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Towards a Global Research Agenda on Urban Biodiversity, Ecosystem Services and Design

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1 The Urban Challenge

We have now entered the urban age. Over half of humanity lives in towns and cities and by 2050 almost 3 billion additional people will inhabit the world's cities. In all of human history the world will have undergone the largest and fastest period of urban expansion. Consequently, urban growth will impact the provision of many ecosystem services and the benefits humans derive from nature, and the demands of cities will reshape most rural landscapes in the coming decades. Without adequate consideration of the coming urbanization, many of the goals of the Convention on Biological Diversity, as well as the Millennium Development Goals for providing clean water for consumption and sanitation and the UNFCCC goals for mitigating and adapting to climate change, are unlikely to be met. A sustainable urbanization will be necessary for achieving goals of a more sustainable planet.

2 The consideration within the Convention on Biological Diversity

Until 2007 the opportunities cities and other local authorities offer in terms of implementation of the Convention on Biological Diversity (CBD) had received little consideration within the CBD. No thematic program, mayor group and cross cutting issues focused on this topic. In March of that year, however, representatives of host cities of CBD meetings and other cities showing leadership on biodiversity issues, met in Curitiba (Brazil) to lay the foundation for a "Global Partnership on Local and Subnational Action for Biodiversity".

At the 9th meeting of the Parties to the CBD (COP 9) in Bonn (Germany) in May 2008, the Parties discussed the role of Local Authorities in the implementation of the Convention and, for the first time ever, adopted a decision on cities and biodiversity (Decision IX/28). This decision encourages the 194 Parties to the Convention to recognize the role of cities in national strategies and plans, and invites Parties to support and assist cities and other local authorities in implementing the Convention at local level. This event emerged in the establishment of the Mayor Group "Local Authorities" within the CBD's programs.

At the 10th meeting of the Parties in October 2010 in Nagoya, Japan (COP 10) where the "Strategic Plan Biodiversity for Biodiversity 2011 - 2020" with the "Biodiversity Aichi Targets" (Decision X/2) were adopted, the "Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity 2011- 2020" (Decision X/22) was decided. The "Plan of Action" laid out options for national governments and their partners in supporting and promoting the subnational implementation of the Aichi Targets.

At the 12th meeting of the Parties (COP 12) in October 2012 in Hyderabad, India "The Plan of Action" Decision X/22 was complemented with additional considerations (Decision XI/8). The Parties were encouraged to develop with their local and subnational governments strategies and plans to implement the "Aichi Targets" at all levels.

3 The "Global Partnership on Local and Subnational Action for Biodiversity"

The journey towards a consideration of local authorities within the CBD and the foundation of the "Global Partnership on Local and Subnational Action for Biodiversity" (former "Global Partnership on Cities and Biodiversity") started in early 2006 at the General Assembly of ICLEI (International Council for Local Environmental Initiatives) in Cape Town, South Africa. Here more than 300 local authorities' member to ICLEI called for the establishment of a pilot project on Local Action for Biodiversity (LAB) where 21 cities

representing 52 million people have worked together with ICLEI and IUCN's Countdown 2010 initiative. At the initiative of the mayor of Curitiba (Brazil) and the Secretariat of the CBD, a meeting was held in Curitiba, on 26-27 March 2007. Over 34 mayors and representatives attended, and participants adopted the Curitiba Declaration on Cities and Biodiversity. The Declaration reaffirms the mayor's commitment to contribute actively to the implementation of the three objectives of the CBD and to the achievement of the 2010 biodiversity target. A task force was established with the Secretariat of the CBD, ICLEI, IUCN, UN and Scientific organizations and the mayors of Curitiba, Bonn, Nagoya, Montreal and Singapore.

"The Global Partnership on Local and Subnational Action for Biodiversity" was launched during COP 9 in 2008 with the goal of bringing together all the relevant networks and initiatives involved, in implementing the Convention on Biological Diversity. Today it includes UN Agencies (UNESCO, UNEP, UN-Habitat), international NGOs (ICLEI, IUCN), selected Parties and Scientific networks (Stockholm Resilience Centre, URBIO Urban Biodiversity & Design, WRF The World Resources Forum, Nature of Cities blog) and City governments (represented by the Advisory Committee on Cities) and Subnational governments (represented by the Advisory Committee on Subnational Governments).

<http://www.cbd.int/en/subnational/partners-and-initiatives/global-partnership>

Since 2008 each of the COP meetings has been complemented by parallel meetings of the "Global Partnership". URBIO organized scientific conferences prior the COP meetings and ICLEI organized "Biodiversity Summits for Cities and Subnational Governments". At COP 10 and COP 11 these were the largest and arguably most high-profile events in parallel with the COP, attended by governors, ministers and the Executive Secretary of the CBD and helping to raise the profile of subnational implementation of the Convention.

4. Partners and instruments

In order to support local authorities the partners within the "Global Partnership" have developed several initiatives and instruments. Prominent examples are in chronological order:

4.1 ICLEI and IUCN program "Local Action for Biodiversity" (LAB)

This flagship biodiversity program is coordinated in partnership between ICLEI and IUCN. LAB's approach is action oriented and customized for local and regional authorities and their partners around the world, with the goal of improving biodiversity management at the local level. LAB is a key component of, and contributor to, the CBD's "Global Partnership on Local and Sub-national Action for Biodiversity". The program began in 2006 with a select group of 21 pioneering local and regional authorities from around the world, representing 54 million citizens. The initiative has since expanded to include many more cities and has branched into thematic streams, including LAB Pioneers, Climate Change and Biodiversity and Biodiversity and CEPA. The program focuses on implementation, and is comprised of a three-year, five-step peer learning process, a local biodiversity and ecosystem services assessment report, workshops, forums, a knowledge bank, networks and various strategic projects that address specific local and national needs. In 2010 emerged the manual "Local Action for Biodiversity Guidebook" (2010), documenting cities contributions to biodiversity conservation with guidelines for replication.

Since the foundation of the "Global Partnership", the driving force of the Major group "Local authorities" is ICLEI's Cities Biodiversity center and its "Biodiversity Summit for cities and subnational governments" organized on the COP meetings.

<http://www.cbd.int/en/subnational/partners-and-initiatives/iclei>

ICLEI (ed.) 2013: Local Biodiversity Strategy and Action Plan Guidelines: Biodiversity and Municipal Planning

Laros MT and Jones FE (Eds) 2010: ICLEI - Local Governments for Sustainability Local Action for Biodiversity Guidebook: Biodiversity Management for Local Governments.

4.2 URBIO platform and scientific conferences

URBIO is an open worldwide scientific network for education and research, which was founded during COP 9 with the aim to promote the work of the "Global Partnership".

Already in 2005 scientists of the European “Competence Network Urban Ecology” requested to raise the implementation of the CBD in urban areas and to support this by an International conference during COP 9 in Germany. This was the foundation of the international scientific network URBIO. Its aims are to foster scientific research related to urban biodiversity, ecosystem services and sustainable landscape design and the exchange with the other partners of the Global Partnership”. As clearing mechanism a website is held and a newsletter is distributed. Prior to the COP meetings scientific conferences are held as side events and thematic workshops. The coordinating work of the headquarters in Erfurt (Germany) has been funded by the German Government from 2007 - 2014. The following thematic conferences were organized by URBIO:

Urban biodiversity and design - implementing the CBD in towns and cities (Germany 2008)

Urban biodiversity in the ecological network (Japan 2010)

Urban biodiversity and climate change - adaptation and mitigation (India 2012)

Cities and water - conservation, restoration and biodiversity (Korea 2014)

<http://www.cbd.int/en/subnational/partners-and-initiatives/urbio>

<http://www.fh-erfurt.de/urbio>

4.3 The “Singapore Index”

In 2008 - during COP 9 - Singapore proposed the development of the city biodiversity index - a self-assessment tool to evaluate biodiversity conservation efforts of cities. Within expert workshops of the Global Partnership a set of 23 indicators were developed and presented as “Singapore Index” during COP 10.

Until today over 60 cities have applied the Singapore Index as diagnostic and decision-making tool.

<http://www.cbd.int/en/subnational/partners-and-initiatives/city-biodiversity-index>

4.4 TEEB - “The Economics of Ecosystems and Biodiversity for Local and Regional Policy Makers”

The Economics of Ecosystems and Biodiversity (TEEB) is a global initiative focused on drawing attention to the economic benefits of biodiversity. Its objective is to highlight the growing cost of biodiversity loss and ecosystem degradation. TEEB presents an approach that can help decision-makers recognize, demonstrate and capture the values of ecosystems & biodiversity, including how to incorporate these values into decision-making. In 2010 a 200 page sourcebook “The Economics of Ecosystems and Biodiversity for Local and Regional Policy Makers” were published to support subnational and local authorities especially (TEEB 2010).

TEEB 2010: A Quick Guide to the Economics of Ecosystems and Biodiversity for Local and Regional Policy Makers 8 p.

4.5 The “Cities and Biodiversity Outlook”

The “Cities and Biodiversity Outlook” (CBO) is a global assessment of the links between urbanization, biodiversity and ecosystem services prepared under leadership of the Secretary of the CBD and the Stockholm Resilience Centre and with contributions of over almost 200 scientists and practitioners.

Part I of the CBO - “Action and Policy” - provides the summary of the assessment drawing on contributions from more than 120 scientists and policy-makers from around the world. It presents 10 key messages for strengthening conservation and sustainable use of natural resources in an urban context and was launched during COP 11 in Hyderabad (2012).

<http://www.cbd.int/en/subnational/partners-and-initiatives/cbo>

Part II of the CBO - “Urbanization, Biodiversity, and Ecosystems - Challenges and Opportunities” is a more detailed scientific analysis and assessment of the links between urbanization, biodiversity and ecosystem services and was published in 2013. Besides 15 principle papers it provides 18 regional and local case study assessments (Elmqvist et al 2013).

Elmqvist, T. et al. (eds.) Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities: A Global Assessment. Springer, New York open access

4.6 The “Nature of Cities” Forum

The “Nature of Cities” is a virtual magazine and discussion site on cities as ecosystems since 2012 on the web. It is a global collective of contributors, an essay and discussion site devoted to cities as social-ecological spaces, ecosystems of people, buildings, open spaces, and nature. City design with nature at the center is key

to urban resilience, sustainability, and livability.

<http://www.thenatureofcities.com>

4.7 Further partners and activities

UN-HABITAT and the CBD Secretariat worked together to develop in 2010 the manual:

Supporting Local Action for Biodiversity: The Role of National Governments

<http://www.cbd.int/en/subnational/partners-and-initiatives/un-habitat>

The Network of Regional Governments for Sustainable Development (nrg4SD) is a non-profit international organization representing subnational governments and associations of subnational governments at global level.

<http://www.cbd.int/en/subnational/partners-and-initiatives/nrg4sd>

5 Global Research Agenda on Urban Biodiversity, Ecosystem Services and Design

Subsequently, in following up of the abovementioned work of the “Global Partnership” the Scientific Network URBIO was invited by the SCBD to determine the necessary scientific fields and skills most needed by local governments to implement the “Plan of Action”. This “Research Agenda on Urban Biodiversity, Ecosystem Services and Design” should be based on existing studies on urban biodiversity and the needs of local governments. An initiating workshop was organized at the URBIO Headquarters in Erfurt in July 2013 together with ICLEI and the SCBD. Here representatives from URBIO, ICLEI, the SCBD and contributors to the CBO attended and drafted a first roadmap. The driving questions of the workshop were:

- What information do decision makers & managers in governments and other sectors need to support biodiversity, expand ecosystem services & apply ecologically-sophisticated design?
- What knowledge is currently available in the cities & what are critical knowledge gaps?
- How can basic research support the specific need of cities?
- How can we communicate knowledge to decision-makers?
- What should next steps be to develop this agenda?

Following up this event an online survey was held to determine the most urgent research questions from the view of the URBIO community.

In two subsequent sessions of the URBIO 2014 conference the dialogue between city representatives and researchers will continue and closed by panel discussion with the audience.

With the Incheon URBIO 2014 Declaration the progress of the “Research Agenda” will be brought to the “Biodiversity Summit for cities and subnational governments” a COP 12 in Pyeongchang.

6 Outlook

The “Global Research Agenda on Urban Biodiversity, Ecosystem Services and Design” is a further instrument within the “Global Partnership” to support local authorities. To face the urban challenge a better understanding what local authorities need, will be important for researcher as well as to produce applied research which can be implemented immediately will be essential for practitioners. Therefore collaborative forms of research (e. g. Ives & Lynch 2014) and new communication platforms like the “Cities of nature” forum will be good tools within this instrument.

<http://www.thenatureofcities.com/>

Ives Ch., & Lynch Y. 2014: Untapping the Potential of Science-Government Partnerships to Benefit Urban Nature. Nature of Cities Blog <http://www.thenatureofcities.com> Posted on August 31, 2014