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Coastal community resilience in climate adaptation and risk reduction

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Paper 92		
Title:	Coastal community resilience in climate adaptation and risk reduction	
Keywords:	community resilience, coastal floods, storm surges, emergency response, impact mitigation	
Abstract:	<p>Storm surge impacts on the Limfjord coasts of Denmark are exacerbated by the expansion of the Thyborøn Channel that causes increased water transport into the fjord from the North Sea. This, in combination with sea level rise, jeopardizes the strength of existing flood protection and challenges the local municipalities to implement additional measures. For the fjord towns of Thyborøn (pop. 2100, located towards the North Sea by the Thyborøn Channel) and Løgstør (pop. 4000, located approximately 80 km east from the North Sea) flood hazard, vulnerability, and risk assessments and mapping are combined with community resilience studies to provide the corresponding municipalities with a more elaborate knowledge platform for climate adaptation and disaster risk reduction. Community resilience is investigated in four dimensions (information & communication, community competence, social capital, and institutional capacity) from +25 semi-structured interviews conducted with local citizens, municipal level employees as well as national government officials. Despite facing the same flood hazards, the two communities have different histories, social structures, and previous flood experiences and, accordingly, have different resilience strengths and limitations inherent. Thyborøn emerged over the past century as a fisheries town protected from the North Sea by large sea dikes constructed by the national government. Life in a harsh physical environment and no significant flood accounts in decades, means that neither the community nor the municipality perceives floods as any immediate threat. Municipal adaptation planning is slowly forming but hitherto without engaging the local community, and the town has no formal emergency preparedness plan. In contrast, the medieval town of Løgstør last experienced severe floods in 1981 and 2005 which led to the construction of a sea wall, community involvement, and detailed emergency management setup. The Thyborøn community has a reputation of ‘acting on their own’ and the citizens do not –neither individually nor collectively, ask e.g., the municipality for assistance. They do possess the ability to muster volunteers in large numbers when needed, however. Here, the current lack of information from the municipality is noticeable and community involvement, to go along with current scientific investigations for climate adaptation, will increase community resilience and allow for better and more integrated solutions. The Løgstør community resilience is strong as the locals are knowledgeable about the flood risk, have good work relations with the municipality, and have detailed disaster preparedness plans. The plans are not flexible which may limit the community resilience, however. In addition, amenity – or the attractiveness of the town to tourists and residents, is a strong factor to both the locals and the municipality and is weighed at almost equal level to safety and risk reduction in adaptation planning. More specifically this means that the heights of existing sea walls are a compromise between safety against floods and sea view. Thus, although the community is well prepared for the next extreme event and has the ability to recover, the level of protection indicates that floods may occur at unnecessary high frequencies thereby degrading the community resilience to an undesired extent. In conclusion, the study points to the potential in combining and merging natural and social science approaches for climate adaptation and disaster risk management to strengthen municipal decision-making, allow for better planning measures, and to strengthen community resilience.</p>	
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