

China-Australia Carbon Market Design Expert Workshop
 Allocation Approaches and lessons learnt so far
 12 October 2013, Beijing

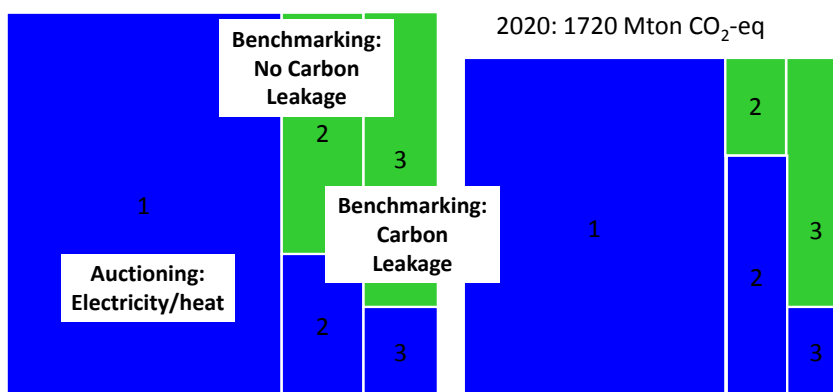
Lessons learnt from Benchmarking in Europe

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2013: 1974 Mton CO₂-eq

2020: 1720 Mton CO₂-eq



Benchmarking is a complex issue

My sector produces over a million products

I need a correction for my type of raw material

I can't use this technology in my plant

Benchmarking Principles
Benchmarking Structure (product groups....)
Benchmarking Values
Data Verification

Approach should be reasonable, keep incentives to reduce emissions within the system and should not be unnecessary complex

„The Bible“ – BM Principles

- 1: ~~Base the benchmark level on the most energy efficient technology~~ 10% Best
- 2: Do not use technology-specific benchmarks for technologies producing the same product
- 3: Do not differentiate between existing and new plants
- 4: Do not apply corrections for plant age, plant size, raw material quality and climatic circumstances
- 5: Only use separate benchmarks for different products if verifiable production data is available based on unambiguous and justifiable product classifications
- 6: Use separate benchmarks for intermediate products if these products are traded between installations
- 7: Do not use fuel-specific benchmarks for individual installations or for installations in specific countries
- 8: Take technology-specific fuel choices into account in determining benchmarks
- 9: Use historical production to allocate allowances for existing installations
- 10: Use product-specific capacity utilization rates in combination with verifiable capacity data to allocate allowances to new installations
- 11: Use heat production benchmark combined with a generic efficiency improvement factor for heat consumption in processes where no output-based benchmark is developed

BM Hierarchy

	Fuel mix choice	Combustion process efficiency	Heat end-use efficiency
1 Product benchmark	Included	Included	Included
2 Heat production benchmark	Included	Included	Not included
3 Fuel mix benchmark	Included	Not included	Not included
4 Process BM	Not included	Not included	Not included



Criteria to determine the number of products to distinguish within a sector

- Difference in emission intensity (grouping of products with similar emission intensities)
- Share of a product in emissions of a sector
- Share of a product in the total EU ETS emissions
- Number of installations



The 80%/20% rule for sector coverage

Example: Chemical Sector

No.	Product / process	Process and steam emissions [Mt CO ₂ -equivalents]	Share	Cumulative share
1	Nitric Acid	41 ⁴	21.6%	21.6%
2	Cracker products (HVC)	35	18.4%	40.0%
3	Ammonia	30	15.8%	55.8%
4	Adipic acid	13 ⁴	6.8%	62.6%
5	Hydrogen / Syngas (incl. Methanol) ¹	12.6	6.6%	69.3%
6	Soda ash	10	5.3%	74.5%
7	Aromatics (BTX)	6.6	3.5%	78.0%
8	Carbon black	4.6	2.4%	80.4%
9	Ethylene dichloride / Vinyl chloride / PVC	4	2.1%	82.5%
10	Ethylbenzene / Styrene	3.6	1.9%	84.4%
11	Ethylene oxide / Monoethylene glycol	3.6	1.9%	86.3%
12	Cumene / phenol / acetone	1.2	0.6%	86.9%
13	Glyoxal / glyoxylic acid ²	0.4 ⁴	0.2%	87.2%

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BM products (1)

Product group	Nb Instal-lations	Emissions 2007	Bench-marks	Fallbacks Mt/Inst.
Iron/Steel	~ 300	253	4/5	3 11Mt/1140
Chemicals	> 400	170	9/13	>20? 3Mt/?
Klinker	268	158	1	0
Refineries	137	154	"1" (CWT)	0
Pulp/Paper	844+82	28/41	10	1 ?Mt/300
Lime	210	32	2	1 1.5Mt/?

Heavy Weights: 810 Mt/27-32 BM

 **Fraunhofer**
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Note:
This list evolved further over time!

BM products (2)

Product group	Nb Installations	Emissions 2007	Nb Benchmarks	Nb Fall-backs/Mt/Inst.
Ceramics	2000	27	6/12	1 <2.5Mt/?
Aluminium	69	14	4	1 1Mt/16
Glass	> 310	19	3/10	2/ 3Mt/>63
Non-ferrous	40	4	0	5 4 Mt/40
Mineral wool	67	2-3	1	0
Gypsum	~ 50	~ 1	4	0

Light Weights: 68 Mt/18-31 BM



Note:

This list evolved further over time!

European Commission's 2011 'Benchmarking Decision'

COMMISSION DECISION

of 27 April 2011

determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council

(notified under document C(2011) 2772)

(2011/278/EU)

L 130/19

Article 6

Division into sub-installations

1. For the purposes of this Decision, Member States shall divide each installation eligible for the free allocation of emission allowances under Article 10a of Directive 2003/87/EC into one or more of the following sub-installations, as required:

- (a) a product benchmark sub-installation;
- (b) a heat benchmark sub-installation;
- (c) a fuel benchmark sub-installation;
- (d) a process emissions sub-installation.

Sub-installations shall correspond, to the extent possible, to physical parts of the installation.

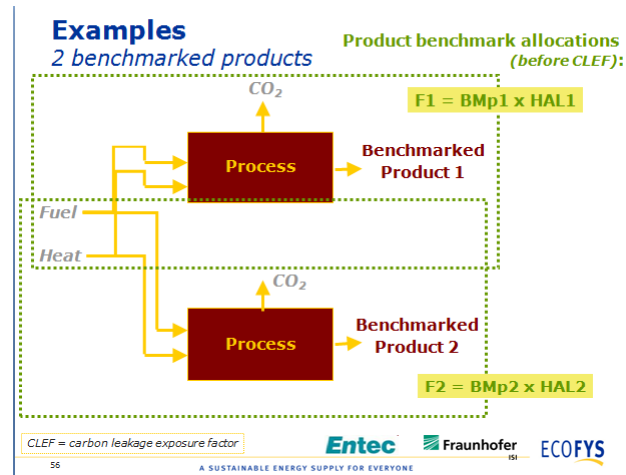


PRODUCT BENCHMARKS

1. Definition of product benchmarks and system boundaries without consideration of exchangeability of fuel and electricity

Product benchmark	Definition of products covered	Definition of process and emissions covered (system boundaries)	Carbon leakage exposure as determined by Decision 2011/278/EU for the years 2013 and 2014	Benchmark value (allowances)
Coke	Coke-oven coke obtained from the carbonisation of coking coal, at high temperature or gas-works coke by-product of gas-works plants; expressed as tons of dry coke. Lignite coke is not covered by this benchmark.	All processes directly or indirectly linked to the process units: coke oven, H ₂ S/OH, incineration, coal preheating (drying), coke gas extractor, dust-planturization unit, distillation unit, steam generation plant, pressure control in incineration, biological water treatment, miscellaneous heating of by-products and hydrogen separator unit included. Coke oven gas cleaning is included.	yes	0,218
Ironed ore	Agglomerated iron-bearing product containing iron ore fines, fluxes and iron containing recycling materials with the chemical and physical properties such as the level of basicity, mechanical strength and permeability, measured by...	All processes directly or indirectly linked to the process units: sinter strand, sinter, feedstock preparation unit, hot screening unit, sinter cooling unit, cold screening unit and steam generation unit are included.	yes	0,171

Division into Sub-Installations



Learning processes!....

Training of companies and authorities

Lessons

- Define „the bible“ (BM principles)
- Keep it simple (but not overly simple....)!
- Defend the bible as much as you can
- 80%/20 principle



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