

Humboldt Kolleg

Hilton Garden Inn Hotel, Doamnei St. 12, Bucharest
18-22 November 2020

Global Challenges of the 21st Century

- 1) Technological development and human health/ quality of life*
- 2) Climate change and environmental sustainability*
- 3) Democracy and cohesion in Europe*

Water-Energy-Land: A Cross-sectoral Perspective to Encourage Sustainable Use of Limited Resources under Changing Climate Conditions in a Semi-arid Region

Water, energy and land (conceptualized in the WEL-nexus) are interlinked natural resources, which build the basis for human livelihood. Climate change and growing demands increase pressure on resource sectors. Thus, coordinated planning and implementation of climate change mitigation and adaptation measures across resource sectors are required. We apply a participatory modelling approach to investigate the WEL-nexus in the case study region Seewinkel, which is a semi-arid agricultural production region in eastern Austria, where multiple conflicting demands for water, renewable energy and land exist. We conduct workshops and semi-structured interviews with regional stakeholders, representing the water, energy and land sectors, to identify and illustrate perceived key components of the regional WEL-nexus, their feedbacks as well as potential climate change mitigation and adaptation measures. Based on stakeholders' perceptions, scenarios are simulated to reveal the impact of different climate change mitigation and adaptation measures such as the implementation of different regional policies or agricultural adaptation on the regional WEL-nexus. The participatory modelling approach allows us to alleviate tensions between and across resource sectors by identifying trade-offs and synergies that emerge from climate change mitigation and adaptation measures.

Bernadette Kropf currently works on her PhD thesis at the Institute for Sustainable Economic Development, University of Natural Resources and Life Sciences Vienna. In her research, Bernadette explores current challenges of the Austrian agricultural sector including invasive species and climate change impacts. Furthermore, she is very much interested in synergies and trade-offs that may emerge from climate change mitigation and adaptation measures from regional to national scales. She applies social science methods such as qualitative interviews, cognitive mapping and participatory modelling approaches to get a deeper understanding of farmers' and sectoral experts' attitudes, perceptions, behavioral intentions and behavior.