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METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Reaching net-zero cost-efficiently

Aalto Energy Modelling seminar:
Decision support for reaching Net Zero

19.1.2022 **Tommi Ekholm**

The Cost of Reducing Emissions

What creates the cost?

BAU

100 €
5 t CO_2

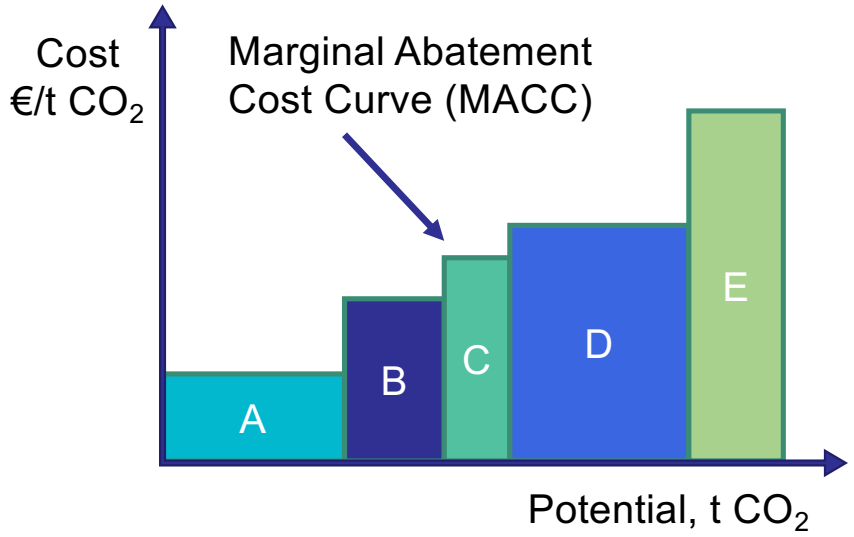
vs.

Alternative

200 €
1 t CO_2

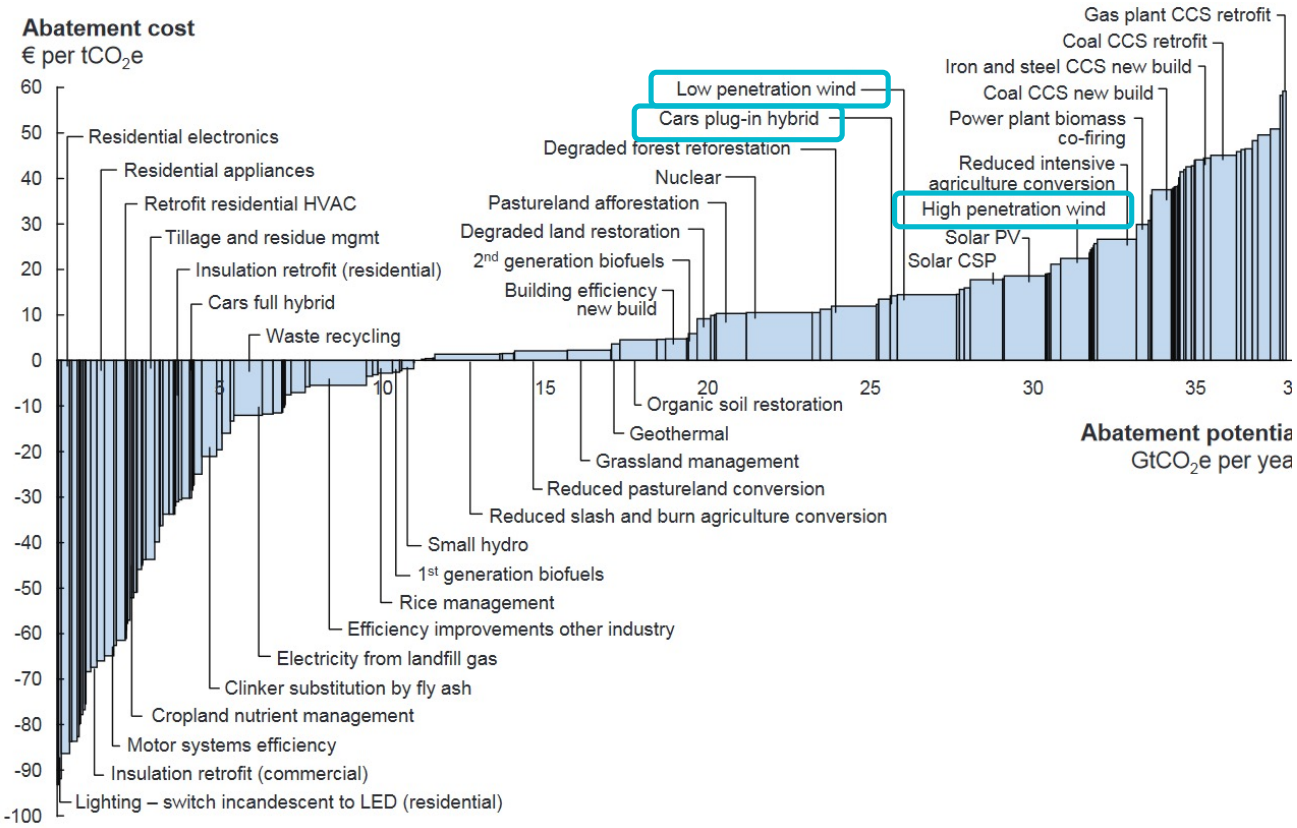
→ 25 €/t CO_2 reduction cost

Portfolio of reduction options



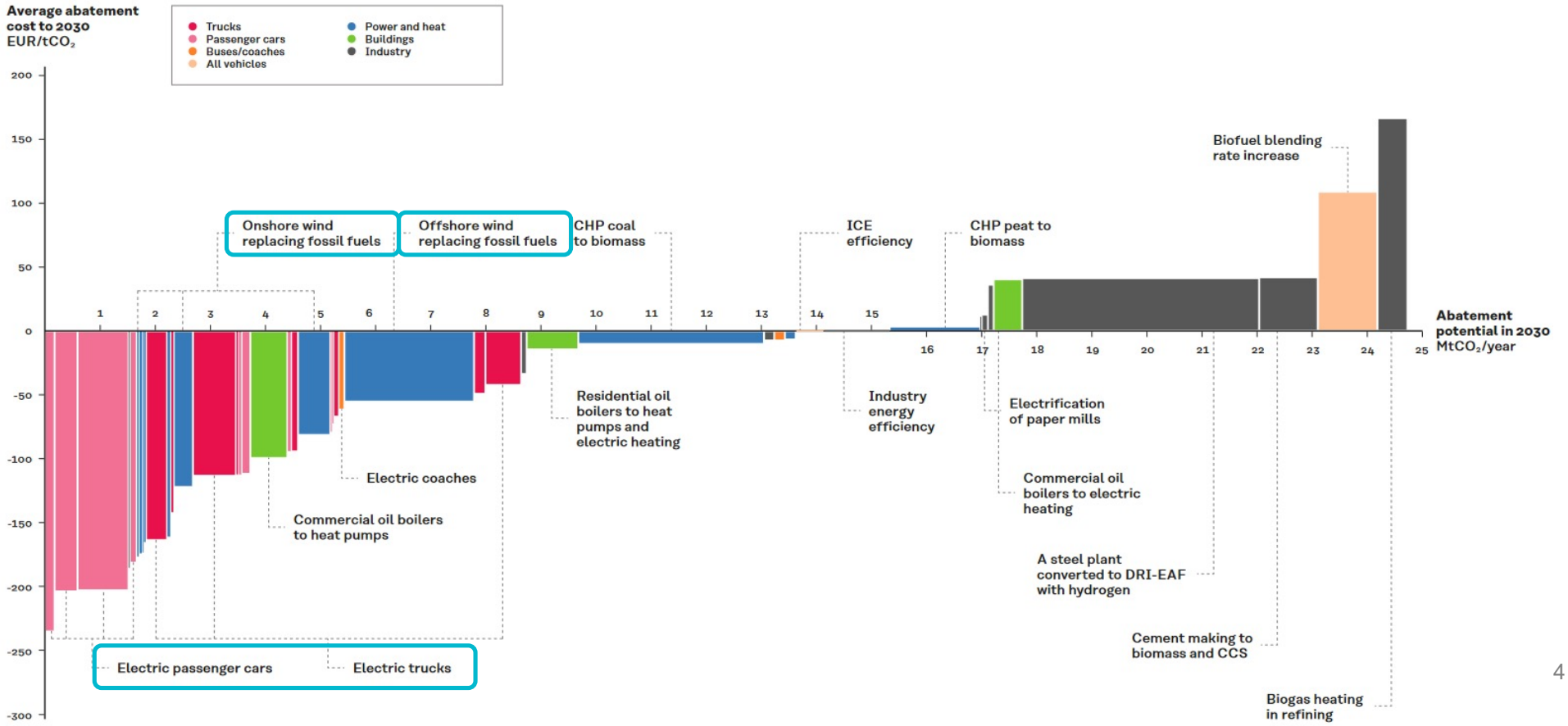
→ **Why do emission reduction costs matter?**

McKinsey global MAC curve – 2009

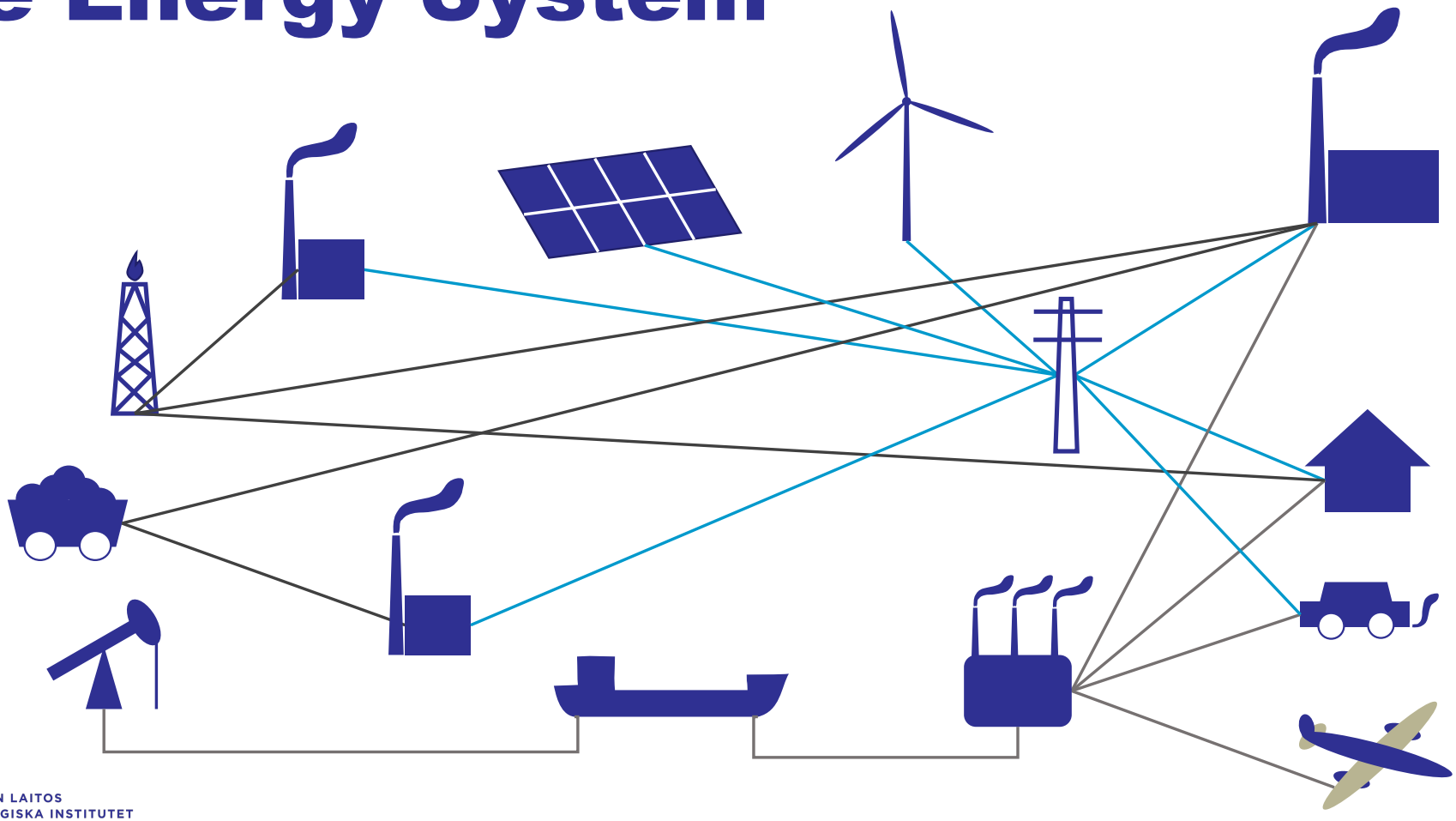


Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO_2e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.
Source: Global GHG Abatement Cost Curve v2.0

Sitra Finnish MAC curve – 2018

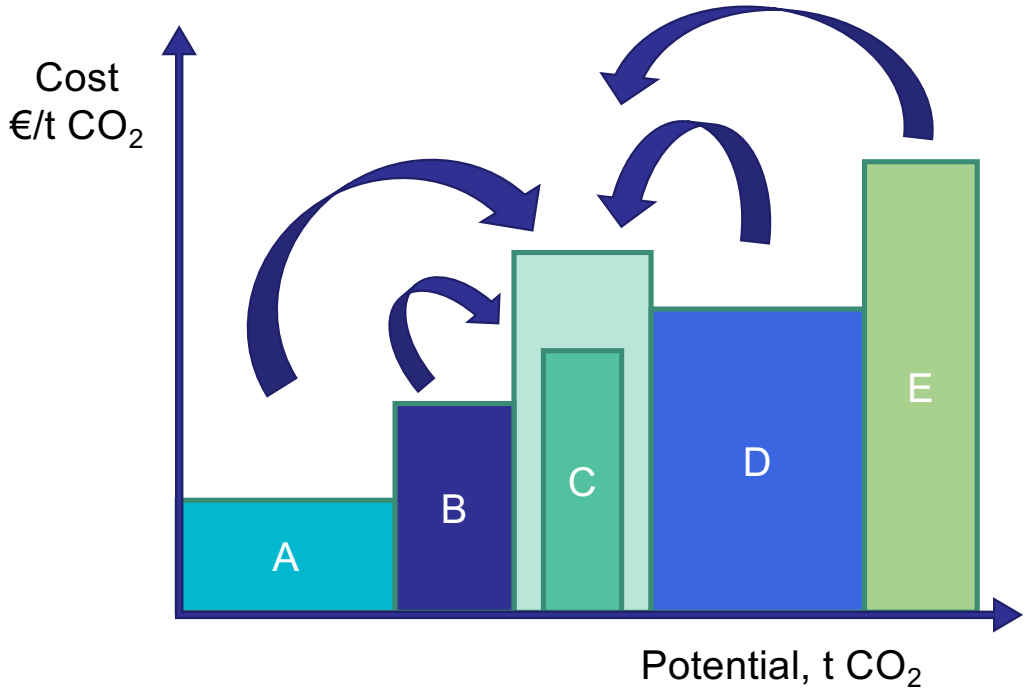


The Energy System



Interdependency in a System?

- Are the reduction measures independent of each other?
- Can reduction measures be implemented independently of the rest of the energy system?
- Costs and potentials can be sensitivity to external changes.



The Virtue of MACCs: Simplicity

- *Simplicity is the ultimate sophistication.*
  - Leonardo da Vinci

- *Everything should be made as simple as possible, but not simpler.*
  - Albert Einstein

- *Simple is good, if it works.*
  - Tommi Ekholm

Concluding thoughts

1. Cost-minimization: efficient use of resources
2. MACCs are good for visualizing & communicating
3. System level vs. corporate / project level
4. Be wary when parameters change (costs, prices, techs etc.)

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Thank you!

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