

Rapid Urbanization: Challenges and Opportunities for Planning in Asian Cities

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Outline of Presentation

The Global Perspective

The Indonesia Case

Jakarta's Rapid Urbanization Epochs

What Is Driving the Current Epoch

Challenges/Responses to Rapid Urbanization

Smart City/Green City in Asia

Planning Responses

Characteristics of Rapid Urbanization

Population Growth

Spatial Expansion of the Built Environment

Ongoing Infrastructure Developments





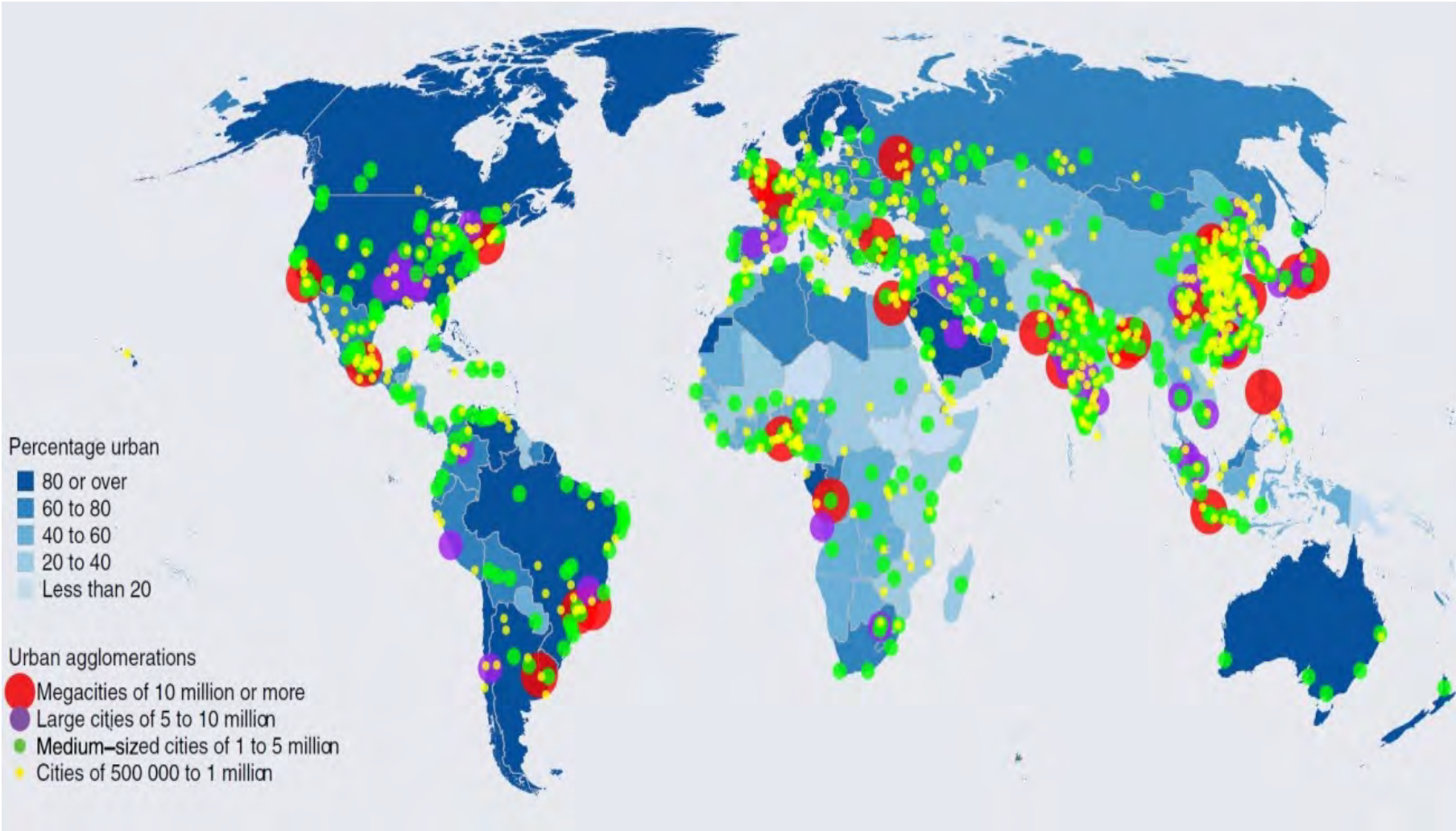
Global Rapid Urbanization

1.5 million people are added to the
global urban population **every week**

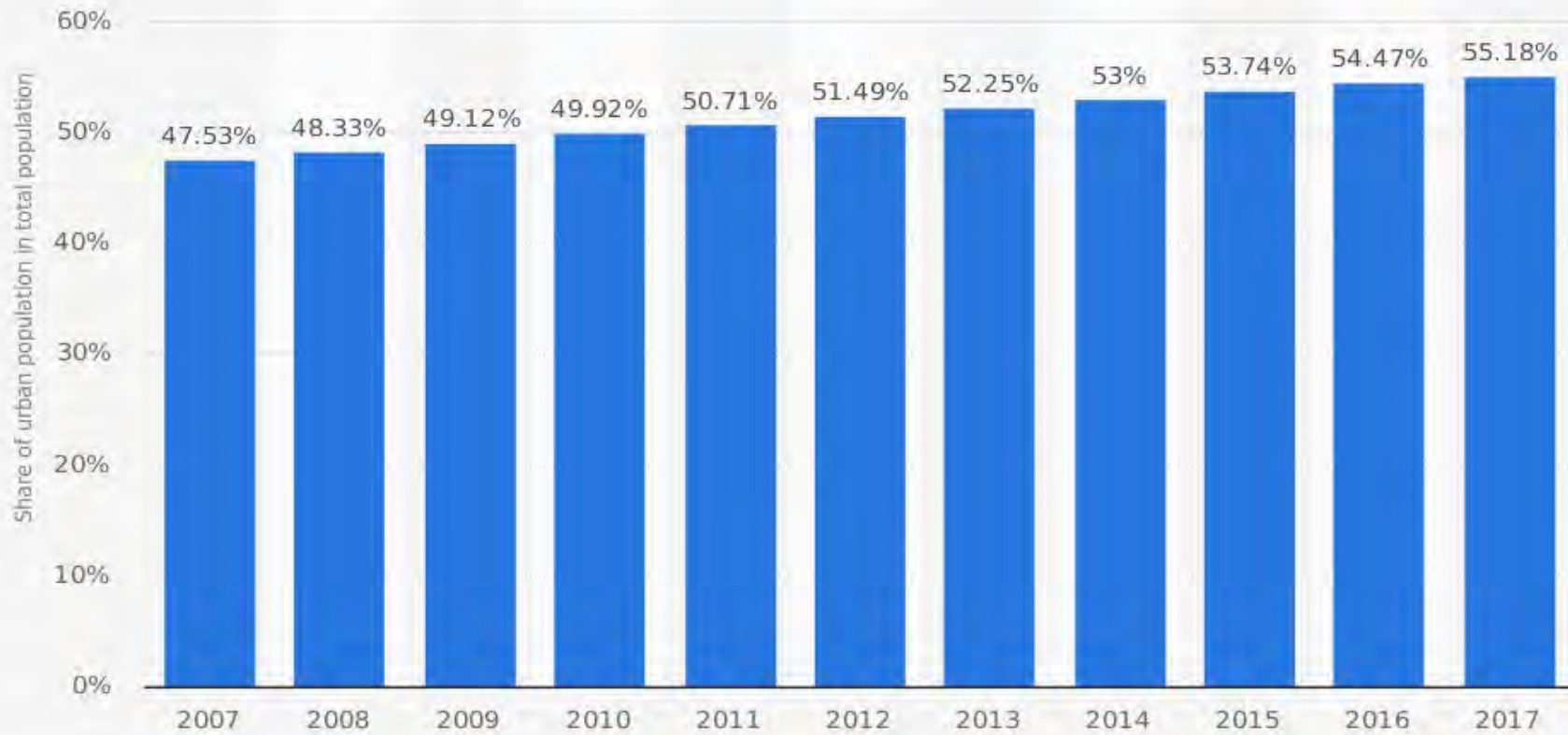


Source: PwC analysis (United Nations Population Division (2014))

Urban Agglomerations, 500,000 or more



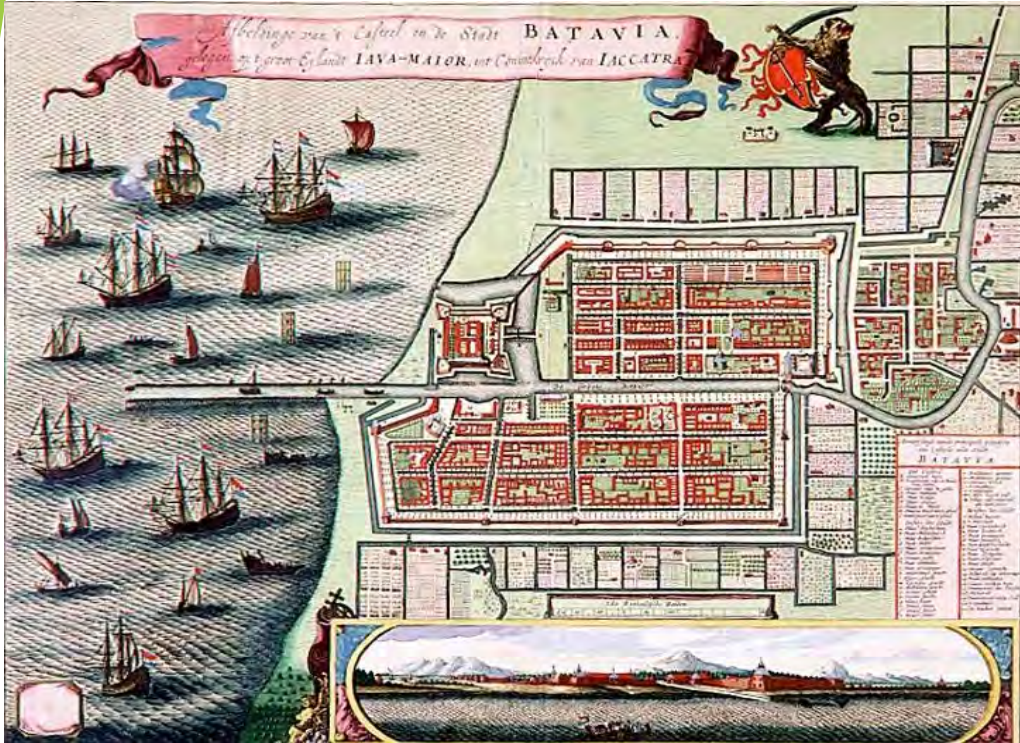
Indonesia: Urbanization from 2007 to 2017



Source
World Bank
© Statista 2018

Additional Information:
Indonesia; World Bank

Watercity to Megacity 1619 - 2019



Jakarta region grew in
the 20th century from
about 150,000 in 1900
to about 30 million in
2014

Table 1. Population Metropolitan Region of Jakarta 1980-2010 (in millions)

Area	1980	1990	2000	2010
Core	6.50	8.26	8.39	9.60
Jakarta	6.50	8.26	8.39	9.60
Inner peripheries	n.a	n.a	4.93	7.22
City of Tangerang	n.a	n.a	1.33	1.80
City of South Tangerang	n.a	n.a	0.80	1.29
City of Depok	n.a	n.a	1.14	1.75
City of Bekasi	n.a	n.a	1.66	2.38
Outer peripheries	5.41	8.88	7.31	11.20
City of Bogor	0.25	0.27	0.75	0.95
Tangerang Regency	1.53	2.77	2.02	2.84
Bekasi Regency	1.14	2.10	1.62	2.63
Bogor Regency	2.49	3.74	2.92	4.78
Megacity of Jakarta	11.91	17.14	20.63	28.02

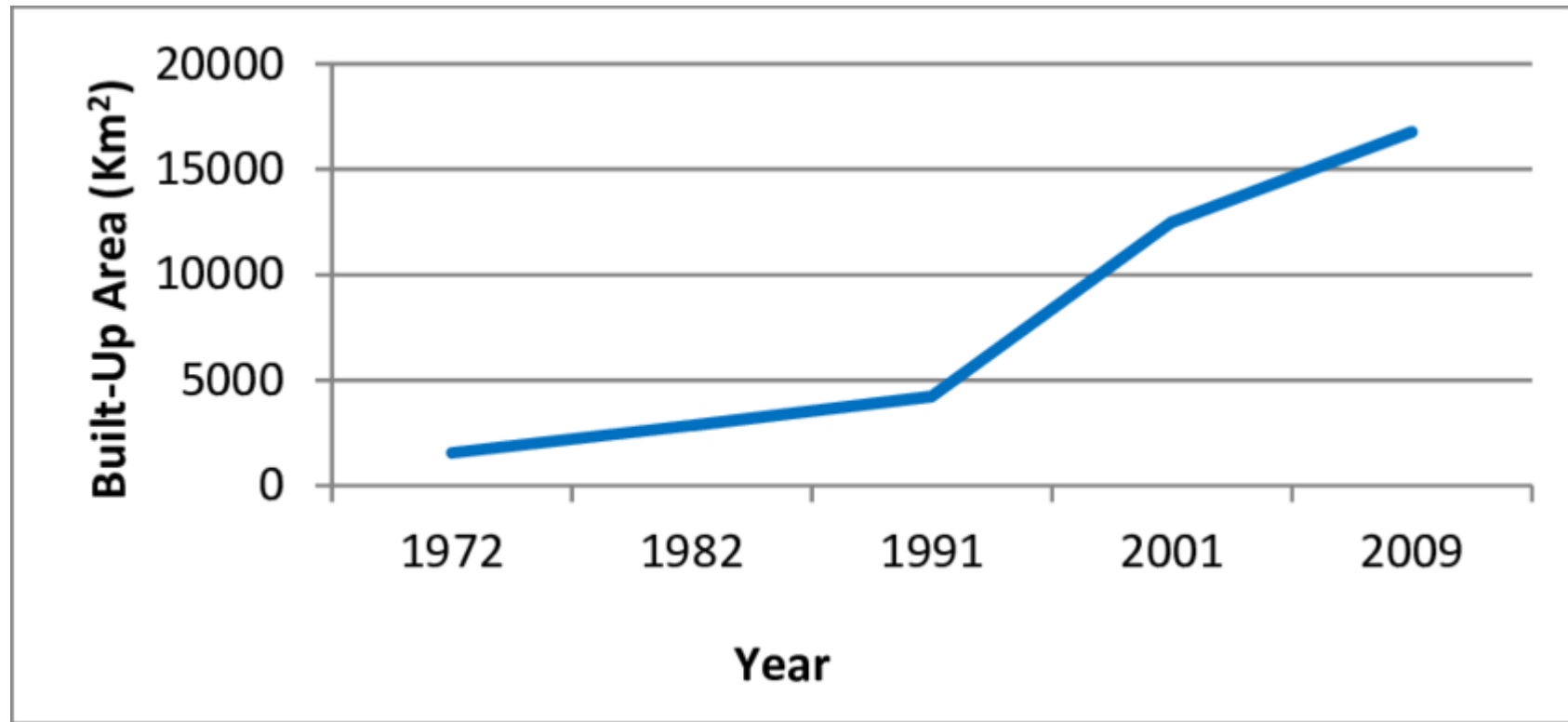
Peripheral Expansion in Indonesian Cities

Population growth is primarily in **periphery**, not in core city.

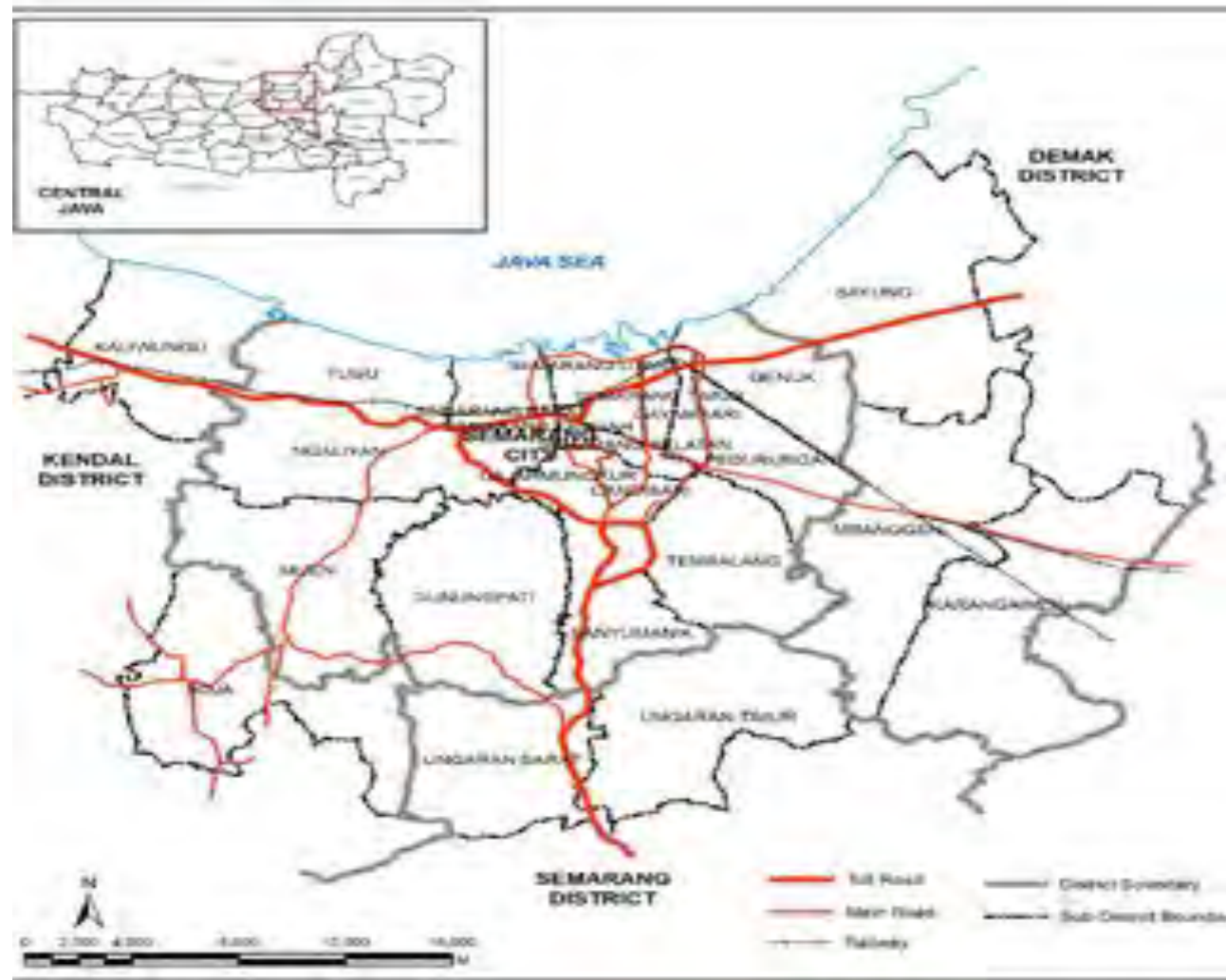
Metro name	2005			CAGR 1995 - 2005		
	Core	Periphery	Metro	Core	Periphery	Metro
Jakarta	8,820,603	12,799,559	21,620,162	0.44%	2.47%	1.56%
Surabaya	2,611,506	5,974,090	8,585,596	0.33%	1.46%	1.10%
Bandung	2,270,969	5,079,430	7,350,399	0.66%	3.13%	2.26%
Semarang	1,446,533	4,335,017	5,781,550	0.97%	1.15%	1.10%
Medan	2,029,797	1,812,196	3,841,993	1.07%	0.10%	0.59%
Palembang	1,369,239	1,122,731	2,491,970	1.20%	-2.67%	-0.85%
Makassar	1,194,583	1,106,362	2,300,945	1.58%	1.58%	1.58%
Denpasar	574,610	1,208,004	1,782,614	3.97%	1.07%	1.87%

Source: Indonesia Bureau of Statistics (BPS)

Built up Area of Semarang 1972-2009



Toll Roads and Expanded Urban Area



Major Epochs of Rapid Urbanization in Jakarta

1950s - 1960s - Rural Migration to the new capital; insufficient infrastructure

1980s - 1990s - Massive built environment expansion, fueled by business expansion, speculative development and deregulation

2010 - Present -- Renewed Speculative Development and Spatial expansion

Characteristics of Current Growth Epoch in Asian Cities

Aggressive housing construction in large-scale and increasing high-rise structures

Massive new malls and “town centers” especially in peripheral locations


Increased investment in infrastructure, including public transit

Even greater increase in car, motorcycle and truck traffic

Continuing infrastructure deficits affecting millions of inhabitants

Serious environmental deficits continue as reflected in flooding

Does the New Urban Form
of Indonesian Cities Offer a
Way to Accommodate
Sustainable Rapid Growth?



Challenges and responses to rapid growth in the 1950s and 1960s epoch in Indonesia

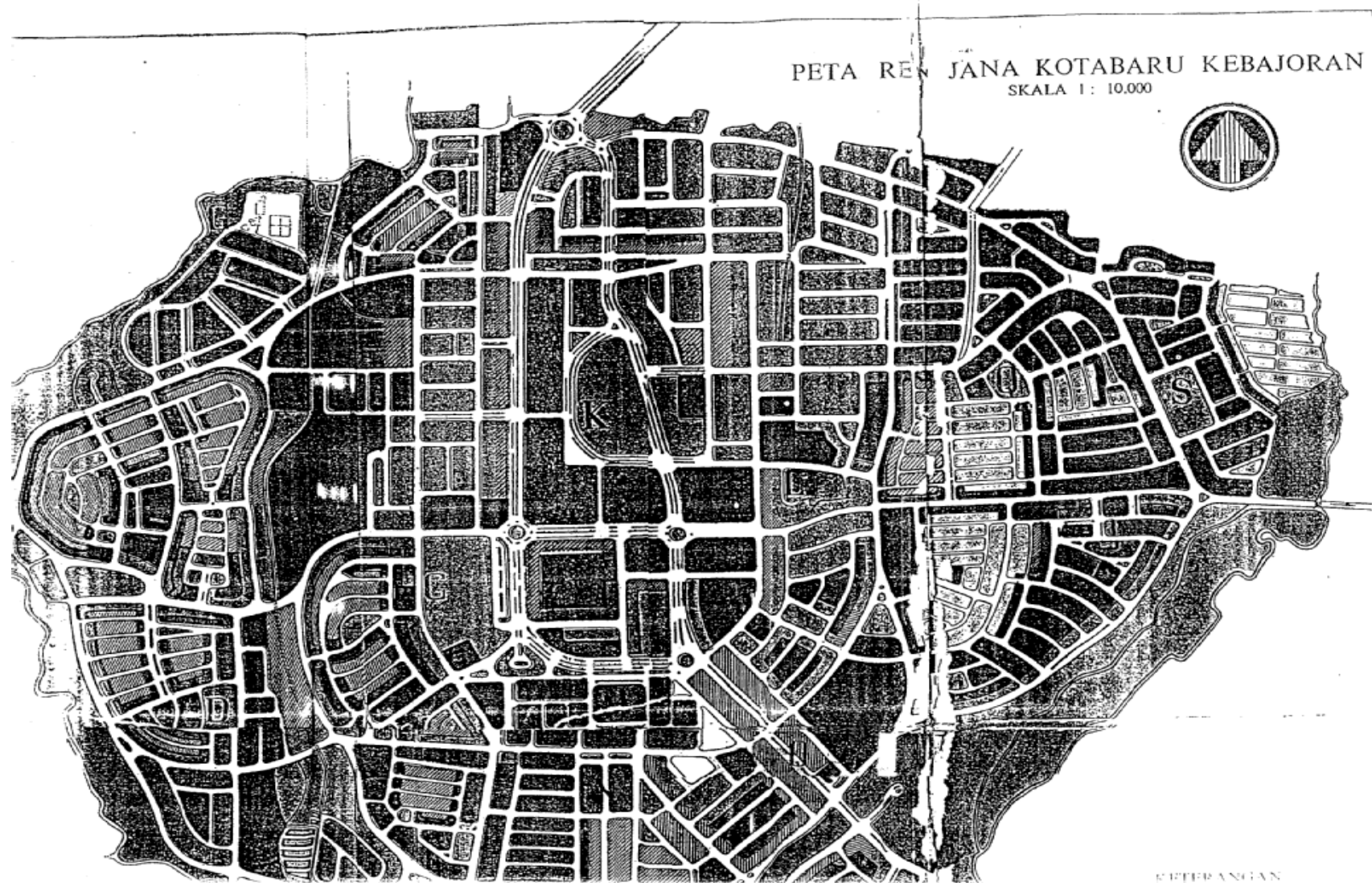
Sukarno - Modernist Planner



Hotel Indonesia - Modernism



Kebayoran Baru

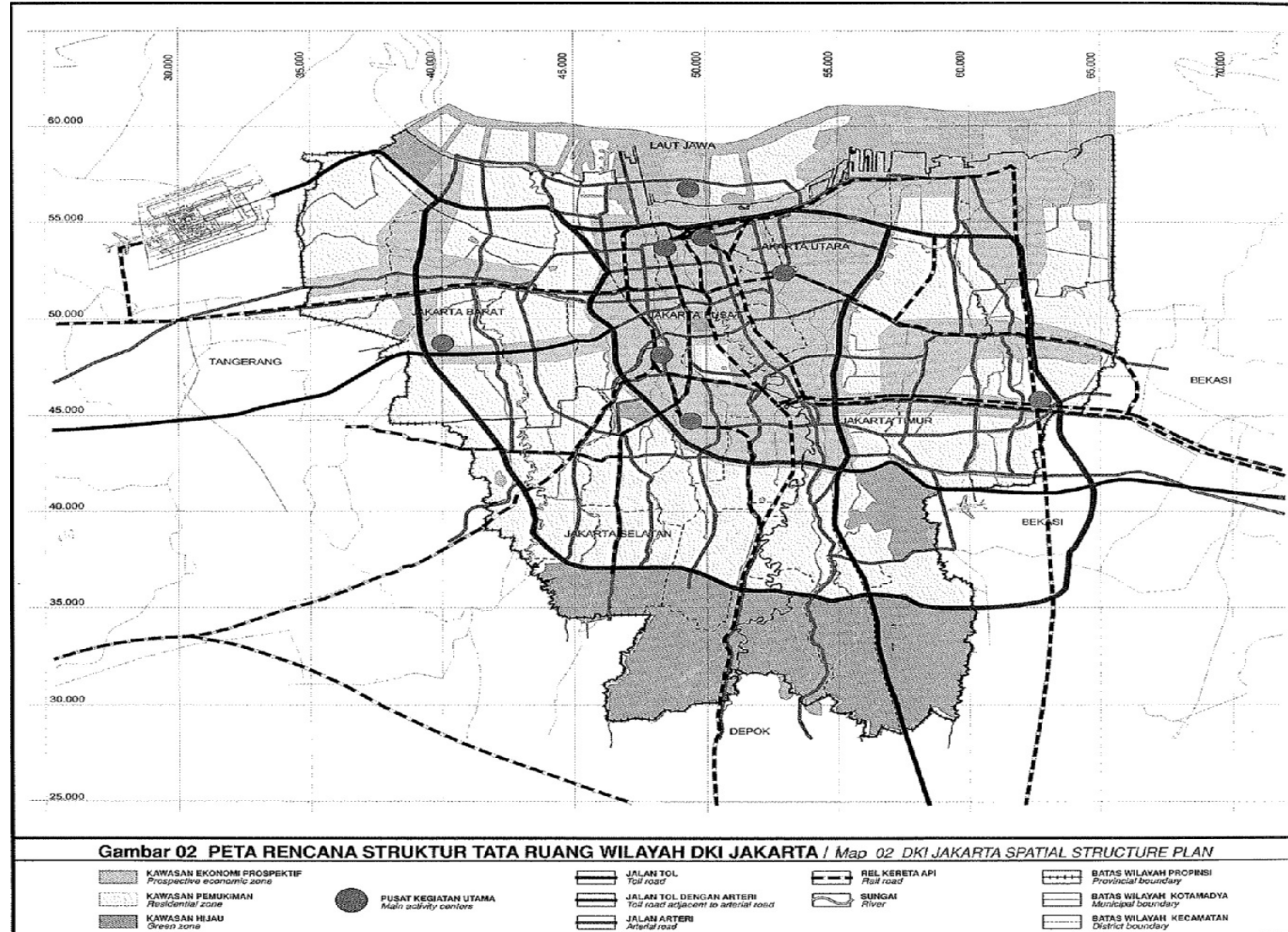




New Order “Family” Planning



Automobile Metropolis



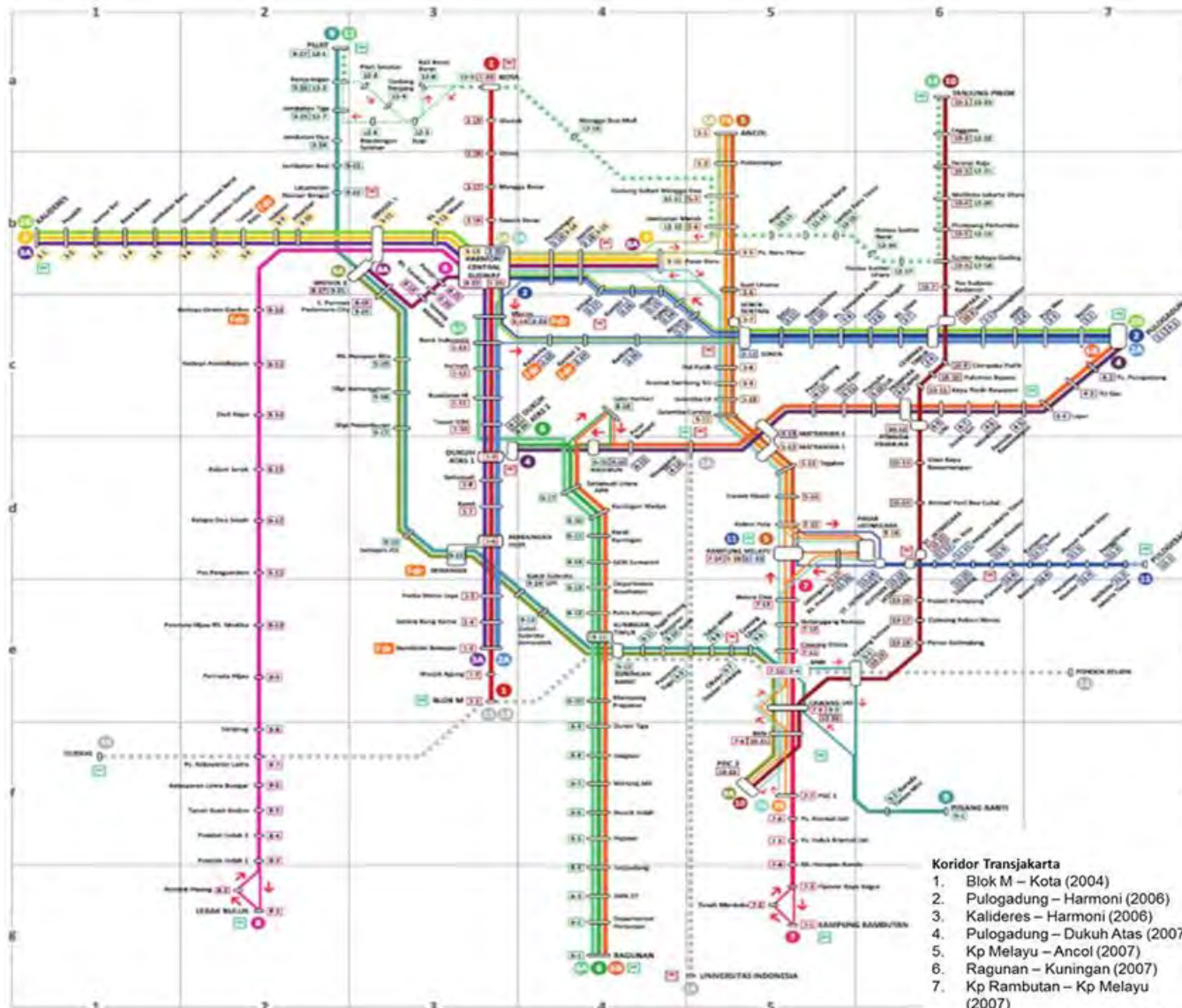
Toll Roads and the New Order



Suburban Enclaves - Bumi Spong Damai



Mass Transit - Busway - 2004



Koridor Transjakarta

1. Blok M – Kota (2004)
2. Pulogadung – Harmoni (2006)
3. Kalideres – Harmoni (2006)
4. Pulogadung – Dukuh Atas (2007)
5. Kp Melayu – Ancol (2007)
6. Ragunan – Kuningan (2007)
7. Kp Rambutan – Kp Melayu (2007)
8. Lebak Bulus – Harmoni (2009)
9. Pinang Ranti – Pluit (2011)
10. Cililitan – Tanjung Priok (2011)
11. Pulogebang – Kp Melayu (2012)

Busway - Mass Transit





Spatial Plan and Politics

Fauzi Bowo, Governor, 2007-2012



HIGHLIGHTS OF FAUZI BOWO'S ACHIEVEMENTS

- Increasing the number of TransJakarta bus passengers in Corridors 1, 3, 5 and 6 by around 18 percent from 148,097 after preparing the exclusive lanes in July 2010.
- Major inundations eliminated in 16 locations out of 78 locations.
- Reducing flooding in main streets in 33 locations of 106 in 2010.
- Reducing the use of groundwater from 20 million cubic meters to 8 million cubic meters as of August 2010 by imposing a gubernatorial decree on groundwater tax.

SOURCE: JAKARTA ADMINISTRATION

Modeling sustainable and transit-oriented world class city

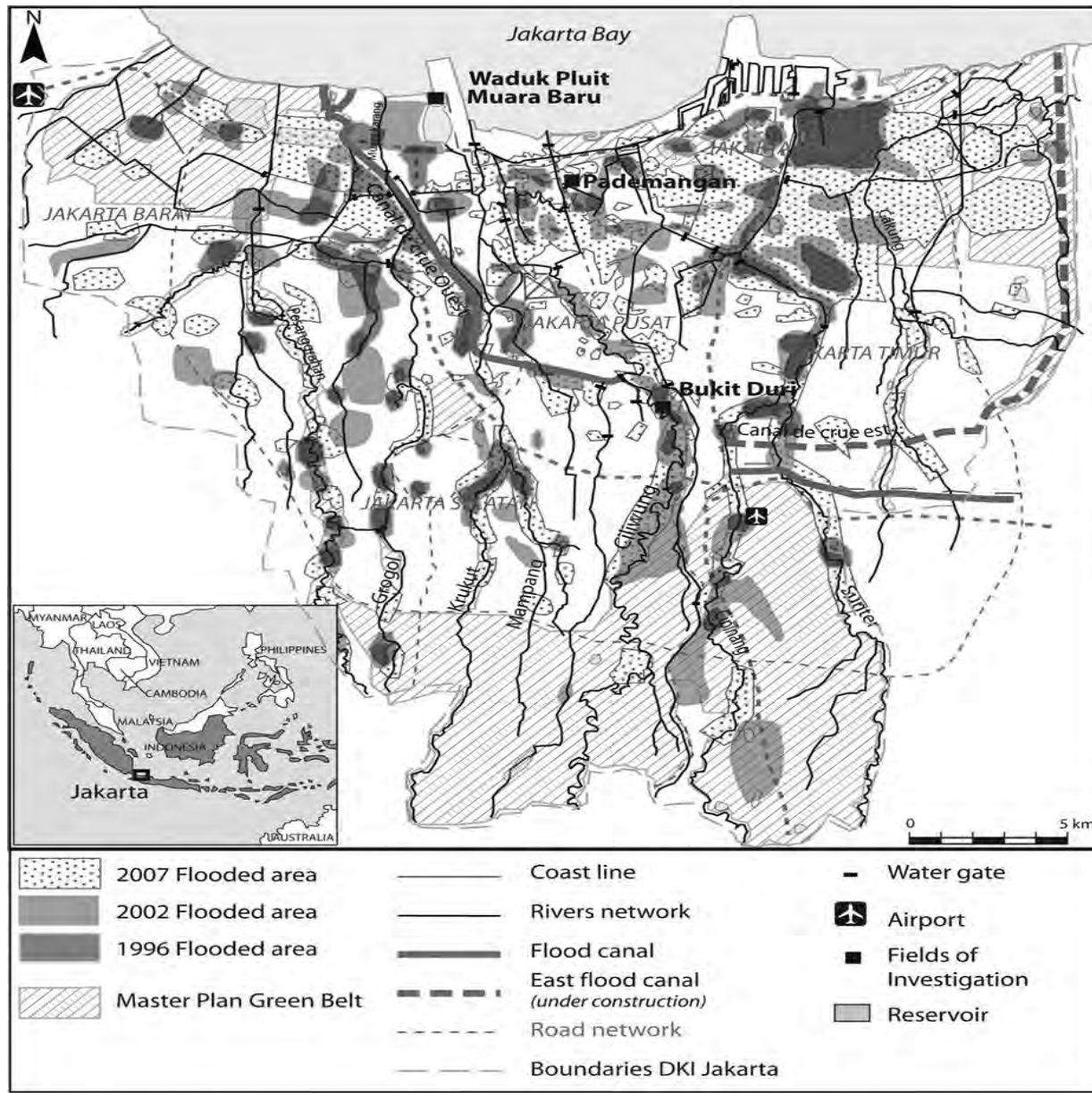


What were the key challenges that confronted the Indonesian city?

2007 Flood - The Great One in Jakarta



1996-2007 Flood Impact Areas



Sources: *Tempo* (2007); Departemen Permukiman dan Prasarana Wilayah, 25 February 2002; *Kompas Journal*, 10 February 2007; Dinas PU DKI, 9 February 2007; Ciliwung Cisadane Project, 1996

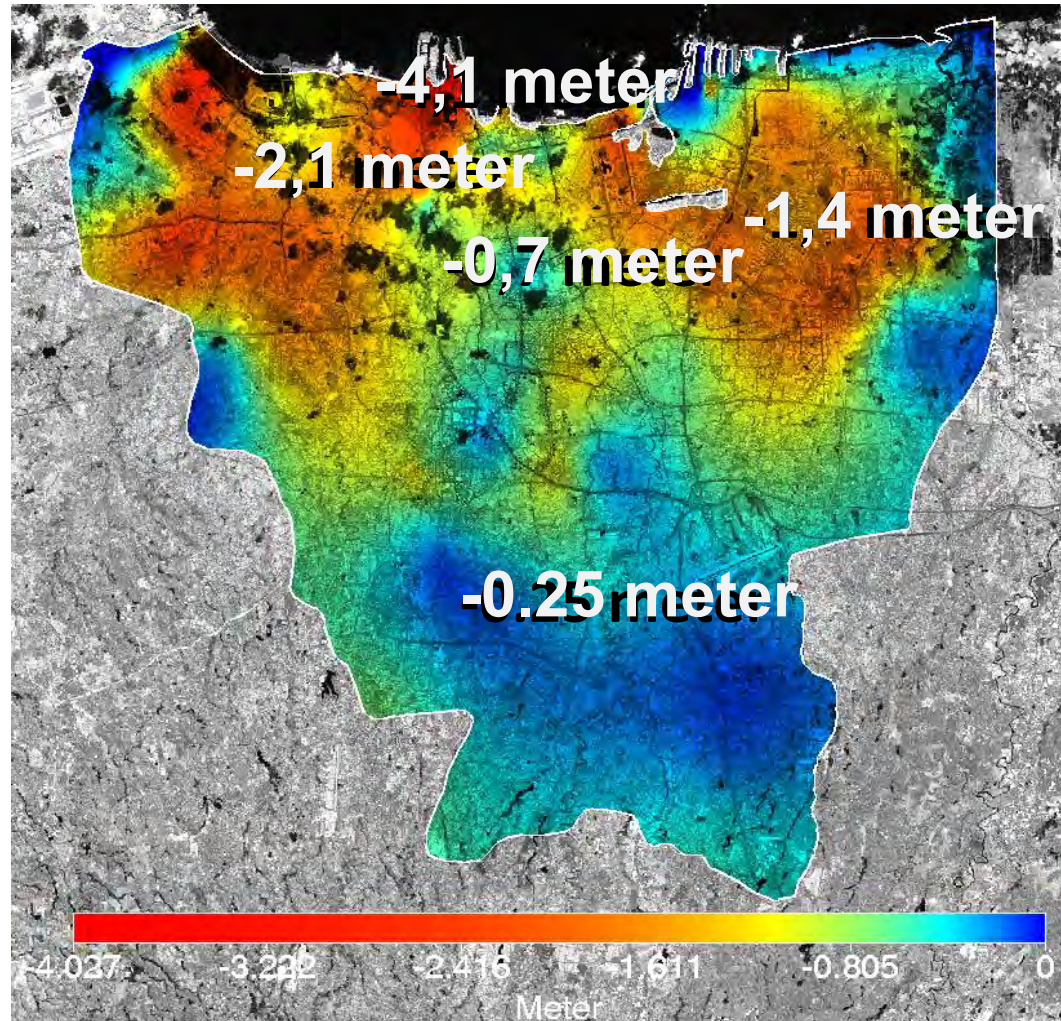
Land Subsidence Map - Jakarta

Subsidence map of Jakarta 1974-2010:

Total subsidence -25 up to -400 cm ; rate -0.5 up to -17 cm/year

First recorded of leveling data were in 1974. Base on acumulated data, interpolation and extrapolation we can make subsidence map of Jakarta from year 1974 up to 2010.

Base on latest analysis of piezometric surface data found that initial condition of subsidence were probably on 1965. In this case in the near future we will try to modeled subsidence map of Jakarta for year 1965 up to 2011



Recent Flooding in Makassar



Flood in Baleendah District, Bandung



Flooding in Semarang



Flooding of Phnom Penh



President Jokowi as Governor

“The Ciliwung River must be restored to its original size and purpose....”



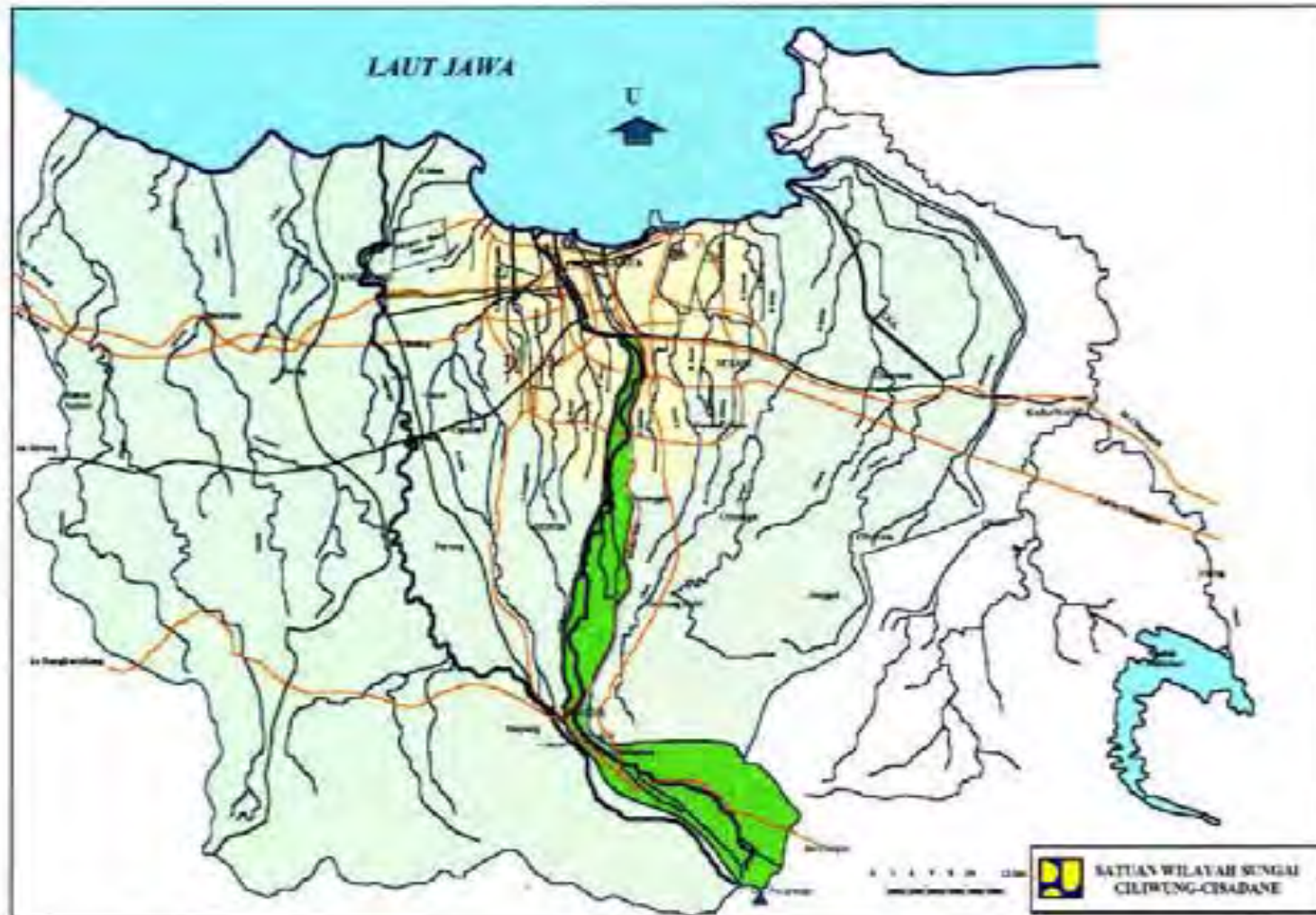
Why is water so important for Jakarta?

- ▶ Historically of the city connected to its natural water ways
- ▶ Growth of city has swept over the ecological structure of the area, including the entire river system
- ▶ Acceleration of flooding, increased land subsidence, inadequate clean water, inadequate management of waste water, and environmental destruction
- ▶ Severely limited recharge of aquifer and surface water sources despite extensive rain as urban moves inland
- ▶ Waterfront has become the new development zone through land reclamation

Pantai Mutiara - Pluit



Jakarta Watershed - 13 Rivers



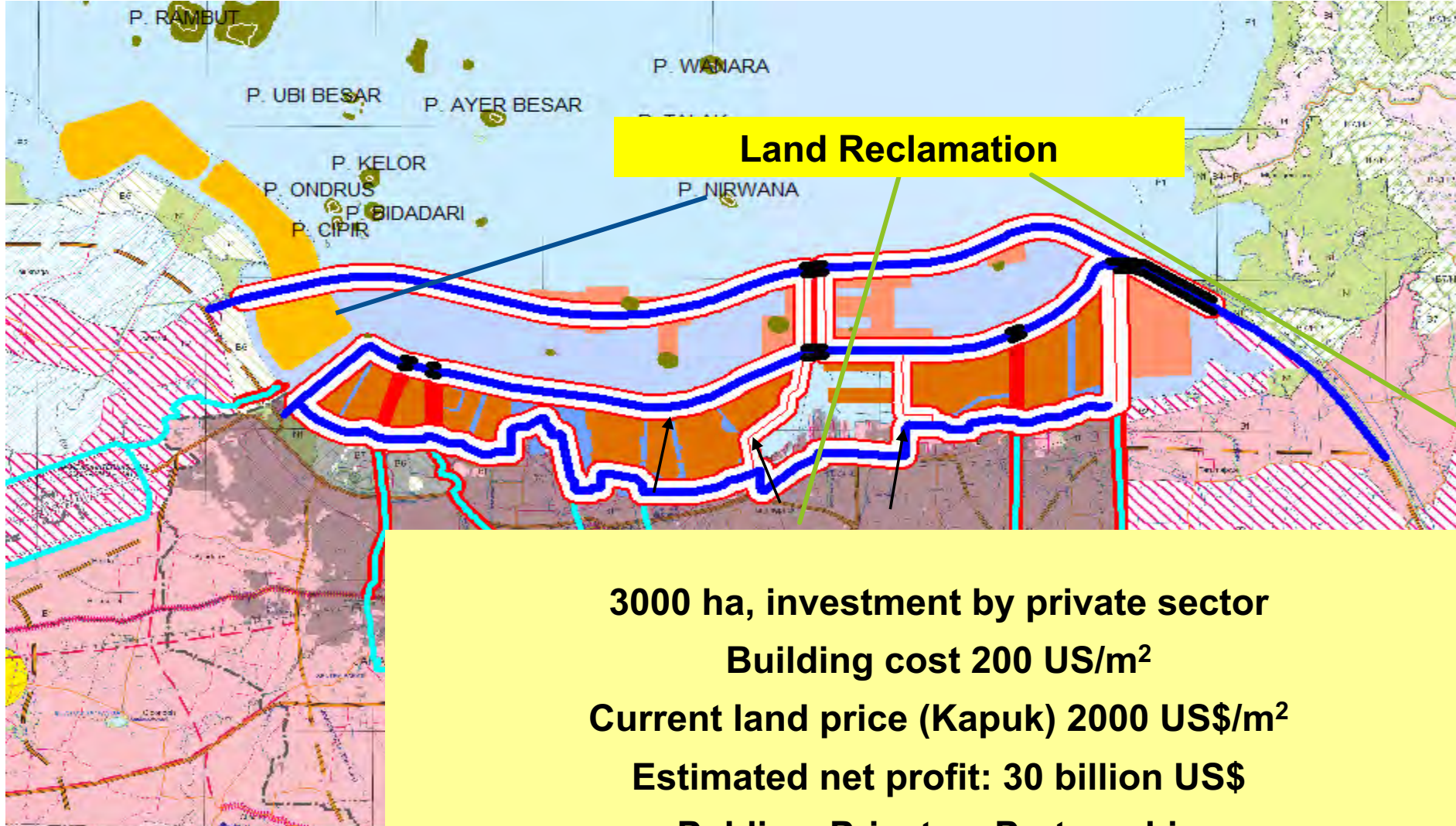
Jokowi Plan to Boost Green Space in Jakarta



Pluit Reservoir Revitalization Project



Land Reclamation



3000 ha, investment by private sector

Building cost 200 US/m²

Current land price (Kapuk) 2000 US\$/m²

Estimated net profit: 30 billion US\$

Public – Private – Partnership

Required for Safety and Transportation

Land Reclamation and Coastal Defense System - Jakarta



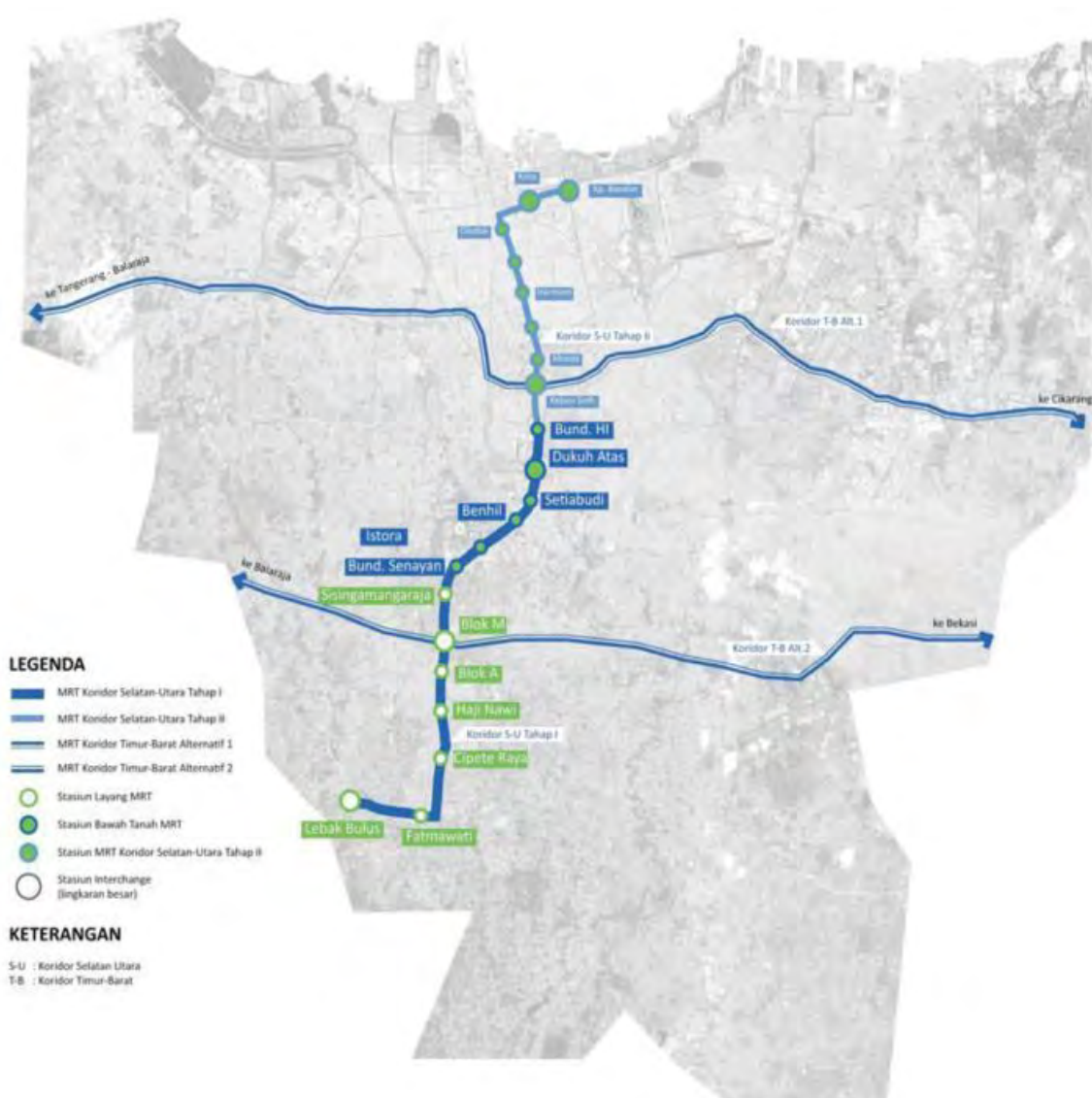
Traffic Management Challenge: The Daily Commute



Traffic Phnom Penh Style



MRT Plan from 1990s Becomes a Reality



Jakarta MRT - Opening March 2019



Riding the MRT in Jakarta





Light Rail System Unveiled



Jakarta Light Rail



Jakarta-Bandung High Speed Rail

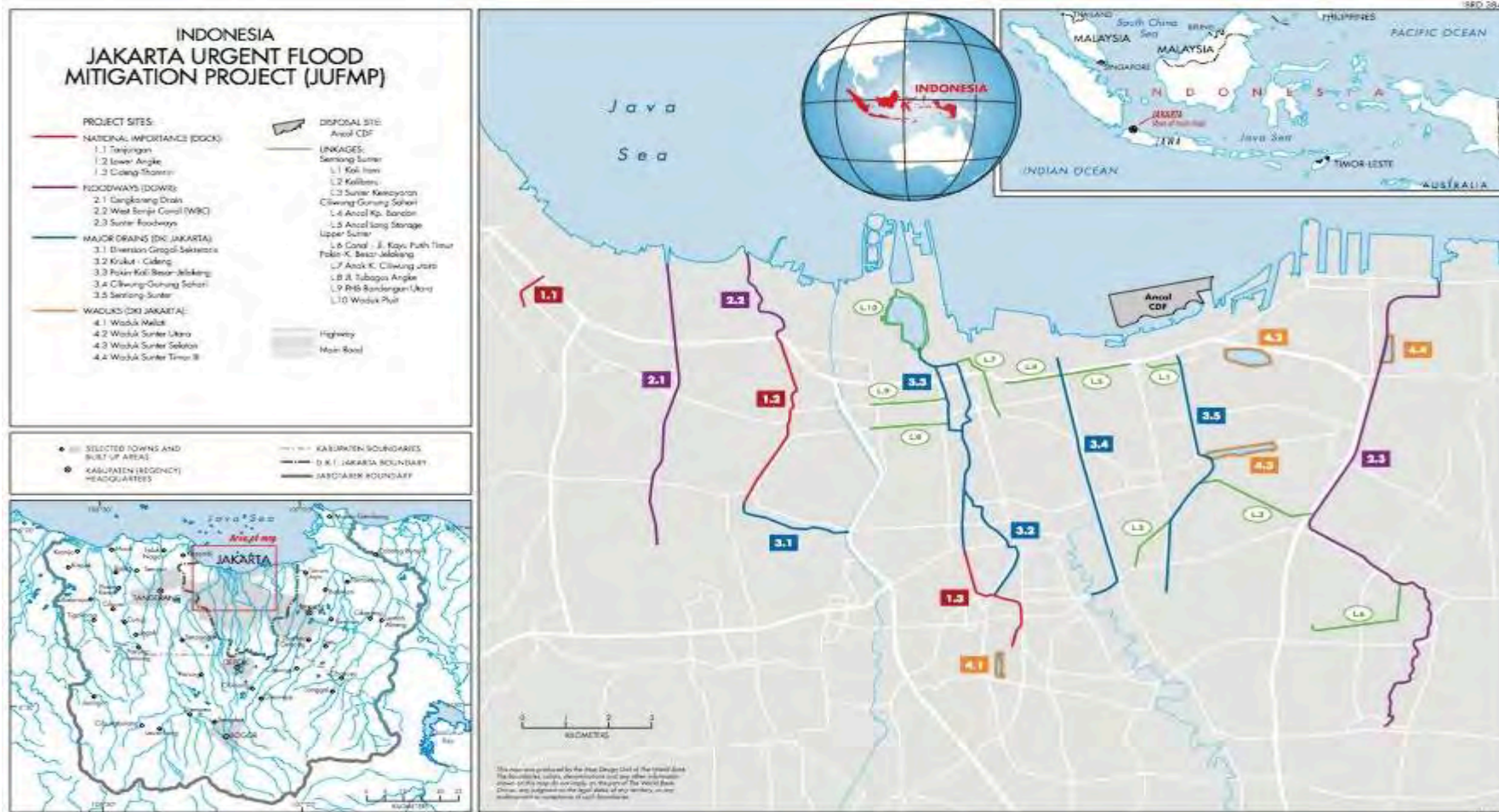


JAVA HIGH SPEED RAIL



Coping with Flooding

Jakarta Urgent Flood Project



Jakarta Urgent Flood Mitigation



Kali Semarang Polder



Ciliwung as it passes Bukit Duri



Manggarai along the Ciliwung



Central Java has cleared 4000 hectares of slums since 2014 (57% of total), especially along its waterways - By 2024 no slums

Jakarta Post

April 1, 2019

Citarum River Pollution



Jakarta's Emerging Peri-Urban Centers

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the slide, creating a modern, layered effect. The text is positioned on the left side of the slide, set against a plain white background.

Fatmawati City Center



South Quarter - A Peri-Urban Center



Boskalis - Losari Beach



Diamond Island - Phnom Penh





DIAMOND ISLAND, CAMBODIA

25 MAY 2017

Where Has Planning Taken Jakarta?

- ▶ Has shaped an auto dependent megaurban region
- ▶ Paved and built over the basic ecological footprint
- ▶ Continued densities of commercial and residential leave opportunity for transit
- ▶ Recognition of waterfront as an investment and as a protector
- ▶ Inner city increasingly affluent, the edges are affluent and mix of poor and middle class
- ▶ Poor water/sanitation management threatens to overtake traffic management as the greatest challenge

Rise of the Smart City Movement

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a dynamic, layered effect. The overall aesthetic is clean and modern, typical of a professional presentation slide.



**JAKARTA
SMART CITY**

Bandung Smart City



SMART CITY - MAKASSAR





SEMARANG **SMART CITY**

Semarang SMART CITY Objectives





Surabaya's Architect-Mayor Supports Heritage



The banner features a stylized city skyline at the bottom with various smart city icons floating above. The icons include a factory, a medical cross, a water tap, a laptop, a shield, a lightbulb, a wind turbine, a recycling symbol, a person walking, a camera, an atom symbol, a server rack, and a Wi-Fi symbol. On the right side, there is a logo for the 'INDONESIA INTERNATIONAL SMART CITY EXPO & FORUM 2019' and text detailing the event's dates and location.

**INDONESIA
INTERNATIONAL
SMART CITY
EXPO &
FORUM
2019**

**The 3rd Indonesia International
Smart City Expo & Forum**

17 - 19 July 2019
Jakarta Convention Center, Indonesia

Transport in the SMART CITY



SMART TRANSPORT- PETE-PETE



BRT in Semarang

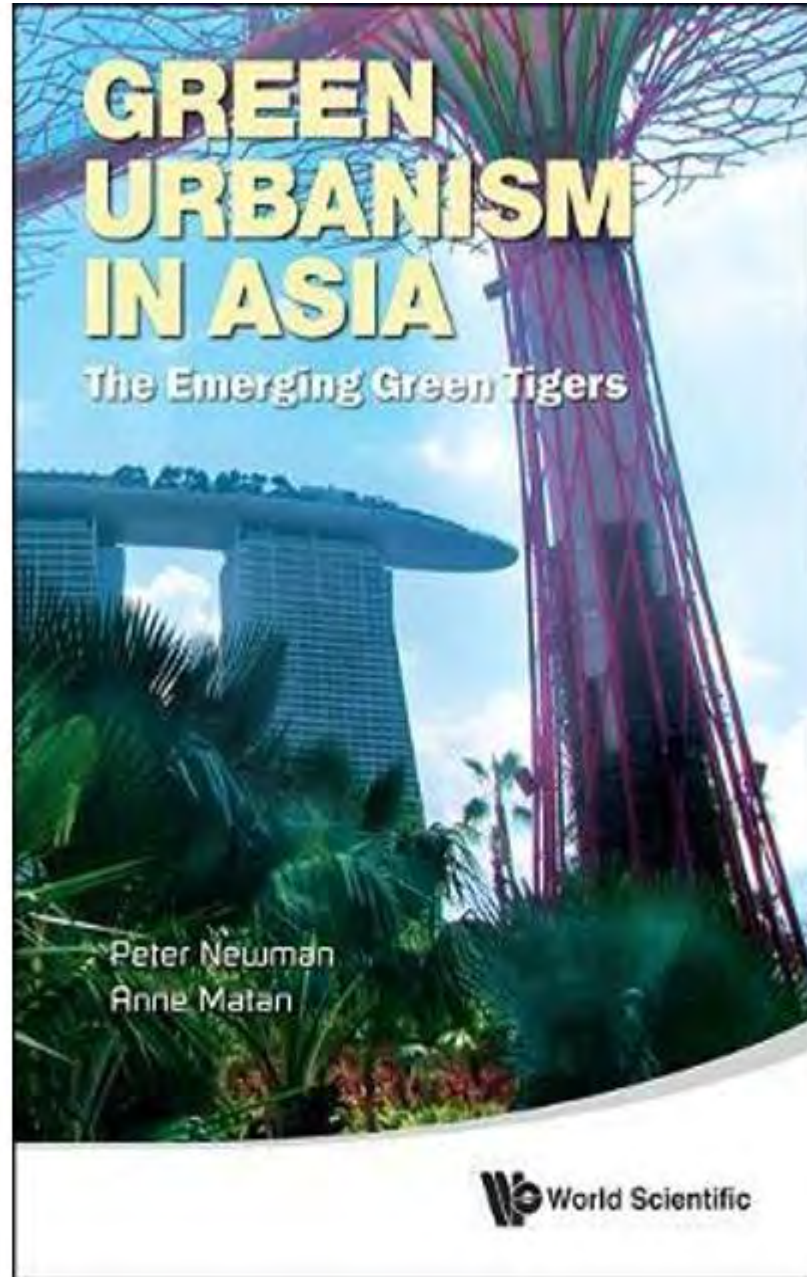


Ecological Approaches for Smart Cities

- ▶ “...urbanization patterns and population and development pressures...are placing ever more people and property in harms way [and] these development patterns impact and disrupt the ecological patterns of natural systems, [and] the ability of [the] environment to mitigate and absorb the likely impacts of flooding, storms and sea level rise...”
- ▶ Timothy Beatley, *Planning for Coastal Resilience: Best Practicis for Calamitous Times*. 2009

UN-Habitat Study Critical Climate Change Initiative, Makassar, 2014


- ▶ Land reclamation along the coastal area
- ▶ Vision to create a “World City” and “Gateway to Eastern Indonesia
- ▶ SMART City
- ▶ Growth of outer districts faster than center
- ▶ Water management challenges given dispersed settlements
- ▶ Continuing challenge of 58,000 slum households



GREEN URBANISM IN ASIA

The Emerging Green Tigers

Peter Newman
Anne Matan

 World Scientific

SMART APPROACHES TO GREEN URBANISM

- ▶ The Renewable Energy City - reduces non-renewables (Singapore, Taiwan, China)
- ▶ The Bioregional Carbon Neutral City (India, Singapore)
- ▶ The Distributed City (Jakarta's Lippo Village)
- ▶ The Biophilic City (Singapore)
- ▶ The Eco-Efficient City (Bekasi City)
- ▶ The Sustainable Transport City (Yogyakarta)

What to do to create an integrated sustainable metropolis of 30 million, or a medium metropolis of 3-5 million?

Sustainable Mobility

- ▶ Continue to invest in high/volume and high speed public transit
- ▶ Disincentivize auto use by making it more expensive to use regularly
- ▶ Add new inter-center transit linkages
- ▶ Link existing new social housing w/transit

Sustainable Human Settlements

- ▶ Bring private sector/non profits into social housing in conjunction with public transit - that is, “transit-oriented development” for the public
- ▶ Develop and enforce planning for new urban centers that have mixed uses and mixed income housing
- ▶ Provide community-based infrastructure to existing settlements to upgrade services

Sustainable Environment

- ▶ Regulate inputs into the two most important rivers in Jakarta metro- Citarum and Ciliwung
- ▶ Utilize river dredging not only to address flooding issue but also the create urban greenways and public parks
- ▶ Make waste management, solid and sanitary, the top priority for improvements in existing local in settlements
- ▶ Make clean cheap water accessible to all

Key Characteristics of the SMART CITY

- ▶ Data-driven decisions about planning and management of cities
- ▶ Inclusion of ecological values in planning and management decisions
- ▶ Urban experts connected to best practices globally
- ▶ Local power to innovate and implement
- ▶ A socially and economically inclusive planning and decision process
- ▶ Ensuring healthy and comfortable communities
- ▶ Linking the parts of the city together in an efficient way

Surabaya Mayor- *Tri Rismaharini*

“Surabaya offers all its municipal services electronically... Some services can be accessed through smartphones, such as issuing licenses or applying for birth or death certificates. However, the concept of a smart city does not stop there. The most important thing is how a city can make its citizens feel happy, peaceful and comfortable. In addition to creating parks and urban forests—as well as enforcing health and cleanliness in the kampongs so that the people can feel more comfortable—Surabaya has more than 1,000 libraries and more than 36 broadband learning centres, places where people can learn how to use information technology. I also believe that a smart city should be safe. For that reason we have installed CCTVs in various spots., so that the people of Surabaya can feel safe”⁹⁹

Asia Can Have “Smart,” “Green,” and “Sustainable” Cities For ALL





Thank You!

