SESSION DESCRIPTION

POSTER PRESENTATIONS

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Contact: Matteo Bizzotto
E-mail/web: resilient.cities@iclei.org
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CONTRIBUTORS

Presenter   *Menna Dessouky, Sustainability Master Planning, Arcadis, Abu Dhabi, United Arab Emirates*

Circular urban metabolism as a design approach for master plans

Circular Metabolism (CM) considers an urban area to be a system with a set of circular or recycled flows, where "the output of one [agent] is the input for another" (Robinson et al., 2003). Flows include natural resources, human knowledge, labour, skills, income, technology and data. The main objectives of a CM approach to development are: resource efficiency and self-sufficiency (Rapoport, 2011), reduction of CO_2 emissions and creation of socio-economic opportunities. This research proposes a design framework (coined as Circu-Set) for master planners to achieve the objectives of CM on private sector design projects using an integrated systems approach.

Presenter   *Troy McMillan, PhD student, University of British Columbia, Vancouver, Canada*

Using participatory mobile technology to engage citizens in urban climate resilience-building within developed countries

Disaster losses in developed countries continue to grow in large part due to the exposure of citizens and infrastructure to existing and future disaster risks, influenced by both rapid urbanization and climate change. Concurrently, we are witnessing unprecedented consumerization of mobile technology. Recent research has examined how mobile technology influences disaster response and recovery efforts; however, little research has been conducted to determine how this technology can be used to increase engagement between local governments and their citizenry in order to build urban climate resilience. This research will aim to reduce the existing gap in knowledge using a mixed methods approach, with the intent to develop a "quick start" mobile technology framework for local governments to strengthen digital engagement with residents in advance of climate-induced disaster.

Presenter   *Kathia Vanessa Román Reina, Student, HafenCity Universitat, Hamburg, Germany*

Gerson Amaral Lima, Landscape Architect, Architectus S/S, Frontaleza, Brazil

Fiocruz Ceara: First public certified building in the Brazilian northeast region

Fiocruz is a Brazilian institution part of the Minister of Health, reference in Latin America in the areas of public health, research and education. This project is the result of a working process, where the stakeholders were willing to innovate, becoming a role model regarding how to conciliate a public bidding with an environmental certification system and how to integrate sustainable construction solutions in order to turn possible integrated goals. Successful strategies, like stormwater and runoff control, energy demand and water consumption reduction and the capacity of being a sustainable knowledge multiplier among students and professionals, must be highlighted.

Presenter	*Lee Shing Him, PhD Candidate, University of Hong Kong, Hong Kong*

Thermal benefits of wire-rope climber-green walls in subtropical summer

Urban greening can contribute to urban resilience in the face of global climate change. The growing number of cities in subtropical region necessitates the need to combat the urban heat island phenomenon which jeopardizes the thermal condition in urban space. The vertical wall surface of buildings offers great potential in green wall implementation. The present research investigates the outdoor and indoor thermal effects of a green wall in various weather scenarios. Influencing factors of the cooling benefits have been examined. Recommendations have been proposed for the use of green wall.

Presenter	*Sébastien Dujardin, Researcher, University of Namur, Namur, Belgium*
	Catherine Linard, Professor, University of Namur, Namur, Belgium

A spatial predictive model of urban malaria infection risk in sub-Saharan Africa

Throughout the 21st century, climate change is expected to lead to increases in ill-health in many regions and especially in cities from developing countries with low income. Within this poster presentation, we show the potential of remote sensing and spatial modelling at different spatial and temporal scales to improve the understanding of intra- and inter-urban malaria risk variations in sub-Saharan Africa. We introduce a spatial predictive epidemiological risk model that will provide stakeholders with a faster and less labour-intensive alternative for effective disease control, and an applied tool to address urban developments that impede their transformation to resilient cities.

Presenter	*David Williams, Researcher, Climate Service Center (GERICS), Hamburg, Germany*

Vulnerability of informal settlements in the context of rapid urbanization and climate change in Durban, South Africa

Rapid urbanization and climate change collectively increase the vulnerability of poor urban communities to natural hazards, thereby undermining urban resilience. It is therefore critical to identify and deepen our understanding of the main variables, and the complex interactions between them, which produce and shape the vulnerability of poor urban communities to natural hazards. To develop this understanding it is necessary to conduct detailed research at the local scale. This poster represents the work carried out in Quarry Road West informal settlement, Durban, South Africa. It shows how participatory systems mapping can contribute the understanding of vulnerability at the local scale. Furthermore, results from the application of the Capital Approach Framework, identifying strengths and weaknesses in current local governance, are also presented.

Presenter	*Nora Schneevoigt, Research Associate, University of Bonn, Bonn, Germany*

Half a century of land use and cover change in North Rhine-Westphalia

The project KlimNet aims at improving the climate adaptation competence of cities. To collect maximum knowledge for creative solutions towards resilient towns, scientists, municipalities and citizens are closely cooperating. Satellite data of North Rhine-Westphalia (NRW) from the 1970s to date are analysed regarding different kinds of land cover and use as well as varying degrees of imperviousness or soil sealing. The changes over time and certain hotspots of climate change become visible. Decision tools and capacity-building measures are provided to support the application of the findings by the interested public and communal decision-makers.

| Presenter | *Linda Beyer, Visiting Scholar, Urbanization and Well-Being Unit, African Population and Health Research Center (APHRC), Nairobi, Kenya* |

Urban food deserts: Exploring dimensions of food security and resilience. The tale of two slums in Nairobi, Kenya

This research shows geo-spatial and differentiated socio-economic dimensions of food insecurity and resilience of vulnerable urban populations in two informal settlements of Nairobi (Korogocho and Mukuru). Using a mixed methods design, two years of monthly data sets and bi-monthly market data explore dimensions of food insecurity at a household level as well the interface with various socio-environmental factors. Further, household interviews have been undertaken to explore dimensions of resilience (what makes a difference) in relation to food insecurity. The results of this analysis explore the critical and complex understanding of how vulnerable urban populations cope or adapt to food insecurity.

| Presenter | *Lisette Klok, Researcher, University of Applied Sciences, Amsterdam, The Netherlands* |

The cooling effect of small blue urban spaces is negligible

Blue spaces in cities are often regarded as adaptation measures that effectively reduce urban heat. Therefore, urban professionals like to integrate blue infrastructures in climate resilient designs. However, several studies indicated that the cooling effect of small water bodies is often small or absent. This poster will inform about the actual cooling potential of small blue spaces such as rivers, ponds, canals and fountains. Simulation results from the REALCOOL project will be complemented with measurements and questionnaire surveys from other studies and relevant scientific literature to illustrate the negligible cooling impact of small blue spaces for climate resilient urban design.

| Presenter | *Johannes Lückenkötter, Research Assistant, Technische Universität Dortmund, Dortmund, Germany* |

Research and PhD Programme on Resilient Cities in East Africa

This poster summarizes the work of a research-cum-training programme that focuses on governance and planning for resilient cities in East Africa. The programme is conducted jointly by the urban planning schools of Ardhi University (Tanzania) and TU Dortmund University (Germany) and includes several PhD research projects in East African countries. The research focuses on challenges of climate change and continued rapid urbanisation for informal settlements and the functioning of urban systems as a whole. Proposed strategies integrate both innovative technical solutions and more adaptive local governance.

| Presenter | *Eddie Wasswa Jjemba, Urban Resilience Advisor, Red Cross Red Crescent Climate Centre, The Hague, The Netherlands* |

Closing gaps for warming cities in Africa

Unlike Europe and the United State of America, risks of extreme heat events are less understood in developing countries. In India, extreme temperatures appear among the top most disasters and are reported to cause enormous suffering including mortality and illness yet their impact remain under reported. In Africa, a recent study indicates increased intensity and frequency of heat waves in many parts of the continent between 2006 and 2015. Poor housing conditions, constrained health systems and limited access to income further increase the vulnerability of the urban poor to extreme heat. Drawing from different case studies, we will brainstorm practical actions and suggest feasible research priorities and policy options towards adapting cities to extreme heat risks.

Presenter	*Cristian Terreno, Researcher, Universidad Nacional de Córdoba, Córdoba, Argentina*
	Cecilia Becerra, Researcher, Universidad Nacional de Córdoba, Córdoba, Argentina

A partnership for the sustainable development of an urban protection area "Los Manantiales" Rio Ceballos, Argentina

The poster presents the regulation and environmental management proposal for the protection of the water basin "Los Manantiales" located in the municipality of Rio Ceballos (22.000 inhab.) part of the metropolitan region of Córdoba (1.350.000 inhab.). The protection area was legally created by local authorities in 2008 starting from the initiative of neighbors organized in a Non-Governmental Organization. Facing the current urban development pressures, NGO members stimulated the integration of knowledge and political actors with social engagement in a partnership that in an intensive participatory eight months process developed an integral plan for the management of the protection area.

Presenter	*Leila Irajifar, Lecturer, RMIT University, Melbourne, Australia*

Crowdsourcing Urban Resilience

Crowdsourcing as an emerging tool to foster participatory approaches has the potential to engage individuals in solving urban challenges in many different ways from self-organization activities and shared learning to mutual support, and innovative ideas. This study explores the link between crowdsourcing and urban resilience and investigates the interconnectivity between urban subsystems, individuals, and government to understand how active citizenship can stimulate building urban resilience. We argue the necessity of allocating more resources to prefigure all the potentials of crowdsourcing platforms in solving urban challenges and ensure the openness, transparency, interoperability and adaptability of these crowdsourcing platforms for all the stakeholders' involved in building urban resilience from designers, planners and policymakers.

Presenter	*Theresa Zimmermann, Research Associate, Freie Universität Berlin, Berlin, Germany*

Understanding urban disasters – the 2005 floods in Mumbai

This poster presents insights from research on the constitution of meanings of the 2005 floods in Mumbai. It is argued that the way how disasters are discussed, how they are contextualized, which impacts are considered and which conclusions are drawn from the experiences, are socially constructed and henceforth differ between actors. The results contribute to understanding urban disasters and developing disaster risk reduction and resilience strategies that include perspectives of vulnerable populations.