

THE TRANSITION OF THE AUSTRIAN ENERGY SYSTEM TO A HIGH PENETRATION OF WIND ENERGY: VISIONS, VALUES AND COSTS

Patrick Scherhauser, University of Natural Resources and Life Sciences, +4314765473211, patrick.scherhauser@boku.ac.at

Stefan Höltinger, University of Natural Resources and Life Sciences, +4314765473119, stefan.hoeltinger@boku.ac.at

Boris Salak, University of Natural Resources and Life Sciences, +4314765485328, boris.salak@boku.ac.at

Thomas Schauppenlehner, University of Natural Resources and Life Sciences, +4314765485316,
thomas.schauppenlehner@boku.ac.at

Johannes Schmidt, University of Natural Resources and Life Sciences, +4314765473118, johannes.schmidt@boku.ac.at

Overview

Wind energy is a key technology towards achieving a low-carbon society, because it is one of the most cost-effective technologies in an energy system with high shares of renewables, in particular in Europe (Blanco, 2009). In Germany, UK, Poland, France, Sweden, and also some Austrian regions wind energy has experienced significant growth in recent years. However, the lack of acceptance of renewable technologies and wind power constrains ambitious renewable energy deployment targets. Studies repeatedly highlight that people support wind energy in general, but oppose to specific wind farm projects often on a local level (Firestone et al., 2015; Wolsink, 2012).

In a transdisciplinary project we created the vision of more than doubling the wind energy production in Austria until 2030 (from 5.8 TWh in 2016 to 13.4 TWh in 2030). We established different demand scenarios and estimated the related costs on the basis of a participatory modelling approach (Höltinger et al., 2016). The calculation showed that the levelised cost of electricity (LCOE) are strongly depended on the availability of suitable areas, but also on policy support schemes and a certain level of feed-in-tariffs. However a successful transition towards renewable energy is dependent on various elements and not only on the market and socio-economic acceptance (Wüstenhagen et al., 2007). The crucial question is how a transition management can adequately comply with the complex social dynamics and vice versa. Therefore we confronted stakeholders at various levels of policy-making with the vision and collected their different views, values and preferences about it through conducting interviews and focus groups (Scherhauser et al., 2017). The analysis demonstrates that the participating individuals and organisations represent different interests, rationales and beliefs, which are embedded in specific narratives. According to the statements of our respondents three influential narratives could be detected: a) nature conservation (protection of wildlife, habitat and landscape); b) human wellbeing (reducing or preventing impacts on human ecology); c) ecological modernisation (e.g. the implementation of technical solutions like renewable energy generation, which reduce the human impact on climate change and the dependency on fossil fuels). These narratives strengthen the problems of interaction and make a societal consensus about the the future development of wind energy in Austria nearly impossible.

Methods

Participatory modelling, focus groups, interviews.

Results

The paper will highlight that the expected costs of a high penetration of wind energy in Austria do not play the only decisive role in a successful transition management. In order to understand and may overcome the many veto positions and stumbling blocks there is a need to investigate the salient beliefs of stakeholders and decision-makers stocked in narratives like nature conservation, human wellbeing or ecological modernisation.

Conclusions

As a successful transition management is often stocked in different narratives about the future development of wind energy it is necessary to counterbalance the selfishness of attitudes and open up institutional as well as personal inertia.

References

- Blanco, M.I., 2009. The economics of wind energy. *Renewable and Sustainable Energy Reviews* 13, 1372-1382.
- Firestone, J., Bates, A., Knapp, L.A., 2015. See me, Feel me, Touch me, Heal me: Wind turbines, culture, landscapes, and sound impressions. *Land Use Policy* 46, 241-249.
- Höltinger, S., Salak, B., Schauppenlehner, T., Scherhauser, P., Schmidt, J., 2016. Austria's wind energy potential - A participatory modeling approach to assess socio-political and market acceptance. *Energy Policy* 98, 49-61.
- Scherhauser, P.,Höltinger, S., Salak, B., Schauppenlehner, T., Schmidt, J., 2017. Patterns of acceptance and non-acceptance within energy landscapes: A case study on wind energy expansion in Austria. *Energy Policy* (in press).
- Wolsink, M., 2012. Wind Power: Basic Challenge Concerning Social Acceptance, in: Meyers, R.A. (Ed.), *Encyclopedia of Sustainability Science and Technology*. Springer New York, New York, NY, pp. 12218-12254.
- Wüstenhagen, R., Wolsink, M., Bürer, M.J., 2007. Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy* 35, 2683-2691.