

# Program of URBIO International Conference

## “Integrating Biodiversity in Urban Planning and Design Processes”

**Hybrid format:** all presentation can be seen on-site & online

**Date:** 28-30 November 2022

**Venue:** Leipziger KUBUS, Helmholtz Centre for Environmental Research – UFZ,  
Permoserstraße 15 / 04318 Leipzig / Germany

### Day 1: Monday 28<sup>th</sup> November 2022

8:30-9:00	Registration and morning coffee	
9:00-9:20	Opening ceremony: warm greetings words from URBIO Committee (Maria Ignatieva and Charles Nilon), Stadt Leipzig (Constantin Suppee) and UFZ (Bernd Hansjürgens and Diana Dushkova)	
9:20-10:35	KEYNOTES	
Time	Title of presentation	Presenters
9:20- 9:45	A review on the work of urban biodiversity networks in Germany – from national to international activities	Norbert Müller, Peter Werner
9:45 -10:10	Urban trees under climate change: Challenge and/or solution for both biodiversity and society?	Dagmar Haase
10:10-10:35	Future of URBIO Movement. Challenges and Opportunities	Maria Ignatieva, Charles Nilon
10:35-11:00	COFFEE BREAK	
11:00-12:15	SESSION 1: Integration of biodiversity in urban planning, green infrastructure and landscape design projects (6 min oral presentation on-site or online via zoom or pre-recorded presentation) <i>Chair: Maria Ignatieva</i>	
1	Introduction of Session 1: Integration of biodiversity in urban planning, green infrastructure and landscape design projects	Maria Ignatieva
2	Incorporating community voices to extend the ecosystem services framework for park planning in marginalised urban environments.	Dayle Shand
3	Integrating Biodiversity into Urban School Grounds through Transdisciplinary Curriculum Design	Shari Wilson
4	Exploring the hidden meaning of biodiversity in Canberra as a designed national capital.	Fahimeh Mofrad
5	Seasonal variation in preference for green roof vegetation	Petra Thorpert, Åsa Ode Sang
6	A conceptual approach to investigate the socio-ecological significance of urban green spaces across spatial and structural gradients	Sophie Arzberger, Yannik Hecher, Stefanie Burger, Vera Knill, Birgit Probst, Michael Suda, Peter Annighöfer, Monika Egerer
7	The TUM Urban Green Infrastructure Research Training Group: applying Social-Ecological-Technological frameworks to integrate biodiversity into urban fabrics	Zbigniew Grabowski on behalf of the <a href="#">TUM UGI RTG</a>
8	Integrating biodiversity in health clinics: the valuation of ecosystem services and disservices of health clinic gardens in South Africa.	Marlize Muller, Nanamhla Gwedla, Sarel Cilliers, Christi Niesing, and Petra Bester. <b>Online participation</b>
9	Balancing environmental and socioeconomic benefits in green infrastructure projects: exploring enabling conditions for urban biodiversity conservation.	Javiera Chinga, Maureen Murúa and Stefan Gelcich. <b>Online participation</b>
10	Can informality be the new approach and practice of urban planning and design to improve biodiversity integration of cities in the global south?	José Castro, Wilson Cabral and Eduardo Arraut. <b>Online participation</b>
11	Beautiful vs. useful: plant diversity and related ecosystem services of allotment gardens in Berlin.	Dara Gaeva. <b>Online participation</b>
12:15-12:30	Discussion	

<b>12:30-13:30</b>	<b>Lunch (at UFZ KUBUS)</b>	
<b>13:30-14:00</b>	<b>SESSION 2: Ecological restoration and urban biodiversity</b> <i>Chair: Charles Nilon</i>	
1	Towards carbon neutrality and ESG management of power plant area - ecological restoration project by Korea Midland Power Co., Ltd	<b>Chongsu Lee</b>
2	Indicator communities for wildlife conservation in heterogeneous urban areas	<b>Heather Sander</b>
3	Restoration of urban ecological axis and degraded area in Gwangyang City, South Korea	<b>Hyunsim Park</b>
4	Design modules and technique-package based approach for urban biodiversity - Case study of Suwon City, South Korea	<b>Youngkeun Song, Namchoon Kim</b>
<b>14:00-14:15</b>	<b>Discussion</b>	
<b>14.15-14.30</b>	The post-2020 Global Biodiversity Framework, its urban ecosystem target, the Plan of Action for cities and subnational governments and the associated opportunities and needs for technical and scientific assessments and cooperation	<b>Oliver Hillel. <a href="#">Online participation</a></b>
<b>14.30-15.00</b>	<b>SESSION 3: Integrative Green Infrastructure Planning and urban biodiversity</b> <i>Chair: Kristine Engelmann Jensen</i>	
1	Implications of undefined ownership in the management of green infrastructure in the city of Tshwane, South Africa.	<b>Titilope Onalapo</b> , Christiana Breed, Maya Pasgaard and Kristine Engemann, Peta Brom
2	Urban green infrastructure planning and design that encourage co-management and increase benefits.	<b>Christina Breed, Tania du Plessis</b>
3	A decision support tool for planning multifunctional integrative green infrastructure.	<b>Peta Brom, Kristine Engemann</b>
4	Benefits and barriers of urban green infrastructure from the perspective of local communities in Tshwane, South Africa	<b>Maya Pasgaard</b>
<b>15:00-15:15</b>	<b>Discussion</b>	
<b>15:15-16:20</b>	<b>Session 4: Urban wildlife biodiversity: mechanisms of increasing biodiversity in urban areas, protection, and conservation strategies</b> <i>Chair: Sonja Knapp</i>	
1	Mammalian functional trait responses to anthropogenic and environmental factors across the contiguous USA	<b>Christine Brodsky</b> , Katherine C. B. Weiss, Austin M. Green, Fabiola Iannarilli, Jacquelyn Tleimat, Sarah Fritts, Daniel J. Herrera, M. Caitlin Fisher-Reid, Justin A. Compton, Diana J. R. Lafferty, Maximilian L. Allen
2	Moving forward in providing citywide ecosystem integrity data for urban management and planning	<b>Ian MacGregor-Fors. <a href="#">Online participation</a></b>
3	Do varying urban built form configurations differentially impact avian richness in urban green spaces?	<b>Morgan Rogers</b>
4	How to collect turtles in an anthropic environment? An accessible trapping method to overcome urban barriers	<b>Sabine B. Rocha</b> , Carlos Eduardo V. Grou, Carlos Rouco
5	Effects of water level fluctuation and urbanization on soil fauna in the riparian zone of a regulated river.	<b>Fengping Yang. <a href="#">Online participation</a></b>
6	How urban factors are shaping mammal diversity in European cities? A case study in Freiburg, Germany	<b>Marufa Sultana</b> , Marius Huber, Carolina Golisch, Geva Peerenboom, Ilse Storch
7	Preferred habitat of <i>Corvus frugilegus</i> invading urban environment and the core management areas tracked by citizen science	<b>Jiweon Yun</b> , Wonhyeop Shin, Jihwan Kim, Dohee Kim, Youngkeun Song
8	Species differences in temporal response to urbanization alters predator-prey and human overlap in northern Utah	<b>Austin Green</b>
9	Comparative assessment of urban nature protected areas: methods to reveal ecosystem and cultural value	<b>Vitaly Kryukov</b> , Elena Golubeva. <b><a href="#">Online participation</a></b>
9.1	<i>How state-led environmental policy affects urban protected areas: a model of pa4d ramifications</i>	<b>Vitaly Kryukov. <a href="#">Online participation</a></b> <b>Poster Pitch (2 minutes)</b>
10	"I converted an old wheelie bin into a water butt" – exploring citizens' motivations and barriers to implementing action to enhance biodiversity and ecosystem services in urban domestic gardens	<b>Gina Cavan</b> , Carly Fletcher, Fraser Baker, Konstantinos Tzoulas, Claire L. Smith. <b><a href="#">Online participation</a></b>

11	Birds in the Hood: The Importance of Urban Trees and Forest Fragments for Bird Conservation	<b>Mark Hostetler</b> , Ryan Buron, Natali Pegg <b>Online participation</b>
<b>16:20-16:30</b>	<i>Discussion</i>	
<b>16:30-17:00</b>	<b>Afternoon tea / coffee break</b>	
17.00-17.50	<b>SESSION 5: Challenges and opportunities of urban plant biodiversity</b> <i>Chair: Dagmar Haase</i>	
1	Interactions of functional traits with native status and ecosystem novelty explain the establishment of plant species within urban ecosystems: evidence from Berlin, Germany.	<b>Sonja Knapp</b> , Moritz von der Lippe, Ingo Kowarik
2	Designing urban biodiversity: case studies of alternative lawns in Sweden.	<b>Maria Ignatieva, John Green</b>
3	Punching above their weight, the role of small green spaces for biodiversity in cities	<b>Kevin Vega</b> , Anouk-Lisa Taucher, Christoph Kueffer, Johan Six
4	Smart green city, Gangjin - convergence of urban ecological planning and design techniques	<b>Ki Sook Park</b>
5	Low resource availability drives feeding niche partitioning between wild bees and honeybees in a European city.	<b>Joan Casanelles Abella</b>
6	Biotic homogenization of residential yard vegetation with contrasting management.	<b>Josep Padullés Cubino</b> , Jeannine Cavender-Bares, Peter M. Groffman <sup>3</sup> , Meghan L. Avolio, Anika R. Bratt, Sharon J. Hall, Kelli L. Larson, Susannah B. Lerman, Desiree L. Narango, Christopher Neill, Tara L.E. Trammell, Megan M. Wheeler, Sarah E. Hobbie
7	Vegetation composition in an ephemeral urban stream in central Texas: value for use in green infrastructure	<b>Jeffrey T. Hutchinson</b>
8	Ecological function of urban green spaces based on high spatial resolution dataset and its implication to the management	<b>Sokyoung Yi</b> , Wonhyeop Shin, Youngkeun Song
9	The ECOLOPES plant-animal-soil community model.	<b>Victoria Culshaw</b> , Jens Joschinski, Isabelle Boulangeat, Carsten Buchmann, Alexandre Changenet, Maya Guéguen, Thomas E. Hauck, Marta Pianta, Enrica Roccotiello, Michael Schloter, Wolfgang Weisser, and Anne Mimet.
10	Creating urban wildflower meadows using species from threatened native plant communities.	<b>Katherine Horsfall</b> , Stephen J. Livesley, John Delpratt, Lee Harrison, Nicholas S.G. Williams
11	Restored urban roadside vegetation offers opportunities for climate regulation and enhancement of resources for urban flower-visitors	<b>Sandra Rojas-Botero</b> , Simon Dietzel, Johannes Kollmann
<b>17:50-18:10</b>	<i>Discussion</i>	
<b>18:10-20:30</b>	<b>Ice breaker (at UFZ KUBUS)</b>	

## Day 2: Tuesday 29<sup>th</sup> November 2022

8:30-9:00	Registration and morning coffee	
9:00-9:15	Wrap-up of Day 1 and Introduction of Day 2 <i>Maria Ignatieva, Diana Dushkova</i>	
Time	Title of presentation	Presenters
09:15-10:15	<b>SESSION 6: Methodological approaches to implement biodiversity in design and planning</b> <b>(6 min oral presentation on-site or online via zoom or pre-recorded presentation)</b> <b>Chair: Maria Ignatieva</b>	
1	A scalable remote sensing model for urban forest health inventory	<b>Jonathan Ocón</b> , Natasha Stavros, Justin Robertson, Steven J. Steinberg, and Thomas W. Gillespie. <b>Online participation</b>
2	Experiences with the practical application of the Animal-Aided Design method in urban development - a first evaluation of problems and potentials in the implementation of actions.	<b>Thomas E. Hauck</b> , Wolfgang W. Weisser, Qingyu Liang, Christine Jakoby and Ariane Mutzel
3	Integrating ecological modelling in a 3d cad system for urban planning and for regenerative urban ecosystems.	<b>Verena Vogler</b> , Shany Barath, Victoria Culshaw, Luis Fraguada, Jens Joschinski, Anne Mimet, Surayyn Selvan. <b>Online participation</b>
4	Urban Nature in integrated city planning – how do we support municipal practice in Germany?	<b>Rieke Hansen, Lena Enderich</b>
5	Attitudes of citizens towards wild native flower floral mat as a landscape element in Japanese urban community gardens.	<b>Mariia Ermilova</b> , Mitsunari Terada. <b>Online participation</b>
6	Astro-turfing the city: exploring the environmental impact and social drivers of artificial lawns	<b>Mark A. Goddard</b> , Katherine C.R. Baldock, Jessica C. Fisher, Robert Francis, Rachel Gaulton, Robert Lavin, Miranda T. Prendergast-Miller, Marc Redmile-Gordon, Hannah Shaw
7	The Ideas of Hybridity in Urban Landscapes: Looking at Native and Non-native Biodiversity Components through the Research of Honey Bees in Western Australia.	<b>Yuqi Yang</b> . <b>Online participation</b>
8	Translating ecological knowledge for urban developers through Biodiversity Sensitive Urban Design (BSUD).	<b>Holly Kirk</b> , Casey Visintin, Georgia Garrard, Sarah Bekessy. <b>Online participation</b>
9	Emergence of heterogenous urban landscape and its effects on biodiversity of wetlands: A case study of three Cities in China.	<b>Yuangong Hu</b> , Tianyi Chen, Congcong Zhao. <b>Online participation</b>
10:10-10:25	<b>Discussion</b>	
10:25-10:45	<b>COFFEE BREAK</b>	
10:45-11:40	<b>SESSION 7: Nature-based solutions and their multiple co-benefits linked to biodiversity aspects</b> <b>Chair: Julius Knopp</b>	
1	Urban woodland as a mitigation solution for the impact of urbanisation on biodiversity and ecosystem services in a tropical mega-city (Thailand).	<b>Phakhawat Thaweeproradej</b>
2	Listening to the community: implications of cultural and social values on governing meaningful urban nature-based solutions – Australian perspective.	<b>Veljko Prodanovic</b> , Niloufar Naserisafavi, Taylor Coyne, Kefeng Zhang, and Maria de Lourdes Melo Zurita. <b>Online participation</b>
3	Design and management of nature-based solutions in urban plays settings: for co-existence between children and biodiversity	<b>Marcus Hedblom</b> , Fredrika Mårtensson, Björn Wiström, Åsa Ode-Sang, Anna Litsmark
4	Economic value of air purification services provided by Urban National Park: A case study of Sanjay Gandhi National Park.	<b>Haripriya Gundimeda</b> . <b>Online participation</b>
5	Indigenous Knowledge in Green Infrastructure, Ethics for Restorative Design and Care: A Typological Approach	<b>Claudia Tomateo</b> , Zbigniew Grabowski
6	Nature-based solutions: how to mitigate urban flood risks and conserve biodiversity through the co-participatory processes – case study Jacareí/sp, Brazil	<b>Ana Letícia Bragança Rodrigues Gonçalves</b> , Wilson Cabral de Sousa Júnior, José Caléia Castro, João Vitor Mariano Ribeiro, Carolina Cassiano Ferreira and Andréa Castelo Branco Brasileiro. <b>Online participation</b>

7	Meaningful Monitoring: Supporting Urban Green Space Planning through Remote Sensing	<b>Thilo Wellmann</b> , Dagmar Haase, Angela Lausch
8	Restoring urban ecosystem functions using “nature-based solutions”: products and approaches: a study case from a Brazilian south-eastern region	<b>Alexandre Marco da Silva</b> , Lucas Hubacek Tsuchiya, Matheus Marinho Munhos, Maria Lucia, Pereira Antunes, Florence Rezende Leite, Fabiola Bergamasco da Silva Marcondes Palinkas
9	Impact of urban landscape on storm water runoff and quality within small river of Moscow city.	<b>Sergey Chalov</b>
10	<i>Derivation of passive technologies of smart farm design</i>	<b>Donghwa Shon, Yejin Lee, Hanna Joo, Nahyang Byun, Jieun Lee.</b> <b>Online participation Poster Pitch (2 minutes)</b>
<b>11:40-11:55</b>	<b>Discussion</b>	
<b>11:55-12:55</b>	<b>SESSION 8: Challenges and opportunities of urban biodiversity (e.g., ongoing climate change, the impact of COVID-19 pandemics, other societal challenges)</b> <b>Chair: Marcus Hedblom</b>	
1	Personal green spaces during the Pandemic-A study of people’s attitudes and motivations, towards urban home gardens during the COVID-19 pandemic in Bangalore, India.	<b>Varsha Bhaskaran</b> , Charles H. Nilon
2	Have pandemic changed our attitude and habits concerning access to urban greenery.	Tuula Eriksson, <b>Fredrik Eriksson.</b> <b>Online participation</b>
	Coastal conurbation expansion threatens foredune persistence; opportunities for re-connection of cities and citizens with remnant ecosystems.	<b>Moisés A. Aguilera</b> , María Gracia González
3	What Influences Shifts in Urban Nature Site Visitation During COVID-19? A Case Study in Tel Aviv-Yafo, Israel.	<b>Michelle Talal.</b> <b>Online participation</b>
4	Conceptual design of orientation values for urban green in Germany.	<b>Arne Kunkel, Peter Blum</b>
5	COVID-19 pandemic in Moscow: rethinking the role of nature for urban design, sustainability and resilience.	<b>Anastasia Konstantinova, Diana Dushkova.</b> <b>Online participation</b>
6	Restoration of Satoyama and biodiversity conservation through citizens' activities in the urban area of Kyoto City.	<b>Katsue Fukamachi.</b> <b>Online participation</b>
7	Land use and biocultural diversity in the scenic area of Arashiyama in Kyoto, Japan	<b>Wen Wang, Katsue Fukamachi.</b> <b>Online participation</b>
8	"100k TREES"	<b>Rolf Wilting.</b> <b>Online participation</b>
9	Access and management of green areas during the COVID-19 pandemic: socio-ecological gaps in society and participation in conservation.	<b>Yuta Uchiyama, Ryo Kohsaka.</b> <b>Online participation</b>
10	Environmental and social impacts of the COVID-19 pandemic and the role of urban green infrastructure for city recovery (case of Almaty, Republic of Kazakhstan)	<b>Zarina Kuriyeva, Elena Golubeva</b> <b>Online participation</b>
<b>12:55-13:10</b>	<b>Discussion</b>	
<b>13:10-14:00</b>	<b>Lunch (at UFZ KUBUS)</b>	
<b>14:00-15:00</b>	<b>SESSION 10: Special session of UFZ Resilient cities platform: Blue-green infrastructures and nature-based solutions for resilient cities</b> <b>Chairs: Dieter Rink, Ellen Banzhaf</b>	
1	Structural biodiversity in Leipzig and its impact on multiple ecosystem services.	<b>Ellen Banzhaf</b> , Sebastian Elze
2	From landscape design to biodiversity-led design: insights from the Paris Region.	<b>Marc Barra</b> , Gwendoline Grandin
3	Political-legal challenges of the blue-green transformation of urban water infrastructure.	<b>Frank Huesker</b> , Moritz Reese, Lucie Möller
4	Residents’ perception of green façades – key for urban resilience or just ‘nice to have’?	<b>Raphael Karutz</b> , Heinrich Zozmann, Uwe Schlink
5	High resolution mapping for urban green space composition, quality and accessibility - A case study of Aarhus, Denmark.	<b>Julius Knopp</b> , Gregor Levin

6	Co-creation of nature-based solutions in urban and natural areas towards sustainable development and resilience: results from RECONNECT project.	<b>Diana Dushkova, Christian Kuhlicke</b>
	<i>Discussion</i>	
<b>15:00-16:00</b>	<b>Podium discussion: Researching and co-designing green cities – setup, experiences and challenges of UGBI interdisciplinary and transdisciplinary research at UFZ</b> <i>Moderation: Annegret Haase</i>	
	Diana Dushkova, Christiane Heinichen, Sonja Knapp, Dieter Rink, Anika Schmidt, Constantin Suppee	
	<i>Discussion</i>	
<b>16:00-16:20</b>	<b>COFFEE BREAK and poster session</b>	
1	Challenging the sustainability of urban beekeeping using evidence from Swiss cities.	<b>Joan Casanelles Abella</b>
2	Getting to know the urban biodiversity of the metropolitan region of São Paulo (brazil): data from education project	<b>Yuri Tavares Rocha</b> , and Patrícia do Prado Oliveira
3	Comparison of butterfly diversity between traditional and new residential areas in Satoyama landscape	<b>Yue Yuan</b> , Wen Wang, Shozo Shibata, Katsue Fukamachi
4	The effects of human development, environmental factors, and a major highway on mammalian community composition in the Wasatch Mountains of northern Utah, USA	<b>Austin Green</b>
5	Derivation of passive technologies of smart farm design	<b>Donghwa Shon</b> , Yejin Lee, Hanna Joo, Nahyang Byun, Jieun Lee. <b>Online participation</b>
6	How state-led environmental policy affects urban protected areas: a model of pa4d ramifications	<b>Vitaly Kryukov</b> . <b>Online participation</b>
7	Illegal captive breeding of continental chelonians: an ethnoherpetological approach to understand this activity in Brazil	Priscila Silva Gomes, Carlos Eduardo Vargas Grou, <b>Sabine Borges da Rocha</b> , Fabricio Hiroiuki Oda, Marcos Vinicius Rodrigues
8	UFZ green roof research	<b>Lucie Moeller</b>
<b>16:20-17:00</b>	<b>URBIO Advisory Board Meeting</b>	
<b>17:00-17:30</b>	<i>Closing remarks (Maria Ignatieva, Charles Nilon)</i> <i>Day 3: Excursions. Organisational issues (Diana Dushkova)</i>	

## Day 3: Wednesday 30<sup>th</sup> November 2022

09:00-10:30	<b>EXCURSION 1: Leipzig City Centre (Johanna Park): Promoting urban biodiversity and citizen participation in urban greening</b> <i>Organized by Constantin Suppee &amp; Markus Drappatz, Office of Green Space and Water, City of Leipzig</i> Offering important ecosystem services, green infrastructure has a great significance for a high quality of live in the city. The focus of the excursion lies on the diverse ecosystem services offered by green spaces, and their associated management against the background of a rapidly growing city. Among other things, the projects focusing on citizen engagement/civic commitment to promote urban greenery ("Aktion Baumstarke Stadt") and the measures implemented in the park to promote biodiversity will be presented.
9:00-11:00	<b>EXCURSION 2: Typical residential structures including new renaturing programmes by Leipzig city council</b> <i>Organized by Ellen Banzhaf, Department of Urban and Environmental Sociology, UFZ</i> A walk through the residential suburban structure (see garden city movement by Ebenezer Howard) of the 1920s and 1930s, then taking a glimpse at residential buildings of the turn of 19th century to understand the needs for the garden city concept. Close by, a renaturation project run by the city council will be demonstrated, as well as the so-called Parkbogen Ost, a new public green corridor under construction. From there, we will walk through the accessible part of the allotment garden area and show further advancements of inner development in Leipzig.
11:00-12:30	<b>EXCURSION 3 in the Eastern part of the city (as follow-up of Excursion 2 but can be joined also separately): Meeting point: Torgauer Platz Leipzig New green spaces in the former working-class district of Leipzig East</b> <i>Organized by Dieter Rink &amp; Anika Schmidt, both Department of Urban and Environmental Sociology, UFZ</i> Leipzig's Inner East is a densely built and inhabited urban area which was undergoing a dynamic urban development in the recent decades, from shrinkage and decay to upgrading and regeneration. New parks were created where once were industrial sites and railroads. During this excursion we will visit a variety of these green spaces and hear about their different history, design and current use (e.g. multifunctional retention park) and their embedding into a larger municipal masterplan on urban green.
11:00-12:30 up to 15 participants	<b>EXCURSION 4: Leipzig South (Connewitz district) Green walls for Leipzig: "Kletterfix" project</b> <i>Organized by Christine Heinichen &amp; Marie Romer, Ökolöwe – Umweltbund Leipzig e.V. (NGO)</i> During our walk through a neighbourhood in the south of Leipzig you will discover the variety of green facades as part of the green urban infrastructure. You will learn more about the potential of climbing plants for cities, especially in times of climate change and the decline of biodiversity.
11:00-12:00 up to 9 participants	<b>EXCURSION 5: UFZ Leipzig The UFZ green roof research</b> <i>Organized by Lucie Moeller, UFZ</i> Green roofs are promising blue-green infrastructures, because they can absorb water and cool the environment through evapotranspiration, store water and release it to the sewer system in a delayed manner, thus enabling smart stormwater management, serving as sinks for CO <sub>2</sub> and particulate matter. In addition, they serve as places for all-around biodiversity - for both plants and animals. The multifunctionality of green roofs is undisputed, however, it is necessary to explore in more detail which of the green roof types is the best option for each problem. During this excursion to the Green Roof installed on the roof of the UFZ building, we will discuss the current questions about the optimized effect of the green roofs in urban areas, with a focus on upgrading urban green roofs for rain and grey water management as well as improving the inner-city climate and support biodiversity.