

Urban Resilience Research Group

Yearbook 2019-20

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SDU 

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Urban Resilience Research

Urban Resilience is a research group in the section of Civil and Architectural Engineering. The research group develops transdisciplinary research, education and knowledge transfer activities on urban resilience at international level.

Research in this area investigates urban resilient transition, addressing systemically the causes and effects of climate change in cities, including climate change adaptation and mitigation, and other related major urban challenges: urbanization, sustainable development, pandemics and disaster risk reduction. Urban Resilience is coordinated by Professor Nicola Tollin.

The objective of the research is to inform policymaking at international and national level, and to support science-based urban planning and design for local action, both in the Global North and South. The research group actively contributes to the joint implementation of the United Nation's Sustainable Development Goals, the Paris Agreement, the New Urban Agenda, and the Sendai Action Framework for Risk Reduction.

COMPETENCES

The research is developed through the following thematic clusters, which are strongly interlinked, covering specific knowledge and research gaps on urban resilience:

Water and Human Settlements

This thematic cluster focus on urban water challenges and responses, related to urbanization and climate change, specifically working on Integrated Urban Water Management, Urban Metabolism and Water Sensitive Urban Design

Resilient Coastal and Maritime Planning

This thematic cluster focus on coastal zone that is the interlinkage between the marine and land environments, including maritime spatial planning, including climate impact and planning responses for coastal areas and small islands developing states.

Green Infrastructures for Climate Adaptation

This thematic cluster focus on green infrastructures, nature-based and hybrid solutions facing climate adaptation and mitigation issues, with specific relation to urban flooding, cloud burst and urban heat island, to improve urban livelihoods.

Circular Economy and Built Environment

This thematic cluster focus on circular economy transition of the built environment, construction and housing sector, particularly in relation to the reduction of use of material, energy, water and land, greenhouse gasses emissions, and the derived socio-economic co-benefits.

Human Health in Cities

This thematic cluster focus on the relation between human-health and climate change in cities, it includes systemic review of scientific and grey literature, and an analysis of evaluation framework to support urban design and planning practices.

Climate Change Governance

This thematic cluster focus on multi-level governance for climate change mitigation and adaptation in cities, including the analyses of the urban content of Nationally Determined Contribution and National Adaptation Plans.

Climate Action and Capacity Building

This thematic cluster focus on supporting climate resilience action at local level, understanding operationalization needs, assessing and strengthening capacity building for local stakeholders, and enhancing impact and sustainability of resilience and climate interventions.

Research group



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Activities



Understanding Urban Resilience Research

Understanding Urban Resilience Research is a joint research developed by researchers from:

University of Southern Denmark, Imperial College London, IUAV
University of Venice, Massachusetts Institute of Technology.

The research objective is to investigate the knowledge and implementation gaps as experienced by urban resilience researchers, practitioners and policy makers. The research is carried out in order to support informed decision and policy-making in liaison with: UNFCCC and Paris Agreement, UN-HABITAT and the New Urban Agenda, UNDRR and the Sendai Framework for Disaster Risk Reduction.

Through the research the following research hypothesis are tested:

- There is a gap between the knowledge and implementation of urban resilience.
- Different knowledge and practice communities lack common ways of validating and constructing knowledge (academics, practitioners, policy makers), which are key for understanding current gaps between the theory and implementation of urban resilience.
- As urban resilience is an interdisciplinary challenge, by understanding the ways in which people relate to interdisciplinary working environments and lifelong learning, we can better understand the barriers and opportunities for bridging the knowledge – implementation gaps

So far 20 semi-structured interviews were conducted, and more than 45 structured surveys completed. The aim is to conduct more than 100 semi-structured interviews and 200 structured surveys.



UNESCO-IHP Research

Water and Human Settlements of the Future

UNESCO – United Nations Education, Scientific and Cultural Organization is supporting the process of strengthening water security for sustainable development. The UNESCO Intergovernmental Hydrological Program (IHP) is currently implementing its Eighth Phase “Water Security: Responses to Local, Regional and Global challenges” during the period 2014 - 2021, which began one year prior to the launch of the 2030 Agenda.

SDU is contributing to deliver the Intergovernmental Hydrological Programme VII world program on the theme of Water and Human Settlement of the Future. The International Hydrological Programme (IHP) is the only intergovernmental programme of the UN system devoted to the scientific, educational, and capacity building aspects of hydrology. Based on the priorities and needs of Member States, identified at the Working Group meeting in Nairobi, the eighth phase of the IHP focuses on six thematic areas to assist Member States in their challenging endeavour to better manage and secure water and to ensure the necessary human and institutional capacities.

Water and Human Settlement Research focuses on cities that are experiencing stresses from population growth, climate change and the deterioration of urban infrastructure systems. As water demand will continue to increase in the future, a growing number of cities will face the challenge of managing scarce and less reliable water resources efficiently.



December 2019

SDU contribution to the delivery of the Intergovernmental Hydrological Programme VIII including: Work package 1: Integrated Urban Water Management, Work Package 2: Urban Metabolism, and Work Package 3: Water Sensitive Urban Design. These subtopics are defined through the analysis of the state of the art and collection and analysis of case studies and best practices, with tentative understanding for replication and upscaling.

In regard to Integrated Urban Water Management, the case studies will focus on developing countries, analysing the various existing approaches to macro urban water management, integrated basin based water management with long-term funding solutions, the evolution and constraints of urban water systems, the identification of responsible national institutions and relevant international cooperation institutions, regional and intergovernmental organizations, and NGOs.

Urban Metabolism will focus on considering stock and flow of water in urban environment, with significance to urban water management and potential applicability.



Human Health Research

Health and Wellbeing Assessment, Health Communication and User Involvement is a cross-disciplinary research program under Human Health, funded in 2019, involving interdisciplinary teams from the University of Southern Denmark.

This research program explores notions central to current health care practices and initiatives with a specific focus on user involvement, health communication, person and personalized (medicine). The overall aim is to investigate communication about values and personal matters, both in one-on-one health care interactions and in implementing new health technology. The aim is to contribute to improving or supplementing existing indicators and methods for assessing health and wellbeing, taking into account patient experience, moods and atmosphere, experience of meaning, the impact of human interaction and physical environment, and the balance between safety and autonomy and privacy. The work is divided in WP1, WP2, WP3.

Work package 1: New indicators and methods for human health assessment.

The overall research question of WP1 is: What are the limitations of existing health and wellbeing indicators, and how can new indicators be developed that are both sensitive to a wider range of factors and still readily applicable to actual health practices and concerns? The work package will be led by Prof Nicola Tollin (TEK) and carried out by a post. doc and a PhD-student, in collaboration with Birgitte Nørgaard (SUND), Diane Bastien (TEK) and Søren Harnow Klausen (HUM).

Within this framework, the impacts of human interaction and the physical environment are the focus of Civil and Architectural Engineering unit (CAE) within the Faculty of Engineering (TEK).

The research comprehends the analysis of air quality, greenhouse gases (GHG) emissions, policies and decision making in relation to sustainable development and climate change, participatory design and stakeholders' involvement.

Resilience Model of the City of Istanbul

The Istanbul model was developed by the University of Southern Denmark – Civil and Architectural Engineering – Department of Technology and Innovation (SDU) and ADBA Marketing Consulting Innovation.

Professor Nicola Tollin's role in the development of the Istanbul model was to follow up on the results of the project of the Project Technical Team in Istanbul (the acute shocks and chronic stresses of Istanbul and selected world cities), provide support in building the holistic approach of the Resilience Model of the City of Istanbul and defining the resilience index of the city, and to review the final report.

The holistic approach included the following steps: preliminary research, data collection, further analysis and strategic examinations of resilience frameworks and examples, plans for improving the resilience of the city in relation to possible acute shocks and chronic stresses. On this basis, Resilience index, Key Performance Indicators and Resilience Model were developed. The process also included stakeholder's involvement.

The preliminary results outlined the factors and processes that build the resilience of Istanbul, including consultation with stakeholders, the government and the Istanbul Metropolitan Municipality (IMM), and the partnerships with NGOs. The following challenges were addressed: disaster risk, waste management, traffic, migration, climate change, lack of urban identity, urbanization.

3rd International Conference on Smart and Sustainable Planning for Cities and Regions SSPCR 2019

**December 2019
Bolzano Italy**

“Housing and Sustainable Development Goals: optimizing housing life cycle through a circular economy approach”. Authors: N. Tollin and K. Wieszczechzynska.

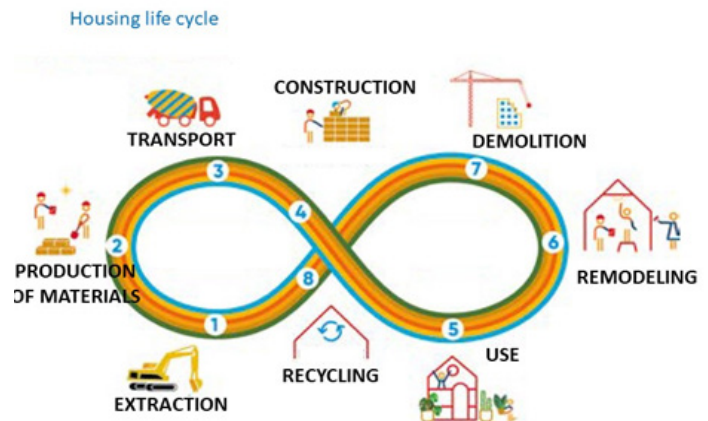
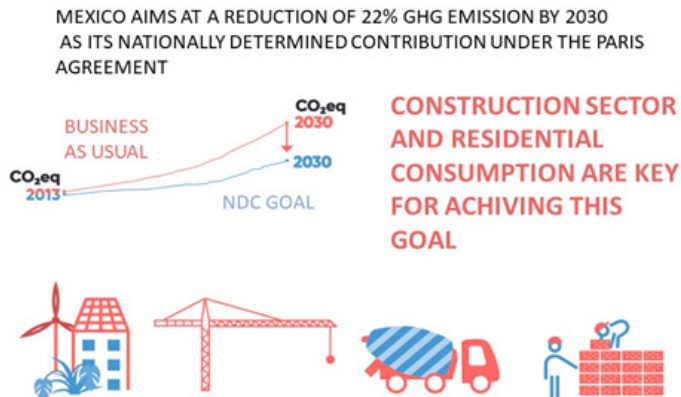
The presentation addressed regulatory recommendations for a circular economy transition in the housing sector in Mexico, within the broader framework of the Sustainable Development Goals. Both production and consumption during the entire life cycle of the house were addressed, including the habits and consumption patterns of the inhabitants, and the potential for replication of these recommendations in other countries and contexts.

The presentation was based on the report: Housing and Sustainable Development Goals in Mexico, developed by UN-Habitat in partnership with INFONAVIT - Mexican federal institute for workers’

housing, and in collaboration with SEDATU - Mexican Office for Agrarian, Land and Urban Development. Lead Consultants: F. Aportela, I. Magalhães, N. Tollin.

The document aims to support the housing sector in Mexico in the transition from incremental actions and iterations to a radical innovation of the system, and to contribute to sustainable development. The work is structured in 6 strategic guidelines, 16 proposals and 49 specific actions, 6 strategic lines are core themes and chapter of the report.

The focus was specifically on understanding the challenges and key conditions for a sustainable transition of the housing sector, with a circular economy approach through governance, in particular through the vertical integration of (inter)national policies and local actions.



International Urban Resilience Academy (IURA)

International Urban Resilience Academy (IURA) is a transdisciplinary platform for education, research and networking activities on Urban Resilience, at Civil and Architectural Engineering, University of Southern Denmark.

International Urban Resilience Academy will include teaching/educational activities:

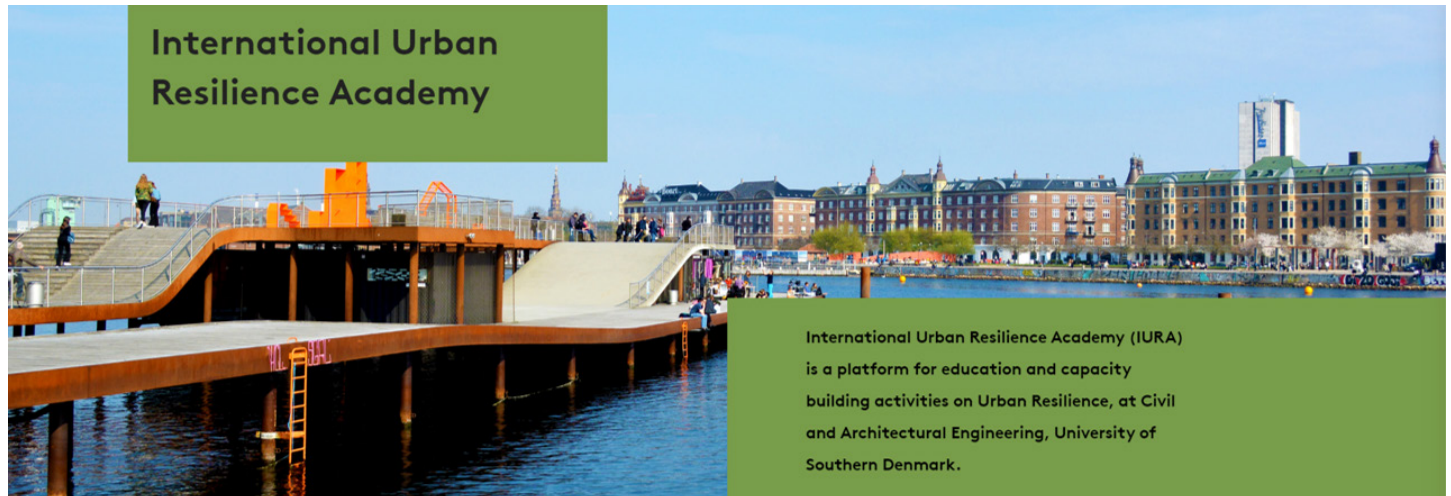
- Urban Resilience Intensive Training (for practitioners, policy makers and researchers) running yearly in Copenhagen DK or on-line, from 2019.

- SDU Summer School Urban Resilience (for BSc and MSc) running in Odense DK or on-line, from 2020.

- Short Courses Urban Resilience, half a day or one day, (for practitioners, policy makers and researchers) to be organized on demand from 2020.

- World Urban Resilience Intensive Trainings organized on demand, lead/co-organized with partner organizations worldwide.

<https://www.sdu.dk/en/iura>



Training for the Ministry of Planning of Edo State, Nigeria

November 2019

Professor Nicola Tollin delivered the training 'Processes and indicators for preparing resilient urban master plans', guiding and reviewing the Group work on Envisioning Benin City in 2040 during the Technical Assistance Consultancy for the Restructuring of the Ministry of the Physical Planning and Urban Development (MPPUD), EDO State, Nigeria. The entire training was aligned with the vision of Edo State as economic & environmental competitive location, and met the provisions of African Urban Agenda, New Urban Agenda, Sustainable Development Goals & PACC Policy.

The training enhanced the understanding of Urban Resilience as a transformative process through which an urban system can dynamically build adaptive capacity to foster innovation. The session included key findings from the IPCC Climate Change Report (2014), the importance of systemic and integrated approaches in generating co-benefits and responding with policies, plans and actions to the challenges posed by the Sustainable Development Goals, the New Urban Agenda, the Paris Agreement and the Sendai Framework of Action, and examples of cities working towards a resilient future.

The presentation included the process design methodology, the phases for developing informed plans, strategies and actions for the resilience transition, as well as enabling conditions. Participants also took part in the practical exercise on Envisioning Benin City in 2040.



BLOXHUB Summer School on Urban Resilience 2019

BLOXHUB Summer School on Urban Resilience was organized by the University of Southern Denmark, in collaboration with BLOXHUB and Aalborg University-BUILD Department of the Built Environment, and in partnership with many other organizations: UN-Habitat, UNDRR, UNESCO-IHP, GERICS, ICLEI, WWF, CTCN, RECNET, ICCCAD, IUAV University of Venice, Polytechnic University of Catalonia, TU Delft, RC3 at Polytechnic of Turin, NURI, and with financial support from: RELDANIA, Grundejernes Investeringfond.

The BLOXHUB Summer School was organized to respond to the Cities-IPCC call for fostering dialogue between practitioners, policy makers and researchers, to develop and promote peer-to-peer learning across regions, sectors and disciplines. It gathered 26 participants, including 7 policy-makers, 14 scientists and researchers and 12 practitioners from 20 countries and 4 continents, coming for capacity building on & per to peer learning during an intensive eight days course in Copenhagen. The objective of the summer school was to provide multi-disciplinary knowledge and perspectives on the different global and local challenges in cities of the Global South and North, and build capacities to develop informed policies, strategies, plans and solutions for urban resilience, through lectures



September 2019
Copenhagen, Denmark

and involvement in problem-based workshops using Copenhagen's real-life experience and challenges as a living laboratory.

The lectures provided an overview of major international policies in relation to urban resilience, practices, the latest developments and perspectives for research, as well as cross-sectorial and thematic issues, including: multi-level governance, finance, nature-based solutions, appropriate technology, urban metabolism, circular economy, planning and design, participatory processes and stakeholders involvement, generation of co-benefits. Following process design methodology during the workshops, 4 groups of participants developed resilience strategies and action plans for Copenhagen and Sydhavn, tackling systemically challenges of heat-waves, water scarcity, cloudburst and storms. The resilience plans included the principle of integrated and systemic solutions, through the use of inter alia nature-based solutions, tackling both causes and effects of the 4 urban global challenges, creating co-benefits for the health, energy and food sectors. Resilience plans had 20 years of timeline, integrating multiple temporal and spatial dimensions.

Quote from a participant: "Learning the skills required to collaborate across disciplines and backgrounds is equal to, if not more important than, 'hard' skills, e.g. systems analysis or risk mapping."

<https://tinyurl.com/tp8ztkl>



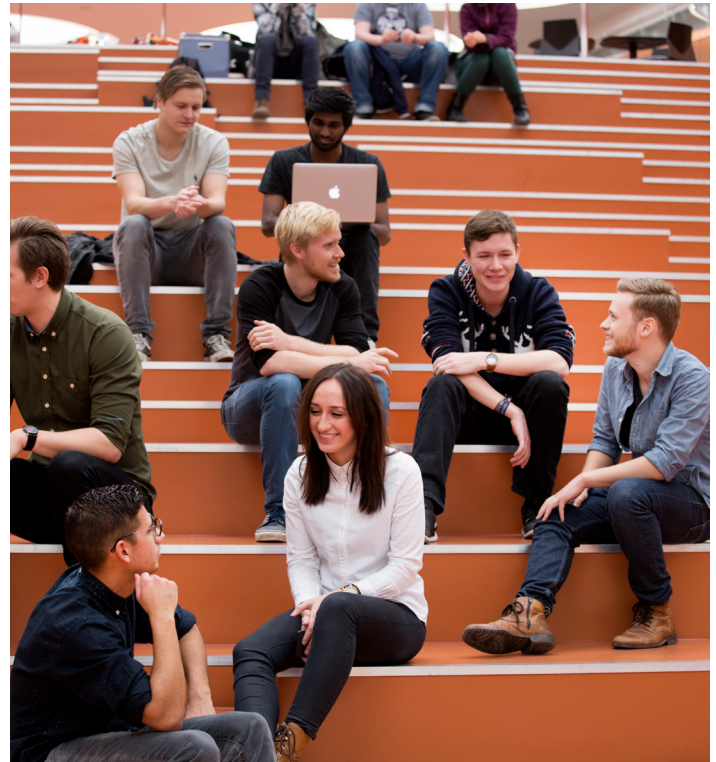
Lecture on resilience and water MSC in Environmental Engineering, SDU

May 2019
Odense, Denmark

Professor Nicola Tollin hold a lecture on Urban Water Management and Resilience, for the Master students of the Environmental Engineering Department at the University of Southern Denmark.

The lecture provided inputs to the understanding of Urban Resilience as a transformative process through which an urban system can dynamically build adaptive capacity to foster innovation. The themes covered included research in climate change, as well as the international policies. The session included the importance of systemic and integrated approaches in generating co-benefits and responding with policies, plans and actions to the challenges posed by the Sustainable Development Goals, the New Urban Agenda, the Paris Agreement and the Sendai Framework of Action.

The analysis of the case studies provided some practical examples of appropriate policies application and helped to understand the ways of improving life quality of civil society, with nature-based solution and the revival of intangible heritage: Medellin in Colombia, Kigali in Rwanda, Chennai in India, Mexico City in Mexico, Rotterdam in the Netherlands, and Melbourne in Australia.



Co-organization of Summer School on Climate Change

The summer school on Climate Change for master's students, localized between the two cities was organised in collaboration between the University of Southern Denmark SDU and the Polytechnic University of Turin POLITO.

The summer school focused on urban sustainability, urban resilience, circular economy, and possibilities of reorientation of urban processes towards sustainable and resilient cities. The summer school was held in Turin and Copenhagen and involved ten students and four professors for one day of lectures in Italy and three days in Denmark, from 11 to 13 September 2019, joining the concurrent BLOXHUB Summer School 2019.

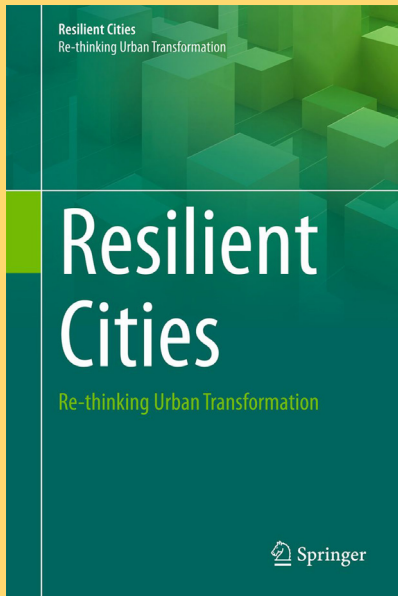
Students learned how urban futures can be co-created and how to strengthen cross-sectoral knowledge and dialogue on crucial urban challenges. Working with the experience and real-life challenges of Copenhagen as a living laboratory, students had the opportunity to acquire the skills and knowledge needed to develop policies, strategies, plans and solutions for urban resilience.

September 2019
Copenhagen, Denmark
Turin, Italy



Springer Book Series.

Resilient Cities: re-thinking urban transformation



The Resilient Cities Book Series aims to analyse the contemporary challenges faced by cities and provide an up-to-date body of knowledge, including a systematic collection of global cutting-edge best practices, fundamental to managing the urban transition towards resilience. Series Editors: Tollin, Nicola; Morató, Jordi.

The Resilient Cities Book series will be a unique and fundamental resource for practitioners, policy makers and scientists involved in planning and governing the transition of cities. It presents the latest and up-to-date systematized information on research, practices and policies development, defining clear means and pathways for replication and up-scaling.

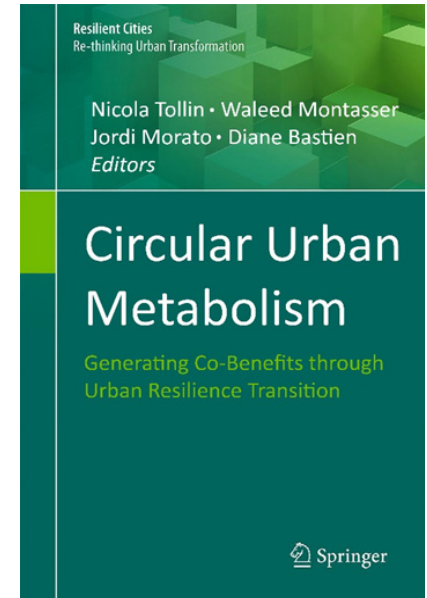
The distinctiveness of the book series is its international dimension, coupled with a multidisciplinary and a cross sectorial approach. The best practices are collected and analysed following a common format, enabling the reader to understand the solutions adopted and clearly high-lighting the parameters and possibilities for replication and up-scaling. The best practices are taken from a global city base, including Barcelona, Medellin, Adelaide, Copenhagen, Seoul, and Accra.

Book on Circular Urban Metabolism by Springer

The book provides examples and potential frameworks and approaches to design, planning and evaluation, as key enabling factors worldwide, depicting challenges and opportunities within a Circular Urban Metabolism, within e.g. waste and resources and water and wastewater, with differences based on location and legal and planning context.

Main sections of the book:

- Definitions, approaches and frameworks for Circular Urban Metabolism, including reference to: transition and innovation, circular economy, urban metabolism, low-carbon development, de-growth, decoupling, etc. This topic aims also at discussing approaches on how a circular metabolic system can support urban resilience transition and the challenges related to data collection.
- Case studies collection: Sectorial approaches for circular urban metabolism, fostering more systemic and integrated policies, strategies and actions, within topics: 1) water and blue infrastructures; 2) material and waste management; 3) biodiversity and agriculture.
- Case studies collection related to Cross-sectorial approaches for circular urban metabolism, including issues of multiple flows and sectors, water, waste, biodiversity and agriculture, energy, knowledge infrastructures, biotechnologies, social economy and the construction sector.



”Circular Urban Metabolism: Generating Co-benefits through Urban Resilience Transition” is the fifth volume of the book series “Resilient City: Re-thinking Urban Transformation” Editors: Tollin N., Montasser W., Morato J., Bastien D.

United Nations Climate & SDGs Synergy Conference

April 2019
Copenhagen, Denmark

Professor Nicola Tollin participated in panel discussion at the Global Conference on Strengthening Synergies between the Paris Agreement and the 2030 Agenda for Sustainable Development - Climate & SDGs Synergy Conference, organized by UN DESA and the UN Framework Convention on Climate Change, and hosted by the Ministry of Foreign Affairs and the Ministry of Energy, Utilities and Climate, Denmark.

The conference aimed to align the climate and SDGs processes, and to stimulate action from stakeholders at the global, regional and country levels to maximize co-benefits. Limiting global warming to 1.5°C above pre-industrial levels, including through scaling up climate action towards both adaptation and mitigation, is an imperative critical to the achievement of the 2030 Agenda. The conference

examined how to advance joined-up efforts for both the SDGs and climate action at the global, regional and country levels, helping to scale up levels of ambition towards these objectives.

The partners contributed to the Conference helping to identify specific examples to illustrate the potential of synergistic and interlinked approaches towards realizing the objectives of the 2030 Agenda and the Paris Agreement, including analyses of National Development Plans, NDCs, NAPs, National Risk Reduction Strategies among others. Moreover, gaps and challenges were analysed (including trade-offs) and a set of concrete recommendations was made for strengthening synergies, increasing ambition, advancing implementation action, maximizing co-benefits and stimulating multi-stakeholder partnerships.



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE, JUSTICE AND STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS



SUSTAINABLE
DEVELOPMENT
GOALS

Summit side event at C40 World Mayors Congress



Organizers:
SDU
BLOX HUB

Partners:
UN HABITAT
UNDRR
ICLEI
WWF
recnet.
TU Delft
B&K Bouwkunde
CTCN
ICC CAD
C40

With financial support from:
GRI

Debate:
URBAN RESILIENCE
BUILDING CAPACITY FOR
OPERATIONALIZATION

9AM - 11AM
10th October 2019

C40
WORLD MAYORS
SUMMIT COPENHAGEN
2019

Copenhagen
BLOXHUB - Los Angeles room
Frederiksholms Kanal 30

The side event “Urban Resilience: building capacity for operationalization” was organized by the University of Southern Denmark in partnership with BLOXHUB, Aalborg University, UN-Habitat, UNDRR, UNESCO-IHP, GERICS, ICLEI, WWF, CTCN, RECNET, ICCCAD, IUAV University of Venice, UPC Polytechnic University of Catalonia, TU Delft, RC3 at Polytechnic of Turin, NURI.

The event was an opportunity to reflect and discuss on the urban resilience challenges and the need to build capacities for its operationalization. The presentations and debate drew on the outcomes of BLOXHUB Summer School on Urban Resilience (12-19 September 2019), during which 30 practitioners, policy-makers and researchers from 20 countries in collaboration with 30 international lectures, elaborated proposals responding to a climate real-life challenge conceived in collaboration with the City of Copenhagen. The strategies and actions proposed for the City of Copenhagen were based on an integrated approach fostering the generation of co-benefits by using eco-system services and nature-based solutions. The event also served to present and discuss the preliminary results of research aiming at identifying key knowledge gaps, capacity building needs, operationalization barriers and opportunities for urban resilience.

**October 2019
Copenhagen, Denmark**



Side events at United Nations Climate Change Conference COP25

December 2019
Madrid, Spain

The side event “Capacity-building for Resilience” was organized and chaired by Professor Nicola Tollin, SDU, in partnership with UNESCO, GIZ, WWF CITIES, GERICS, UN-Habitat, ICLEI World Secretariat, ICCCAD.

The event was hosted by the Paris Committee on Capacity-Building (PCCB) in the frame of the Capacity Building Hub, during the Local Governments and Cities Day, coordinated by UNFCCC, UN-Habitat and ICLEI at COP 25. The session aimed to discuss challenges and opportunities for building capacities for urban resilience, respond to the Cities-IPCC call for fostering dialogue between practitioners, policy makers and researchers, and to develop and promote peer-to-peer learning across regions, sectors and disciplines, supporting climate action at local level and contributing to raising ambition of national policies. During the session the results of the BLOXHUB Summer School on Urban Resilience and preliminary results of the current research “Understanding Urban Resilience” were presented.



<https://tinyurl.com/tq2opjp>

The discussion highlighted the need for further research on bringing climate information and models to a useful level in cities, integration of finance and national policy as keys for building back better, the need for tools integration and navigation to create platforms for learning across mitigation, adaptation and resilience. The need for resilient people by building capacities and educational institutions, the need for more evidence-based decision making, and the importance of local context specificities and the importance of community-based measures were also discussed.

During the COP 25, the Urban Resilience Research Group participated in the side event “Improving resilience of key infrastructure in Central America and the Caribbean”, organized by SDU and UN-Habitat, in partnership with ENEA (Italy), CTCN, Ministry of Forestry in Honduras, OECS, IFC (Honduras), and hosted by the Italian Delegation at COP 25. The panel discussion chaired by Kasia Wieszczechyńska (SDU) focused on how to build resilient infrastructures and support a resilient transition in Central America and the Caribbean. Special attention was paid to climate change adaptation in the education sector, given the high importance of education for national development, the centrality of schools as learning and development centres, and their frequent use as emergency shelters during climate disasters.

The side event “Capacity-building for climate action”, organized by UNESCO in partnership with SDU, CDKN - Fundación Futuro Latinoamericano aimed to discuss alternatives for climate resilient urban development in small and medium-sized cities, establish a multi-sectorial dialogue to propose ways of reinforcing the capacities of local water actors in city, and discuss how a city-to-city-knowledge exchange can be facilitated by a cooperation mechanism such as MAWAC and trainings for Cities resilience. Professor Nicola Tollin presented the International Urban resilience Academy (IURA) and the BLOXHUB Summer School on Urban Resilience 2019 as a capacity building training for city actors.



Side events at UN-Habitat World Urban Forum

The side event “Understanding Urban Resilience: knowledge gaps, capacity building; and delivering sustainable & resilient infrastructure” was organized by SDU and ARUP in partnership with UN-Habitat, UNESCO, GCF, GIZ, WWF Cities, UNDRR and TU Delft.

The event aimed at discussing the key challenges for urban resilience, focusing specifically on knowledge gaps, capacity building, skills development and operationalizations through innovative practices in planning, designing and delivering infrastructure in a city.

The presentations and Panel 1 discussion drew on the outcomes of BLOXHUB Summer School on Urban Resilience and the research Understanding Urban Resilience. The knowledge gaps observed in urban resilience are data accessibility and data relevance, fundamental for evidence-based and informed decisions. The needs for capacity building involve strengthening science-policy interface, multi-sectoral systems thinking, cross-fertilization, while operationalization can happen through design thinking, horizontal integration, governance (integrating national and local levels).

The presentation and Panel 2 discussion drew from a review of innovating practices integrating eco-system services and climate change projections in planning and design, conducted in 2019 by WWF with funding from GIZ, and technical support from Arup. The main highlights found are the need to produce a paradigm shift faster, practices of more integrated approaches to eco-system and climate change analysis informing projects, and the risk is to have ‘too little too late’.



The special session “Enhanced resilience of the built environment and infrastructure” was organized by Un-Habitat in partnership with EC-DEVCO, 100 Resilient Cities, Medellin Collaboration for Urban Resilience, SDU. The aim of the session, chaired by Professor Nicola Tollin, was to discuss how can the New Urban Agenda be implemented with a focus on integrated urban resilience, and how can the international community support cities in building the resilience required to achieve the Sustainable Development Goals, with focus on UN-Habitat’s City Resilience Profiling Tool and City Rap. The session highlighted the need for integrating climate action in the frame of SDGs, the importance of cultural heritage and use of nature based solutions with participatory design, and the role of urban sprawl, migration, and urbanization.

The networking event “Scaling up finance for transformative climate action in cities” was organized by Green Climate Fund in partnership with SDU, UN-Habitat, Climate Policy Initiative, EBRD, and Moody’s Investors Service. This event discussed the access to urban climate finance, the innovative development, including the obstacles that impede investment, the cutting-edge approaches to addressing key obstacles, the multi-country approach to scale up climate action in cities, and unlocking private capital for urban climate action. Professor Nicola Tollin addressed the need for the development of frameworks and tools to integrate climate considerations into fiscal and financial decision-making at the city scale and explore how public budgets can be strategically used.

**February 2020
Abu Dhabi,
United Arab Emirates**



Resilient Cities – Global Forum on Urban Resilience

**June 2019
Bonn, Germany**



<https://resilientcities2019.iclei.org/>

<https://www.greengrowthknowledge.org/event/resilient-cities-2019-10th-global-forum-urban-resilience-and-adaptation>

Resilient Cities – The Annual Global Forum on Urban Resilience and Adaptation, a global platform for urban resilience and climate change adaptation, was organized by ICLEI – Local Governments for Sustainability and the Federal City of Bonn. Professor Nicola Tollin joined the expert’s committee and facilitated the A4 panel: Linking data and science to improve urban resilience and contributed to closing plenary remarks.

The core objective of the Resilient Cities congress series is to serve as the global resilience implementation forum. The special 10th edition aimed to engaging political leaders and representatives from the private sector, international organizations and research institutions to discuss the state of local resilience, to evaluate its progress and encourage all stakeholders to take action under the lens of the Paris

Agreement and the resilience targets of the 2030 Agenda. The focus of resilient cities 2019 were financing resilience, advancing resilience actions, innovation for resilience and building resilient societies.

The A4 Panel on Linking data and science to improve urban resilience, facilitated by Professor Nicola Tollin, was conducted in partnership with WWF One Planet Cities, Tokyo City University, FA UNAM, Ouranos, Argonne National Laboratory, Florida International University. The session focused on the benefits of science-policy collaboration to achieve sustainability goals and better-informed decision making, the potential of leveraging innovative data sources to track cities’ environmental performance and social equity outcomes.

Association for European School on Planning Congresses 2019: Planning for Transition

During the Association for European School on Planning's Congresses 2019, Professor Nicola Tollin chaired the Roundtable: "Urban Resilience for Risk and Adaptation Governance", and participated in Roundtables "The General Adaptation" and "City, Production, and Retail: New Perspectives for Old Research Lens".

The Roundtable "Urban Resilience for Risk and Adaptation Governance" was organized with SDU, POLITO, UPC, UN-Habitat, National School of Public Administration in Canada, Future Earth Coasts, King's College London. The discussion addressed a global cross-cutting knowledge gaps on cities and climate change, defined by Cities IPCC Cities and Climate Change Science Conference, to be addressed by science to support the preparation of the IPCC forthcoming special report on cities, specifically strengthening

multi-level governance in the frame of transformative climate change responses. The Roundtable was based on the contributions of the editors and the authors of the book "Urban Resilience for Risk and Adaptation Governance", first volume of the "Resilient City: Rethinking Urban Transformation" book series published by Springer.

Topics of the debate: 1) Systemic Challenges: integration of conflicting understandings of urban resilience transition, to effectively support informed decision-making. 2) Policy Challenges: strengthening multi-level governance favouring collaboration and harmonization of policies and actions across national and local governments. 3) Co-Benefit Challenges: defining and reinforce the co-benefits produced by urban resilience transition.

July 2019
Venice, Italy



<https://www.aesop2019.eu/>



International Research Network for Low Carbon Societies - 11th Annual Meeting

**October 2019
Rome, Italy**

Presentation of “Action in cities: housing and SDGs in Mexico” Author: N. Tollin.

The housing sector in Mexico is following a linear model of consumption and production with significative environmental impacts, both in relation to the excess of consumption of natural resources, as water, materials, energy and land, and the generation of negative externalities leading to the pollution of water, air and land, and ultimately being responsible for significant GHGs emissions, with consequent impact on climate change.

Strategic proposals and normative recommendations were presented, in relation to a circular economy transition in housing sector in Mexico, in the wider frame of sustainable development goals, considering both production and consumption during the entire life cycle of the houses. The potential for replications of these recommendations, in other countries and contexts, was discussed.

To optimize housing’s life cycle includes 2 PROPOSALS. The first proposal targeted new housing and included 2 specific ACTIONS of inter-institutional governance and financial and fiscal instruments. The second proposal focused on new and existing housing and includes 4 specific ACTIONS of updating normative framework, developing financial and fiscal instruments, developing policies and programmes, and empowering citizens.

The work was based on the UN-Habitat report “Housing and SDGs in Mexico”.

Between 2006 and 2012

6.1 mil tones of waste were produced by the construction sector



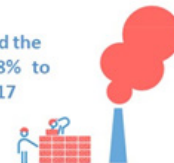
construction sector is the 3rd largest source of waste generation

Housing sector was responsible in 2013 for 16.2 % of the total energy use in Mexico



and of 32% of the total GHG emissions

Construction sector increased the energy consumption from 9.8% to 10.4% between 2014 and 2017



<https://onuhabitat.org.mx/index.php/la-vivienda-en-el-centro-de-los-ods-en-mexico>

June 2019,
Bonn, Germany



COP24-KATOWICE 2018
UNITED NATIONS CLIMATE CHANGE CONFERENCE



— DRIVING CHANGE TOGETHER

**SPECIAL JOINT EVENT ON MULTILEVEL CLIMATE ACTION
FOCUSING ON E-MOBILITY AND ADAPTATION**

26 June 2019 | Wednesday | 15:00 – 18:00

LOCATION: World Conference Center, Bonn, Germany

IN COLLABORATION
WITH:



SUPPORTED
BY:



Multilevel Climate Action event at UNFCCC Climate Conference SB50

The Presidency of COP24- KATOWICE 2018 United Nations Climate Change Conference and ICLEI – Local Governments for Sustainability, in its capacity as the focal point of Local Governments and Municipal Authorities (LGMA) Constituency, convened this special joint event, endorsed by the UNFCCC Secretariat and further supported by Polish Alternative Fuel Association and AVERE.

This multi-stakeholder event consisted of a high-level session, followed by 2 breakout groups. The event aimed to highlight progress since COP24 and address potential opportunities for synergetic actions towards UN Climate Action Summit and COP25.

The event dealt with multilevel climate action, focusing on e-mobility and adaptation. Climate change is recognized as one of the biggest challenges we face today, environmentally, economically and

socially. To meet the goals of the Paris Agreement, transport must be decarbonized, through joint and consistent actions undertaken by national, regional and local authorities. Air pollution caused by road transport poses a real threat to public health in our towns and cities. As a part of the transition to a low carbon economy, we need in particular the development of accessible zero-emission vehicles, that can bring economic, health and environmental benefits to all of us. Adopted at COP24 in Katowice in Poland, Driving Change Together Partnership for E-mobility, was supported by 43 countries from 5 continents, organizations and alliances bringing together more than 1500 cities, regions and 1200 companies. Since governments cannot manage this transition alone, integrated approaches, combining engagement of national and municipal policymakers with the activity of investors, business leaders and consumers are necessary.

International Conference on Climate Action ICCA2019

**May 2019
Heidelberg, Germany**

The International Conference on Climate Action was hosted by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety together with the Federal State of Baden - Württemberg and the city of Heidelberg.

Roughly 1000 participants from 80 countries discussed intensively collaborative climate action.

A few months ahead of the UN Secretary-General's Climate Action Summit in September, ICCA2019 advocated for implementing ambitious climate action and comply with the goals of the Paris Agreement and the 2030 Agenda for Sustainable Development.

A significant result of ICCA2019 was the Partnership Declaration on Collaborative Climate Action across all levels of government. The states, cities, municipalities, federal states, regions and networks committed to a stronger collaboration, communication and support in the implementation of the Paris Agreement and the UN 2030 Agenda for Sustainable Development and set out priority actions to achieve their respective goals. The declaration was adopted during the high-level round table by representatives of all three levels of government and their networks.

The partnership declaration remained open for endorsement. Partners and supporters were invited to work together on the implementation and make the declaration a valuable contribution to the UN Secretary General's Climate Action Summit in September 2019.



Article in SDU magazine Ny Viden

November 2019

In the article “Cities must prepare for rising sea levels and global warming”, Professor Nicola Tollin describes the current challenges facing by big cities:

- Vulnerable cities. Cities are vulnerable to climate change negative effects, for example floods and sea level rise, and are contributing to greenhouse gases emission causing climate change.
- Faster than anticipated. Cities have limited economic resources and lacks the necessary knowledge and capacity to respond to the urgent need for action.
- Integrated approach. It is necessary for cities to redefine their policies, strategies, planning systems and actions to tackle risks in an integrated and sustainable manner.
- Life cycle of housing. It is necessary to involve the entire life cycle of housing from when it is designed and built to when it is used and demolished.

- From national policy to local action. Local actions need to support national policies and governments needs to provide the legislation and financial support required by cities in addressing the impact of climate change.
- Lifelong learning systems. Cities need support in building local knowledge and capacity through lifelong learning systems where researchers and practitioners share their knowledge.
- Network and co-creation. SDU has created the International Urban Resilience Academy - a multidisciplinary platform for favouring the knowledge co-creation among practitioners, policy makers and researchers.
- Training local forces. Summer school open to BSc and MSc students, and other activities to train local forces in working on the sustainability of cities and climate challenges, for example in Nigeria.
- COP25. Nicola Tollin participated to the climate negotiation at COP25 in Spain in December 2019, organizing two official side events.

UNESCO Meeting on Water for Human Settlements

December 2019
Paris, France

The International Hydrological Programme (IHP) of UNESCO organized the Second Meeting of Water for Human Settlements related Chairs and Center at UNESCO Headquarters in Paris. Professor Nicola Tollin has been invited to participate in the meeting, in his capacity as UNESCO Co-Chair on Sustainability.

Objectives of the Water for Human Settlements Programme as a collaboration between UNESCO and the International Hydrological Programme included: exploring new approaches, technologies and system-wide changes towards integrated urban water management such as flexible and adaptive urban water systems, water sensitive urban design and water (beneficiation) in urban areas, promoting effective governance and institutional structures of urban water management, identifying and disseminating best practices for different economic and geographic settings in developed and developed countries. Water issues in emerging cities and rural

settlements in developing countries deserve special attention, including the special needs and problems in informal settlements or peri-urban areas, often the most deprived. New approaches for water management in the city of the future need to be developed. Strategies to build resilient urban water systems must adopt a broader perspective that recognizes the interdependence of the different water systems. Game-changing approaches and technologies that allow optimization of water quality, quantity and the water and energy footprint in cities need to be explored.

One of the main objectives of IHP VIII was to put science into action, by promoting the process of transformation of information and experience into answering local and regional needs for tools to adapt IWRM to global changes and building competencies to meet the challenges of today's global water challenges.



SDU Conference: Facilitating Health Communication

November 2019
Odense, Denmark

The conference “Facilitating Health Communication at SDU - Medical Practice and Research in the Humanities and Social Sciences” was organized by the University of Southern Denmark (SDU).

In which ways can contemporary medical practice benefit from research in the Humanities and Social Sciences? How to facilitate health communication by social research? With its strategic research program Human Health, the University of Southern Denmark aims at answering these questions. Human Health represents a multidisciplinary research platform on the various dimensions of health communication, bringing together scholars from the medical, humanistic and social science faculties.

During the conference SDU introduced the research program Human Health to a broader audience. Professor Nicola Tollin, head of the Urban Resilience Research Group, held the presentation “Assessing and communicating the climate and health hazard in the build environment”. The presentation focused on climate change causes and the relation with health, through air pollutions and heat waves, resulting in life losses. Further research can help to understand the co-benefits for health and climate change adaptation. Professor Tollin involved in the discussion the possibilities and challenges that arise from current attempts to base health assessment, policy and practice on personal experiences and qualitative measures (Session: Health and Wellbeing Assessment, Health Communication, and User Involvement).



Getty Images, Nigeria-environment-pollution-health

Horizon 2020 ESPREssO project

Event at Danish Society of Engineers IDA

RISK Management Group (IDA Risk) hosted the debate “Enhancing Synergies for Disaster Risk Prevention in the European Union”, which displayed the result of EU project: ESPREssO, moderated by Professor Nicola Tollin. The EU H2020-project ESPREssO addressed integration between “climate change adaptation and disaster risk reduction”.

ESPREssO aimed at contributing to a new strategic vision to approach natural risk reduction and climate change adaptation, thereby opening new horizons for research and policy making, in terms of creating more coherent national and European approaches on Disaster Risk Reduction, Climate Change Adaptation and resilience strengthening, to enhance risk management capabilities by bridging the gap between science and legal/policy issues at local and national levels in six European countries, to address the issue of efficient management of trans-boundary crises.

Professor Nicola Tollin addressed different barriers and challenges regarding actions for disaster risk reduction and climate change, including gaps in scientific knowledge and action, legislation, system of planning, multi-level governance, generation of benefits, collaboration cross policy, makers, practitioners:

- Multi-level governance: in which way national policies can support local actions and in which way empower in terms of legislation, actions and data provision. Local action can contribute to objectives set at the national level. The vertical integration in the climate actions includes cross border collaboration and collaboration between different departments.
- Practice - policy, and practice - policy - science borders: generating the knowledge that aligns the needs of policy- making, knowledge exchange.
- Semantic borders: disaster risk reduction approach and climate

November 2019 Copenhagen, Denmark

<https://english.ida.dk/event/climate-change-adaptation-and-disaster-risk-reduction-333898>

change approach, in terms of addressing slow and rapid onset events. Considering systemic changes: which way to address those (as sea level rise, change in the temperature).

- Borders between capacities at disposal and tasks ahead: limited financial and human capacity, and multiple tasks ahead (terrorism, flood, what to give priority).
- Create integrated actions: we need to change mindsets, encourage various organizations working together, and thinking short—medium- and long-term actions and solutions.
- What we know and what we do not know. Systemic change produced by climate and disaster risk are related to uncertainty. Climate change presents a high level of uncertainty, changes are faster than scientists predicted, in terms of higher magnitude and frequency. Building knowledge produced needs to be actionable with quantitative information, trends and visioning.



UN-Habitat expert group on NDCs guidelines



Professor Tollin was invited from UN-Habitat to join the Expert Group to advise on the content of a planned new UN-Habitat normative guide on “Increasing the ambition of NDCs through the integration of human settlements issues”.

In the coming months and years, Member States will continue to undertake national processes to review, strengthen and implement their Nationally Determined Contributions (NDCs) under the Paris Agreement. The Expert Group was called for NDC review under the UNFCCC, with several countries required to submit updated or reviewed NDCs by the end of 2020.

While most of NDCs in 2016 contained strong urban content, a high number of highly urbanized countries lacked urban content. Therefore, there is still significant scope for many countries to integrate urban issues more comprehensively in all sections of

their NDCs (Commitment, Adaptation, Mitigation, Finance and Technology). This could help governments – through NDCs – to harness better the potential emissions’ reductions and adaptation potential of urban areas and human settlements, and in so doing, potentially raise the overall ambition of the NDCs themselves. Moreover, this process can strengthen the role of local and subnational governments in the delivery of NDC commitments.

The co-operation between UN-Habitat and the Expert group, through advises on the conceptual framework of the guide, on the content and supporting in distribution, led to the production of “Enhancing Nationally Determined Contributions through Urban Climate Action”, a guide for incorporating urban climate action and human settlement issues into the Nationally Determined Contributions enhancement process, published in 2020.

Situation and Evolution of the Circular Economy in Spain

October 2019
Barcelona, Spain



The Circular Economy (CE) model seeks to improve the current linear production model to face global challenges such as climate change and resources overexploitation. However, the circular economy approach can be also a framework with a business scope that supports production on the regeneration of products and services from their design to their reincorporation into the productive system. The main goal with CE is to use less resources while maintaining the value of products, limiting at the same time the entry of raw materials and reducing negative externalities to the environment and public health from the linear production model.

To strengthen the transition from a linear to a circular economy, it is important to develop integrated assessment systems able to adapt to different needs and contexts, considering the correspondent economic policies, macroeconomic and microeconomic indicators. However, innovation is a key element that enables the incorporation of appropriate technologies, the improvement of production processes and business models, and the integral change on consuming behaviour. On the other hand, learning from best practices and key cases can be the best way to move from the linear to the CE model.

A research developed during 2016 with the exploration and analysis

of most relevant companies working on CE in Spain, resulted in the report “Situation and Evolution of the Circular Economy in Spain” published by COTEC Foundation in 2017, coordinated by the UNESCO Chair on Sustainability of the UPC and with the participation of the RECNET network and ASYPS. The updated version has been published in 2019, proposing a roadmap in which all necessary and strategic priorities for the transition from linear to circular are collected. The publication is a novel approach for Spain, including the theoretical approaches related to the set of indicators used, the identification of key actors, and the successful cases and best practices quantified and analysed.

The publication includes a new indicator methodology to assess the state and extension of Circular Economy, and is based on the use of five large groups of indicators: material input, eco design, materials use in production, materials use in consumption and waste recycling. This work provides an overview of the existing best practices and cases on Circular Economy in Spain (including companies of different sizes, non-profit and government organizations) where there is a growing number of practices: from 46 in 2017, to 167 in the current 2019 report.

UNESCO Chair on Urban Resilience at the University of Southern Denmark

UNESCO Chair on Urban Resilience was established in 2019, under the UNITWIN program, within the Section for Civil and Architectural Engineering, Faculty of Engineering, at the University of Southern Denmark.

Nicola Tollin, Professor with special responsibilities on Urban Resilience, was appointed as Chairholder with the mandate to establish a research group on urban resilience operating at the highest international level, as objective for his special responsibilities.

The main objective of the Chair is to actively contribute, through high impact research, education and knowledge transfer activities, to the joint implementation of the Agenda 2030, the Paris Agreement, the New Urban Agenda and the Sendai Framework, primarily through close collaboration with UNFCCC, UN-Habitat and UNISDR, and envisaging further collaboration with IPCC, UN-DESA, UN-Environment and CTC-N.

The Chair is thereby supporting both normative and operational efforts facing major social, economic and environmental global challenges, through evidence-based policy making and empowering participatory local actions, in the global south and north; ultimately supporting the just transition of cities toward urban resilience, leaving no one behind.



Specific objectives:

1. Develop transdisciplinary research and knowledge co-creation at highest international level
2. Support science-based policy making at international and national level
3. Support evidence-based participatory local action globally
4. Develop transdisciplinary education and capacity building

The Chair aims at supporting a just transition to urban resilience, addressing both causes and effects of climate change, including climate change mitigation and adaptation, as well as climatic, environmental and man-made disaster risk reduction. The research and education activities support evidence-based policy making at international and national level, as well as science-based urban planning and design for local action, both in the global north and

south. The Chair key cross-thematic areas are: Climate adaptation, Climate Mitigation, Multi-level governance, Process design, Circular urban metabolism. The Chair will prioritize water, both in the context of climate change adaptation and circular urban metabolism.

The Chair is committed to contribute to the mission of UNESCO, and it will actively work specifically on sustainable development and intercultural dialogue through education, the sciences, communication and information. The Chair will work with the second Programme of UNESCO, Programme II, on Natural Sciences; and will be committed to contributing to the fulfilment of UNESCO's mission and its Medium-Term Strategy for 2014-2021.

The Chair will contribute also to the United Nation's Sustainable Development Agenda and Member States' efforts in achieving particularly the following Sustainable Development Goals: SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 6 Clean Water and Sanitation, SDG 12 Responsible Consumption and Production.

Memorandum of Understanding with Polytechnic University of Torino



POLITECNICO
DI TORINO



The Polytechnic University of Turin, Interuniversity Department of Regional and Urban Studies and Planning The Interdepartmental Centre Responsible Risk Resilience (R3C) and University of Southern Denmark, Department of Technology and Innovation, has signed a Memorandum of Understanding. Therefore, SDU and POLITO established an institutional and scientific partnership for initiatives related to scientific and educational research in the subject areas linked to the fields of urban resilience, climate change adaptation, and circular economy.

The cooperation in training activities and research in areas of common interest for SDU and POLITO will be implemented in the form of:

- Organising, promoting, staffing and coordinating exchanges for undergraduates and postgraduate students, PhD students, researchers and lecturers (Erasmus+ Project);

- Facilitating and coordinating joint research cooperation and collaborations focused on the fields of urban resilience, climate change adaptation, and circular economy;
- Organising of common bilateral seminars, interactive academic sessions, including special short-term academic programmes, and other professional development activities
- Fostering the participation in tenders and regional, national, European and international research programmes, with a particular focus on the EC Framework Programme;
- Enhancing the capacity of the POLITO and SDU to carry out relevant research and to secure the required external funding for the same sharing of technological data, experience and scenarios.

SDU granted the observer status of The United Nations Framework Convention on Climate Change (UNFCCC)

The University of Southern Denmark was admitted for the first time by the Conference of the Parties 25 (COP 25) as observer organization to the UNFCCC process in 2019. The observer status allows to attend the annual Conference of Parties (COP), as well as SB sessions.

The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty adopted on 9 May 1992 and opened for signature at the Earth Summit in Rio de Janeiro from 3 to 14 June 1992 and entered into force on 21 March 1994. By now, 197 countries have ratified the Convention (called Parties to the Convention). The UNFCCC objective is to “stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. The framework sets non-binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties

(called “protocols” or “Agreements”) may be negotiated to specify further action towards the objective of the UNFCCC. The Paris Agreement is the first one that not only formalizes the process of developing national plans, but also provides a binding requirement to assess and review progresses on these plans.

The parties to the convention have met annually from 1995 in Conferences of the Parties (COP) to assess the progresses in dealing with climate change. The COP is the supreme decision-making body of the Convention. All States that are Parties to the Convention are represented at the COP, where they review the implementation of the Convention and any other legal instruments that the COP adopts and take decisions necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements.



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