UNDIP-ADB INTERNATIONAL WEBINAR SERIES 2021

ASIAN WATER DEVELOPMENT OUTLOOK 2020

SEMARANG

Urban Water Management

Ir. Iswar Aminuddin, MT

City Secretary – Acting Mayor of Semarang

Semarang, 23 February 2021

OUTLINE

01 *Semarang Overview*

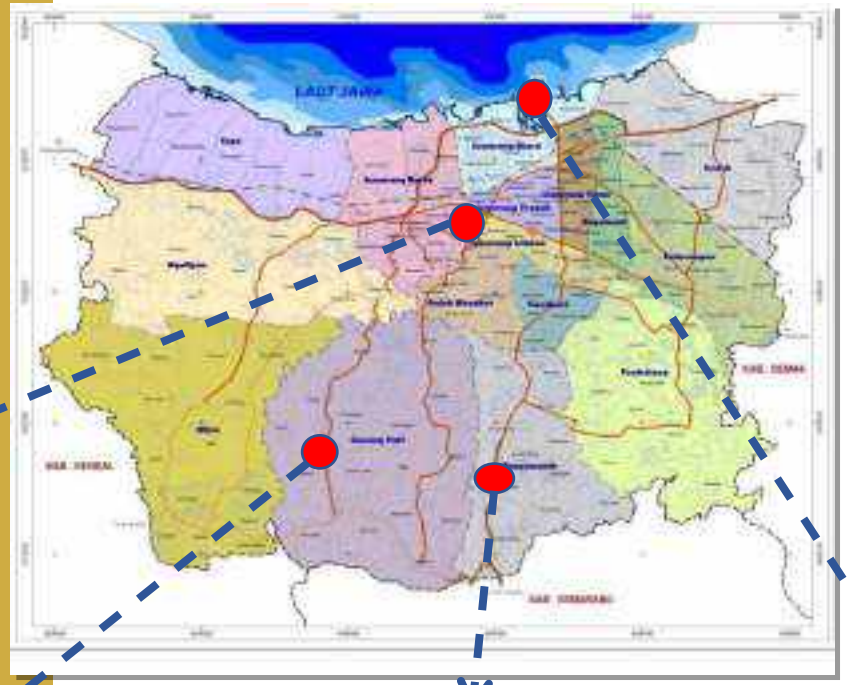
02 *Urban Drainage System*

03 *Water Supply*

04 *Waste Water and Sanitation*

01 *Semarang Overview*

SEMARANG OVERVIEW



- Capital City
- 373.3 Km2
- 16 district
  177 sub district
- 1,8 Million
  Population

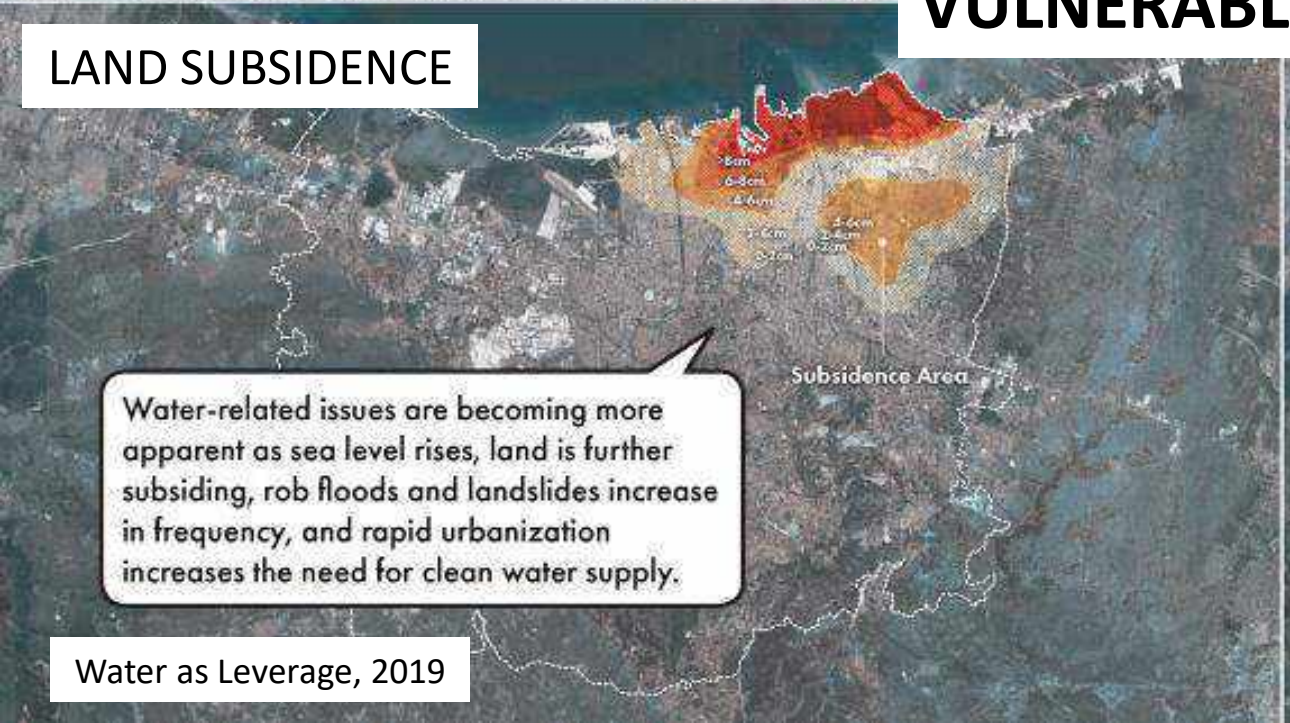
SEMARANG IS **UNIQUE**

VULNERABLE RISK MAP

FLOOD

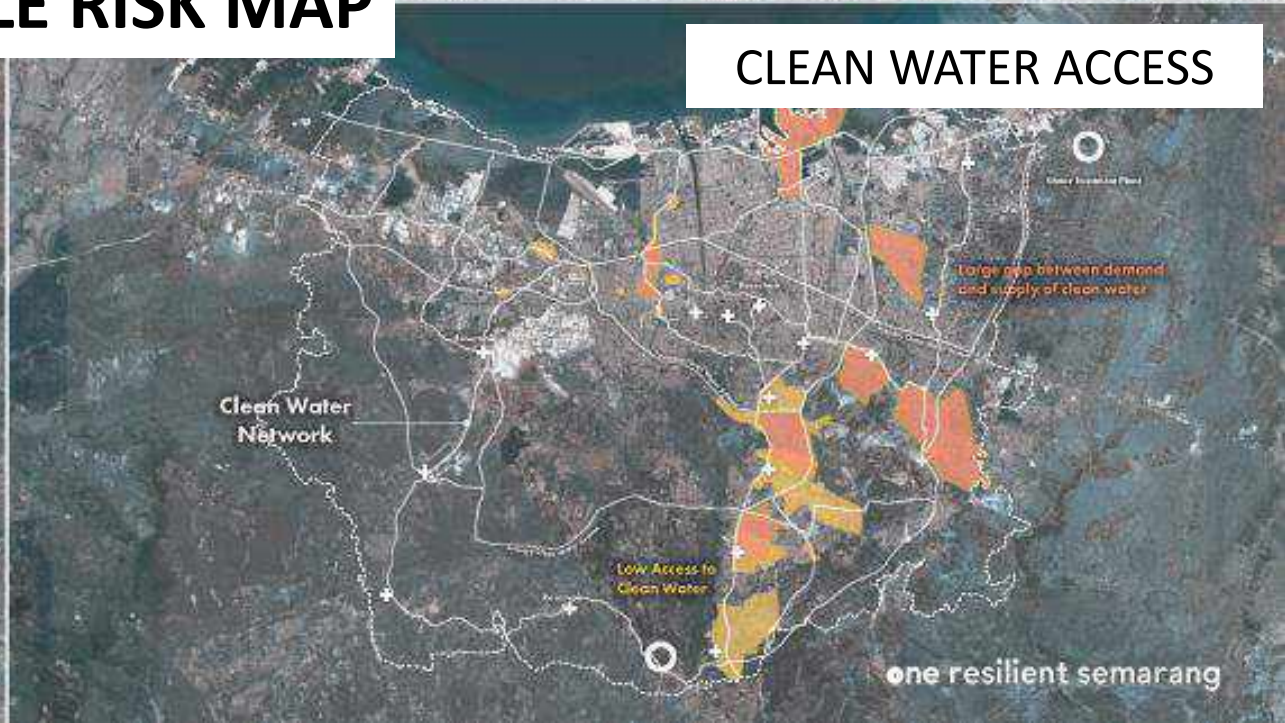
LANDSLIDE

LAND SUBSIDENCE



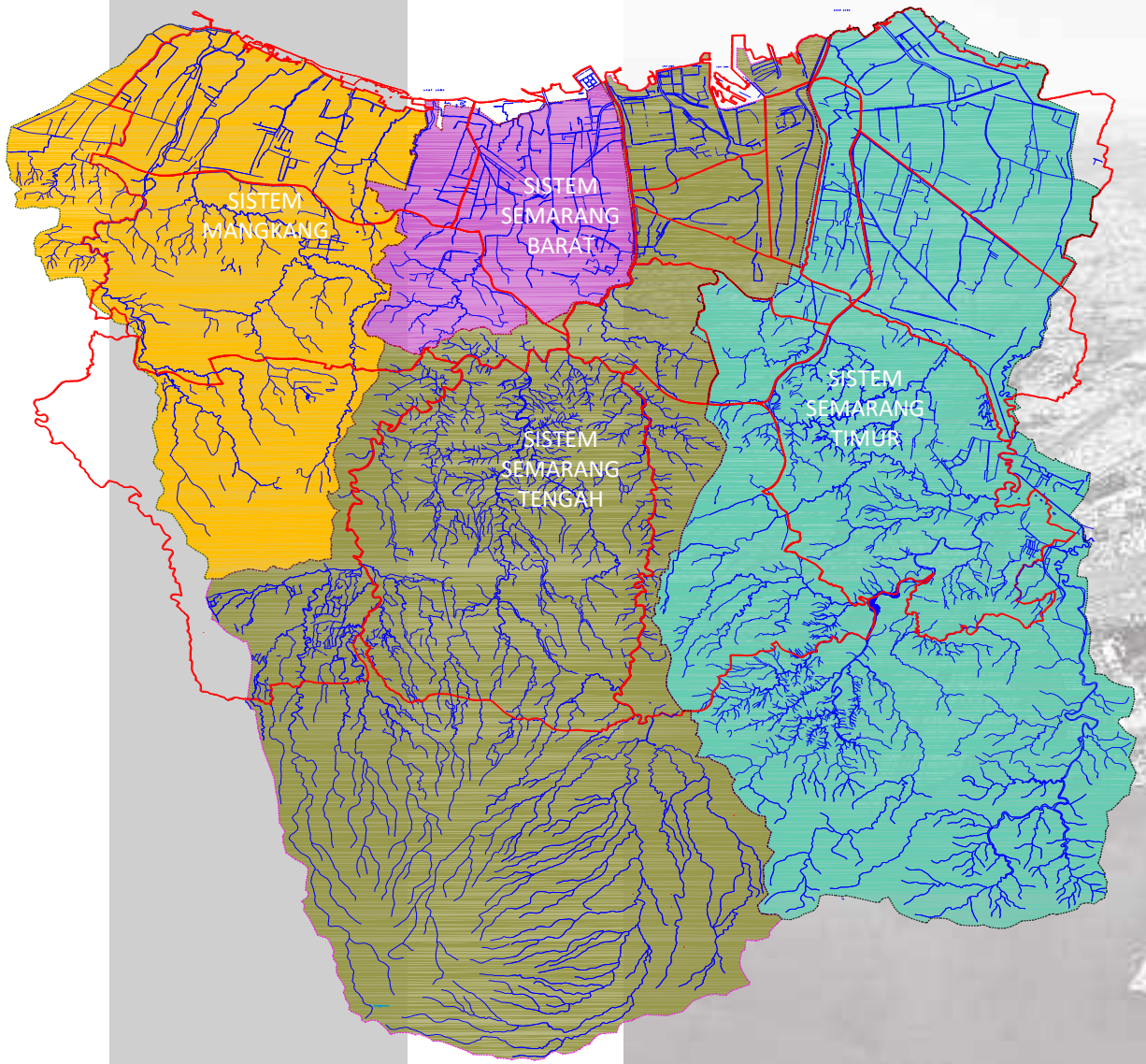
Water as Leverage, 2019

CLEAN WATER ACCESS



02 *Urban Drainage System*

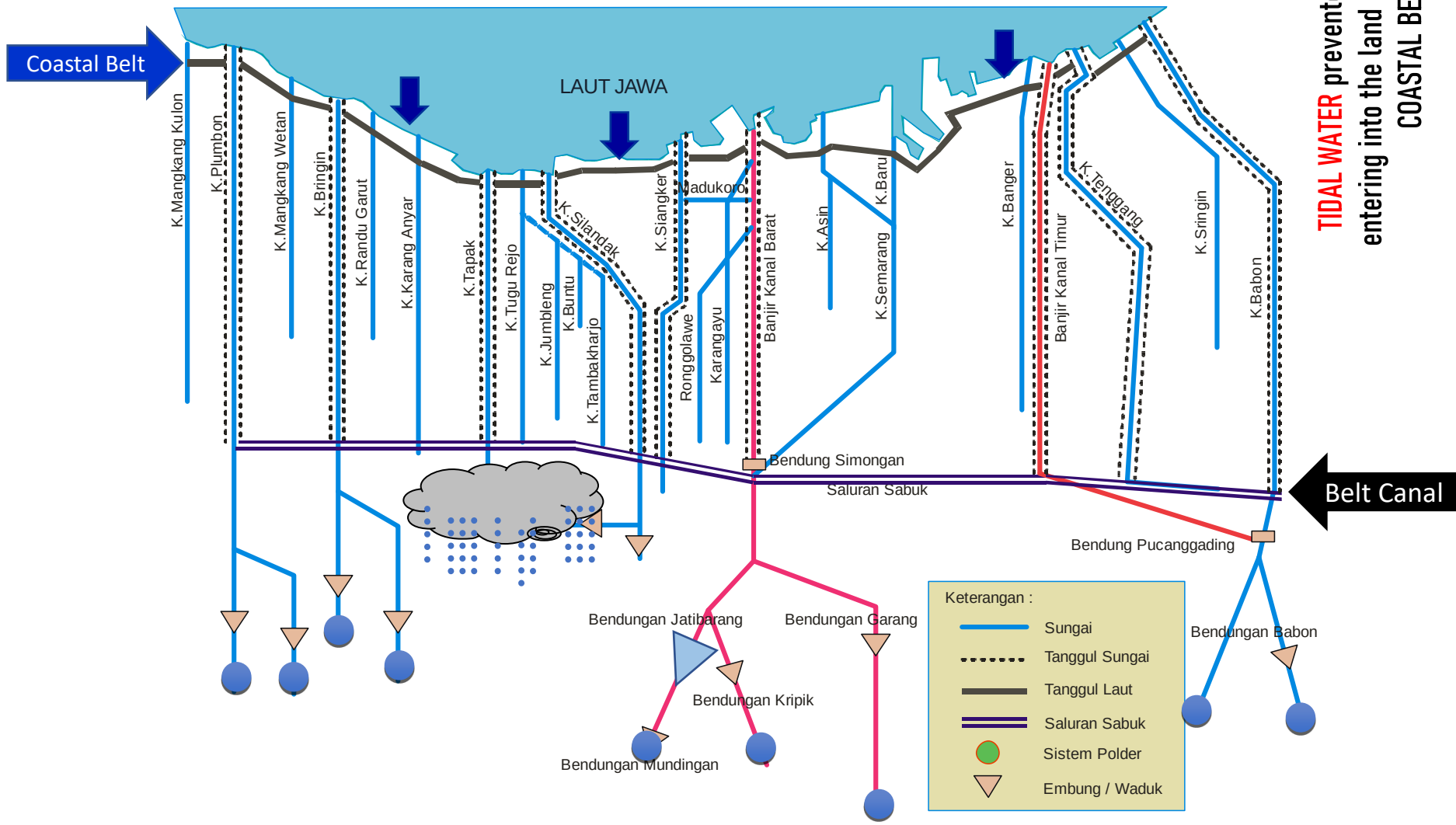
MASTERPLAN OF DRAINAGE SYSTEM



Consist of
4 SYSTEM dan
19 SUB SYSTEM

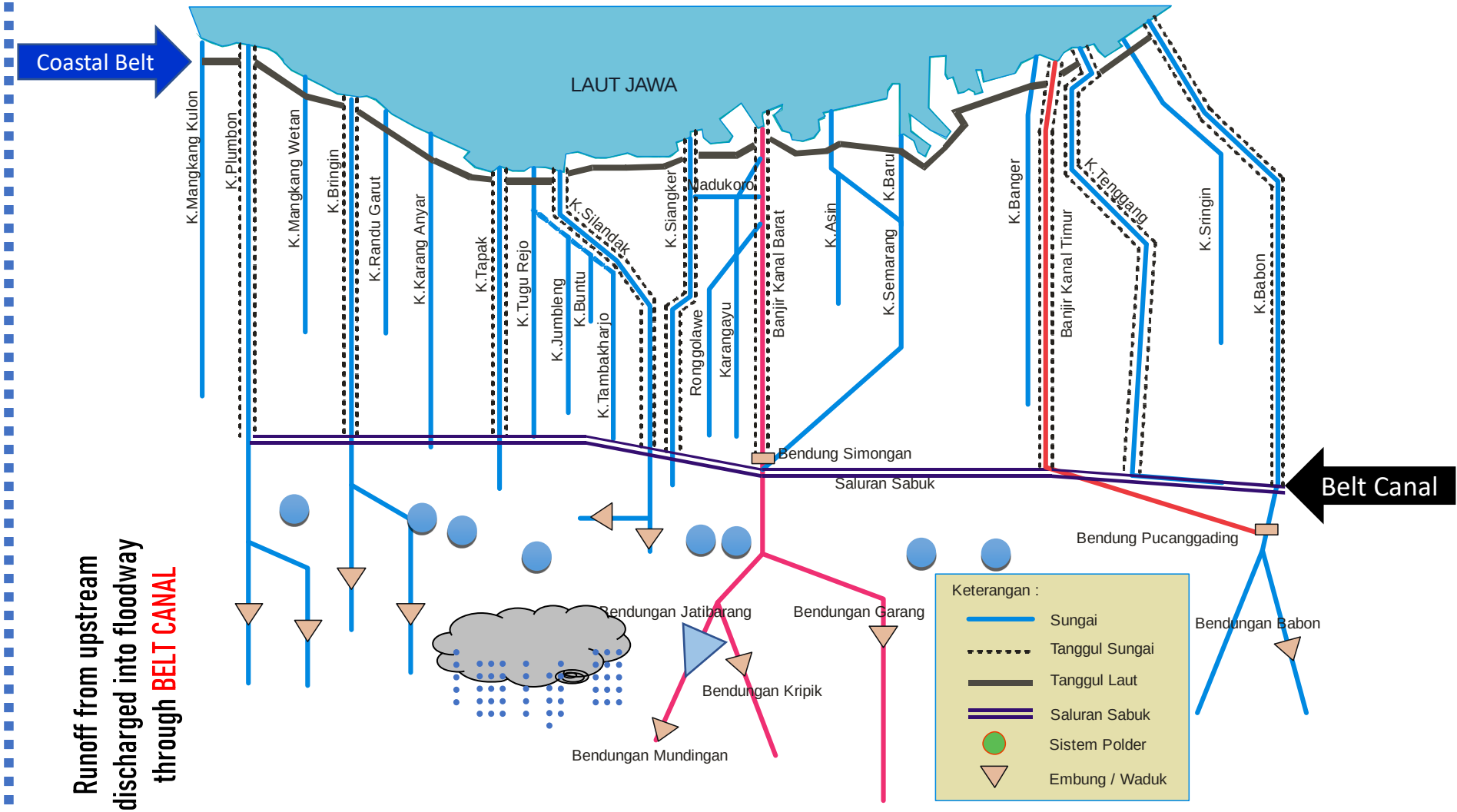
1. **Drainage System Mangkang**
   1. Sub Sistem Kali Mangkang
   2. Sub Sistem Kali Bringin
2. **Drainage System of West Semarang**
   3. Sub Sistem Kali Tugurejo
   4. Sub Sistem Kali Silandak
   5. Sub Sistem Kali Siangker
   6. Sub Sistem Bandara A. Yani
3. **Drainage System of Central Semarang**
   7. Sub Sistem BKB
   8. Sub Sistem Kali Bulu
   9. Sub Sistem Kali Asin
   10. Sub Sistem Kali Semarang
   11. Sub Sistem Kali Baru
   12. Sub Sistem Kali Bandarharjo
   13. Sub Sistem Kali Simpang Lima
   14. Sub Sistem Kali Banger
4. **Drainage System of East Semarang**
   15. Sub Sistem BKT
   16. Sub Sistem Kali Tenggang
   17. Sub Sistem Kali Sringin
   18. Sub Sistem Kali Babon
   19. Sub Sistem Kali Pedurungan

THE BASIC CONCEPT OF SUSTAINABLE URBAN DRAINAGE SYSTEM DEVELOPMENT IN SEMARANG CITY



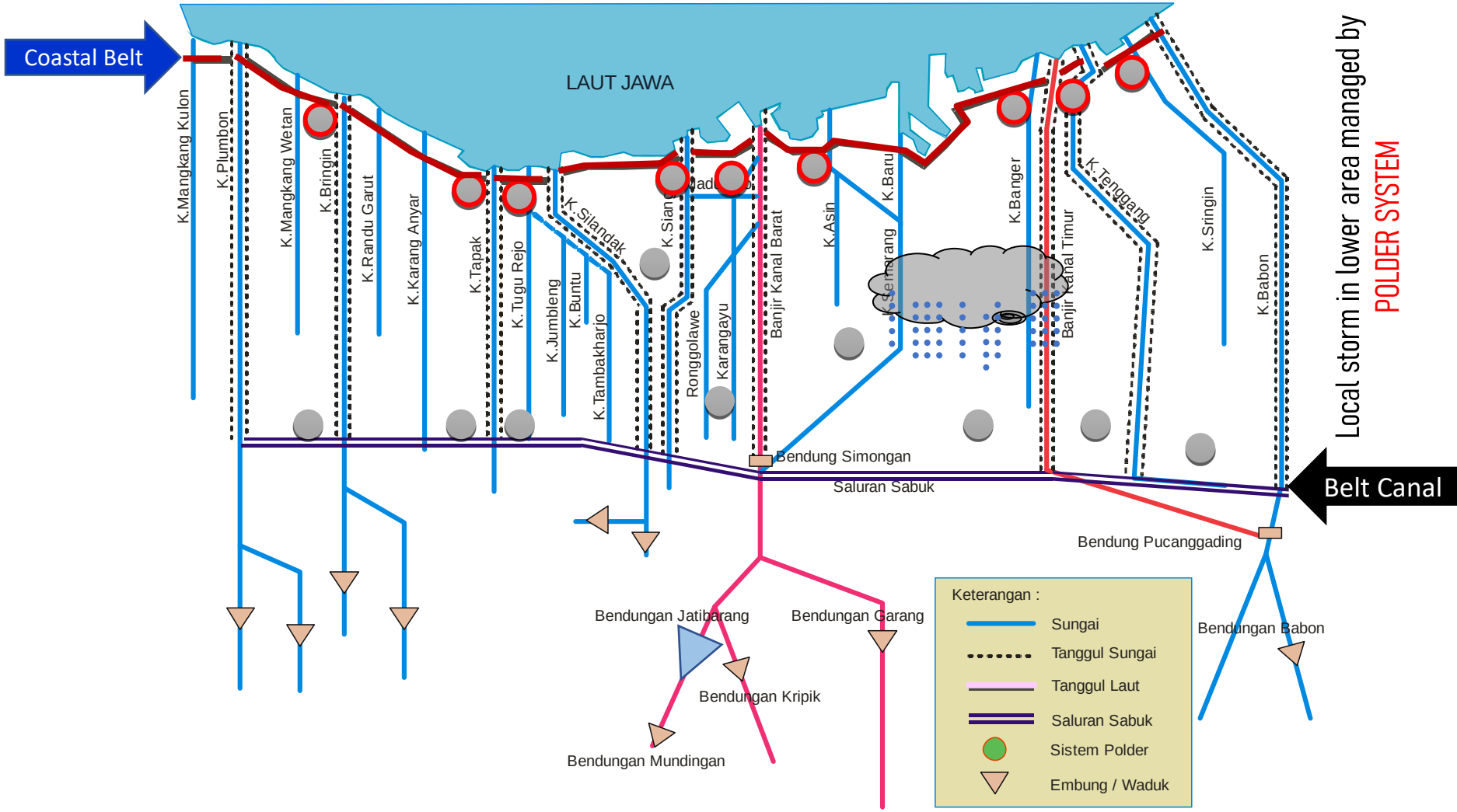
TIDAL WATER prevented entering into the land by COASTAL BELT

THE BASIC CONCEPT OF SUSTAINABLE URBAN DRAINAGE SYSTEM DEVELOPMENT IN SEMARANG CITY



Runoff from upstream discharged into floodway through BELT CANAL

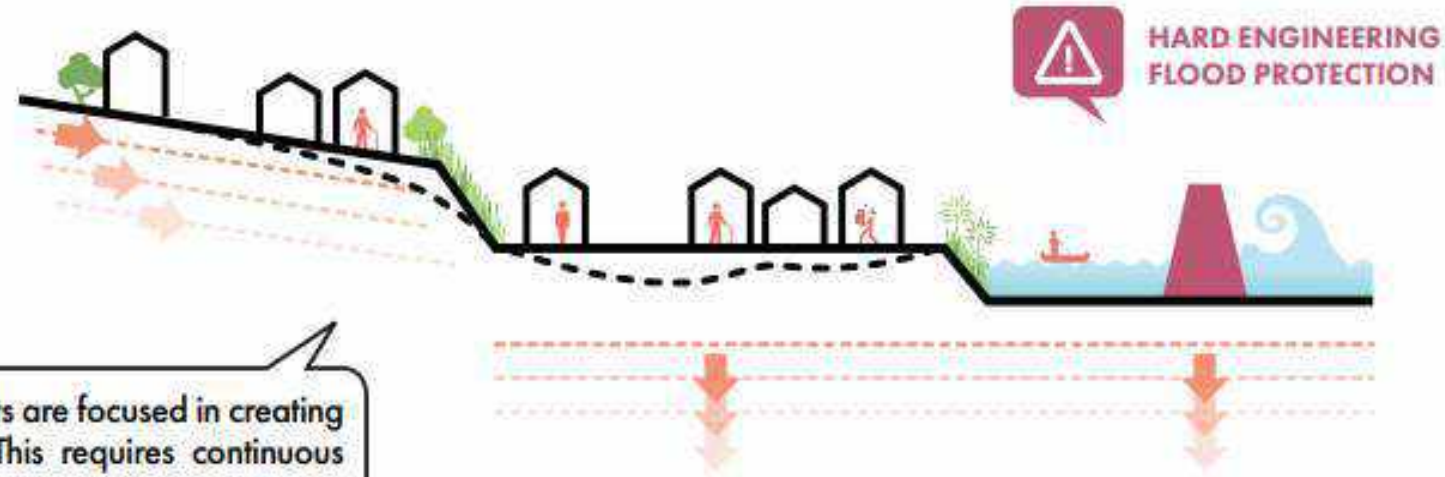
THE BASIC CONCEPT OF SUSTAINABLE URBAN DRAINAGE SYSTEM DEVELOPMENT IN SEMARANG CITY



WATER PUMP IN SEMARANG

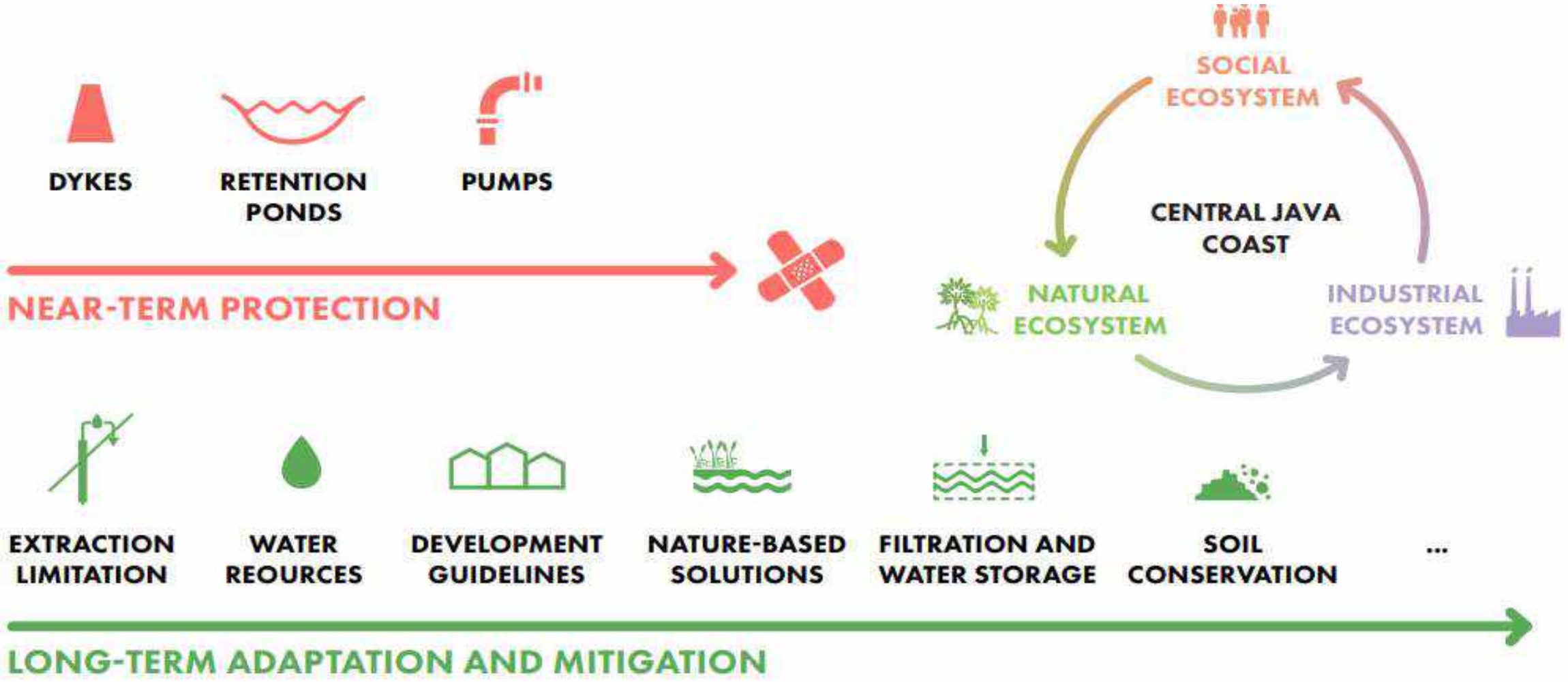
CURRENT APPROACH TO COASTAL PROTECTION

PENDEKATAN YANG ADA SAAT INI UNTUK PERLINDUNGAN PESISIR



The city's coastal protection efforts are focused in creating polders in the lowland areas. This requires continuous treatment and pumping of water out into the sea, actions presumably costly and difficult to manage. Upaya perlindungan pesisir berfokus pada pembangunan sistem polder di daerah dataran rendah yang membutuhkan upaya pemompaan air dan perawatan secara terus-menerus, yang secara relatif mahal dan sulit untuk dikelola.

*"The **DOWNSTREAM** approach is urgent..*
*but lets also focus on The **UPSTREAM**"*



Water as Leverage

Integrated Urban Water Management Program

Conservation Area & Building Coverage Limitation in Spatial Plan

Marine Village Tambaklorok

Semarang River Revitalization

Integrated Toll Road–Sea Dyke Semarang - Demak

Integrated Toll Road–Sea Dyke Semarang - Kendal

SPONGY MOUNTAIN TERRACE

RESILIENT KAMPUNGS

5 RECHANNELING THE CITY

SPATIAL PLAN OF SEMARANG

2011 - 2031

POLICIES :

- Protected Area (regional)
  Protected Area (local)
- 10% Green Open Space (Private)
  20% Green Open Space (Public)
- Housing Development :
  - Zero Delta Q
  - Providing retention pond & infiltration wells
- Special Regulation for District Gunungpati, Mijen & Ngaliyan :
  - Maximum Building Coverage 40%
  - Minimum House Lots @120 m2

03 *Water Supply*

PDAM (Water Supply Company)

Piping Network

Service Coverage

52,71%

174.384 House Connection / 1,04 million people

Production Capacity **3.383** lt/sec

Non Revenue Water (NRW) **39,10** %

INVESTMENT PLANNING

1. Water Supply System (SPAM) Smg Barat 1.000 lt/sec
   1,04 Triliun Rupiah (KPBU, APBN/D, PDAM)
2. Water Supply System Pudakpayung 100 lt/sec
   63,5 Milyar Rupiah (Perbankan, APBD, APBN)
3. Water Supply System Jatisari 200 lt/sec
   131,8 Milyar Rupiah (B to B)
4. Switching Water Supply System Semarang Barat to North & Central Area
   158 Milyar (PDAM)
5. Increasing Capacity of WTP Kaligarang
   50,9 Milyar (B to B)
   1.150 → 1.300 lt/sec
6. Increasing Capacity of WTP Kudu
   93,8 Milyar (PDAM)
   1.250 → 1.800 lt/sec
7. Decreasing Non Revenue Water (NRW) PDAM
8. Water Supply System Muktiharjo 200 lt/sec
   (KPBU, APBD, PDAM)
9. Network Piping on Brown Field area (PDAM)

SPAM (Water Supply System) SEMARANG BARAT

Under Construction

Award on PPP Water Supply System West Semarang

Jatibarang Intake & Transmition Piping by **Ministru of Public Works**

Kreo River

DAM Jatibarang

WTP JATIBARANG **1.000** lt/dt

+

MAIN RESERVOIR **6.600** m3

- Transmition Pipe
- Reservoir Desel **2.700** m3
- Reservoir Manyaran 1 **3.500** m3
- Reservoir Manyaran 2 **5.200** m3

- Main Distribution Network by Ministry of Public Works
- Secondary Distribution Network by **Semarang Municipality** and **PDAM**

KPBU

60 – 70 thousand House Connection

WATER SUPPLY SERVICE SEMARANG

TOTAL COVERAGE 2020 78,17%

1. PAMSIMAS

Water and Sanitation Community Based Provision

Service Coverage **14%**

Pamsimas Kota Semarang 2008 – Sekarang (Pamsimas I – III)

Reguler, HIK, HID, HKP, Padat Karya

House Connection **25.699**

People Covered **128.495**

Area Covered **91** sub district

2. NON PAMSIMAS

Service Coverag **11,46%**

Funding Source Government **DAK, APBD**

Wells Drilling & Surface Water

20 unit

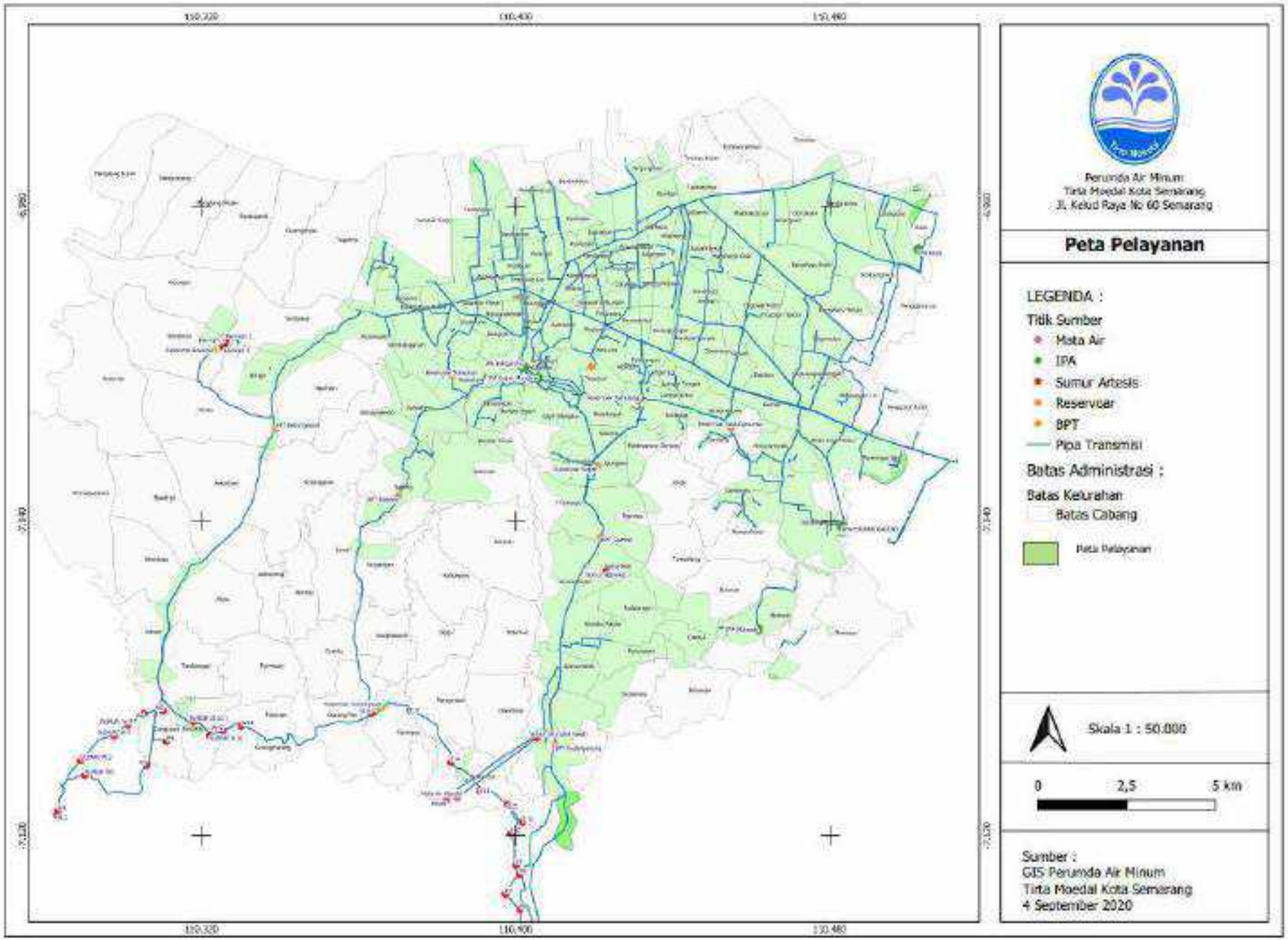
(2017 – 2019)

Funding Source Non Government **Pengembang**

Development Plan on Non PDAM Water Supply **Resctriction on Deep Wells**

NON PDAM

Non Piping Network



Service Coverage of PDAM

52,71%

WTP Jatibarang
60.000 – 70.000 House Connection

WTP Jatisari
16.000 House Connection

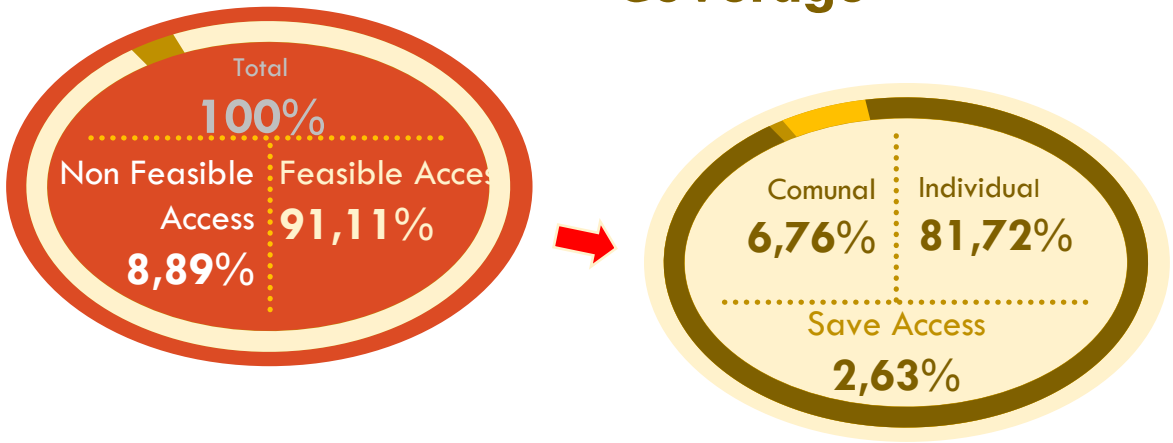
WTP Pudakpayung
6000 House Connection

Upgrading WTP Kudu
adding 650 lt/sec

04 *Waste Water and Sanitation*

WASTE WATER & SANITATION

Sanitation Access Coverage



Providing **SEPTICTANK** 2018 – 2019 **(563)**

WASTE WATER MANAGEMENT

CENTRAL

WWTP (IPAL)
Comunal (**184** unit)
USRI, SANIMAS, DAK & APBD
In 16 district

Development Plan on SPALD-T Skala Kawasan (Area Scale)
IPAL Kawasan Pendidikan (Education Area)
(**Study is on progress**)

WWTP (IPAL)
Central

ESP Program on **SPALD-T Skala Perkotaan (City Scale)**
(10 district, target House Connection 1 million unit)

On Progress
Feasibility Study

LOCAL

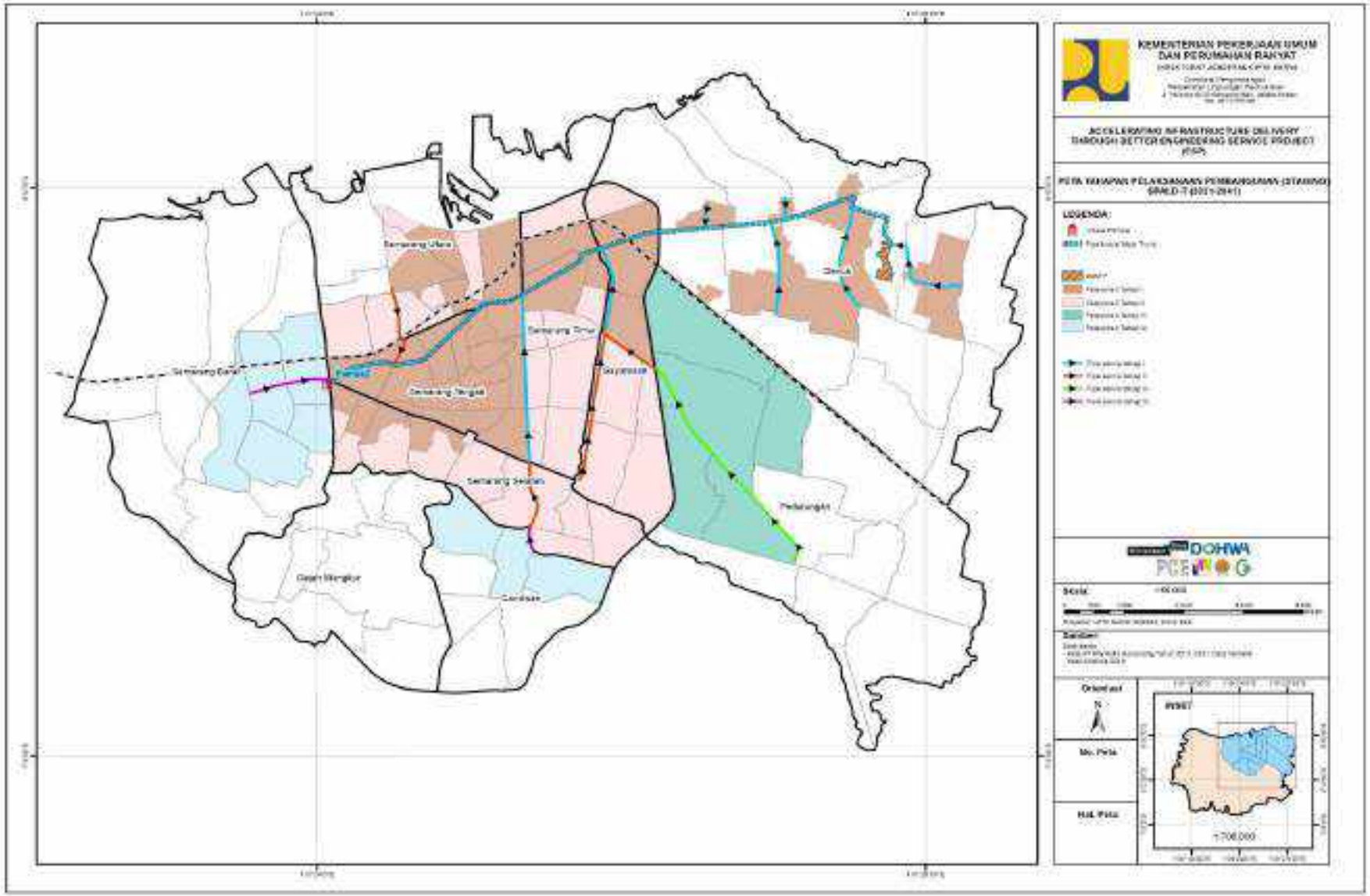
Individual

Comunal

Capacity
70 m^3/day
(25-30 truck/day)

Under Management from Housing & Settlement Agency of Semarang (Disperkim)

Retribution
Rp **250** million (2018)



SPALD-T (*Central Waste Water Treatment System*)

Covering 10 Districts :

Semarang Tengah, Genuk, Semarang Utara, Semarang Timur, Gayamsari, Semarang Selatan, Pedurungan, Candisari, Semarang Barat, Gajah Mungkur

Phase 1 (2023-2026)

1. Kecamatan Semarang Tengah
2. Kecamatan Semarang Timur
3. Kecamatan Gayamsari
4. Kecamatan Genuk
5. Kecamatan Semarang Utara
6. Kecamatan Semarang Selatan

Phase 2 (2027-2031)

1. Kecamatan Semarang Tengah
2. Kecamatan Semarang Timur
3. Kecamatan Gayamsari
4. Kecamatan Genuk
5. Kecamatan Semarang Utara
6. Kecamatan Semarang Selatan

Phase 3 (2032-2036)

1. Kecamatan Semarang Tengah
2. Kecamatan Semarang Timur
3. Kecamatan Gayamsari
4. Kecamatan Genuk
5. Kecamatan Semarang Utara
6. Kecamatan Semarang Selatan
7. Kecamatan Pedurungan

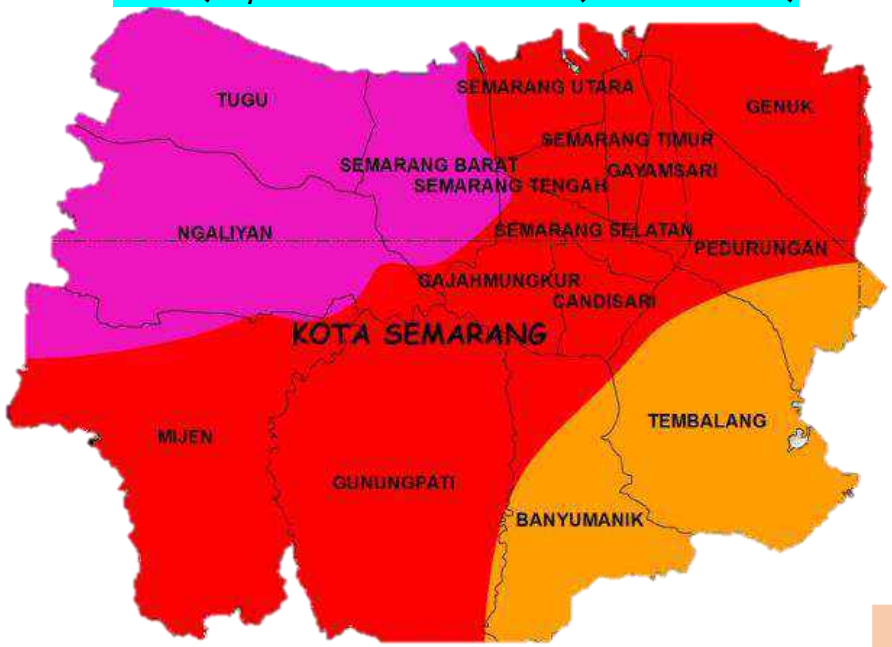
Phase 4 (2037-2041)

1. Kecamatan Semarang Tengah
2. Kecamatan Semarang Timur
3. Kecamatan Gayamsari
4. Kecamatan Genuk
5. Kecamatan Semarang Utara
6. Kecamatan Semarang Selatan
7. Kecamatan Pedurungan
8. Kecamatan Candisari
9. Kecamatan Semarang Barat
10. Kecamatan Gajahmungkur

THANK YOU. TERIMA KASIH. MATURNUWUN

Added Slide
(if needed)

Curah Hujan Jam 07.00 WIB (Tgl 5 Feb 2021) s/d Jam 07.00 WIB (6 Feb 2021)

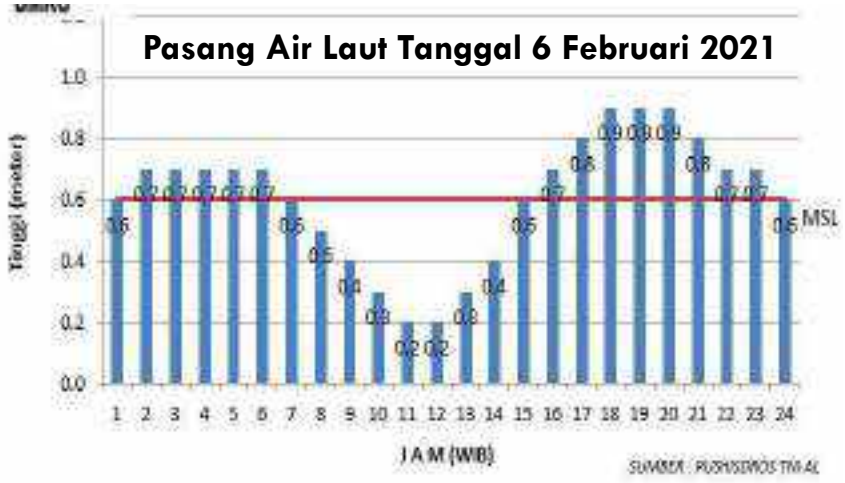


Keterangan :

Tidak Hujan		
Ringan	: 0.5 - 20 mm/hari	
Sedang	: 20 - 50 mm/hari	
Lebat	: 50 - 100 mm/hari	
Sangat Lebat	: 100 - 150 mm/hari	
Ekstrim	: > 150 mm/hari	

Hujan Tertinggi di Beringin, Ngaliyan sebesar

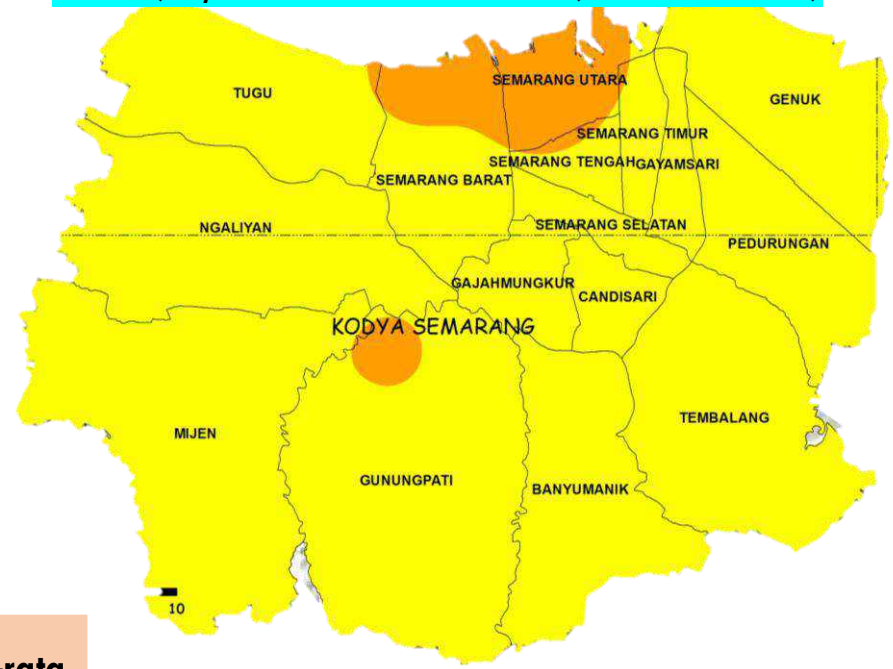
183 mm



NO	TAHUN	Curah hujan setahun (mm)	Hari hujan setahun	Rata-rata (mm/hari)
1	2015	**1748**	122	**14,33**
2	2016	**2590**	181	**21,23**
3	2017	**2657**	153	**21,78**
4	2018	**2059**	128	**16,88**
5	2019	**1273**	114	**10,43**

Sumber: BPS Jawa Tengah

Curah Hujan Jam 07.00 WIB (Tgl 6 Feb 2021) s/d Jam 07.00 WIB (7 Feb 2021)



Hujan Tertinggi di Tanjung Mas sebesar

58,8 mm