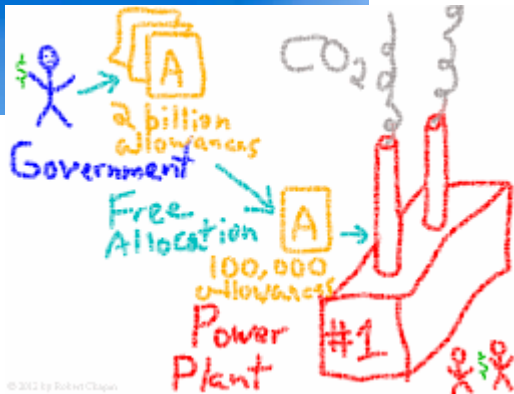
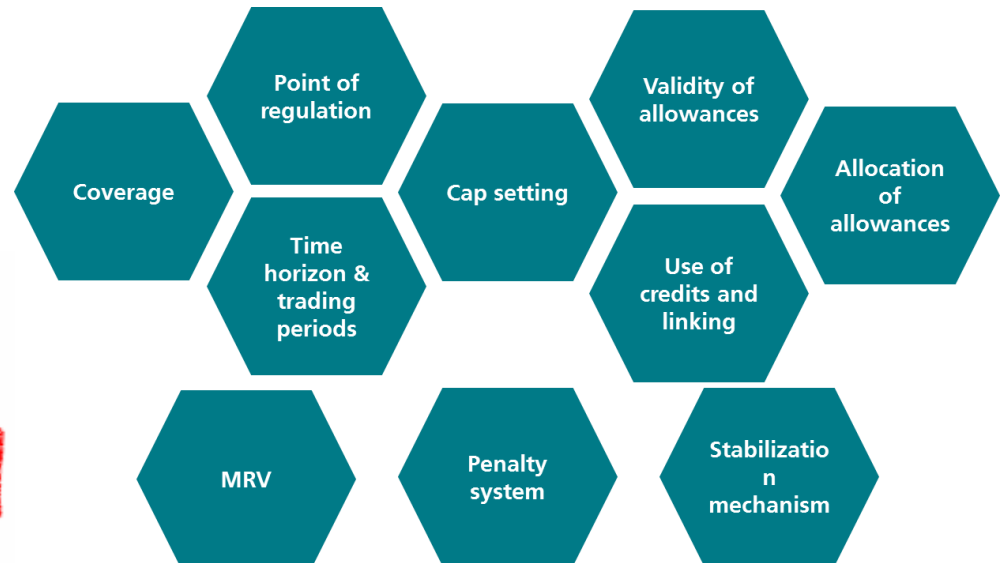


EMISSIONS TRADING – DESIGN ELEMENTS AND ASPECTS FOR MODELLING

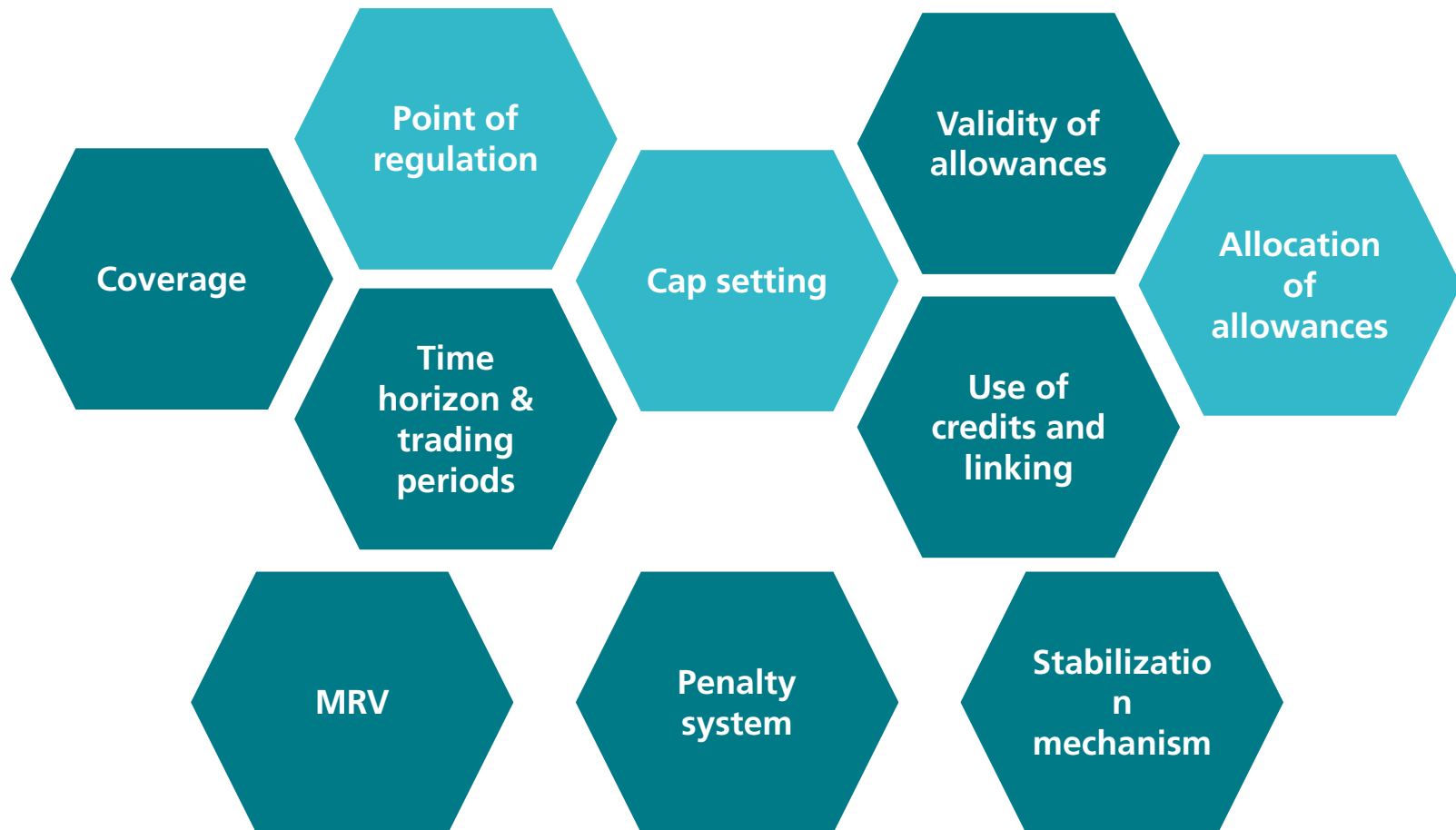
Vicki Duscha, Fraunhofer ISI
25.02.2021



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Design elements of an ETS



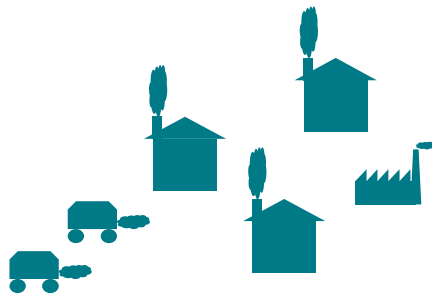
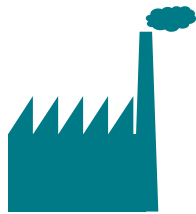
Sector coverage & point of regulation

Upstream



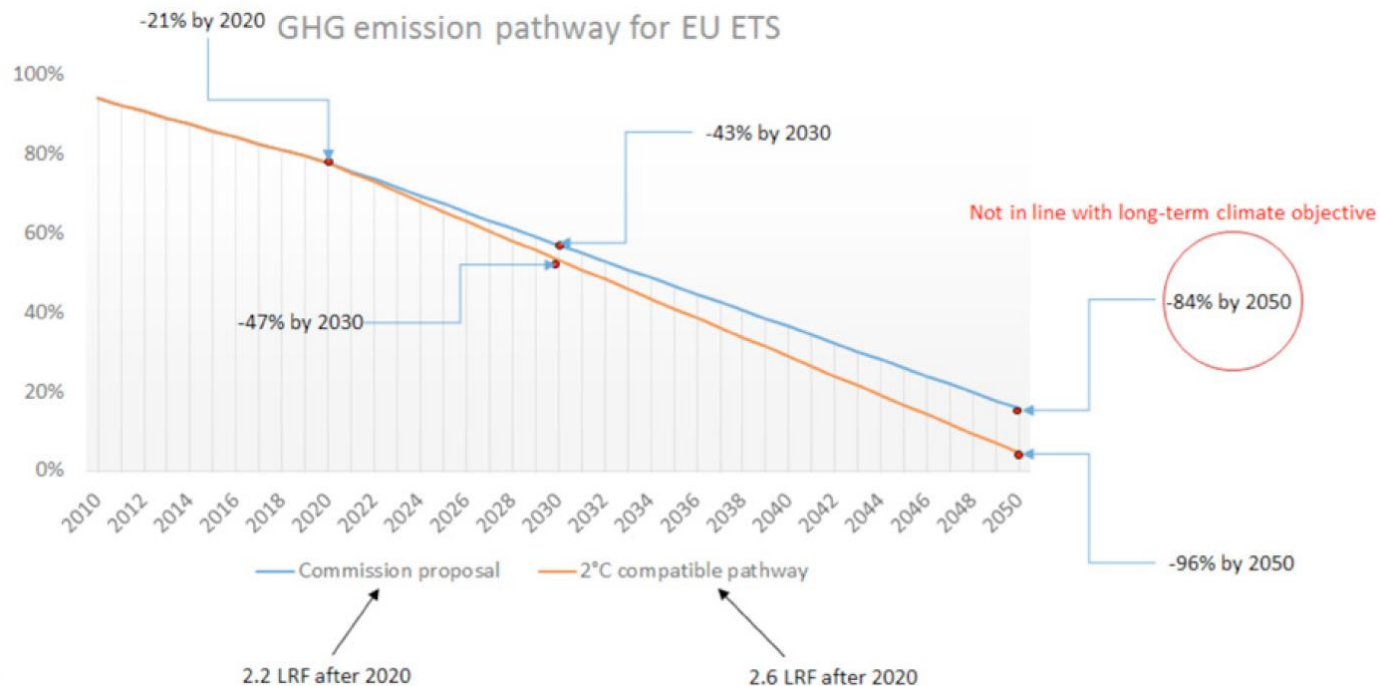
Sectors considered to be included:
road transport
buildings

Downstream



Current EU ETS coverage:
combustion installations > 20MW
energy-intensive industry
intra-EU flights

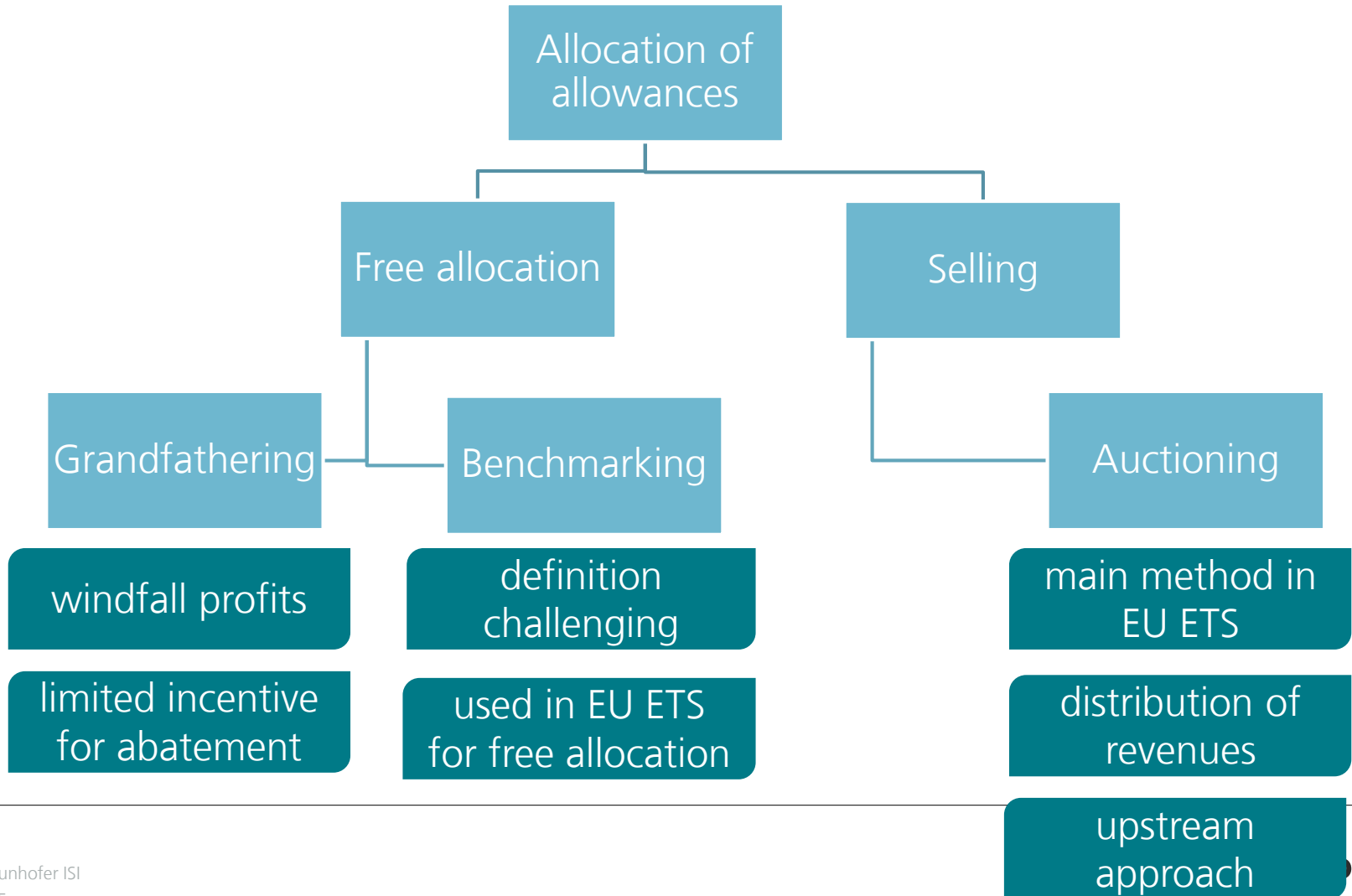
Cap setting in the EU ETS



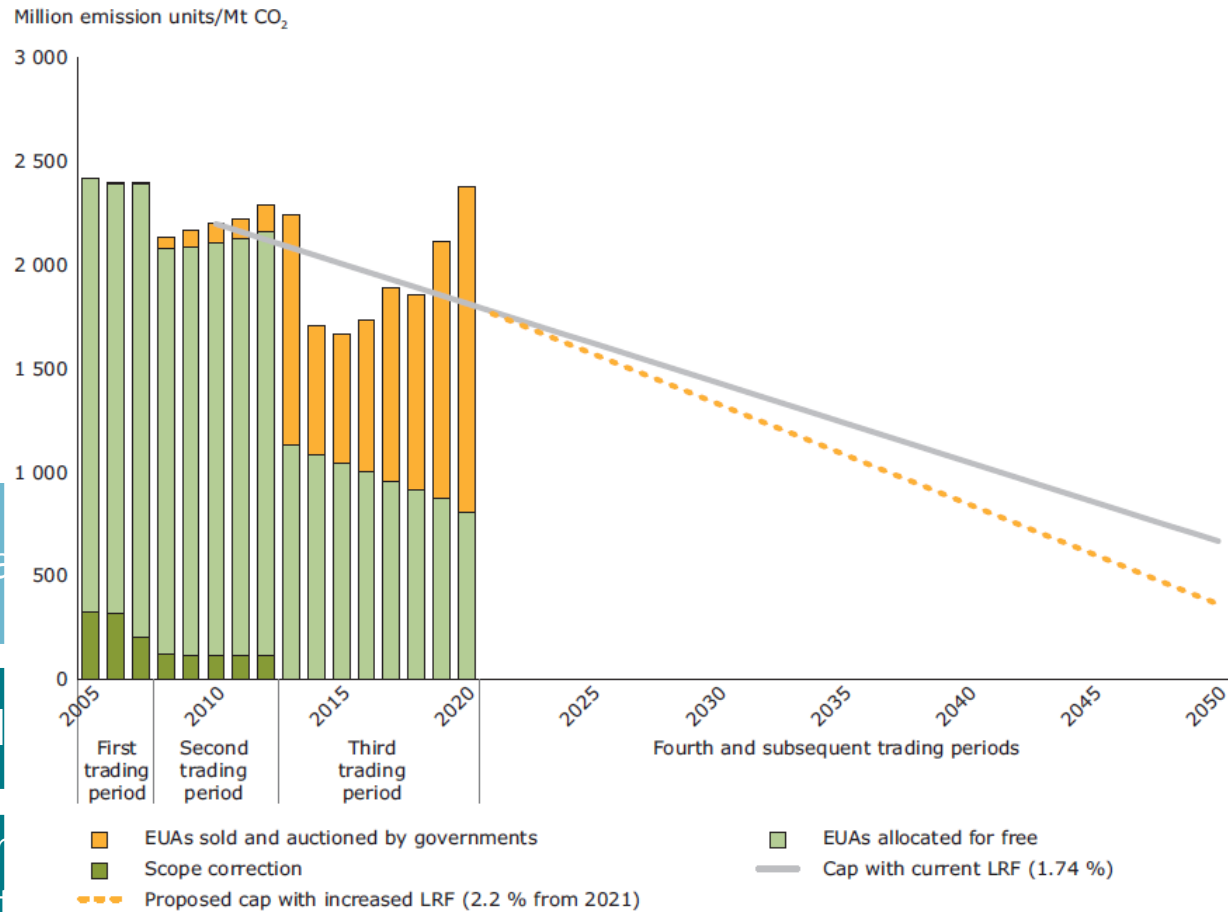
Source: Carbon Market Watch

➔ **Update of LRF for new GHG target!**

Allocation of allowances



Allocation of allowances



Note: The data presented do not include the aviation sector.

Grandfathering

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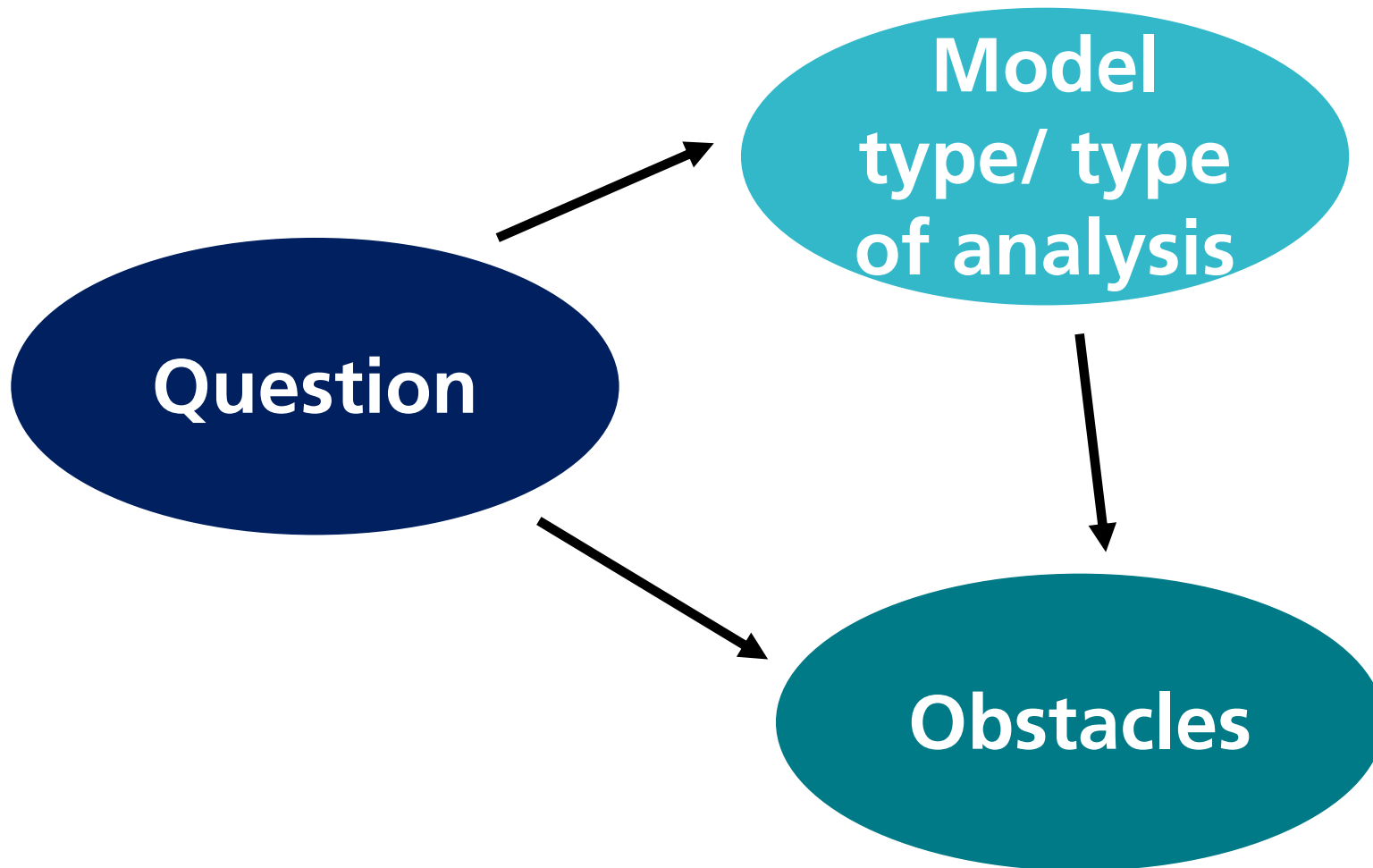
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approach

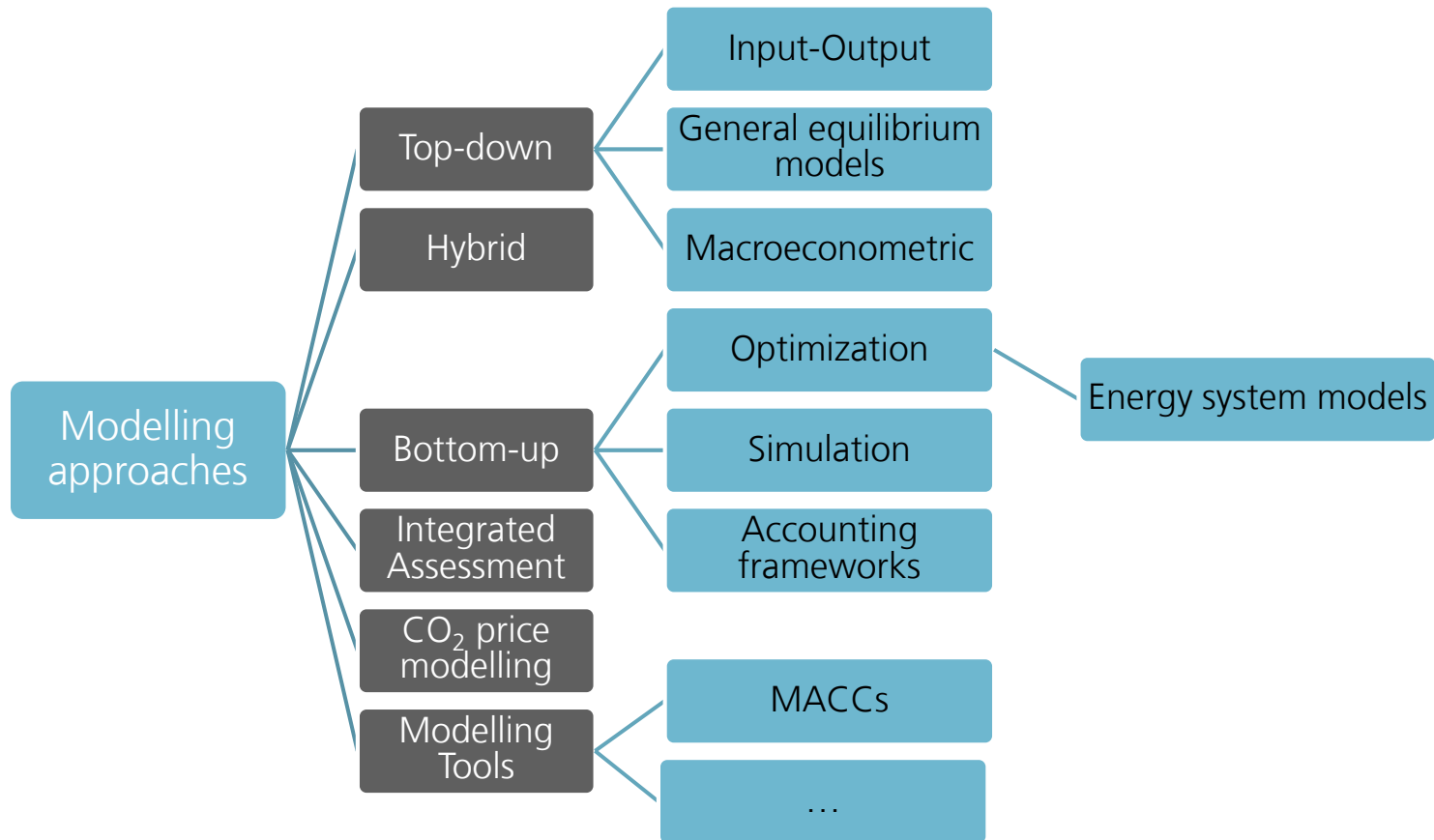
Three points for good modelling

- **Choose your model wisely**
 - **Be aware of and transparent regarding your modelling assumptions**
 - **Less complex modelling tools/ analysis frameworks may often present a good alternative to using a complex model**

Modelling of ETS



Overview of different model types



Source: own figure, ETS-Modelling project

Questions and related obstacles

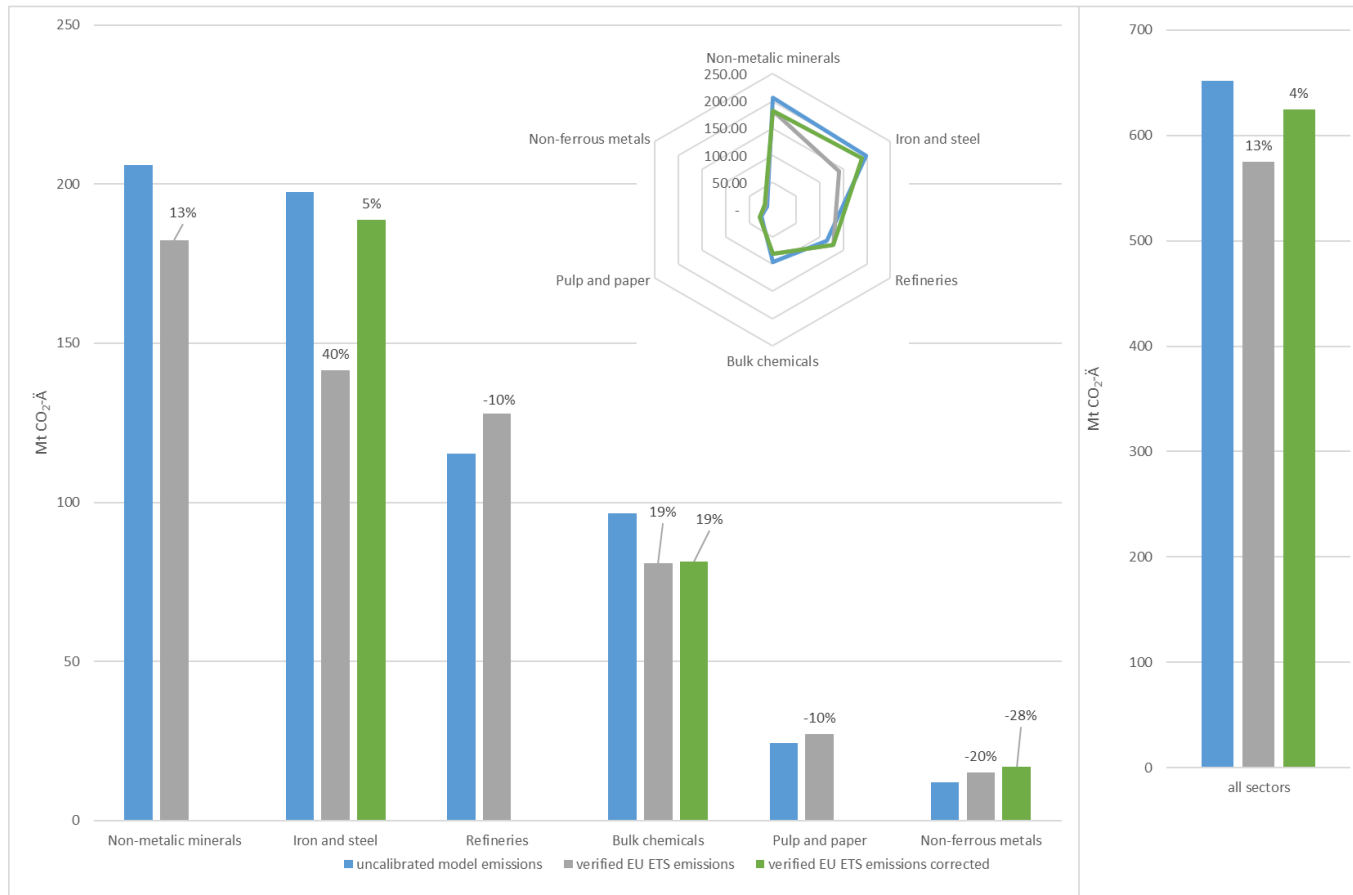
Question: What is the effect of a carbon price of x €/t CO₂?

- Modelling of a CO₂ price signal (exogenous)
- Use of bottom-up sector models or energy system models
- No ETS-specific design elements

Question: Which CO₂ price is necessary to reach a target of x Mt CO₂e in the year y ? (Cap-Setting)

- Modelling of a CO₂ price signal (endogenous)
- Use of bottom-up sector models or energy system models
- No ETS-specific design elements

Matching of ETS sectors with modelling - the example of industry emissions



Source: own figure, ETS marginal abatement cost curves project

Modelling of abatement decision

social perspective

- discount rate low (~3%)
- payback time high (~ 10 years)
- no market heterogeneity
- technical lifetime
- no taxes and duties
- low inertia

→ high uptake of new technologies

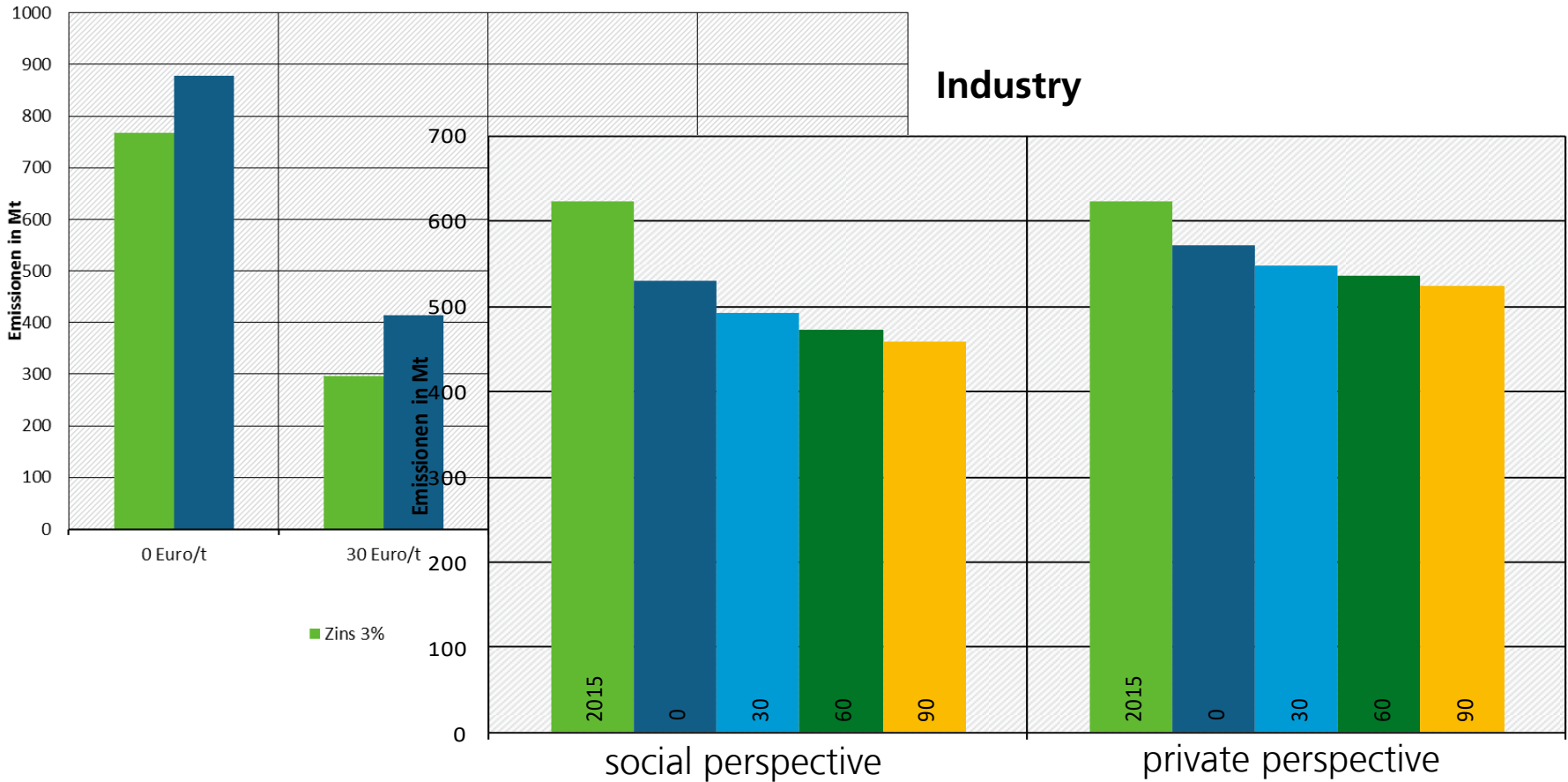
private perspective

- discount rate higher (~7.5%)
- payback time low (2-3 years)
- market heterogeneity
- calculatory lifetime
- taxes and duties included
- high inertia

→ lower uptake of new technologies

Differences in abatement

Electricity



Other questions and approaches for analysis

Question: Point of regulation in an ETS?

→ Analysis of supply chain and identification for obstacles in cost-pass-through

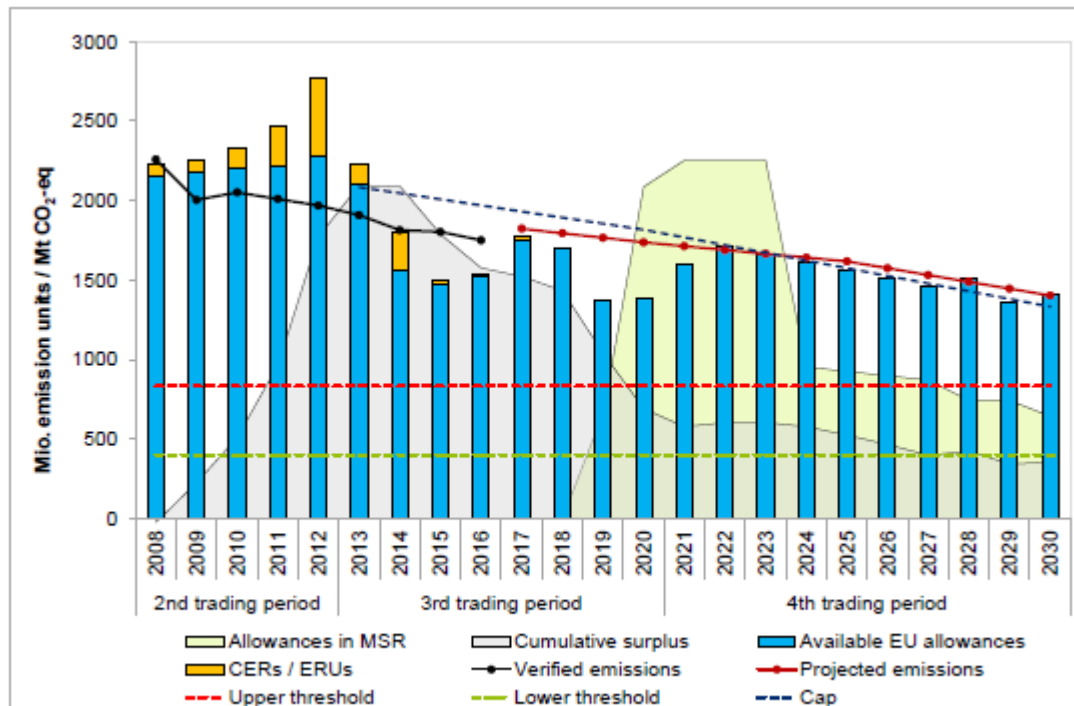
Question: Allocation of allowances?

→ Development of modelling tools
→ Analysis based on firm-level data

Question: Design of the market stability reserve

→ Development of modelling tools

Example: MSR analysis tool



Quelle: MSR-Tool des Öko-Instituts; European Council (2017)

Thank you for your attention!

Vicki Duscha

Fraunhofer Institut für System- und Innovationsforschung, Karlsruhe

Vicki.Duscha@isi.fraunhofer.de