



Nordic Hydrological Conference 2018

Hydrology and Water Resources Management in a
Changing World

Knut Alfredsen, Chong-Yu Xu and Kolbjørn Engeland (Eds.)

68
2018



R
E
P
O
R
T

INTERNATIONAL KNOWLEDGE EXCHANGE ON INFILTRATION OF STORMWATER UNDER EXTREME CLIMATE AND GEOHYDROLOGIC CIRCUMSTANCES

F. Boogaard

*Hanze University of Applied Sciences Groningen
Zernikeplein 7, P.O.Box 30030, Groningen, The Netherlands
Email: Floris@noorderruimte.nl*

G. Venvik

*Geological Survey of Norway (NGU)
P.O.Box 6315 Sluppen, 7491 Trondheim - Norway*

T. Muthanna

*Department of Civil and Environmental Engineering, NTNU
Trondheim, Norway*

ABSTRACT

Urbanisation and climate change have an effect on the water balance in our cities resulting in challenges as flooding, droughts and heatstress. Implementation of Sustainable Urban Drainage Systems (SuDS) can help to restore the water balance in cities by storing and infiltrating stormwater into the subsurface to minimise flooding, restoration of groundwater tables to prevent droughts, lowering temperatures by evapotranspiration to fight heatstress. Urban planners and other stakeholders in municipalities and water authorities struggle with implementing SuDS at locations where infiltration of water seems challenging. Questions arise as: *can you infiltrate in countries as The Netherlands with parts under sea level, high groundwater table and low permeable soil? Can you infiltrate in Norway with low permeable or impermeable bedrock and frozen ground most of the year? How do you find space to implement SuDS in the dense urban areas of Bucharest?* These questions are answered by researchers of the JPI Water funded project INovations for eXtreme Climatic Events (INXCES).

To answer the question on *'can we infiltrate stormwater under worse case conditions?'*, testing of the hydraulic capacity take place at rainwater gardens in Norway (Bergen and Trondheim) and (bio)swales in the low lying parts of The Netherlands. The first results show that even under these 'extreme' hydraulic circumstances the hydraulic capacity (or empty time) is sufficient to infiltrate most of the stormwater throughout the year.

INXCES exchanged researchers on an international level, shared research results with stakeholders and sets up guidelines for design, implementation and maintenance of SuDS to promote the implementation of sustainable water management systems throughout the world.

One of the tools used to promote SuDS is www.climatescan.nl, an open source online map application that provides an easy-to-access database of international project information in the field of urban resilience and climate adaptation. The tool is able to map several sustainable urban drainage systems as has been done for Norway, The Netherlands, Romania and other countries in the world. The tool is used for engagement with stakeholders within EU projects as INXCES and WaterCoG and resulted in international knowledge exchange on infiltration of stormwater under extreme climate and geohydrologic circumstances.

Keywords: SuDS; Infiltration; Stormwater; Flood resilience; INXCES