

ARTEMIS (“Assessment of Renewable Energy Technologies on Multiple Scales – A Participatory Approach”

Executive Summary

The aim of the research project ARTEMIS (“Assessment of Renewable Energy Technologies on Multiple Scales – A Participatory Approach”) was to apply, critically assess and further develop participatory multi-criteria evaluation (MCE) of selected future energy scenarios that are based on sustainability criteria (social, economic, environmental, systemic-technological).

In a first step, energy scenarios for Austria for 2020 were developed in cooperation with energy experts and stakeholders at two different levels. These scenarios specifically addressed electricity and heat generation from renewable energies as well as, to a lesser extent, energy efficiency measures. The scenarios were elaborated both for the national scale (national case study) and for two communities in Styria (local case study).

In a second step, for both case studies evaluation criteria were developed in collaboration with and weighted by stakeholders. The 15 (local level) and 17 (national level) quantitative and qualitative criteria chosen represent the societal goals regarding sustainable energy systems. The weights attached to these criteria reflect the social preferences. The criteria range from environmental aims (reduction of CO₂ emissions) to social (impact of energy system on social cohesion), systemic-technological (security of supply) and economic aims (employment created by the energy system). The evaluation of the scenarios was based on impact matrices, which included the impacts of the scenarios on the criteria described above. The data was compiled (1) by exploring and integrating existing databases and studies into scenario impact modelling and (2) through personal interviews with selected experts and stakeholders.

The evaluation and ranking of the scenarios was calculated by use of the multi-criteria evaluation (MCE) method PROMETHEE.

The result of the MCE was a ranking of the energy scenarios on both geographic levels – depending on the performance of the scenarios against the criteria. On the national level rankings were calculated for all stakeholders and different preference profiles derived. These preference profiles allowed us to study the ‘landscape’ of social preferences. Thus we gained a deep understanding of the conflicts of interests in the energy field, the potential for compromises, and the consequences of certain energy technology pathways. Since the two local communities, which were involved in the ARTEMIS project, strive to become certified as part of the Austrian ‘e5-programme’ (cf. www.e5-gemeinden.at), local-level results of the scenario ranking will be used for this process. The e5-programme assesses and certifies local communities with respect to their attempts to use energy more efficiently and to intensify the use of renewable energy.