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Institut für angewandte Ökologie
Institute for Applied Ecology

Fraunhofer ISI

ECOFYS

This presentation reflects the views of the consultants and not the position of the European Commission

Figures in this presentation may be subject to change

Benchmarking als Methode der Zuteilung von Zertifikaten

Wolfgang Eichhammer (Ecofys)
also on behalf of Ecofys and Oeko Institute

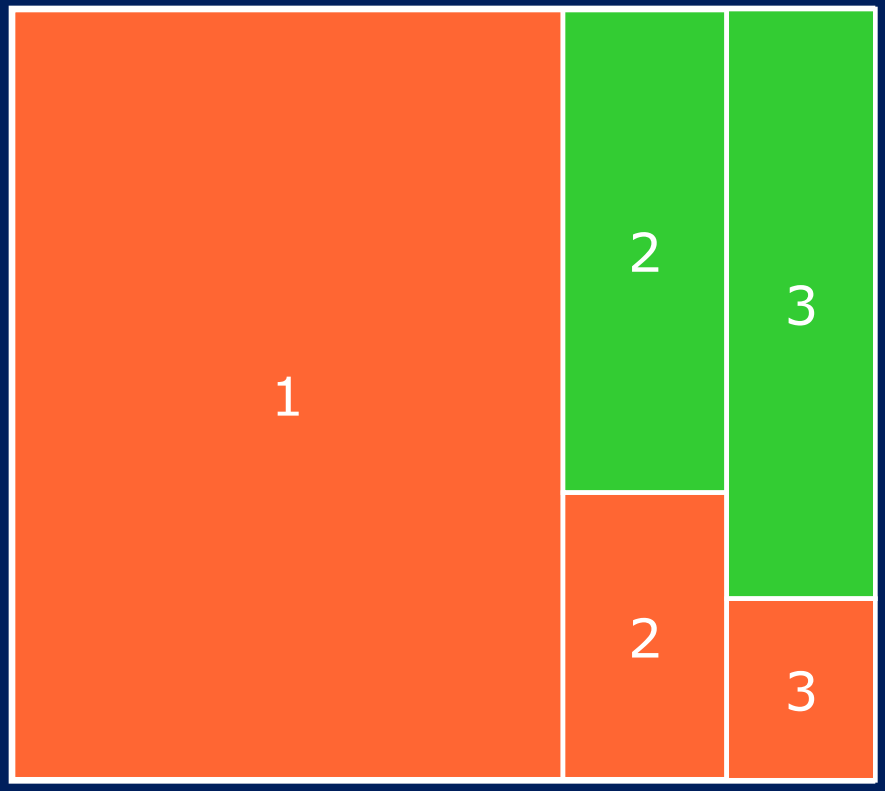
Europäischer Emissionshandel und
globale Klimapolitik:
Was kommt auf die österreichische Wirtschaft zu?

12 October 2009, Wien

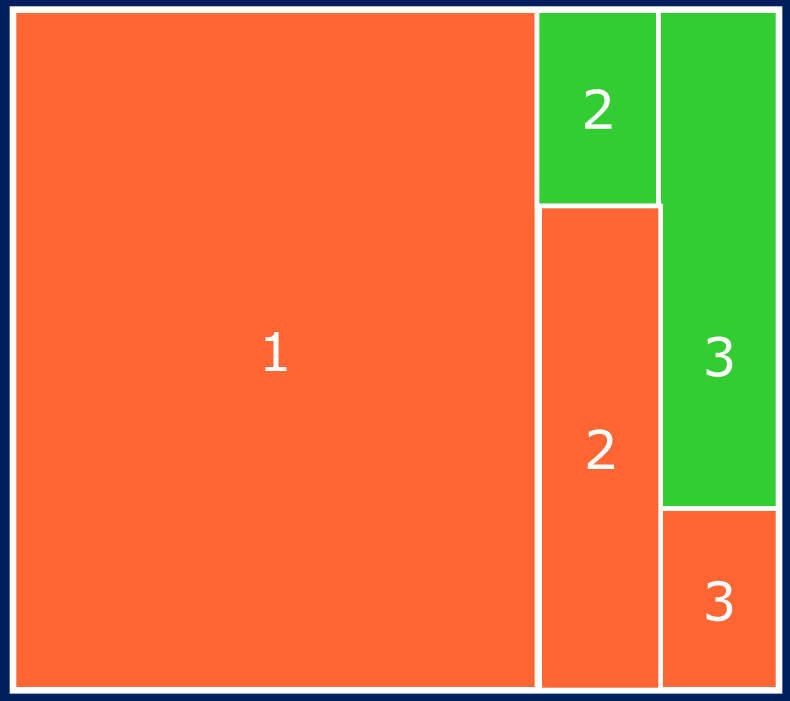
Content

1. Background / process
2. Development of harmonised Benchmarking methodologies
3. Overview of Benchmarks developed so far
4. BMs versus Fall-back approaches
5. Further issues in the harmonised Benchmarking methodology
6. Final remarks

2013: 1974 Mton CO_2-eq



2020: 1720 Mton CO_2-eq



This presentation is on how the green blocks will be determined

Free allocation – based on benchmarks

Free allocation based on Community-wide ex-ante benchmarks

- To ensure incentives for reductions in greenhouse gas emissions
- In principle for products rather than for inputs to maximise emission reduction throughout the production chain
- 10% most efficient installations in the Community as starting points

Timing – key dates

10 / 2009	Study by consortium of consultants ready (Ecofys lead consultant)
11-12 / 2009	Public consultation
06 / 2010	Commission proposal for allocation rules ready
12 / 2010	Adoption of rules
06 / 2010	MS start to apply rules (data collection)
12 / 2011	Allocation per installation determined

How will the benchmarks look like

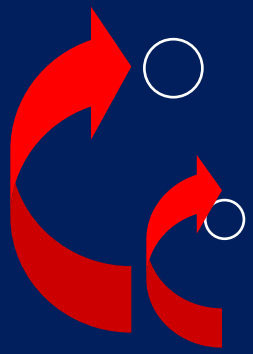
- What is presented here is what consortium of consultants currently intends to propose to EC
- Outcome of the political process (between now and June 2010) difficult to predict

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

Some key issues

1. Which sectors to benchmark and how many product groups to distinguish
2. What to do if benchmarking is not feasible
3. How to determine the average of the 10% most efficient installations
4. Cross-boundary heat flows

And many others …

(which activity data, substitutability between electricity and fuels, new entrant rules and benchmarking, …)

Key principles

Only one benchmark for one product group

- But how many product groups to distinguish ?
- And what is a 'product group' ?

Average of the 10% most efficient installations starting point in determining benchmark levels

- As prescribed in the directive
- But how to determine the most efficient 10%

Only one benchmark for one product

No technology-specific benchmarks for processes producing the same product

No corrections for plant size, age, raw material quality and climatic circumstances

No fuel-specific benchmarks for individual installations or for individual countries

Product specific fuel choices (e.g. pig iron, pulp) to be taken into account

Approaches

Activity	Product based benchmarks	Combustion process benchmark	Grandfathering
Other activities	Default option	Fall back (combustion emissions)	Fall back (non fossil fuel related process emissions)
Combustion process with monitored heat output	Maybe	Default option: Heat production benchmark (combustion emissions)	Default option (non fossil fuel related process emissions)
Combustion process without monitored heat output		Default option: Fuel mix benchmark (combustion emissions)	

Degree to which GHG reduction possibilities are included in the approach differs between the approaches

	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 Grandfathering	Not included	Not included	Not included

Sectors for which product benchmarks are currently foreseen

Iron and steel	Ceramics
Chemicals	Glass
Klinker	Mineral wool
Refineries	Gypsum
Pulp/paper	Aluminium
Lime	*Other NF metals (still under discussion)*

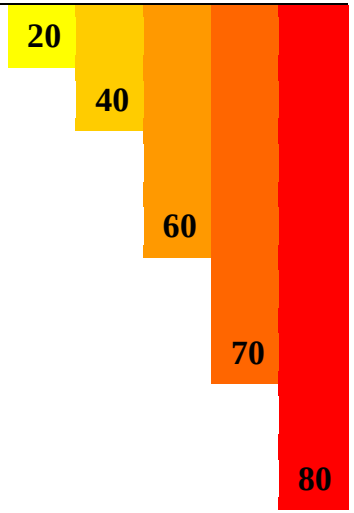
Number of products within a sector

Following criteria are used 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

Chemicals

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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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

Product group	Nb Instal-lations	Emissions 2007	Nb Bench-marks	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

- 45/63 BMs, > 80% of ~ 880 Mt

Total

Key choices in further design of fall-back

- Exact lay-out of heat production benchmark (which heat products, definitions, system boundaries, approach when product is not monitored)
- Idem for fuel mix benchmark
- Definition of process emissions (NAP experiences!)
- Level of differentiation
- Addition of correction factor to create level of playing field

Level of differentiation

- Heat production and fuel mix benchmark could be differentiated by sector
- Allows for taking into account specific situations for specific sectors
- But can and will lead to discussion on sector definitions and applicability of benchmark to specific installations
- Alternative could be to limit allocation to between X and X% of emissions in the reference year

Additional correction factors

- Product benchmarks and fall-back approaches differ in the extent to which GHG reduction potentials are taken into account
- This could / should be corrected for via additional factors in the allocation
- Trade-off between fairness (taking into account early action in non-benchmarked parameters) and simplicity / transparency / uniformity
- Installation specific improvement potential factor possible option (experience in NL and BE), but it is an issue how to organize and harmonize this in the time available
- Uniform factor derived from difference between historical emissions and benchmark for benchmarked products will not provide fairness between installations
- Trade-off between detailed design of fall-back and requests for additional product benchmarks

Average of the 10% most efficient

1. CITL alone not enough for the development of benchmark curves
2. No regulatory framework foreseen
3. Status of data collection differs widely between sectors
4. Confidentiality (when to share which data) is an issue

As a result – final benchmarks will be based on a mix of sources

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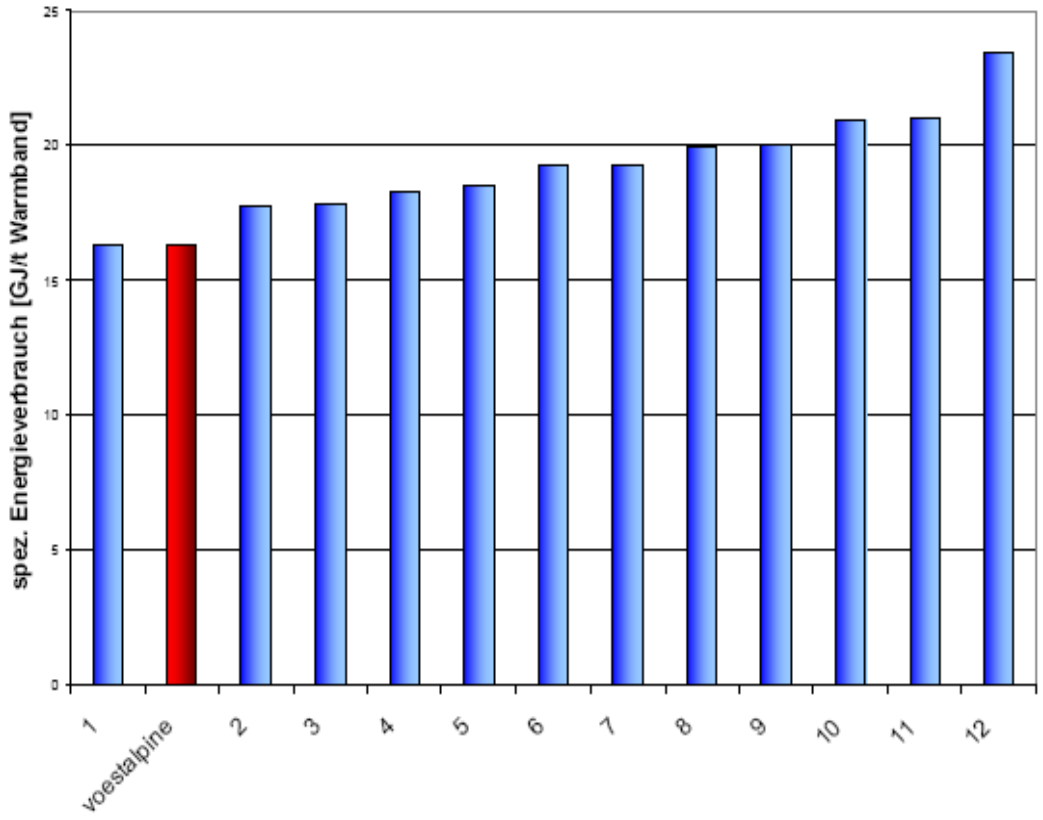
Spez. Energieverbrauch europ. Stahlhersteller



voestalpine Stahl GmbH

Quelle: ESEC benchmark 2002
Energiebedarf bezogen auf Warmband
(Werte wurden normiert!)

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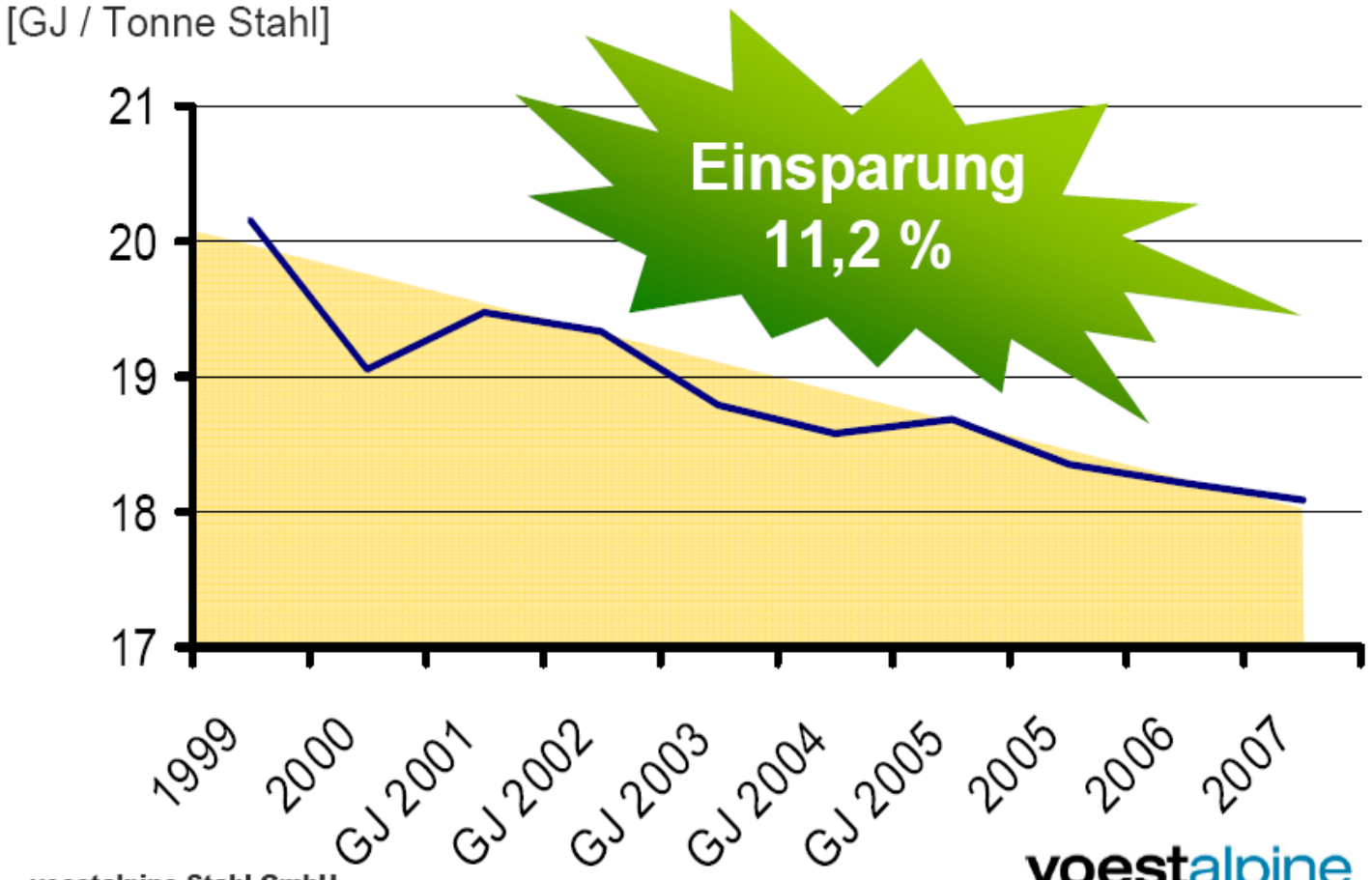
EINEN SCHRITT VORAUS.

Die österreichische Wirtschaft scheint gut aufgestellt...

Spezifischer Energieverbrauch voestalpine



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Cross-boundary heat flows

1. Benchmark based on the product consuming the heat
2. Sometimes this heat is produced by another installation

Key rule: outsourced or in-house heat production should result in equal amount of total allowances for the same heat

Solution: amount of allowances based on consumers – but allowance to producers

Additional product benchmarks

- In "combustion of fuel" activity quite some sectors with significant emissions (>5 Mt CO_2) (e.g. sugar industry, upstream oil and gas industry)
- For some, the situation regarding "outsourcing of heat" determines whether installation is outside or inside the EU ETS
- Many sectors work on or consider working on additional product benchmarks …
- But need / would like to know the details of the fall-back before positioning themselves
- Trade-off between number of benchmarks and level playing field between sectors

- Recommendation to communicate the process to come to additional product benchmarks (if any) as soon as possible

Some changes for operators

- Basic framework ETS (competent authorities, need to surrender allowances, emission reports etc.) unchanged
- Allocation for 2013 – 2020 based on European, not national rules
- Allocation related to benchmark, thus not necessarily to the actual emissions of the installation
- For many installations, historical production data play a role in the allocation
- For complex installations, detailed insight in the installation necessary to determine the allocation

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