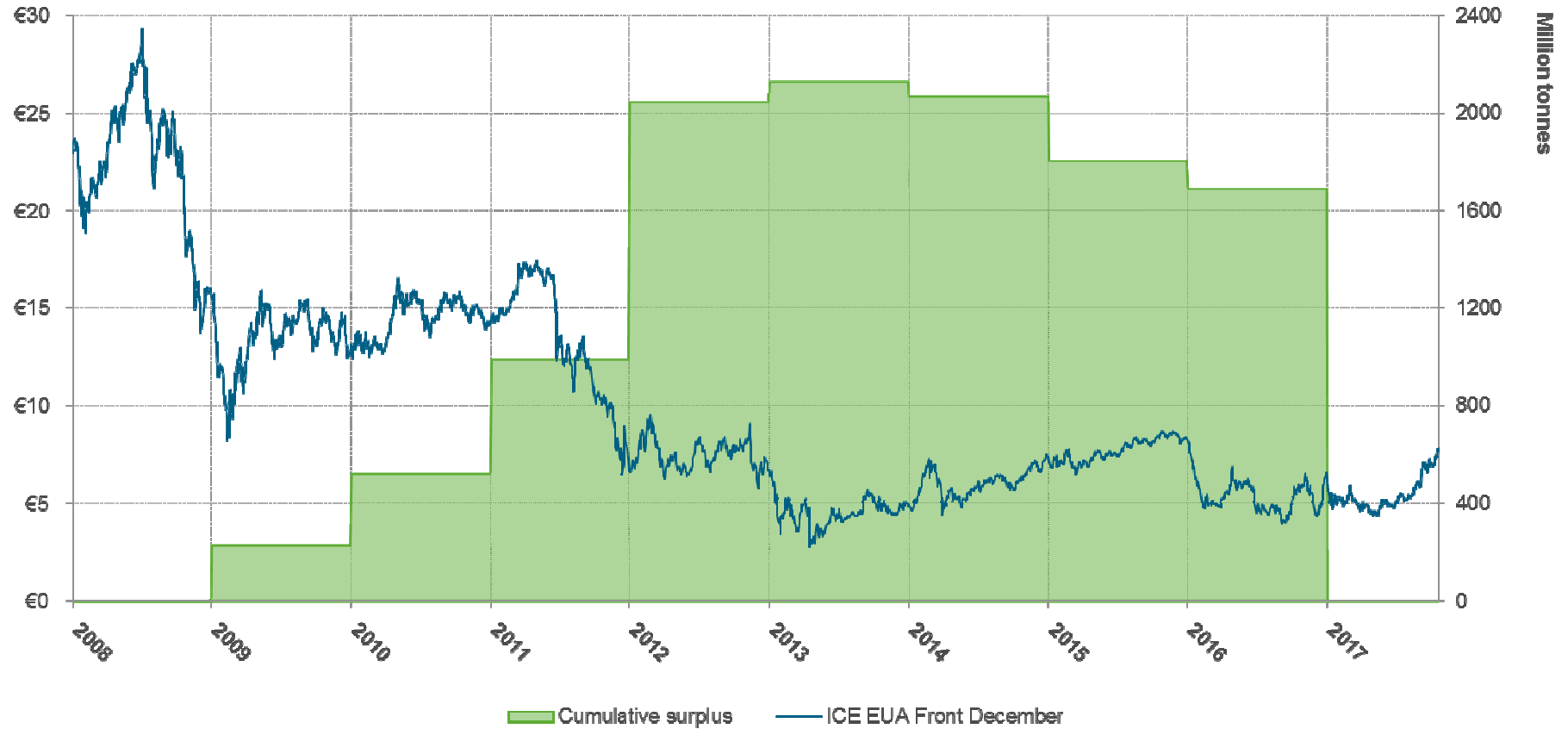
- Economic crisis
- Non-ambitious caps
- High inflow of credits
- Lack of policy coordination

have led to a **structural surplus of about 2.9 bln. EUA** end of 2016

Source: DEHSt calculation based on data from the European Environmental Agency (EEA), the European Commission, Member States projections WEM = with existing measures (EEA 2017), Sandbag (2016)

As of: October 2017

EUA-price and surplus development in the EU-ETS



Source: Own calculations based on data from Thomson Reuters Eikon, ICE, EU COM.

As of: 20/10/2017

Conclusion

■ EU-ETS functions well

- Given reduction target for 2020 (- 21% in relation to 2005) will be reached
- Emission projections for 2020 predict a development below the nominal Cap (with linear reduction factor LRF of 1.74 %)
- Liquid market, well performing auctions

■ EU-ETS does not tap the full potential

- low CO₂-price ⇒ poor incentives for investments in mitigation measures
- Long term reduction target 2050 ⇒ necessary investments postponed ⇒ investments are getting more expensive in the future

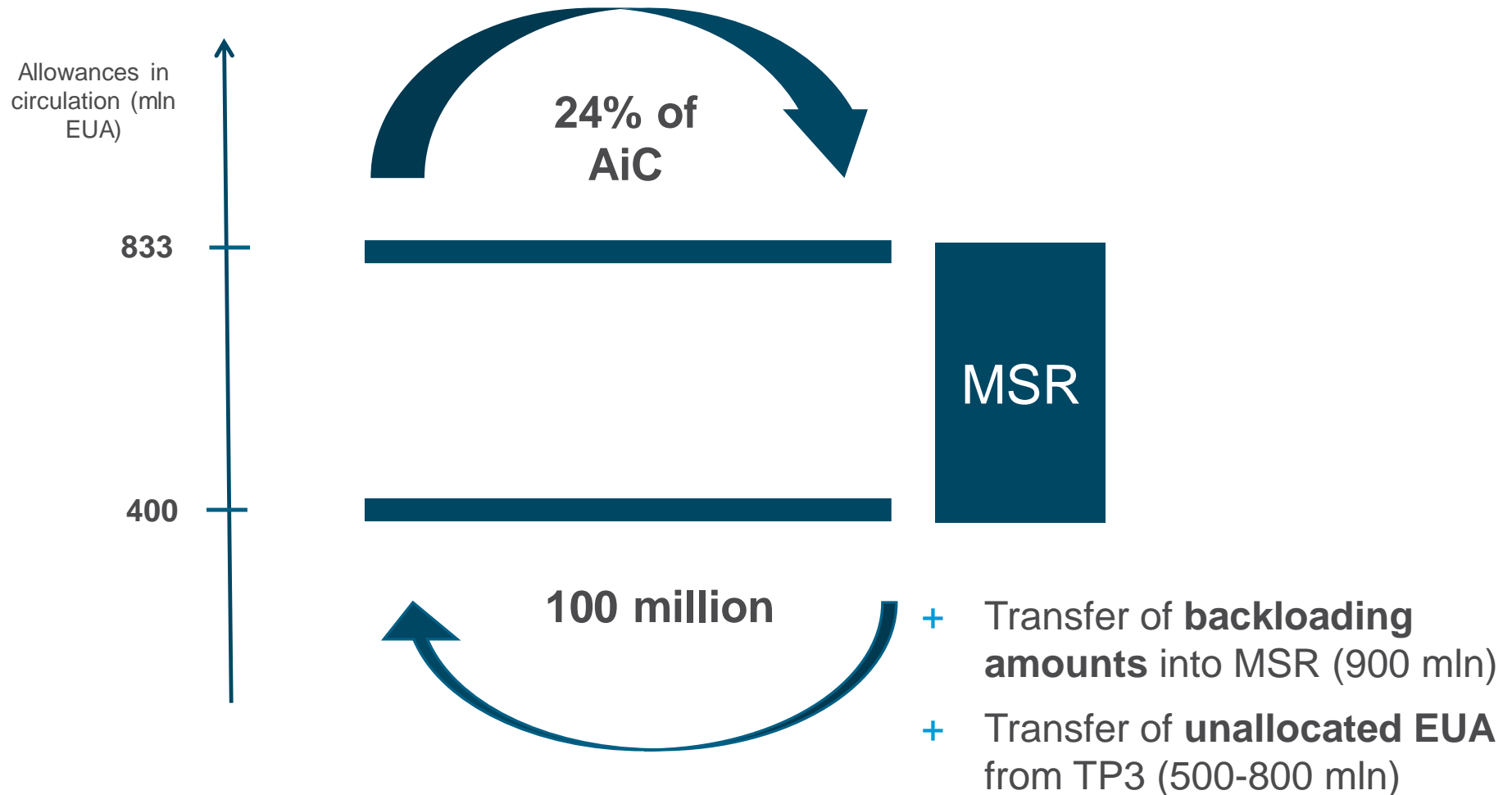
Structural reform: EU ETS in TP4

Structural Reform of the EU ETS – State of Play

Market Stability Reserve will be implemented from 2019 on

- **Two main goals** of the MSR:
 - Deal with the current oversupply (in the short and medium run)
 - Stabilize the market balance (in the long run)
- **Rule based** mechanism for adjustment of annual auction volumes:
 - No intervention if surplus is between 400 and 833 million EUA
 - Reduction of auction volumes by 24% (from 2024 on: 12%) of the surplus if the surplus > 833 million EUA (MSR inflow)
 - Increase of auction volumes by 100 million EUA if the surplus is < 400 million EUA (MSR outflow)

Functionality of the MSR (as from 2019 on)



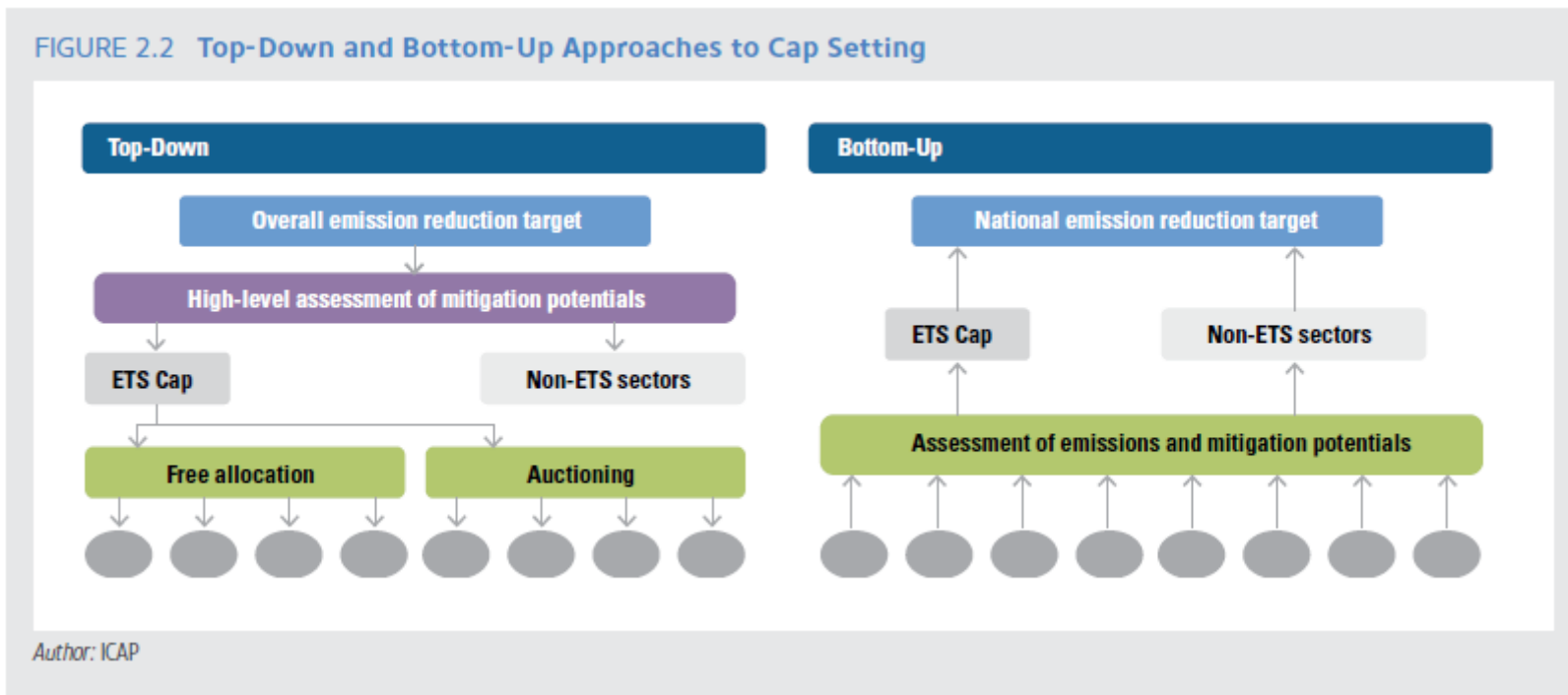
ETS phase IV (2021-2030): Outcome of the Trilogue

- ✓ Domestic action: no more credits on top of the Cap
- ✓ Strengthening of MSR (24% instead of 12% intake rate)
- ✓ Cancellation of allowances from the MSR (approx. 2.3 – 2.7 bln EUA)
- ✓ Voluntary allowance cancellation to compensate for closure of coal power facilities
- Cap Linear Reduction Factor 2.2% ≠ long-term decarbonisation goal: minus 80 to 95% by 2050 (economy wide)
- Interactions with other energy and climate policies (RE, EE, coal phase out) not adequately assessed

Setting the Cap is Challenging

General Approaches to Cap Setting

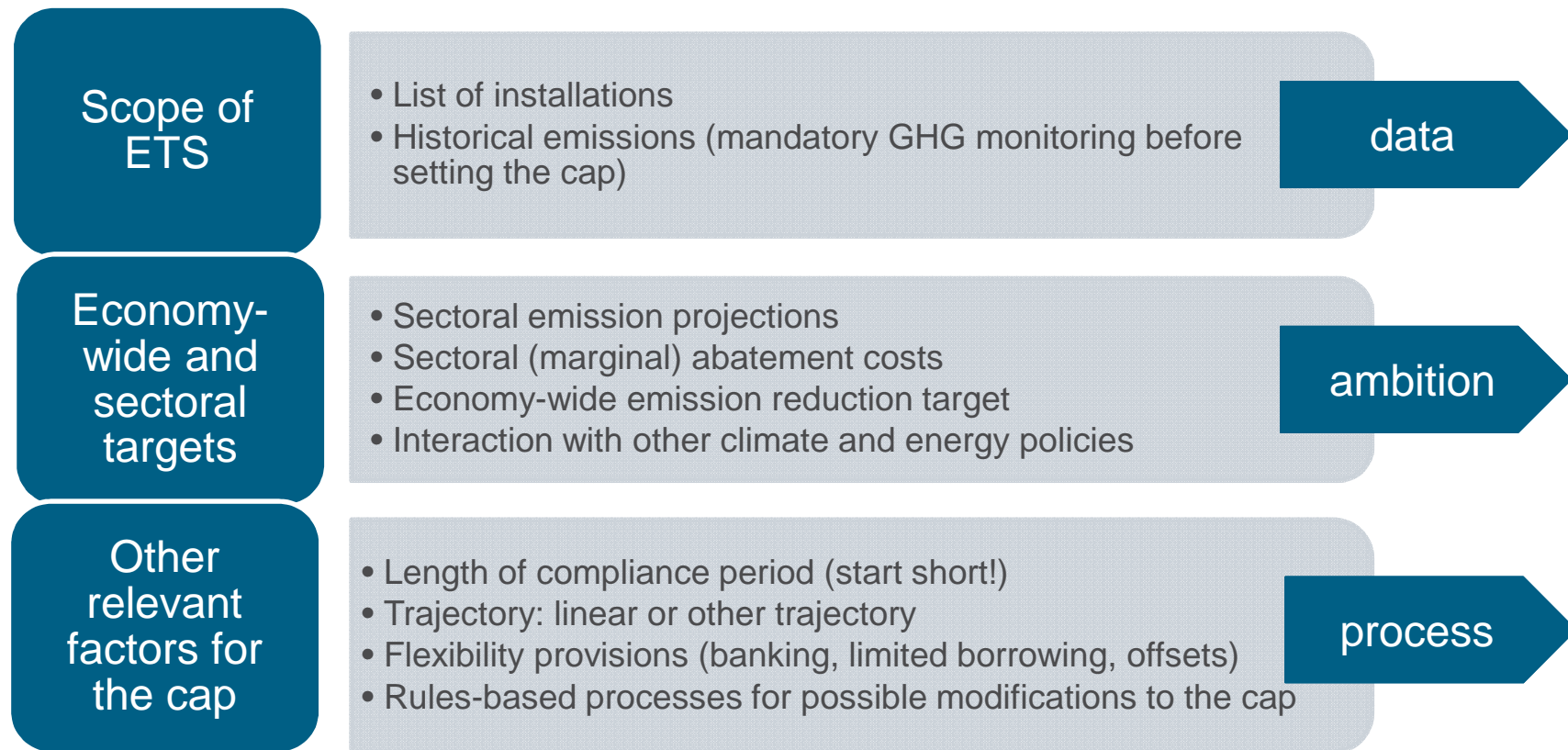
In practice, a combination of approaches seems useful



ICAP/PMR 2017 (Handbook on Emissions Trading)

Elements of Cap Setting

„A cap is only as good as the underlying data and assumptions.“
(ICAP/PMR 2017)



Scope: What sectors should be covered

Scope: What is your country's emissions profile?

- Which sector accounts for which share of national GHG emissions?
- Is there a small set of sectors that cover a high share of total emissions?
- **Energy installations** and **energy-intensive industries** are the “typical” candidates for an ETS.
- Emission profiles change over time, and will look different in the future: Are there sectors with high growth rates?
- Which greenhouse gases shall be included?
 - CO₂ emissions (combustion and process emissions) from a range of sectors
 - N₂O emissions from chemical processes (adipic acid, fertiliser production)
 - SF₆ emissions from aluminium production
 - CH₄ emissions from livestock: “A nightmare to monitor!”
 - Black Carbon, etc.

➔ **What is key? Availability of information, in particular emission data!**

Which sectors should be included under an ETS?

Why not take all?

- **Pro's of a broad scope:**
 - The more included, the more cost-efficient mitigation is possible.
 - Improves market liquidity.
 - Avoids distortions and perverse incentives at the margins.
 - Direct contribution to emission reductions in all sectors also allows a more easy and direct link to national climate targets.
 - **Con's of a broad scope:**
 - Some sectors might not respond to price signals.
 - Emission sources in some sectors might be difficult to monitor.
 - Administration burden and transaction cost can be very high.
- ➔ **Cover most of GHG emissions with a small number of participants!
Scope can be dynamic: Start with "easy" sectors, add others later!**

Scope: What entities should be covered

Entity

- Definition: An emission source is a legally definable entity that is subject to the regulators jurisdiction.
Typically, an entity under an ETS is a single installation or facility that emits GHG and needs to have a permit to operate.
But it could also be a company.
EU-ETS: installation not company level.
- Permit: to what level (company, installation) does the permit refer.
EU-ETS: usually one permit per installation.
An installation could cover several technical units like a power plant with several blocks, or an industrial installation with different production lines
- Every covered entity has to report its emissions. But not every entity needs to be eligible to apply for free allocation.
- Data and reporting requirements and procedures could be different and handled separately which is the case in the EU-ETS.

Entity - coverage of activities in EU-ETS Sectors

- Scope: legal definition of covered activities: Annex I of EU-ETS Directive (for Germany transformed in Annex I of German GHG emissions Trading Act)
- All large emitters included
- Annex I determines
 - whether an installation is subject to ETS
 - to which extent the installation is subject to ETS, i.e. which part of the installation must be regarded as being subject to ETS
 - For example: all combustion units with a rated thermal input of 20 MW_{th} or more are subject to ETS.
This includes process heaters in subsectors also that are otherwise not mentioned as such in Annex I, like breweries or asphalt mixing plants.

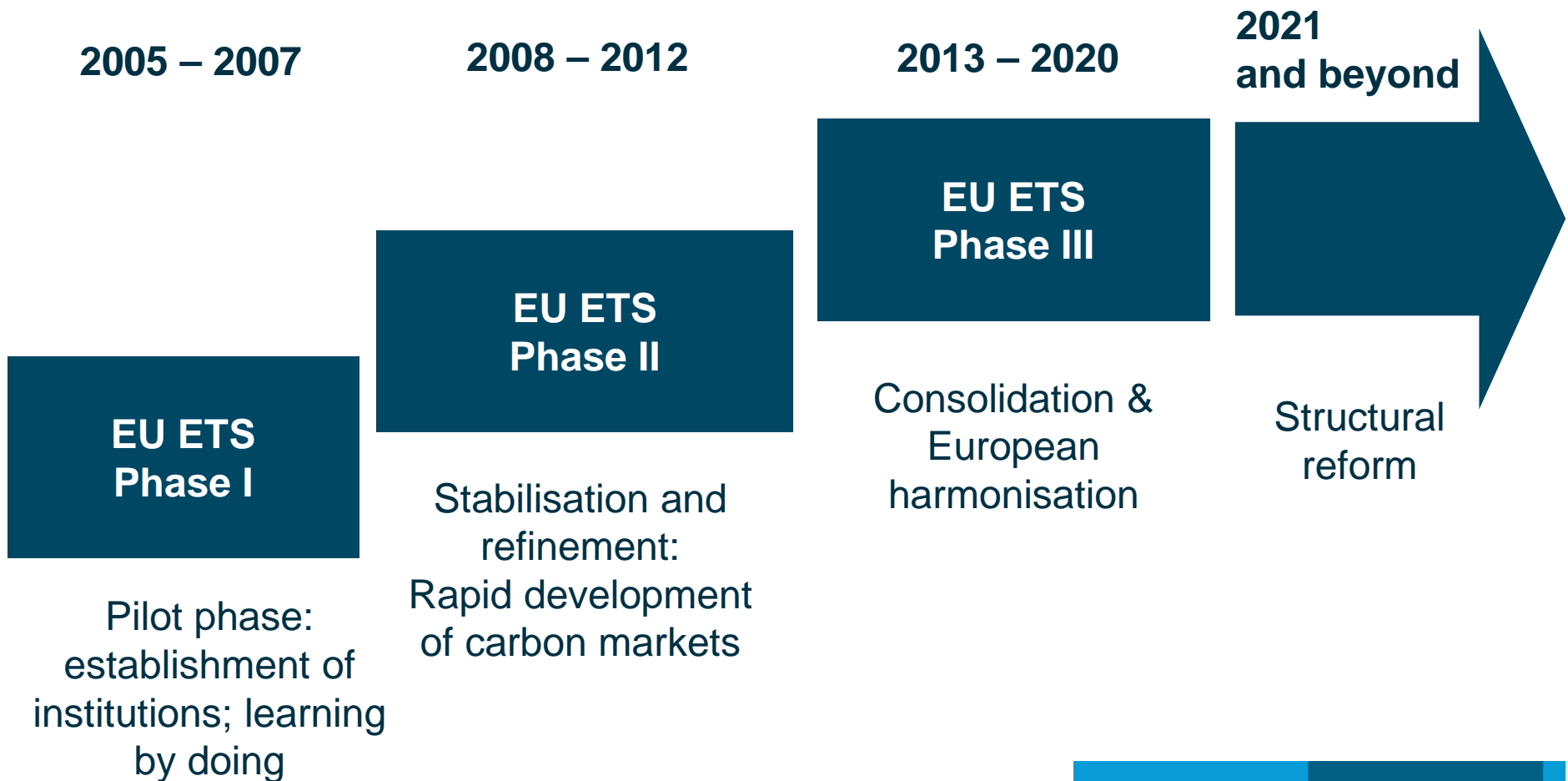
Data Collection is the Basis of the Cap

Historical Emissions are Key Information

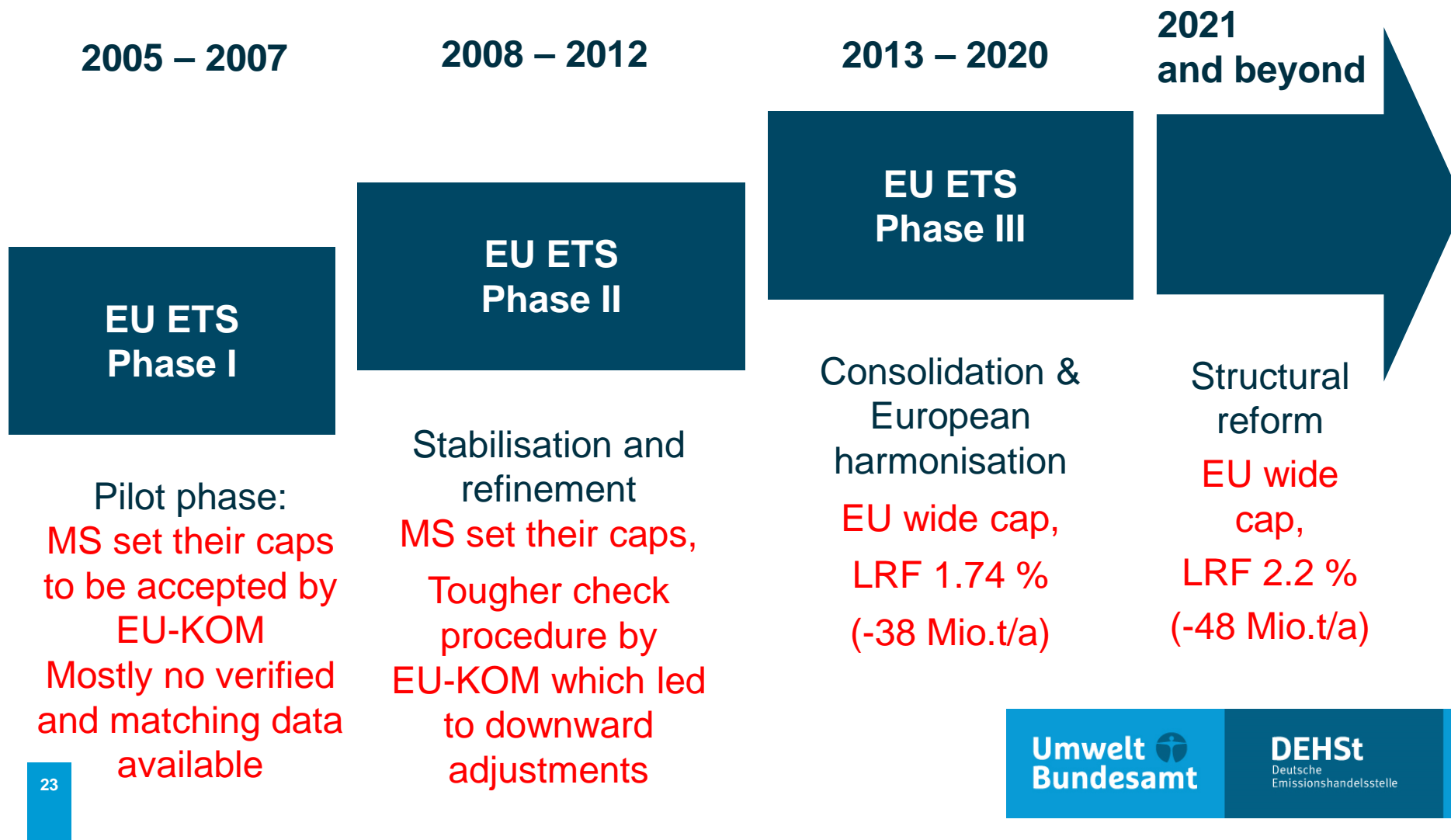
- Know all entities that will be covered by the ETS
 - Data from national inventories are usually not sufficient. Inventory doesn't deliver installation specific data in every case.
- Install mandatory GHG monitoring (installations, companies) **before** setting the cap!
- Use data **verified** by independent third parties (to avoid exaggerated data)

Alternative: Start a pilot phase, no significant price signal to be expected, (see phase 1 of EU ETS)

Steps within EU ETS



Steps within EU ETS – Changes in Cap Setting



Drafting a NAP for the pilot phase in Germany

A really challenging time schedule

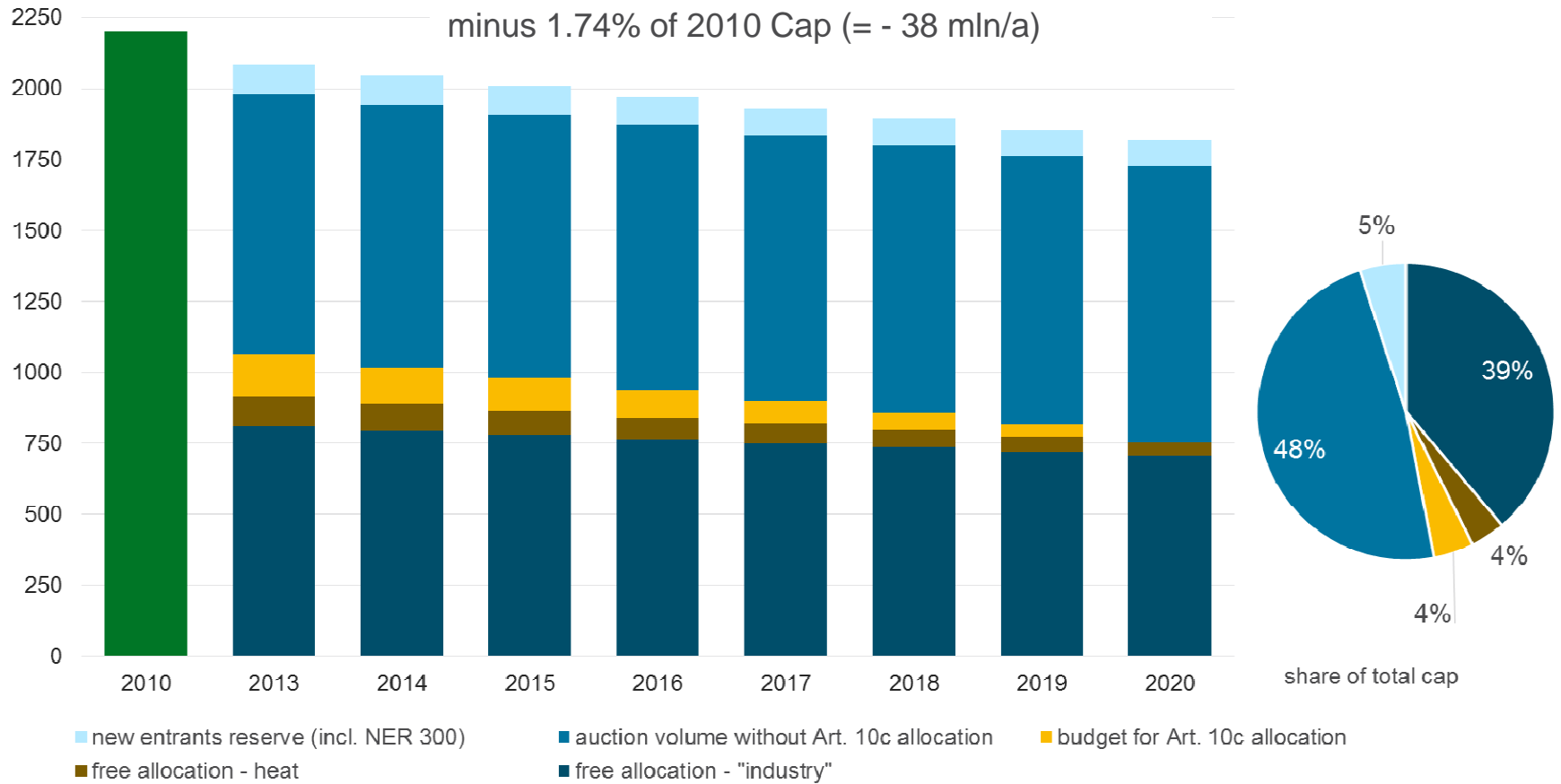
- October 2003: Final Decision of EU-ETS Directive
- Only 14,5 Month time period to implement the ETS on European and national level.

National level: a lot of things had to be done in parallel

- Creation of a national legal framework
 - National allocation law, allocation ordinance, National Emissions Trading Act
- Collecting Data from national inventory, energy statistics and operators (no verified and scope matching data available)
- Decision about the cap
- Establishment of an national administration, which had to organize the application procedure for free allocation
- Registry

Cap Setting: How to distribute shares to the sectors covered?

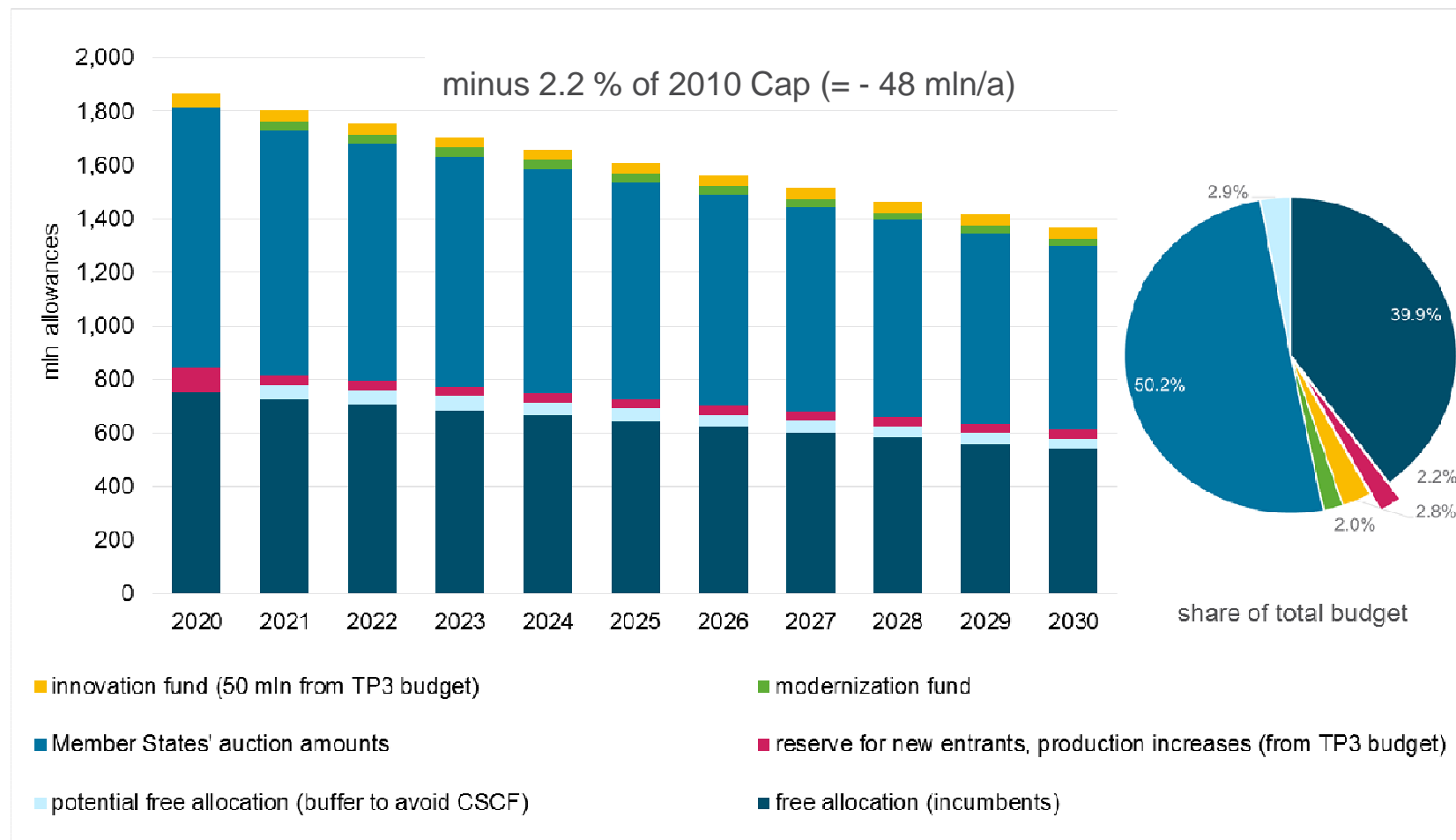
Composition of the Cap in the 3rd Trading Period



Source: DEHSt calculations based on data from the NIMs-Decision of the European Commission

As of: September 5th, 2013

Composition of the Cap in the 4th Trading Period



Source: DEHSt calculations based on data from the new ETS Directive (November 22, 2017)

As of: November 22, 2017

Ambition: economy wide and sectoral targets, interaction with other policies

Economy-wide and Sectoral Targets

Balance between ambition, mitigation potentials and cost

- Stringency = baseline emissions – Cap
- Knowing the mitigation potentials and cost is important for balancing environmental ambition against possible economic impacts
- Generation of this information is complex and might not be possible in the short-term (e.g. MAC curves derived from economic modelling)
- Interaction with other climate and energy policies is important as they influence the demand side of the market

→ **Raise ambition gradually and review the cap periodically!**

Drafting a NAP for TP 2

Verified emissions data are the basis of a NAP

- Maximum allowed annual average cap
= verified emissions 2005 x GDP growth trend x carbon intensity trend
+ additional emissions for extended scope

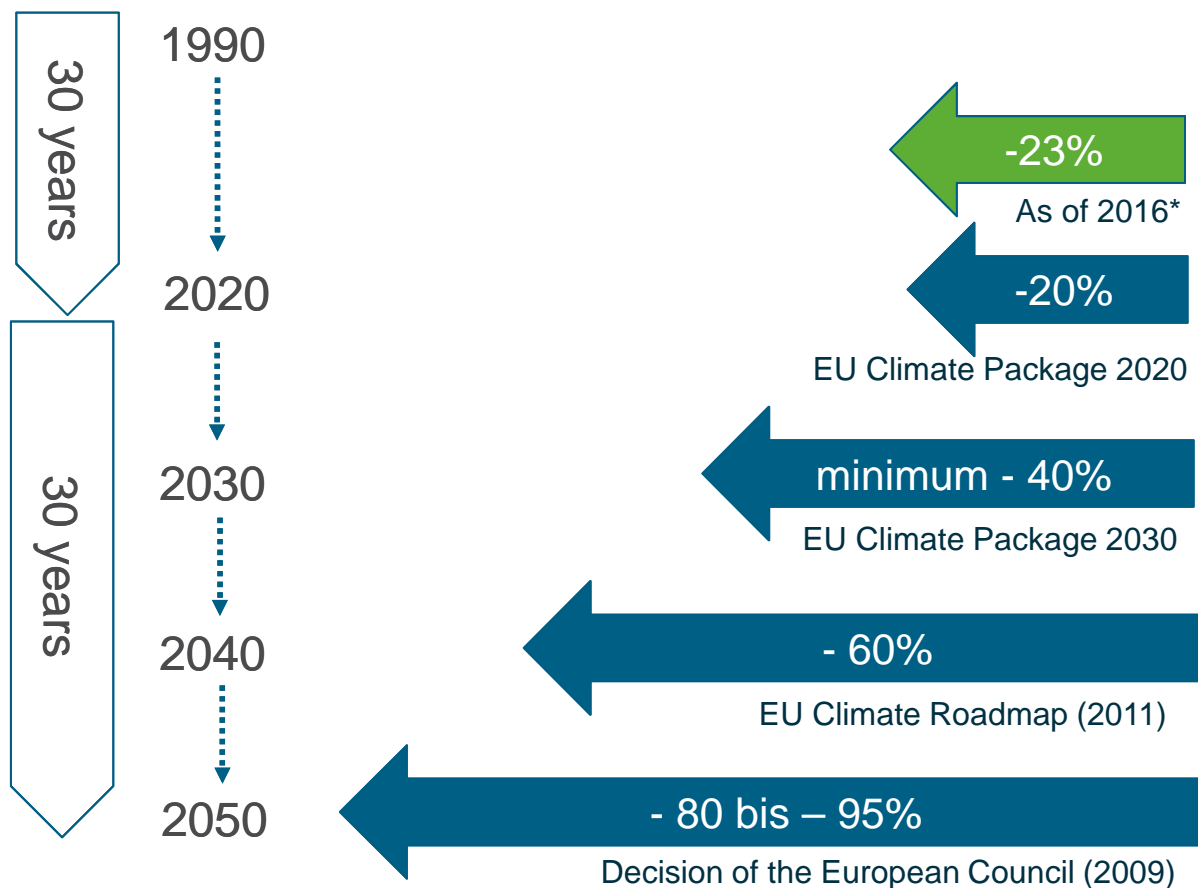
In TP2, COM checked GDP growth and carbon intensity trends as well as plausibility of planned measures in NETS sectors (to achieve Kyoto targets) and corrected overall cap if necessary

→ Ensure consistency with Kyoto targets and national climate change programmes

→ ensure that total quantity of allowances is not more than is likely to be needed

European Climate Change Mitigation Targets

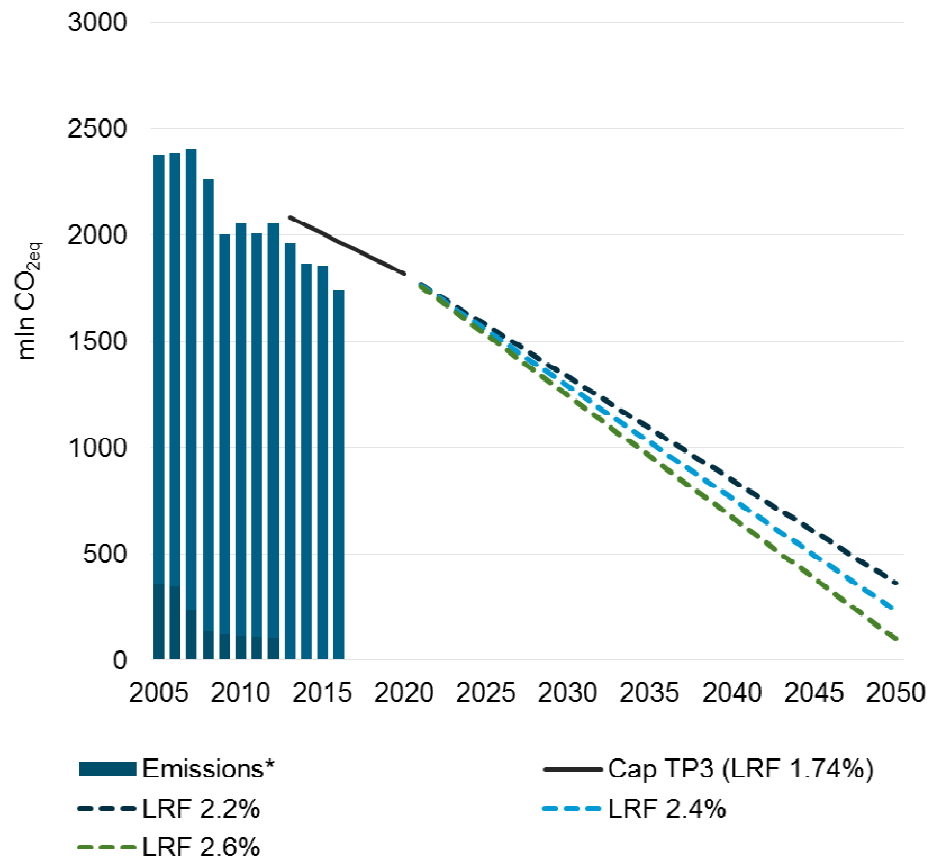
Emission reductions compared to 1990



*preliminary estimates

Long-term Mitigation Path of the EU ETS

The cap is not aligned with the long-term decarbonisation path of the EU



LRF	Reduction in ETS sectors 2050 (compared to 2005)	Economy-wide reduction 2050 (compared to 1990)
2.2%	- 85 %	?
2.4%	- 90 %	- 80 %*
2.6%	- 96 %	- 90 to - 95 %**

*according to the EU Climate Roadmap
 **own assumption

Economy-wide emission reductions of 90 to 95 % by 2050 require a linear reduction factor of **2.6 %** as a minimum!

*Source: DEHSt calculation based on data from the European Environmental Agency, including estimations for enlarged scope between trading periods.

As of: 15/06/2017

Interaction of ETS with other Climate and Energy Policy Instruments

Mix of complementary, interacting climate and energy policies

- ETS is a cornerstone of EU's climate policy
- But decarbonisation needs other instruments too:
 - Promotion of innovation and new (young) technologies (breakthrough technologies, renewable energy)
 - Address emissions with high abatement cost or sectors where price signal does not work
 - Correct market imperfections (myopia, risk aversion, regulatory uncertainty)
→ avoid stranded investments and lock-in effects
 - Balance sector specific needs (energy vs. industry)

Interaction of ETS with other Climate and Energy Policy Instruments

Different instruments can co-exist, but impacts must be considered in the cap

- Caps must take mitigation impacts of other policies into account
 - ➔ proper analysis with economic modelling needed
 - ➔ set the cap after assessing the impacts of interaction

(this was missed in EU – ETS unfortunately)
- Be careful with linking different types of instruments (e.g. clean energy certificates with emission allowances);
- Coexistence of carbon tax and ETS offers some chances if impacts are considered in the cap (UK Carbon Price Floor helped to phase out coal)

Addressing emissions from coal power needs additional instruments

> 60 % of coal power is produced in MS with targeted coal reduction policies

Germany: Lignite reserve since 2016;
KSP 2050: no fix date for coal phase out

UK: CPF since 2013; coal phase out by 2025

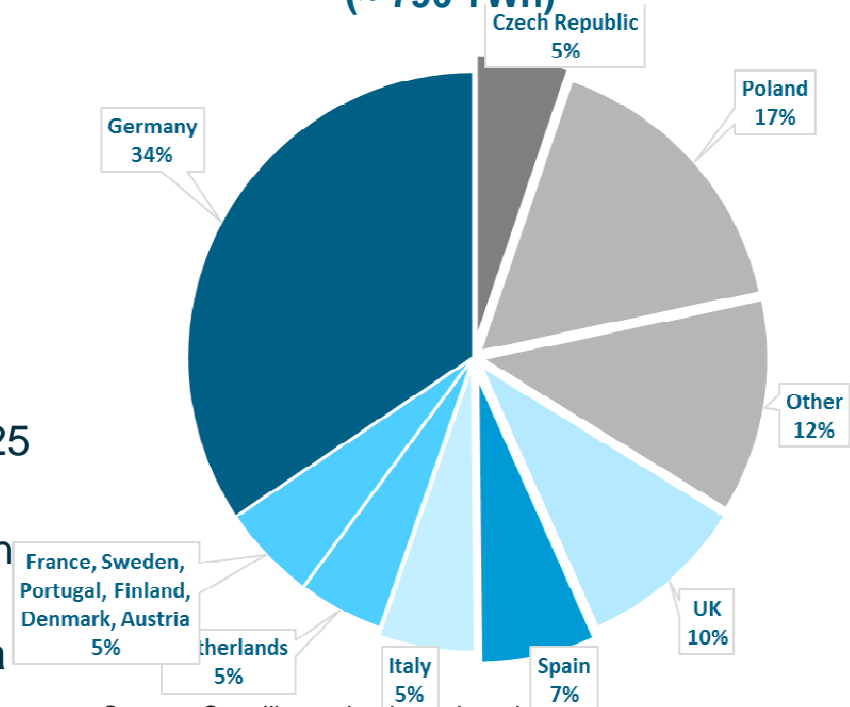
Spain: Coal power production reduced by 50%
since 2005

Italy: Partial or complete coal phase out by 2025

NL: Coal phase out by 2030; CPF from 2020 on

France, Portugal, Sweden, Denmark, Austria
and **Finland** also set dates for coal phase out.

Power generation from solid fuels in EU 2015
(~ 790 TWh)



Source: Own illustration based on data from the EU Commission and EUROSTAT

What does that mean for the EU ETS?

**Additional climate policies can lead to the “waterbed effect”:
increased emissions elsewhere, weakened carbon price signal**

- Targeted coal phase out policies lead to a structural demand shift in EU-ETS
- Interacting policies have not been assessed properly before the cap was set
- Cap size and annual cap reduction do not reflect the impacts of interacting policies.



ETS emissions decreased by **84 mln t CO₂** 2012- 2016
(coal power production – 78%)



Lignite reserve: - **12.5 mln t CO₂** p.a. by 2020
Implementation of KSP2050: **160 – 170 mln t CO₂** less in 2030 compared to 2015



- **12 mln t CO₂** p.a. through closure of 5 power plants by 2030



~ 8 GW coal power facilities could be closed by 2025/2030

Flexibility and Adjustments to the Cap

Length of compliance period

- Cap is usually defined for a certain period (more than 1 year)
- Should be aligned with other climate policy cycles (e.g. ambition raising cycle of Paris agreement)

Longer cap periods: more predictability from the stakeholders' perspective

Shorter cap periods: easier to adjust the cap (in case of data mistakes, wrong assumptions, unexpected changes in production levels, fuel prices etc.)

New in TP4 of EU-ETS: Cap is set for the length of the trading period (2021-2030) but must be reviewed after Global Stocktake

Thank you for your attention!

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Bundesamt

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