

Nexus challenges for sustainable biomass policy in Sweden, Latvia and the Netherlands

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BACKGROUND AND CHALLENGES

- SIM4NEXUS (Sustainable Integrated Management FOR the NEXUS of water-land-food-energy-climate).
- Sector-crossing and multi-scale analysis for a low-carbon and resource-efficient Europe.
- System Dynamics Modelling (SDM) and serious gaming (SG) for understanding complexity and learning.
- Latvia, Sweden, the Netherlands: focus on biomass.
- But also challenges for policy: inconsistencies & trade-offs water, land, energy, food and climate.
- Biomass sustainability disputed: high levels of greenhouse gas emissions and trade-offs with biodiversity, soil and landscape.



THE NETHERLANDS

Biomass-poor and low self-sufficiency. Much import of biomass, but image of biomass persistently negative. Biomass for energy: sustainability heavily debated (imported woody biomass or manure). Many misconceptions and differences in biomass types ignored. Until 2020, biomass policy fragmented and incoherent.

SIM4NEXUS case: conflicting goals & ambiguity between biomass as an essential source of renewable energy for a low-carbon economy & trade-offs on water, land and food.

Stakeholders: developed the thinking of barriers and opportunities and the SDM.

Playing the serious game: for learning how biomass types may conflict/ synergize a low-carbon & resource efficient economy.

LATVIA

Biomass-rich and high self-sufficiency. Forests, almost half of the land, is cornerstone of the economy. High export capacity but low added value, low on R&D, market incentives and infrastructure. The use of energy-crops competes with high-end usage in the bio-based economy. Conflict with national climate goals.

SIM4NEXUS case: focus on low-carbon development considering interlinkages with the Nexus components climate, water, energy, land use, and food (synergies, trade-offs and solutions).

Stakeholders: co-developed SDM and SG by thinking beyond their own 'silo' dimensions.

Playing the SG: learn about green solutions to agriculture and food, land-use and forestry, energy and water.

SWEDEN

Biomass-rich and high self-sufficiency. Forests, 2/3 of the land, are important to the economy. As biofuel market grows, so do concerns on the effects of biomass use on biodiversity & ecosystems. Competing claims forestry, water and energy.

SIM4NEXUS case: focus on understanding the complex forest-water interlinkages & climate change

Stakeholders: co-developed the conceptual model for the SDM and SG, and supported the data collection as well.

Playing the SG: for education, not decision making.

REMEDIES

Netherlands: More focus on competing claims for land for feed, fibre and bio-energy. More clarity and transparency of various uses of biomass and link to business models. Need for a participative process for the 2030 policy for a low-carbon and resource efficient economy. Clarify criteria for sustainable biomass use.

Sweden: More focus on biodiversity & resilient ecosystems; environmental produce; more collaboration, capacity building, new concepts for green infrastructure and land-use; learning of good practices and success-stories.

Latvia: Diversification of land use; more innovative technologies for carbon emitting production processes; more R&D, improve infrastructure, less bureaucracy and more market-based incentives.

