Dutch polder exploration of pathways towards a low-\(\text{CO}_2\) energy system in 2050

Arthur Petersen
Workshop on Energy Scenarios, Public Debate and Ecological Transition in Europe
Paris, 24 January 2013
Mission

PBL Netherlands Environmental Assessment Agency contributes to improving the quality of political and administrative decision-making by conducting outlook studies, analyses and evaluations in which an integrated approach is considered paramount.

Policy relevance is the prime concern in all our studies.

We conduct solicited and unsolicited research that is always independent and scientifically sound.
Governance structure

Formal basis:
Government regulation for policy-analysis agencies

Organisational embedding:
Ministry of Infrastructure and the Environment

Clients:
- Ministry of Infrastructure and the Environment
- Several other ministries; e.g. Ministry of Economic Affairs and Ministry of General Affairs
- European Union, UNEP, OECD
PBL expertise

Climate and Energy, Post-Kyoto
- Climate, air and energy
  - Hunger
  - N-cycle
  - Bio-energy
- Sustainable cities
  - Energy landscapes

Nature, agriculture and water
- Landscape protection
- Adaptation to climate change
- Future of the rural areas
- CAP-reform
- Natura 2000

Housing, working and mobility
- Randstad 2040
- Urbanisation challenge
- Infrastructure investments

Methodology
- Governance
- Trade offs
- CBA
- Spatial coherence
- Sustainability
Professional relationships PBL, based on project plans

The Netherlands

Other countries

Knowledge institutes
Consultancy firms
Universities
Private organisations (including non-governmental)
Assessment agencies / advisory councils
Government bodies

Number of working relationships
Structural products

- Assessment of the Human Environment (biannual)
- Nature Outlook (quadrennial)
- Assessment of Spatial Developments (quadrennial)
- Trend reports (biannual)
- Compendium of the Environment (in association with CBS en WUR)

www.clo.nl
Strategic multiannual programmes

- Climate and energy transition agenda
- Biodiversity, food security and development issues
- Spatial developments beyond the systemic crisis
- The importance of clusters and networks for the competitiveness
- Infrastructure and sustainable urban regions
Recent publications
What doesn’t work anymore ...
The energetic society

www.geluidsnet.nl

www.donteat.at

www.asthmapolis.com

www.depolitiezoekt.nl

www.londonriots.ep.io

www.mediamatic.net/page/227439
The energetic society

Distrust against governing from above

Increasing numbers of citizens believe in their own power...

... but they do not always realistically picture the enormous scale of the coming challenges

Can we build a new collaboration between state and society?
The Energetic Society

Technology

People

Institutions
Top down? Bottom up!

• Local circumstances determine what is the ‘optimal’ mix of measures

• For example: residual heat: local balancing of supply and demand

• Research into local situation reduces risks for investors

• But: national policy is often standing in the way of effectiveness of local measures

• And it all starts with a vision
Advice for the Energy Agreement

• Who wants to have a broadly shared energy agreement needs to pay separate attention to legitimacy and societal support besides effectiveness

• Energy is something citizens and companies would like to get involved with themselves: create the right incentives

• The transition challenge is enormous: not just some ‘nice’ solar PV installations or offshore wind. Look at difficulties CCS
Concept of ‘pathways’

- Based on backcasting scenarios
- Components that contribute to the 80% reduction in greenhouse gases in 2050
- Part of ‘energy transition’ concept coined in the Netherlands in the early 2000s
- PBL distinguishes four pillars
  - Reduced energy demand
  - Use of biomass
  - Carbon capture and storage
  - Zero CO₂ emissions from electricity generation (wind, solar and nuclear energy)
Create your own Energy Future.

The Energy Transition Model is an independent, comprehensive and fact-based energy model that is used by governments, corporations, NGOs and educators in various countries. It is backed by more than 20 partners. There are three different versions of the Energy Transition Model.
<table>
<thead>
<tr>
<th>Light</th>
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A fun introduction to the most important energy themes. Will your energy future get the highest score?

Packed with information on countries, provinces and cities. This version is used by policy makers and energy experts to evaluate their energy scenarios.

Thousands of people in the Netherlands and Germany have already created their Energy Mixes using this questionnaire.

The Energy Transition Model is created and maintained by Quintel Intelligence.
Funtowicz and Ravetz, Science for the Post Normal age, *Futures*, 1993
The challenge of post-normal science

- Expert advisers should be reflexive
- Methods for dealing with uncertainty should merely be considered as tools, not as the solutions
- Fear for paralysis in policy making should not be allowed to block communication about uncertainty
- Communication with a wider audience about uncertainties is crucial
Lessons from global assessments


Global assessments considered: GEO4, IPCC AR4, IAASTD, OECD EO, MA, WWDR-3

- Embrace uncertainty
- Embrace the diversity of knowledge
- Embrace the diversity of circumstances
- Enhance participation
- Enhance engagement with policy makers
- Establish an institutional home
Why are futures studies important?

Strategic policymaking:
• generates high impacts
• is confronted with high complexity and uncertainty
• runs the risk of suboptimal outcomes or policy-fiascos

Futures studies may be helpful to:
• better deal with complexity and uncertainty
• improve strategic policymaking and its outcomes
How can futures studies be used?

**Cognition**
- trends and mutual relations
- low probability / high impact events
- new problems and challenges
- alternative policies and their impact

**Communication**
- input for strategic discussions
- stimulate open discussions
- structuring discussions

**Commitment**
- provide support for current policy
- inspire to choose alternative policy
- consider other values and views
Why is it difficult to use them?

World of futurists
- Scientific rationality
- Exploring uncertainty
- Long term orientation
- Integrated perspective
- Focussed on one study

World of policymakers
- Political rationality
- Searching for certainty
- Short term orientation
- Sector perspective
- Confronted with many studies, advices etc.
Why is it difficult to use them?
Which factors influence the use of them?

**Qualities of futures studies**

- Imaginative
- Plausible
- Comparable
- Informative
- Understandable
Which factors influence the use of them?

**Communication**

- *Multi target groups*: public organisations, NGOs, business, citizen groups
- *Multi languages*: stories, images, figures
- *Multi media*: reports, DVDs, internet, film
- *Multi techniques*: conferences, workshops, presentations, serious games
Which factors influence the use of them?
Which factors influence the use of them?

**Institutionalisation**

- *Position*: internal or external
- *Competition*: one or more institutes
- *Status*: legalized, commissioned, independent
- *Resources*: people, expertise, money
- *Contacts*: (in)formal, bilateral, networks
Which factors influence the use of them?

**Contextual factors**

- *Policy issue*: physical, social
- *Policy system*: pluralistic, corporatist
- *Level of conflict*: medium, high
- *External factors*: economic tide, political atmosphere
Which factors influence the use of them?
What are important success factors?

- High quality of futures studies
- Enough resources for producers and users
- Active involvement of target groups
- Intensive and long lasting communication
- Adequately using policy momentum
- Various futures studies providing comparable messages
Transition theory (Geels and co-workers)
Dutch transition policy evaluated (SPRU)

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Conclusions

- Global scenarios (expert-driven) provide the context
- Pathways (stakeholder- and expert-driven) provide robust reduction options
- However, liberalisation and Europeanisation have been more important drivers of the energy transition (1960-2004) than environmental factors (Verbong & Geels 2007)
- And the Dutch approach risks capture by the incumbent energy regime (Kern & Smith 2008)
- Transition policy now replaced by Top sectors policy (the implicit industrial policy focus in energy policy has finally become explicit)
- Not much use is made of scenarios in generating really alternative futures for the Dutch energy system