

URBAN RESILIENCE IN A CONTEXT OF CLIMATE CHANGE (URCC) CONFERENCE

20-21 October 2020

100% online

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RESCCUE

RESILIENCE TO COPE WITH CLIMATE CHANGE IN URBAN AREAS

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Chairs | URCC Conference



Esteban León | UN-Habitat

Esteban has a background in economics, shelter/housing and settlement program design and management, capacity building, as well as building constructions and reconstruction projects in post-crisis situations and urban resilience building. He has been working for UN-Habitat since 2002 based in Nairobi, Geneva, Panama and Barcelona.



Marc Velasco | Aquatec-SUEZ Advanced Solutions

Marc Velasco (MSc in Civil Engineering) has more than 10 years of experience in water-related projects, particularly modelling floods, sewer networks and water resources. He has been involved in several FP7 projects related to climate change and water and has experience on climate change impact studies, statistical analysis of climate modelling data and implementation of adaptation and mitigation measures. He has specific experience with projects related to the telemetering of water distribution networks, linking the commercial, asset management and metering systems of the SUEZ group companies. He is the project manager of H2020-RESCCUE, a multi-sectoral approach to urban resilience that is coordinated by Aquatec.

Tuesday 20		
9.30-9.45	Room Plenary	Welcome
9.45-11.30	Room Plenary	Opening plenary
12.00-13.30	Rooms 1-4	Parallel sessions
15.00-16.30	Rooms 1-4	Parallel sessions
Wednesday 21		
9.00-10.30	Rooms 1-4	Parallel sessions
11.00-12.30	Rooms 1-4	Parallel sessions
12.30-13.30	Room Plenary	Closing plenary

Organising Committee



Gemma Noguera | Barcelona City Council

Gemma has been working in public and non-profit organisations for almost two decades in the field of communications and awareness. Currently, she is working in the Barcelona City Council and is seconded to UN-Habitat facilitating city-to-city collaboration, knowledge sharing and outreach. Prior to joining the municipality, Gemma worked in the private sector.



Ares Gabàs | Barcelona City Council

Ares has been Head of the Resilience Department, which is under the Infrastructure and Urban Coordination Management of the Barcelona City Council, since November 2013. She is currently responsible for the development of the resilience strategy and project implementation carried out through the Resilience Boards (TISU). She has a background in architecture and public space design, and she has been working for the municipality of Barcelona since 2006. Before joining the Resilience Programme in September 2012, she worked in the 22@ District Transformation Project, an integrative urban renewal process of the former industrial area of Barcelona.



Helene Fourniere | UN-Habitat

Helene is an urban resilience expert with an academic background in architecture and urban fields and further specialisation spanning from sustainable development to resilience and disaster risk reduction. She joined UN-Habitat City Resilience Profiling Programme in 2013, based in Nairobi (Kenya), and, in 2015, she relocated to Barcelona (Spain). Currently, she is focused on normative and operational activities, including the deployment of the Programme in Dakar, Senegal, and providing technical expertise to the RESCCUE project. Prior to that, she worked in the French public administration, as well as in architectural conservation and transformation in Zanzibar.



Beniamino Russo | Aquatec-SUEZ Advanced Solutions

PhD in Civil engineering, full professor of Hydraulics and Hydrology at the Technical College of La Almunia (University of Zaragoza, Spain) and Director of the GIHA (Group of Hydraulic and Environmental Engineering) Research Group. R&D+i project manager at AQUATEC Suez Advanced Solutions. Associate professor at the Technical University of Catalonia. Author of more than 100 papers in peer-reviewed journals and international conferences proceedings in the field of flood risk management and urban drainage.



David Pacheco | Cetaqua

David Pacheco is an environmental communications specialist with an audiovisual media and corporate communications background. He has experience in managing the communication and dissemination of environmental-related initiatives, mainly focused on water resources, water quality and urban resilience. From Cetaqua's end, David is in charge of the design, implementation and evaluation of the communication strategy of different European research projects funded under Horizon 2020 and LIFE programmes. He is currently involved in H2020-RESCCUE, where he leads the Communication and Dissemination Work Package.



Rosa Suriñach | UN-Habitat

Rosa has over 15 years of professional experience with local governments and international organisations, and she has led global campaigns and advocacy initiatives promoting sustainable and resilient cities all over the world. Rosa took part in the elaboration of the New Urban Agenda leading mobilization and outreach initiatives within the Habitat III Secretariat. Before joining the United Nations in 2011, she worked in the private sector and in the Barcelona City Council. As responsible for advocacy and outreach, she coordinated field projects in Brazil, Colombia, Ecuador, Mexico, China, Kenya and Europe.

Scientific Committee

The URCC Scientific Committee is made up by experts from different backgrounds that advise on the organisation of the conference:

Amaia Celaya | UN-Habitat

Àngel Villanueva | Aquatec-SUEZ Advanced Solutions

Dominic Royé | Universidade de Santiago de Compostela

Gemma Conde | Barcelona Regional

Laia Romero | Isardsat

Lindsey McEwen | University of the West of England

Lorenzo Chelleri | Urban Resilience research Network (URNet)

Luca Pelá | Universitat Politècnica de Catalunya

M. Carmen Moreno Garcia | Universitat de Barcelona

Manuel Gómez Valentín | Universitat Politècnica de Catalunya

María José Estrella | Universitat de València

Maria Pregnolato | University of Bristol

Marta Galceran | Anteverti

Megan Rowling | Journalist

Montserrat Termes Rifé | Universitat de Barcelona

Nicola Tollin | University of Southern Denmark

Pere Malgrat | Ajuntament de Barcelona

Peter Bosch | TNO

Peter Joyce | PreventProtectPrepare

Roelof Moll | TU Delft

Thanasis Sfetsos | NCSR Demokritos

Zoran Vojinovic | UNESCO-IHE

Parallel session

Water & climate change: Challenges and solutions

Chair: Bernat, Xavier

Keywords: Water, scarcity, rainfall, climate change

Urban services are key for the proper functioning of a city: without water, energy or transport, citizens can't live their normal lives and thus, economic and social activities are disrupted. Due to the concentration of population and complexity of cities, urban services are already working at high levels of stress, and climate change may increase the pressures on those systems. This is of special relevance when it comes to the water sector, as water scarcity, extreme rainfall or water quality problems may add stresses to the water and waste water networks of cities. This session presents challenges and solutions related to the urban water systems from cities all around the world.

Wednesday 21

11.00-12.30

Room 3

Achieving urban water supply and flood resilience using catchment scale rainwater management

Ahilan, Sangaralingam

Urban resilience diagnosis in context of climate change in Benidorm (Spain)

Balaguer, Miguel

Assessing water related challenges in the wider resilience context: lessons from Asunción, Paraguay

Celaya, Amaya

Modelling future water availability for the city of Barcelona

Forero-Ortiz, Edwar

Multi-temporal built-up grids of Brazilian cities: how trends and dynamic modelling could help on resilience challenges?

Rufino, Iana

Achieving urban water supply and flood resilience using catchment scale rainwater management

By Ahilan, S., Webber and J. & Butler, D.

Theme: Climate risk management and resilience in urban areas.

Sub-theme(s):

- Adaptation strategies and nature-based solutions to improve resilience

Keywords: Rainwater management, water supply, flood resilience, surface water management

Abstract of presentation: The increasing magnitude and frequency of extreme rainfall events coupled with a rapid growth in urban populations is leading to surface water flooding being recognised as one of the pre-eminent natural hazards impacting communities, properties and infrastructure. However, if managed effectively, urban storm water also represents a promising resource to enhance water supply resilience. This research investigates how catchment-scale rainwater management can be applied to achieve flood and drought resilience through capturing extreme rainfall and contributing to water demands at the property scale.

The study investigates a case study in Pandon Dene, North East England, implemented in three stages: Firstly, evaluating the household water demand and supply from an individual rainwater harvesting system; Secondly, examining the effects of catchment scale rainwater management on urban flood resilience; And thirdly, assessing cost-effectiveness of strategies.

Three types of household rainwater harvesting systems are considered in the performance evaluation, including a single storage tank, a passive system with regulated overflow and an active system with real time control. Household demand and supply is characterised using 15-minute resolution non-potable property scale water consumption, evaluated through continuous simulation over a 36-year period (1984-2019). Long-term continuous simulation enables quantification of water supply efficiency and overflow from the rainwater harvesting system at individual houses. Urban flood resilience from catchment scale application is evaluated using a rapid two-dimensional cellular automata flood model (CADDIES), with the estimated overflow from each of the household applied as a model input to examine strategy response to 36 historical rainfall events, ranging from a 1 in 1-year through to a 1 in 140-year return period. Cost effectiveness is evaluated using a rainwater system cost model and a GIS-based hazard impact assessment tool for flood damage mitigation.

Analysis indicates that all three rainwater harvesting systems deliver water-saving benefits and stormwater benefits to varying degrees. The single storage tank and passive rainwater harvesting system are particularly effective to regulate more frequent (< 10-year) and moderate (< 30-year) storm events whereas the active system can effectively regulate larger (< 50-year) rainfall events. At the same time, results also indicate that a system primarily designed for water supply augmentation provides up to 64% of non-potable demand (toilet flushing) alongside 77% (median) reduction of stormwater peak runoff into the sewer system. Dual modes of resilience indicate that distributed catchment-scale rainwater management can deliver multi-functional, multi-benefit systems.

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