Minutes of meeting: CEESA seminar Haraldskær, Vejle 4th of June 2009

Note takers: Mads Pagh Nielsen and Mette Reiche Sørensen

Introduction to the day

Henrik Lund: We should meet again in one year where we present a draft for the final report for each work package. It is suggested to put in two meetings in October (Ballerup) and January (AAU) where the WPs present their status. There was general acceptance of this in the group.

Discussion

Niels I. Meyer:

Handouts were given to the group with Niels' impression of the current project status.

- Who is responsible for the energy conservation part?? WP4 will consider some of these things but it is still unclear who is responsible.
- Political questions are "blowing in the wind". To which extent can we accept regulation vs. free market mechanisms? Can we accept a radical kind of regulation or should we be more pragmatic?
- Groups should become more aware and involved in the work of each other.
- Transport sector: Free public transportation.
- Heating sector: Should we tear down old houses with outdated insulation standard? Competition between micro CHP and district heating. We have to decide for the final system.
- Biomass: Should imported biomass energy be included. Ecological farming? Waste? Residual biomass?
- Need for at detailed time schedule (Henrik and project WP leaders).
- Political questions should be cleared in the group August 2009.
- Main points in each chapter must be ready by September 2009.
- Perspectives outside the project? We must have a chapter in the final report pointing towards further work!

Henrik Lund:

The question was raised whether we should discuss these points or go in groups. It was decided to briefly comment to the points.

Jesper Munksgaard: We have to be reminded what the outputs of the overall project are.

Kai Heussen: Good approach to set milestones. We have to discuss the structure of the final document. We need cross-sectional discussions to determine interfaces between WPs. Output and main standpoints of the project should be communicated at climate conventions to be held shortly in Denmark.

Henrik Lund:

We already have an outline for the final project structure. WP leaders must return with the final input to this outline a.s.a.p.

The biomass issues have been put on the agenda and we have a sufficient proposal to investigate a scenario. Biomass resources should be used in the BAU-perspective. Options of methanol production must be included. This should be coordinated with WP2. We have one base scenario based on "residual resources". This could be adjusted considering organic farming. We could also consider reserving some resources for industrial products. Inclusion of energy crops could also be an issue to include. We will have to consider which constraints we have in the project and decide whether to include these scenarios.

Niels I. Meyer:

Which sub-scenarios to include? Also remember the parallel case of "conservation".

Henrik Lund:

Maybe we can reach consensus on this or maybe not. Brian and I hope to have the first scenarios ready in October.

Regarding the energy conservation discussion: This is not a key issue. No individual WP is dealing with this. Mainly WP1 handles the issues not included in other WPs. We do include this in the IDA scenarios. What we can improve in CEESA is to better include details on the district heating issues. Based on the numbers from SBI, we can identify some energy conservation measures. The additional cost of making energy conservation during scheduled renovations could be significantly smaller than replacing the current inefficiently insulated buildings.

Niels I. Meyer:

Inclusion of energy conservation makes the project easier to handle from a supply side viewpoint.

Henrik Lund:

We already have assumed very high emphasis on energy conservation in the scenarios. Great savings in energy consumption have been included.

Frede Hvelplund:

Do we have data for the pay-back-time for a given insulation improvement? This would be useful in estimating the economic feasibility of the consequences of an improvement of building insulation.

Henrik Lund:

This is the "old way of thinking" criticized by SBI. SBI says that this is not a cost effective way of thinking as taking all houses and insulating them. Coordination of building renovation yielding improvements in half of the houses would be more efficient and the least costly way of implementing energy conserving measures.

Frede Hvelplund:

This happens nowhere! In the real world, people discuss this in the "old fashioned way". Nothing like this has been done to my knowledge in for instance Aalborg.

Niels I. Meyer:

We cannot accept outdated ways of thinking but must come up with new perspectives. We need more radical thinking!

Frede Hvelplund:

How do we motivate people to do such renovations? We need incentives to change well-functioning houses of a good quality but low insulation standard.

Christoffer Christensen:

It must be pointed out that only old houses of bad standard needing renovation would be considered in this case.

Niels I. Meyer:

If SBI has these data it would be straight-forward to include this aspect in the project. SBI has calculated these costs. I think they are willing to give us more details on this. Who is in this project responsible for this?

Henrik Lund:

Frits and Kai are responsible, I would say.

Frits M. Andersen:

Part of this should actually be in the policy group. The coordination should be done by WP4 and the WP members should then get necessary information from the other WPs.

Frede Hvelplund:

I have to know the cost.

Kai Heussen:

Costs could be staged from the analysis and could be used to envision how far CEESA can go. It would visualize where we have the best cost-benefit – improvement of existing buildings or renewable energy investments:

Brian V. Mathiesen:

It is private economically feasible to make the reductions referring to the IDA climate plan. The costs associated with these saving are described thoroughly and are documented in the plan and we probably cannot be more precise on these issues in this project.

Jesper Munksgaard:

Have solar energy and photovoltaic energy been considered in SBI's work. We must consider this in that case!

Brian V. Mathiesen:

It is not considered by SBI but in the climate report - to a great extent!

Niels I. Meyer:

We could propose to investigate all houses and estimate potentials. It is important to know the potentials. Small steps or a more radical legislation?

Henrik Lund:

We have to use the cost-effective way based on a coordinated improvement strategy. That is the assumption behind the IDA numbers. Otherwise the cost would be significantly higher.

Niclas S. Bentsen:

We could have a chapter/section in the report identifying the "hot-spots" in the report telling where it would be possible to go even further than our proposals.

Henrik Lund:

The major challenge is not heating the houses and we are not 100% dependant on biomass. One of the spots where we mainly have this challenge is within transportation. Another area is the renewable energy sources of electricity supply. We need to fuel backup power with hydrogen and there we need biomass resources. We also produce heat from such plants, so heating houses is not the great issue; it is rather biomass resources and transportation. The third import issue is "industry". What could be district heating – which industries need process heating – this is more difficult to establish. So far we have assumed using biomass and maybe this is critical as we are perhaps more constrained concerning biomass.

Kai Heussen:

What is the procedure until October?

Henrik Lund:

The more we can agree on today the better! Maybe we should stay in plenum rather than separate.

Brian V. Mathiesen:

Would be good to go into groups!

Next meetings

Henrik Lund:

Agreement upon the dates for the next one-day meetings is crucial!

Proposal: Week 44 2009 – e.g. Tuesday 27th October in Ballerup. Week 4 in 2010 – e.g. 26th January. Dates will have to be cleared finally but there is agreement on the weeks.

Seems as if these dates (so far) are ok with the members of the group participating in the present meeting.

Next consortium meeting (in Copenhagen) is planned to be 8th-10th of June 2010.

Niclas proposes to use a low energy house!

Workpage updates and summarizing agreements/conclusions on the future work:

WP1

Status and future work:

In terms of biomass, we have a proposal from WP5 which can be used for WP1 scenarios. The scenarios have already been defined.

We use a BAU scenario on the basis of input from WP5.

We implement methanol solution and coordinate with WP2

We use one basis scenario in terms of "residual resources"

We may add a series of subscenarios, such as for instance:

- organic farming representing one subscenario.
- include energy crops, 1st step is to make synergy in relation to biogas production

We shall use these scenarios to provide information on biomass and restrictions and demonstrate the options.

Based on what we have now, we will start working on scenarios and show temporary results in October.

High wind, low demand scenario will be the main scenario.

In terms of reference, we use the same reference as the Climate Commission uses

Overlaps will exist between IDA Climate Plan and CEESA scenarios, but differences in biomass share. In this sense, CEESA will have to provide a better alternative.

WP2 and WP5

Status and future work:

Clarifications required concerning WP5 assumptions:

- Biomass potential – crops/forest?
- How many hectares do we have?
- Biomass conversion

Optimisation approach of WP5? Must be clarified in order to be able to select possible solutions

Important to agree on a range of biomass indication – but no final numbers at this point.

Important to look into options such as methanol, describe biomass carefully and look into chemical options.

Agreements concerning future work:

1. Agree on the amount of biomass – provide figures to WP4
2. Define how to integrate it into the system

Emphasize how we treat biomass and waste including imported biomass and products. Define how we reach the figures we use.

How do we include methanol?

We miss the figures of methanol and manure. WP5 will describe these in the technology catalogue.

Organic farming will be included in another scenario, but not in the BAU scenario.

Figure by Thomas Astrup and Niclas S. Bentsen:

WP1 needs some details on the waste part.

How much can we use for energy production? Define what is used for food production today to get an overview of the resources available.

Define a qualitative measure to determine if the use of a certain resource has a strong or weak impact on food production.

Conclusion: limit the use of biomass

By 1/10 2009, the first drafts for inputs to Transport Scenarios shall be ready:

- Biomass potential scenarios (Niclas)
- Biomass conversion technologies (Niclas + Mads)
- Prioritization table with area/PJ and el/steam efficiencies and total efficiencies (Niclas)
- Waste conversion technologies (Marie)
- Synthetic fuels from electricity (methanol is high priority) – where to get CO_2 for synthesis gas production from electrolyzers (Mads)
- Overall discussion of the technical implications of changing infrastructure.

- Up-date of existing data for vehicles, busses, trains and aviation (Erik with support from Mads)
- Up-date of shift between different modes of transportation (Brian)
- Up-date of data for road-pricing (Brian)

⇨ New draft scenarios (Brian)

At the October meeting

Draft scenarios will be presented for:

- Hearing of draft scenarios with other WPs
- Hearing of draft scenarios with experts

By 15/12 2009: More or less final report

- Draft report with transport scenarios
- Precise description of one scenario which is picked as the recommend scenario as main outcome for the CEESA project.

Poul Østergaard:

What are you going to do after 15/12?

Brian V. Mathiesen:

We need to have a finalized transport scenario.

WP3

Status and future work:

How do we map the changes that have been made to the Reference in the CEESA project?

EnergyPLAN:

- Maximum grid stabilisation share: 30% vs. 0% in CEESA
- Theoretical minimum unknown

Inputs from WP3 to WP1 are most welcome, identifying better figures and implement these into the model.

WP3 would benefit from a clarification of the calculations behind EnergyPLAN to know if some adjustments should be made.

In relation to WP4: communication to clarify market design

Which type of technology is needed? How will you get this? Motivation for investing in the right technology.

Link between WP3 and WP4: To define the regulation system.

Define technical requirements, before WP4 can define regulation measures.

List challenges, identify problems and communicate with WP1 on how to change scenarios in order to solve problems.

Communicate to WP4 if you define problems related to market design

Frequency control with battery in vehicle? Or outside the vehicle?

Short term: September 2009 – Bornholm Conference

- Joint paper on Bornholm case (CEESA issues/EnergyPLAN)
- Paper on short-term system balancing
- Paper on the use of electric vehicle storage for power system regulation

At the October meeting:

Draft document will be presented on:

- **Challenges**
    - From resource changes (more wind…)
    - Opportunities from information technology (controllability)
- **Discussing the applicability and validity of the Bornholm case** (how does it scale?)
- **Methodology discussion:**
    - Going from case simulation to future plan.

- From abstract system descriptions (requirement?) to the future plan.

Appendix report

- Effects of the resource changes on the technical system
- General joint papers by Kai and Jayakrishnan
- Specific separate papers.

WP4

Status and future work:

Questions to be answered:

- How should the individual heat pump system look like?
- Long-run marginal costs of the heat supply?

Scenarios are ok.

We work on a general description of the criteria and objectives: Efficiency, cost, political acceptability etc.

At the October meeting:

- **A catalogue of criteria to select best solutions will be presented**. Sectors included are consumption and supply sectors. One special issue is the radical changes required in the present system.

Some aspects cannot be finished without inputs from the other WPs. Inputs concerning public regulation are required from all WPs to WP4. A meeting should be held to develop this input in an iterative process.

Brian V. Mathiesen:

We must realize that some things do not change that much and we can work on this right away.

Kai Heussen:

What is the criterion for having a “good scenario”? In the catalogue, it should follow what CEESA accepts and does not accept regarding the criteria.