THE SINGAPORE INDEX ON CITIES' BIODIVERSITY

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Convention on Biological Diversity

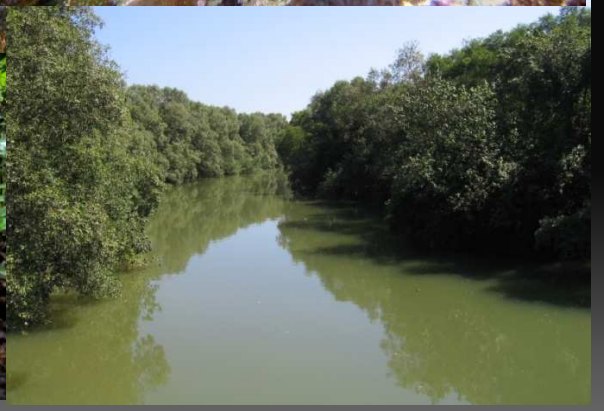
NATIONAL PARKS
NATIONAL PARKS BOARD SINGAPORE

3.5 billion people,
i.e., more than half of the world's population,

live in cities.


Peacock Anemone


Giant
Clam



Environmental Sustainability Index Environmental Performance Index
Cities of Opportunity
European Green City Index

In 2008, at COP9, Singapore proposed the development of a self-assessment tool to evaluate biodiversity conservation efforts in cities

The Involvement of the Global Partnership on Local and Sub-national Action for Biodiversity

SCBD

City of Curitiba (Brazil)

City of Montreal (Canada)

City of Bonn (Germany)

City of Nagoya (Japan)

Singapore

ICLEI - LAB

UNESCO

UNEP

UN-Habitat

IUCN

URBIO

UNU

Conservation International

Expert Workshops on the Singapore Index

First Expert Workshop on the Development of the CBI (10-12 Feb 2009), Singapore

Second Expert Workshop on the Development of the CBI (1-3 Jul 2010), Singapore

Workshop objectives are to develop an index to:

- Assist national governments and local authorities in **benchmarking** their **biodiversity conservation efforts** in the urban context
- Help **evaluate progress** in reducing the rate of biodiversity loss in urban ecosystems

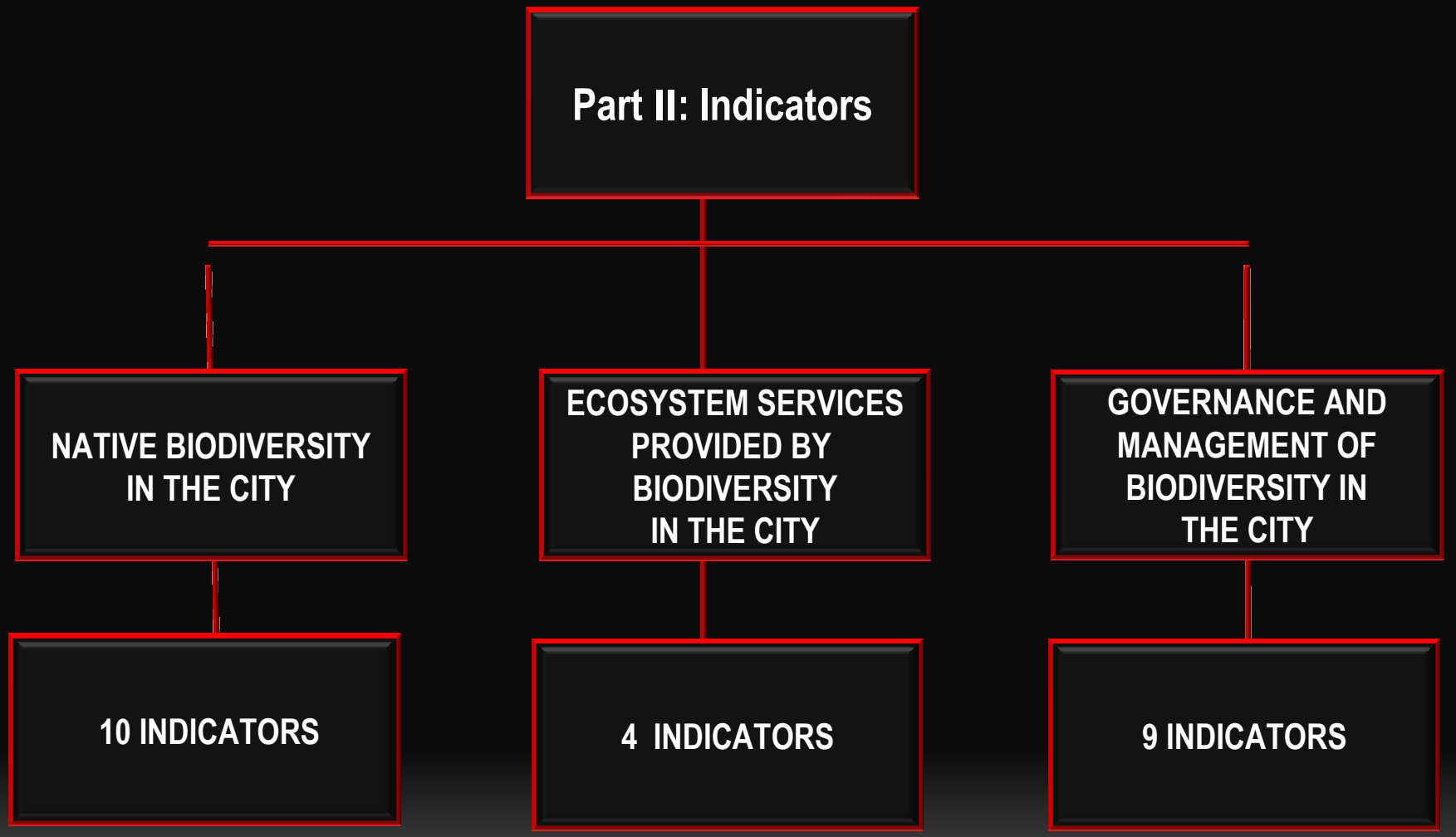
Singapore Index on Cities' Biodiversity

Part I

Profile of the City

- Indigenous ecosystems found in the city
- Native species found in the city
- Quantitative data on populations of key biodiversity indicators
- Other relevant biodiversity data

Singapore Index on Cities' Biodiversity



Indicators - Native Biodiversity in the City

Indicator 1	*Proportion of Natural Areas in City*
Indicator 2	*Connectivity Measures or Ecological Networks to Counter Fragmentation*
Indicator 3	*Native Biodiversity in Built-Up Areas*

Indicators - Native Biodiversity in the City

Indicator 4	*Change in Number of Native Species (Vascular Plants)*
Indicator 5	*Change in Number of Native Species (Birds)*
Indicator 6	*Change in Number of Native Species (Butterflies)*
Indicators 7&8	*Changes in Numbers of Native Species (any 2 taxonomic groups of choice)*

Indicators - Native Biodiversity in the City

Indicator 9	*Proportion of Protected Natural Areas*
Indicator 10	*Proportion of Invasive Alien Species (as Opposed to Native Species)*

Indicators - Ecosystem Services of Biodiversity

Indicator 11	*Regulation of Quantity of Water Through Permeable Areas*
Indicator 12	*Climate Regulation: Carbon Storage and Cooling Effect of Vegetation*
Indicator 13	*Recreational Service*
Indicator 14	*Educational Service*

Key Indicators - Governance and Management of Biodiversity

Indicator 15	*Budget Allocated to Biodiversity*
Indicator 16	*Number of Biodiversity Projects Implemented by the City Annually*
Indicator 17	*Existence of Local Biodiversity Strategy and Action Plan*

Key Indicators - Governance and Management of Biodiversity

Indicators 18	*Number of essential biodiversity-related functions*
Indicators 19	*Number of city or local government agencies involved in inter-agency cooperation*

Key Indicators - Governance and Management of Biodiversity

Indicators 20	*Existence of public consultation process*
Indicators 21	*Number of agencies involved in biodiversity projects*

Key Indicators - Governance and Management of Biodiversity

Indicators 22	*Biodiversity in school curriculum*
Indicators 23	*Outreach/public awareness events*

CBI	INDICATORS	VARIABLES	SCORE
Governance and Management	**INDICATORS 18 – 19: INSTITUTIONAL CAPACITY**		
	RATIONALE FOR SELECTION OF INDICATOR Institutions are necessary for the effective implementation of projects and programmes. Hence, the existence of biodiversity-focussed and biodiversity-related institutions will greatly enhance biodiversity conservation in a city. Some of the essential institutions include a well-managed biodiversity centre, herbarium, zoological garden or museum, botanical garden, insectarium, etc. It is more important to measure whether the functions of these institutions exist rather than the physical existence of these institutions. Hence, if a herbarium is situated in a botanical garden, then two functions exist in the city under one institution. Many biodiversity issues are cross-sectoral and, hence, involve inter-agencies. The evaluation of inter-agency coordination is an important indicator of the success of biodiversity conservation, more so in a city where it is so compact.	HOW TO CALCULATE INDICATOR **Indicator 18:** Number of essential biodiversity-related functions* ** The functions could include the following: biodiversity centre, botanical garden, herbarium, zoological garden or museum, insectarium, etc.* **Indicator 19:** Number of city or local government agencies involved in inter-agency cooperation pertaining to biodiversity matters WHERE TO GET DATA FOR CALCULATIONS City councils	BASIS OF SCORING **Indicator 18:** 1 point : 1 function 2 points : 2 functions 3 points : 3 functions 4 points : > 3 functions **Indicator 19:** 0 point : 1 or 2 agencies* cooperate on biodiversity matters 1 point : 3 agencies cooperate on biodiversity matters 2 points : 4 agencies cooperate on biodiversity matters 3 points : 5 agencies cooperate on biodiversity matters 4 points : More than 5 agencies cooperate on biodiversity matters ** Agencies could include department or authorities responsible for biodiversity, planning, water, transport, development, etc.*

CBI	INDICATORS	VARIABLES	SCORE
Governance and Management	**INDICATORS 22 - 23: EDUCATION AND AWARENESS**		
	RATIONALE FOR SELECTION OF INDICATOR Education can be divided into two categories, formal through the school curriculum or informal. Two aspects will be evaluated, i.e., formal education and public awareness. Whereas, Indicator 14 gives an indication of school children's use of recreational services provided by ecosystems, Indicators 22 and 23 highlight: (i) whether biodiversity is included in the school curriculum; and (ii) the number of outreach or public awareness events are held per year? Most cities have no jurisdiction over school curricula. The incorporation of this indicator creates the opportunity for city officials to liaise with education officers so that biodiversity courses are taught at pre-school, primary, secondary and tertiary levels.	HOW TO CALCULATE INDICATOR Indicator 22: Is biodiversity or nature awareness is included in the school curriculum (e.g. biology, geography, etc.) Indicator 23: Number of outreach or public awareness events held in the city per year WHERE TO GET DATA FOR CALCULATIONS Education department, city councils, NGOs	BASIS OF SCORING Indicator 22: 0 point : Biodiversity or elements of it are not covered in the school curriculum 1 point : Biodiversity or elements of it are being considered for inclusion in the school curriculum 2 points : Biodiversity or elements of it are being planned for inclusion in the school curriculum 3 points : Biodiversity or elements of it are in the process of being implemented in the school curriculum 4 points : Biodiversity or elements of it are included in the school curriculum Indicator 23: 0 point : 0 outreach events/ year 1 point : 1 - 59 outreach events / year 2 points : 60 -149 outreach events / year 3 points : 150-300 outreach events / year 4 points : > 300 outreach events / year

List of Participating Cities

Curitiba (Brazil)
Edmonton (Canada)
Montreal (Canada)
Hamilton (New Zealand)
Singapore
Nagoya (Japan)
Brussels Capital Region (Belgium)
Tallinn (Estonia)
Frankfurt (Germany)
Bandung (Indonesia)
Montpellier (France)
Waitakere City (New Zealand)
Bangkok (Thailand)
Chiang Mai (Thailand)
Krabi (Thailand)
Phuket (Thailand)
London (United Kingdom)
Joondalup (Australia)
Phnom Penh (Cambodia)
Siem Reap (Cambodia)
Ottawa (Canada)
Lisbon (Portugal)
European cities participating in the European Capitals of Biodiversity Competition (from five countries – France, Germany, Hungary, Spain and Slovakia)
Paris (France)
Padang (Indonesia)
Pekanbaru (Indonesia)
Vientiane (Lao PDR)
Xayaboury (Lao PDR)
Sibu (Malaysia)
Kuantan (Malaysia)
Iloilo City (Philippines)
Puerto Princesa City (Philippines)
Quezon City (Philippines)
Ourense (Spain)
Montpelier (USA)
Kings County (USA)
Danang (Viet Nam)
Hanoi (Viet Nam)
Helsinki (Sweden)
Stockholm (Sweden)
Heping District, Shenyang (China)
Amsterdam (Netherlands)
Barcelona (Spain)
Jerusalem (Israel)
New Orleans (USA)
Calgary (Canada)
Guatemala City (Guatemala)
Vancouver (Canada)
Johannesburg (South Africa)
Heping District of Shenyang (China)
French Région (France)

Other Applications

- Guidelines on how to enhance native biodiversity
- Good practices for sustainable development
- Provision of biodiversity inputs into the master planning of cities
- Basis for calculation of economic value of biodiversity and ecosystem services
- As the biodiversity component of other indices
- Decision-making tool
- Diagnostic tool
- Capacity-building in biodiversity conservation for cities

Tenth Conference of Parties to the CBD

- Decision X/22 - Endorsement of the Plan of Action on sub-national governments, cities and other local authorities for biodiversity

- ".. and to set benchmarks for local biodiversity management in line with the 2011-2020 indicator framework under the Convention on Biological Diversity, using tools such as the Singapore Index on Cities' Biodiversity"




THANK YOU