

Poster Presentations

A Comparative study on the eco-city practices in Ma'anshan and Freiburg

Xiaoping Xie, Hendrik Herold and Wei Hou (IOER)

- > Using remote sensing data for quantitative evaluation of the political promises (planning) and the practical achievements (implementation) of eco-city initiatives in German and Chinese contexts.

Walking the tightrope: The challenge of sustainability for the City of Isfahan

Ehsan Tavakoli-Nabavi (Australian National University)

- > The idea of Navigational Indicators is proposed. Water-Land-Economy nexus is systematically explored. For modelling, a system dynamics approach is adopted. Water-transfer is not a sustainable solution.

Owerri Municipality, Nigeria: An eco-municipality or a mere rain-municipality

Emmanuella Onyenechere (Imo State University)

- > This study hopes to empirically investigate the situation in Owerri municipality in Nigeria to ascertain the specific challenges it is faced with in terms of employing the Nexus Approach.

The Low Carbon Development Strategy of the Great Metropolitan Area of San José, Costa Rica

Mauricio Zaballa Romero (UNEP DTU Partnership), Huberth Mendez (Fundación para el Desarrollo Urbanom (FUDEU)), Manuel Salas (FUDEU) and Irene Campos (Instituto Costarricense del Cemento y del Concreto)

- > The low carbon development strategy of the Great Metropolitan Area of San José in Costa Rica aims to encompass the needs of the urban growth with the reduction of greenhouse gases and the increase of resilience.

Policy recommendations for the solid waste management in Kazakhstan

Zhanna Kapsalyamova (Economic Research Institute (ERI)) and Artem Korzhenevych (IOER)

- > Evaluated scenarios show large greenhouse gas saving potential and positive welfare impact of the suggested solid waste management schemes in the large cities of Kazakhstan.

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URBAN ECOSYSTEM SERVICES AND BIOLOGICAL DIVERSITY

Leading Convener:

Federal Nature Conservation Agency (BfN),
Matthias Herbert

Co-Conveners:

IOER, Wolfgang Wende¹, Juliane Mathey and Andreas Otto; TU Dresden,
Luis Inostroza; Paris Lodron University Salzburg, Jürgen Breuste and Martina
Artmann; Centre for Development Research (ZEF), Christine Fürst;
Opole University of Technology, Marcin Spyra

Urban systems are known to be the areas with greatest conflicts over land resources and services requested by a multitude of different actors. Particularly, in densely settled metropolitan areas, requests for sustainable development and restoration of structures closer to nature are increasing. For example, urban green systems as an expression of a nexus between urban biodiversity and urban ecosystem services concerning water, soil and built-up structures are assigned a crucial role by local decision makers in influencing the quality of life of the urban population. As one major outcome of the session the following can be stated: Urban green infrastructure seems to be a world-wide key issue for offering biodiversity and ecosystem services. The session provided us with comparable country approaches on how to establish urban green infrastructure for preserving biodiversity and ecosystem services, for example, from Chile, Mozambique, Germany or Singapore. The following take-home messages can be derived from the session:

- **Green infrastructure not only addresses the nexus, but itself represents a kind of nexus.**

Green infrastructure follows the idea of connecting core habitats and/or green spaces and deals with setting up a 'corridor network' for exchange and migration. Thus, it serves to interlink valuable components and therefore can be seen as a kind of structural nexus. Also, biotic components of soil

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and water are responsible for ecosystem services like providing potable water etc. It is the biotic (e.g., microbiological) component that is responsible for water filtration and cleaning in the soil; thus, again the nexus between soil and water. And 'green' also addresses the food/energy nexus between soil and water, which is an important component of new urban agriculture concepts.

- **Green infrastructure is an important supplement to blue and grey infrastructure.**

To stress the value of urban green and open space issues within urban development, they have to be considered as important as grey or blue infrastructure. Although one might get confused with all the terminology, green infrastructure still seems to be a rather good concept to exhibit this equal value of urban green. For a common understanding of urban green infrastructure among the various relevant stakeholders it is necessary to concretize the general definition, its components and instruments for implementation on national, regional and local level.

- **Green infrastructure not only addresses linear structures, but also takes the surrounding areas and greater habitats/open spaces into account.**

In a first step one might think of an ecological network, but it is more. It is a combination of a network, core habitats as something like junctions and points of intersection, as well as biodiversity and ecosystem services within certain meshes and it reaches even beyond the borders of a city. It not only comprises well-designed parks but also incorporates urban brownfields, vertical green like roof greening as well as secondary near-natural structures.

Focus should be put on the cultural ecosystem services, particularly in the urban context.

- **Urban biodiversity and ecosystem services should be linked to the sustainability goals concept.**

We need strategic goals for urban biodiversity and ecosystem services, action plans for implementation and indicators for monitoring. For this purpose there are helpful recommendations in the CBD plan of action on subnational governments, cities and other local authorities for biodiversity (2011-2020) which was adopted by the Conference of the Parties in 2010 in Nagoya. However, cities should derive their own green strategies and set up their own goals, as local conditions are very different around the world and only this motivates them to try to achieve these goals.

Recommended Reading

Costanza, R.; Kubiszewski, I. 2015. *A Nexus Approach to urban and regional planning using the four capital model of ecological economics*. DNC2015 Position Paper. UNU-FLORES, Dresden. <https://flores.unu.edu/wp-content/uploads/2015/02/D-2-Costanza-Summary-Bio.pdf> (last access: 31st of March 2015).

Federal Government of Germany (2007): *National strategy on biological diversity*. Bonn.

Mathey, J.; Röbber, S.; Banse, J.; Lehmann, I.; Bräuer, A. (forthcoming): Brownfields as an element of green infrastructure for implementing ecosystem services into urban areas.' *Journal of Urban Planning and Development*. Special Issue 'Green Infrastructure for Urban Sustainability'.

Spyra, M. 2014. 'Ecosystem services and border regions – Case study from Czech-Polish borderland.' *Journal of Land Use, Mobility and Environment*. Special Issue: Eighth International Conference INPUT Smart City - Planning for Energy, Transportation and Sustainability of the Urban System, p. 921-32

Oral Presentations

Multifunctional green infrastructure as a planning strategy for territorial cohesion in Santiago de Chile

Alexis Vásquez, Francisca Morales, Josefa Vergara, Andrés Riveros and Benjamín Ludeña (University of Chile)

- > Linear green infrastructure providing multiple ecosystem services challenges the high sectorial and spatial fragmentation in Santiago. On the local scale, ecosystem services present complex trade-offs across space.

A Land cover-based ecosystem services approach: A concept for integrated water and environmental resources management and sustainable urban development in Beira, Mozambique

António Dos Anjos Luís (Catholic University of Mozambique - Geographical Information Centre (UCM-CIG)), Sérgio Niquisse (UCM-CIG), Dennis Eucker (UCM-CIG), Mari Ito (UNU-FLORES), Wolfgang Wende, Karsten Grunewald, Ralf-Uwe Syrbe, Ulrich Walz (IOER) and Samuel Kusangaya (University of Kwazulu-Natal)

- > The presentation shows the concept of a simple ecosystem services approach for land characteristics in Beira, Mozambique, which take population growth, urbanization and climate change, for integrated environmental management into consideration.

Ecosystem services and biological diversity in urban areas: Challenges from the perspective of nature conservation

Matthias Herbert and Alice Schröder (BfN, Germany)

- > The presentation gives an overview of the challenges for nature conservation and maintaining of biological diversity in urban areas.

Indicators for cultural ecosystem services in urban contexts: A critical review for urban planning

Luis Inostroza (TUD), Daniele La Rosa (University of Catania) and Marcin Spyra (Opole University of Technology)

- > This presentation reviews indicators for Cultural Ecosystem Services (CES) for urban contexts. No CES indicator was found to be of high relevance to urban contexts, but there was a high dependence of indicators from data quality and availability.

Assessment of ecosystem services for urban resilience in Singapore

Jeannette Sieber and Manon Pons (European Institute for Energy Research)

- > An integrated assessment of Ecosystem Services (ES) in Singapore allows for a qualitative evaluation and localization of important ES and quantitative information on sustainability indicators.

Poster Presentations

Temperature mitigation in residential areas by urban green spaces

Madhumitha Jaganmohan, Sonja Knapp, Carsten Buchmann and Nina Schwarz (Helmholtz Centre for Environmental Research (UFZ))

- > Certain green spaces are found to be cooler than nearby urban areas and their cooling effect extends into the surrounding. This helps in mitigating heat stress in the nearby residential areas.

Ecosystem services outside of urban green areas?

Carola Meß and Harald Zepp (Ruhr-Universität Bochum)

- > Mapping biophysical characteristics of urban landscapes together with model based interpretations forms the basis for assessing, evaluating and communicating ecosystem services and of disservices.

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Green infrastructure and ecosystem services to tackle climate change in Chilean cities

Alexis Vásquez, Natalia Gómez, Dustyn Opazo, Christian Silva and Dayán Martín (University of Chile)

- > The development and conservation of an essential network of green spaces intended for climate change adaptation and mitigation would render highly effective and efficient results. However, in Chile this approach faces a variety of barriers.

The Role of urban green spaces for cities under climate change

Juliane Mathey (IOER)

- > This poster will introduce an approach for analyzing ecosystem services based on vegetation structures. Microclimatic effects are quantified by modelling.

The Evaluations and analysis of recreation ecosystem services in urban parks of Shanghai affected by physical age and policy changing

Liang Zhao (TU Dresden), Jürgen Breuste (Paris Lodron University of Salzburg) and Wolfgang Wende (IOER)

- > Six urban parks in Shanghai were researched through vegetation mapping and field work investigation. Recreation ecosystem services were analysed within factors of physical age and policy changing.