A Liveable City is a Resilient City

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Singapore Today

Population of 5.5 Million, A Highly Liveable and Sustainable City
Singapore in 1950s & 1960s
Population < 2 Million
Singapore: A City-state’s Challenges

- Population of **5.535 mil**
- Land area of **719 km²**
- **7,698 persons/km²** density
- Very **limited** natural resources
- **Essential** needs of a country for defence, accessibility (airport, sea port), basic survival (e.g. water supply and catchment) coupled closely with municipal urban concerns
About the Centre for Liveable Cities

Mission: To distil, create and share knowledge on liveable and sustainable cities
Singapore Liveability Framework

A Framework for planning and developing a liveable and resilient city

- **High Quality of Life**
- **Competitive Economy**
- **Sustainable Environment**

**Integrated Master Planning & Development**
1. Think long term
2. “Fight productively”
3. Build in flexibility
4. Execute effectively
5. Innovate systematically

**Dynamic Urban Governance**
1. Lead with vision and pragmatism
2. Build a culture of integrity
3. Cultivate sound institutions
4. Involve the community as stakeholders
5. Work with markets

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CENTRE for LiveableCities SINGAPORE
Global challenges
Climate change, global economic uncertainties

Limited land area
720km² in 2015 to 766km² in 2030

Population Growth
5.5mil in 2015 to ~6.9mil by 2030

Changing Demographics
Ageing population & increasing diversity from immigration
BUILDING RESILIENCE THROUGH URBAN PLANNING
Long term planning for a sustainable environment

Increased green cover from 35.7% to 50%

Singapore’s 1st Marine Park

Extensive network of parks

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The Blue Map of Singapore

- 17 Reservoirs
- 32 Rivers
- 8,000km of waterways

4 National Taps:
- Domestic Sources
- Imported Water
- NEWater
- Desalinated Water

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Building in Responses

Minimum Platform Levels & Flood Barriers

• The minimum platform level for important underground facilities e.g. Transit stations cannot be lower than 1 metre above the adjacent road / ground level or 1 metre above the highest recorded flood level.

• Watertight barriers to protect underground stations and tunnels.

Guidelines for Enhancing Building Security

• Structural measures designed to within pressure and redistribute loads and use of force-resistant building materials.

• Surveillance measures and natural artificial measures.
Active, Beautiful and Clean Waters

- Network of drains, canals and reservoirs transformed into vibrant and beautiful streams, rivers and lakes, integrated with the urban landscape

- From waterways to active, beautiful, and clean community spaces

**Source:** PUB

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Marina Barrage

**Water Supply**
Boosts Singapore’s water supply as Singapore’s 15th reservoir and its first reservoir in the city.

**Flood control**
Acts as a tidal barrier to keep seawater out and alleviates flooding in the low-lying city areas.

**Lifestyle Attraction**
Hotspot for recreational activities and latest icon in Singapore.
Active Mobility

**Improving our public transport network**
Urban train network from 182km to 360km in 2030

**National Cycling Plan**
>700km of cycling paths by 2030
7 Cycling towns

**Car-free Zones, Streets for People**
10 regular car-free zones
Streets for People programme supports community-initiated projects that transform our streets into meaningful public spaces
Sustainable Singapore Blueprint

Targets for 2030

- 200ha of skyrise greenery
- 700km of cycling paths
- 80% Green Buildings
- 5000 green volunteers

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2015 Levels</th>
<th>Targets for 2030</th>
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<tbody>
<tr>
<td>1. Amount of skyrise greenery</td>
<td>61 ha</td>
<td>200 ha</td>
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<tr>
<td>2. Amount of park space and waterbodies open to recreational activity</td>
<td></td>
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<tr>
<td>a. Parks</td>
<td>4,940 ha</td>
<td></td>
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<tr>
<td>b. Waterbodies</td>
<td>909 ha</td>
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<tr>
<td>3. Length of park connectors and waterways open to recreational activity</td>
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<td></td>
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<tr>
<td>a. Park connectors</td>
<td>215 km</td>
<td></td>
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<tr>
<td>b. Waterways</td>
<td>93 km</td>
<td></td>
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<tr>
<td>4. Length of Nature Ways</td>
<td>21 km</td>
<td></td>
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<tr>
<td>5. Proportion of households within 30-min walk of a park</td>
<td>80%</td>
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<tr>
<td>6. Length of cycling paths</td>
<td>205 km</td>
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<tr>
<td>7. Modal share of journeys during peak hours made via public transport</td>
<td>64%</td>
<td></td>
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<td>8. Length of rail network</td>
<td>180 km</td>
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<td>9. Proportion of households within 30-mn walk of a train station</td>
<td>30%</td>
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<tr>
<td>10. Proportion of buildings to achieve BCA Green Mark Certified rating</td>
<td>21.8%</td>
<td></td>
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<tr>
<td>11. Energy intensity improvement (from 2005 levels)</td>
<td>22% in 2017</td>
<td></td>
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<tr>
<td>12. Domestic water consumption per capita per day</td>
<td>171 L</td>
<td></td>
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<tr>
<td>13. National recycling rate</td>
<td>61%</td>
<td></td>
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<tr>
<td>a. Domestic recycling rate</td>
<td>20%</td>
<td></td>
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<tr>
<td>b. Non-domestic recycling rate</td>
<td>77%</td>
<td></td>
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<tr>
<td>14. Air Quality</td>
<td>(Targets for 2020)</td>
<td></td>
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<tr>
<td>a. PM2.5</td>
<td></td>
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<tr>
<td>Annual mean</td>
<td>20 μg/m³</td>
<td></td>
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<tr>
<td>24-hour mean (95th percentile)</td>
<td>176 μg/m³</td>
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<tr>
<td>b. NOx</td>
<td></td>
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<tr>
<td>Annual mean</td>
<td>31 μg/m³</td>
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<tr>
<td>24-hour mean (60th percentile)</td>
<td>155 μg/m³</td>
<td></td>
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<tr>
<td>c. Sulfur Dioxide (SO₂) 24-hour mean (Max)</td>
<td>75 μg/m³</td>
<td></td>
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<tr>
<td>d. Ozone, 8-hour mean (Max)</td>
<td>130 μg/m³</td>
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<tr>
<td>e. Nitrogen Dioxide (NO₂)</td>
<td></td>
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<tr>
<td>Annual mean</td>
<td>35 μg/m³</td>
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<tr>
<td>1-hour mean (Max)</td>
<td>132 μg/m³</td>
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<tr>
<td>f. Carbon Monoxide (CO)</td>
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<tr>
<td>Annual mean</td>
<td>5.5 mg/m³</td>
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<tr>
<td>1-hour mean (Max)</td>
<td>7.6 mg/m³</td>
<td></td>
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<td>15. Flood-prone areas</td>
<td>35 ha</td>
<td></td>
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<tr>
<td>16. Number of active green volunteers</td>
<td>&gt;1,000</td>
<td></td>
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<tr>
<td>17. Number of Community in Room Gardens</td>
<td>&gt;500</td>
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<tr>
<td>18. Number of litter-free habitats spots</td>
<td>&gt;500</td>
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SINGAPORE
ENHANCING SOCIAL RESILIENCE
Responding to Challenges

SARS Crisis 2003

Masks could not hide the fear that gripped Singapore when Sars hit in 2003. But behind many masks were also men and women who showed courage and commitment in fighting the disease.

Local-Foreigner Tensions

Dealing with religious extremism and potential terrorist threats
Fostering Cohesion

• **Home Ownership**
  – 82% of our resident population lives in public housing

• **Integrated towns, Shared Spaces**
  – Mixture of housing types in a neighbourhood
  – Shared spaces e.g. Void Decks
  – Ethnic Integration Policy
Building Communities

• Community Spaces
  – Upcoming first-ever integrated community and lifestyle hub
  – Offers a range of services and facilities e.g. Medical Clinic, Community Library

• Community building programmes
  – Community in Bloom Programme
Maintaining Self-Sufficiency

Ensuring a resilient supply of safe food

Future Goals

- **12,932** man-hours saved
- Leafy vegetable production: **550 tonnes**
- Food-fish production: **34 tonnes**
- Hen egg production: **4 million pieces**
Conserving Heritage

Singapore’s Historic Districts: Chinatown, Little India, Kampong Glam

Cultural and Civic District Plan, Museums and Heritage Centers
Engaging Community

Nation-wide programme
A national programme to sensitise, train and mobilise our citizens in the event of a crisis

Community Engagement Efforts
Engaging citizens through dialogue and discussion sessions

Grassroots Organisations
Foster community cohesion and build networks of trust across different racial and religious groups
Thank You!

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