CEESA 4th Consortium meeting

2-4 June 2009, Vejle

Welcome and introduction

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Some Thoughts on

- What did we knew before CEESA ?
- What did we plan to learn from CEESA ?
- How are we doing so far…?
- What is the expected outcome of other projects: (Heat Plan DK 2008, IDA Future Climate 2009, Climate Commission 2010, parallel VTU projects)?
- What should be our key focus and potential contributions from CEESA?

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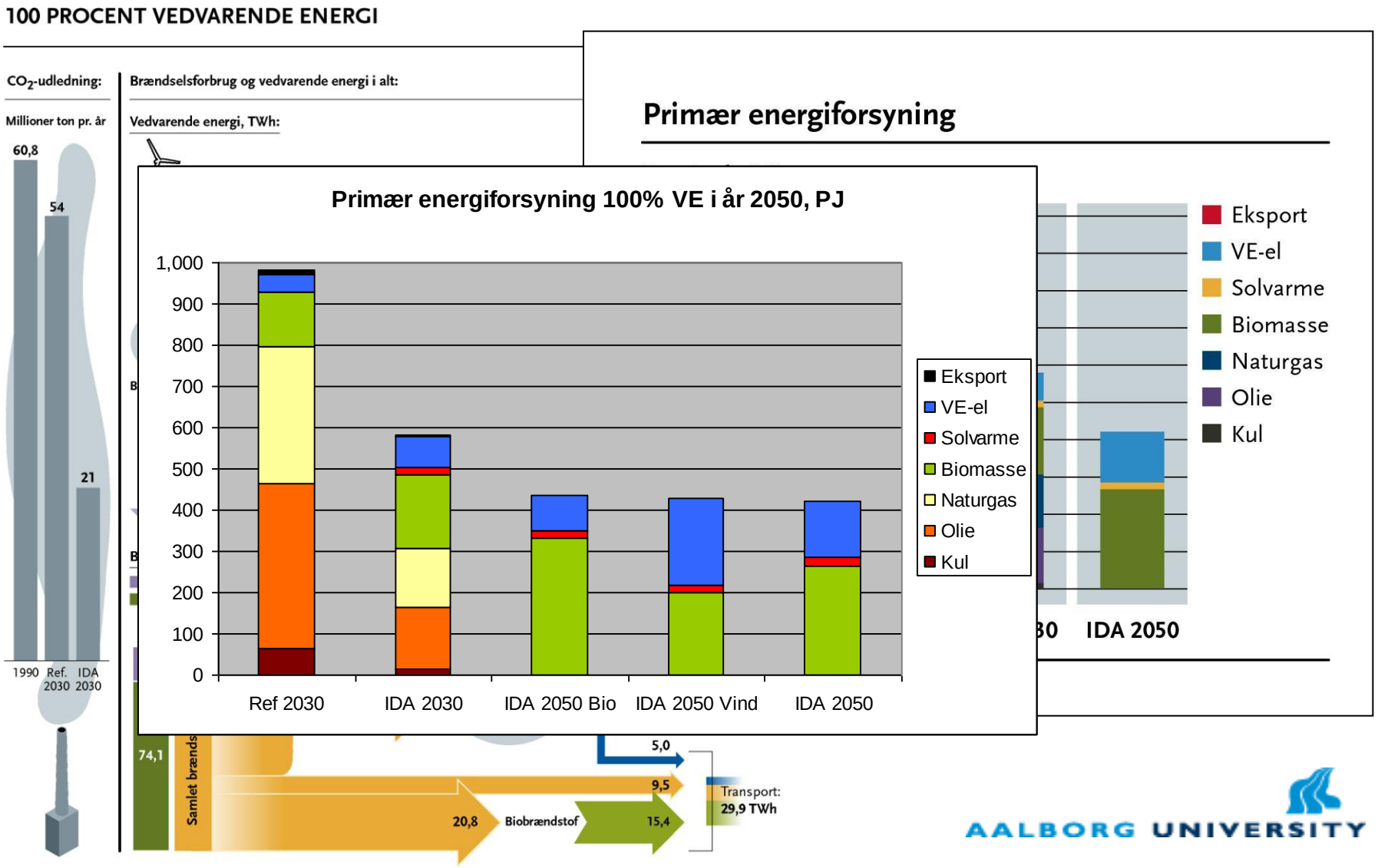
Based on IDA Energy PLAN



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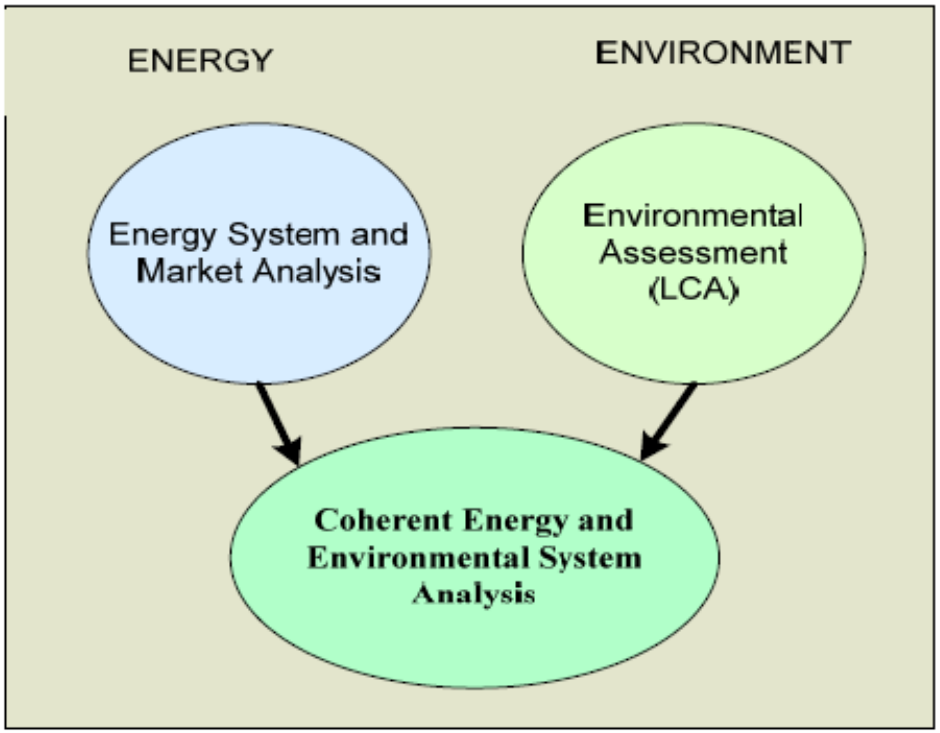
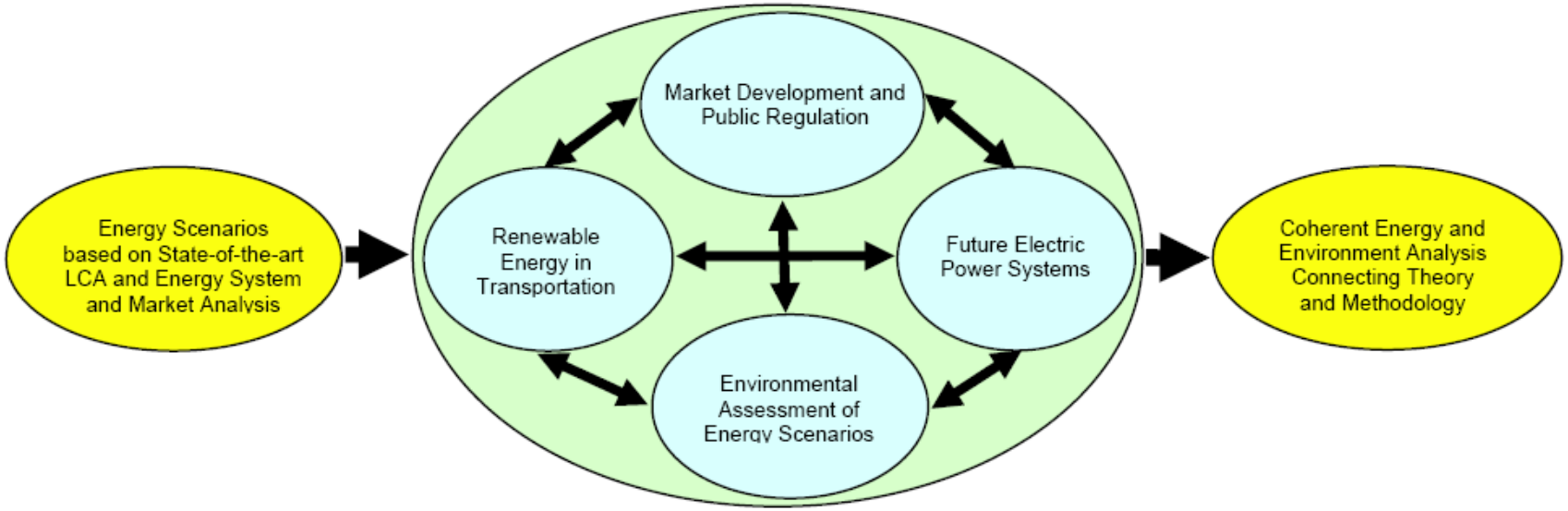
IDA Plan versus CEESA

IDA plan (and other similar scenarios) was not coherent at the following points:

- Biomass resources (How much?)
- Future Electric production and distribution system (Can this be implemented?)
- Public Regulation Measures (How should such development be implemented?)
- Transportation (What kind of mix is possible and appropriate?)


ENERGY
ENVIRONMENT
Energy System and Market Analysis
Environmental Assessment (LCA)
Coherent Energy and Environmental System Analysis


Energy Scenarios based on State-of-the-art LCA and Energy System and Market Analysis
Market Development and Public Regulation
Renewable Energy in Transportation
Future Electric Power Systems
Environmental Assessment of Energy Scenarios
Coherent Energy and Environment Analysis Connecting Theory and Methodology

100% RES Scenarios

20-30 years sustainable energy scenarios based on 100 % renewable energy sources (All scenarios include trade on the international energy markets of fuel and electricity)		
	High degree of electricity from fluctuating sources (low degree of bio-fuels)	***Low degree of electricity from fluctuating sources (high degree of bio-fuels)***
Centralised energy system	E.g.: Electricity for transportation. Many large wind farms and few fuel-based centralised power stations.	E.g.: Biofuel for transportation, large bio-refineries and many biofuel-based centralised power stations.
Distributed energy system	E.g.: Electricity for transportation. Many distributed wind turbines and small CHP plants.	E.g.: Biofuel for transportation, bio-refineries, distributed wind turbines and small CHP plants.

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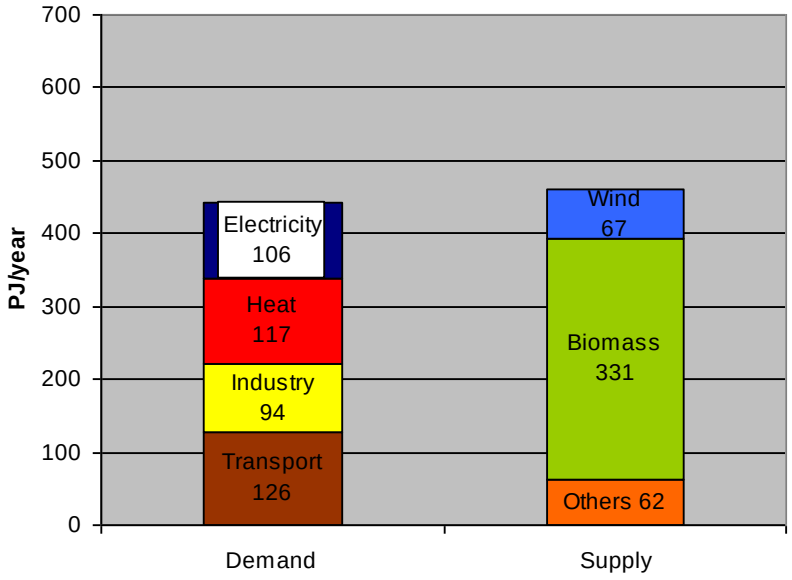
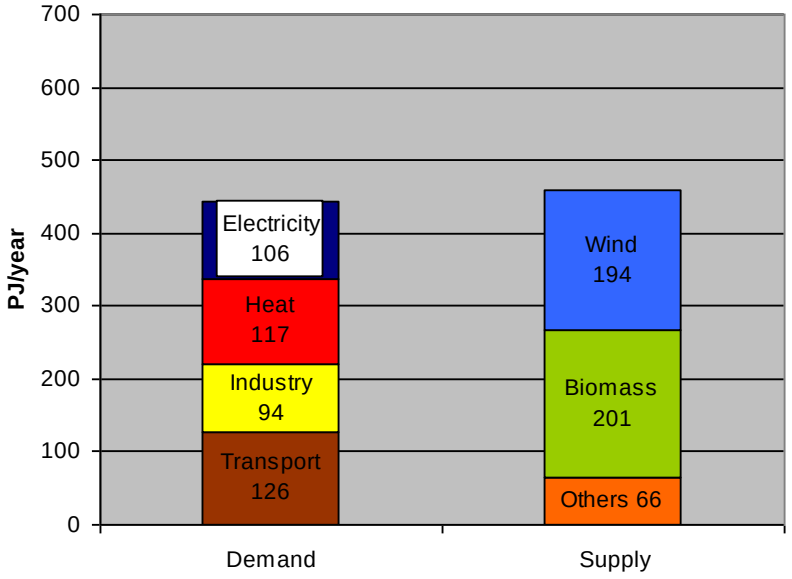
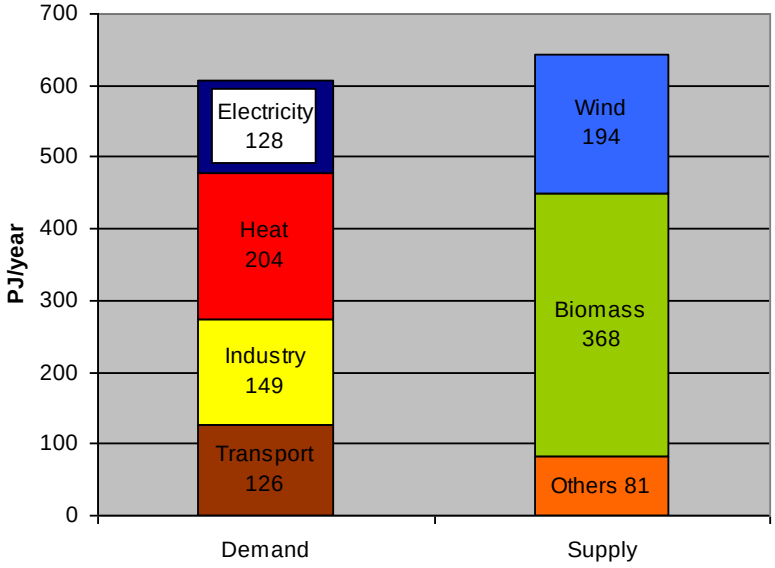
Biomass



Wind



High Demand



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The Work Flow in WP1

- Task 1.1: Provide a framework of scenarios including ref. Scenario of demands
- Task 1.2: Implementing inputs from the other WPs into the tools and methodologies
- Task: 1.3: Re-calculating (and redesigning) the scenarios

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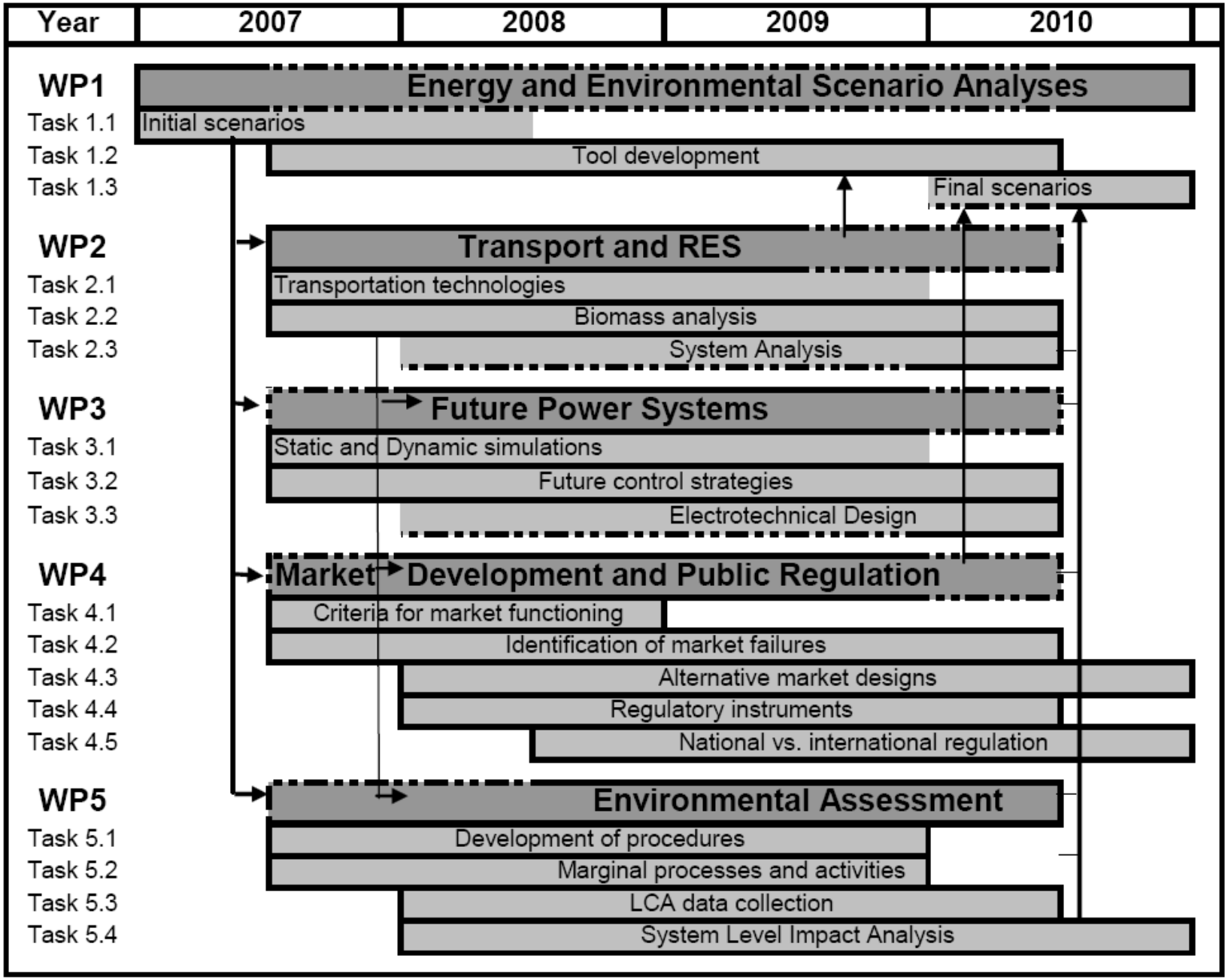
Year
2007
2008
2009
2010
WP1
Energy and Environmental Scenario Analyses
Task 1.1
Initial scenarios
Task 1.2
Tool development
Task 1.3
Final scenarios
WP2
Transport and RES
Task 2.1
Transportation technologies
Task 2.2
Biomass analysis
Task 2.3
System Analysis
WP3
Future Power Systems
Task 3.1
Static and Dynamic simulations
Task 3.2
Future control strategies
Task 3.3
Electrotechnical Design
WP4
Market Development and Public Regulation
Task 4.1
Criteria for market functioning
Task 4.2
Identification of market failures
Task 4.3
Alternative market designs
Task 4.4
Regulatory instruments
Task 4.5
National vs. international regulation
WP5
Environmental Assessment
Task 5.1
Development of procedures
Task 5.2
Marginal processes and activities
Task 5.3
LCA data collection
Task 5.4
System Level Impact Analysis

Ref scenario on demands

- Discussions on different scenarios especially on transportation.
- A new ref projection has now been produced and is likely to be used in both IDA Future Climate project and by the Climate Commission
- We should be able to
  - Implement such ref scenario into the CEESA project
  - Combine any change in demands with specific technological changes and Public Regulation Measures

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District heating and savings

- IDA Plan on Individual heating: heat Pumps match the system best.
- IDA Plan: Not in details with regard to DH costs and the influence from Geothermal and Waste etc.
- Heat Plan Denmark: Optimal solution is DH and Heat Pumps, even when space heat demand is decreased.

Waste and geothermal

- New Studies: Frederikshavn, Maries PhD and IDA Climate Plan…
- Combining Waste CHP with Geothermal steam storage….
- New technologies have been implemented into the EnergyPLAN model

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Biomass resources

- IDA Energy plan 2006: Biomass versus wind (storage)
- Discussions on Biomass resources..

- We should be able to
  - Reach consensus on residual resources
  - Identify relation between waste and biomass/materials amounts and available resources
  - Identify one or more possible Biomass scenarios

Biomass and Transportation

- WP2 inputs from last meeting: Transportation is a mix of different needs and demands: Needs both electricity and biomass resources ….!!?
- HW: Air-fare can take all biomass resources alone, and its a limited resourse
- ::: What about algae oil….!!!

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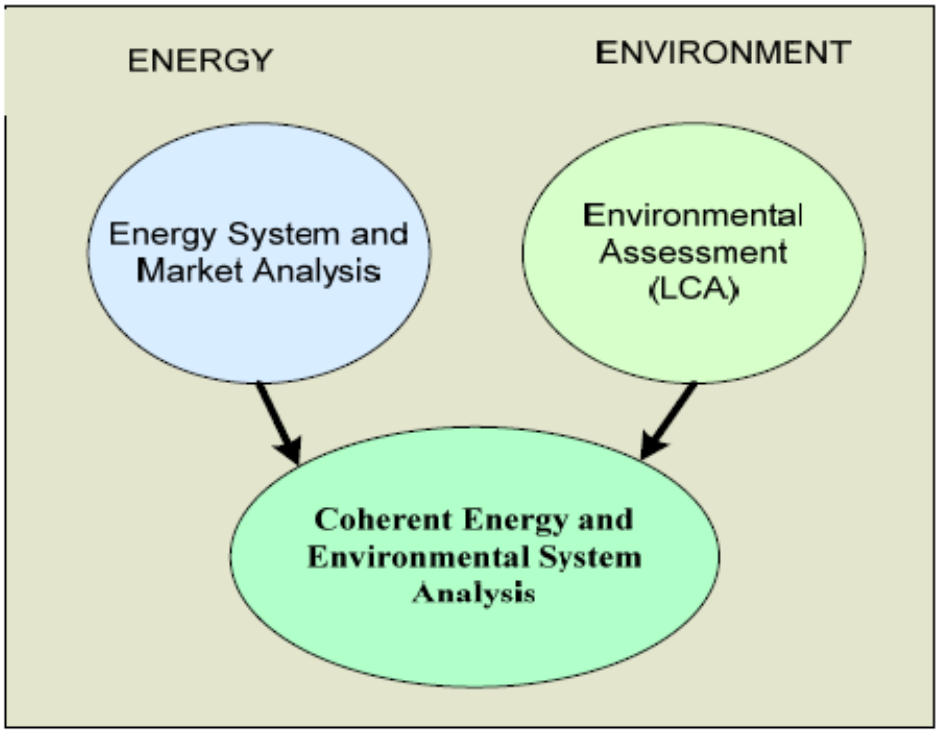
What about the key-issue?



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Main focus for this meeting

What are the inputs from the WPs on the scenarios (incl. Tools and methodologies):

- WP2: Possible transportation mix mid future, far future…??
- WP3: Can this be done (below the hour), or should be moderate, and what..???
- WP4: ….
- WP5: …Biomass resource… LCA methodology…

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