

The regional roles and benefits of wind power – a monitoring and mapping process for the partner regions Bavaria, Georgia, Québec, São Paulo, Shandong, Upper Austria and Western Cape

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Motivation

Within the political framework of the Regional Leader's Summit (RLS), the regions Bavaria, Georgia, São Paulo, Québec, Shandong, Upper Austria and Western Cape founded the scientific Regional Renewables Alliance (RRA) (<http://www.rls-energynetwork.org/>). Wind energy supports those regions' energy systems' transition and responds to climate change and growing concerns over energy security.

Problem Statement

The technological leadership of the partner regions in the renewable and wind energy sector offers an opportunity to establish new energy markets. However, these potentials are limited due to non-harmonized and only partially elaborated wind energy data on the different regions' levels. Some regions do not have high quality, publicly available data on wind energy, which limits the potential for the exchange of key technologies and knowledge and informed policy development. Further, this increases the effort of preliminary site identification and financial analyses and hence narrows the field of potential commercial developers.

Methodology

A monitoring and mapping process regarding wind energy for each partner region is implemented. This data base provides the status quo and potentials of wind energy of the partner regions and identifies scientific, industrial and administrative key players regarding wind energy. The data collection for the different regions focuses on descriptive data, such as number of entries and wind farms, location and turbines. The importance of wind energy to the regional energy structure is revealed by displaying time-series data of installed capacity and electricity generation of wind power. A particular focus lies on energy- and socio-economic data related to wind energy such as employment and value added in the area of wind power (supplier and service companies, operation of wind power stations) and mitigation of CO₂ emissions compared to conventional energy generation.

Results

The RRA's work allows the determination of the wind energy structures of the individual regions regarding the energy system and the energy technologies in place. A consistent monitoring and mapping procedure regarding wind energy ensures methodological transparency so that wind energy data can be properly analysed and reconfigured between the regions' researchers and decision makers.

Due to the monitoring and mapping process, it will be possible to demonstrate what the regions can learn from each other. The major result is the evaluation and harmonization of existing and newly generated wind energy data (installed capacities, electricity generation, socio-economic benefits) in order to allow comparative studies of the status quo and the developments within the partner regions, and to identify synergies and business opportunities.

Conclusions

Placing technology maps and the underlying datasets support research and offer transparency in project development processes. The data set is intended to be utilized as high-quality input data to facilitate the preparation of joint transnational research and innovation projects regarding wind and renewable energy between the RLS partner regions.