

BENCHMARKING METHODOLOGY FOR ALLOCATION

*Introduction, characteristics and main
options*

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Mariano Morazzo
Fabio Romani



*Italian Ministry for
Environment, Land and Sea*

Scheme of presentation*

- Introduction: for a common language
- BM objectives and post-2012 policy options
- Main options for benchmarking:
 - Production factor
 - Definition of sectors/processes
 - Fuel (in)dependent BM
 - Definition of products
 - Definition of technologies
- Conclusions

**Disclaimer: the presentation expresses the view of the authors.*

Benchmarking: a general definition

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- A standard by which something can be measured or judged
- Solution décisionnelle pour les réseaux de commerces
- A standard, used for comparison
- Benchmarking is an improvement tool whereby a company measures its performance or process against other companies' best practices, determines how those companies achieved their performance levels, and uses the information to improve its own performance.

...standard, performance, comparison are the key words...

Benchmarking: allocation of allowances

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Benchmarking refers to an allocation in which allowances are distributed according to a common emission rate multiplied by a measure for output

$$A_i = P_i \cdot BM \cdot CF$$

with

A_i : Allocation to Installation i

P_i : Output of Installation i

BM : Benchmark (emission / unit of output)

CF : Compliance Factor

...allocation based on production, early actions considered...

Approach: Cap setting vs. Distribution

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Total and Sectoral Cap setting (bottom-up approach)

$$A_{i,j} = P_i \cdot BM_j \cdot \cancel{CF_j} \quad CF=1$$

with

$A_{i,j}$: Allocation to Installation i of Sector j

P_i : Output of Installation i

BM_j : Benchmark of Sector j (emission / unit of output)

CF_j : Compliance Factor of Sector j

No compliance reduction to installation allocation (CF=1)

BM can be EU-wide or MS level

Approach: Cap setting vs. Distribution

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Total and Sectoral Cap setting (bottom-up approach)

$$Q_j = \sum_i A_{i,j} = \left(\sum_i P_i \right) \cdot BM_j$$

with

Q_j : *Cap of Sector j*

$$T = \sum_j Q_j = \sum_{i,j} A_{i,j}$$

with

T : *Total Cap*

Sectoral cap is sum of installations' allocation

Total cap will be the sum of sectoral caps

The reduction effort for different sectors is a function, among others, of the distance of sectoral BM from BAT BM

Approach: Cap setting vs. Distribution

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Sectoral Cap Distribution (top-down approach)

$$T = \sum_j Q_j$$

with

T : Total Cap

Q_j : Sectoral Cap

$$BM_j = \frac{Q_j}{\left(\sum_i P_i \right)}$$

with

BM_j : Benchmark for Sector j

Q_j : Cap of Sector j

P_i : Output of Installation_i

Total Cap is divided among sectors

The reduction effort for different sectors is determined with the total cap split

The sectoral BM formula can give indications on the extent of the reduction effort (sectoral BM vs. BAT or Best Practices)

Approach: Cap setting vs. Distribution



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Sectoral Cap distribution (top-down approach)

$$A_{i,j} = P_i \cdot BM_j = P_i \cdot EF_j \cdot CF_j$$

with

$A_{i,j}$: Allocation to Installation i of Sector j

P_i : Output of Installation i

BM_j : Benchmark of Sector j (emission / unit of output)

EF_j : Average Emission per unit of output of Sector j

CF_j : Compliance Factor for Sector j

The derived sectoral BM ensures the respect of the sector cap

The reduction effort at sector/installation level can be evidenced by expressing the BM with a Compliance Factor ($0 \leq CF \leq 1$)

Benchmarking vs. Grandfathering

BM approach

**MS level cap setting
– (“total” MS Burden
Sharing)**

**EU wide sectoral cap
setting (ETS sectors
out of Burden
Sharing)**



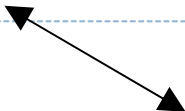
- Transparency of reduction effort across EU [vs.GF]
- Incentive to low carbon products and technologies [vs.GF]
- Account for installation growth – market share [vs.GF]
- Account for MS national circumstances [vs.EU cap]

- Potential competitive distortions [vs.EU cap]
- Need of quality data on processes/products [vs.GF]

In addition

- EU industry level playing field – no competitive distortions [vs.BS] [vs.GF]
- Account for installation and sector growth [vs.BS] [vs.GF]

No account for MS national circumstances [vs.BS]



Benchmarking technical issues and options

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$$A_{i,j} = P_i \cdot BM_j \cdot CF_j$$

Production

Emission
factor

N° of
benchmarks

standard load
factor

historical
production

projections

Single benchmark

Fuel specific
benchmarks

1 product

More products
(differentiating the
carbon intensity)

Technologies?

Options - Production

$$A_{i,j} = (P_i)^* BM_i^* CF_j$$

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□ Capacity x standard load factor

- Common approach for new entrants...
...but for incumbents ->
Inequal consideration of different characteristic of installation (e.g. peak o base-load)

□ Historical production

- Better consideration of installation characteristics.
- representative outlook of future production
- assumption: in medium term, production growth are granted by new entrants

□ Historical production corrected with projections (growth factor)

- Sector and country-specific growth factors to correct historical production.
But check:
In a 5 years period, any growth for incumbents could be recognized only after assessing the actual load factor

Options – Specific emissions

$$A_{i,j} = P_i * \text{BM}_i * CF_j$$

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For electricity and heat production:

$$\text{BM}_{i,j} = \text{EF}_{\text{fuel}} * \text{Eff (conversion efficiency)}$$

EF_{fuel} (Fuel emission factor)

Single Benchmark →

Simplicity, environmental soundness, avoided perverse incentives

Fuel-specific benchmarks →

Consistency with general energy policies: long term security of supply

For industrial activities

$\text{BM}_{i,j}$: emissions per unit of output

↳ Fuel independent ?!

Definition of sectors/processes

$$A_{i,j} = P_i * \text{BM}_i * CF_j$$

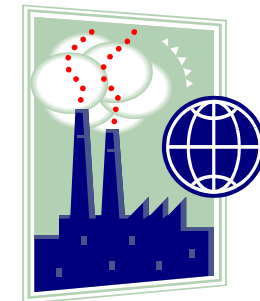
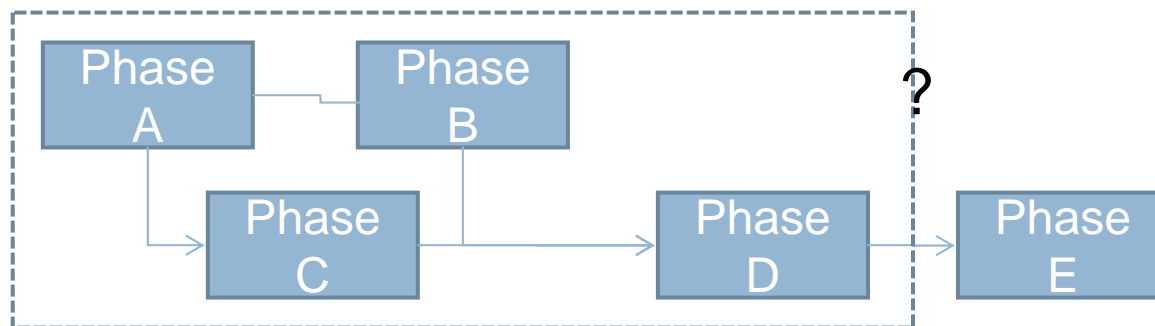
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Scope of ETS, minor number of sectors
Integrated vs. stand-alone processes

and related issues...

- Outsourcing
- Installation and process boundaries

At time 0 and changes over time



Options - Definition of products

$$A_{i,j} = P_i * \text{BM}_i * CF_j$$

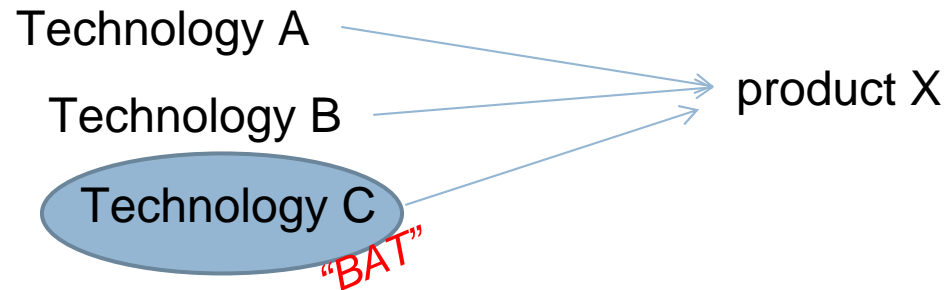
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	<p>simplicity</p> <p>Incentive to low carbon products and technologies</p> <p>CO₂ price into products</p>	<p>Risk of inequity</p> <p>Mix of products for different markets</p>	<p>Better consideration of different processes and markets</p>

Options - Definition of technologies

$$A_{i,j} = P_i * \text{BM}_i * CF_j$$

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Technology differentiation

No technology differentiation

Most efficient technologies rewarded (both early action or future investments)

Exceptions?!

- To protect products from external competition or
- To face scarce availability of input materials
- ?!

*But transparent
and for transition*

Conclusions (I): issues & options

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- There are some issues to be overcome and technical options to be assessed...

outsourcing

data consistency and confidentiality

Installation and process boundaries

products

technologies

Fuel (in)dependent BM

...but many of the problems are exactly the same we have to face in the medium term to ensure a consistent monitoring across Europe and to avoid speculative behaviours

Conclusions (II): a flexible policy tool

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- Environmental and Economic benefits ensured
 - To reward CO2-efficiency and early action
 - To create a perception of fairness and transparency
 - To give simple and predictable signals of policy direction
 - Allowing an inter-(or intra?) periodal updating of production levels
- Benchmarking can be used both in MS BSA or EU-wide caps
 - To create a level-playing field across EU (or a MS)
 - BM provides a measure of ETS reduction effort vs. total EU target

Transparency



Thank you
for attention

Morazzo.mariano@minambiente.it

Romani.fabio@minambiente.it