EGU22-6341
https://doi.org/10.5194/egusphere-egu22-6341
EGU General Assembly 2022

Comparative Analysis of Indicators for Sustainable Urban Development and Coastal Adaptation - Uncovering Barriers and Potentials of Integrated Assessments

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Denmark is one of the most vulnerable countries in Europe with respect to increasing risk of sea surges. A two hundred year paradigm of land reclamation close to the sea must therefore be revisited with the intent of retaining flexibility and avoiding lock-ins while recognizing the unintended consequences of new adaptation strategies. Potential solutions continue to face considerable structural, spatial, temporal and definitional challenges requiring collaboration between communities, local actors and scientists. In the “Cities and rising sea levels” project scientists from different research disciplines including (landscape) architecture, regional and local planning, and hydrology collaborate with local actors in order to tackle these challenges. The aim is to establish a common terminology and identify common scenarios, strategies, and indicators of successful and less successful urban developments in coastal areas over space and time.

One of the objectives in the project is to establish a coherent, spatially explicit framework for assessing strategies for sustainable urban development (SUD) of coastal communities to facilitate mediation and decision-making for stakeholders involved in adaptation and urban planning processes. As a starting point, our study identified a total of >2200 indicators across 50 references on SUD and respective additional >1600 indicators across 28 references on coastal adaptation. By means of systemic reviews and analyses, the study builds upon previous reviews on indicators and expands beyond by laying a clear focus on sustainable adaptation in coastal areas.

Extracted indicators sets of SUD and coastal adaptation are compared and similarities as well as differences are pointed out and analysed. Interestingly none of the identified indicators of SUD include a direct representation of climate risks or determinants of risk i.e. vulnerability and exposure, neither as conceptual variables driving risk, nor the assessment of adaptive capacity. At

the same time, indicators of coastal adaptation disregard liveability and human wellbeing as crucial aspects of urban planning, in contrast to SUD indicators where they represent guiding principles. This illustrates a clear gap between adaptation practices and other professions involved in urban planning processes.

In order to uncover sustainable pathways to adapt, adaptation must be an integral part of sustainable development. The study aims at understanding differences in performance assessments and to suggest steps forward to better integrate SUD and coastal adaptation. Here, the study will proceed by operationalizing a combined and integrated indicator framework in the form of spatio-temporal assessments. The first results of these assessments will be presented and synergies and tradeoffs between a risk lens and SUD will be highlighted.