

Singapore Index on Cities' Biodiversity

2011 Xi'an City & Biodiversity International Forum

14 May 2011

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Why a Biodiversity Index for Cities?

- 2008: > 50% of people live in cities
- 2050: > 70% will live in cities
- 2025: 29 megacities with population of > 10 million each



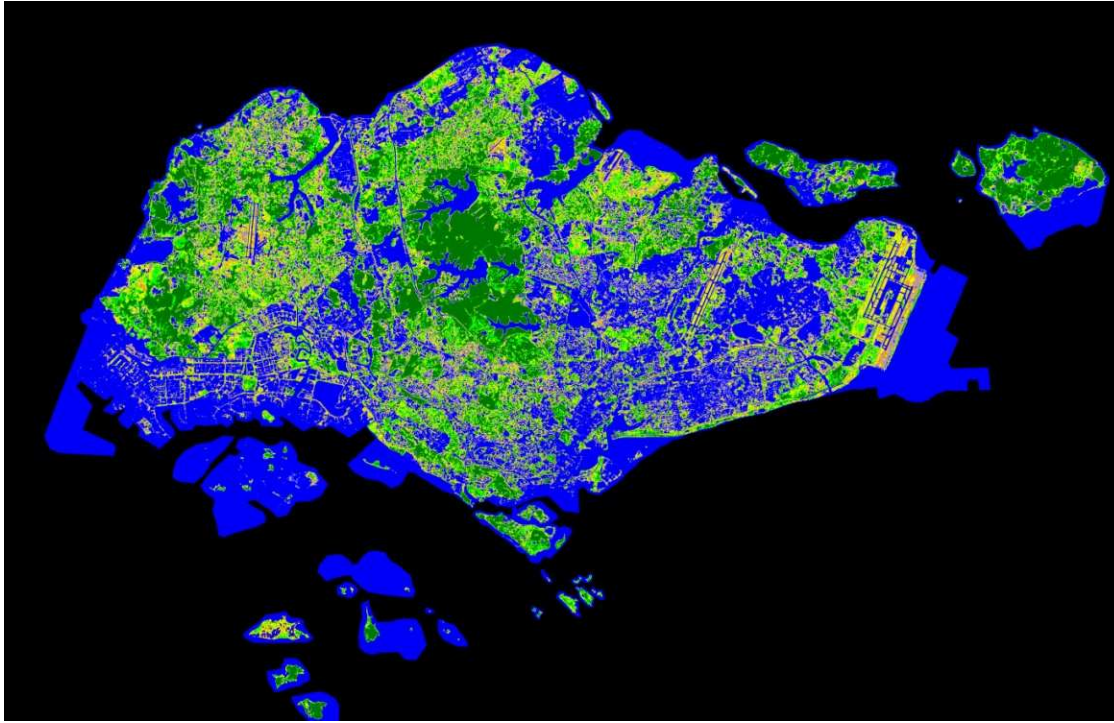
Limitations of Current Indices

- Environmental Sustainability Index (ESI)
- Environmental Performance Index (EPI)
- Cities of Opportunity
- European Green City Index
- Asian Green City Index

Is there biodiversity in cities?





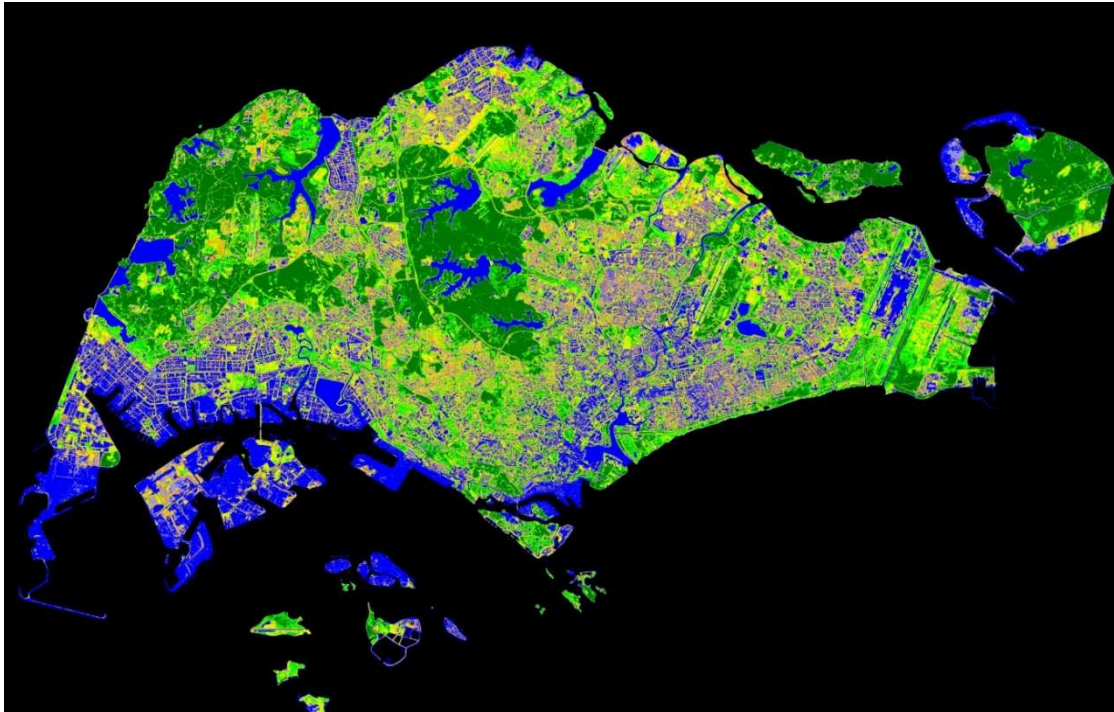


1986

666 sq.km

Population: 2.7 mil

36% vegetation coverage



2007

700 sq.km

Population: 4.6 mil (+ 41%)

47% vegetation coverage

Edmonton John Jantzen Nature Centre



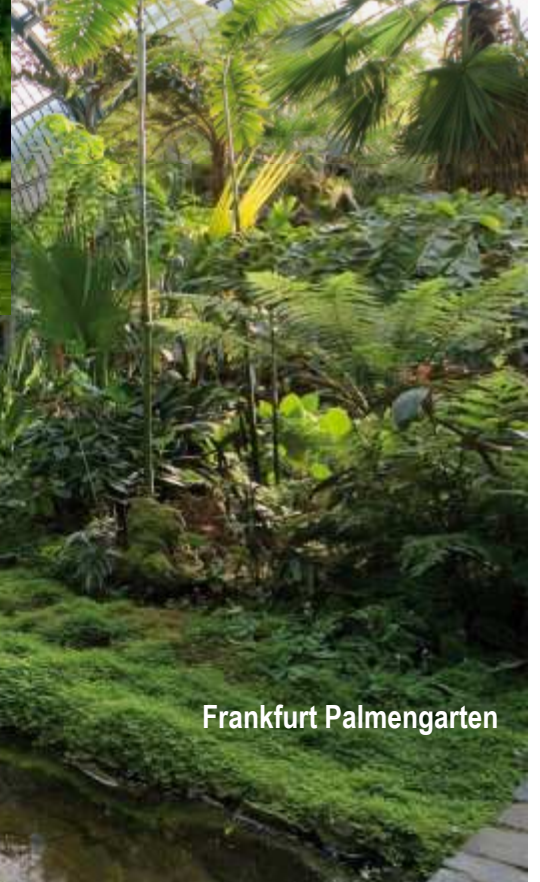
Brussels Tervuren Park



Krabi



London St James Park

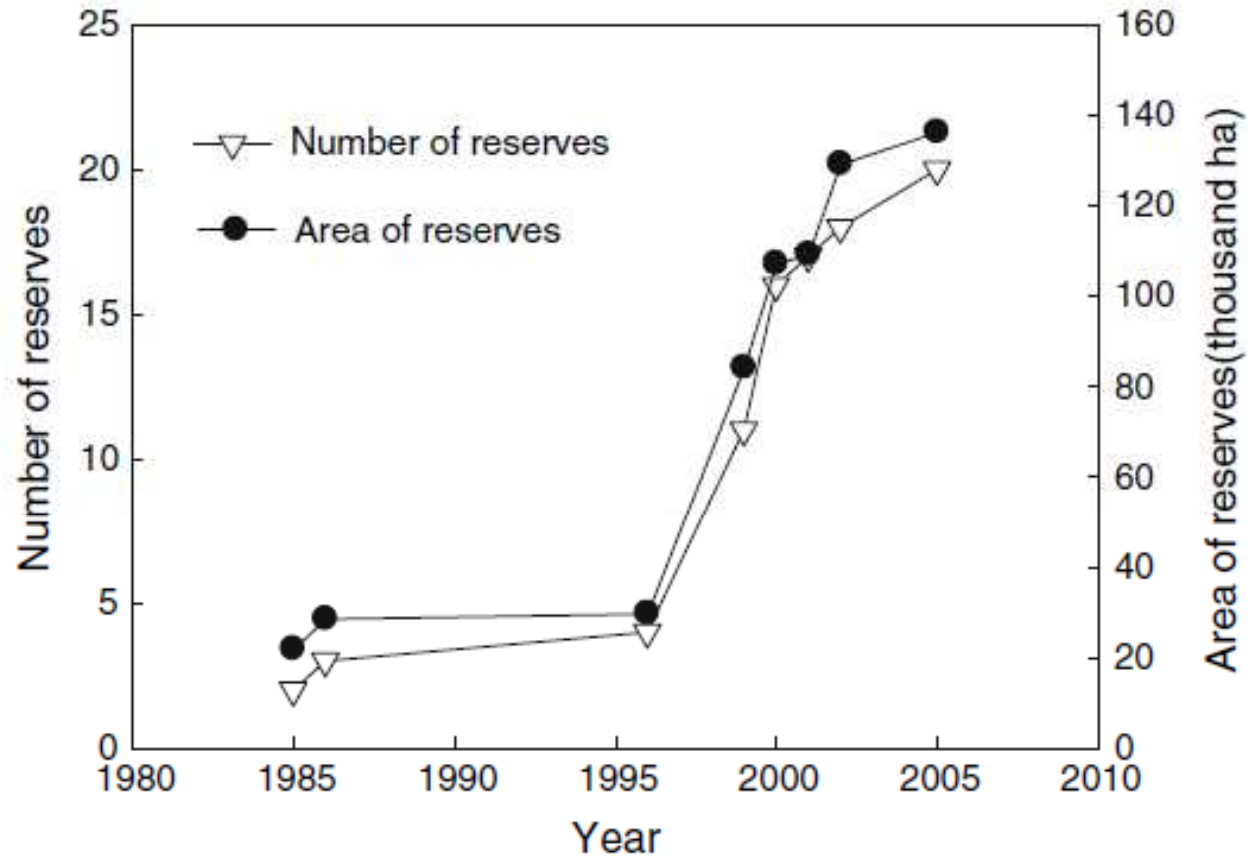


Frankfurt Palmengarten



Nagoya

Growth of Reserves in Beijing



Source: Wang, G., G. Jiang, Y. Zhou, Q. Liu, Y. Ji, S. Wang, S. Chen and H. Liu (2007). Biodiversity conservation in a fast-growing metropolitan area in China: A case study of plant diversity in Beijing. *Biodiversity and Conservation* 16(14): 4025-4038

Urban Greenery in Xi'an



Xi'an Botanical Gardens
(Source: <http://my.opera.com>)



Chan-ba Ecological District (Source: <http://www.bigxian.com>)

**We need a scientific-based, objective,
quantitative, and fair evaluation tool**

**The Singapore Index on Cities' Biodiversity is a
CBD-led collaboration with the Global
Partnership on Cities and Biodiversity (GPCB)**

GPCB

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



How did the Singapore Index develop?

- 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
- Proposed index:
 - a self-assessment tool
 - easy to apply
 - scientifically credible
 - objective and fair



Singapore Index on Cities' Biodiversity

Part I: Profile of the City

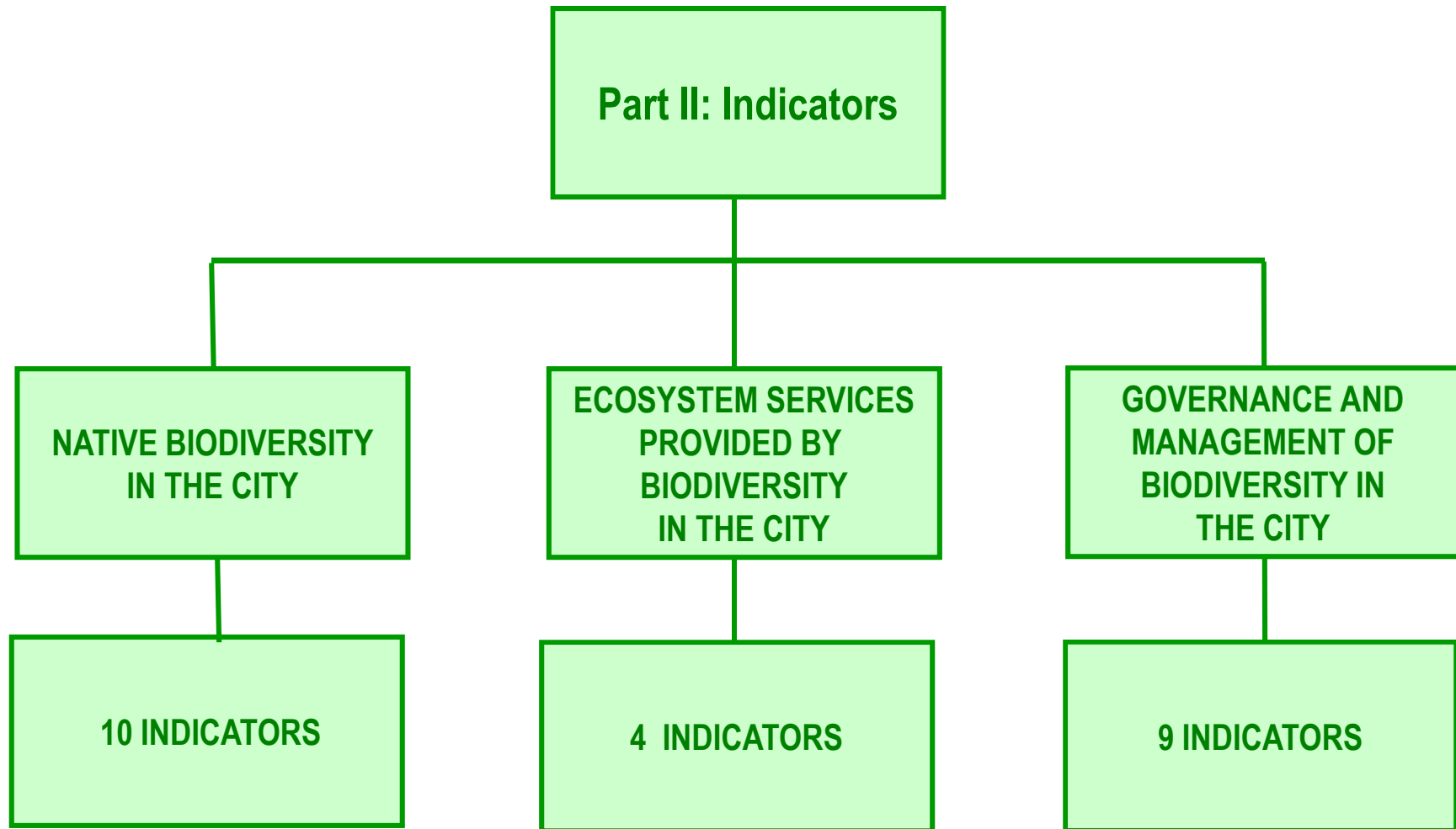
Indigenous ecosystems found in the city

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

- **Ind. 1**: Proportion of Natural Areas in City
- **Ind. 2**: Connectivity Measures or Ecological Networks to Counter Fragmentation
- **Ind. 3**: Native Biodiversity in Built-Up Areas
- **Ind. 4**: Change in Number of Native Species (Vascular Plants)
- **Ind. 5**: Change in Number of Native Species (Birds)
- **Ind. 6**: Change in Number of Native Species (Butterflies)
- **Ind. 7 & 8**: Changes in Numbers of Native Species (any 2 taxonomic groups of choice)
- **Ind. 9**: Proportion of Protected Natural Areas
- **Ind. 10**: Proportion of Invasive Alien Species (as Opposed to Native Species)

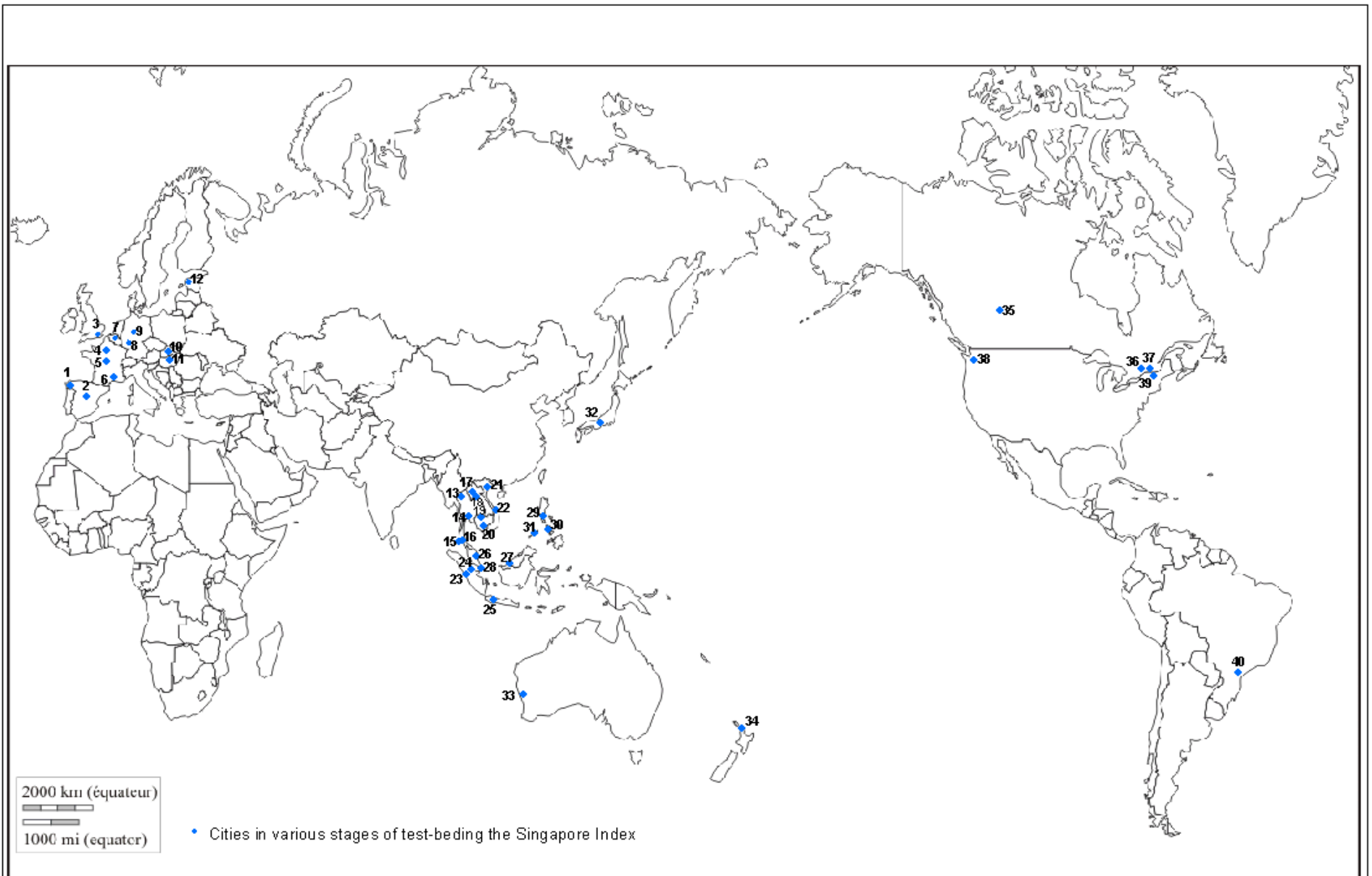
Indicators - Ecosystem Services of Biodiversity

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

Key Indicators - Governance and Management of Biodiversity

- Ind. 15: Budget Allocated to Biodiversity
- Ind. 16: Number of Biodiversity Projects Implemented by the City Annually
- Ind. 17: Existence of Local Biodiversity Strategy and Action Plan
- Ind. 18 - 19: Institutional Capacity
- Ind. 20 - 21: Participation and Partnership
- Ind. 22 - 23: Education and Awareness

Cities in Various Stages of Test-bedding



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)
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)
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)

Key Milestones

DATE	ACTIVITY
May 2008	Minister Mah Bow Tan proposed at COP 9 the establishment of a self-assessment tool to measure cities' progress in conservation of biodiversity (Bonn, Germany)
10 - 12 Feb 2009	First Expert Workshop on Development of the City Biodiversity Index (CBI), hosted by NParks and SCBD (Singapore)
Jun-09	ICLEI's Urban Nature Forum (Edmonton, Canada)
Nov 2009	User's Manual on the CBI posted on the CBD website
6-7Jan 2010	2 nd Curitiba Meeting on Cities and Biodiversity (Curitiba, Brazil)
18-20 Jan 2010	Expert consultation on the revision and updating of the CBD Strategic Plan (London, UK)
2-4 Mar 2010	East Asia Summit High Level Seminar on Environmentally Sustainable Cities (Jakarta, Indonesia).
27-29 Apr 2010	ASEAN Workshop on the CBI (Singapore).
18-22 May 2010	URBIO2010 (Nagoya, Japan); CBI workshop at URBIO2010
1-3 Jul 2010	2 nd Expert Workshop on Development of the CBI (Singapore)
18-29 Oct 2010	COP-10 of the CBD (Nagoya, Japan) City Biodiversity Summit High Level Segment of the Tenth Conference of Parties (COP-10) of the CBD.
29-Oct-10	Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity was endorsed by the CBD Parties

Tenth Conference of Parties to the CBD

- Decision X/22 - Endorsement of the Plan of Action on subnational 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”

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

THANK YOU

<http://www.cbd.int/authorities/gettinginvolved/cbi.shtml>

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