

Study Tour on Emissions Trading System Mexican Delegation



Allocation Methods and Benchmarking

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

Section E 1.2 - Mineral Processing, Pulp and Paper, Non-ferrous Metal and
Carbon Black Industries

Study Tour of Mexican Experts at the
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Outline

- Policy objectives – grandfathering vs. benchmarking
- History of allocation in Germany - reasons for changes
- Concept of allocation at sub-installation level
- Steps towards benchmark development
- New entrants, closures, partial cessation
- Lessons learnt

Policy objectives, allocation methods and history of allocation in Germany

Objectives of allocation

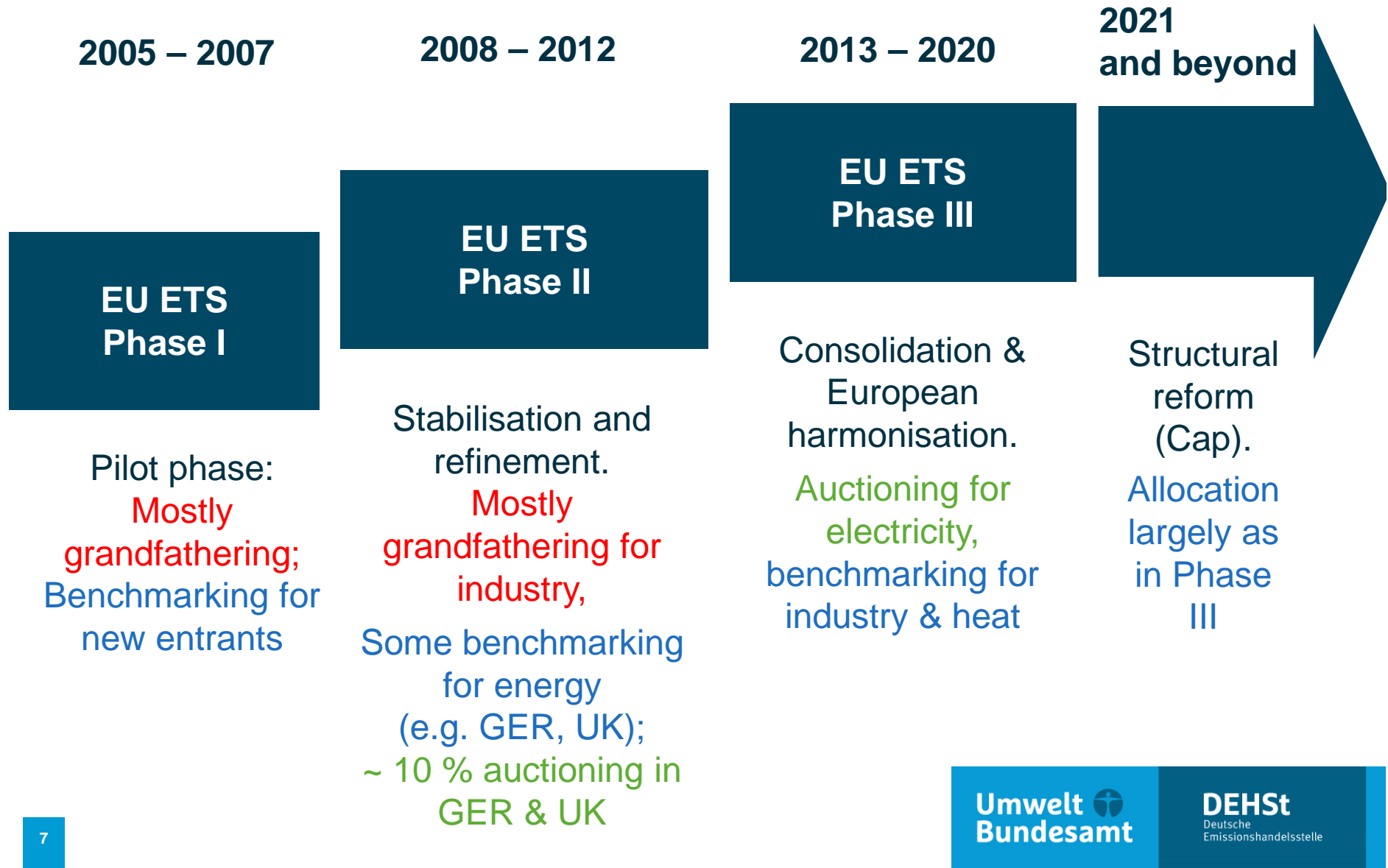
- “Fairness” between sectors and firms:
Mitigation potentials & „rewards“ for early actions
- Incentives for abatement & investment in low emission techniques
- Protection against “carbon leakage” from international competition under “uneven” carbon prices
- Avoid possible “windfall profits” when costs can be passed on to consumers
- Financial compensation for consumers and/or support for R&D or demonstration by using auction revenues
- In early phases: protection against “stranded assets”.



Why free allocation anyway?

- Introduction of new ETS → give firms time to adapt
- Compensates for stranded investments
- Win political support by industry stakeholders
- If internationally large carbon price differences:
potential shield from „carbon leakage“
- In the long-run: auctioning (at least partially for all sectors) is preferred:
 - → secures price signal across the economy
 - → avoids „windfall profits“
 - → avoids wrong incentives to invest in carbon intensive technologies („lock-in“ effect)
 - → raises money that can be refunded directly or used to reduce other distorting taxes, or support R&D/demonstration of low-carbon options

Steps within EU ETS – Changes in Allocation Rules



Methods for free allocation: grandfathering vs benchmarking

1st + 2nd trading period
(industry, partly energy):
grandfathering

$$\begin{aligned} &\text{Allocation} \\ &= \\ &\text{Historical Emissions} \\ &\quad (\text{e.g., 2000-2005}) \\ &\quad \times \\ &\quad \text{correction factor} \\ &\quad (\text{to meet the cap}) \end{aligned}$$

3rd trading period:
benchmarking

$$\begin{aligned} &\text{Allocation} \\ &= \\ &\quad \text{Benchmark} \\ &\quad (\text{e.g., 0.766 EUA} \\ &\quad \text{per ton of cement clinker}) \\ &\quad \times \\ &\quad \text{Historical Activity Level} \\ &\quad (\text{e.g., 800,000 t cement clinker}) \\ &\quad \times \\ &\quad \text{correction factor} \end{aligned}$$

The choice of free allocation methods: benchmarking vs. grandfathering



Grandfathering:

- Requires “only” historical emission data of installations

Benchmarking (BM)

- „Rewards“ owners of efficient installations
→ fair distribution among competitors; equal treatment of comparable products
- Gives higher incentives for investment in low emission techniques
- Allows equal allocation for existing (incumbent) and new installations
- Requires...
 - a clear definition of BM products
 - developed BM values prior to allocation phase
 - Activity (production) data

Free allocation in Germany in Phase 1 (2005-2007): Grandfathering for existing plants, benchmarking for new entrants

- Allocation based on each installation's average emissions 2000-02
- General adjustment factor (to meet the cap) turned out to be ~7 % reduction;
- Exemptions from adjustment factor for...
 - “early actions”
 - “process emissions”
- New entrants:
 - Legally fixed benchmarks (BM) for some products (e.g. cement clinker, float glass, bricks, power&heat) → easy to enforce;
 - For other products: benchmarks (BM) based on “Best Available Techniques (BAT) in comparable plants” → difficult to enforce

→ System was complex and required significant administrative effort (pilot phase)

Free allocation in Germany in Phase 2 (2008-2012): Grandfathering only for existing industrial plants, benchmarking for energy installations and new entrants

- Industry: Allocation on each installations average emissions 2000-05; very modest adjustment factor 1,25 %.
- Energy: **Benchmarking (larger abatement potential, windfall profits)**

Allocation = installations average production (2000-2005) * benchmark

- oriented at BAT (e.g. 0,75 t CO₂ / MWh electricity for coal)
 - „double“ benchmark allocation for combined heat and power (CHP):
BM (power) + BM (heat)
 - allocation differentiated for fuel used: coal, other.
- New entrants (industry and energy): as in phase 1
 - Auctioning of 9 % of cap

Free allocation with benchmarking in Phase 3

Free Allocation in the 3rd trading period (EU-ETS)

- **Electricity not eligible for free allocation**
(but free allocation for heat production)
- **Free allocation to industry:**
 - Community-wide allocation rules
 - Benchmarks **based on most efficient plants in each sector**
- In principle, free allocation rate declines
from 80 % of benchmark value (2013) to 30 % (2020), but...
- “Exemptions” for industries at risk of carbon leakage
(~100 % of *benchmark value*, minus a correction factor to match the overall cap)
- EU countries can decide to pay limited compensation to industry
for power price increases

Allocation rules in 3rd trading period

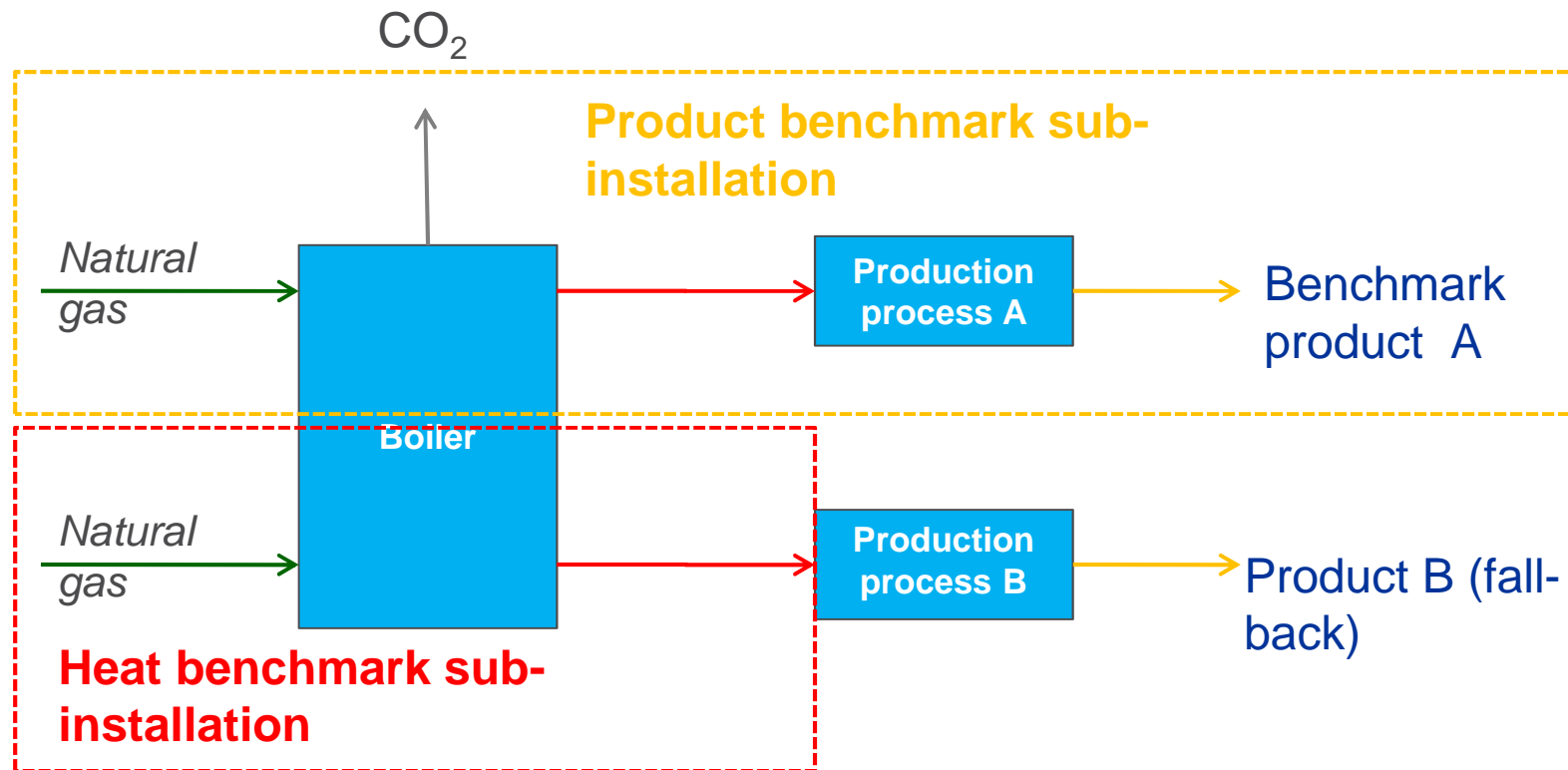
Hierarchy of benchmark allocation rules

- **Product benchmarks** (BM) for 52 products, defined as the average of the 10th percentile of the most greenhouse gas efficient installations at EU level in the years 2007-2008
- Otherwise „**fallback**“ approaches in the following hierarchy:
 - Heat benchmark on measurable heat used for production
(= 62.3 allowances / TJ)
 - Fuel benchmark (= 56.1 allowances / TJ),
 - Process emissions outside of BM products (list of specific processes)
(= historical emissions x factor 0.97)

→ Installation to be split up in **sub-installations** to correctly apply the methodology in the right order (all inputs, outputs and corresponding emissions related, ≠ boundaries of physical process units)

Different sub-installations in one installation

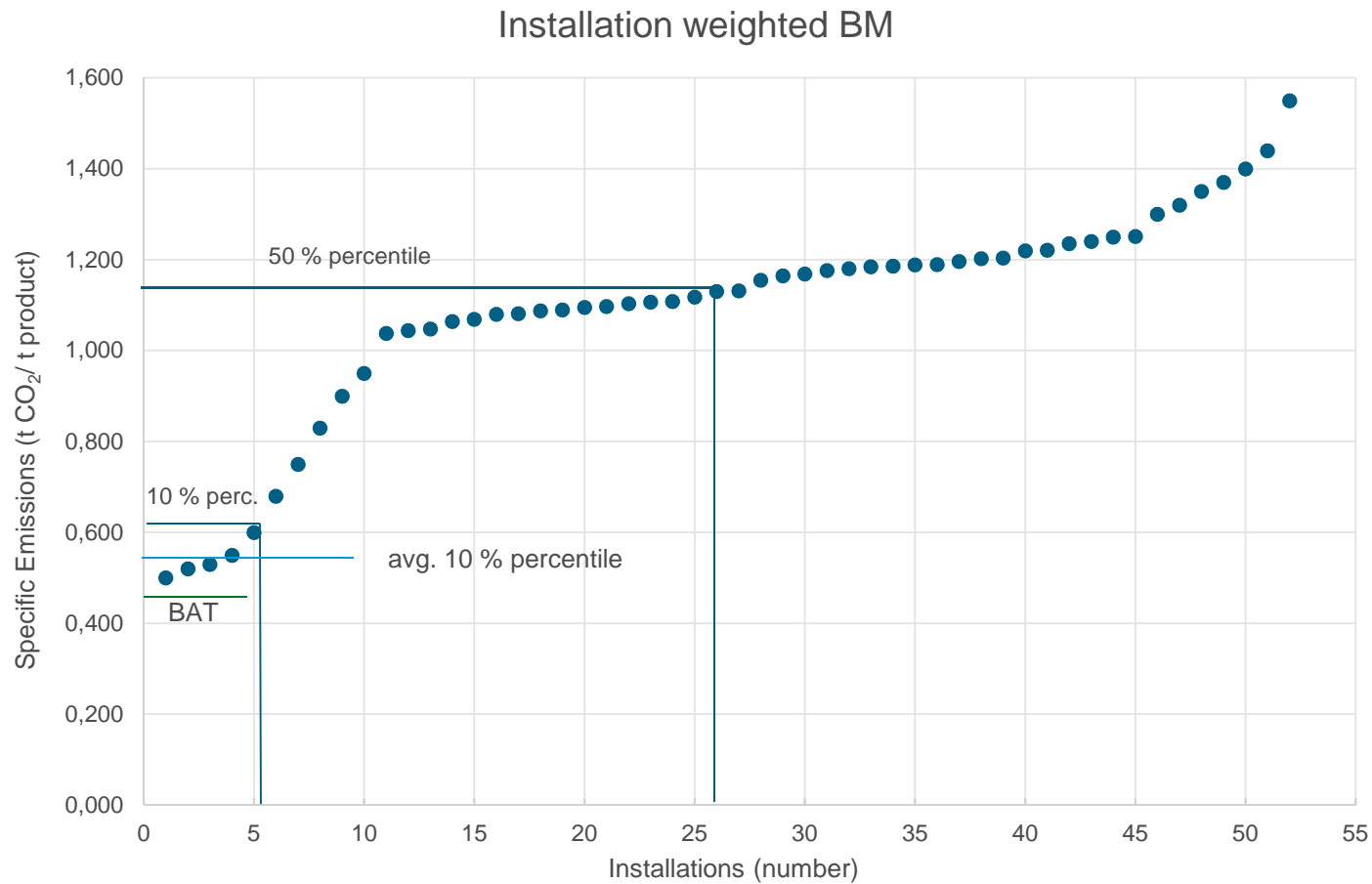
Product benchmark sub-installation and fallback sub-installation



Benchmark development in Phase 3

- Benchmarks (BM) are applied EU-wide – to avoid distortions of CO₂ price signal within Member States and competitors
- Same ambition level for all product benchmarks within all sectors
- Starting point within a sector: one product group - one BM
- If relevant differences in product specification within a sector (“quality of product”) → more than one BM (to decide: what is “relevant”?)
- Differentiation within a BM should be avoided, e.g. not for technology, plant age & size, raw material, site-specific factors, or cross-media effects
- Pre-requisite for benchmarking: harmonized definition of activities and **clear product definition** (like EU-Prodcom number system)
- **Data needs:** verified historical data of emissions, energy consumption and production at sub-installation level (and in case of exchangeability of heat/power: electricity consumption)

Approaches for BM definition



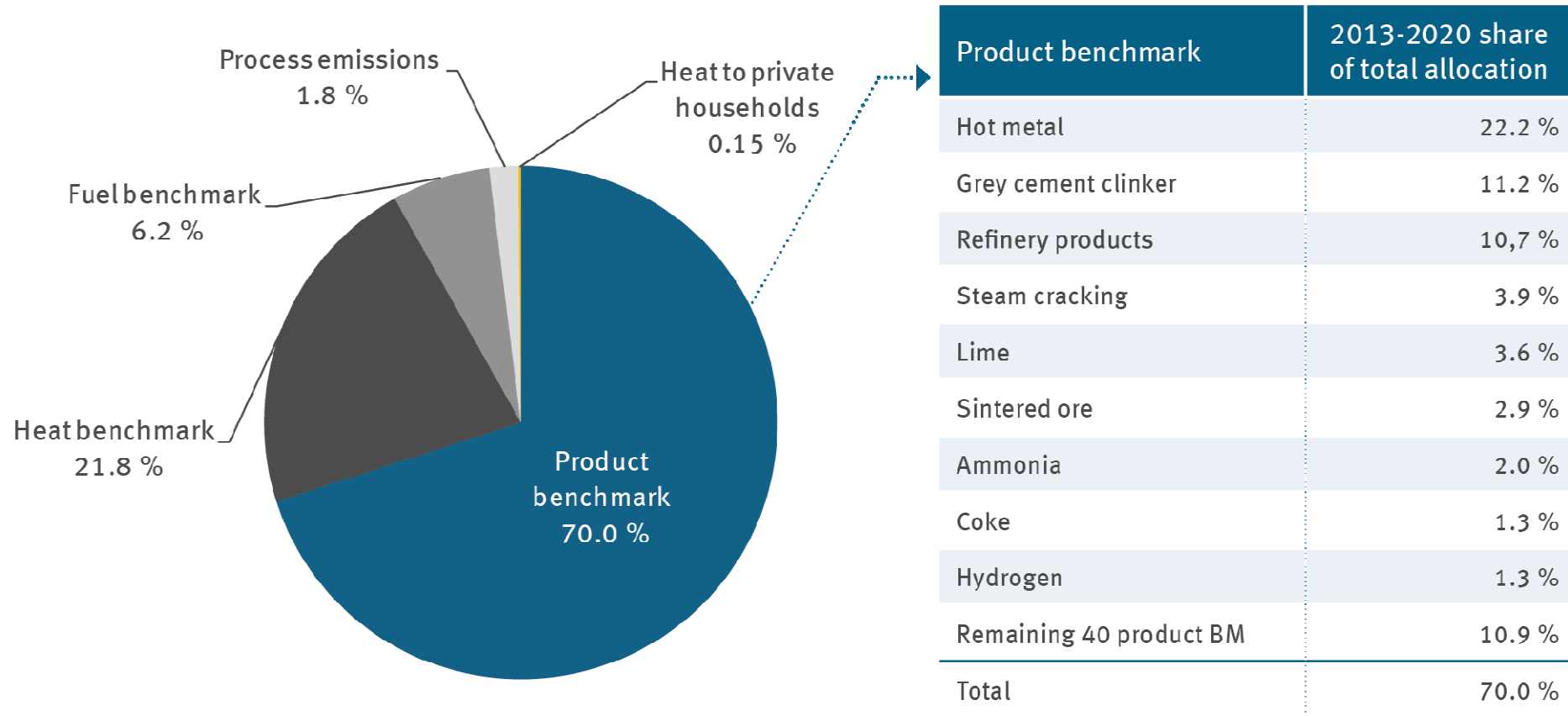
Benchmarking in Phase 3 – lessons learnt

- Derivation of product benchmarks is time-consuming, but BM allocation is easy and fair compared to fall-back approaches (heat, fuel, process)
→ **high coverage of product BM allocation recommended**
- Principle: one product – one BM → no differentiation of BM for similar usage of products (e.g. coloured vs. white container glass, coated vs. uncoated paper) or similar raw materials (e.g. grey vs. white cement clinker) → no unnecessary differentiation
- Same ambition level for all BM → Phase IV: higher adjustment for heat and fuel BM and some product BM (-24 %) compared to other BM (-3%)

→ Keep it simple!

- EU Guidance and Studies, FAQs: https://ec.europa.eu/clima/policies/ets/allowances_en#tab-0-2
- EU “ETS Training Courses” (22 units):
<https://ec.europa.eu/clima/policies/ets/ets-summer-university/content/ets-e-learning-online-course>

Distribution of allocation 2013-2020 in Germany



Source: Allocation 2013-2020: Results of Free Allocation of Emission Allowances to Incumbent Installations, DEHSt, 2016

Dynamic allocations for new entrants, closures, partial cessation

New entrants, closures, partial cessation

New entrants/extensions of capacity after the start of trading period:

- Allocation from EU-wide New Entrant Reserve (NER);
 $BM \times \text{new capacity} \times (\text{standard}) \text{ utilization factor}$

Closures/reductions in capacity after the start of trading period :

- No allocation for following years

Partial cessation of operations (only in Phase 3):

- If activity drops below 50 % of activity level in the base period, then allocation is adjusted downwards proportionally for the following years
→ “mild” form of ex-post-adjustments to allocation: only downward and only below 50 %
- Allocation can then be raised again if production is increased again.

EU-ETS New Entrants Reserve

- Phases 1 and 2: Germany
 - Phase 1: **0,8 % of the cap** (3 Mln per year) (but “**refilment**” provisions)
 - Phase 2: ~ **5 % of the cap** (23 Mln EUA per year)
- Phase 3: EU New entrants reserve (Art. 10a (7) ETS–Directive)
 - 5 % of the cap (incl. “NER 300” for innovative demonstration projects)
 - If amount is not exhausted at the end of phase 3 ⇒ auctioning of surplus

Phase 4 (2021-2030): Rules for new entrants, closure, partial cessation are replaced by activity-based rules

1. Capacity-based rules (ETS Phases 1-3) can be complex and cause high administrative effort & possible legal disputes (e.g. about the definition of “capacity”),
2. Activity-based rules (ETS Phase 4) include *any* kind of production changes, so...
 - provide a closer alignment of allocation with firms’ actual economic activity,
 - are less complex and
 - provide an even stronger protection against carbon leakage, but
 - can require even higher administrative effort or threshold levels to limit administrative effort
 - set little or no incentives for change to less CO₂-intensive products
→ **climate policy gets more expensive in the long-run.**
- Therefore, with activity-based rules, it is even more important to tailor the free allocation to the sectors’ actual exposure to international competition.

Allocation Rules – General lessons learnt

- Allocation rules
 - need to be understandable for authorities, operators and verifiers
 - need to be enforceable
- Special rules and exceptions
 - increase complexity
 - potential to undermine the general rules
 - equal treatment challenged

Example: Germany 1st trading period: choice between grandfathering and benchmarking (“option rule”).
- The more generous rules for free allocation are, the more likely is the need to introduce a correction factor in order to meet the cap
- For Carbon Leakage: **try to focus on free allocations** for the sectors most at risk – and **work towards international co-ordination of free allocation**

Thank you for your attention!

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