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Functions and flexibility: ecological succession and stakeholder networks operating in stormwater design

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Urban ecosystem design provides an important entry point for practices seeking increased resilience and transitions toward urban sustainability. Active management of ecological succession is one of the challenges in design. Both biodiversity and a diversity of human activities are needed to increase the urban ecosystem services. However,





it is not well understood what kind of roles different actors are able to take in this process.

The purpose of this paper is to examine how stakeholders operate in the creation of stormwater systems in urban areas. The stormwater system planning projects aim to increase climate resilience and flood protection, but they also generate novel urban ecosystems and ecosystem services. Our task is to analyze how (1) the ecological succession takes shape in the institutional arrangements of stormwater system processes; (2) the stakeholders operate through networks; and (3) the stakeholders deal with uncertainties, the emerging possibilities, and the feedbacks arising in the ecological succession. We use three empirical cases of stormwater management areas in the largest cities in Finland; Helsinki, Vantaa and Tampere. We focus on practices and use observation method and interviews with the companies' landscape planners and city officials.

Our preliminary findings show that the shifting relations between functions and flexibility are crucial in the creation of stormwater system processes. Functions refer to the primary goal of creating more space for flooding water in the urban landscape. Functions are based on quantified





calculations and are attached to technical solutions of water purification, filtration and absorption. Flexibility refers to combinatorial dynamics through which the multiplicity of ecosystem services can be generated. We conclude that the reciprocal interaction between functions and flexibility can be used as an analytical lens to recognize different stakeholder–ecosystem relationships that increase the resilience of ecosystems, diversity of human activities and are potentially useful in urban sustainability transitions.

Keywords: ecological succession, stakeholder engagement, stormwater management, urban nature, ecosystem services

