OUTLINE

1. **INDONESIA AT GLANCE**
   - Strategic Issues and Challenges
2. **INDONESIA TOWARDS SUSTAINABLE CITIES - AT THE POLICY LEVEL**
   - Vision of National Urban Development
   - New Urban Agenda
   - Indonesia's National Urban Development
3. **INDONESIA TOWARDS SUSTAINABLE CITIES - AT THE IMPLEMENTATION LEVEL**
   - Initiative on Green Infrastructures
   - Green Cities Development
   - Eco-district
   - Resilient Cities
   - Flood Management
   - Seismic Risk Mapping
   - Other Strategic Infrastructures Development
   - Infrastructure Development Practices
4. **CONCLUSION**

INDONESIA AT GLANCE

STRATEGIC ISSUES & CHALLENGES

DEMOGRAPHY

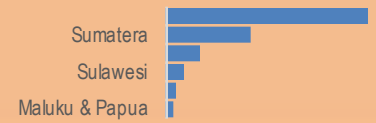
53%
Proportion of urban population*

11,22%
Percentage of poor household*

REGIONAL DISPARITY

9,31%
Eastern Indonesia contribution to National GDP*

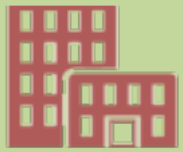
GDP contribution per island



CLIMATE CHANGE

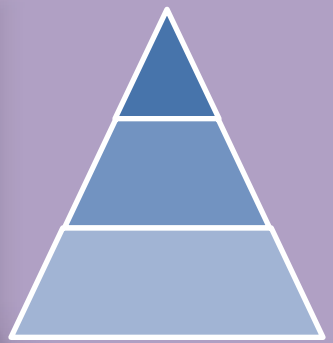
70%
Proportion of Greenhouse Gas (GHG) emitted from urban area**

GHG Emitter:
Domestic Waste



Buildings

DECENTRALIZATION

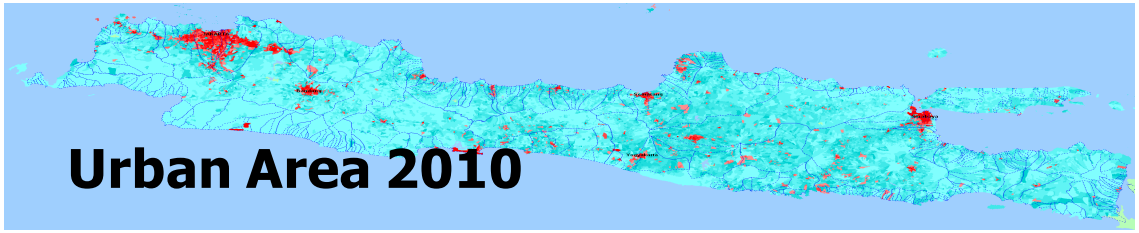


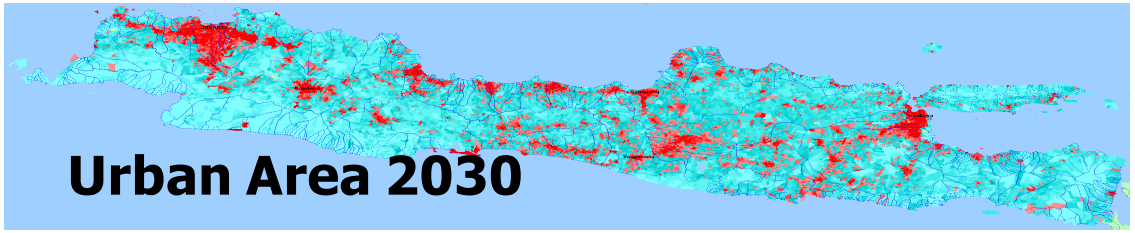
Central Government	→	National scale system development (inter-provincial and national strategic interests)
Provincial Government	→	Regional scale system development (inter-city/regency)
City/Regency Government	→	Local scale system development (city/regency)

*) Data Source: www.bps.go.id
**) UN-Habitat, 2011

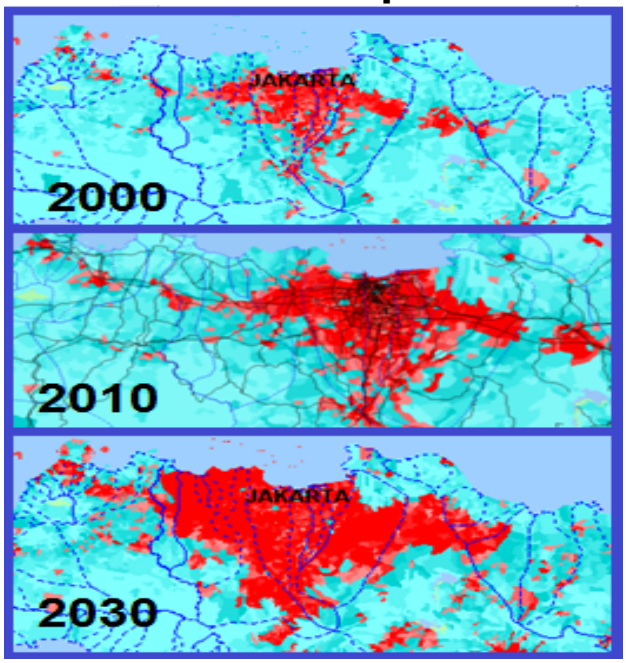
STRATEGIC ISSUES & CHALLENGES

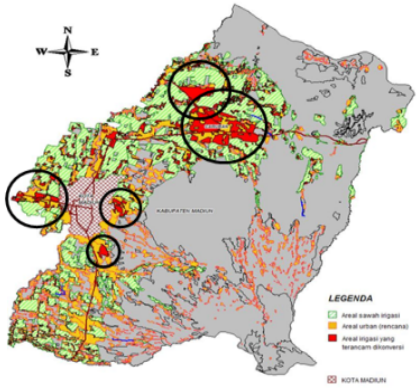
URBANIZATION & ECONOMIC DEVELOPMENT VS LAND USE CHANGE)





Example: Jakarta



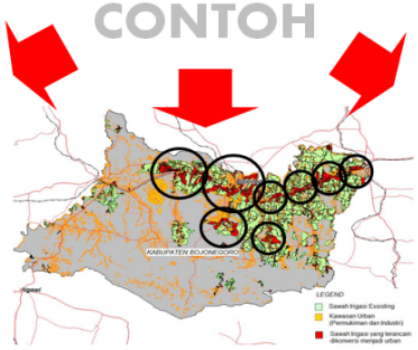


RTRW Kab. Madiun 2009 - 2029

Areal Irigasi :

- 2007 → 26.270 ha
- 2029 → 21.363 ha
- Alih fungsi lahan : 4.907 ha (18.7%) dalam 22 tahun
- Laju konversi lahan pertahun 0.94%

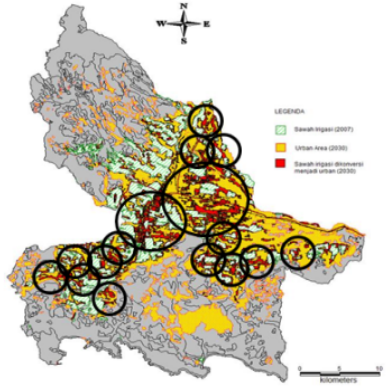
CONTOH



RTRW Kab. Bojonegoro 2010 - 2030

Areal Irigasi :

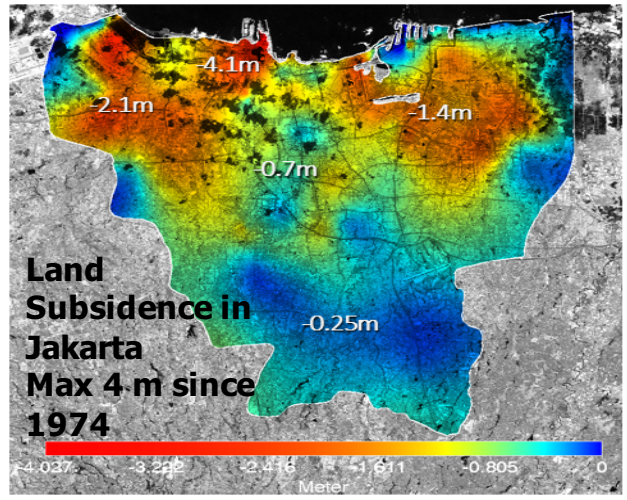
- 2007 → 53.370 ha
- 2029 → 42.480 ha
- Alih fungsi lahan : 10.530 ha (19.7%) dalam 20 tahun
- Laju konversi lahan pertahun 0.95%



RTRW Kab. Tulungagung 2010 - 2030

Areal Irigasi :

- 2007 → 24.030 ha
- 2028 → 15.394 ha
- Alih fungsi lahan : 8.636 ha (35.39%) dalam 21 tahun
- Laju konversi lahan pertahun 1.92%



STRATEGIC ISSUES & CHALLENGES

Indonesia's Global Competitiveness Index (GCI)

Year	Rank
2010 – 2011	44
2011 – 2012	46
2012 - 2013	50
2013 - 2014	38
2014 - 2015	34
2015 - 2016	37
2016 - 2017	41

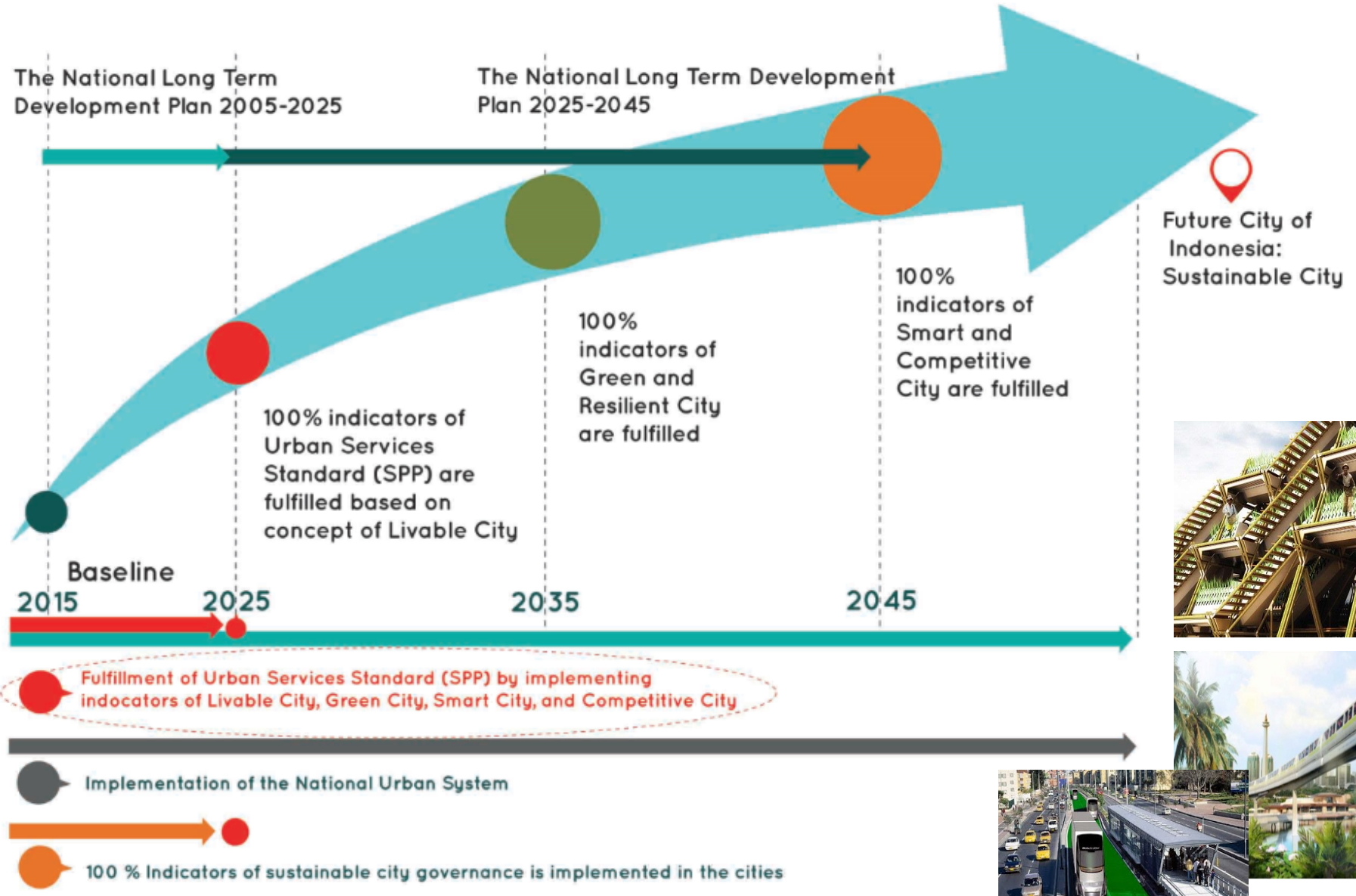
Indonesia's Infrastructure Competitiveness Index

Year	Rank
2010 – 2011	90
2011 – 2012	82
2012 - 2013	92
2013 - 2014	82
2014 - 2015	72
2015 - 2016	62
2016 - 2017	60

Indonesia's Global Competitiveness Index
(source: Global Competitiveness Index, WEF, 2016)

INDONESIA TOWARDS SUSTAINABLE CITIES AT THE POLICY LEVEL

VISION OF NATIONAL URBAN DEVELOPMENT [1-2]



VISION FOR SUSTAINABLE URBAN DEVELOPMENT [2-2]

LIVABLE CITIES THAT ARE SAFE AND COMFORTABLE

- Strong Neighborhood
- Walkable
- Affordable
- Comfortable
- Cultural
- Resilience

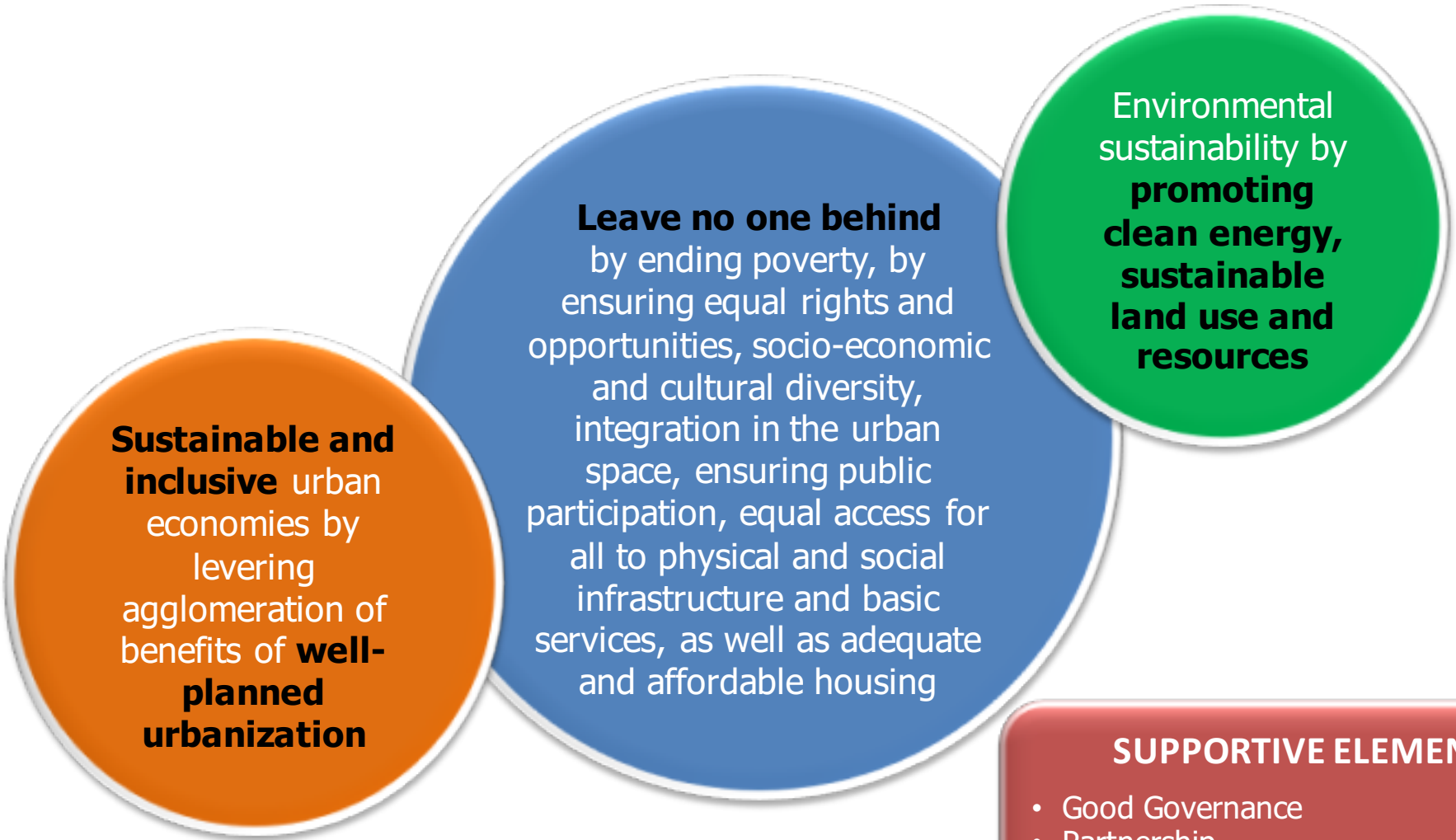
GREEN CITIES THAT ARE RESILIENT TO CLIMATE CHANGE AND DISASTER

- Green Open Space
- Green Waste
- Green Water
- Green Building
- Green Energy
- Green Transportation
- Green Community
- Green Planning & Design

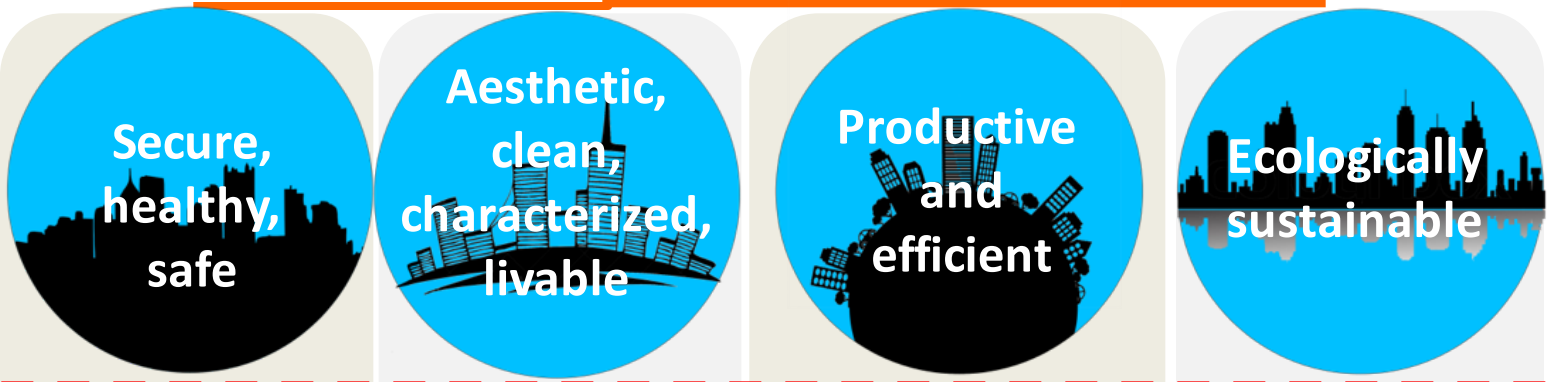
SMART CITIES THAT ARE COMPETITIVE AND BASED ON TECHNOLOGY

- Smart Economy
- Smart People
- Smart Governance
- Smart Environment
- Smart Living

NEW URBAN AGENDA



GOALS & STANDARD OF SERVICES OF SUSTAINABLE SMART CITIES



Sustainable Urban Development goals	Secure, healthy, safe	Aesthetic, clean, characterized, livable	Productive and efficient	Ecologically sustainable
Standard of services	• Public green open Space ≥ 20% • Roads ≥ 20% • Overall public space (incl. green & roads ± 50%) • Water supply and sanitation access • In line with the carrying capacity • Lower building coverage ratio (< 30%) and higher floor area ratio (> 3)	• City landscapes • Integrated waste management (3R) • Landmark of the city • Heritage sites conservation and management • Organized urban facades	• 40% built up area for economic activities • Mixed-use area • High accessibility: harmony between land use & transport infrastructure • Applied state-of-the-art of technology (in particular ICT) • Network of cities	• Reduce the impact of climate change • Optimizing renewable resources • Good governance • Encourage community participation • Natural & man made hazards (disaster mitigation)

All elements are connected, controlled, and actualized by technology support (censor, camera, RFID, cable connection, wireless, and control room)

A COMPREHENSIVE PLATFORM TO SUPPORT SUSTAINABLE URBANIZATION IN INDONESIA

National Platform on Sustainable Urbanization

National Urban Development Project (NUDP)

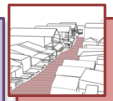
Technical Assistance & Coordination

Technical Assistance Program

Sector 1: Urban Transport Systems

Sector 2: Urban Water Supply

Sector 3: Urban Sanitation



Sector 4: Affordable Housing

Sector 5: Drainage, Flood & Disaster Risk Management

Sector 6: Slum-Upgrading

Sector 7: Solid Waste Management

National Sector Programs

Regional Infrastructure Development Fund (RIDF)

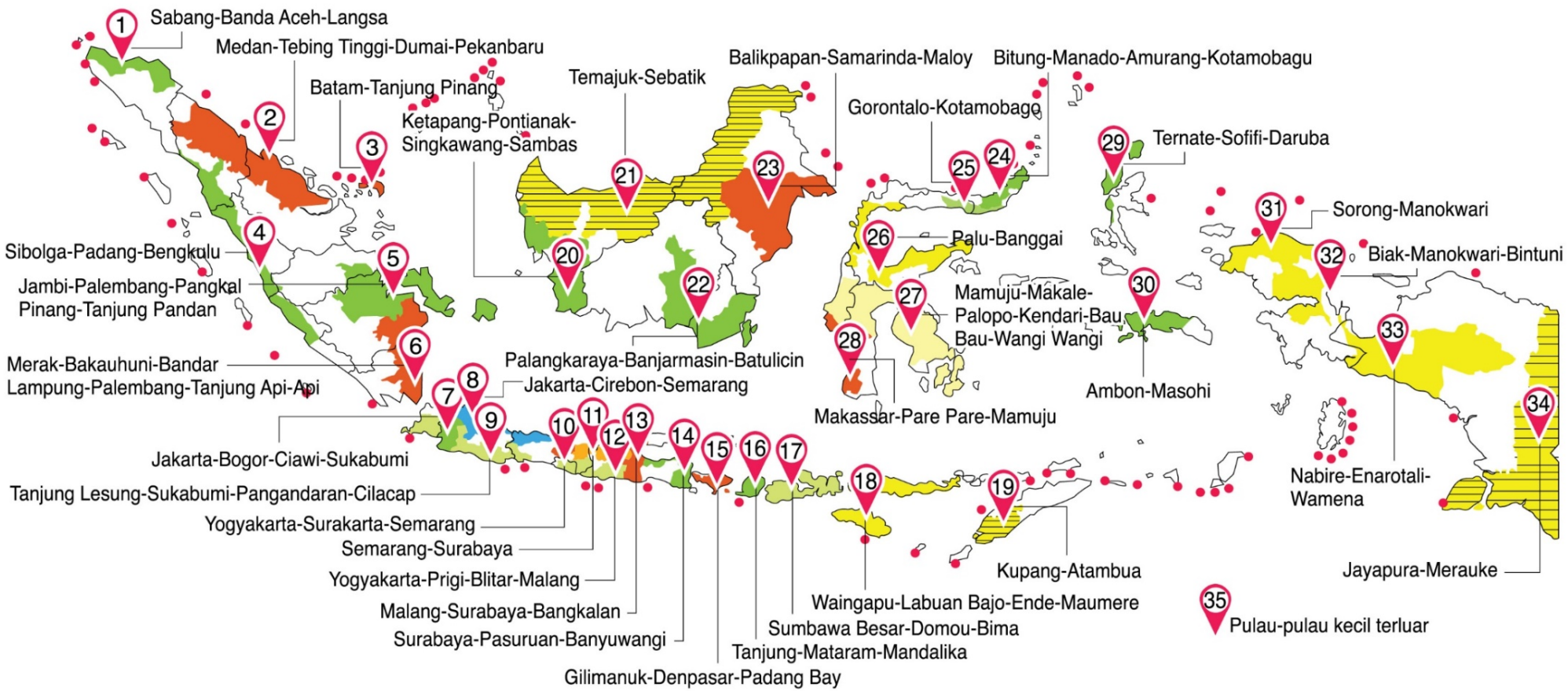
Financing Facility

Source: Bappenas, NUDP

SPREAD OF STRATEGIC DEVELOPMENT REGIONS (SDR) IN INDONESIA

35 **Strategic Development Region (SDR)**

Ministry of PWH, through Regional Infrastructure Development Agency, has established 35 Strategic Development Regions (SDR) as integration of infrastructure planning basis.



PWH INFRASTRUCTURE OUTPUT TARGET 2015-2019

3,073 km Capacity development of national road

29,859 m Bridges construction

19,951 m Bridge development

1,000 km Toll road construction (government & private sector)

2,650 km Construction of new road

ROAD SECTOR

- Support on development of 24 New Seaports
- Support on harbour in 60 locations
- Support on Urban road network restructurisation
- Construction of urban ring road in Metropolitan and big cities
- Support on 15 priority industrial areas
- Support on 25 priority National Tourism Strategic Zones (KSPN)
- Support on development of 15 new Airport
- Support on multi-modal transportation with railways

HOUSING SECTOR

- Provision of Public Utilities to support public housing provision: 676,950 unit
- Construction of specific purpose house : 50,000 unit
- Construction of apartments for low-income households (MBR): 550,000 unit
- Disbursement of financial aid for self-reliant house construction: 450,000 unit

WATER RESOURCES SECTOR

65 Dams construction

1 million ha New irrigation network construction

3,000 km Construction of flood control facilities and infrastructures

3 million ha Irrigation network rehabilitation

67.52 m^3/s Construction/development of raw water treatment facilities and infrastructures

500 km Construction and development of coastal protection facilities and infrastructures

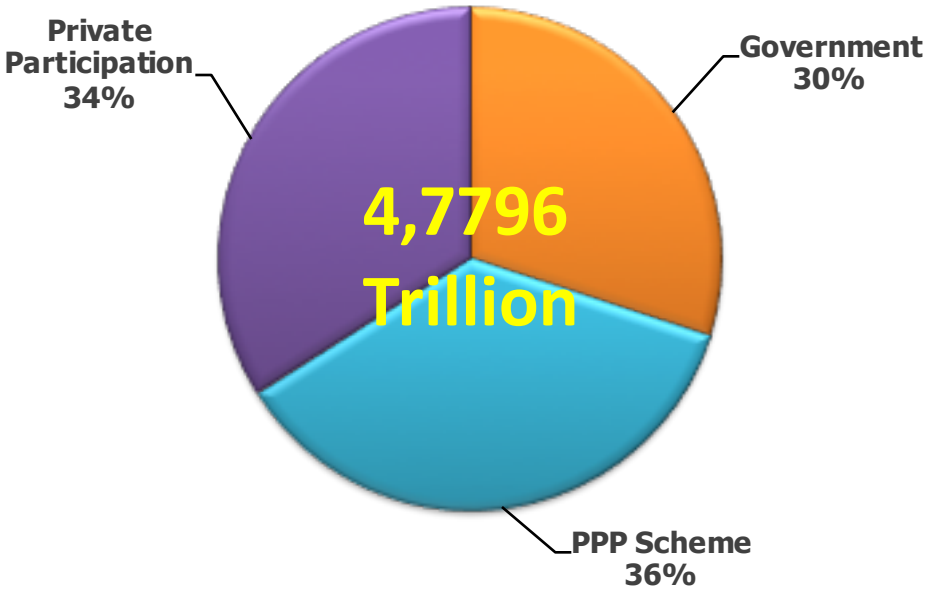
HUMAN SETTLEMENT SECTOR

Untuk Permukiman Layak Huni
CIPTA KARYA

	STATUS END OF 2014	TARGET 2019
Safe drinking water access	70 %	100 %
Urban slum areas	38,431 Ha	0 ha
Decent Sanitation Access	62 %	100 %

BUDGET NEEDS
PWH INFRASTRUCTURE YEAR 2015 - 2019

INFRASTRUCTURE FUNDING ESTIMATE



Estimation of infrastructure funding needs in 2015-2019:
IDR 4,7796 trillion

Government capacity:
IDR 1,433 trillion (30% of total funding needs)

Funding gap:
IDR 1,720 trillion (36% expected to be fulfilled through PPP scheme)

The private participation is expected to fill the funding gap as well as to share knowledge and experience in the development, operation, and management of qualified infrastructure services.

Source: Public Private Partnerships – Infrastructure Projects Plan in Indonesia 2015 (Bappenas)

NO.	SECTOR/ORGANIZATION UNIT	State Budget & Local Government Budget		Non State Budget		TOTAL	
		Rp. Trillion	(%)	Rp. Trillion	(%)	Rp. Trillion	(%)
1.	Roads (include Bridges) (BM)	468	63.85	265	36.15	733	100
2.	Water Resources (SDA)	264	58.54	187	41.46	451	100
3.	Drinking Water and Sanitation (CK)	329	81.64	74	18.36	403	100
4.	Housing	228	69,51	100	30.49	328	100
Total		**1.289**	**67**	**626**	**33**	**1.915**	**100**

Source: National Planning Development Agency (Bappenas) 16 February 2016

INDONESIA TOWARDS SUSTAINABLE CITIES AT THE IMPLEMENTATION LEVEL

INITIATIVE ON GREEN INFRASTRUCTURE

GREEN WATER

- Reverse Osmosis technology to produce potable water from sea water in East Java.
- Roughing Filters combined with Ultra Filtration for water treatment without chemicals (Banjar City, West Java).
- Recycling of waste water to anticipate of raw water shortages (Location: Bandung and Denpasar).

GREEN WASTE

- Waste-to-energy by constructing landfill gas flaring to reduce methane emission (Bantar Gebang, Palembang, Batu).
- Nation-wide 3R (Reduce-Reuse-Recycle) Program.
- Eco-Drainage combining detention (holds water temporarily) with retention (ground absorption)

GREEN BUILDING

- Certification of Green Building for public and private buildings. For example, Ministry of Public Work Building receive platinum certificate in design.
- Formulation of Green Building regulations.

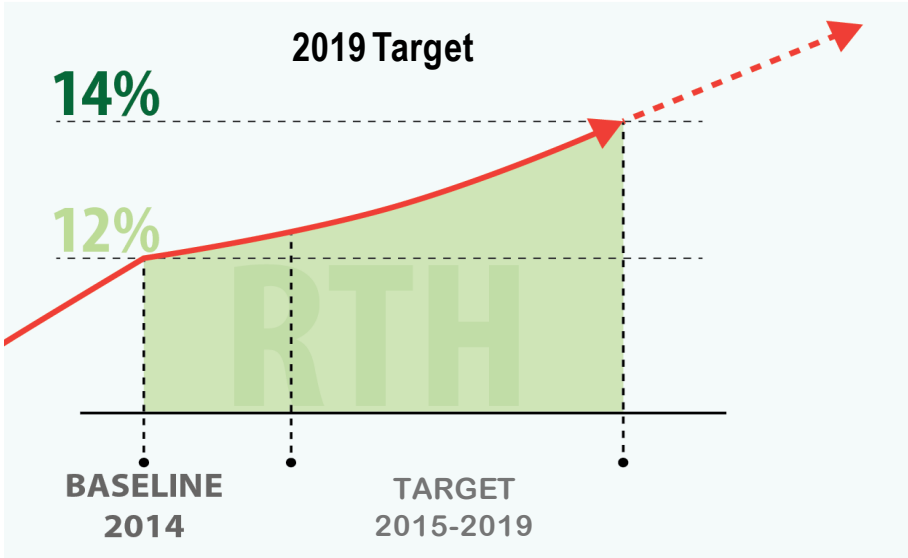
GREEN CITIES DEVELOPMENT

GREEN CITY

A well-planned city that characterized with environmental friendly and effective use of natural resources in a balanced manner to ensure quality of settlement environment and sustain environmental carrying capacity.

Green city program focused on city regency that show commitment and capability to formulate green action plan and has integrate this action plan into local development planning.

Result 2010-2016:
- 165 regencies/cities participate in Green City Program
- 237 green festival organize by green communities
- 143 green open space masterplan
- Additional 210 green open space (162 Ha)



ECODISTRICT

- Green City Development Program (P2KH)
- Green Building
- Green Open Space
- Green Community

+

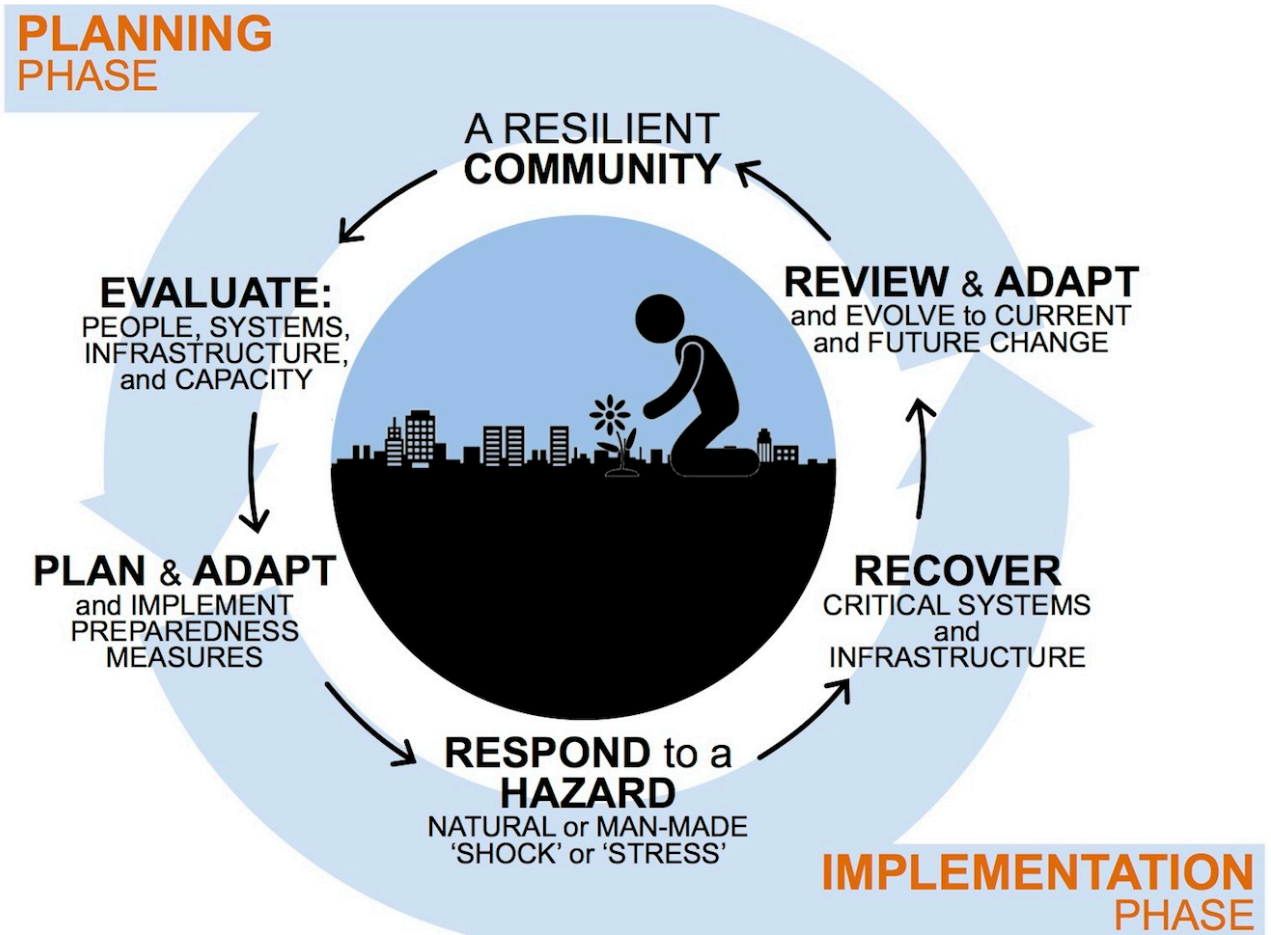
- Green Water
- Green Transportation
- Green Building
- Green Waste
- Green Energy

=

ECO DISTRICT

- Eco-district aims to improve infrastructure access of green areas that meets 8 attributes of Green City (Cooperation between GOI and French Government).
- Pilot project Eco-district program implemented in 3 districts/cities (**Semarang, Yogyakarta, and Wonosobo**).

RESILIENT CITY [1-3]



- The geographical position of Indonesia not only provides a variety of natural resources, but also has plenty of potential natural disasters, such as earthquake, flood, landslide, volcano eruption, etc.
- These conditions impact the building performance development, which some requirements must be fulfilled.
- Therefore, the provision of in compliance with the requirements of building reliability is an absolute requirement, i.e. **safety, health, comfort, and accessibility**.

RESILIENT CITY [3-3]

Construction of Disaster Mitigation Building (Temporary Evacuation Place) for protection against tsunami for up to 2 hours after the disaster occurred, then affected peoples will be evacuated to permanent shelter.

There are 38 Temporary Evacuation Place that are constructed in **12 provinces** as follow:

1. Aceh : 3 unit
2. North Sumatra : 2 unit
3. West Sumatra : 3 unit
4. Bengkulu : 4 unit
5. Lampung : 1 unit
6. Banten : 2 unit
7. West Java : 2 unit
8. DI Yogyakarta : 1 unit
9. East Java : 3 unit
10. Bali : 3 unit
11. West Nusa Tenggara : 4 unit
12. East Nusa Tenggara : 4 unit

FLOOD MANAGEMENT

FLOOD MANAGEMENT

STRUCTURAL

NON STRUCTURAL

UPSTREAM

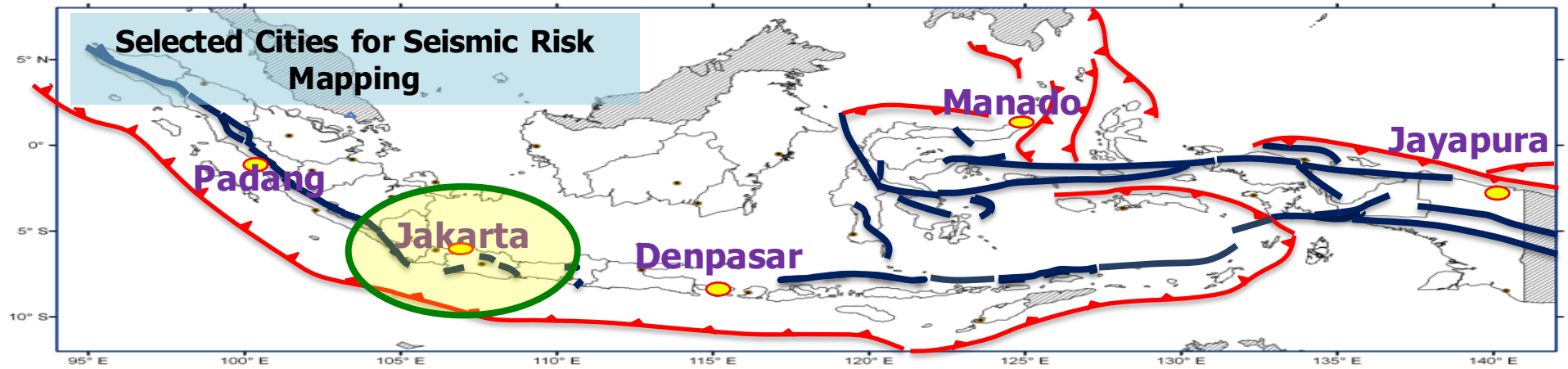
- Reservoirs.
- Small dams, ponds, embankment.
- Forest and land rehabilitation.

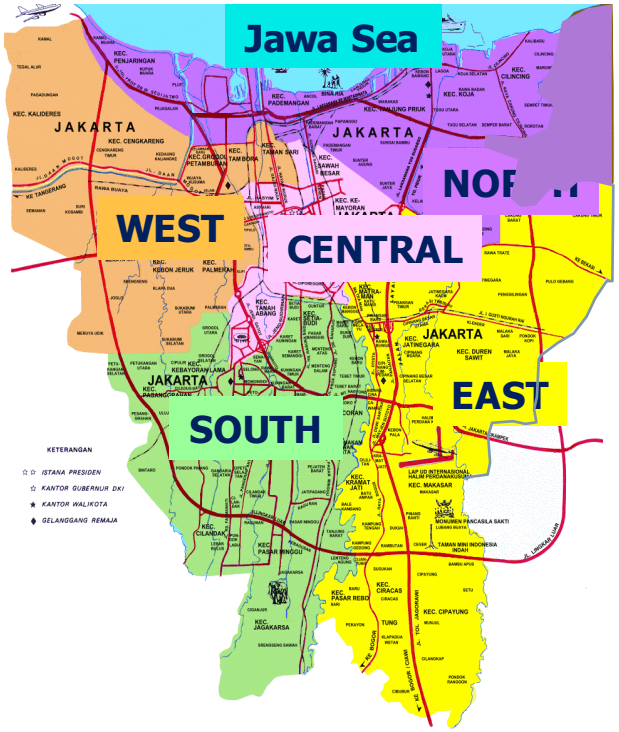
DOWNSTREAM

- Flood canals, rivers normalization, dikes.
- Retention basins, polders, and pumping systems.
- Protection against water sea level.
- Land subsidence control.

- Spatial planning.
- Public awareness.
- Forecasting and early warning systems.
- Flood prone area/hazard mapping.
- Emergency response.
- Watershed conservation.
- Groundwater policy.
- Flood prone area management.
- Riparian zone (sempadan) management.
- Resettlement policy framework.

SEISMIC RISK MAPPING





Population Growth in the Past and Estimates for 2020 & 2030

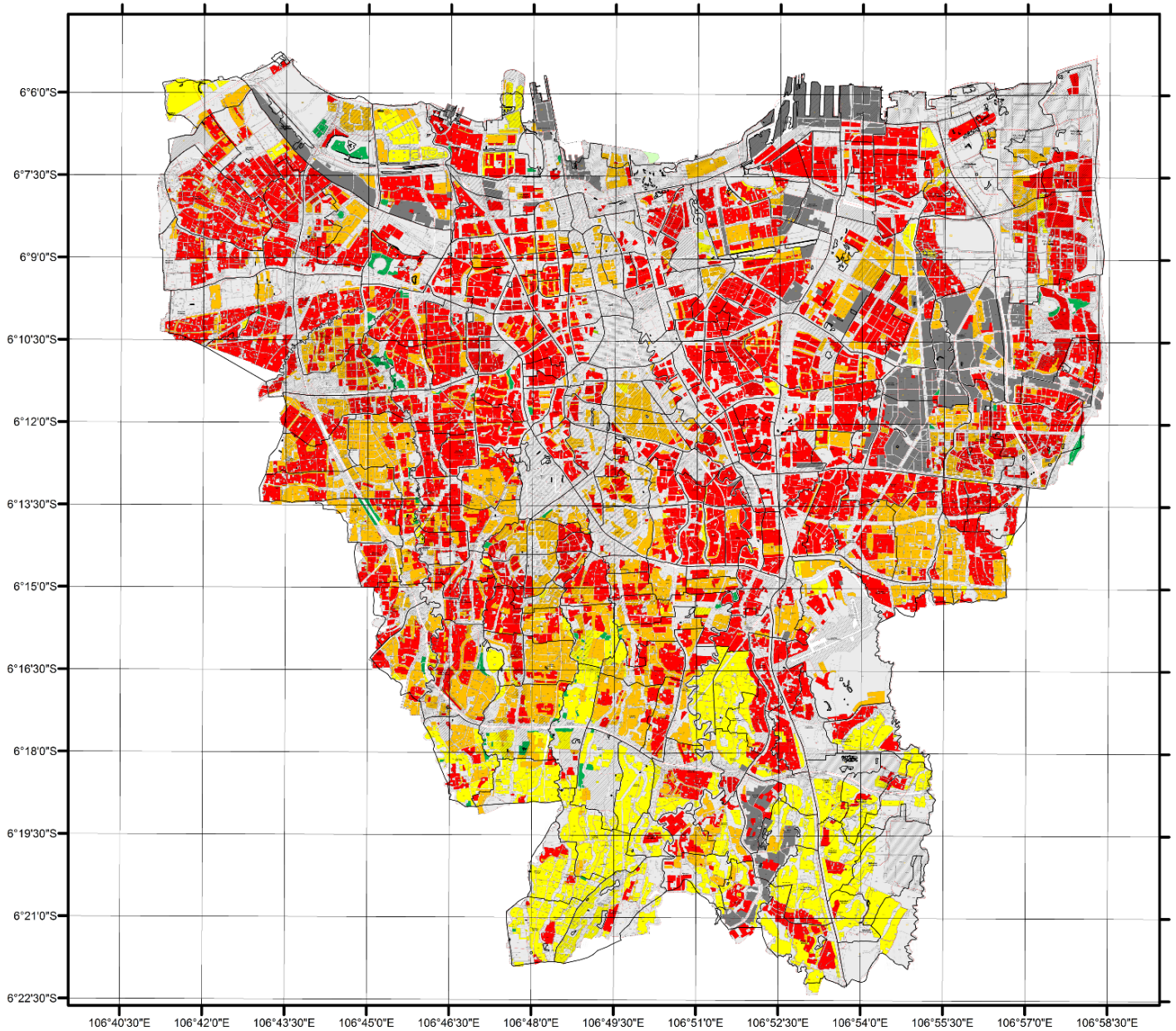
	1971	1980	1990	2000	2010	2020	2030
Jakarta	4,579,303	6,503,449	8,259,266	8,389,443	9,607,787	10,645,000	11,310,000
Indonesia	119,208,229	147,490,298	179,378,946	206,264,595	237,641,326	271,066,400	296,405,100

source: *bps.go.id*

Jakarta Provincial Government

City/ District	No. Sub-District	No. Village	Land Area (km²)	Population Density (people/ km²)*
North	6	31	146.66	13,323.4
West	8	56	129.54	21,172.8
Central	8	44	48.13	21,367.8
East	10	65	188.03	16,937.7
South	10	65	141.27	15,443.8
	40	261		

**Source: 2010, BPS*

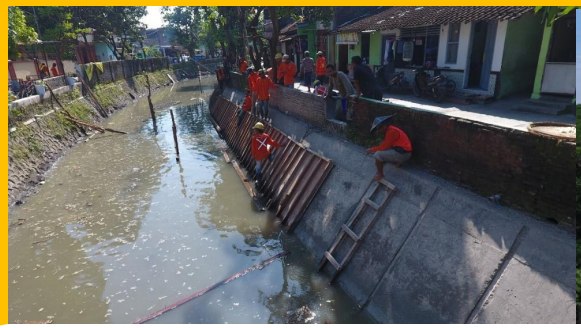
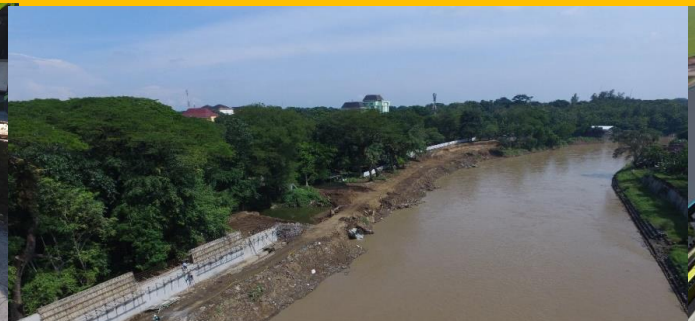


Seismic Risk Map for Residential Building of Jakarta Due to Probabilistic Earthquake 2500 years

VULNERABILITY BUILDINGS LABEL

- VERY HIGH
- HIGH
- MEDIUM
- LOW
- VERY LOW

Salokang, O., 2015


OTHER STRATEGIC INFRASTRUCTURE DEVELOPMENT (2015 -2019)

20 Areas of Green Public Space

2 Regional and **6** Cities wastewater Treatment System

97 Integrated Waste Processing Site/3R

Local Building Code

108 Cities/Regencies Community Based on Santation

53 Sludge Treatment Plant

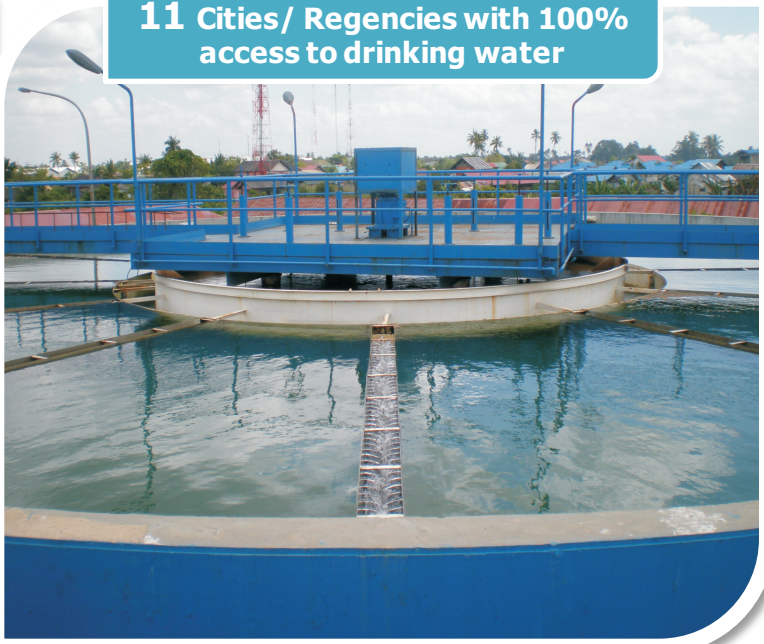
6 Historical Area Preservation

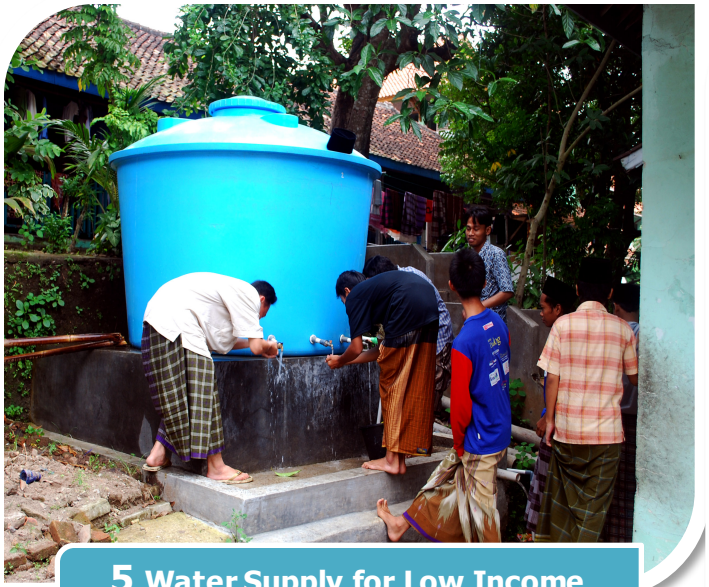
3 Regional and **49** Cities Regencies Final Disposal Site

433 Ha of Urban Draunage SystemSludge Treatment Plant

6 Regional Water Supply System

11 Cities/ Regencies with 100% access to drinking water





5 Water Supply for Low Income Communities

4,320 Community Based Water Supply

9 Water treatment plant in border/ remote or small islands

INFRASTRUCTURE DEVELOPMENT PRACTICES
(SETTLEMENT DEVELOPMENT)

Cities without Slums Program
Banjaran Sub-District, Bandung

Rural Infrastructure Development Program – Keliobar Village, Maluku Tenggara Barat District, Maluku

- Installation and plastering work
- Construction of *MCK* and Drainage
- Construction of Worship Places and Multipurposes building

INFRASTRUCTURE DEVELOPMENT PRACTICES
(WATER SUPPLY SYSTEM DEVELOPMENT)

Kartamantul (Yogyakarta-Sleman-Bantul) Regional Water Supply System

Community Based Water Supply - Ngelokulon Village, Mijen Sub-District, Demak District, Central Java

INFRASTRUCTURE DEVELOPMENT PRACTICES
(ENVIRONMENTAL HEALTH DEVELOPMENT)

Regional Final Disposal Site - Legok Nangka, Bandung District, West Java

- Construction of Landfill Zone
- Construction of Retention Pool
- Construction of Leachate Treatment Installation (IPL)

Community Based Sanitation Program - Semayap Village, Kotabaru District, South Borneo

INFRASTRUCTURE DEVELOPMENT PRACTICES
(ECO-DISTRICT & GREEN BUILDING)

Example of Eco-district in Yogyakarta

Revitalization of Gajah Wong River Bank

Revitalization of Housing and open Spaces In Gajah Wong River Bank

MPWH Green Building

- The Main Building of the Ministry of Public Works and Housing won **2016 ASEAN Green Building Award** on Large Green Building Category.
- The Main Building of the Ministry of Public Works and Housing also won **2014 ASEAN Best Practises Energy Efficient Building Awards** for New and Existing Building Category. (up to 61% energy saving)

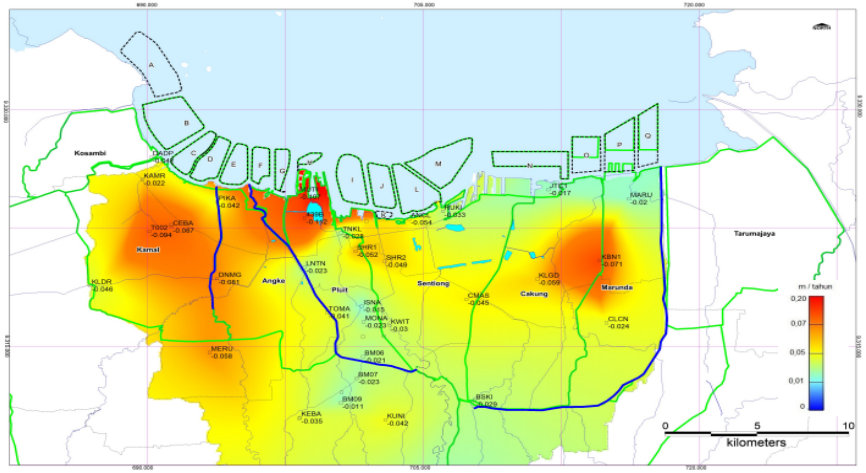
INFRASTRUCTURE DEVELOPMENT PRACTICES

The Past

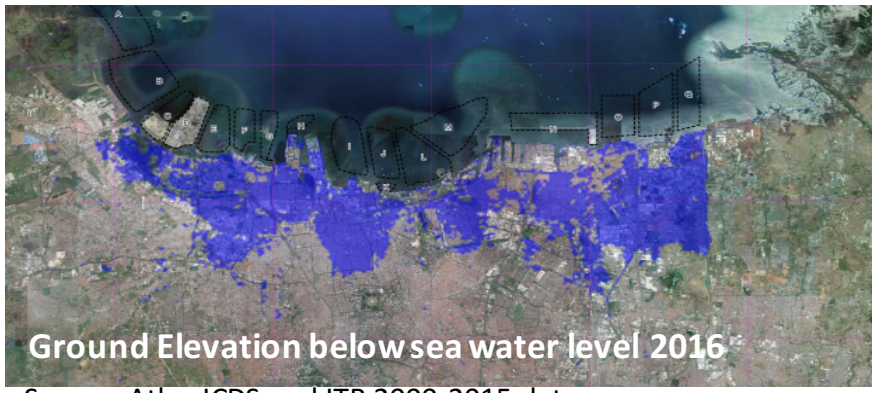
The Present

The Future "Vertical Kampung"

INFRASTRUCTURE DEVELOPMENT PRACTICES
(National Capital Integrated Coastal Development)



Land Subsidence 2000 - 2015



Source: Atlas JCDS and ITB 2000-2015 data

PROBLEMS

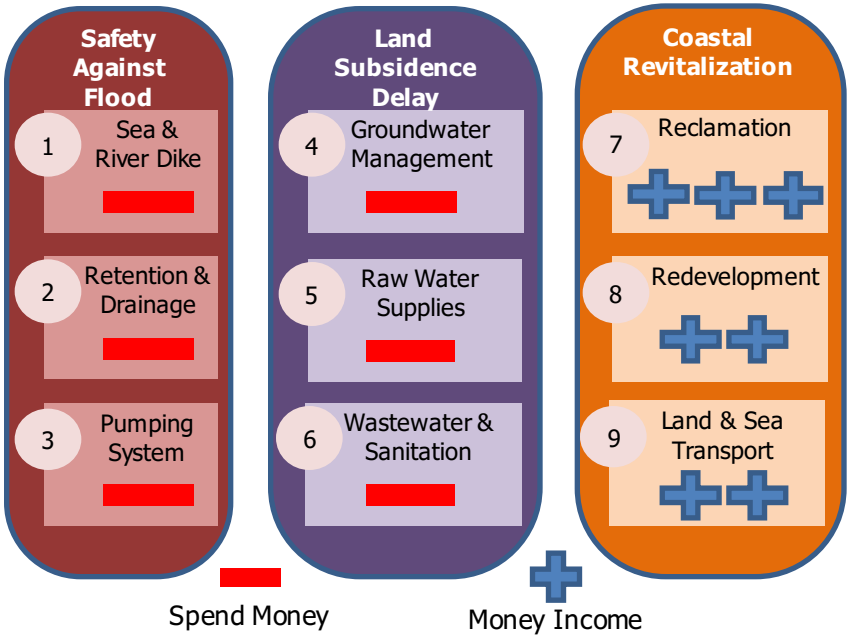
- **Land Subsidence.** The soil in coastal area of Jakarta is having land subsidence in the level of 3-18 cm per year (2005-2015). In 2016, more than 70% of the land in North Jakarta is under the sea elevation, including the sea and river dike.
- **Flood Threat.** As the consequence of the flood-affected areas from rivers and local rain. Specific for coastal area, it also affected by ROB.
- **Groundwater Extraction.** Land subsidence is mainly caused by groundwater exploitation. To delay the land subsidence, groundwater extraction has to be stopped immediately.

OBJECTIVES

- To ensure the safety of Nothern Jakarta from floods from the sea and rivers discharging into the Jakarta Bay.
- To use the safety-infrastructure for revitalizing Nothern Jakarta.
- To attract investments to recover the costs of the primary infrastructure.

NATIONAL CAPITAL INTEGRATED COASTAL DEVELOPMENT

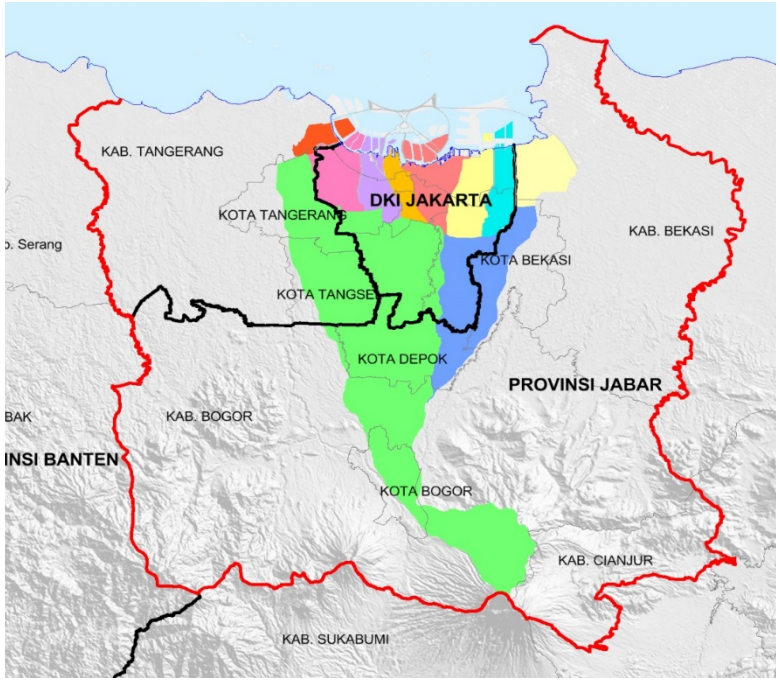
INTEGRATED DEVELOPMENT PLAN & STRATEGY
Sustainable City



- **Safety against flood from river, local rain, and ROB** by means of (1) sea and river dike, (2) Retention dan drainage (3) Pumping system
- **Land Subsidence delay** through (4) Groundwater management (5) Groundwater substitution with raw water supplies, and (6) Water quality enhancement through waste water management system and sanitation, and
- **Coastal revitalization** based on multi-source funding and cross-subsidy from (7) Land reclamation, and (8) The redevelopment of slums area and the fishermen's settlement that can add values to those areas and also (9) The development of land transport and sea port.

Source: BAPPENAS 2017

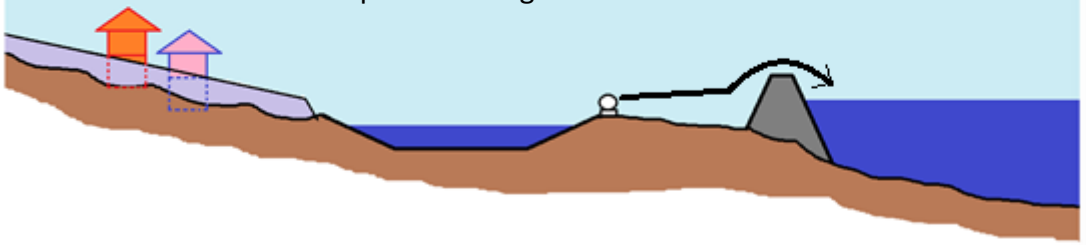
PLAN & STRATEGY IN REGIONAL SCOPE

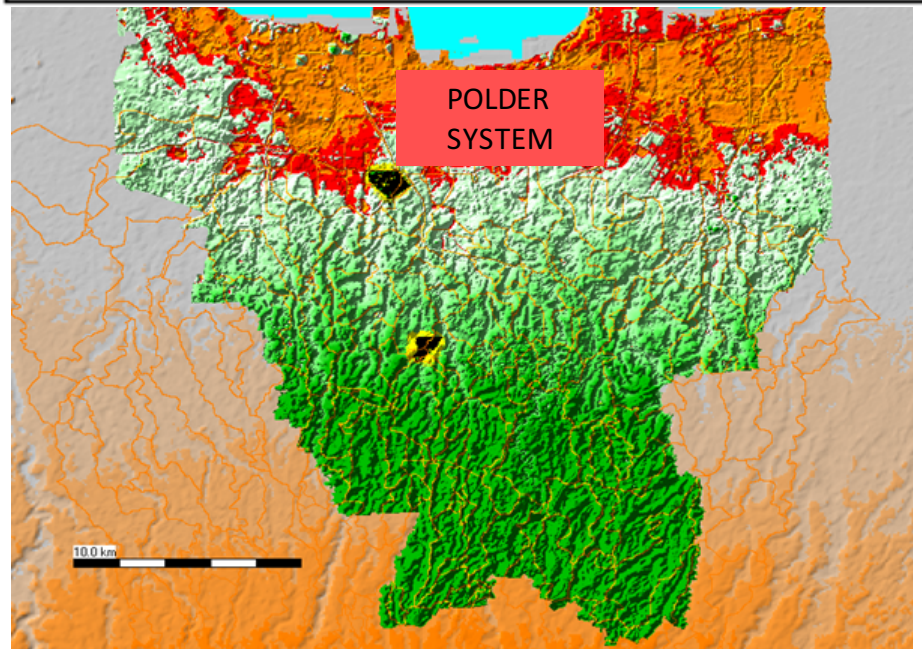


- **Three Provinces.** The coastline includes: DKI Jakarta, Jawa Barat, and Banten. Coordination between province will be conducted for raw water supplies from Jatiluhur and Karian DAM for regional road network, and for international port.
- **Upper-Middle-Lower Watershed.** Sedimentation at lower watershed will be reduced through erosion prevention at upper watershed, reforestation and check DAM, and also water border restoration at middle watershed.
- **Land and Sea.** Land spatial plan development must be coordinated with sea spatial plan, including offshore dike, land reclamation, coastal power plant, subsea pipeline and subsea cable, port, fishermen 'settlement, and mangrove.

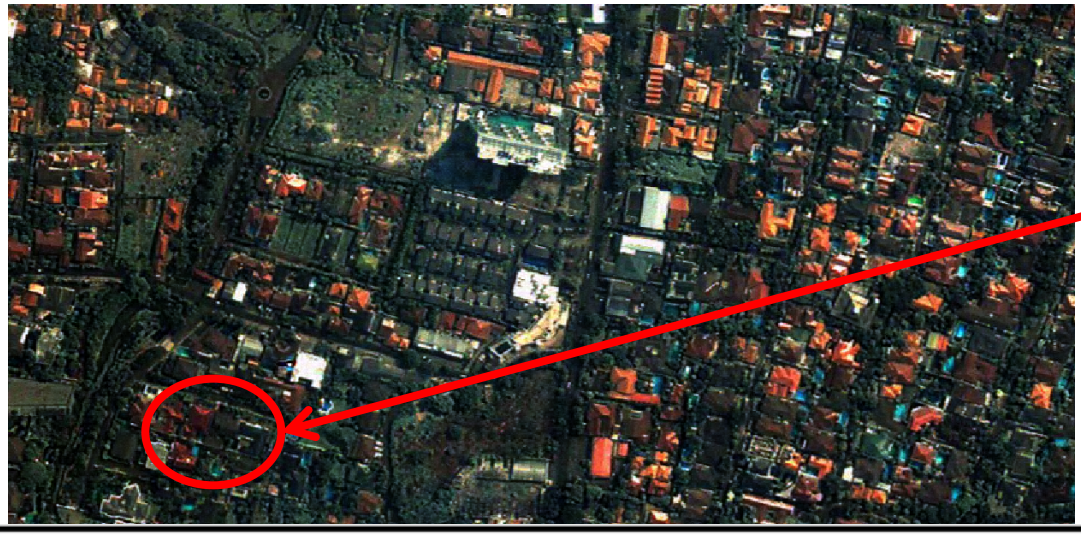
INFRASTRUCTURE DEVELOPMENT PRACTICES
(Lowland Management in Jakarta)

Adaptation by elevating the building.
Groundwater controlling.
Riparian zone, flood prone management.
Early warning system from both land and sea.
River, canal, drainage system management.
Polder and pumping system.
Coast protection against sea tide.

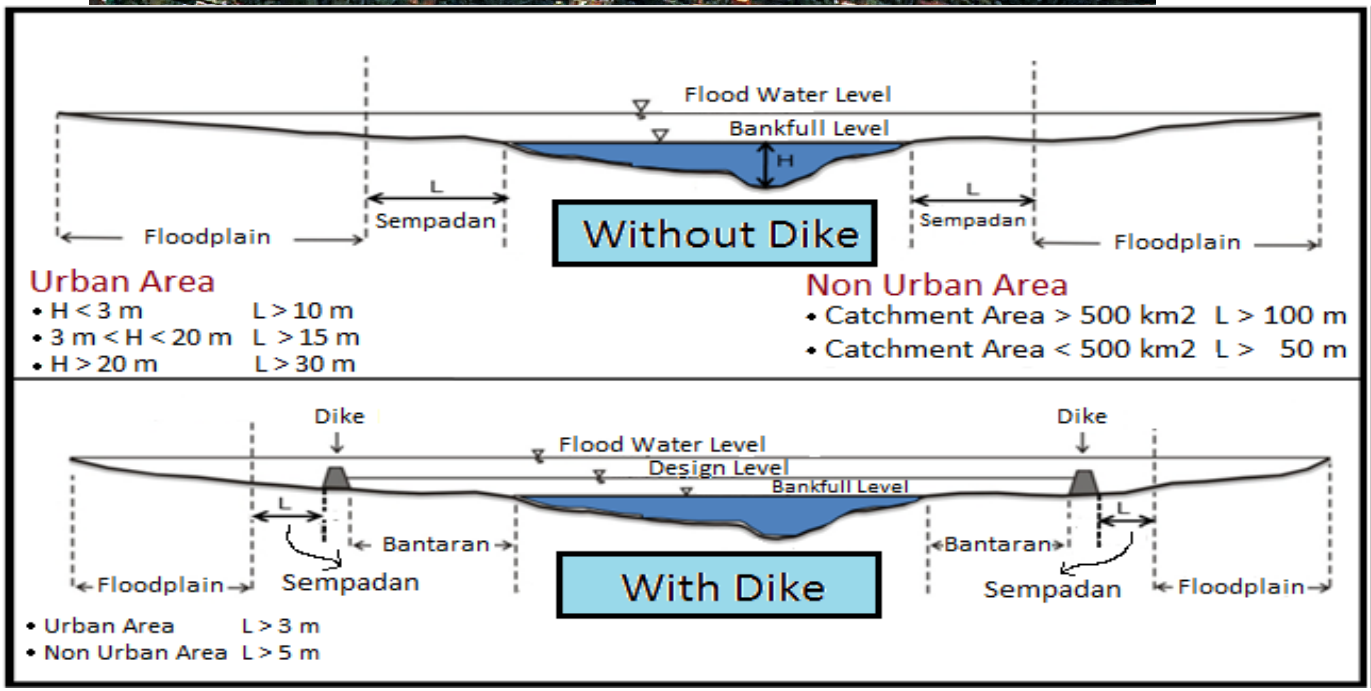


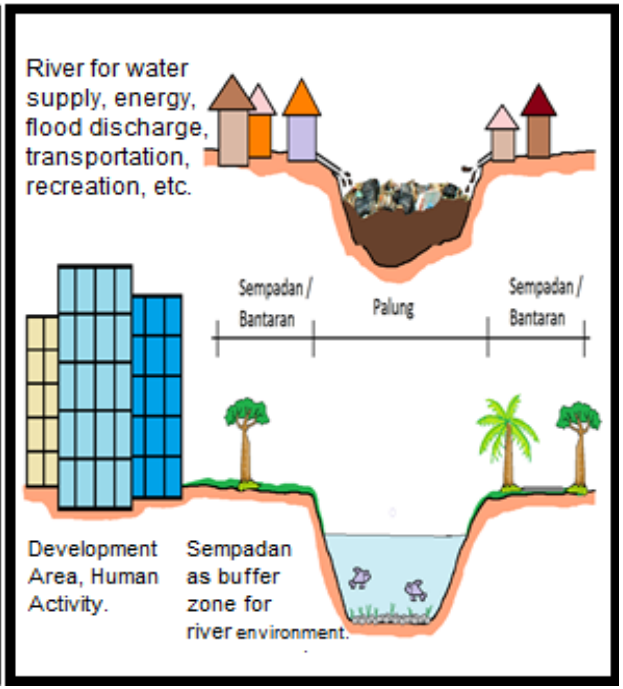


INFRASTRUCTURE DEVELOPMENT PRACTICES
(Riparian Zone Management in Jakarta)

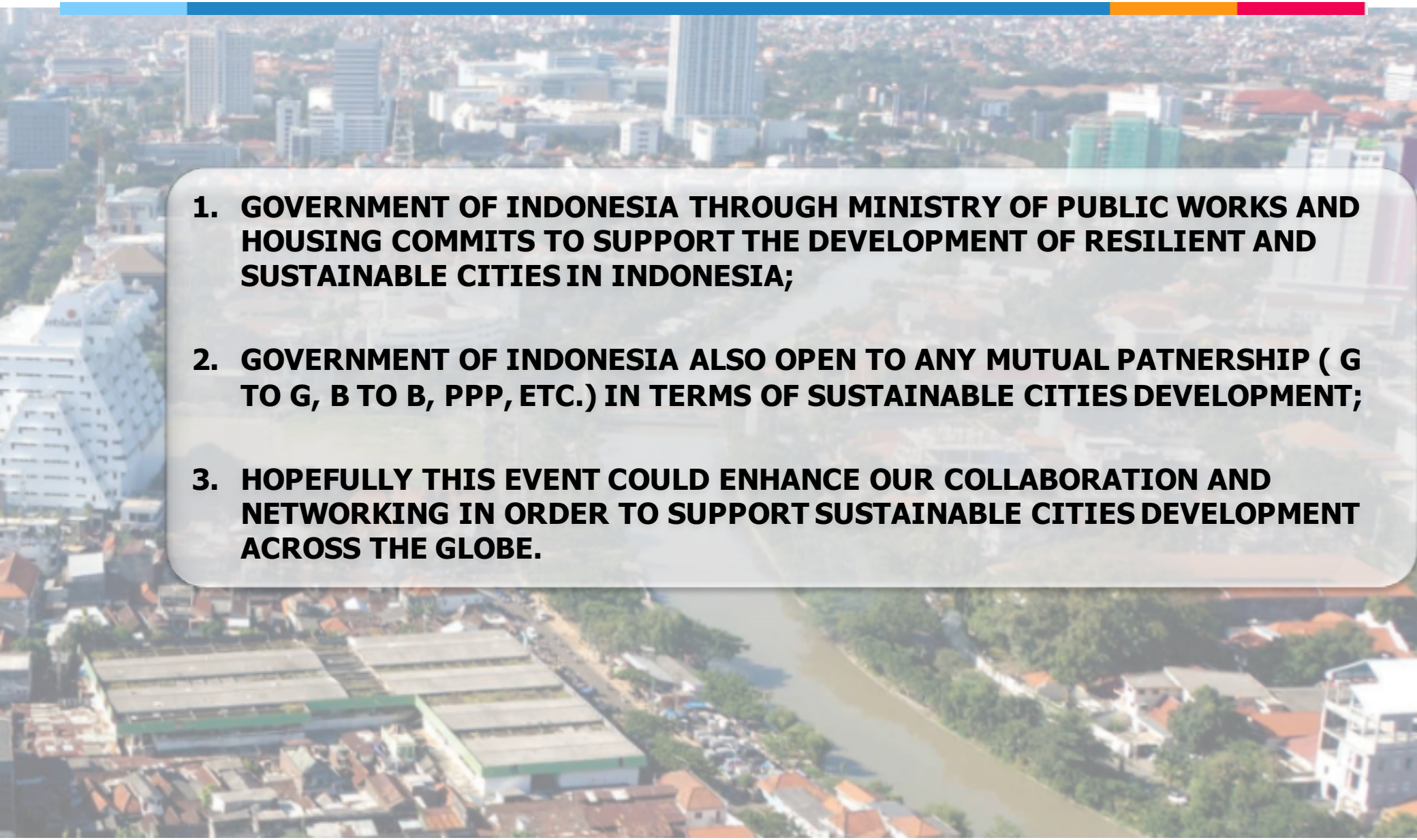


KRUKUT RIVER, JAKARTA





CONCLUSION



1. GOVERNMENT OF INDONESIA THROUGH MINISTRY OF PUBLIC WORKS AND HOUSING COMMITS TO SUPPORT THE DEVELOPMENT OF RESILIENT AND SUSTAINABLE CITIES IN INDONESIA;

2. GOVERNMENT OF INDONESIA ALSO OPEN TO ANY MUTUAL PATNERSHIP (G TO G, B TO B, PPP, ETC.) IN TERMS OF SUSTAINABLE CITIES DEVELOPMENT;

3. HOPEFULLY THIS EVENT COULD ENHANCE OUR COLLABORATION AND NETWORKING IN ORDER TO SUPPORT SUSTAINABLE CITIES DEVELOPMENT ACROSS THE GLOBE.

THANK YOU
ARIGATOU GOZAIMASU
ありがとうございます