

“A multi-layered approach to adaptive capacity across social networks: a case study in rural Kenya”

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Social networks are central to the idea of adaptive capacity because they shape and allow for crucial collective as well as individual behaviors. In consequence, numerous studies have drawn structural analyses of social systems for the study of adaptive capacities, adaptation, and adaptive co-management. Past work on social networks and resilience has shed light on the tensions between the diversity, centrality and modularity structure of social networks that frame the impossibility of a social system to be equally resilient, adaptive, and transformative. We address those tensions by dissecting the effects of a social network's structure on various components of its adaptive capacity: the capacity to build social memory, innovate, diffuse innovations, and diversify strategies. We then apply this theoretical framework to the study of two overlapping social networks in three villages of rural East Africa and discuss the adaptive capacity of each network. This work yields three main results. First, it enhances the narrative linking social network's diversity, centrality, and modularity and its adaptive capacity by highlighting the importance of analyzing the strength of ties that link individuals in a social network as well as the profile of important nodes such as hubs and bridges. Second, we demonstrate the interest of dissecting adaptive capacity into a pattern of successive layers in order to grasp the combined mechanisms that form adaptive capacity as a whole. Finally, the complementarities in terms of adaptive capacity that we found between both networks reinforces ideas drawn from focus theory that a group or an individual's social capital is not formed by a single dimension but is composed of articulated strata in distinct foci. We conclude by briefly discussing how refined analyses of adaptive capacity can guide framing actions to facilitate adaptation to climate change and variability