

The presentation will discuss strategies for implementing renewable energy resources into remote Arctic electricity grids. For such a transition process, it is crucial to study all effects of the process. In the following study, we have used system dynamics to evaluate the different options of a transition process for remote Arctic communities. The energy transition is a complex process, which touches several other areas, such as engineering, economics and social aspects. For a successful transition, it is not just important that the technical side and reliability are well-considered. Also, economic aspects play a crucial role. Moreover, especially in small places like remote Arctic communities, it is essential to consider the techno-social elements.

The following research tries to answer 'how renewable energy can be introduced into remote Arctic micro grids'. To answer the overarching question, a set of underlying questions has to be answered. Which environment is needed to foster a transition process towards renewables? In that context, the environment is pointing towards the political, economic, and social surroundings for the transition process. Other questions are related to technical aspects. Which technology options are available for the transition process, and can they be used or adapted to the specific location. Another technical question that has to be answered is how the transition towards renewable with an increased share of non-dispatchable energy sources affects energy security.

The last question this research aims to answer is reaching a little further and examining how sustainable energy can be the capstone for further sustainable development in other areas in Arctic communities. The study has analyzed several implementation strategies for the implementation of renewable energy sources. The preliminary results show a significant potential to reduce the cost burden created by high electricity prices in remote communities. The lowering of the cost burden can foster sustainable development in remote places.