SINGAPORE’S GREEN VISION AND STRATEGY FOR IMPLEMENTATION

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WORLD CITIES DAY 2019

Changing the World: Innovations and better life for future generations
THE AGE OF CITIES: URBANOCENE ERA
10 KEY MESSAGES FOR GLOBAL URBANIZATION, BIODIVERSITY & ECOSYSTEM SERVICES

- Urbanization is both a challenge and an opportunity to manage ecosystem services globally
- Rich biodiversity can exist in cities
- Biodiversity and ecosystem services are critical natural capital
- Maintaining functioning urban ecosystems can significantly enhance human health and well-being
- Urban ecosystem services and biodiversity can help contribute to climate change mitigation and adaptation
- Increasing the biodiversity of urban food systems can enhance food and nutrition security
- Ecosystem services must be integrated in urban policy and planning
- Successful management of biodiversity and ecosystem services must be based on multi-scale, multi-sectoral and multi-stakeholder involvement
- Cities offer unique opportunities for leaning and education about a resilient and sustainable future
- Cities have a large potential to generate innovations and governance tools and therefore can – and must - take the lead in sustainable development
Singapore on the Equator

- Climate of perpetual summer and high rainfall
- Rich diversity of flora and fauna
# Comparing Statistics

<table>
<thead>
<tr>
<th></th>
<th>NINGBO</th>
<th>SINGAPORE</th>
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<tbody>
<tr>
<td><strong>PHYSICAL AREA</strong></td>
<td>9,816 sq km</td>
<td>721.5 sq km</td>
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<tr>
<td><strong>POPULATION</strong></td>
<td>8.20 million persons</td>
<td>5.7 million persons</td>
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<tr>
<td><strong>POPULATION DENSITY</strong></td>
<td>835 persons/sq km</td>
<td>7,900 persons/sq km</td>
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Singapore’s landuse

- 11.8%, Land Transport Infrastructure
- 13.8%, Industry and Commerce
- 14.3%, Housing
- 19%, Defence
- 5.3%, Reservoirs
- 7.7%, Community, Institution and Recreational Facilities
- 8.1%, Parks and Nature Reserves
- 14.3%, Ports and Airports
- 14.3%, Others
- 2.6%, Utilities (e.g. Power, water treatment plants)
A list of Singapore’s native biodiversity

- 2215 native vascular plant species
- 403 bird species
- 102 reptile species
- 85 freshwater fish species
- 334 butterfly species
- 131 dragonfly species
- more than 800 spider species
- 35 true mangrove tree species
- 12 seagrass species
- 255 hard coral species
- 50 sea anemone species
From Garden City to City in a Garden

Pervasive greenery
Rich biodiversity
Community ownership
Nature Conservation Masterplan

- Thrust 1: Conservation of Key Habitats
- Thrust 2: Habitat Enhancement, Restoration and Species Recovery
- Thrust 4: Community Stewardship and Outreach in Nature
1a Safeguard and strengthen core areas
Secure and Enhance Buffer Areas
1d  Develop ecological connections
1d  Develop Ecological Connections

East Coast Parkway
1d Develop Ecological Connections

Yishun Central

Emergent

Canopy

Understory

Shrub
1d Develop ecological connections
2a Habitat Enhancement and Restoration
2a Habitat Enhancement, Restoration and Species Recovery
2b Species Recovery

Raffles’ Banded Langur (*Presbytis femoralis femoralis*)
3a Applied Research in Conservation Biology & Planning
Ground-level research – Flora and Fauna Surveys
Micro-level research – Micropropagation and genomics
Community Stewardship and Outreach in Nature
Singapore Index On Cities’ Biodiversity (SI)

- **Native Biodiversity in the City**
  - 10 Indicators

- **Ecosystem Services Provided by the Biodiversity in the City**
  - 4 Indicators

- **Governance and Management of Biodiversity in the City**
  - 9 Indicators
**Singapore Index – Application World-wide**

26 city governments have applied the SI:

<table>
<thead>
<tr>
<th>City/Region</th>
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<tbody>
<tr>
<td>Auckland/Waitakere</td>
<td>Krabi</td>
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<tr>
<td>Bandung/West Java</td>
<td>La Antigua Guatemala</td>
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<tr>
<td>Bangkok</td>
<td>Lisbon</td>
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<tr>
<td>Brussels</td>
<td>London</td>
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<tr>
<td>Chiang Mai</td>
<td>Mira-Bhayandar</td>
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<td>Curitiba</td>
<td>Montreal</td>
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<tr>
<td>Durban</td>
<td>Nagoya</td>
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<td>Edinburgh</td>
<td>Phuket</td>
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<td>Edmonton</td>
<td>Porto</td>
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<td>Hamilton</td>
<td>Singapore</td>
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<td>Heidelberg</td>
<td>Tallinn</td>
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<td>Helsinki</td>
<td>Vitoria-Gasteiz</td>
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<td>Hyderabad</td>
<td>Los Angeles</td>
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## Singapore Index – Application World-wide

### 12 cities in the process of applying:

<table>
<thead>
<tr>
<th>City</th>
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<tr>
<td>Calgary</td>
<td>Iloilo</td>
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<td>Costa Rica</td>
<td>Ourense</td>
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<td>Cuenca</td>
<td>Paris</td>
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<td>Galle City</td>
<td>Stockholm</td>
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<td>Hong Kong</td>
<td>Thane</td>
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<td>Kaoshiung</td>
<td>Wellington</td>
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### SI applied by academics to 14 cities:

<table>
<thead>
<tr>
<th>City</th>
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<tr>
<td>Chiba</td>
<td>Kyoto</td>
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<tr>
<td>Frankfurt</td>
<td>Neubrandenburg</td>
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<tr>
<td>Fukuoka</td>
<td>Osaka</td>
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<tr>
<td>Hiroshima</td>
<td>Sapporo</td>
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<tr>
<td>Kawasaki</td>
<td>Sendai</td>
</tr>
<tr>
<td>Kitakyusyu</td>
<td>Tokyo</td>
</tr>
<tr>
<td>Kobe</td>
<td>Yokohama</td>
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THANK YOU