Socio -Economic evaluation of Dutch climate change policies

Brussels
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Overview

- Why policy evaluation
- Which targets?
- Methodology
- Potential and policy
- Which emission targets are feasible for the Netherlands, at what costs?

Why?

- Negotiations EU
  - Which Dutch emission target? What costs? Limits regarding potentials and policies?
  - Additional targets renewables, energy use?

- National parliament
  - Various requests
  - What is the impact for the Netherlands
  - Interactions between targets
  - Transition towards 2050

Which targets?

- **Europe**
  - **GHG: -40%**
    - **ETS: -43%**
    - **Non-ETS: 30% EU, *binding target by member state (AEA)***
  - Renewables and energy efficiency: *EU-only*
    - RE: **27%**-35%
    - Energy use: 25% - 40% less

Methodology

National costs:

- Direct costs, for society as a whole
  - Investments, O&M, energy (commodity) prices, policy implementation costs

Alternatives?

- Inclusion of external costs and indirect costs
- Costs for government, end users' costs
  - Only for policy instruments
  - Additional aspects like free-riders

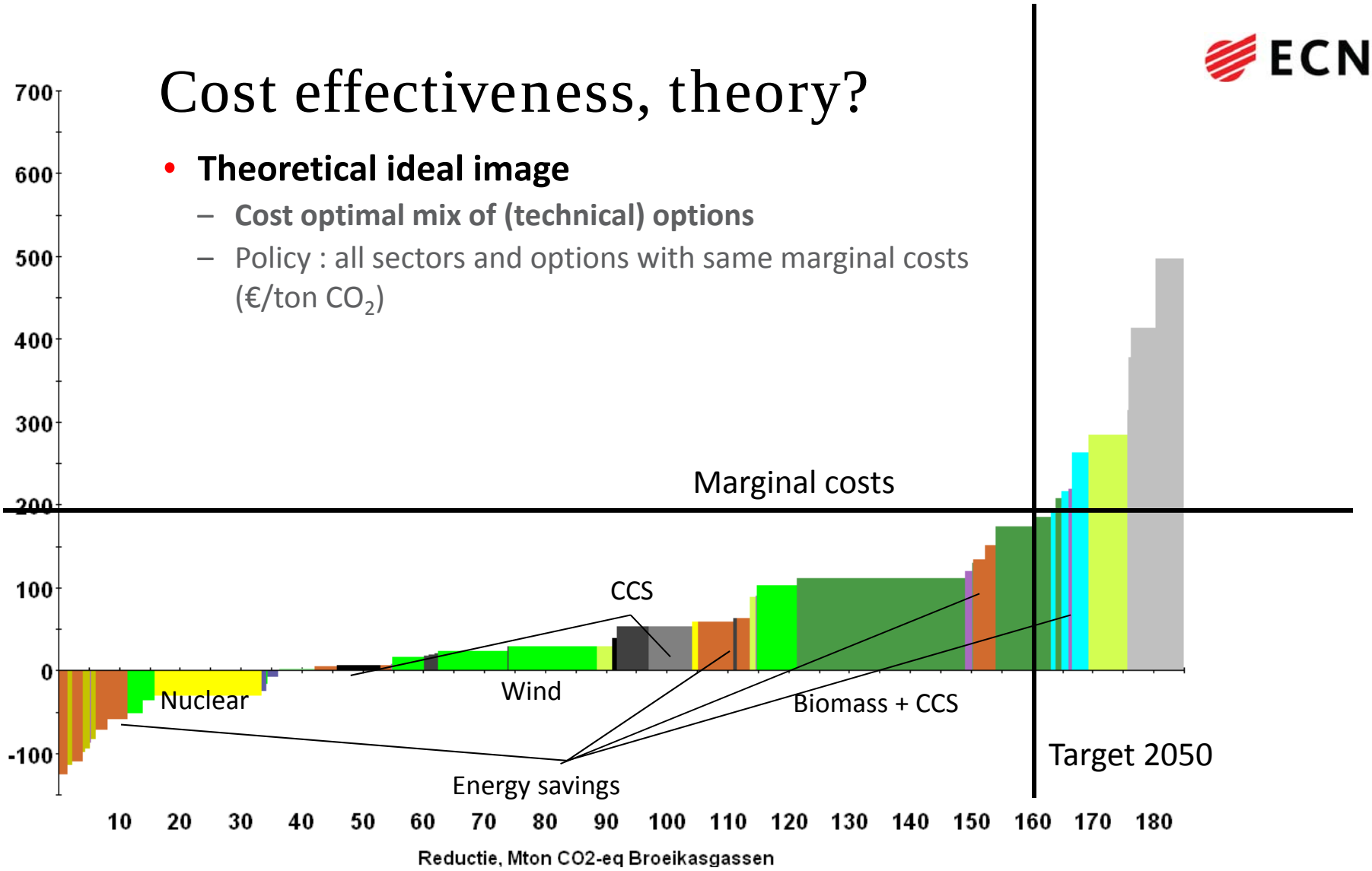
Rather confusing : no harmonised approach among MS

Methodology

- **Integral approach** : OPERA
  - Optimisation model
  - Based on reference energy scenario
  - Technology factsheets : renewables, nuclear, CCS, energy savings, new technologies (heat pumps, E-vehicles, E-storage, P2G, P2H, …)
  - Single or multiple targets, additional constraints (emissions, RE, final, primary)
  - Single target year
  - Least cost solution, annualised national costs, marginal abatement curve
  - Interactions between options differ with increasing reduction targets
  - Co-benefits climate – air reduction measures

Cost effectiveness, theory?

- **Theoretical ideal image**
  - **Cost optimal mix of (technical) options**
  - Policy : all sectors and options with same marginal costs (€/ton CO_2)



Achievable targets

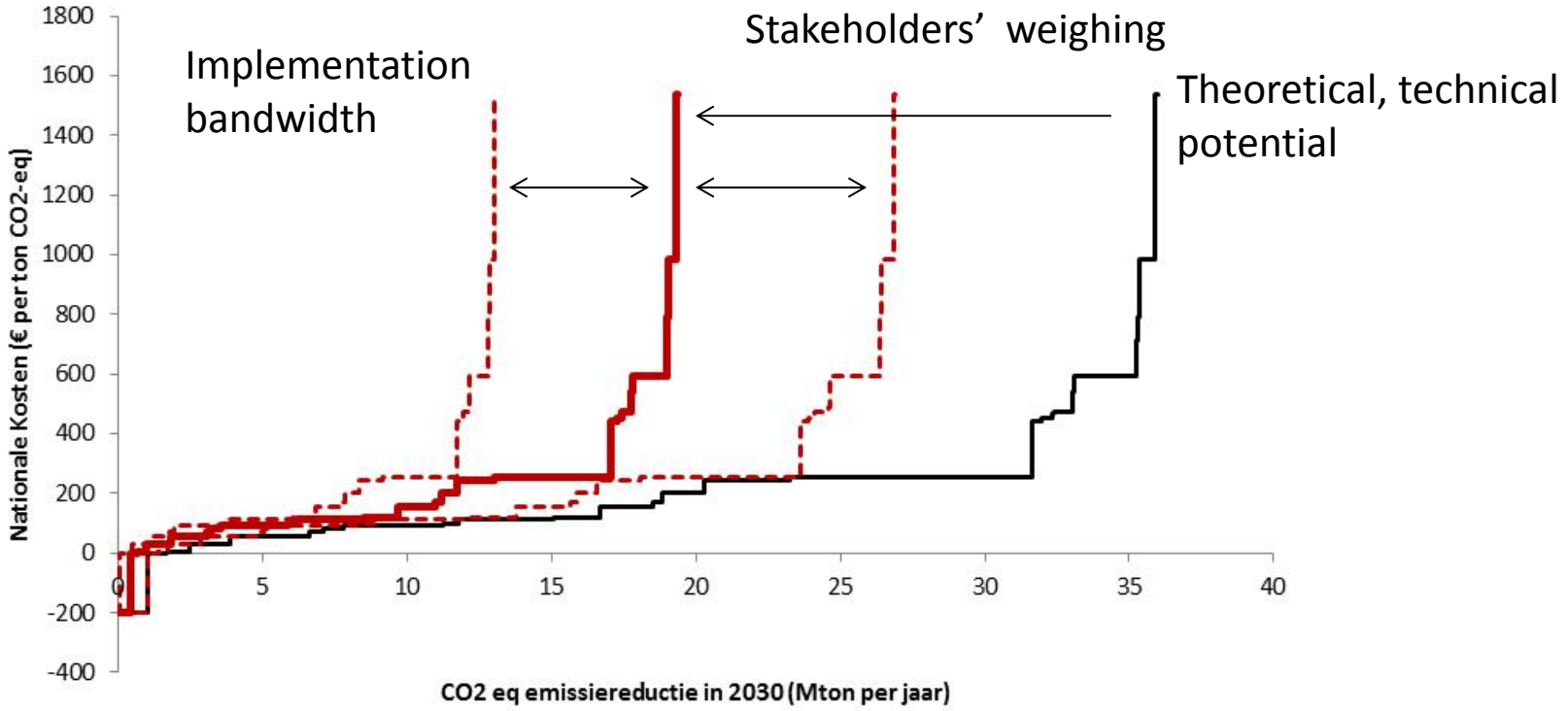
- **Netherlands: lowest costs to attain the targets calculated by OPERA**
  - GHG: **28 - 48%** *domestic, cumulative 2020-2030*
  - Renewables: **20 - 26%** *gross final consumption 2030*
  - Energy efficiency: **15 - 17%** less *gross final consumption 2030*
  - ETS CO2-prices: €40/ton CO2 assumed

    lower in case of RE targets

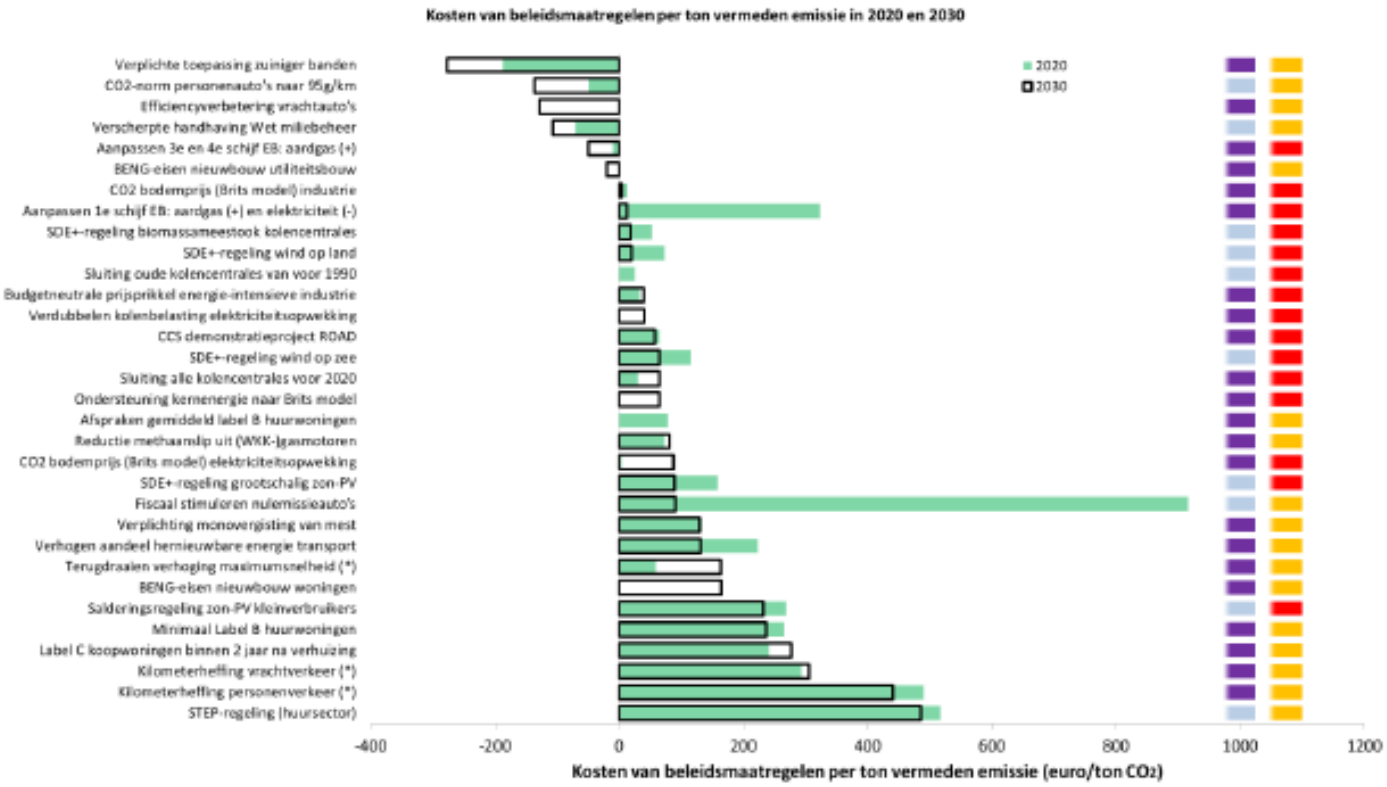
Methodology

- Individual measures, but effects not adding up
- Technically & economically feasible <> practically feasible by policies
  - Societal support
  - Legal barriers
  - Politically feasible
- Session with policy officers : seeking the limit
  - Potential + different policy packages: from low effect/easy to much effect/difficult
  - Voting: which could be feasible, where is the limit?

Potential and policies



Costs of measures

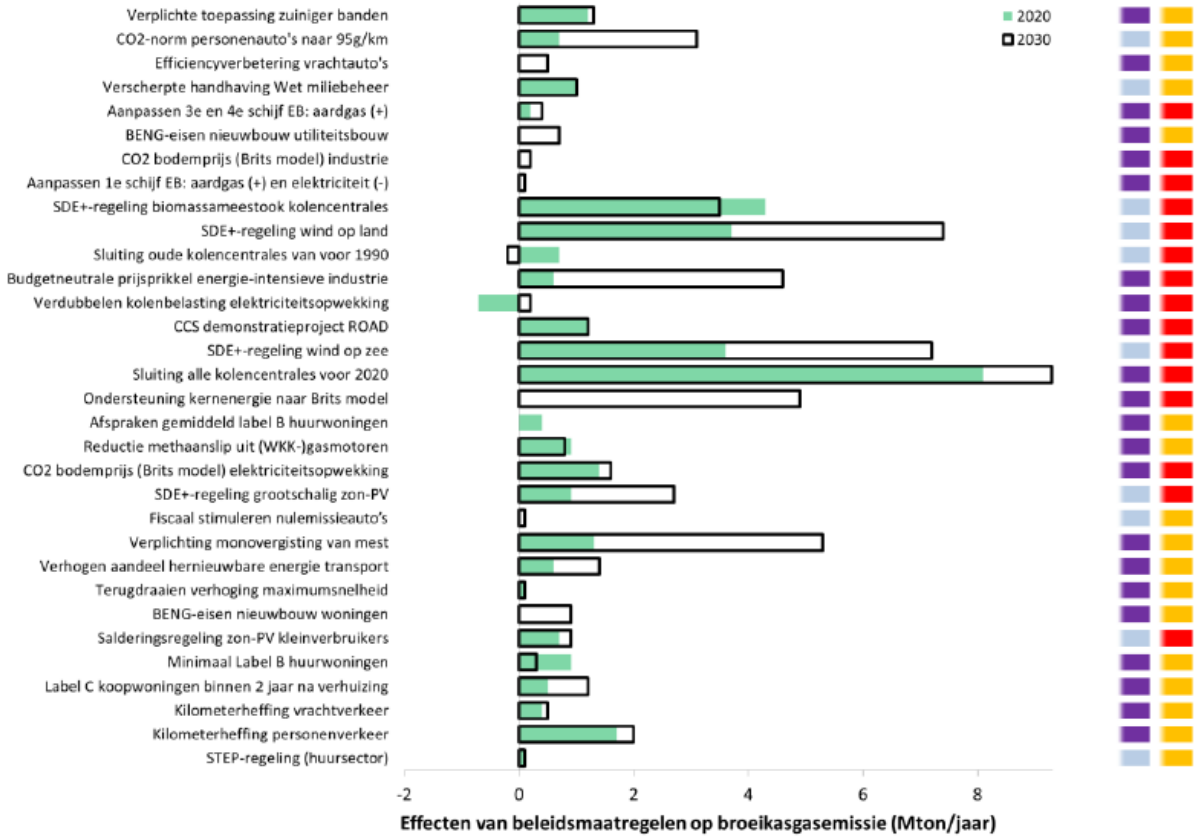


National costs in €/ton CO2-eq for 2020 (light green) and 2030 (transparent)

Cost effectiveness : interpretation

- Cost effectiveness based on total national costs, not divided for ETS-non ETS part
- Example : 100 M€, total effect 1 Mton CO2-eq, 0.9 Mton ETS of which 0.54 in NL, 0.1 Mton non ETS
- CE = 100 €/ton total effect
- CE = 111 €/ton ETS effect
- CE = 184 €/ton ETS NL effect
- CE = 1000 €/ton CO2-eq non ETS effect

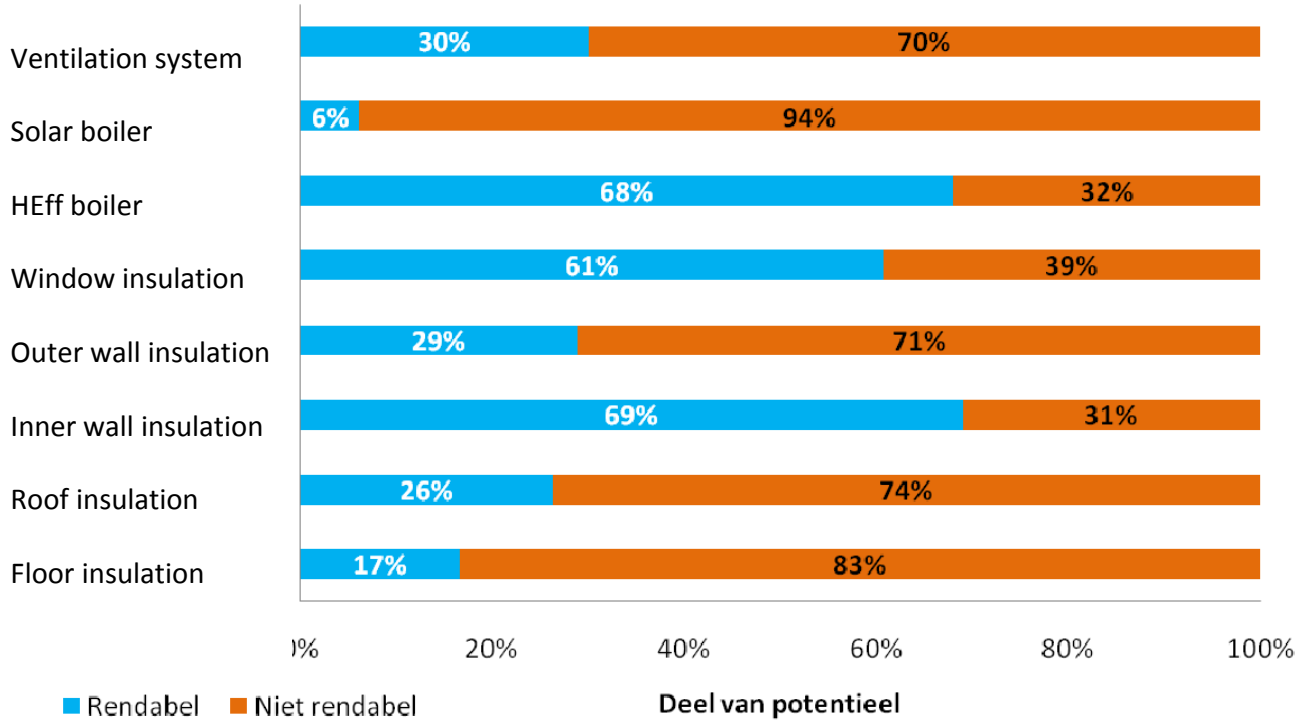
Effects of measures



Effects of measures in Mton CO2-eq/year in 2020 and 2030

Differentiation behind the front door

Not all energy saving measures are cost effective : low costs but also very expensive



Conclusions

- Is Dutch policy cost-effective?
  - No? because there are low CE measures not implemented, while more expensive ones are.
  - But : other reasons : international (level) playing field, carbon leakage, CE in 2030 not the only criterium, uncertainty in CE due to assumptions, waterbed effect ETS
  - And : expensive CE measures may face less constraints, cost reduction by learning by doing requires stimulation of expensive start, and some targets may be reached by low CE measures while others have still substantial gap to target (e.g. RE and GHG)
- There is room for improvement of policy implementation based on CE, but …
- … in an imperfect world, suboptimal may be the best feasible.


Questions?

Thank you for your attention

This presentation was prepared with material from ECN, PBL, Min EA

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