

The potentiality of nature-based solutions seen through ambiguities

Ari Jokinen

University of Tampere, Finland

Nature-based solutions, i.e. alternatives to grey or technology-based infrastructure dealing with sustainability challenges, is a new concept. Recent research has found that it suffers from ambiguities that hinder its development, implementation and up-scaling. This paper sees ambiguities as an asset, as they reveal the concept's potential for transformative change in urban sustainability. Using stormwater systems as an example, we analyze the concept's ambiguities in relation to governance, stakeholder contributions and urban development. We use interdisciplinary and practice-oriented research approach based on serial case studies within the Tampere urban area, Finland. The development and operation of stakeholder networks, business actors included, was followed in each case.

Cities typically adopt global policy models in their policy-making strategies for urban sustainability. In this process, the compact city agenda or other policy models are locally interpreted and combined with the city's profit-making aims, resulting in a local 'sustainability fix'. This development tends to lead to weak sustainability in which green issues have only supportive roles. Nature-based solutions seem variants of this development; however, they shift the perspective. They focus on specific environmental challenges, frame problems differently, and gather stakeholder networks accordingly. More importantly, they change the nature of ambiguities. This can be analyzed in more detail by focusing on the navigation between problem space and solution space, which we regard as the principle how nature-based solutions work.

We find that the following focus areas within nature-based solutions are particularly important from the perspective of transformative change: (1) forms of organization of urban biodiversity and ecosystem services as socio-environmental trajectories, (2) multi-stakeholder networks and value co-creation, and (3) how the process associates with wider urban problems in experimental designs.

Keywords: ambiguity, sustainability transformation, nature-based solutions, multi-stakeholder networks, value co-creation

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Johanna Kujala, Anna Heikkinen, Ari Jokinen, Hannele Mäkelä, Jere Nieminen

www.b2n.fi University of Tampere, Finland