The economics of transformational adaptation

Main Supervisor: **Birgit Bednar-Friedl** [**showcase 1**]
Research field "Climate and environmental economics: Economic analysis of climate change adaptation and mitigation policies"
Research question 1 | Cluster 2
Links to showcases Birk 2, Sass 1, Sass 2, Steiner 1

Background: While incremental transformation is understood as an extension of existing adaptation action, so-called transformational adaptation takes place at much larger scales or intensity, is truly new to a region or sector, or requires a substantial change of place or relocation (Kates et al. 2012). Due to this nature, transformational adaptation often requires collective action, with fundamental change in behavior and in institutions. The need for transformational adaptation arises either because of large vulnerability of certain groups/regions or because of severe climate change (+4 °C and beyond).

Goal: While limited research on transformational adaptation is available at the sectoral level, mostly in the context of agriculture (Leclère et al. 2014; Rickards and Howden 2012) and flood management (Colloff et al. 2016), economic research has so far focused only on incremental adaptation (OECD 2015). Given the non-marginal nature of transformative adaptation, this showcase will focus therefore on transformative adaptation as a problem of collective action with potential winners and losers.

Methods and disciplinary background: Drawing on institutional economics, transformation theory, and social science, this showcase will combine economic modelling (e.g. game theory) with empirical methods for generic cases of transformational adaptation such as changes in the acceptable levels of flood or drought hazard, or novel institutions and funding mechanisms e.g. for sustainable water management. In addition to the economic costs and benefits of transformational adaptation, intangible values (e.g. values of culture and place) for specific groups (O'Brien and Wolf 2010), as well as different decision frameworks (such as robust decision making), will be integrated in the modelling framework.

References:

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An economic assessment of different instruments of adaptation finance

Main Supervisor: **Birgit Bednar-Friedl** [**showcase 2**]
Research field "Climate and environmental economics: Economic analysis of climate change adaptation and mitigation policies"
Research question 1 | Cluster 1
Links to showcases Meyer 1, Schulev-Steindl 1, Steiner 2, Maraun 1

Background: Going back to the Copenhagen Accord, industrialized countries committed themselves to raise USD 100 billion per year in climate finance by 2020 for climate action in developing countries. Despite the goal of balanced contributions towards mitigation and adaptation in developed countries, adaptation so far has attracted much less finance than mitigation (Buchner et al. 2016). While specific funds such as the Green Climate Fund or the Adaptation Fund have been installed towards that end, it is unlikely that these targeted funds will be sufficient for meeting the envisaged USD 100 bn target (Pickering et al. 2017). Existing multilateral and bilateral development funds are therefore also mainstreamed towards mitigation and adaptation objectives (OECD 2009). Finally, private finance is seen as an integral part for attaining the USD 100 billion target, yet private adaptation finance has hardly been mobilized yet (Pauw 2017).

Goal: From an economic perspective, the question arises how international climate finance can deal with adaptation and what the differences are compared to financing mitigation. The showcase will focus on different public and private instruments of climate finance, such as Official Development Assistance (ODA), grants, low-cost debt by International Development Banks, and corporate project development. As a subsequent question, the research will focus on questions of distribution of funds across recipients, as well as monitoring and verification of adaptive action.

Methods and disciplinary background: Based on climate finance data as collected by official aid statistics and project inventories such as OECD DAC (2015) or ODI (2016), the showcase will conduct an econometric analysis to identify the motives of different donor and recipient countries as well as further economic impacts. In addition, background documents will be analysed for a comparison between mitigation and adaptation projects. This empirical approach will be combined with the normative and legal considerations regarding fair burden sharing as contributed by showcases by Meyer and Schulev-Steindl. These qualitative and quantitative insights will allow the development of either an analytic/structural model or a computable general equilibrium (CGE) model in order to assess the effectiveness and incidence of international adaptation finance undertaken by public and private actors.

References:

Buchner, B., Trabacchi, C., Abramskiehn, D., Wang, D. and F. Mazza. 2016. "Global Landscape of Climate Finance 2015." Climate Policy Initiative.

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