



NORDISK ARKITEKTURFORSKNING

Nordic Journal of Architectural Research

2-2013

THEME ISSUE

GREEN INFRASTRUCTURE: FROM GLOBAL TO LOCAL

Nordic Journal of Architectural Research

ISSN: 1893-5281

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PGS ISESS Account no: 4190325-3, Postgirot Bank Sweden, SE 105 06 Stockholm

Published by SINTEF Academic Press

P O Box 124 Blindern, NO-0314 Oslo, Norway

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THEME ISSUE

GREEN INFRASTRUCTURE: FROM GLOBAL TO LOCAL – EDITORS' NOTES

**MARIA IGNATIEVA, MADELEINE GRANVIK,
ANNI VARTOLA AND CLAUS BECH-DANIELSEN**

This special issue is based on 11 peer-reviewed papers from the EFLA ICON-LA International Conference «Green Infrastructure: from global to local». The conference had a truly global resonance and attracted some of the world's most recognised scientists and practitioners in urban planning, landscape architecture and design. In total there were 307 participants from 41 countries.

The conference was held in St. Petersburg, Helsinki, Stockholm and Uppsala on 11th–15th June 2012. Locations of the conference were truly Nordic (North-Eastern part of Russia, Sweden and Finland) and its topic «Green Infrastructure» was a very timely and relevant one for all Nordic countries. Particularly, Stockholm, Copenhagen and Helsinki are famous for their well-developed and extended green infrastructures and are nowadays considered as «iconic» positive models.

The main objective of this issue is to raise the attention and awareness among scientists, urban planners, landscape architects and the various cities' administrative bodies on the importance of creating sustainable, green infrastructure in the cities. The current situation of unsustainable development of most cities in the world is further challenged by a range of specific problems relating to their green infrastructure, which is discussed in this issue. The papers presents different themes dealing

with theoretical questions of green-blue infrastructure, as well as more practical design and management considerations. Since the topic of green infrastructure is quite broad, it is not surprising that a wide range of scales needs to be addressed: from a large scale of master planning to a fine scale such as research of trees in private gardens and the detailed historical analysis of sultans' palace gardens. The papers represent original research and deep analyses of relevant literature. The geography of places included in the research is quite broad as well: ranging from the West Coast and Midwest of the US and Canada to Nordic, Central European and Mediterranean countries.

This issue starts with a conceptual and theoretical vision of the «Green-blue Infrastructure in Urban-Rural Landscapes – introducing Resilient Citylands» by Per G. Berg, Maria Ignatieva, Madeleine Granvik and Per Hedfors. Here, *Green-blue infrastructure* is declared as a key component in human settlements. The authors have investigated the potential for new interactions between *green-blue*- and *built* structures by using a broad range of international case studies, of both practical and theoretical relevance. *Resilient Citylands* proposes a new concept useful for landscape architecture and planning. It represents a new reciprocal co-evolution for different scales: for urban and rural areas; for human settlements and natural ecosystems; and for constructed and green-blue areas and elements within urban settings.

The theoretical vision of Green Infrastructure is continued by Nancy Rottle's paper «Urban green infrastructure for climate benefit: global to local», addressing five systems of green infrastructure; social, biological, hydrologic, circulatory and metabolic. These systems provide multiple benefits and may mitigate anthropogenic impacts on climate through reducing greenhouse gases in the atmosphere and helping to reduce the negative effects that climate change will have on urban environments. Rottle presents a powerful North American Low Impact Development approach, dealing with storm water management and incorporation of ecological processes. This paper is supported by famous ecological design projects from North America and Europe.

The paper «Ecological infrastructure: an examination of three Canadian Cities» by Richard Perron and Rob Zonneveld, two representatives from the neighbouring country, Canada, studies three distinct ecological regions, i.e. the boreal forest (in the Precambrian Shield), the tall-grass prairie and the short-grass prairie. Their work can be seen as a classical approach to landscape architecture, working on different scales across the landscape: from a macro scale, long term ecological plan for the city to a series of site specific design investigations and suggestions. Each city has been examined through the design studio process, where a combination of GIS investigations and CAD based design iterations were used as primary methodological tools. The concept of «ecological infrastruc-

re» requires respect and the integration of landscape ecology principles. The paper illustrates quite clearly how design context, understood as the convergence of natural and urban systems, can provide the basis for modeling urban ecological infrastructure.

The theme of transportation and green infrastructure is represented by the paper «Road networks as framework for green infrastructure» by Thomas Juel Clemmensen. Clemmensen looks at the roads not only as an obstacle resulting in fragmentation and barriers, but also as parts of larger networks, which can contribute to creating new green infrastructures and even improve urban landscape porosity and connectivity. Two questions asked in this work are whether it is possible to conceptually relocate road networks in the landscape, and how to consider infrastructure as an opportunity to, and basic component of giving shape to a city or even an entire region. It is not surprising that the case study projects come from the Netherlands and Denmark, with their highly constructed landscapes, and from the US, with its long history of dedication to automobile road networking (national highway system, network of wayside landscapes and parkways) as well as from the UK, where there are some interesting examples of connecting fragmented urban landscapes using road networking.

The theme of networking in this paper is supported by Muhammad Farid Azizul, writing about «Ecological Networks in a Sustainable Landscape, their roles and Impact in the Socio-Cultural Process». This theoretical paper is based on a critical analysis of literature published between 1995 and 2012 across disciplines, which are connected to ecological network-landscape ecology, conservation biology, landscape and urban planning as well as nature conservation.

Also included is a group of papers which are based on the analysis of urban green infrastructure, mostly using a city level scale. «Marginal» Urban Vegetation – the case of Lisbon» by Sara Machado Doesburg and Paulo Farinha-Marquesis calls for the use of an ecological approach to urban planning and management as an essential factor in maintaining the long-term sustainability of ecosystem services. The authors pay attention to «marginal» vegetation, which exists within an officially identified and protected network of green areas. Using satellite images and field work, they have found considerable amounts of such «marginal» areas, which are currently underestimated, but have the potential to become a valuable resource for enhancing the ecological structure of the city.

The Italian example of Catania by Riccardo Privitera, Francesco Martini-co, Daniele La Rosa and Viviana Pappalardo, «The role of non-urbanized areas for designing an Urban Green Infrastructure», operates on a city scale and presents an Urban Green Infrastructure (UGI) design approach

as a tool for re-defining the role of a green area network as part of the Land Use Master plan. As in the case of Lisbon, Italian researchers try to increase attention to a special category of green spaces, which are usually not part of existing «official» urban green areas – Non Urbanized Areas (NUAs). The authors claim NUA (currently unmanaged spaces) to be an important part of Urban Green Infrastructure. These Non-Urbanized Areas are mainly semi-natural areas, which can be seen as the last remnants of nature within the built up areas that provide a whole range of ecosystem services and, first of all, preservation and enhancement of biodiversity.

Another European case study is presented in the paper by Attila Toth and Lubica Ferianova, «Green infrastructure in the context of rural space restoration and design», investigating rural settlements in Slovakia. This case study has been conducted by using classical methodology, which is a scheme working with three scales: firstly, GI concept for the micro-region Cergát-Váh; secondly, a meso-planning scale consisting of a more detailed concept concerning the cadastral area of the village Tvrdošovce; and lastly, the planning level of a public space design at a fine scale relating to the central part of the village. The proposed design is based on rules of rural space design. This solution will reconstruct lost character and reinforce the local identity of Slovakian rural settlements.

Today, historic gardens are considered as a very special type of green area that are highly valued for their cultural, aesthetic and ecological features. Such historic landscapes play a unique role in overall urban green infrastructures. That is why having two papers in this special issue dedicated to historic complexes containing green areas is not surprising. Both papers concern one country, Turkey, and even look at the same city, Istanbul. In «The potentials of Topkapi Palace as a contributor to Urban Green Infrastructure Planning» Pinar Koylu discusses how historic gardens, with their existing endowment of monumental trees and other plant species, can become a core «skeleton» of structured green-blue spaces network, and the preservers of national identity in the modern era of urbanisation and westernisation. In their paper «Through the Historical Landscape to an Urban Green Infrastructure: Themes & Context» Meltem Erdem and Meliz Akyol use a broader approach and analyse the green heritage of Istanbul aiming to understand its potential for the development of the European side of Istanbul. Three relevant typologies were studied: historical parks and gardens, groves and cemeteries. The authors' findings confirm the importance of conservation strategies as an effective tool to control the change within historic green landscapes, but at the same time suggest using contemporary design approaches. Together, these strategies, can create a robust framework for the development of an integrated green infrastructure.

Charles Wade and James Kielbaso's paper «Green Infrastructure: Condition Changes in Six USA Urban Forests» is an example of classical fine scale

research of public and private trees in an urban forest in the Midwest cities of the United States. It is a thorough and detailed investigation of size and health conditions of urban forest trees, which can be determined by many factors ranging from the genetics of the individual trees to environmental and anthropogenic factors. This research has a very practical aim and gives researchers, arborists and planners an understanding of the conditions and sizes of the urban trees in the Midwest of the US and also instructs on the suitability of trees for planting.

All papers included in this issue show quite clearly the breadth and interdisciplinary nature of landscape architecture – an umbrella discipline including work on all scales (from the mega scale of region and master planning to the micro scale of individual tree or plant species selection), and based on theoretical and practical knowledge. We hope that the readers of the *Nordic Journal of Architectural Research* will find this wider geographical and scale context interesting, and that it will provide input for the development of Nordic green infrastructures.

We especially want to thank all the reviewers for valuable input.

Maria Ignatieva, Madeleine Granvik, Anni Vartola and Claus Bech-Danielsen

