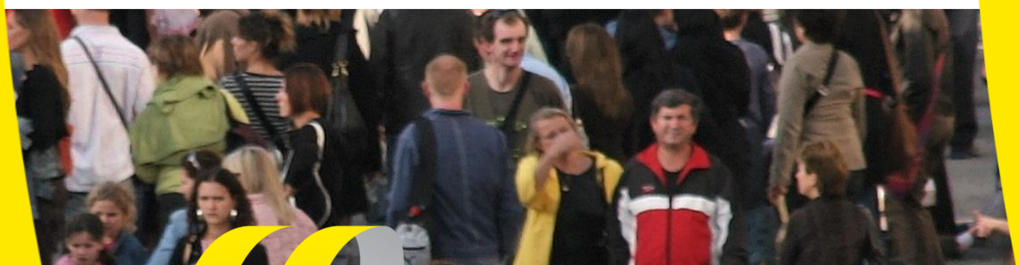
Cost-effective share of bioenergy in the EU?

Bettina Kampman



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This presentation

- Some key results of a study for
  - Transport and Environment
  - Birdlife Europe
  - European Environmental Bureau

- Main study objectives:
  - What is the most cost-effective renewable energy mix in 2030, given current and future cost structures?
    - To meet a 27% RES target from a societal point of view
  - How does this mix compare with the projections of the EU PRIMES reference scenarios?

Main author: Geert Warringa

How to determine the most cost-effective RES mix?

Two key factors

- Assumptions on cost developments of the various RES technologies
- Discount rate used, i.e. the perspective

Societal perspective: discount rate of 3% for EU Member States

- Social view on how future benefits and costs should be valued against present ones
- To appraise a project's contribution to welfare

Private perspective: discount rate ranges from 7.5% up to 14.75%

- To predict what actors will do given a certain cost development and policy context, includes a risk premium.

With higher discount rates, technologies requiring large upfront investments (such as wind, solar) are less favourable.

PRIMES vs. our calculations

Primes reference scenario:

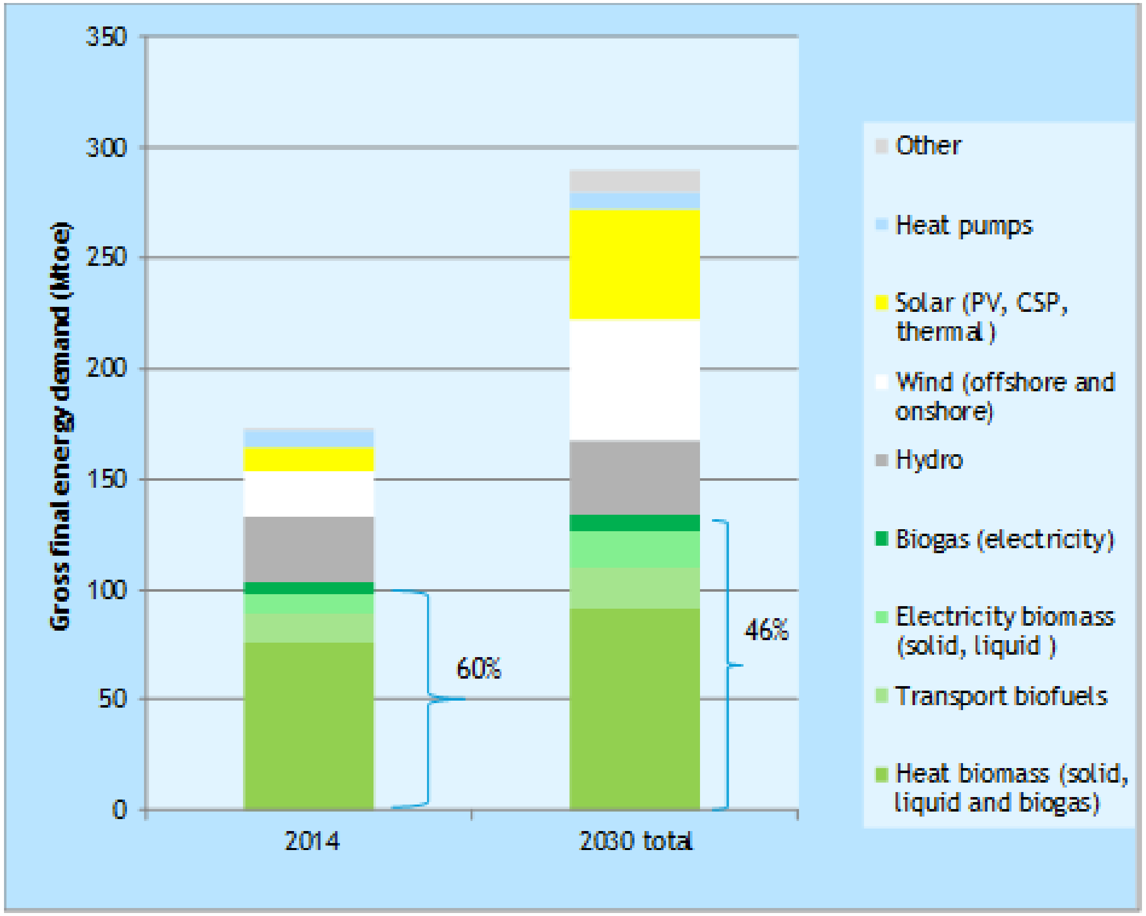
- Based on partial equilibrium modelling
- Many assumptions (and results) unknown, only high level data published
- Cost-effectiveness from a private perspective

Our calculations:

- Based on high level cost curve, and estimated realisable potential
- Recent cost data used (2015)
- With data from a range of sources, incl. Green-X, cost data for the Dutch renewables subsidies, reports by Ecofys, IEA, IRENA, DECC, etc.
- Cost-effectiveness from a social perspective

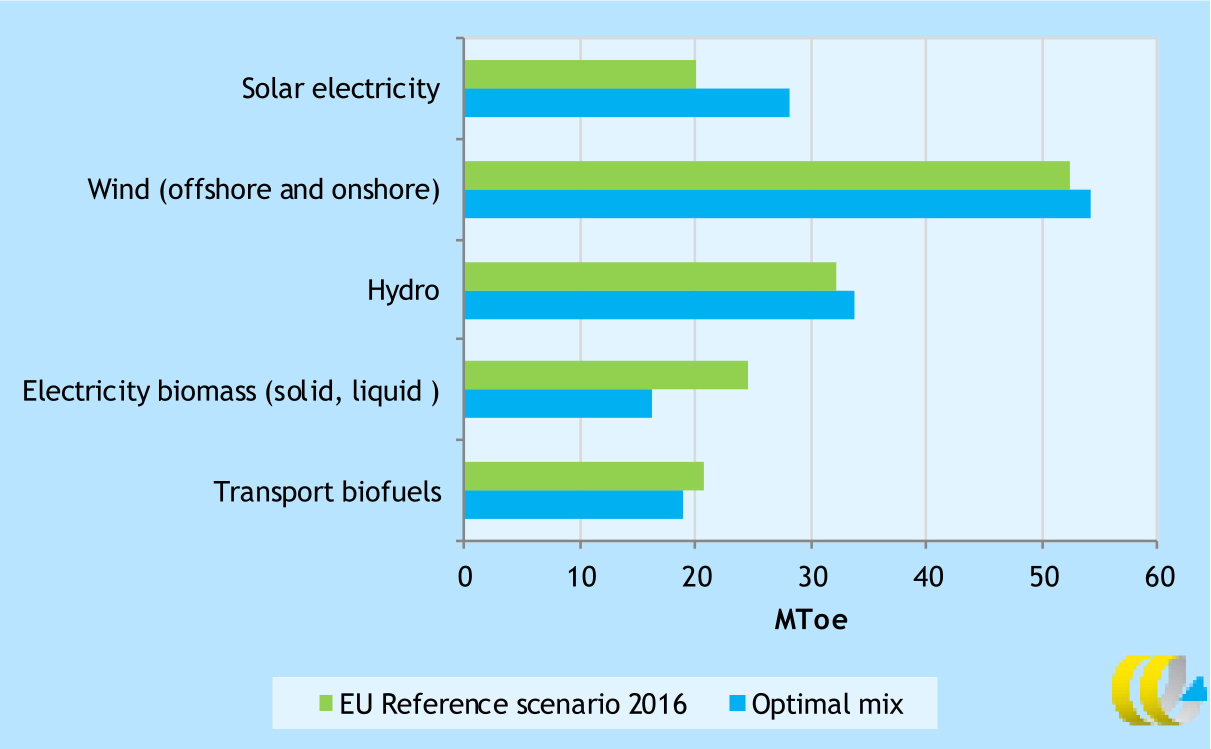
2030 optimal mix to meet a 27% EU renewables target

- Solar growing by a factor of 5
- Wind by a factor of 2.5
- Bioenergy grows by about 35%



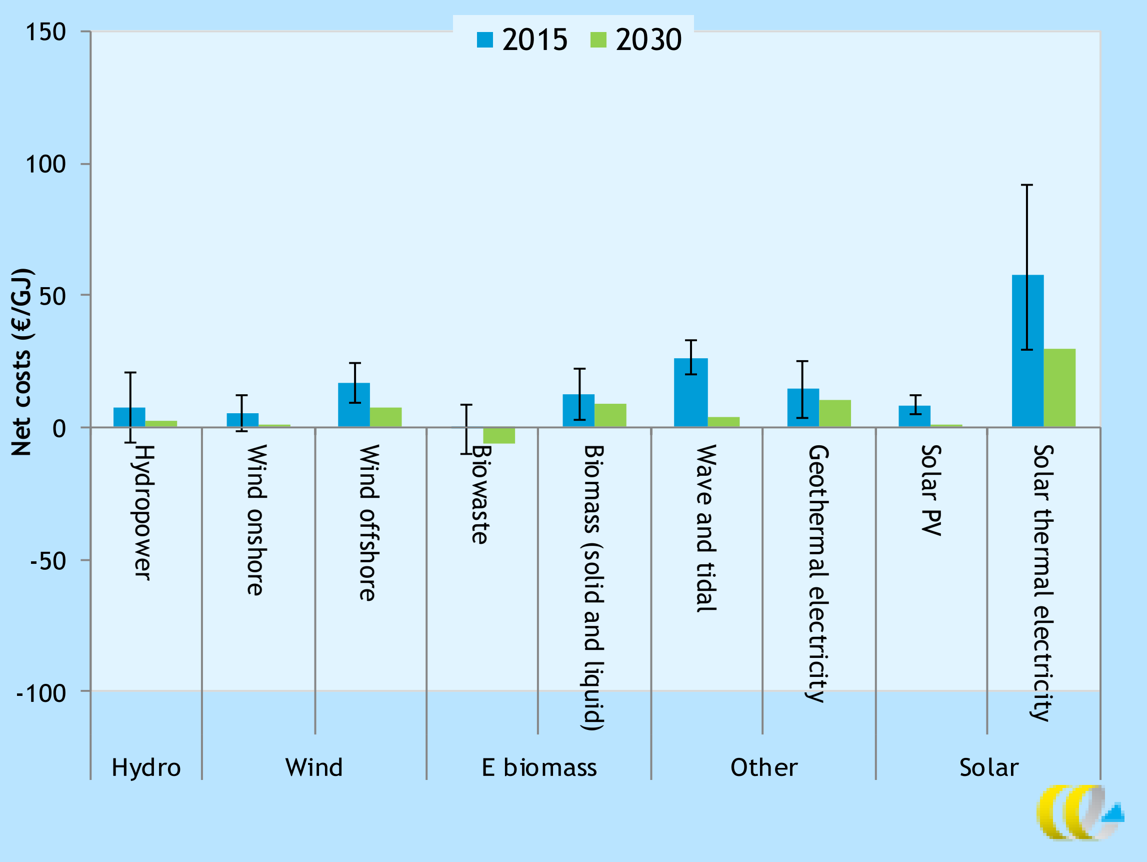
Comparison with 2016 PRIMES reference

- Our RES mix: a higher share of solar and less biomass for electricity
  - Comparable results for hydropower, wind and transport fuels
- Comparison with 2016 reference scenario difficult
  - Published data do not include biomass use in heat, or biomass in final energy demand



Cost per technology: current and outlook

- All RES net cost expected to reduce
- Ranges are very considerable. On average:
- **Low-cost electricity:** bio-waste, followed by onshore wind and solar PV
- **Low-cost heat:** biomass connected to the grid (heat networks), followed by solar thermal and biomass non grid



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Other key conclusions for policy makers

- Bioenergy use increases in the cost-effective mix, but at a much lower rate than other RES

- Still huge growth potential for solar, wind and geothermal energy including heat pumps
  - Over 90% of realisable bioenergy potentials are exploited in 2030, only 35% of other renewables

- Policies are required to achieve the most cost optimal mix from societal perspective
  - Private actors require higher discount rates
  - With higher discount rates, technologies requiring large upfront investments (wind, solar) are less favourable.

The report will be published today

Thank you!

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