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Allocation of allowances. Methods and approaches

Partnership for Market Readiness (PMR)
Technical Workshop: Domestic Emissions Trading (ETS)

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- **The contents of this presentation does not necessarily reflect any official position of Germany or the European Union.**

Allocation with an GHG ETS
Introduction

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- **Allocation: initial distribution of emission allowances**
- **For all GHG ETS allocation emerged as the key (political) debate**
- **Allocation is a distributional issue**
  - distributional issues drive policy making processes
  - the nature of distributional issues changes over time
- **Underlying motivations for different allocation approaches change over time**
- **Allocation can also have an impact on the efficiency of an ETS**
  - for multi-period schemes with updated allocation
  - for schemes with new entrant allocation
- **Allocation must reflect other design features (coverage, scope, permitting etc.)**

Allocation with an GHG ETS
General design options

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- **General allocation options**
  - free allocation
    - grandfathering (based on emissions)
    - benchmarking (based on activities)
  - auctions and sales
- **(Free) allocation to …**
  - incumbents
  - new entrants
- **Eligible entities for (free) allocation**
  - ETS-regulated entities
  - consumers (of regulated entities)
  - other entities

Allocation with an GHG ETS
Motivations for free allocation

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- **Buy-in of stakeholders (especially relevant for phase-in)**
- **Direct compensation**
  - for regulated entities
  - for downstream-affected entities (e.g. power consumers)
- **Rewarding early action (seems to be a key issue for phase-in)**
  - within a grandfathering approach (special provisions needed)?
  - preferentially with benchmarking approaches!
- **Balance between simplicity and suitability**
  - grandfathering based on emissions is easy but creates distortions (and the need for complementary provisions)
  - benchmarking requires (manageable) efforts but removes distortions and avoids the need for (some) complementary provisions

Allocation with an GHG ETS
Motivations for auctioning

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- **Non-distorted price signal**
  - direct auctioning
  - free allocation to non-ETS-regulated entities is an equivalent
- **Reflecting the ability for CO2 cost pass-through**
  - windfall profits
  - compensation where appropriate
  - the more upstream the less free allocation to regulated entities
  - regulatory framework (e.g. for energy policy)
- **Creating revenues**
  - for the general budget
  - for energy & climate policy activities
  - for direct compensation

Allocation approaches
Grandfathering (historic emissions)

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- **Allocation formula**

$$A = E \cdot AF$$

with

A	(Free) allocation
E	Emissions (base period/planned)
AF	Adjustment factor

- **Assessment**
  - simple
  - significant distributional problems
  - market transparency is a problem
  - major distortions of the carbon price signal
  - creates often a need for (some) complementary provisions (early action etc.)

Allocation approaches Benchmarking

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- **Allocation formula**

$$A = AR \cdot BM \cdot AF$$

with

A	(Free) allocation
AR	Activity rate (historic/standardized/planned)
BM	Benchmark
AF	Adjustment factor

- **Assessment**
  - more complex
  - distributional problems depend on benchmark design
  - market transparency could be a problem
  - distortions of the carbon price signal depend on benchmark design

Allocation approaches
Auctioning

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- **Allocation formula**

$$A = 0$$

with

A (Free) allocation

- **Assessment**
  - Easy, but not trivial
  - Least distortions of the carbon price signal
  - Perfect market transparency
  - Revenue spending as key challenge
  - An equivalent option: allocation to non-regulated entities (distribution companies, electricity consumers etc.)

Allocation – The pyramid of distortions and the efficiency of the scheme

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CO_2 price signal creates incentives for				Optimal level of		Optimal intensity for	
				demand/ product innovation	production	CO_2 (energy, fuel, other inputs)	Energy
Incentivized optimization is				System-wide		Plant-specific	
Distortion of CO_2 price signal = loss of economic efficiency = higher allowance prices in future				Comprehen-sive price signal. Least distortion	Price signal for optimal production at given demand	Price signal for optimal specific CO2 emissions at plant level	Price signal for optimal energy efficiency at plant level
Auctioning				X*	X	X	X
Free Allocation	No updating	Historic emissions		(X)	X	X	X
	Updating (incl. new entrant allocation)	Benchmarks based on	All parameters (products, technology, inputs and/or fuels)	(X)	X	X	X
			Capacity only	(X)	(X)	X	X
			Product-specific only	O	(X)	X	X
			Product- and technology-specific	O	O	(X)	X
			Product-, technology- and input-/fuel- specific	O	O	O	X
		Historic emissions		O	O	O	O

O - not ensured. X - ensured. (X) - ensured in general, but depends also from other factors. X* - ensured in general, if no carbon leakage can be assumed

(Efficiency) interactions between allocation and other design features

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- **Aspects for the impact of allocation on efficiency**
  - direct and indirect updating provisions must be reflected
    - direct updating (ex post-adjustments)
    - base period updating
    - new entrant allocation
  - to assess (dynamic) efficiency
    - in combination with the design of methods used for free allocation
    - depending on the ‘updating levers’ (e.g. length of trading periods, direct updating, base period adjustments)
    - new entrant allocation has the most significant potential for efficiency losses
  - Long-term aspects of allocation must be considered (investment decisions!)

Allowance allocation Experiences

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- **All schemes tend to less free allocation**
  - less free allocation in general – over time
  - less free allocation to regulated entities
  - market structures and ability to pass-through CO2 costs are key determinants and must be reflected
- **The allocation approaches converge**
  - pragmatic and appropriate benchmarking is possible (EU, CA)
- **Allocation innovations occurred**
  - allocation to non-regulated entities
  - direct (monetary) compensation as alternative to free allocation
- **Significant questions remain**
  - consequences from updating and ex post-adjustments

Questions for the panel

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- **What are the key design features on allocation, did these change over time?**
- **More important: why where these design features chosen?**
  - with respect to efficiency
  - with respect to (political) acceptance
  - with respect to the regulatory framework (e.g. for energy and competition policy)
- **What are the key lessons learned?**
- **What would be your recommendations to other jurisdictions, reflecting also the (potential) specific circumstances of your own jurisdiction?**
- **What ex-ante analysis should be undertaken primarily?**

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Thank you very much
非常感谢! 欢迎指教!

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Backup: Allocation in the EU ETS

EU ETS: Allocation was a key debate
Allocation history (1)

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- **Allocation emerged as the key debate on the EU ETS**
- **Allocation approaches changed significantly over time**
  - Phase 1: 2005-2007 (Pilot Phase)
    - decentralised definition of allocation provisions by the Member States (National Allocation Plans – NAP-1)
    - >95% free allocation, in most Member States primarily based on historic emissions
    - insignificant auctions
    - many updating features (new entrant allocation, plant closure provisions, ex post adjustments)
    - significant overallocation (based on data uncertainties, projection-based allocation and generous allocation provisions in general) – price collapse in 2006/2007

The EU Emissions Trading Scheme
Allocation history (2)

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- **Allocation approaches changed significantly over time (ctnd)**
  - Phase 2: 2008-2012 (Kyoto Phase)
    - decentralised definition of allocation provisions by the Member States (National Allocation Plans – NAP-2) but strong interventions by the European Commission
    - >90% free allocation, in many Member States partly transition to benchmarking, significantly less free allocation to the power sector (windfall profits from pass-trough of opportunity costs in the liberalised EU electricity market as the main driver)
    - significant auctions in some Member States
    - narrowed updating features (new entrant allocation, plant closure provisions)
    - significant scarcity – robust price since 2008

The EU Emissions Trading Scheme
Allocation motivations

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- **Interest in auctioning increased over time**
  - free allocation can distort the uniform price signal (and the cost-efficiency of the scheme) in an ETS with updating components (new entrant allocation, multi-period design, etc.)
  - free allocation generates significant windfall profits
  - robust large-scale auctions can be implemented
  - auction revenue spending can speed-up the transition process
- **Motivation of free allocation changed significantly over time**
  - Phase 1 and 2:
    - phase-in compensation
    - rewards for early action
  - Phase 3 and beyond:
    - avoiding leakage

Key innovation for Phase 3 and beyond
Fundamentally different allocation approach

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- **Free allocation is now mainly seen as a mechanism to deal with leakage concerns**
  - Immediate phase-out of free allocation for power generation
  - Gradual phase-out of free allocation for other sectors
  - Continued free allocation only for sectors with leakage concerns (definition was a ‘learning exercise’ again)
- **Benchmarking (ex ante allocation) as the main approach**
  - About 50 benchmarks only (as of today) – which is a success
  - Based on 10% best installations (as a general rule: 20% below the average)
  - Major debate with the ‘usual suspects’ (blast furnace gas allocation, clinker vs. cement allocation, new: heat flows between installations)
- **Recent experiences: Large-scale auctions perform very well**

EU ETS: CO2 cost pass-through as a key driver for auctioning in the power sector

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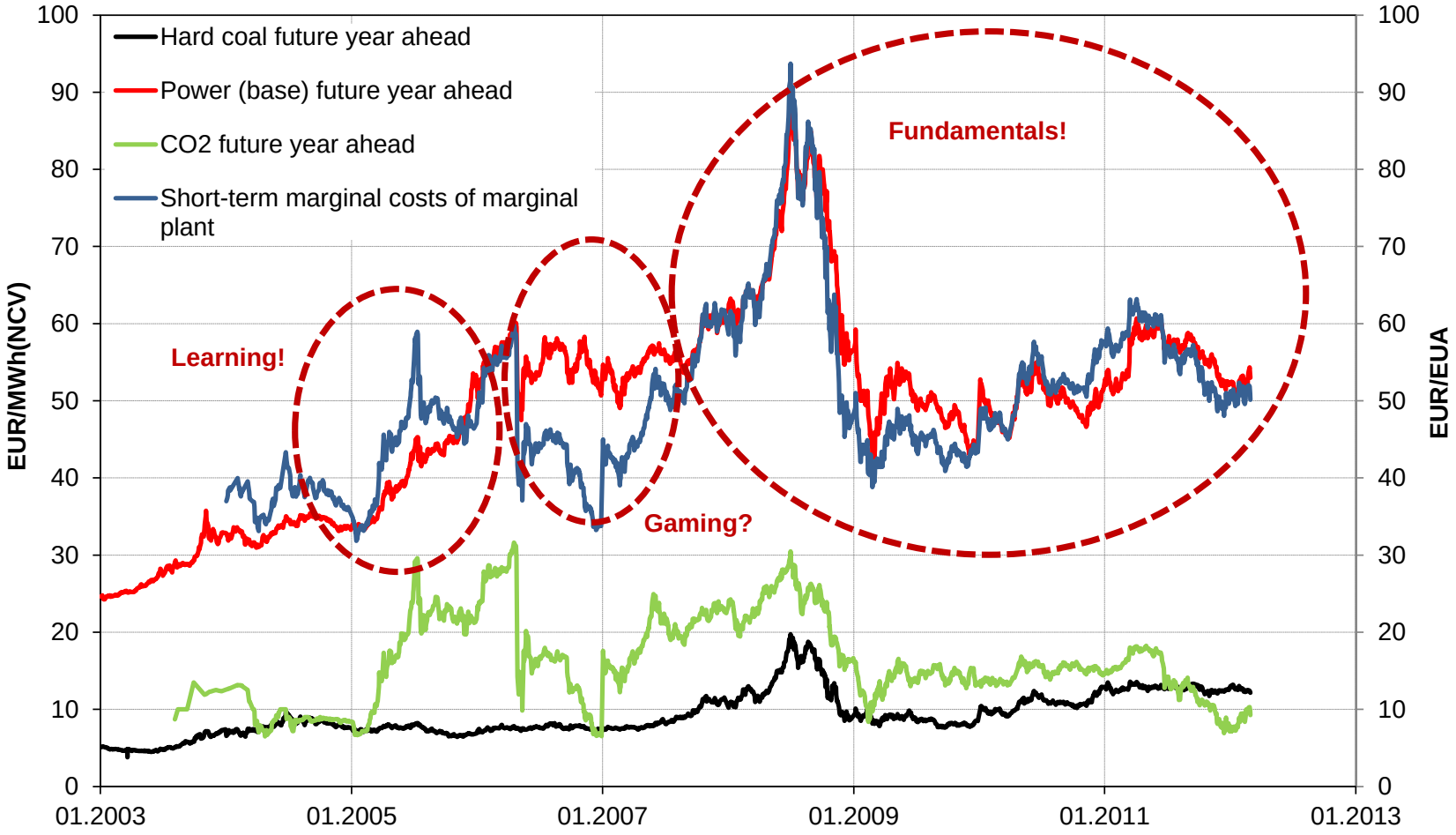

The EU Emissions Trading Scheme
Auctioning

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- **Auctioning in Phase 2 of the EU ETS**
  - Germany 8.8% 40 mln EUA/a
    (sales to the market in 2008 and 2009,
    weekly auctions since 2010)
  - UK 7% 17 mln EUA/a
  - The Netherlands 3.7% 3.2 mln EUA/a
  - Austria 1.3% 0.4 mln EUA/a
  - Ireland 0.5% 0.6 mln EUA/a
  - Hungary 2.0% 2.7 mln EUA/a
- **Total auctioning volume (in few Member States) related to total cap for Phase 2: ~3%**

Allocation under the EU ETS beyond 2012
Share of auctioning increases significantly

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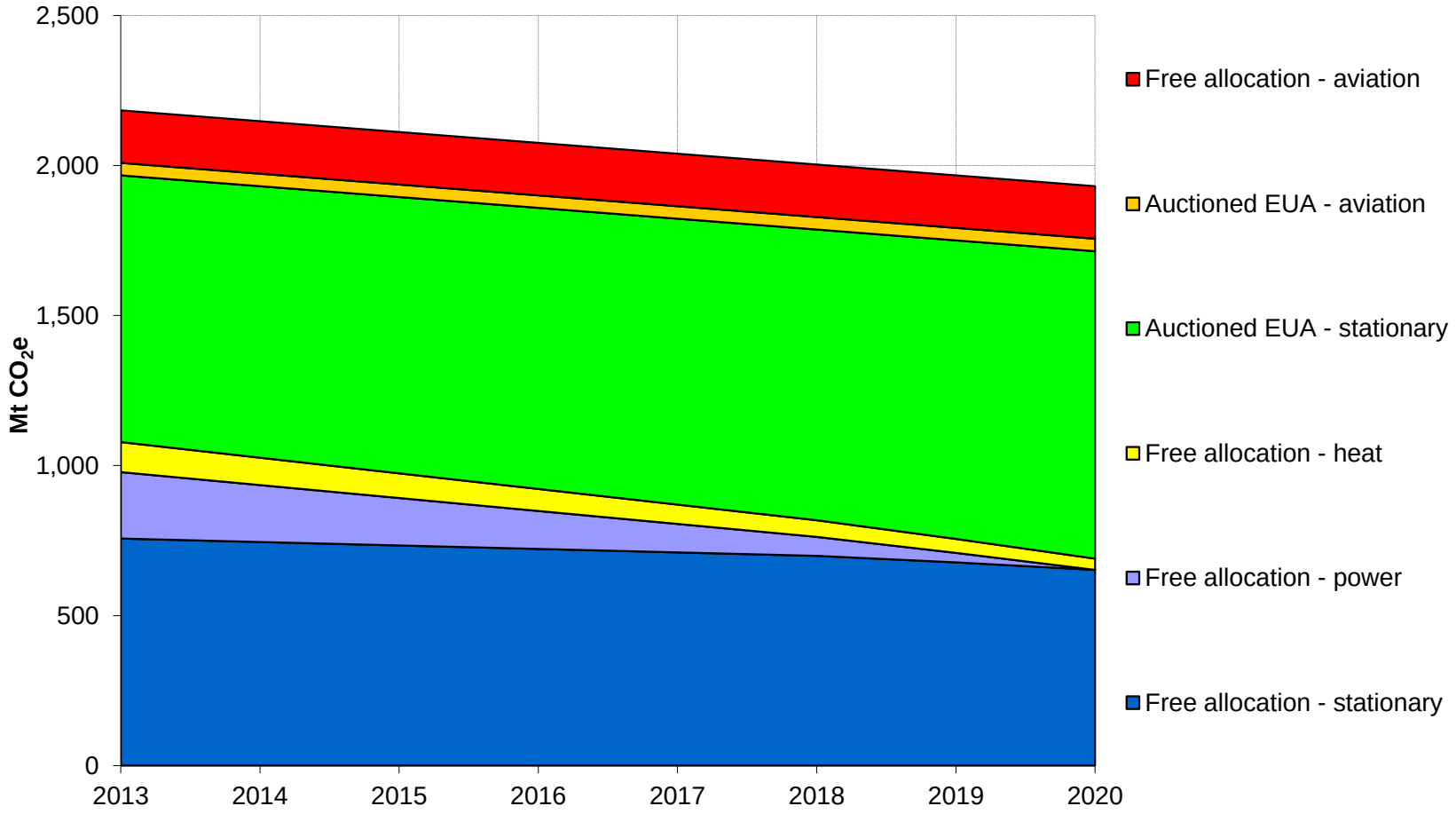

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EU ETS: Benchmarking is a feasible allocation approach for all sectors

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- **No longer free allocation based on historic emissions**
- **Results from the benchmarking exercise for the EU ETS**
  - 52 product benchmarks (based on 10% best)
    - coke 1
    - iron & steel 5
    - aluminum 2
    - cement & lime 7
    - glass 4
    - ceramics 6
    - pulp & paper 11
    - chemicals 15
    - refineries 1 (CWT, 64 sub-processes)
  - 1 heat benchmark, based on natural gas as fuel
  - 1 fuel benchmark, based on natural gas

The EU Emissions Trading Scheme
Benchmarking as new approach (1)

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- **Benchmarking is more than benchmarks**

$$A_{free} = A \cdot BM \cdot CLEF \cdot CSCF \cdot [LRF]$$

linear reduction factor (new entrants)

cross-sectoral correction factor (ensuring sub-cap for free allocation)

carbon leakage exposure factor 80% → 30% (2020) or 100%

benchmark (10% best installations)

activity: median of 2005-2008 or 2009-2010

The EU Emissions Trading Scheme
Benchmarking as new approach (2)

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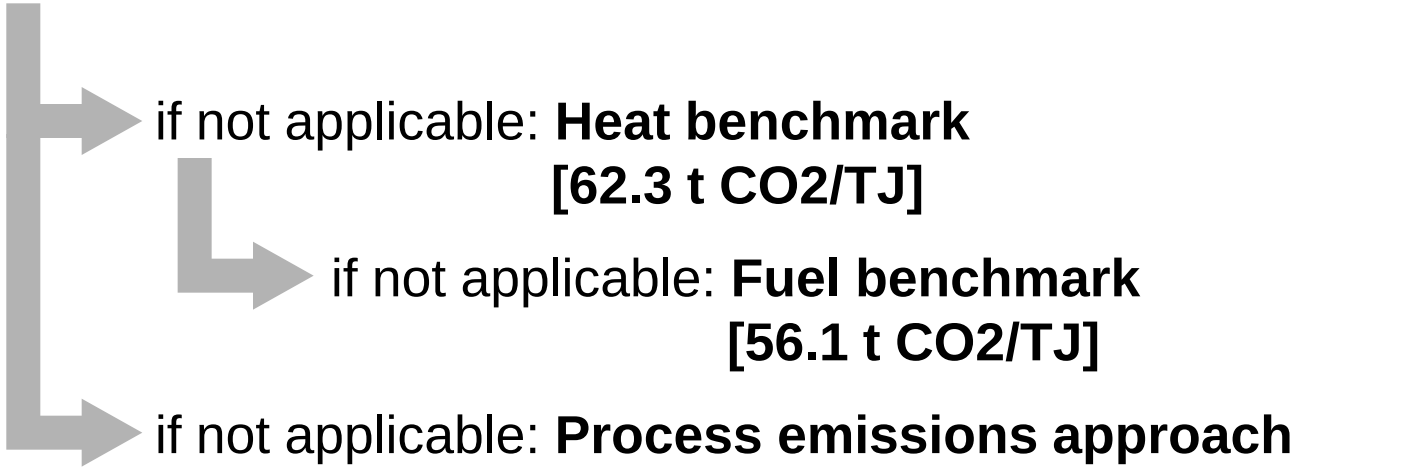
- **Product benchmarks [t CO2/t]** as the general principle



- **Avoiding double counting for cross-boundary heat flows: deduction of free allocation from net heat exporter**
- **Special provision for waste (e.g. blast furnace) gases: full allocation at point of production**

Preliminary assessment of benchmarks
Sectoral aggregates

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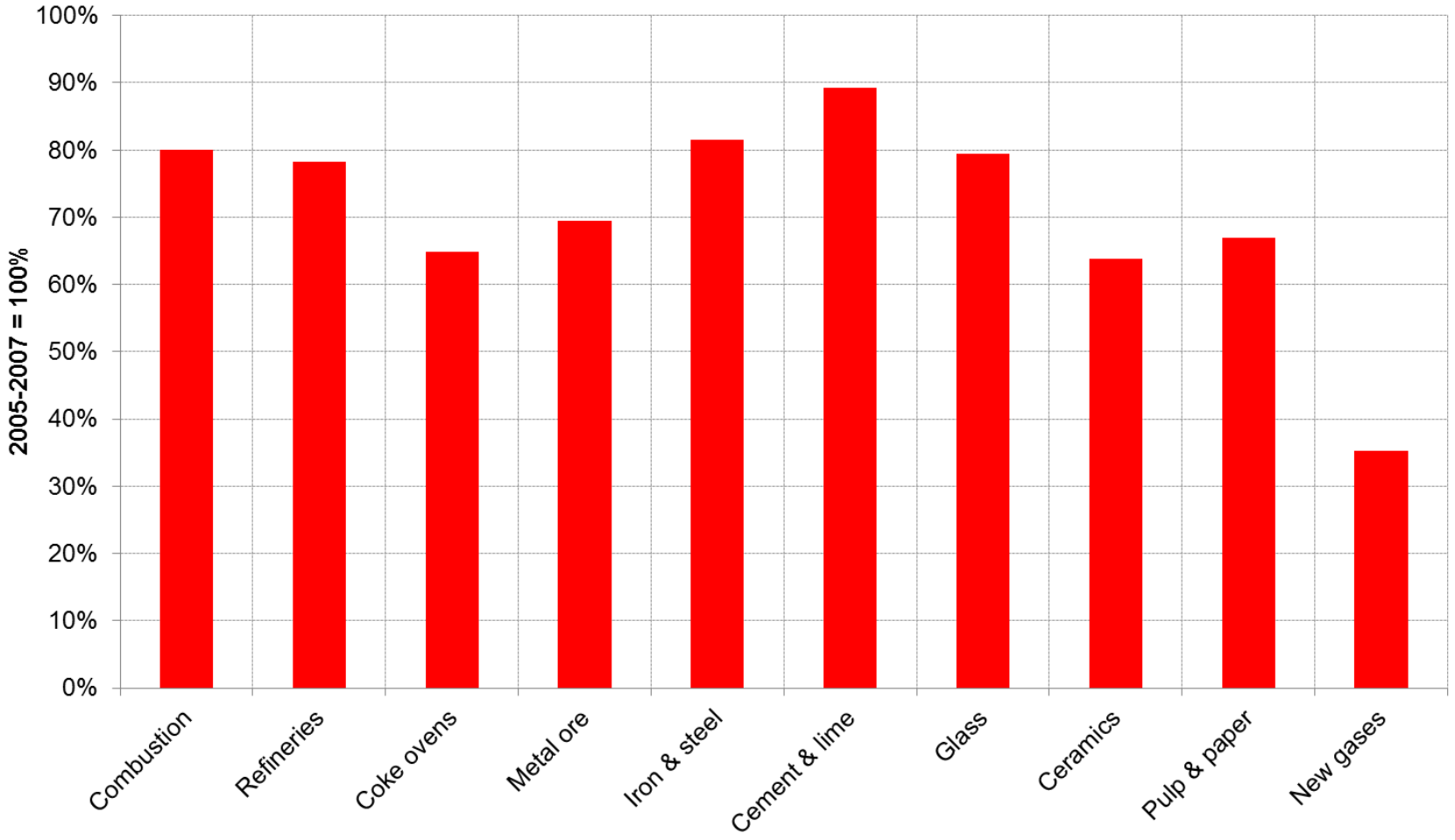

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