



## SESSION DESCRIPTION

# 1 Resilient constructions with Nature-based Solutions and restoration strategies

## Presentations

**Date:** Friday, 28 June, 2019

**Time:** 11:00-12:30

**Rooms:** S29-31

**Language:** English

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**Organized by:** ICLEI

## OBJECTIVE

Urban areas face more severe and frequent floods, droughts and heat waves, which endangers human life in towns and cities. Quality of life in urban areas is already compromised by air, water and noise pollution. Urban planners are increasingly searching for construction, infrastructure and building solutions connected to nature, while also leveraging on culture and identity. Some of these include hybrid infrastructure solutions that integrate natural elements into design and planning; resource efficiency and circular buildings; restoration of heritage sites through low impact interventions; or exploration of resilient floating architecture in hostile water spaces while minimizing the environmental impact.

This technical session started with a presentation by Global Infrastructure Basel Foundation (GIB) on the potential of hybrid infrastructures to adapt to the effects of climate change while creating additional co-benefits for society and the environment. The second contribution by the Rotterdam Ecology Unit explained how stimulating green roofs can contribute to the urban ecological network in The Hague. Applied Energy presented the case of wastewater reuse for heating and cooling in buildings in Canada and New Zealand.

Next, the Karlsruher Institut für Technologie (KIT) presented the case of adaptation measures to heritage constructions through low impact technological interventions. In order to promote sets green roofs, Kaohsiung City Government was the first one in Taiwan adopting the rolling method to plunge into Green Financing policy in photovoltaic system, to attract to renewable-energy-related industries. The last presentation will address the potential of resilient floating infrastructure as an alternative to traditional built environment while using hostile water space.

## OUTCOMES

- Participants had an overview of existing resilient and adaptive infrastructure projects;
- Participants gained understanding of low impact technological interventions to preserve the historical character of a city;
- Participants got to know innovative resilience solutions to the built environment.



## METHODOLOGY

- The facilitator provided an introduction to the session topic and contributors. **(5 minutes)**
- Each presentation was allotted 10 minutes. **(6 x 10 minutes)**
- The facilitator managed questions and answers. **(20 minutes)**
- Closing remarks by the facilitator. **(5 minutes)**

## CONTRIBUTORS

Facilitator *Sunandan Tiwari, Senior Manager, ICLEI-Local Governments for Sustainability, Bonn, Germany*

Presenter *Katharina Schneider-Roos, CEO, Global Infrastructure Basel Foundation (GIB), Basel, Switzerland*

### **What is the Potential of Hybrid (grey-natural) Infrastructure solutions?**

This presentation discusses hybrid infrastructure solutions consisting of natural elements into infrastructure design and planning to adapt to climate change and to create additional benefits for society and natural environment. Hybrid approaches may provide a solution for enhancing the resilience of infrastructure to external shock factors, while also providing benefits to ecosystems, biodiversity, and climate change mitigation and adaptation.

Presenter *Rens De Boer, Ecologist, Rotterdam Urban Ecology Unit, Rotterdam, the Netherlands*

### **Green roofs as an opportunity for enhancing urban biodiversity**

This project researches on the green roof design factors that enhance local biodiversity and on how they can contribute to the urban ecological network. The project also presents a data-based approach, based on The Hague case study, for estimating the impact of green roofs on biodiversity.

Presenter *Nick Meeten, Director, Applied Energy, Blenheim, New Zealand*

### **Recycling thermal energy from wastewater for heating & cooling buildings.**

Applied Energy will show thermal energy mapping of wastewater networks in Canada and New Zealand, which allow both authorities and private developers to quickly determine the feasibility of using wastewater for heating and cooling in buildings.

Presenter *Andreas Gerdes, Scientific Head, KIT Innovation HUB, Eggenstein-Leopoldshafen, Germany*

### **Heritage compatible and cost saving restoration of a historical railway viaduct**

Laufenmühle-Viaduct, an old railway viaduct, was investigated to develop an individual procedure for restoration. The standard adaptation methods were combined with innovative and unconventional techniques to gain a high level of information depth in the planning stages of the project. Moreover, the restoration was carried out under strict quality control measures and structural monitoring for the subsequent use as a bridge.



Presenter *Chung-Shin Yuan, Director General, Environmental Protection Bureau, Kaohsiung City, Chinese Taipei*

### **Green City in transformation: adaptation and mitigation actions in Kaohsiung**

Kaohsiung City is conducting “rapid and far-reaching” transitions in land, energy, industry, buildings and environment. In order to pursue sustainable values, Kaohsiung City Government invites the public and industries to participate and share the results of applying green economy.

Presenter *Petar Lovric, Business and Development Manager, Seine Design Port de la Rapée Paris, France*

### **Floating Infrastructure – Large Scale Public Spaces on Water**

The paper removes any doubt that large floating infrastructure projects such as floating hotels, hospitals, pools, museums, restaurants, theatres and many others can successfully exist on the bodies of water that meet city shores. Apart from this fact, floating architecture is able to deliver solutions that provide high resilience while minimizing the environmental impact.