

OCTOBER–DECEMBER 2017



URBAN ASIA IN 21ST CENTURY



Dr. Susan Bliss

Photograph: http://sg.siemens.com/city_of_the_future/_docs/Asian-Green-City-Index.pdf

Asia dominates the ranks of the world's most populous cities. In 2017, there were 47 megacities globally, with Asia possessing 14 megacities in the top 20 largest megacities in the world.

Asia houses more than half the world's urban population, and by 2050 an additional 1.25 billion people is anticipated to join urban Asia. As Asia's urban population is growing fast, urban planners face cities that are not blank slates but built on top of existing ones. This is a massive challenge for urban planners who use satellite imagery and geospatial mapping (GIS) to ensure policies and plans will benefit a large number of rural-urban migrants, especially poor people.

Massive traffic congestion and air pollution in cities, requires a new paradigm shift from car-centric to people-centric urban plans. Fortunately, many Asian governments are addressing this shift by planning greener, liveable, smart and sustainable cities.

**1950: 1 MEGACITY IN ASIA
2017: 25 MEGACITIES IN ASIA**

USING INFORMATION AND COMMUNICATIONS TECHNOLOGY

Demographia: World Urban Areas

- *Resources:* <http://demographia.com/db-worldua.pdf>
- *Fun game:* Can you find the following 100 cities. Hidden within this image are clues to 100 towns and cities (population 100,000 plus) <https://curiocities.parcelhero.com/>

United Nations

- *Population Division of the Department of Economic and Social Affairs*
<https://esa.un.org/unpd/wup/>
- *Interactive data:* <https://esa.un.org/unpd/wup/DataQuery/>
- *Country urban profiles:* <https://esa.un.org/unpd/wup/Country-Profiles/>
- *Urban maps:* <https://esa.un.org/unpd/wup/Maps/>

CIVICS AND CITIZENSHIP

UN Habitat: United Nations Human Settlements Programme: For a Better Urban future. <https://unhabitat.org/>

Greener Cities; Cities and Climate Change, Urban Policies; Safer Cities Programmes; Urban Low Emission Development Strategies; Slum Upgrading

Cities Development Initiative for Asia <http://cdia.asia/projects/>

Iloilo-Guimaras, *Philippines* (Urban Renewal, Urban Transport); Khulna, *Bangladesh* (Flood and Drainage Management, Solid Waste Management, Urban Transport); Visakhapatnam, *India* (Water Supply); Banda Aceh, *Indonesia* (Urban Renewal); Handan, *China* (Wastewater Management); Hai Duong, *Vietnam* (Wastewater Management); Battambang, *Cambodia* (Solid Waste Management, Wastewater Management); Faisalabad, *Pakistan* (Urban Transport, Wastewater Management)

Asian Development Bank: Sustainable Urban Development in Asia

<https://www.adb.org/projects/documents/sustainable-urban-development-asia>
Advancing Inclusive and Resilient Urban Development Targeted at the Urban Poor

Asian Green Cities Index

http://sg.siemens.com/city_of_the_future/_docs/Asian-Green-City-Index.pdf

- Assessing the environmental performance of Asia's major cities
<https://www.slideshare.net/Management-Thinking/asian-green-city-index-assessing-the-environmental-performance-of-asias-major-cities>
- Compare 22 Asian Cities-5 in China
<http://datadriven.yale.edu/china/asian-green-cities-index-compares-22-asian-cities-5-in-china/>

Sustainable Cities Index

<https://www.arcadis.com/media/0/6/6/%7B06687980-3179-47AD-89FD-F6AFA76EBB73%7DSustainable%20Cities%20Index%202016%20Global%20Web.pdf>

Image: https://a4.odistatic.net/images/landingpages/vacation/640x480/bangkok_640x480.jpg

NUMERACY: RISE OF ASIAN MEGACITIES



A **megacity** is a metropolitan area with a population in excess of **10 million people**.

*'A megacity can be a single metropolitan area or two or more metropolitan areas that converge. The terms **conurbation**, **metropolis** and **metroplex** are also applied to the latter.'*

*'A **megalopolis** or **super city** is a chain of roughly adjacent metropolitan areas.'*

<https://en.wikipedia.org/wiki/Megacity>

The largest megacity varies according to how you define the boundaries of the city. Refer to the list below-is it the city (Chongqing), metropolitan area (Guangzhou) or urban area (Tokyo)?

As statistics are unreliable and vary from different sources, it is difficult to determine the size of cities and address their problems such as slums, homelessness, traffic congestion, air pollution, urban sprawl, gentrification, energy, water and waste.

Largest cities in Asia https://en.wikipedia.org/wiki/List_of_largest_cities

Some statistics include Jakarta, Manila, Shenzhen, Wuhan and Chengdu in the largest 20 megacities

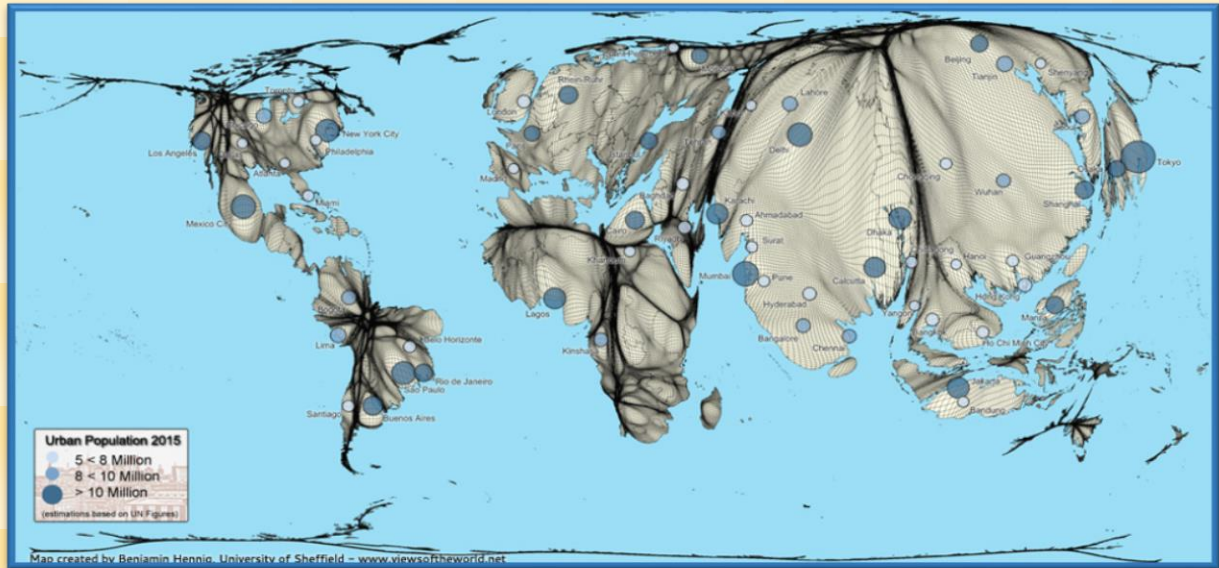
CITY	COUNTRY	IMAGE	POPULATION		
			CITY	METROPOLITAN AREA	URBAN AREA
1.Chongqing	China		30,165,500		25,000,000
2. Shanghai	China		24,256,800	34,750,000 ^[11]	34,000,000
3. Delhi	India		21,678,794	34,098,000	27,200,000
4. Beijing	China		21,516,000	24,900,000	26,000,000
5. Mumbai	India		21,247,844	21,771,200	22,748,395
6. Karachi	Pakistan		14,910,352		25,100,000
7. Dhaka	Bangladesh		12,043,977		19,580,000
8.Guangzhou	China		14,043,500	44,259,000 ^l	20,800,654
9. Istanbul	Turkey		14,025,000 ^l	13,520,000	14,657,000
10.Tokyo	Japan		13,513,734	37,843,000	38,140,000

MAP: DISTRIBUTION OF MEGACITIES HIGHER CONCENTRATION IN ASIAN COUNTRIES

'Megacities are major global risk areas. Due to highest concentration of people and extreme dynamics, they are particularly prone to supply crises, social disorganisation, political conflicts and natural disasters. Their vulnerability can be high.' <http://www.viewsoftheworld.net/?p=1590>

A **gridded population cartogram** depicts urban population distribution. Highly populated countries are inflated (larger) while sparsely populated areas are diminished (smaller) e. g China and India are bigger than their real size. This type of map provides a different view, showing the distribution of the global population, and different sizes of urban places, especially megacities.

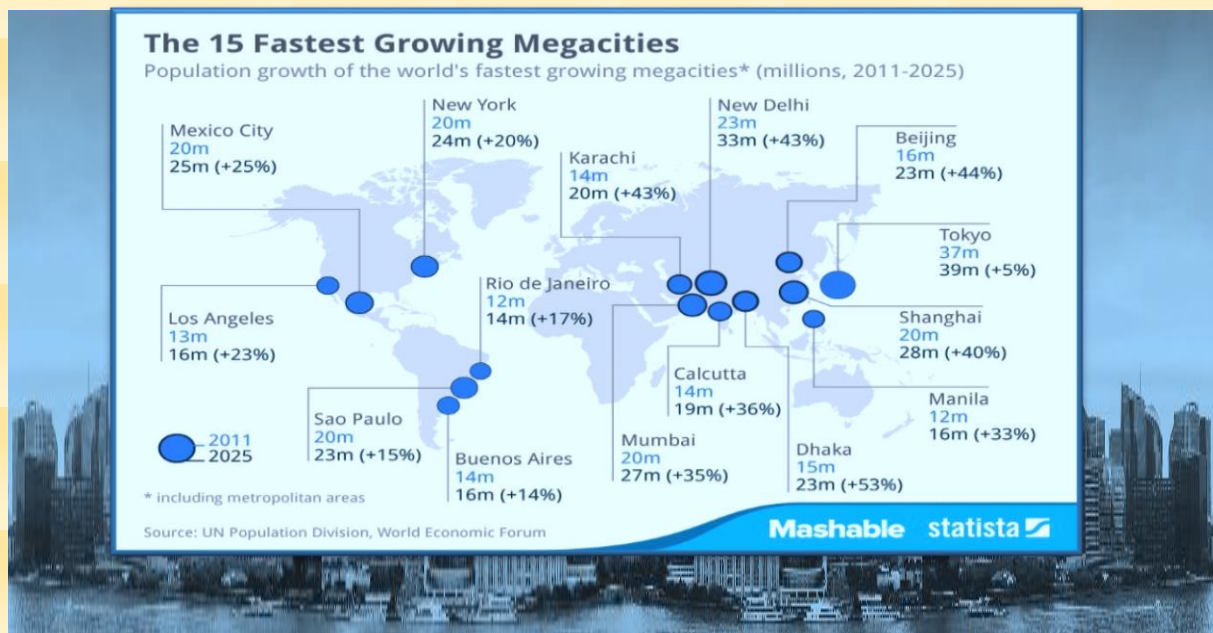
Map: <http://www.viewsoftheworld.net/wp-content/uploads/2011/06/megacitymap.jpg>



MAP: GROWTH OF MEGACITIES MAINLY COASTAL AND ASIAN

The **Greater Tokyo Area**, which comprises the Kantō region and the prefecture of Yamanashi, is the most populous megacity with 37 million people. By 2025, the population is anticipated to reach 39 million.

Map: <https://mashable.com/2014/01/29/megacities-growth-chart/#dpzZyu0Upkqh>

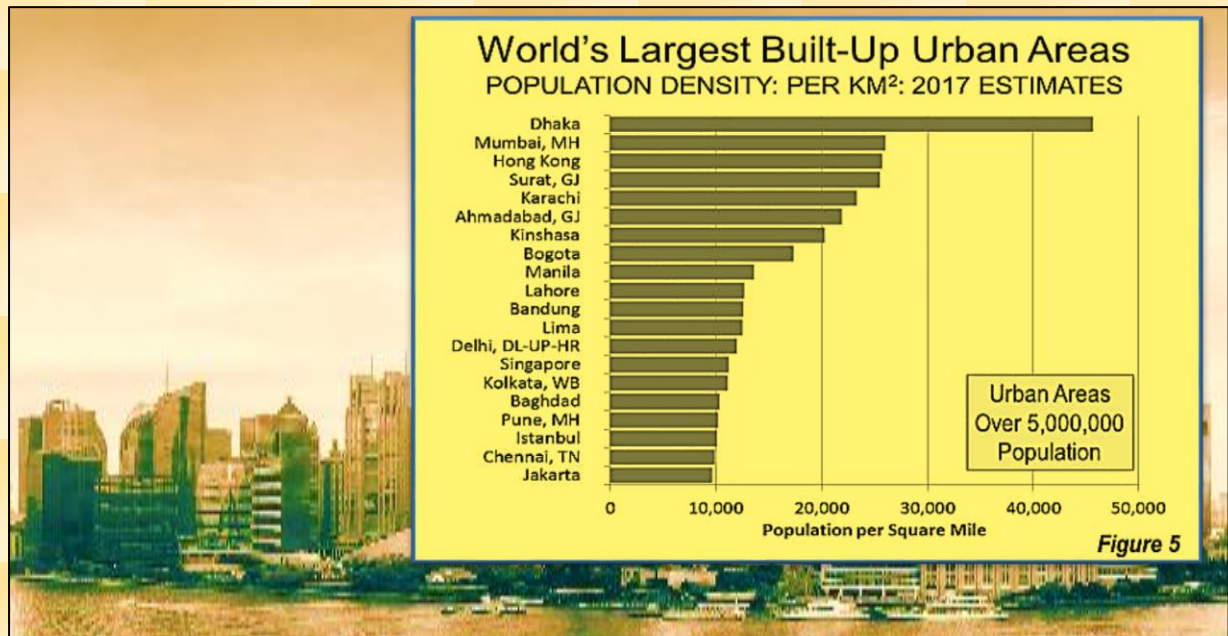


URBAN DENSITY: ASIA

BAR GRAPH

Dhaka in Bangladesh has the highest density of urban population in the world, at 45,700 per Km². It is almost 50% denser than Mumbai and Hong Kong.

Bar graph: <http://www.newgeography.com/content/005593-the-largest-cities-demographia-world-urban-areas-2017>



CONURBATIONS IN ASIA

TABLE

A **conurbation** is a region comprising a number of cities, large towns, and other urban areas, that have merged to form one continuous urban or industrially developed area. Will they become metacities?

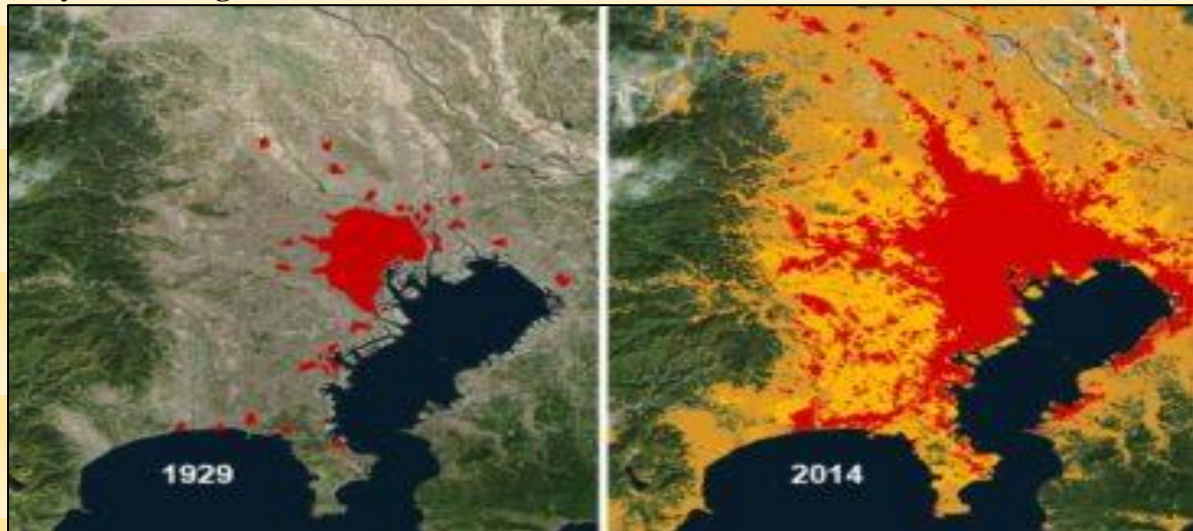
Note and table: <https://en.wikipedia.org/wiki/Conurbation>

<p>China</p> <ul style="list-style-type: none"> Jingjinji comprising Tianjin, Beijing, Tangshan and Qinhuangdao Yangtze River Delta of Shanghai, Nanjing, Hangzhou and Ningbo Pearl River Delta including Guangzhou, Shenzhen, Dongguan, Hong Kong and Macau 	<p>India</p> <ul style="list-style-type: none"> Mumbai Metropolitan Region (MMR) National Capital Region (NCR) encompassing Delhi, Gurgaon, Faridabad, Bahadurgarh, Sonipat, Noida and Ghaziabad. 	<p>Vietnam</p> <ul style="list-style-type: none"> Ho Chi Minh City Metropolitan Region Hanoi Metropolitan Region Qui Nhon-Nha Trang-Da Lat Conurbation Belt Huế-Da Nang-Quảng Ngãi Conurbation Belt 	<p>Japan</p> <p>Taiheiyō Belt is the largest conurbation in Japan extending from Ibaraki Prefecture to Fukuoka Prefecture, running almost 1,200 km (82.9 million)</p>
<p>Bangladesh</p> <p>Dhaka linked to Narayanganj and Gazipur</p>	<p>Indonesia</p> <p>Greater Jakarta or Jabodetabek</p>	<p>Malaysia</p> <p>Klang Valley conurbation in Selangor</p>	
<p>Philippines</p> <p>Metro Manila, (21 million)</p>	<p>Thailand</p> <p>Bangkok Metropolitan Region (14 million)</p>	<p>Pakistan</p> <p>Karachi Metropolitan Area</p>	

FROM 'MEGA' CITY TO 'META' CITY

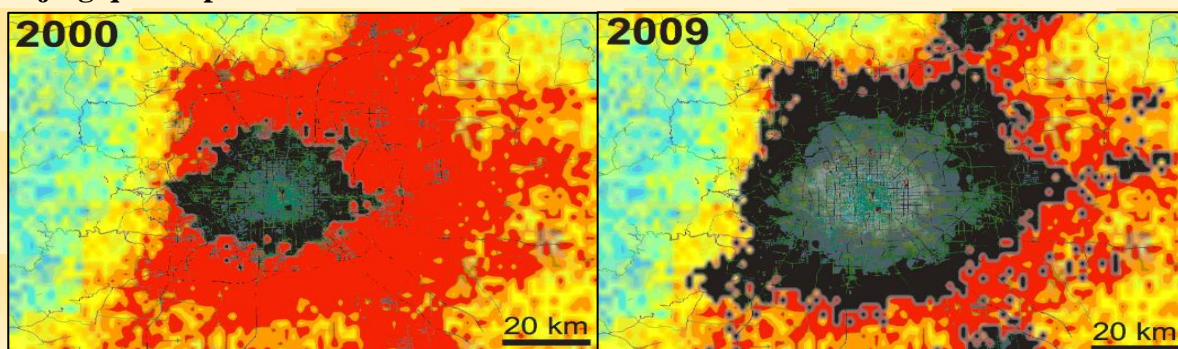
A **metacity** or **hypercity** contains a population of over **20 million**. A sign of how quickly the rate of urbanisation is accelerating, is that the term '**mega**' is now too small to describe the top tier urban giants. **Asian metacities** include Tokyo, Beijing, Shanghai, Mumbai, Jakarta and Karachi. **Tokyo** became the first metacity in the mid-1960s when it reached 20 million people. Today it is the largest urban conglomeration in the world.

Tokyo's urban growth over time



Satellite <http://www.bakedzombie.com/wp-content/uploads/2016/05/tokyo-top-364x205.jpg>

Beijing quadrupled in size in a decade



Satellite <https://www.nasa.gov/sites/default/files/thumbnails/image/beijing20150625.gif>

Changes

These metropolises are so huge that they have **changed the dynamics of urbanisation**. People **commute** to work in megacities from densely populated outlying villages or suburbs. **City centres stagnate** as the economic base shifts outwards to **peri-urban areas** that are more attractive. **Secondary cities** become inter-connected through manufacture and other business enterprises.

Megacities call for a reassessment of urban **governance**. For instance, areas that once were suburbs have themselves become small cities, but they tend to still be subject to suburban regulations. **Sustainable governance** can be achieved through devolution of decision-making and responsibilities down to municipalities, boroughs and civil society.

http://mirror.unhabitat.org/documents/media_centre/sowcr2006/SOWCR%202.pdf

Future

According to the United Nations' 2010/2011 State of the World's Cities report, metacities of the future will not be single political entities but will sprawl across geographic, regional and national boundaries. These massive sprawling conurbations, will be the engines of growth that will shape the future, with new hubs of commerce, information and culture.

USING INFORMATION AND COMMUNICATIONS TECHNOLOGY

YouTube

- History of urbanisation- time line map visualises the history of urban settlements over 6,000 years
<https://www.youtube.com/watch?v=yKJYXujJ7sU>
- Urbanisation push-pull factors <https://www.youtube.com/watch?v=C4UCknuBNKg>
- Push Pull factors <https://www.youtube.com/watch?v=rF86TGM3eSE&pbjreload=10>
- Urbanisation and growth of global cities <https://www.youtube.com/watch?v=EpBbnL3pMRA>
- Urbanisations and rise of the megacity https://www.youtube.com/watch?v=JDS_BqDeZ4k
- What is conurbation? <https://www.youtube.com/watch?v=kSfJnbidIDw>
- What is urban density? <https://www.youtube.com/watch?v=N6mnnpt8JQk>
- Alternative routes to urban density –Karachi Pakistan
<https://www.youtube.com/watch?v=DAhyRbDxAbk>
- Effects of urban sprawl <https://www.youtube.com/watch?v=QuJYNys5Hek>
- Urbanisation and megacities: Jakarta <https://www.youtube.com/watch?v=-ApGzilTwBU>
- Rapid urbanisation in developing country cities https://www.youtube.com/watch?v=KZh8veR_PWw
- Driving sustainable urbanisation in Asia https://www.youtube.com/watch?v=aI2r1adT4_E
- Megacities reflect growing urbanisation trend – Dhaka, Bangladesh
<https://www.youtube.com/watch?v=eFboV2m1yuw>
- Urbanisation in China <https://www.youtube.com/watch?v=Kc2DtUehj48>
- Migration and urbanisation in China https://www.youtube.com/watch?v=d0jPgx_28yQ
- Sustainable urbanisation in China <https://www.youtube.com/watch?v=VijAHqBBThI>
- Age of China: urbanisation building boom <https://www.youtube.com/watch?v=jIXxtwPPEk>
- Chongqing-China's secret metropolis <https://www.youtube.com/watch?v=sXQOBM37MH0>
- China's future megaprojects <https://www.youtube.com/watch?v=gNE7VPTvfbI>
- Urbanisation in Vietnam <https://www.youtube.com/watch?v=neUjDQieifg>
- India, Mumbai <https://www.youtube.com/watch?v=4Vbgs5kfYNw>;
<https://www.youtube.com/watch?v=PxH6qv147Us>;
- City slums-megacity problems <https://www.youtube.com/watch?v=6fcDF3PESXI>
- Children living on the streets of urban India https://www.youtube.com/watch?v=Sd_ae0YXALk
- Indonesian city-waste into electricity <http://www.straitstimes.com/asia/se-asia/when-waste-isnt-wasted-how-a-small-indonesian-city-turned-garbage-into-electricity>
- Sponge cities in China <http://www.straitstimes.com/asia/east-asia/sponge-cities-the-solution-to-chinas-flooding-woes>
- Making South Asian cities more liveable <https://www.youtube.com/watch?v=BD8-BUAKx9Q>
- Creating sustainable cities <https://www.youtube.com/watch?v=fcDDUSUbq9A>
- India builds first 'smart' city as urban population swells
<https://www.youtube.com/watch?v=C7D4Xv3zM8U>
- Making cities climate change resilient https://www.youtube.com/watch?v=R_Ik_GXpWrI
- Knowledge and action-climate change impacts in Asian cities and ways to adapt
<https://www.youtube.com/watch?v=Ywf0qbqza54>
- What is urban planning? https://www.youtube.com/watch?v=_5ot_1tbQX8

Video graphic

- Is India becoming more urban? <https://www.youtube.com/watch?v=gtMeyAs7Vz0>

Infographics

- Green urbanisation in Asia
<https://cdn.thinglink.me/api/image/452303447903961090/1024/10/scaletowidth>
- Urbanisation in South Asia <https://pbs.twimg.com/media/B5IPzqKCIAASCwE.jpg>
- Climate change resilience in Asia's cities
https://www.adb.org/sites/default/files/styles/content_media/public/content-media/7653-resilience-infographic-01.png?itok=uR5Sm9hV
- The rise of the megaregion <https://i.pinimg.com/736x/90/4a/12/904a12cfd27c8fa067b0fc4c48427b79--infographics-asia.jpg>
- There is hope for the city https://thumbnails-visually.netdna-ssl.com/there-is-hope-for-the-city_544e7f80a2871.jpg

Slide share

- Urbanisation in Asia <https://www.slideshare.net/jorgecarrillobangkok/urbanization-in-asia>

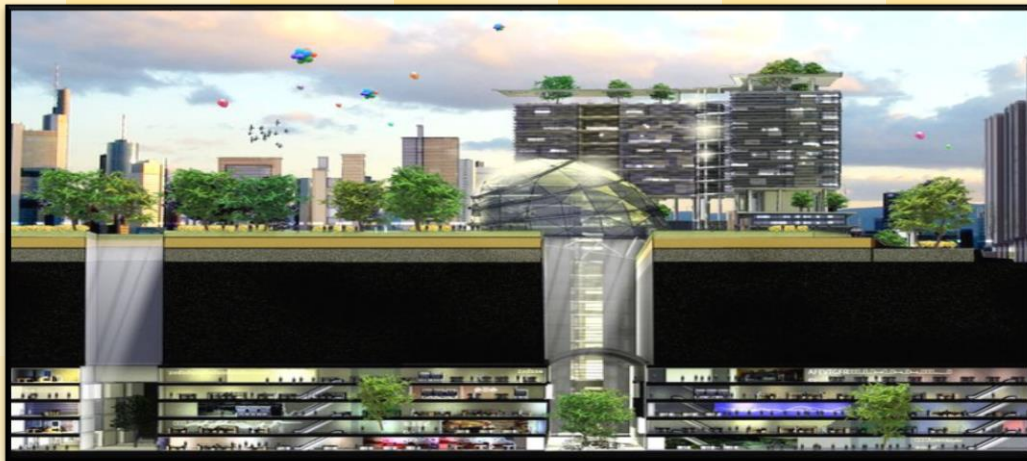
SINGAPORE GOING UNDERGROUND

UNDERGROUND SCIENCE CITY

What does a rich and aspiring country like Singapore do when it runs out of land?

Despite an anticipated decline in Singapore's population with declining births and an ageing population, the city-state aims to expand its area by going underground, expanding into the ocean and using its air space. On the drawing board is the **Underground Science City**, with 40 interconnected caverns for data centres and research and development laboratories that aims to support biomedical and life sciences industries. The science centre, with an estimated 20 hectares, will be constructed 30 stories below the ground, in western Singapore. It aims to house 4,200 scientists and researchers.

Image: <http://www.nytimes.com/2013/09/26/business/international/crowded-singapore-looks-below-for-room-to-grow.html>



UNDERGROUND OIL STORAGE

Jurong Rock Caverns, on Jurong Island, were the first underground rock caverns used to store oil in Southeast Asia. The infrastructure supports companies such as Shell and Exxon Mobile. At present holds 126 million gallons of crude oil. It is expected to free up 60ha of useable surface land for urban development. JTC Corporation
<http://www.nytimes.com/2013/09/26/business/international/crowded-singapore-looks-below-for-room-to-grow.html>



UNDERGROUND INTERCONNECTED CITY

Singapore has built skywards and grabbed back land from the sea, to accommodate its expanding urban population. However, as the city runs out of options for future growth, it's looking underground to create an extensive, interconnected city, with shopping malls, transportation hubs, public spaces, and cycling lanes.

SINGAPORE RECLAIMING OCEAN AND AIR

RECLAIMING OCEAN

Since Singapore became an independent nation 52 years ago, it has through land reclamation, grown in size by almost a quarter from 360 km² to 446km². By 2030, the government wants Singapore to expand to 483 km².

Much of Singapore lies less than 15masl. A third of the island sits around 5masl-low enough to give planners the jitters. All the while, the island receives more and more rain each year. 'If global temperatures continue to rise, many parts of Singapore could eventually be submerged.'

Reclaiming land from the ocean has its limits, particularly in an age of a warming planet.

<https://www.nytimes.com/2017/04/20/magazine/how-singapore-is-creating-more-land-for-itself.html>

RECLAIMING AIR

Singapore also plans to reclaim its air.

'Twelve percent of the island is occupied by roads... What's above roads? Nothing! If you put roads under buildings, you free up some land.'

Sky bridges and mid-air concourses are already part of some public-housing estates. 'In the future, you might see a little town or offices above expressways. They might create space above container ports.'

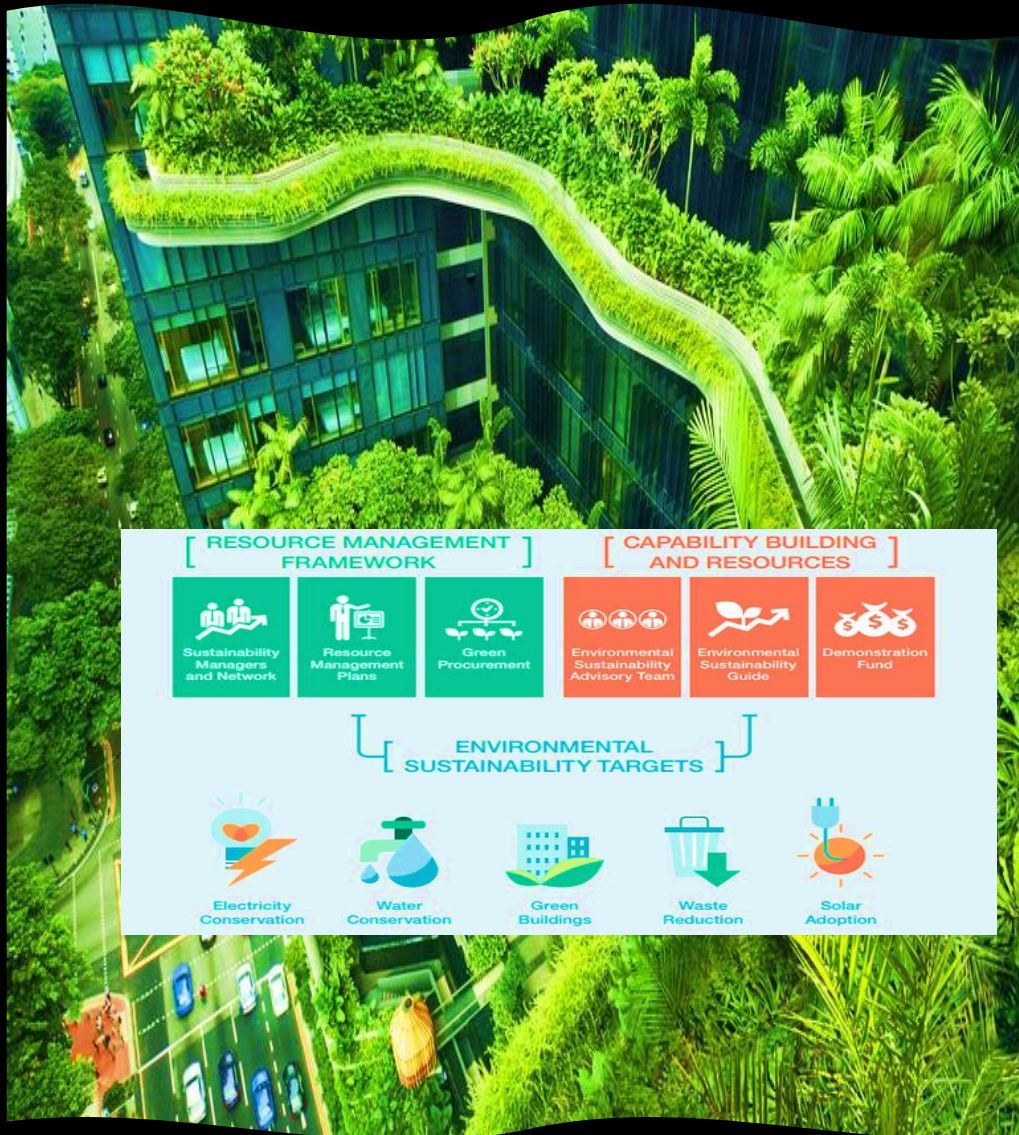
<https://www.nytimes.com/2017/04/20/magazine/how-singapore-is-creating-more-land-for-itself.html>

Photo: Supertree Grove in Singapore's Gardens by the Bay, which sit on 100 hectares of reclaimed land. The Supertrees are vertical gardens that contain over 160,000 types of plants. Credit Sim Chi Yin/VII, for The New York Times <https://www.nytimes.com/2017/04/20/magazine/how-singapore-is-creating-more-land-for-itself.html>

SINGAPORE: SUSTAINABILITY PLAN 2017-2020

The Sustainable Singapore Blueprint 2015, outlines their national vision for a more liveable and sustainable Singapore. It is divided into three areas:

- Liveable and Endearing Home
- Vibrant and Sustainable City
- Active and Gracious Community



The Landscaping for Urban Spaces and High-Rises (LUSH) programme, aims to replace greenery lost during a building's development or redevelopment, to improve urban greenery.

Plan <https://www.opengovasia.com/articles/7668-inaugural-public-sector-sustainability-plan-2017-2020-launched-in-singapore>

Photograph: <https://www.archdaily.com/800182/interview-with-woha-the-only-way-to-preserve-nature-is-to-integrate-it-into-our-built-environment>

INDIA: BHENDI BAZAAR INDIA'S LARGEST URBAN MAKEOVER

Bhendi Bazaar which is over 200 years old, contains dilapidated colonial-era buildings in the heart of India's financial hub in Mumbai. Thousands live in tiny rooms in derelict buildings. Originally, they were four story buildings with steep wooden staircases housing male migrant workers in small dorm like rooms. Unfortunately, for decades Mumbai's state controlled room rents have been frozen, leaving owners unwilling to invest in their maintenance.

Fortunately, there are plans underway to replace 250 dilapidated buildings with 17 high-rise towers. The \$1 billion revamp aims to rehouse 20,000 people, mainly Shia Muslims. It is the largest urban redevelopment to take place in India.

In 2017, the collapse of a building in Bhendi Bazaar leaving 24 dead, brought fresh urgency to the project.

Photo: Nirmala Ganapathy

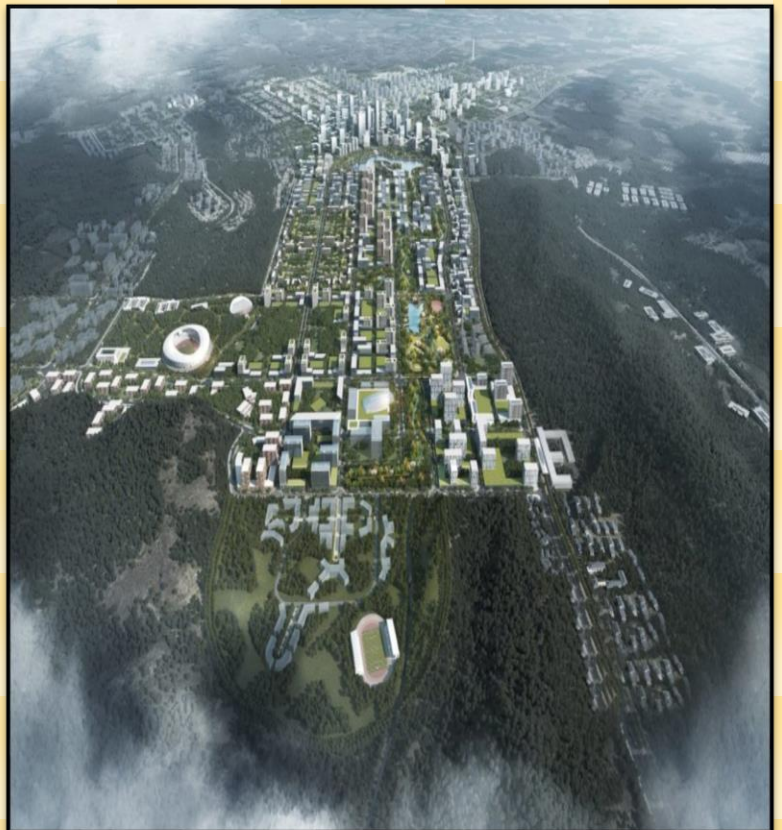
<http://www.straitstimes.com/asia/south-asia/makeover-for-old-mumbai-quarter>



PHILIPPINES: NEW CLARK CITY

In the Philippines, the National Government Administrative Centre (NGAC), is building a \$3billion administrative centre in the city of Manila. The 200ha estate, accommodating 2 million people, will serve as the country's second government centre or 'back-up city'.

New Clark City aims to be the Philippines' first '**smart, green, disaster-resilient city**'. It is among the biggest projects in President Rodrigo Duterte's ambitious eight-trillion-peso '*Build, Build, Build*' infrastructure programme. It also aims to reduce traffic congestion in Metro Manila.



<http://www.straitstimes.com/asia/se-asia/manila-builds-s315-bil-administrative-centre-as-back-up-city>

Photo: [https://www.update.ph/wp-](https://www.update.ph/wp-content/uploads/2017/08/20818861_1921063088218005_4107970020332790158_o-1024x578.jpg)

[content/uploads/2017/08/20818861_1921063088218005_4107970020332790158_o-1024x578.jpg](https://www.update.ph/wp-content/uploads/2017/08/20818861_1921063088218005_4107970020332790158_o-1024x578.jpg)

JAPAN: YUBARI'S SILVER TSUNAMI REQUIRES REJUVENATION

Yubari, is referred to as Japan's '**greyest city**', as it confronts depopulation and bankruptcy. Previously known as the capital of coal, it has now lost 90% of its population in the last 50 years. Demographically, Yubari is the oldest city in Japan, where more than 30% of the population is over 65 years. Yubari's woes began when the city's last coal mine was shut down in 1990, sparking an exodus of its working population. Those who stayed, grew old. In 2017 Yubari had a population of 8,600 people but at current rates of decline, Yubari will possess 5,200 people by 2035. In 2010, Yubari elected Naomichi Suzuki as mayor, who plans to rejuvenate the city by tapping coal-bed methane from the former mines. He also intends to attract tourists by promoting local cultural heritage.

<http://www.straitstimes.com/asia/east-asia/greyest-city-in-japan-fights-depopulation-bankruptcy>

Photo: Abandoned buildings http://i.dailymail.co.uk/i/pix/2016/06/02/02/34C94E7C00000578-3617307-image-a-127_1464830606499.jpg



CHINA: SPONGE CITIES TO SOLVE FLOODING

Wuhan, the capital city of central Hubei province, was selected as one of 16 pilot cities in China to be transformed into a '**sponge city**'.

The city sits on the confluence of the Han and Yangtze rivers. It receives most of its 1,300mm rainfall during summer between June and September. In July 2016, Wuhan was hit by torrential rain receiving a record 600mm of precipitation in a week. As a result hundreds of roads became impassable and subway stations flooded. It affected 10 million people.

About 180 cities across China suffered similar floods between 2012 and 2015. In 2017, heavy rain and floods affected 17.7 million people in 24 provinces, causing 134 deaths, destroying 24,000 homes, and resulting in an economic loss of \$6 billion. In a bid to solve the problem, Chinese President Xi Jinping said cities should be built like '*sponges*' to soak up 70% of rainwater. Concrete surfaces were to be replaced by permeable materials and green spaces such as rain gardens absorb and filter precipitation. Drainage systems are being rebuilt to separate wastewater from rainwater, and excess water stored and re-used for cleaning streets, watering plants and firefighting.

Photo: <http://www.straitstimes.com/asia/east-asia/sponge-cities-the-solution-to-chinas-flooding-woes>



EXPANDING ASIAN CITIES RECLAIM OCEAN

Source: https://en.wikipedia.org/wiki/Land_reclamation

- Mumbai, India. It took over 150 years to join the original seven islands of Mumbai.
- Karachi, Pakistan.
- Jakarta Bay, Indonesia
- Hamad International Airport in Qatar
- Haikou Bay, China
- Cotai Strip in Macau-location of most major casinos
- Nagoya Centrair Airport, Japan
- Incheon International Airport, Korea
- Chinese city of Shenzhen
- Manila Bay in Philippines. Along Metro Manila major developments such as the Mall of Asia Complex, Entertainment City, and Cultural Centre of the Philippines Complex.
- Singapore
- Palm Islands, Dubai UAE
- Yas Island in Abu Dhabi, UAE.

Palm Island photo: <https://i.ytimg.com/vi/bReEvC4CRis/maxresdefault.jpg>



JAKARTA'S GIGANTIC 34KM SEAWALL

Indonesia's capital city, Jakarta, with a population of 20 million, is slowly sinking below sea level. Jakarta sinks between 7.5 and 26 centimetres a year. Already 40% of the city lies below sea level, and as a consequence vulnerable to climate change and resultant sea level rise.

To protect the city, developers are building a 34km seawall shaped like Garuda, the bird-like national emblem of Indonesia. It also includes the development of residential, industrial, infrastructure and waste treatment areas. This is a controversial plan, as it could possibly damage natural habitats such as coral reefs, and force the relocation of thousands of coastal dwellers.



Image: <http://wildsingaporenews.blogspot.com.au/2015/03/indonesia-cracks-in-jakartas-sea-wall.html#.WmqzoOeYOUk>

Japan's 2011 tsunami transported waves that overwhelmed its seawalls, leading to a meltdown at its coastal Fukushima Daiichi nuclear power plant. It is now proposing a new 400 kilometre metre long, four-story-high sea barrier.

VIETNAM: HOUSING WORKING MASSES IN CITIES

ISSUE

Mr Tran Van De was a former rice farmer from southern An Giang province. He migrated to Ho Chi Minh City for work. With another building project completed, the 56-year-old construction worker has taken his wheelbarrow home. Until he finds more work, the cart will stay in the tiny, windowless rented room he shares with his son and colleague.

"This place is narrow and quite tiring to live in," says. "It's not as nice as in my home town. But the jobs are here."

Hundreds of thousands of rural folk like Mr De crowd into cheap, grimy and unsafe dwellings.

<http://www.straitstimes.com/asia/se-asia/housing-asias-working-masses>

SOLUTION

BINH DUONG province is home to US\$27 billion worth of foreign investment, hosts 28 industrial parks, and zones that produce everything from shoes and milk to tissue paper. BINH DUONG province is trying to improve housing for rural-urban migrants. In 2013, 100 million dong apartments were offered to low-wage workers. The open-plan, no-frills 30m² apartments come with a mezzanine level and a living area that lets natural air flow freely through the compact space.

<http://www.straitstimes.com/asia/se-asia/housing-asias-working-masses>

Chairs and tables put out by a coffee-shop owner in a housing estate in BINH DUONG province, where apartments are sold cheaply to low-wage and migrant workers.



<http://www.straitstimes.com/asia/se-asia/housing-asias-working-masses>

INDIA: RISE OF SMART CITIES

In India, Prime Minister Narendra Modi has a vision of 100 smart cities across the country, integrating high-tech systems for transportation, communication and sewage treatment. His urban development plan aims to ensure sustainable development and economic growth.

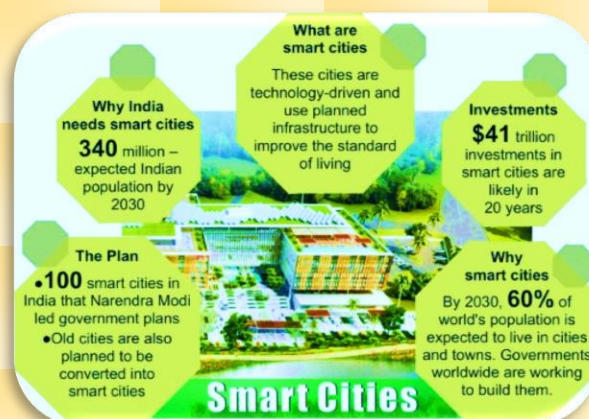
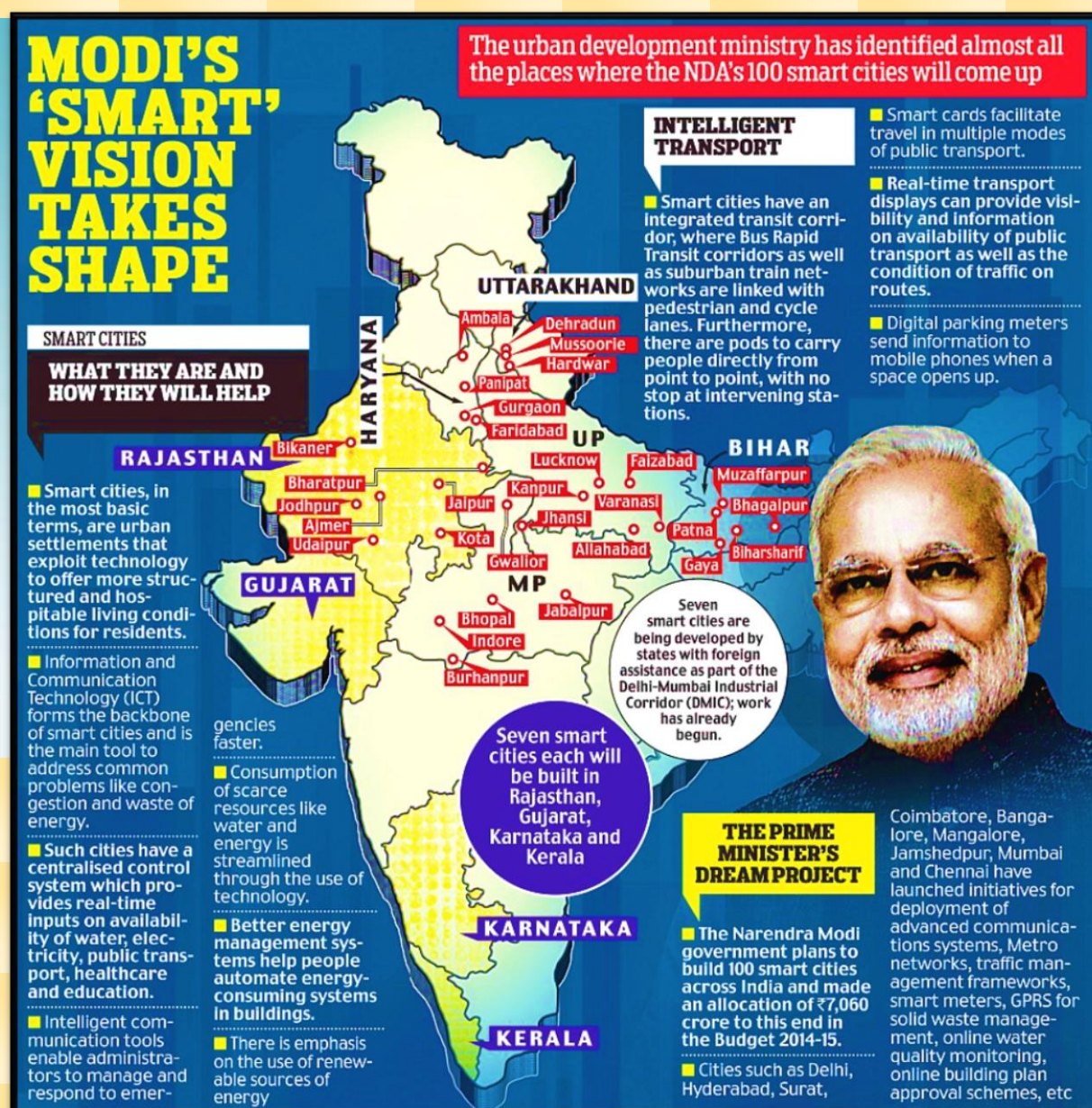


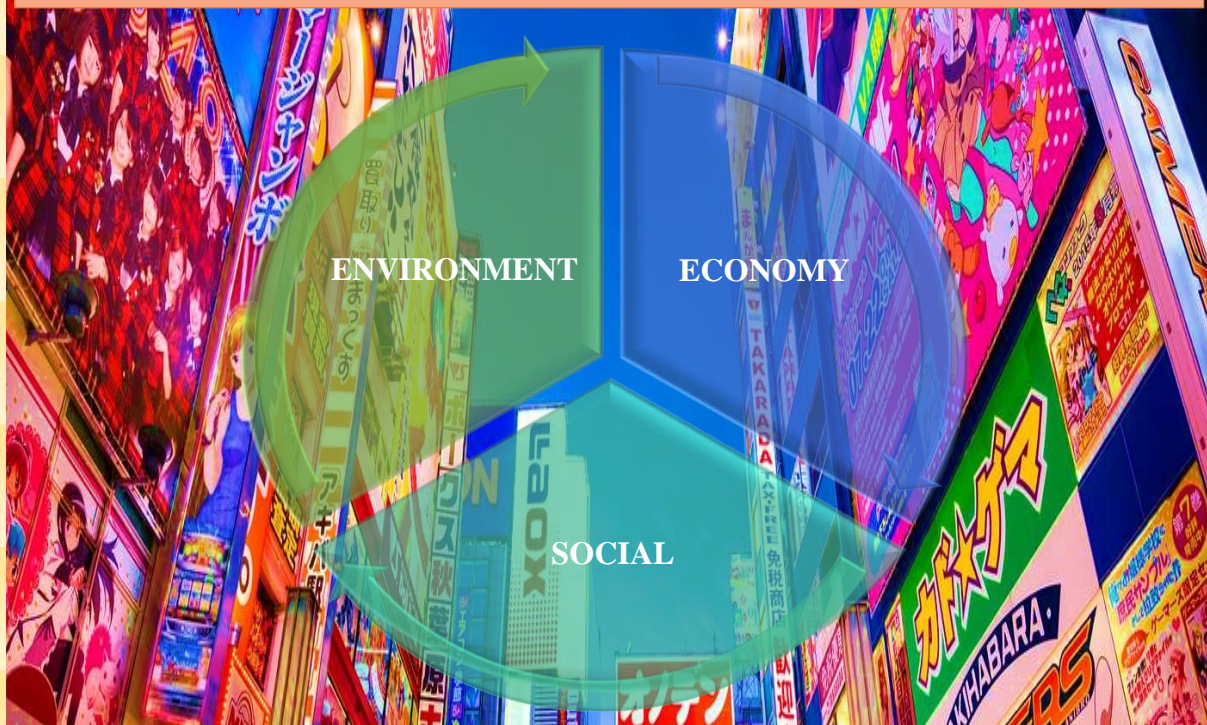
Image: <http://nagasconnect.com/wp-content/uploads/2015/07/smart-cities-features-india-1024x725.jpg>



Infographic http://i.dailymail.co.uk/i/pix/2014/08/29/article-2738057-20E7DA1900000578-126_970x960.jpg

GREEN CITIES: COMPONENTS AND ASIAN RANKINGS

THREE COMPONENTS OF A GREEN CITY



TOP RANKINGS

TOKYO, SEOUL, SINGAPORE, OSAKA, BUSAN, TAIPEI, HONG KONG

Economy	Social	Environmental	Top 10 Asia Pacific Green Cities
1 Tokyo	1 Seoul	1 Melbourne	1 Tokyo
2 Seoul	2 Auckland	2 Singapore	2 Seoul
3 Sydney	3 Tokyo	3 Tokyo	3 Melbourne
4 Osaka	4 Busan	4 Sydney	4 Singapore
5 Melbourne	5 Osaka	5 Auckland	5 Osaka
6 Singapore	6 Singapore	6 Osaka	6 Sydney
7 Busan	7 Melbourne	7 Hong Kong	7 Auckland
8 Taipei	8 Taipei	8 Seoul	8 Busan
9 Auckland	9 Sydney	9 Taipei	9 Taipei
10 Hong Kong	10 Hong Kong	10 Busan	10 Hong Kong

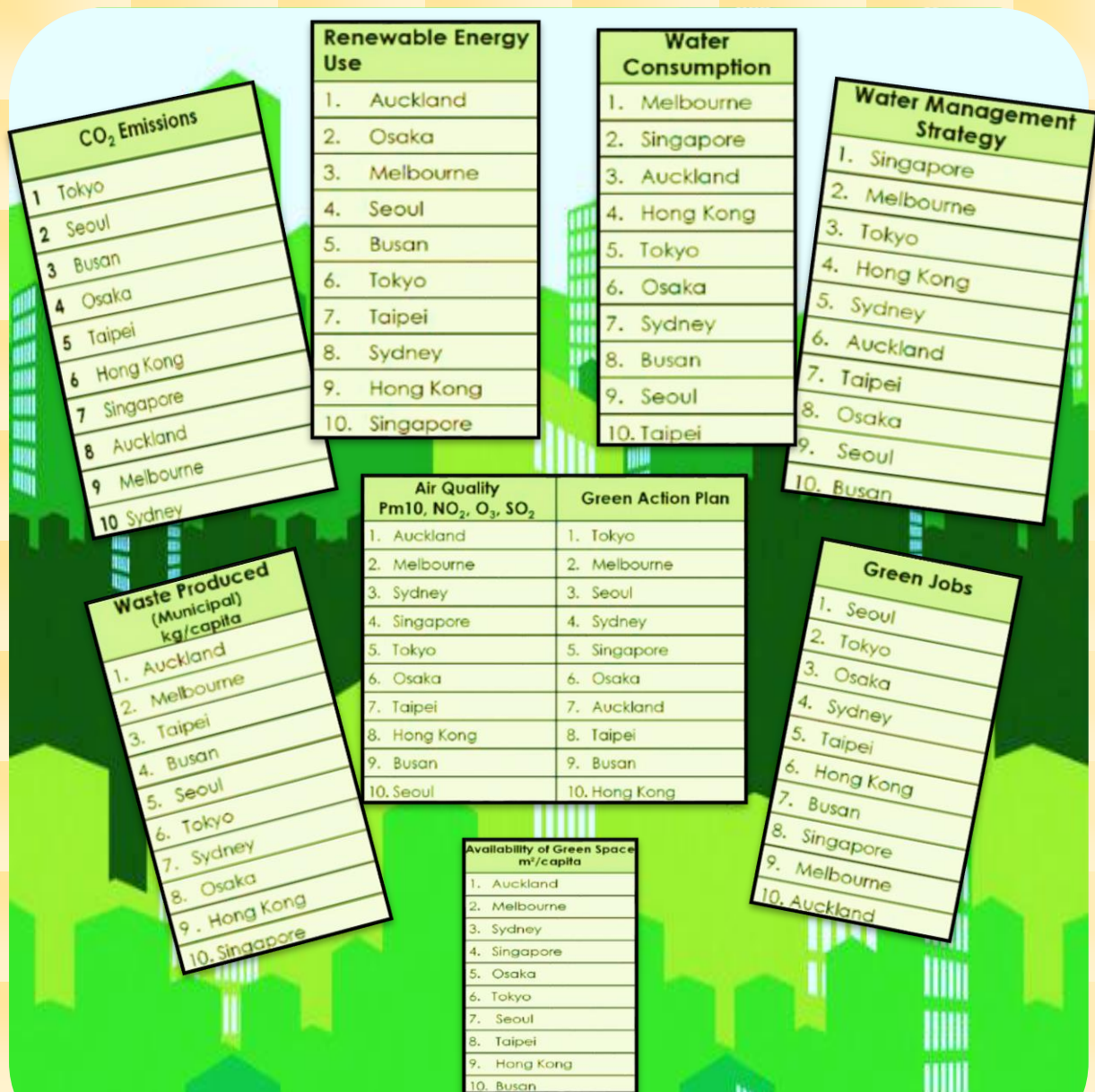
Tables: <https://www.slideshare.net/dduhamel/top-10-asia-green-cities-asian-green-cities-wwwsolidiancecom-2011>
 Photo Tokyo http://s.telegraph.co.uk/graphics/projects/tokyo-ancient-modern/media/f0pwad_wide-mr.jpg

ASIA: GREEN CITIES RANKINGS

ENVIRONMENT

- **Tokyo:** Lowest CO₂ emissions and aims to reduce emissions by 25% from 2000 to 2020. Waste reduced by 50% with new waste management strategy.
- **Seoul:** Long term green \$45 billion Master Plan aimed to transform the city into an eco-friendly city by 2030-reduce greenhouse gases by 40%, increase renewable energy by 20%, create 1 million green jobs, and promote green technology.
- **Singapore:** Since 1986, green areas increased by 50% despite population growing at 70%. There are 480 green certified buildings with a goal of 80% of buildings Green Mark rated by 2030. The city encourages green areas on rooftops, facades and terraces.
- **Osaka:** Green curtains (climbing plants on walls), water-retentive pavements to relieve the urban heat island effect, and solar powered water processing plant.

Tables: <https://www.slideshare.net/dduhamel/top-10-asia-green-cities-asian-green-cities-wwwsolidiancecom-2011>



Background <https://sourceable.net/wp-content/uploads/2014/10/green-city.jpg>

SUSTAINABLE CITIES INDEX

Balancing the needs of today without compromising the needs of tomorrow is at the heart of a sustainable city.

The Sustainable City Index (SCI) determines the sustainability of Asian cities, by encompassing the three pillars of sustainability—**social**, **environmental** and **economic**. However, Asian cities are not effectively balancing the three pillars. Cities such as Singapore and Hong Kong are ranked highly in economic performance but are not as strong on social and environmental sustainability.

THREE PILLARS: SOCIAL, ENVIRONMENTAL AND ECONOMIC



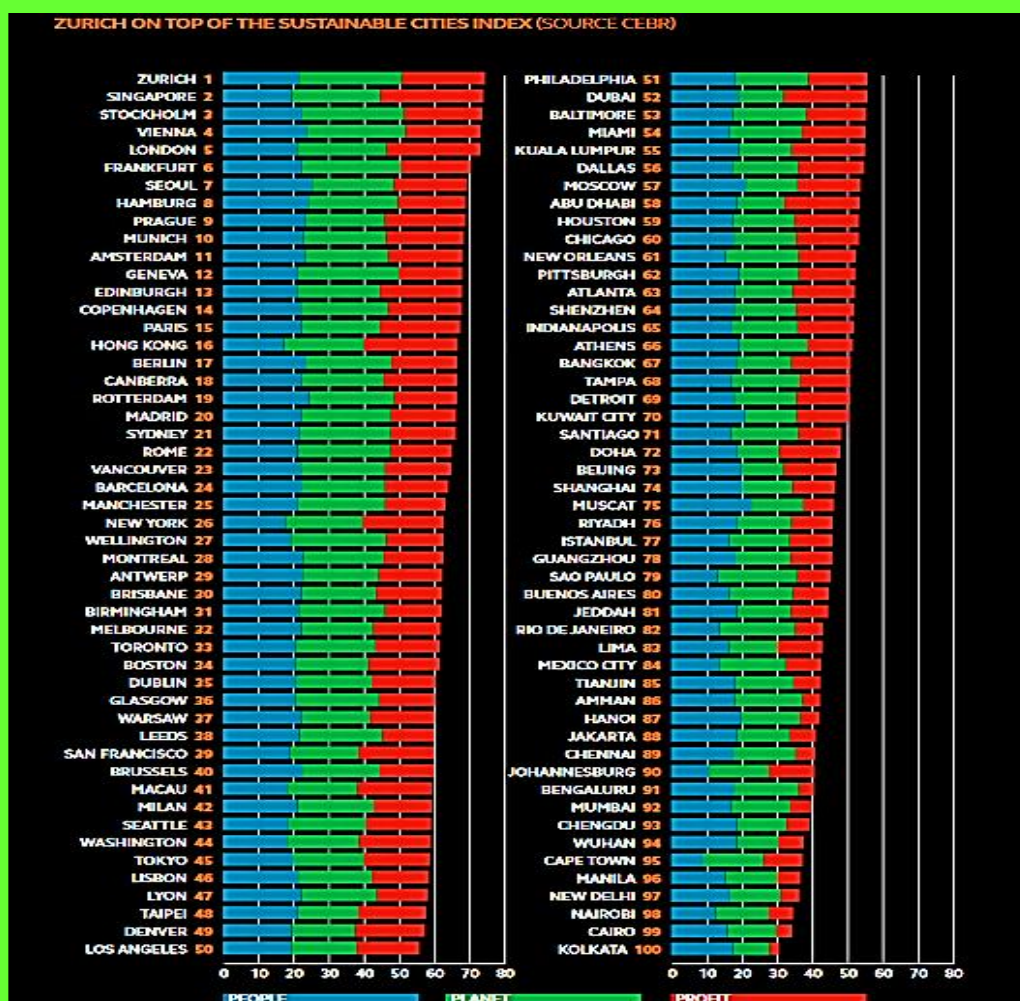
Source: <https://www.arcadis.com/media/0/6/6/%7B06687980-3179-47AD-89FD-F6AFA76EBB73%7D%20Sustainable%20Cities%20Index%202016%20Global%20Web.pdf>

SUSTAINABLE CITIES INDEX: RANK ORDER

In 2017, the top scoring city on the Sustainable Cities Index (SCI) was Zurich, with most high scoring cities located in Europe. However, Asia had some high performing cities such as Singapore ranked 2nd, Seoul 7th and Hong Kong 16th, all higher than Sydney ranked 21st. In West Asia, Dubai was the best performing city ranked at 52nd, closely followed by Abu Dhabi in 58th place. The lower half of the index contains mainland Chinese cities (Wuhan, Chengdu) and Indian cities (New Delhi, Kolkata, Mumbai).

Top Ranks: Sub-Indexes

- **People Index:** Seoul 1st (After Seoul, Europe dominated the top ranks)
- **Economic Index:** Singapore 1st, Hong Kong 2nd, Dubai 4th, Abu Dhabi 13th, Macau 15th, Seoul 18th, Kuala Lumpur 19th
- **Planet Index:** Singapore 12th, Seoul 26th



Source: Composite bar graphs <https://www.arcadis.com/media/0/6/6/%7B06687980-3179-47AD-89FD-F6AFA76EBB73%7DSustainable%20Cities%20Index%202016%20Global%20Web.pdf>

SUSTAINABLE CITIES INDEX: FIVE ASIAN CITIES

Images: <https://www.arcadis.com/media/0/6/6/%7B06687980-3179-47AD-89FD-F6AFA76EBB73%7DSustainable%20Cities%20Index%202016%20Global%20Web.pdf>





CITY PROFILE HONG KONG

With a ranking of 16th overall, Hong Kong scored strongly in second place in the people sub-index, with a world-class infrastructure, vibrant economy and well-educated talent pool. It's no surprise that Hong Kong is considered one of the world's best places to do business.

Hong Kong is one of Asia's leading cities third in respect to relation to the planet sub-index, its natural parks and islands provide easy access to an extensive natural playground, though it needs to improve the quality of open space within the urban environment. Despite being located in a region where Hong Kong is a world leader in mitigating the associated risks and rarely suffers significant disruption.

Compared with its global peers in the people sub-index, Hong Kong faces significant challenges in work-life balance and the wealth gap. It has to find solutions to housing and social infrastructure issues affecting both its young and its increasingly ageing population. These factors have to be among the city's top priorities if it's to ensure a brighter, more sustainable future for its people. The city is extremely safe with low crime levels.

As other Asian cities grow in prosperity and dominance, Hong Kong is under increasing pressure from regional competitors and, critically, it has to maintain its relevance to China's continued development. The city's plan should enable it to rise to these challenges provided it's delivered in a faster, more connected and sustainable manner. If so, it will rightly maintain its mantle of 'Asia's World City'.


OVERALL RANKING: 16

PEOPLE: 81

PLANET: 29

PROFIT: 2





CITY PROFILE KUALA LUMPUR

Kuala Lumpur's regional ranking in Asia is 7th overall, and 6th in the people sub-index, 15th for planet and 5th for the profit sub-index.

Malaysia's current Economic Transformation Program (ETP), improving Kuala Lumpur and the Greater Klang Valley around the capital, has been identified as a key growth engine in delivering its national vision and driving continued economic growth across the country. The government has set a goal to transform Kuala Lumpur into a world-class city by 2020, one that appeals to both residents and tourists alike. Specific large projects are being implemented to improve Kuala Lumpur's ranking, ranging from the 118 Tower to K2-Singapore High-Speed Rail and the Tun Razak Exchange.

The local city hall, DBKL, has also embarked on Kuala Lumpur city competitiveness masterplan studies and InvestKL is offering global businesses access to a growing workforce, a sophisticated business ecosystem, world-class infrastructure and connectivity, competitive cost advantage and a principal hub tax incentive that caters to their business models.

OVERALL RANKING: 35

PEOPLE: 63

PLANET: 84

PROFIT: 19



CITY PROFILE SHANGHAI

Shanghai is one of the key gateway cities into China. It has always been a hub for international trade, finance and business. It ranks 24th overall on the Arcadis Sustainable Cities Index and scores highest among all the mainland China cities on the people sub-index ranking.

With Shanghai continuing its quest to be one of the most sustainable cities in China, urban regeneration and innovation hubs will be important elements of its future development, as the city transforms itself from a manufacturing center to a knowledge, technology and innovation center for the nation. Zhanjiang and Caiding developments play an important part in Shanghai's future as they continue to expand and evolve.

Shanghai's urban transformation is underpinned by an evolving transportation system. 13 of the city's 25 metro lines are completed and operational. The region continues to evolve its transportation connectivity to the greater Yangtze River Delta with new high-speed rail and urban highway connections.

Tourism will also become a major element of Shanghai's urban transformation, with the opening of the Disney resort and other entertainment-related mixed-use developments. The future growth of Pudong will bring more resort and entertainment development to the city, making it one of the key aspects of Shanghai's continued growth and evolution.

Education plays an important role in Shanghai in ensuring the quality of future workforce supply. With the opening of the Shanghai Tech campus, in addition to well-established universities such as Tongji and Fudan, the future is looking optimistic.

OVERALL RANKING: 74

PEOPLE: 43

PLANET: 91

PROFIT: 77





CITY PROFILE SINGAPORE

A number of sustainability initiatives are currently underway which will proactively help Singapore to evolve and remain competitive. Even as the top-ranked city in Asia, and second in the world, the city is continuing to be proactive. For example, with a population predicted to grow to more than six million people by 2030, the government has concentrated significant investment over the next decade to improve mobility and connectivity within the city. This investment includes two new underground lines, extensions to four existing MRT lines, a new terminal and runway at Changi Airport, a high-speed rail link between Singapore and Malaysia and the relocation of the container port.

The city also faces an aging population and a need for greater investment in social infrastructure. This, coupled with long working hours, income inequality and affordability, impacts Singapore's people sub-index ranking.

Singapore has also set an ambitious goal to make at least 80% of all buildings 'green' by 2030 as part of a concerted push to create a vibrant and high-quality living environment, that is resilient and supports the broader climate change agenda. Additional resiliency investment is underway in Singapore including its 'close the loop' water strategy.

Ranked first in profit, Singapore is in the top ten for all six indicators in the profit sub-index, topping the world in ease of doing business and tying with Macau for the top spot for tourism.


OVERALL RANKING: 2

PEOPLE: 48

PLANET: 12

PROFIT: 1





CITY PROFILE SEOUL

Seoul, an up-and-coming global cultural capital, tops the people sub-index. Health and education rankings propel Seoul to the top, with programs such as the 2020 Seoul Plan focusing on five core issues: "a people-centered city without discrimination", "a dynamic global city with a strong job market", "a vibrant cultural and historic city", "a lively and safe city" and "stable housing and easy transportation, a community-oriented city".

The program also includes urban planning policies to strengthen the city's identity, global competitiveness, development direction and innovation in the living environment for citizens. It has 139 projects in 13 districts that plan to transform the urban metropolis into a "safe, warm, dreaming, breathing city".

Seoul's leaders have taken serious steps towards city sustainability with projects like the Cheonggyecheon urban renewal and river restoration project. The previously polluted area has been transformed into a public recreation space in the heart of the city. Restoration not only spurred economic development but also provided much-needed flood protection for the downtown area, boosting Seoul's economic, environmental and social sustainability.

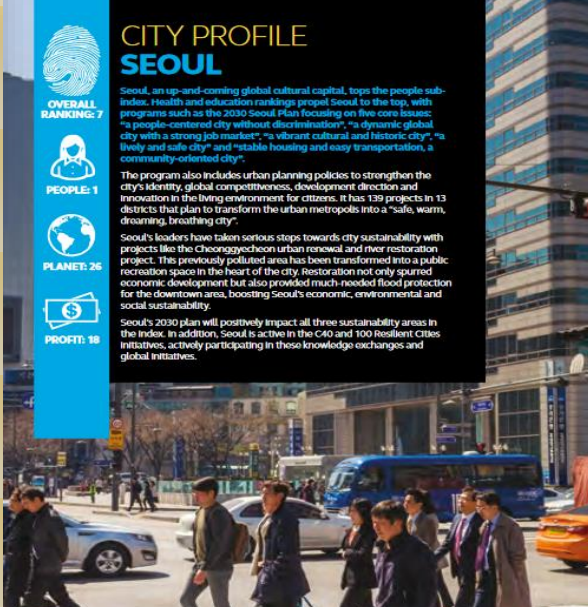
Seoul's 2030 plan will positively impact all three sustainability areas in the index. In addition, Seoul is active in the C40 and 100 Resilient Cities initiatives, actively participating in these knowledge exchanges and global initiatives.

OVERALL RANKING: 7

PEOPLE: 1

PLANET: 26

PROFIT: 18



UNITED NATIONS: FOUR CIRCLES OF SUSTAINABILITY

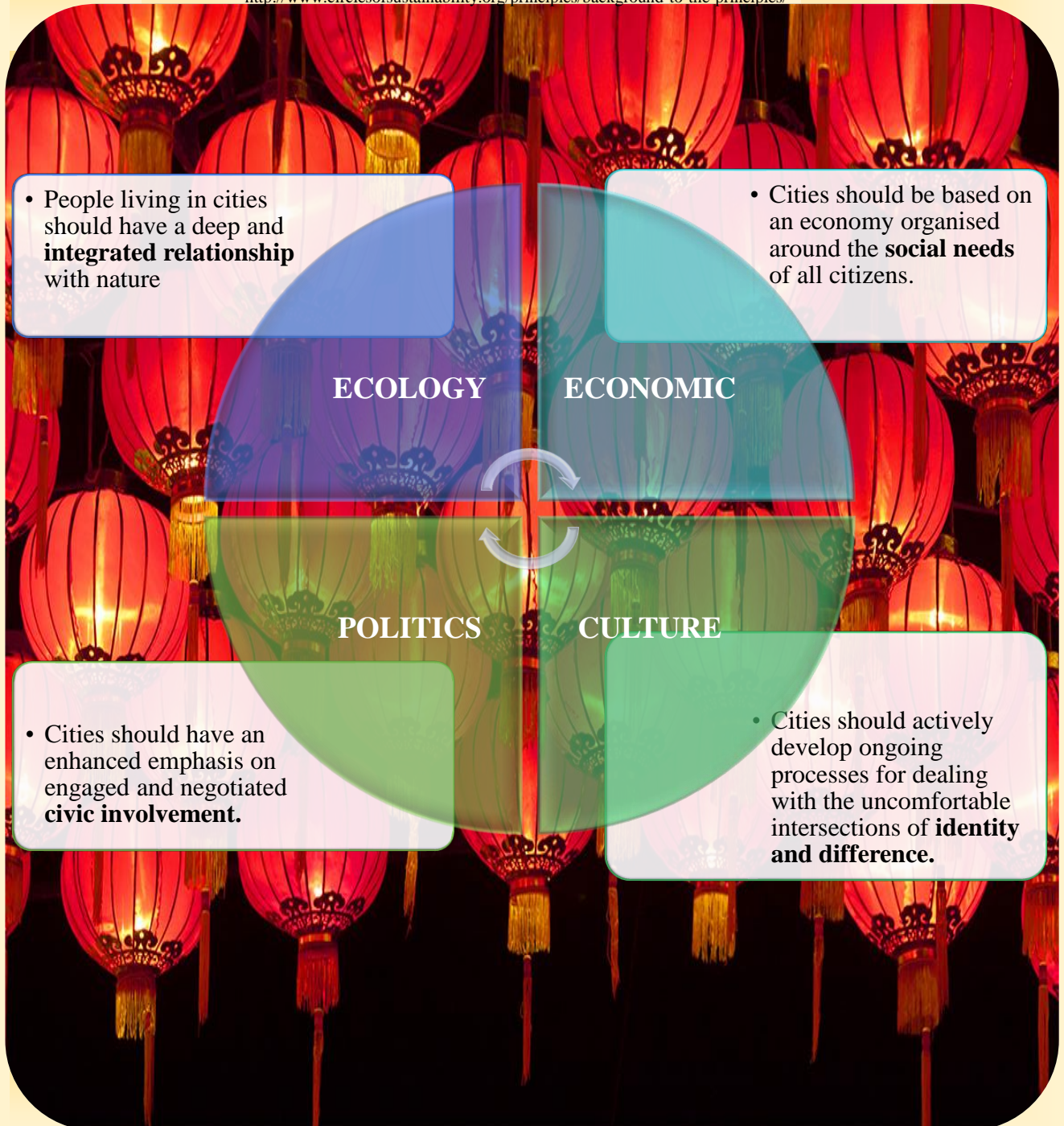
United Nations Global Compact-Cities Programme, adopted **Four Circles of Sustainability** to provide a figurative image of the overall sustainability of a city, as well as to illustrate its strengths and weaknesses.

The **four domains** are-economic, ecology, politics and culture

The UN added '**Culture: Fourth Pillar of Sustainable Development**', as the three triple-bottom-line dimensions (economic, environmental and social) did not reflect the complexity of contemporary multicultural society.

FOUR CIRCLES OF SUSTAINABILITY LINKED TO PEOPLE

<http://www.circlesofsustainability.org/principles/background-to-the-principles/>



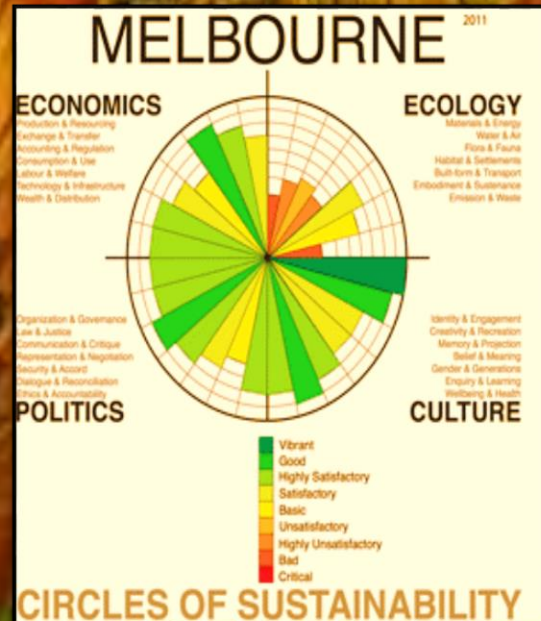
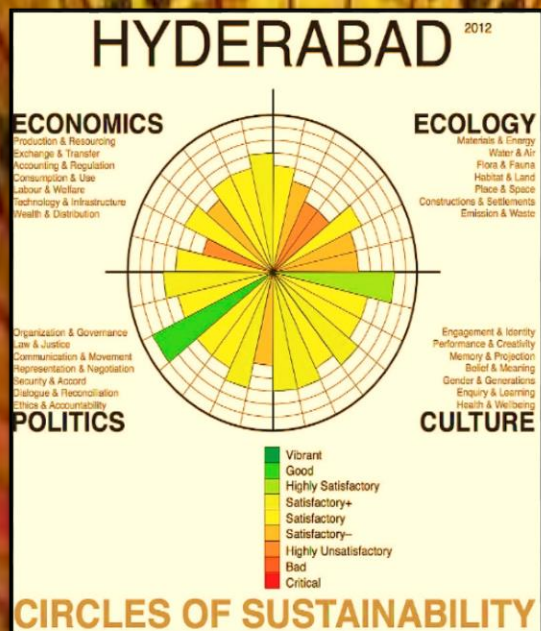
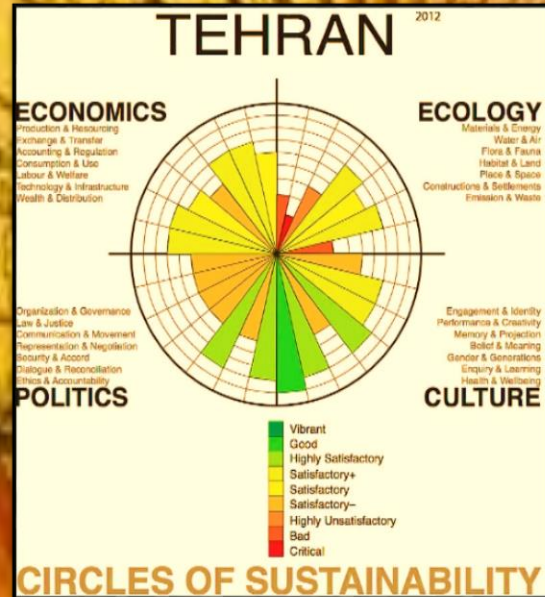
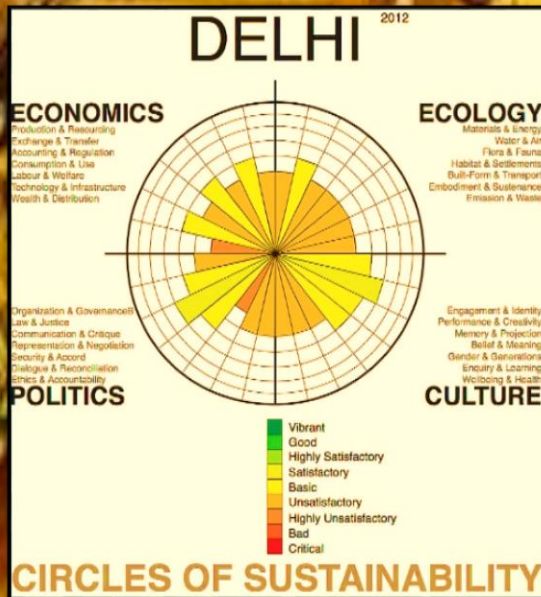
Background photo: http://monopool.asia/images/why-us/10_language_culture.jpg

ACTIVITIES: FOUR CIRCLES OF SUSTAINABILITY

Compare two Indian cities-Delhi and Hyderabad

Compare Melbourne with Tehran

Which city would you prefer to live in, and why?



Graphs /background

https://en.wikipedia.org/wiki/Circles_of_Sustainability#/media/File:Delhi_Profile_Level_1_2012.jpg

https://en.wikipedia.org/wiki/Circles_of_Sustainability#/media/File:Hyderabad_Urban_Profile_Level_1_2012.jpg

https://en.wikipedia.org/wiki/Circles_of_Sustainability#/media/File:Tehran_Profile_Level_1_2012.jpg

<http://www.circlesofsustainability.org/wp-content/uploads/2014/10/Profile-Melbourne-2011.gif>

<http://www.umbrellahistory.net/images/umbrellahistory/chinese-umbrella-5-small.jpg>

LIVEABILITY IN ASIAN CITIES



Robert Solow once said: *“Liveability is not a middle-class luxury, it is an economic imperative.”*

While urbanisation has contributed to economic growth in Asia, its impact on liveability is more complex. As Asian cities have grown they have faced challenges arising from the pressure of their populations on basic services, infrastructure, land, housing, and the environment. This has helped to give rise to the term ‘**messy urbanisation**’, characterised by slums and sprawl, and high levels of ambient outdoor air pollution.

The urbanisation process in Asian countries, has positive productivity benefits that are associated with urban size, but also negative congestion forces. How successfully Asian cities manage these forces will help to determine the quality of life of the region’s urban residents, but also the additional 1.25 billion people anticipated to join urban Asia by 2050. <https://www.weforum.org/agenda/2015/10/how-liveable-are-south-asias-cities/>

Global Liveability Ranking, ranks 140 cities for their urban quality of life based on assessments of stability, healthcare, culture and environment, education and infrastructure.

In 2017 **Singapore** surpassed **Hong Kong** on world’s most liveable city list for first time. It was 35th out of 140 cities. Singapore’s jump up the rankings is attributed to its impressive improvements in educational attainment. In Asia, **Singapore** was ranked third, after **Tokyo** and **Osaka**, respectively.

What does Liveability mean?

- Mobility (transportation and infrastructure), safety, affordability and meeting community needs
- Employment opportunities, cultural activities, adequate infrastructures (transport, water and sewerage systems, and energy/electricity)
- Basic human rights (access to adequate housing, schools and health facilities)
- Sustainability environment
- Good governance
- Lack of poverty, women’s rights, and participation of indigenous people and minority ethnic groups

Sources:

<https://www.eiu.com/graphics/assets/images/public/Global-Liveability-Ranking-2016/Global-Liveability-Ranking-2016-Landing-Page.jpg>

<https://www.todayonline.com/singapore/singapore-surpasses-hong-kong-asias-third-most-liveable-city-economist-report>

<https://medium.com/cityoftomorrow/how-asian-cities-companies-and-individuals-can-work-together-to-create-cities-of-tomorrow-d473c71aa5cb>

Report 2017 <http://www.smh.com.au/cqstatic/gxx114/LiveabilityReport2017.pdf>

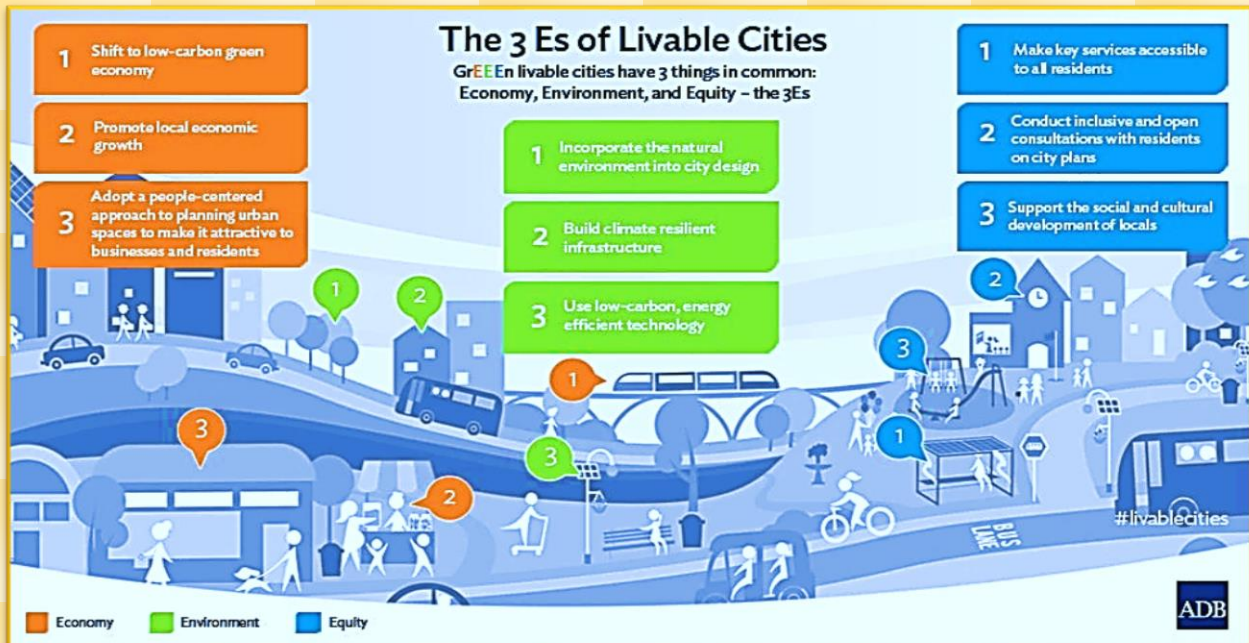
How Asian cities ranked

City	Country	Rank	Overall Rating
Melbourne	Australia	1	97.5
Adelaide	Australia	5	96.6
Perth	Australia	7	95.9
Auckland	New Zealand	8	95.7
Sydney	Australia	11	94.9
Tokyo	Japan	13	94.7
Osaka	Japan	14	94.5
Brisbane	Australia	16	94.2
Wellington	New Zealand	20	93.6
Singapore	Singapore	35	90.4
Hong Kong	Hong Kong	46	88.8
Seoul	South Korea	58	84.9
Taipei	Taiwan	60	83.9
Nouméa	New Caledonia	67	78.9
Kuala Lumpur	Malaysia	70	75.2
Suzhou	China	72	75.0
Beijing	China	73	74.9
Tianjin	China	77	74.0
Shanghai	China	81	72.6
Shenzhen	China	84	71.5
Dalian	China	88	69.7
Guangzhou	China	92	68.2
Qingdao	China	97	66.1
Bandar Seri Begawan	Brunei	100	65.1
Bangkok	Thailand	102	63.5
Manila	Philippines	104	62.0
New Delhi	India	110	58.9
Mumbai	India	115	56.9
Jakarta	Indonesia	118	54.4
Hanoi	Vietnam	119	54.2
Ho Chi Minh City	Vietnam	122	52.7
Phnom Penh	Cambodia	123	51.4
Kathmandu	Nepal	124	51.0
Colombo	Sri Lanka	124	51.0
Karachi	Pakistan	134	40.9
Port Moresby	PNG	136	39.6
Dhaka	Bangladesh	137	38.7

LIVEABLE, GREEN AND SUSTAINABLE ASIAN CITIES

Liveable Cities is the Asian Development Bank's (ADB) approach to urban development. ADB supports the transformation of developing cities in the Asia and Pacific region into safe, sustainable urban centres. The ADB's **Liveable Cities Plan 2012-2020** promotes the growth of **Competitive, Inclusive, and Green Cities** to improve the performance of Asian cities on the Economic, Equity, and Environment (3Es) fronts.

Image: <https://pbs.twimg.com/media/CdtiiiBWEAAIsx-.j>



WHAT WILL A GREEN, LIVEABLE, SUSTAINABLE ASIAN CITY LOOK LIKE?

Each city is unique but a consensus is forming on some of the key elements. They include:

- **Low levels of environmental and climate change impact:** Developing cities that recycle, manage waste in innovative ways and use renewable energy resources.
- **Inclusive development and engaged residents:** City planning that includes all residents, including the poor and disadvantaged, and mechanisms for people to affect the decisions being made about how their city is developed and managed.
- **Resilience to disasters and other shocks:** City planning and development that anticipates the impact of natural hazards and helps keep people safe and infrastructure intact.
- **Cultural and historic preservation:** The recognition of the value of a city's cultural heritage and history, and city planning that incorporates these elements.
- **Green space and walkability:** Moving away from developing cities around roads and automobile traffic and creating vehicle free areas.
- **Creating new destinations; rejuvenating existing spaces; using design as a transformative tool; and encouraging collaboration.**



<https://www.adb.org/green-cities/index.html>

INQUIRY QUESTIONS

- What is the difference between the rate of **urbanisation** and **urban growth** in Asian cities? Provide statistics in your answer.

- Discuss how urbanisation has **impacted** on Asian cities-economic, social and environmental. Draw your answer as an e-mind map.

- How can **technology** improve urban living in Asian cities? Describe ten examples.

- Discuss how urbanisation fuels **environmental change**? E.g. loss of forests, grasslands and agricultural land. Present as a photo story

- Describe how urban dwellers in Asia are affected by **climate change** (environmental, social and economic) and how they could either adapt or move. Present as an oral report.

- What is the **Green City Index (GCI)**? What makes a city green? Why being green matters? What is the green criteria? Compare the GCI with two Asian cities. Discuss how these two Asian cities have become greener.

- Explain the difference between a **megacity** and a **conurbation**. Provide Asian examples.

- Explain the **drivers** of urbanisation in Asian countries in greater detail (e.g. Natural growth, internal and international migration, reclassification, climate change, disasters, and conflicts).

- Asian cities are referred to as '**engines of growth**'. In pairs explain this statement.

- Urbanisation in Asian countries has led to a decrease in **poverty** and growth in the emerging **middle class**. What does this mean? Include statistics or graphs in your answer.

- Describe how **lifestyle** changes are associated with urbanisation in Asian countries.

- In groups, investigate five **sustainable** urban programs in Asian cities. Discuss their effectiveness. Present investigation using ICT.

