ARBOR Workpackage 3
Sustainability assessment and strategy development

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ARBOR – Sustainability assessment and strategy development

Which questions should be answered by work package 3?

- How could the developed concepts and applied techniques be transferred?
  - What are the necessary framework conditions in the region?
  - Economic conditions and administrative environment

- How could we assure the sustainability of the biomass supply chains?
  - What are the environmental impacts of the systems during its lifetime?
  - From a holistic perspective: What are competing utilisation pathways?

- What are the suitable strategies for pilot regions?
  - To foster the sustainable development of biomass in their region
  - To support the transfer of the ARBOR pilots into their region
Work Package 3: Sustainability assessment and strategy development

- Action 11: Assessment of the legal, administrative and economic framework in the NWE member states
- Action 12: Environmental assessment of the concepts and technologies of the pilots and pilot regions
- Action 13: Economic assessment of the concepts and technologies of the pilots and pilot regions
- Action 14: Strategy development for pilot regions and transfer
ARBOR – legal and administrative framework analysis

Work Package 3 – action 11: Policy assessment in NWE

EU-, national and regional biomass valorization targets

- National Energy Targets for Biomass Valorisation
- Regional Energy Master Plans for Biomass Valorisation

EU-, National and Regional Bio-Energy Support Systems

- Legal Incentives and Market-Based mechanisms
- Assessment of Administrative Structures
- Public and Private Responsibilities, Administrative Structures

Description of Consequences by an Adapted Material Flow Steering

- Identifying of Political / Legal Obstacles
- Design of Policy Papers for enhanced Bio-Energy Valorization
Work Package 3 – action 13
Economic assessment of the concepts and technologies of the pilots and pilot regions

- **Micro economic perspective**
  - economic potential of the concepts and technologies -> business cases
  - Analysis of investment volume by different technology scenarios
  - specific costs for the supply of heat, electricity and transport fuel by the considered biomass supply chain unit
  - Comparison of the specific costs (heat, electricity, transport) incl. the regional support schemes amongst the countries (transfer of the economic concepts to other member states)
Work Package 3 – action 13  
Economic assessment of the concepts and technologies of the pilots and pilot regions

- **Macro economic perspective:**
  - regional benefits / regional added value
  - Labor effects
  - Regional and transregional capital flows
  - Calculation of specific costs and benefits for the stakeholders along the supply chain (e.g. farmers, forest owners, communes)
Work Package 3 – action 12
Environmental assessment of the concepts and technologies of the pilots and pilot regions

- Life Cycle Assessment as the method of choice
ARBOR – Environmental assessment

Work Package 3 – action 12
Basic principles: Life Cycle Assessment (LCA)

- Compilation and evaluation of the mass and energy inputs, outputs and the environmental impact of a system throughout its life cycle (ISO 14044)

- Compare systems & technologies fulfilling the same functions according to their environmental performances

- Decision-making support for ecodesign and eco-marketing
Work Package 3 – action 12

Environmental assessment of the concepts and technologies of the pilots and pilot regions

- agreed methodology / choice of biomass supply chains
  - Pyrolysis of greenery cuttings from parks and other communal areas (Stoke-on-Trent)
  - Nutrient recovery from manure and digestate (Flanders)
  - Valorisation of greenery cuttings from nature conservation, parks and roadside (Utrecht and Bliesgau / Saarland)
  - Dry anaerobic digestion, biogas cleaning, upgrading and injection into the grid (Utrecht)
  - Low impact crops (Short rotation coppices / cover crops ...)

- Identification of reference standards for comparison

- revised and adapted life cycle inventories (LCI)
Work Package 3 – action 12
Environmental assessment of the concepts and technologies of the pilots and pilot regions

- **Environmental impact assessment**
  - life cycle inventory assessment (LCIA) (ISO 14040-14044)
  - SWOT analysis of the life cycle assessment results (suitable for communication to decision makers and stakeholders)
  - catalogue of measures to optimize the biomass supply chains and conversion techniques from an environmental point of view
  - publications and conference participation
Work Package 3 – action 14
Strategy development for pilot regions and transfer

- **Derivation of optimisation scenarios**
  - Derivation of optimisation scenarios regarding the different utilization options
  - Display of potential barriers and showing of possible solutions

Principles of the strategies should be **transferable within NWE and beyond** and need to take into account the interlinkages between all possible valorisation pathways.
ARBOR – Strategy development

Work Package 3 – action 14
Strategy development for pilot regions and transfer

- Strategy development for pilot regions and transfer
  - Design and evaluation of a general strategy for pilot topics under consideration of environmental and economical aspects

- Consulting during implementation
  - Consulting & monitoring of the strategy and concept implementation
ARBOR – Stakeholder involvement

Work Package 3 - Stakeholder involvement

“gaining insight in regional structures”
“transfer of results”
“sensitisation of stakeholders”
“Creating acceptance”
“getting feedback”

Transnational advisory Board

- Membership of decision makers from regional Policy, Science, Business and Non-Governmental Organizations
- Annual meetings within project life time
- Reconciliation for applied strategy development
Thank you very much for your attention!

Any questions ...?

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