



A review of urban science literature of importance when developing integrated urban nexus assessments

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Post the adoption of the UN Agenda 2030 and its 17 Sustainable Development Goals (SDGs), cities and local authorities need to create policies, planning and investments that can build both resilient and resource efficient societies. Since the SDGs are highly interconnected, local decisions targeting e.g. SDG7 on clean energy and SDG13 on climate change mitigation may impact other resources and SDGs, such as that on safe access to water (SDG6) both in that locality and beyond its borders. To develop integrated assessment approaches that can support these local decisions and acknowledge their potential cross-resource (and cross-SDG) impacts is therefore an important task for the scientific community that has evolved around the water-energy-land/food nexus. The present paper is a review of literature of relevance when developing such an urban nexus approach. It builds on early prototype approaches for developing urban nexus assessments, and aims to summarize relevant "bodies of literature" to draw from when developing these approaches further. The research areas under review are:

- General water-energy-food nexus literature that quantifies cross-resource interactions
- Technological reviews of alternative solutions to improve urban energy, water and land use (incl. roof) efficiency
- Urban metabolism literature
- Urban resilience literature
- Assessments of climate mitigation and adaptation strategies for cities
- Urban planning theories (and reviews of implemented)
- Literature on how to tackle uncertainties in integrated assessments

The authors do not aim to present comprehensive reviews of these vast fields of research. Rather they aim to scout for elements of importance to incorporate in the development of nexus assessment approaches for cities and local communities.