

Allocation of allowances. Methods and approaches 补贴分配方法

Partnership for Market Readiness (PMR)
Technical Workshop: Domestic Emissions Trading (ETS)
市场准备伙伴基金
技术专题研讨会：国内排放交易

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Shenzen / 深圳, 13 March 2012

- **The views and opinions presented in this paper are partly based on results from research commissioned by the German Federal Ministry for the Environment, Nature Protection and Reactor Safety, the German Federal Environment Agency and the European Commission.**

本文观点部分来自于根据德国联邦环境部、自然保护和反应堆安全部、德国联邦环保署及欧洲委员会委托所进行的研究结果。

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

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- **Allocation: initial distribution of emission allowances**分配：排放补贴的初始分配
- **For all GHG ETS allocation emerged as the key (political) debate**对于所有温室气体排放交易系统来说，分配是一个主要（政治）争论问题
- **Allocation is a distributional issue**补贴分配是一种分配性问题
 - distributional issues drive policy making processes分配性问题需要制定政策来解决
 - the nature of distributional issues changes over time分配性问题的本质随时间变化
- **Underlying motivations for different allocation approaches change over time**这表明不同分配方法的诱因随时间变化
- **Allocation can also have an impact on the efficiency of an ETS**补贴分配还会对排放交易的效率产生影响
 - for multi-period schemes with updated allocation经过更新的多期分配方案
 - for schemes with new entrant allocation有新伙伴加入的分配方案
- **Allocation must reflect other design features (coverage, scope, permitting etc.)**补贴分配必须反映其他设计特征（覆盖范围、领域及许可等方面）

- **General allocation options** 整体分配方案
 - free allocation 自由分配
 - grandfathering (based on emissions) 继承分配（根据排放量决定）
 - benchmarking (based on activities) 标准分配（根据减排量决定）
 - auctions and sales 拍卖和销售
- **(Free) allocation to ...** 自由分配给.....
 - Incumbents 原有伙伴
 - new entrants 新加入伙伴
- **Eligible entities for (free) allocation** 可参加（自由）分配的实体
 - ETS-regulated entities 国内排放交易受监管的实体
 - consumers (of regulated entities) （被监管实体的）消费者
 - other entities 其他实体

- **Buy-in of stakeholders (especially relevant for phase-in)** (尤其是与逐步引入相关的) 相关方买进
- **Direct compensation** 直接补偿
 - for regulated entities 给受监管实体
 - for downstream-affected entities (e.g. power consumers) 给受下游影响的实体 (如电力消费者)
- **Rewarding early action (seems to be a key issue for phase-in)** 根据早期排放进行分配 (似乎是逐渐引入这一体系的一个关键问题)
 - within a grandfathering approach (special provisions needed)? 采用继承法 (可能需要制定特别法规)
 - preferentially with benchmarking approaches! 更适合采用标准法!
- **Balance between simplicity and suitability** 简单性与适用性之间的平衡
 - grandfathering based on emissions is easy but creates distortions (and the need for complementary provisions) 根据排放量采用继承法比较简单, 但容易造成扭曲 (同时需制定补充规定)
 - benchmarking requires (manageable) efforts but removes distortions and avoids the need for (some) complementary provisions 采用标准法要求采取 (易实现的) 行动, 但可避免产生扭曲, 也不必制定 (一些) 补充规定

- **Non-distorted price signal** 未经扭曲的价格信号
 - direct auctioning 直接拍卖
 - free allocation to non-ETS-regulated entities is an equivalent 国内排放交易不受监管的实体之间的自由分配也具有同样效果
- **Reflecting the ability for CO2 cost pass-through** 反映二氧化碳成本的转嫁能力
 - windfall profits 额外利润
 - compensation where appropriate 进行适当补偿
 - the more upstream the less free allocation to regulated entities 越处于上游，受监管实体之间的自由分配就越少
 - regulatory framework (e.g. for energy policy) 监管框架（如能源政策）
- **Creating revenues** 创造收入
 - for the general budget 用于整体预算
 - for energy & climate policy activities 用于能源与气候政策减排
 - for direct compensation 用于直接补偿

Allocation approaches 分配法

Grandfathering (historic emissions) 继承法 (历史排放)

- **Allocation formula 分配公式**

$$A = E \cdot AF$$

with

A (Free) allocation (自由) 分配

E Emissions (base period/planned) 排放 (基本周期/规划)

AF Adjustment factor 调整因素

- **Assessment 评估**

- Simple 简单
- significant distributional problems 重大分配性问题
- market transparency is a problem 市场透明度问题
- major distortions of the carbon price signal 碳价格信号是否存在重大扭曲
- creates often a need for (some) complementary provisions (early action etc.) 往往需要制定 (一些) 补充规定 (早期行动等)

- **Allocation formula分配公式**

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

with

A (Free) allocation (自由) 分配

AR Activity rate (historic/standardized/planned) 减排率 (历史/标准化/规划)

BM Benchmark 标准

AF Adjustment factor 调整因素

- **Assessment评估**

- more complex更为复杂
- distributional problems depend on benchmark design分配性问题取决于标准设计
- market transparency could be a problem存在市场透明度问题
- distortions of the carbon price signal depend on benchmark design标准设计会产生碳价格信号扭曲

- **Allocation formula 分配公式**

$$A = 0$$

with

A (Free) allocation (自由) 分配

- **Assessment 评估**

- Easy, but not trivial 容易但并非微不足道
- Least distortions of the carbon price signal 碳价格信号的扭曲度最小
- Perfect market transparency 市场透明度最高
- Revenue spending as key challenge 收入的支出是关键问题
- An equivalent option: allocation to non-regulated entities (distribution companies, electricity consumers etc.) 另一种选择：在非受监管实体之间进行分配（输配电公司、电力消费者等）

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

分配——扭曲金字塔及方案效能



			Optimal level 最佳水平		Optimal intensity 最佳强度	
			Demand 需求/ product 产品 Innovation 创新	Production 生产	CO ₂ 二氧化碳 (energy, fuel, 能源 other inputs) 燃料	Energy 能源
CO ₂ price signal creates incentives for 二氧化碳价格信号形成激励						
Incentivized optimization is 激励优化包括			System-wide 系统范围		Plant-specific 全厂范围	
Distortion of CO ₂ price signal 二氧化碳价格信号扭曲 = loss of economic efficiency 经济效益损失 = higher allowance prices in future 未来更高的补贴价格			Comprehensive price signal least distortion 整体价格信号 最小扭曲	Price signal for optimal production at given demand 需求量最佳生产 价格信号	Price signal for optimal specific CO ₂ emissions at 全厂二氧化碳最佳 排放价格信号	Price signal for optimal energy efficiency at 全厂最佳能效 价格信号
Auctioning 拍卖			X*	X	X	X
Free Allocation 自由拍卖 www.oeko.de	No updating 无更新	Historic emissions 历史排放		X	X	X
		Benchmarks based on 标准基于	All parameters (products, technology inputs and/o 所有参数 (产品、技术输入和/或燃料),		X	X
	Capacity only 能力				X	X
	Product-specific only 产品		o		X	X
	Product- and technology-specific 产品和技术		o	o		X
	Updating 更新 (incl. new entrant allocation) 包括新加入伙伴补贴分配	Product-, technology-and input/fuel-specific 产品-技术和输入/燃料	o	o	o	X
Historic emissions 历史排放		o	o	o	o	

o - not ensured 不确保. X – ensured 确保. (X) - ensured in general, but depends also from other factors 整体确保, 同时取决于其他因素

X* - ensured in general, if no carbon leakage can be assumed 整体确保, 前提是无碳泄漏

- **Aspects for the impact of allocation on efficiency** 补贴分配对效能产生的影响
 - direct and indirect updating provisions must be reflected 必须反映直接和间接更新的相关规定
 - direct updating (ex post-adjustments) 直接更新（如以往进行的政策调整）
 - base period updating 基本周期更新
 - new entrant allocation 新加入伙伴的补贴分配
 - to assess (dynamic) efficiency 评估（动态）效能
 - in combination with the design of methods used for free allocation 与自由分配法的设计结合进行
 - depending on the ‘updating levers’ (e.g. length of trading periods, direct updating, base period adjustments) 取决于“更新手段”（如交易期限、直接更新、基本周期调整）
 - new entrant allocation has the most significant potential for efficiency losses 新伙伴加入后的补贴分配可导致最大的效能损失
 - Long-term aspects of allocation must be considered (investment decisions!) 必须考虑分配的长期性问题（投资决策！）

- **All schemes tend to less free allocation** 所有方案倾向于支持更少进行自由分配
 - less free allocation in general – over time 随时间变化自由分配整体下降
 - less free allocation to regulated entities 减少受监管实体之间的自由分配
 - market structures and ability to pass-through CO₂ costs are key determinants and must be reflected 对二氧化碳成本进行转嫁的市场结构和能力是决定性因素，必须加以反映
- **The allocation approaches converge** 分配法的覆盖范围
 - pragmatic and appropriate benchmarking is possible (EU, CA) 实用且适当的标准法可能会被采用（欧盟、美国加利福尼亚）
- **Allocation innovations occurred** 分配创新
 - allocation to non-regulated entities 在非受监管实体之间进行分配
 - direct (monetary) compensation as alternative to free allocation 直接（货币）补偿可取代自由分配
- **Significant questions remain** 存在的重大问题
 - consequences from updating and ex post-adjustments 更新及以往进行的政策调整产生的后果

- **What are the key design features on allocation, did these change over time?** 补贴分配包括哪些关键设计特征？这些特征是否随时间改变？
- **More important: why where these design features chosen?** 更为重要的是：为何选择这些设计特征？
 - with respect to efficiency 为了实现效能
 - with respect to (political) acceptance 为了（政治上）接受度
 - with respect to the regulatory framework (e.g. for energy and competition policy) 受监管框架（如能源和竞争政策）
 - What are the key lessons learned? 获得了哪些重要经验？
- **What would be your recommendations to other jurisdictions, reflecting also the (potential) specific circumstances of your own jurisdiction?** 是否可对其他辖区提出能够反映本辖区（潜在）具体状况的建议？
- **What ex-ante analysis should be undertaken primarily?** 首先应当进行哪些事前分析？

Thank you very much
非常感谢! 欢迎指教!

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Backup: Allocation in the EU ETS

背景材料：欧盟国内排放交易补贴的分配

- **Allocation emerged as the key debate on the EU ETS 欧盟排放交易系统中，曾对分配问题进行过重大讨论**
- **Allocation approaches changed significantly over time 分配法随时间发生重大改变**
 - **Phase 1: 2005-2007 (Pilot Phase) 第一阶段：2005-2007年（试行期）**
 - **decentralised definition of allocation provisions by the Member States (National Allocation Plans – NAP-1) 欧盟成员国关于分配规定方面存在分歧（《国家分配计划》——NAP-1）**
 - **>95% free allocation, in most Member States primarily based on historic emissions 超过95%属于自由分配，多数成员国之间根据历史排放进行分配**
 - **insignificant auctions 拍卖较少**
 - **many updating features (new entrant allocation, plant closure provisions, ex post adjustments) 进行过多次更新（新加入伙伴分配、工厂关闭规定、以往进行的政策调整）**
 - **significant overallocation (based on data uncertainties, projection-based allocation and generous allocation provisions in general) – price collapse in 2006/2007 存在过度分配问题（原因包括数据不确定性，根据预测进行分配，分配规定整体过于宽松等），2006至2007年间发生价格崩溃**

Allocation history (2) 分配历史 (2)

- **Allocation approaches changed significantly over time (ctnd) 分配法随时间发生重大改变 (续)**
 - **Phase 2: 2008-2012 (Kyoto Phase) 第二阶段: 2008-2012年 (《京都议定书》阶段)**
 - decentralised definition of allocation provisions by the Member States (National Allocation Plans – NAP-2) but strong interventions by the European Commission 欧盟成员国关于分配规定方面存在分歧 (《国家分配计划》——NAP-2),
 - >90% free allocation, in many Member States partly transition to benchmarking, significantly less free allocation to the power sector (windfall profits from pass-through of opportunity costs in the liberalised EU electricity market as the main driver) 超过90%属于自由分配, 多数成员国部分过渡到标准分配阶段, 对电力部门的自由分配非常少 (欧盟电力市场开放后机会成本转嫁产生的额外利润是主要驱动力)
 - significant auctions in some Member States 一些成员国之间进行了大量拍卖
 - narrowed updating features (new entrant allocation, plant closure provisions) 更新特征减少 (新加入伙伴分配、工厂关闭规定)
 - significant scarcity – robust price since 2008 非常稀少——2008年后价格上涨过快

- **Interest in auctioning increased over time 随时间增长的拍卖兴趣**
 - 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.) 在国内排放交易系统内，由于新元素（新加入伙伴分配、多期设计等）的出现，自由分配将扭曲统一的价格信号（以及系统的成本效益）
 - free allocation generates significant windfall profits 自由分配产生大量的额外利润
 - robust large-scale auctions can be implemented 可进行大规模和活跃的拍卖活动
 - auction revenue spending can speed-up the transition process 拍卖收入用于支出可加快交易过程
- **Motivation of free allocation changed significantly over time 自由分配的诱因随时间发生重大改变**
 - Phase 1 and 2 第一和第二阶段：
 - phase-in compensation 逐步引入阶段的补偿
 - rewards for early action 早期减排奖励
 - Phase 3 and beyond 第三阶段及未来：
 - avoiding leakage 避免漏损

- **Free allocation is now mainly seen as a mechanism to deal with leakage concerns** 自由分配如今被视为是一种漏损预防机制
 - Immediate phase-out of free allocation for power generation 在发电部门立即停止自由分配
 - Gradual phase-out of free allocation for other sectors 在其他部门逐渐淘汰自由分配制度
 - Continued free allocation only for sectors with leakage concerns (definition was a 'learning exercise' again) 只在存在漏损危险的部门继续实行自由分配（同样，定义是一种“学习过程”）
- **Benchmarking (ex ante allocation) as the main approach** 标准分配（事前分配）是主要方法
 - About 50 benchmarks only (as of today) – which is a success (到目前为止) 只有约50种标准——这是此方法可行的表现
 - Based on 10% best installations (as a general rule: 20% below the average) 基于10%最佳装置（通常情况：20%为平均水平以下）
 - Major debate with the 'usual suspects' (blast furnace gas allocation, clinker vs. cement allocation, new: heat flows between installations) （鼓风炉煤气补贴分配，炉渣/水泥补贴分配，新：不同装置间的热量流动）
- **Recent experiences: Large-scale auctions perform very well** 最新经验：大规模拍卖非常成功

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

欧盟排放交易系统：二氧化碳成本转嫁是电力部门进行拍卖的主要驱动力

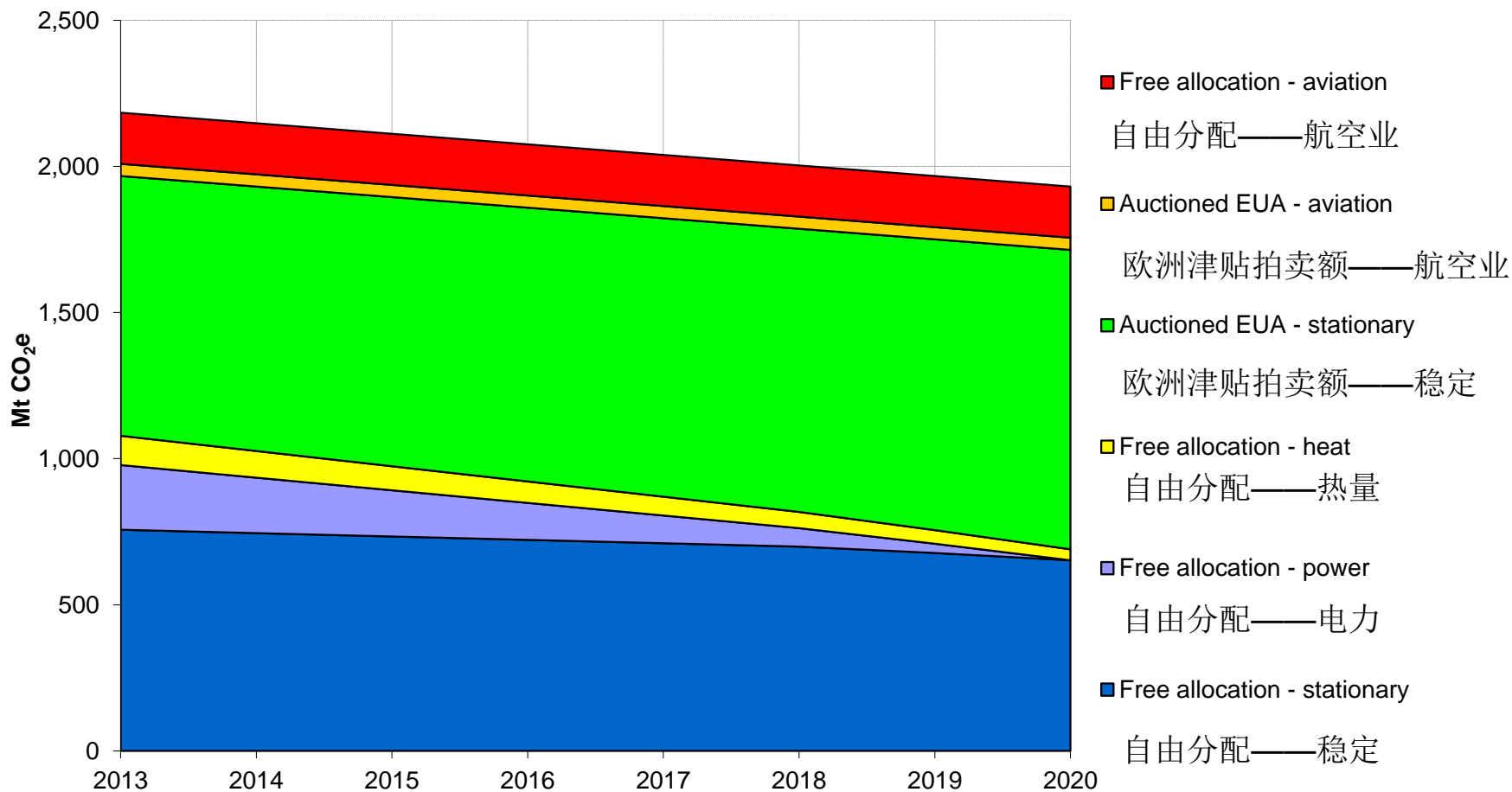


- **Auctioning in Phase 2 of the EU ETS 欧盟排放交易系统第二阶段的拍卖活动**
 - Germany 德国 8.8% 40 mln EUA/a (4000万津贴/年)
(sales to the market in 2008 and 2009, weekly auctions since 2010)
 - (2008-2009年进行市场销售, 2010年开始每周进行拍卖)
 - UK 英国 7% 17 mln EUA/a (1700万津贴/年)
 - The Netherlands 荷兰 3.7% 3.2 mln EUA/a (320万津贴/年)
 - Austria 奥地利 1.3% 0.4 mln EUA/a (40万津贴/年)
 - Ireland 爱尔兰 0.5% 0.6 mln EUA/a (60万津贴/年)
 - Hungary 匈牙利 2.0% 2.7 mln EUA/a (270万津贴/年)
- **Total auctioning volume (in few Member States) related to total cap for Phase 2: ~3%** (在少数成员国之内) 拍卖总额与第二阶段总量限制措施相关

Allocation under the EU ETS beyond 2012

2012年之后欧盟排放交易系统的补贴分配方案

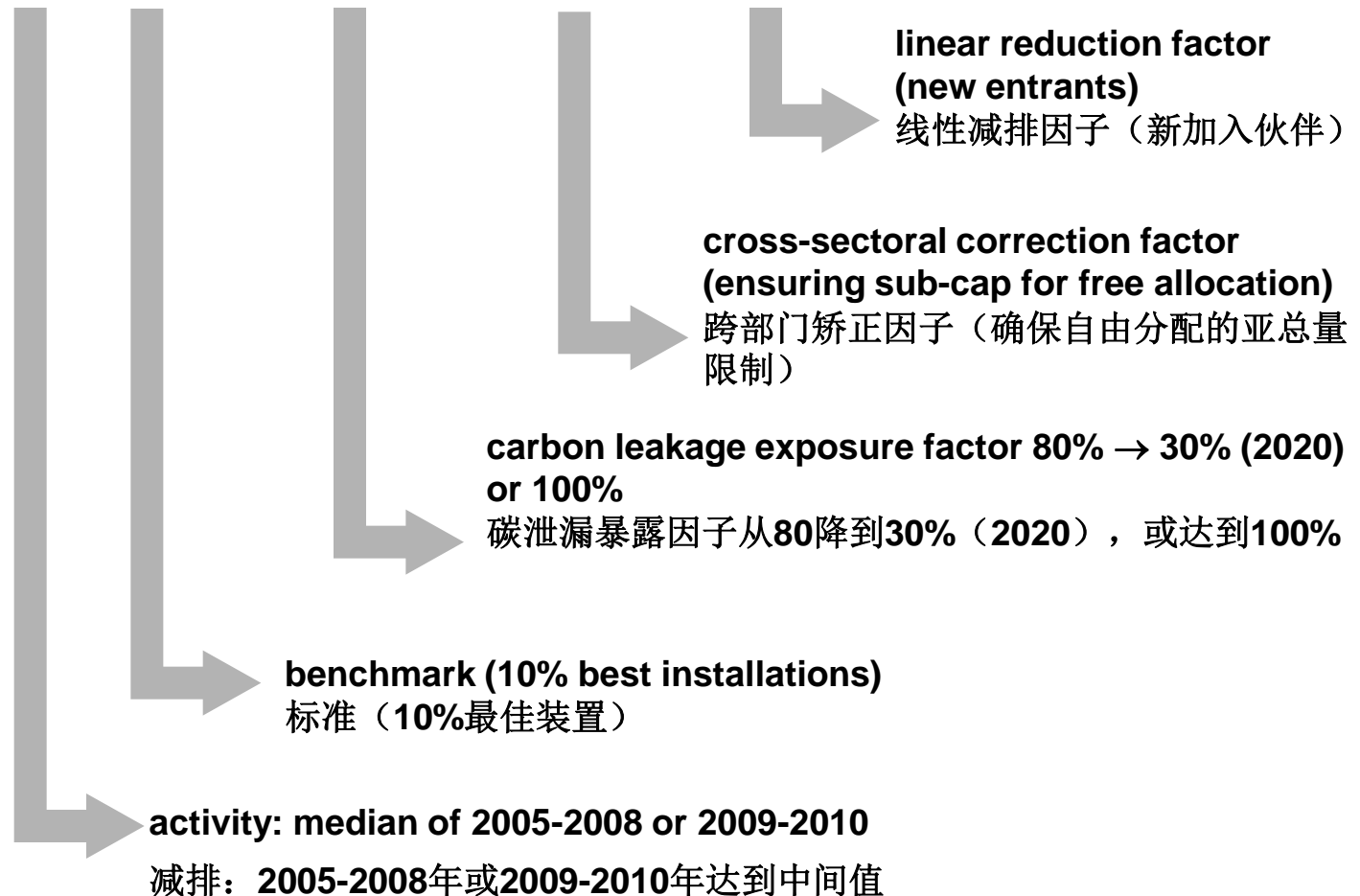
Share of auctioning increases significantly 拍卖所占比例大幅增长



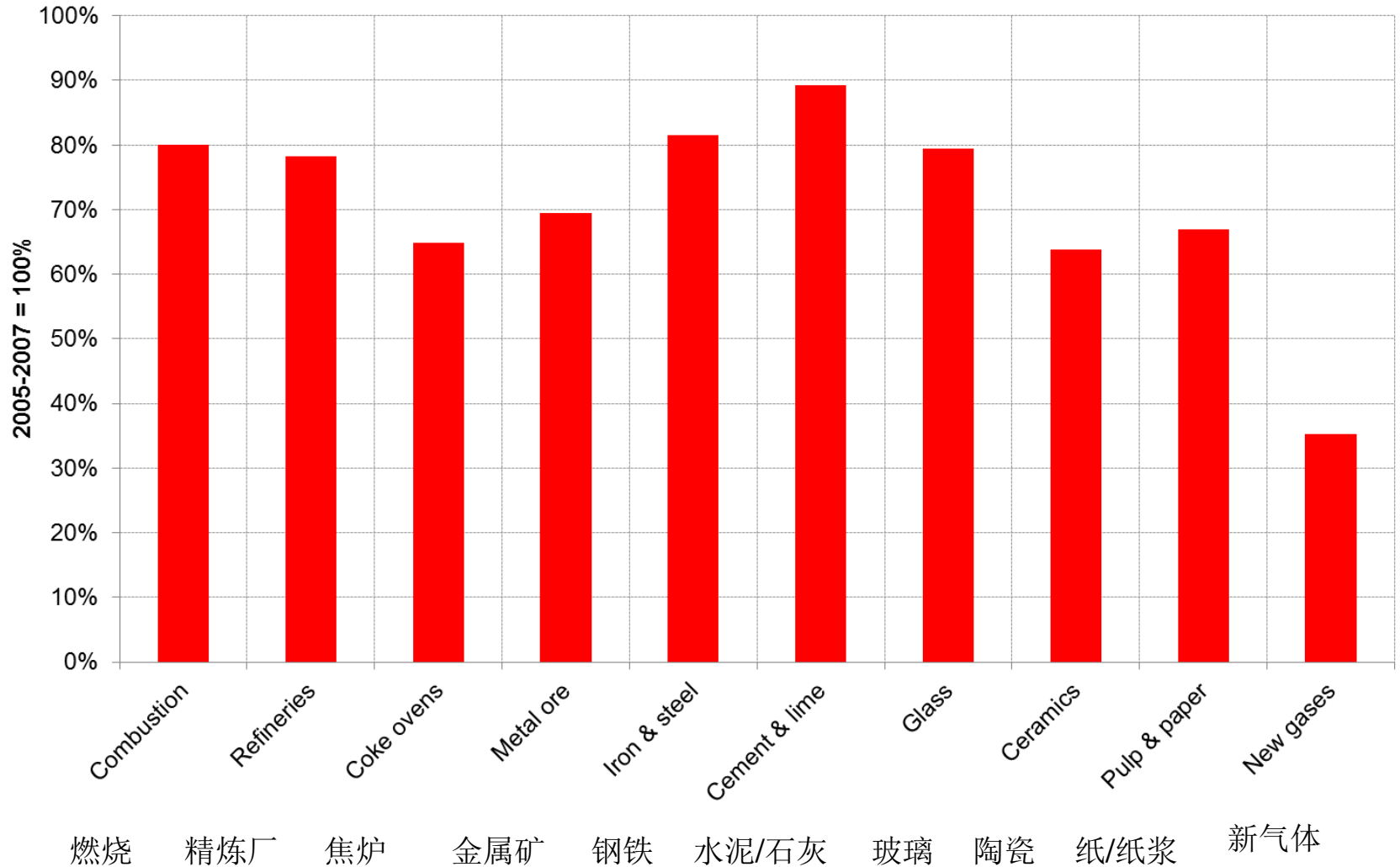
- **No longer free allocation based on historic emissions** 不再根据历史排放进行自由分配
- **Results from the benchmarking exercise for the EU ETS** 欧盟排放交易系统的标准分配结果
 - 52 product benchmarks (based on 10% best) 有52种产品标准（基于10%最佳装置）
 - Coke 焦煤 1
 - Iron & steel 钢铁 5
 - Aluminum 铝 2
 - Cement & lime 水泥和石灰 7
 - Glass 玻璃 4
 - Ceramics 陶瓷 6
 - Pulp & paper 纸和纸浆 11
 - Chemicals 化学品 15
 - Refineries 精炼厂 1 (CWT, 64 sub-processes 包括64步子工艺)
 - 1 heat benchmark, based on natural gas as fuel 一种热量标准，以天然气作为燃料
 - 1 fuel benchmark, based on natural gas 一种燃料标准，以天然气为基础

- Benchmarking is more than benchmarks 标准分配不仅包括树立标准

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



- **Product benchmarks [t CO₂/t] as the general principle 将产品标准 [tCO₂/t] 作为整体原则**
 - if not applicable: **Heat benchmark 如不适用可采用：热量标准 [62.3 t CO₂/TJ]**
 - if not applicable: **Fuel benchmark 如不适用可采用：燃料标准 [56.1 t CO₂/TJ]**
 - if not applicable: **Process emissions approach 如不适用可采用：工艺排放法 97% of historic emissions [t CO₂] 历史排放的97%**
- **Avoiding double counting for cross-boundary heat flows: deduction of free allocation from net heat exporter 避免重复计算跨界热量流动：降低对净热量出口商的自由分配量**
- **Special provision for waste (e.g. blast furnace) gases: full allocation at point of production 关于废气（如鼓风机产生的废气）的特别规定：在生产点进行完全分配**



燃烧 精炼厂 焦炉 金属矿 钢铁 水泥/石灰 玻璃 陶瓷 纸/纸浆 新气体