

Minutes of meeting – CEESA, January 2010

Time and place:

26 January, 9.15 – 17.00

Room 115

Fibigerstræde 11, Aalborg

Participants:

Birgitte Bak-Jensen, Jayakrishnan R. Pillai, Lorie Hamelin, Henrik Lund, Peter Karnøe, Brian Vad Mathiesen, Kai Heussen, Thomas Astrup, Davide Tonini, Poul Østergaard, Erik Schaltz, Poul Erik Morthorst, Frede Hvelplund, Marie Münster, Niels I. Meyer

Note taker: Pernille Sylvest Andersen

Practical information on consortium meeting on Samsø

The consortium meeting will be held on Samsø June 7-9. A conference room has been booked at the Energy Academy along with accommodation at two hotels nearby. An e-mail concerning participation will soon be sent out to the group.

WP1

Three scenarios

- Mostly wind
- Mostly biomass
- High demand
- → Henrik Lund: biomass resources are limited, high wind situation
- Biomass the only scenario in detail

Energy savings

Continue existing trends? Decrease in heat for households, increase in electricity – should be discussed with Brian V. Mathiesen's WP

A reference scenario with policy instruments? The same reference as IDA (BAU reference) following the trends of policy instruments.

Long term marginal costs for conservation vs. supply

Henrik Lund: We could use the results found for Aalborg

Development of neighboring countries

Explicit on what we are doing with these countries

Henrik Lund: We have interconnectors, the same amount as always. We calculate both with and without interconnectors.

Birgitte Bak-Jensen: Different scenarios with/without interconnectors and influence on which countries are calculated with.

Poul Erik Morthorst: Contact Energinet for the amount of interconnectors. Be realistic for the capacity for 2050.

Kai Heussen: We should model the neighbouring countries.

Marie Münster: 3 options for electricity scenarios: use interconnectors, have cables but not use them (no trading), cut cables

Poul Østergaard: Cutting the cables would be worst case scenario

Thomas Astrup: The trend is more and more interconnectors. Makes sense to look at "island example" (cut transmission lines)

Henrik Lund: Interesting to deal with scenario of no interconnectors – how can we do it, what would it cost?

Peter Karnøe: Scenario excluding trade would be unrealistic

Thomas Astrup: It can still be done for academic reasons. Would even out the fluctuations/instability

Henrik Lund: We should see scenarios both with/without trade/interconnectors

Jayakrishnan Pillai: Scenario with interconnectors

Brian V. Mathiesen: Interesting to look at stand-alone system without interconnectors (eliminating trade, balancing the energy system)

- ➔ Already made model without interconnectors, make one with interconnectors
 - One with trade?
 - Does case without trade include a stand-alone system?
 - Handled in WP3

Economic growth

Henrik Lund: Biomass/electricity pricing very important. Make sensitivity analysis. Several oil/co2 prices – dry/wet years.

Brian V. Mathiesen: Choosing the current IEA is lower than the market price and thus good to use

Frede Hvelplund: Should we include numbers from after the financial crisis?

Poul Erik Morthorst: Yes, they could be included. We could use forecast to know where the numbers are going.

Presentation – status on WP1 scenarios (Brian V. Mathiesen)

Initiated a work process

- Quality check of reference system/technology data

Focus areas:

- Electrolysers
- Waste handling
- Transport, incl. sensitivity analyses
- Biomass conversion
- Minimization of biomass consumption

Updated data for industry and aviation

Construction of new high consumption/high biomass scenario

Assessment of the requirement for biomass for chemicals /non-food (50-75 PJ). Good idea to write something about it.

Full scenario in spring 2010

Model scenario using Balmorel for effects on surrounding countries with DK 100% renewable energy

Presentation – waste and Balmorel (Marie Münster)

Waste amounts – effects in 3 scenarios. (BAU, high sorting degree, waste minimisation). In the last scenario there is no waste for energy

3 waste technologies

Difference between EnergyPLAN and Balmorel

Use the same input to Balmorel as to Energyplan

Input to EnergyPLAN: 2 scenarios: 100% renewable energy in DK (surrounding countries the same/not completely there)

- Should be done by this summer

Validation of EnergyPLAN analyses

- should be done by winter 2010

More validity when using two different models (EnergyPLAN and Balmorel)

WP4

Table of contents for their report presented. The report will probably be around 30-40 pages.

Flexible demand

- Duration
- Volume

Potentials

- Households, low – larger in the longer term
- Services, low – larger in the longer term
- Industry, potentials to be developed

Potentials outside normal electricity demand

Strategy

- Within district heating, individual heat pumps w. hot water storage, transport (needs to be regulated), industrial processes, flexible demand in industry/services/households (lowest priority because it is the biggest system)
- How much flexible capacity is needed? Needs to be discussed

Brian V. Mathiesen: Maybe you should organise a process?

Poul Erik Morthorst: how much of the strategy is needed to get the flexible demand required?

Henrik Lund: No need to shift all the meters right now. It will be implemented when appliances are changed over time.

WP2

Biomass potentials – scenarios

- 4 scenarios

Organic farming scenarios

- No feed import – lower meat production
- Unlimited feed import – same meat production
- No animals
- → the most likely scenario chosen as the main one

Danish self-sufficiency scenario

2 Danish diet scenarios

- Recommended diet
- Lacto-ovo diet

2050 current biomass scenarios (graph)

- Frede Hvelplund: We need to know the long-term marginal cost
- Henrik Lund: It would require a biomass price, which would be difficult. Maybe do something else – e.g. Wind turbines, heat pumps (pure costs would not give savings)
- Frede Hvelplund: We need external cost on the supply side
- Frede Hvelplund: We should make a biomass limit and see what the cost will be
- Brian V. Mathiesen: What is the consequence for the main scenario?
- Henrik Lund: This is input for the WPs and we will see at the next meeting
- *(Marie could talk to Niclas concerning input to the Balmorel model (?) increase biomass)*

WP3

Interconnectors

- 3 approaches:
 - o Interconnection as today incl. hourly trade
 - o As today but only for ancillary services/system balance
 - o No interconnection – islanded system

Issues for WP report (table of contents)

Work since last meeting

- Effects of storage systems on system behaviour
- Control strategies

Presentation – (Jayakrishnan Pillai)

V2G systems

3 cases – short/long term simulations with different frequencies, steady-state simulation

Presentation – (Kai Heussen)

Talk on report he is writing – methodological focus

Birgitte Bak-Jensen: It would be easier if it was exemplified in relation to this project

WP5

Waste resources – the numbers are uncertain, just for reference

Waste resources – BAU scenario

Waste resources – high amount scenario

Presentation – (Davide Tonini)

Conversion technologies

Future work – LCA: implementation of LCA by means of Simapro and EASEWASTE (for waste) (period: february-june 2010)

Presentation – (Lorie Hamelin)

Frede Hvelplund: Suggestions/detailed information (at micro-level) from all WPs on technological analyses to WP4 – not raw numbers, but input/behaviour to WP4's focus on market design (e.g. Monopoly threats) – rough text at the summer meeting would be nice.

The work plan is already decided on and under production.

Henrik Lund: Idea for the report: We can make a suggestion on 100 % RE in Denmark and it can be done by doing this and that.

Peter Karnøe: We cannot say anything for sure, but we are quite sure it can be done.