

Summary of Session III

Renewable energy self-sufficiency and sustainable land use systems

Session III addressed sustainable land use systems in relation to renewable energy self-sufficiency and in the framework of sustainability concepts. Thereby, four major topics have been identified:

1. *Biomass production*

Biomass plays an important role in energy self-sufficiency due to its flexible properties such as the possibility to store it, and its contribution to the heating sector, or rural development. Yet, experts and stakeholders see biomass production in an increasingly negative light due to trade-offs to other land use claims and negative social and environmental effects. The presented paper discussed such effects on different scales and in various social contexts, which gave insight into the interconnectedness of renewable energy self-sufficiency, food production, nature protection, and land use changes due to increasing biomass production worldwide.

2. *Spatial scale*

Renewable energy self-sufficiency is a concept pioneered by regional and mostly rural areas in Germany. Therefore, the scientific community has until now, mainly discussed regional, and decentralized renewable energy concepts that hardly consider big cities. Yet, when regions exploit their energy potential from agricultural production based on regional (food and energy) consumption patterns, a shortage for cities could be expected in the future. Therefore, the matter of an appropriate spatial scale of energy concepts was discussed during the session and in relation to several papers that dealt with mapping and estimation techniques of regional energy potentials and demands.

3. *Spatial planning*

The exploitation of renewable energies is related to changes in the landscape. Therefore, spatial planning from the local to the national scale was discussed during the session.

Different regulations and planning tools like the approval procedure for a power plant or the regional plan in Germany were addressed. It was questioned, whether existing tools and regulations provide an appropriate framework to deal with new problems arising from the production of renewable energies.

4. *Geographic Information Systems*

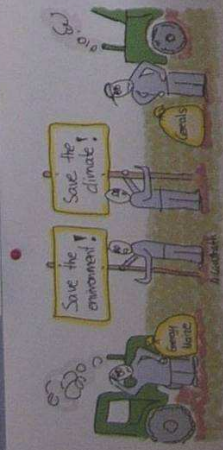
Several papers applied GIS techniques for mapping and the analysis of regional renewable energy potential. The studies agreed that prior to decision-making, renewable energy potential and demands should be surveyed. Geographical Information Systems provide a powerful conceptual and analytical framework for such surveys.

Finally, the concepts of “*energysheds*” and “*demandsheds*” were discussed during the session. The concepts imply the definition of an appropriate spatial scale and the investigation of a typical regional renewable energy supply and demand, as well as, the graphical and analytical representation of the results in a GIS framework.

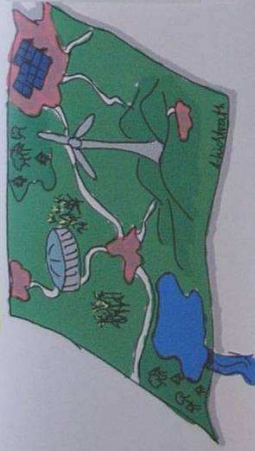
Session III

Sustainable Land use Systems

farmers, citizens, municipality
Conflicts in
RE and Land use



Linking Energy with Spatial Planning

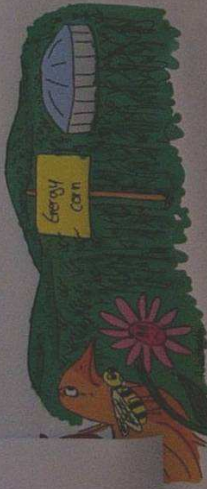


Energy Potentials & demands



Biomass and Regional Planning

The Question of Biomass development and Land use



Untapped Potential in Residual waste use

Communicating Science and technology

Case-by-case review vs Nationwide procedure



Putting Knowledge into Practice

Resource Availability

future vision using back casting

Cooperation vs Competition between Communities