



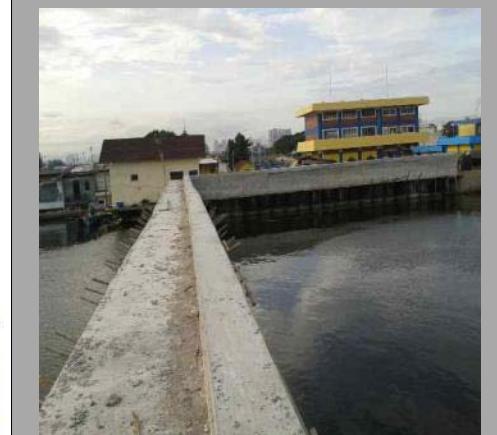
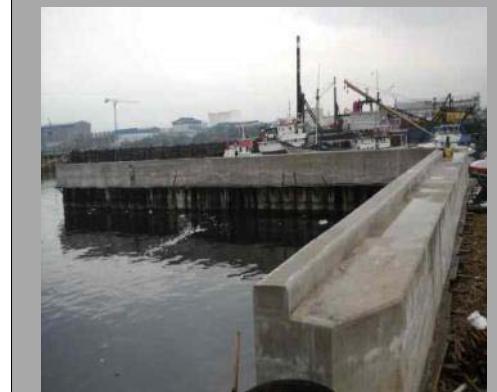
NATIONAL CAPITAL INTEGRATED COASTAL DEVELOPMENT

(NCICD)

*CONFERENCE ON "URBANIZING DELTAS OF THE WORLD"
HO CHI MINH CITY, VIETNAM
26-27 JANUARY 2016*



KEMENTERIAN PEKERJAAN UMUM DAN PERUMAHAN RAKYAT
BADAN PENELITIAN DAN PENGEMBANGAN
PUSAT PENELITIAN DAN PENGEMBANGAN SUMBER DAYA AIR
Jalan Ir. H. Juanda 193, Bandung 40135, Telp. (022) 2501083, 2504053, 2501554, 2500507
Faks. (022) 2500163, PO Box 841, E-mail: pusat@pusair-pu.go.id, [Http://www.pusair-pu.go.id](http://www.pusair-pu.go.id)



The Content of the Presentation

The Issues of the Capital City – Jakarta

Evidence of Jakarta's Land Subsidence

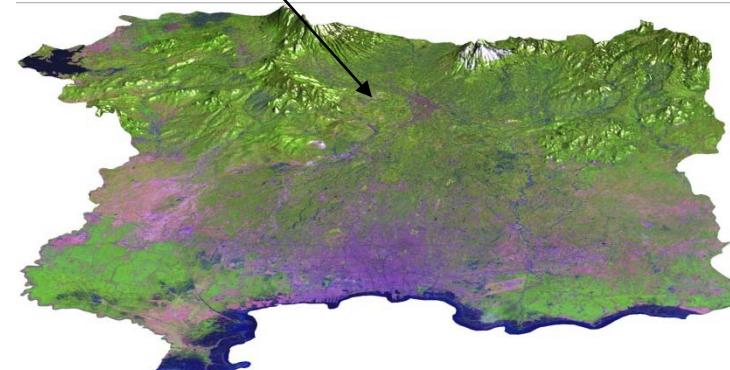
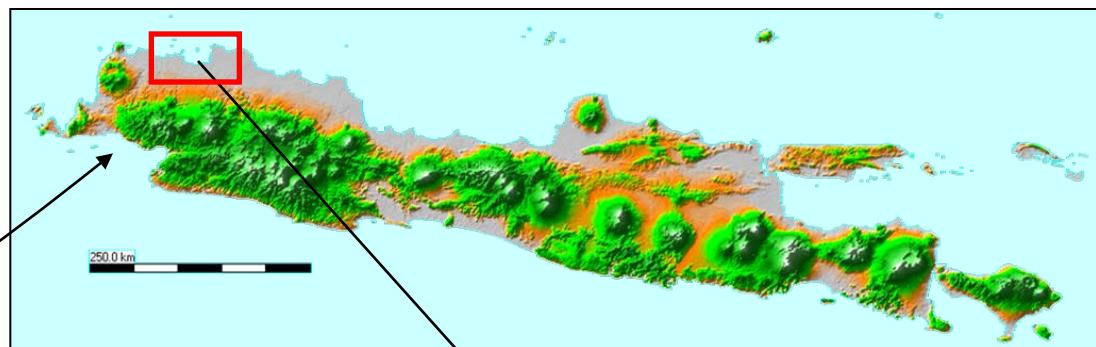
The Threat of Flooding from the Sea

The Threat of Flooding from Rainfall
(upstream)

Solution and Strategy

THE ISSUES OF THE CAPITAL CITY (DKI – JAKARTA)

JAKARTA CAPITAL CITY OF INDONESIA

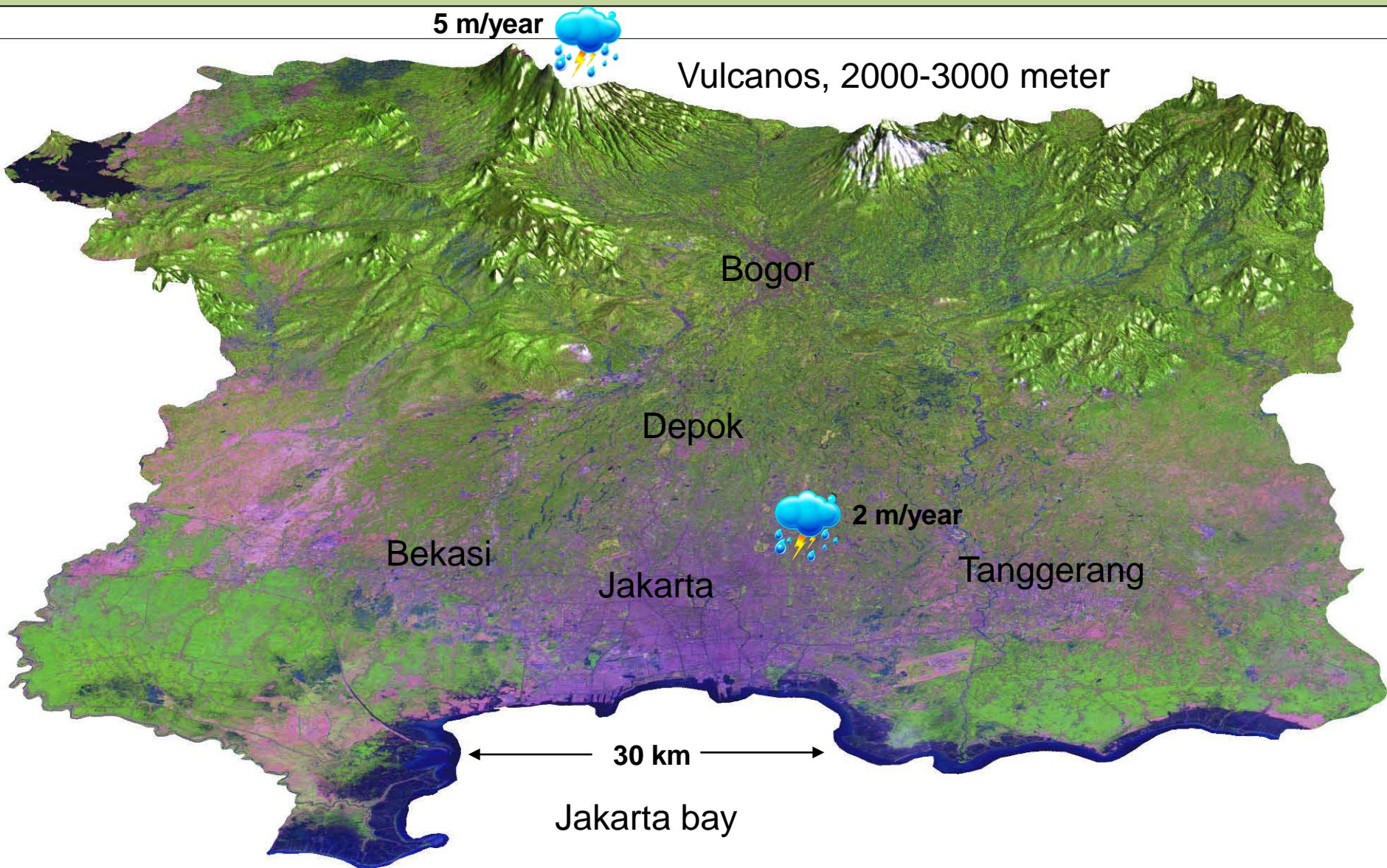


Indonesia:

- Population – 240 million
- 13,000 inhabited islands

Greater Jakarta (JABODETABEK)

2nd largest urban area, 30-35 million people





The Issues of Jakarta

*“too much, too little,
too dirty, too busy”*



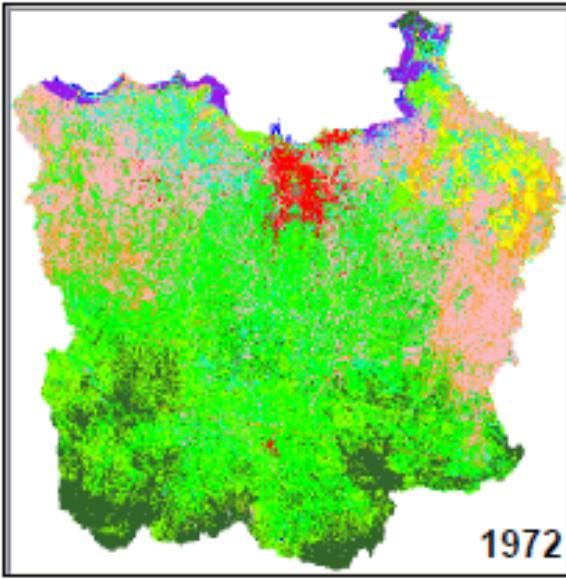
LAND SUBSIDENCE

Evidence of Jakarta's Land Subsidence Story ;

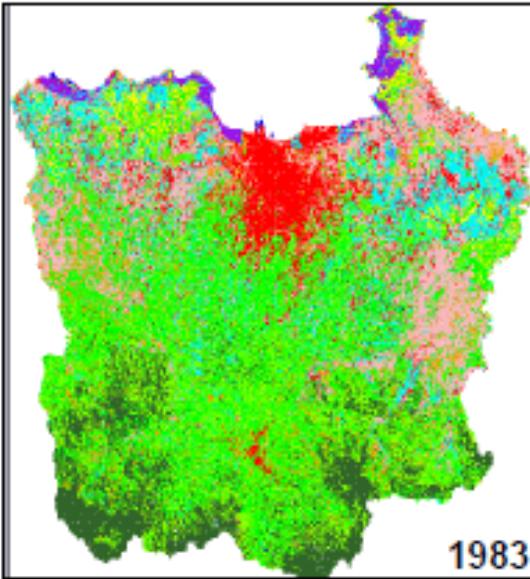
“Floods ROB”

“Bridge Lowering”

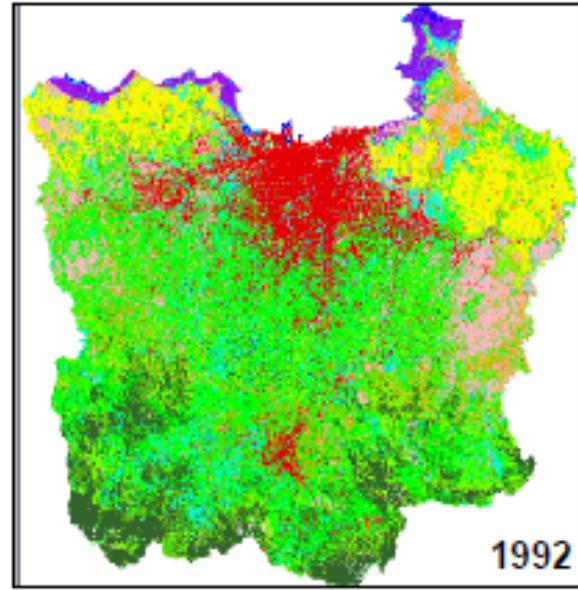
Urbanisation



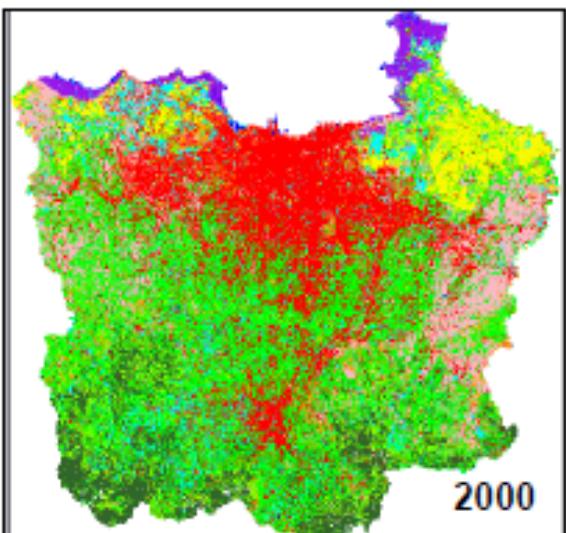
1972



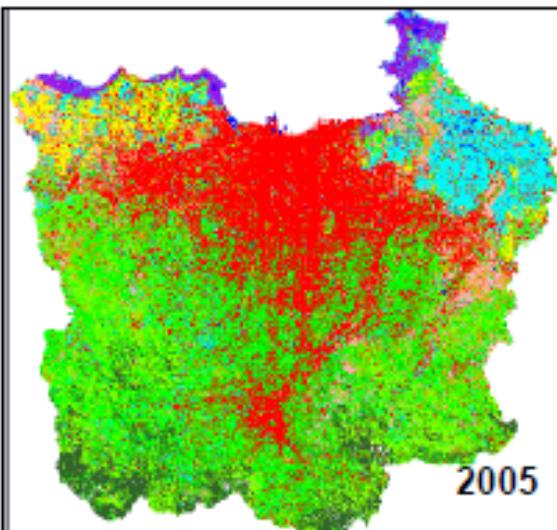
1983



1992



2000



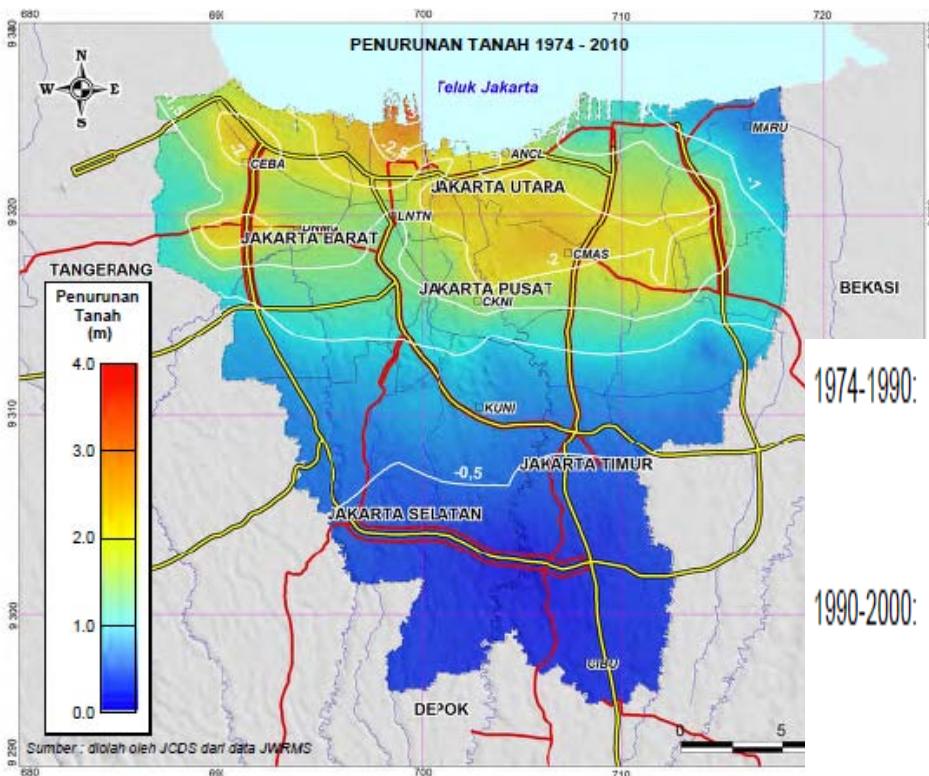
2005

Image of Land Use Development in
Jabodetabek
[Djakapermana, 2008].

The red colors indicate the built-up areas.



SPATIAL AND TEMPORAL DISTRIBUTION OF LAND SUBSIDENCE



Hasil Pengukuran Penurunan Tanah (cm/tahun)

Penurunan Tanah	Periode		
	1974-1990	1990-2000	2000-2010
Minimum	-	0,5	0,9
Rata-rata	1,9	4,5	5,0
Maksimum	7,9	11,7	17,9

1974-1990:

Penurunan tanah Jakarta dipelajari sebagai bagian dari Jabotabek Water Resources Management Study (JWRMS), memanfaatkan teknik sifat datar konvensional dalam jaringan cukup luas.

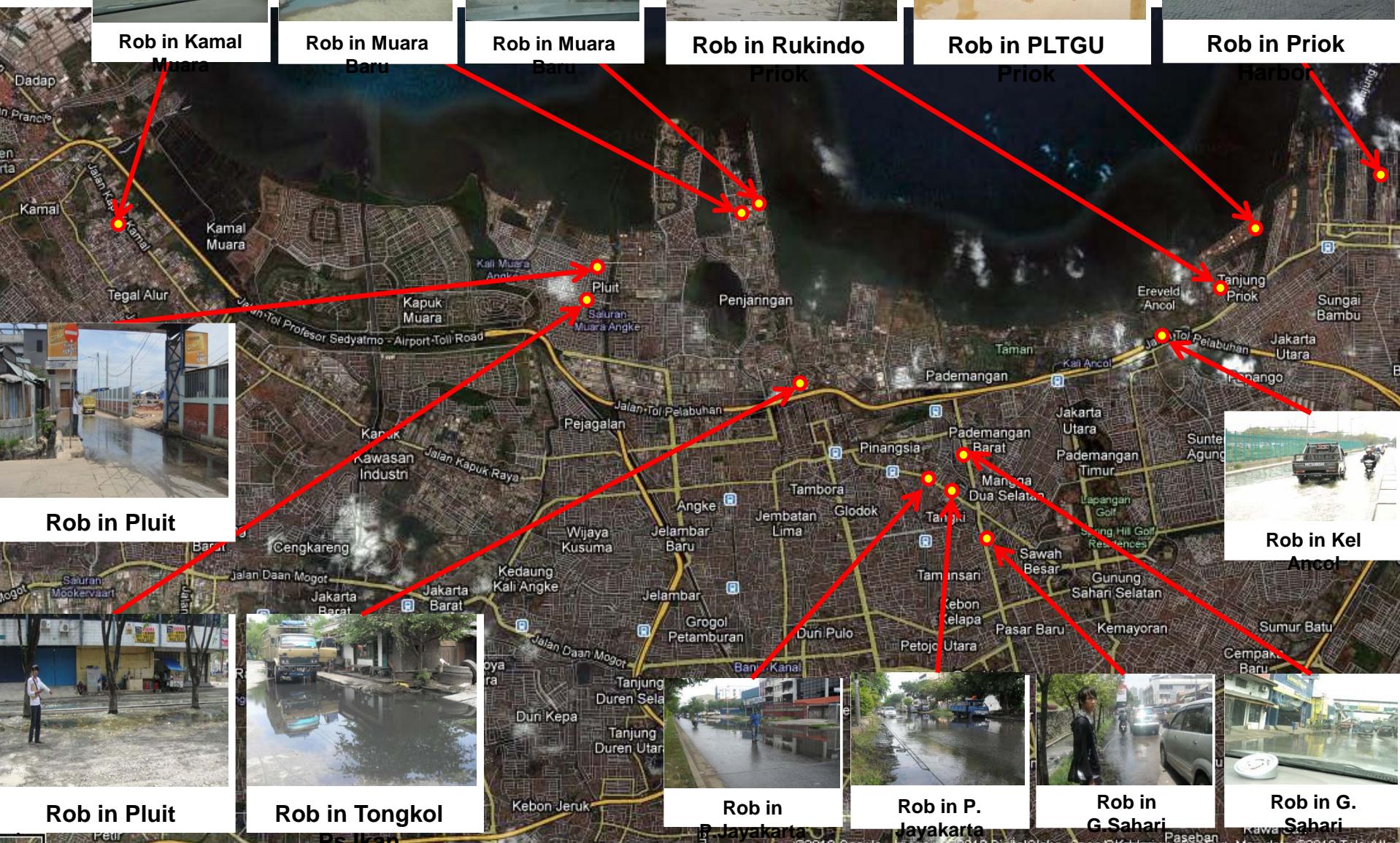
1990-2000:

Studi penurunan tanah melalui pengukuran sifat datar konvensional dilanjutkan antara lain oleh International Development Research Centre (IDRC), sedangkan Dinas Pertambangan kerja sama dengan Institut Teknologi Bandung (ITB) menciptakan jaringan pengukuran baru yang diukur dengan GPS.

2000-2010

Pengukuran jaringan GPS dilanjutkan, sedangkan inisiatif pertama yang diambil oleh teknologi INSAR. Pada periode ini akibat penurunan tanah sudah mulai kelihatan dan terasa di bagian utara kota Jakarta

Floods “ROB” in northern Part of Jakarta



Sign of sinking is real !!



Muara Baru January 14, 2003



Muara Baru February 15, 2010

LAND SUBSIDENCE

THE THREAT OF FLOODING FROM THE SEA



**It started with
Pluit - November 26, 2007**

Pluit --- Febr 2011

Water level 2.28





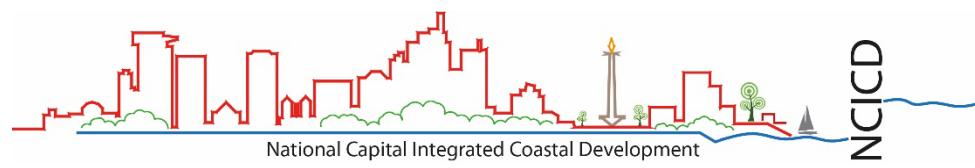
Pluit Seawall



Panic
on the coast
August 14, 2013



PENURUNAN MUKA TANAH



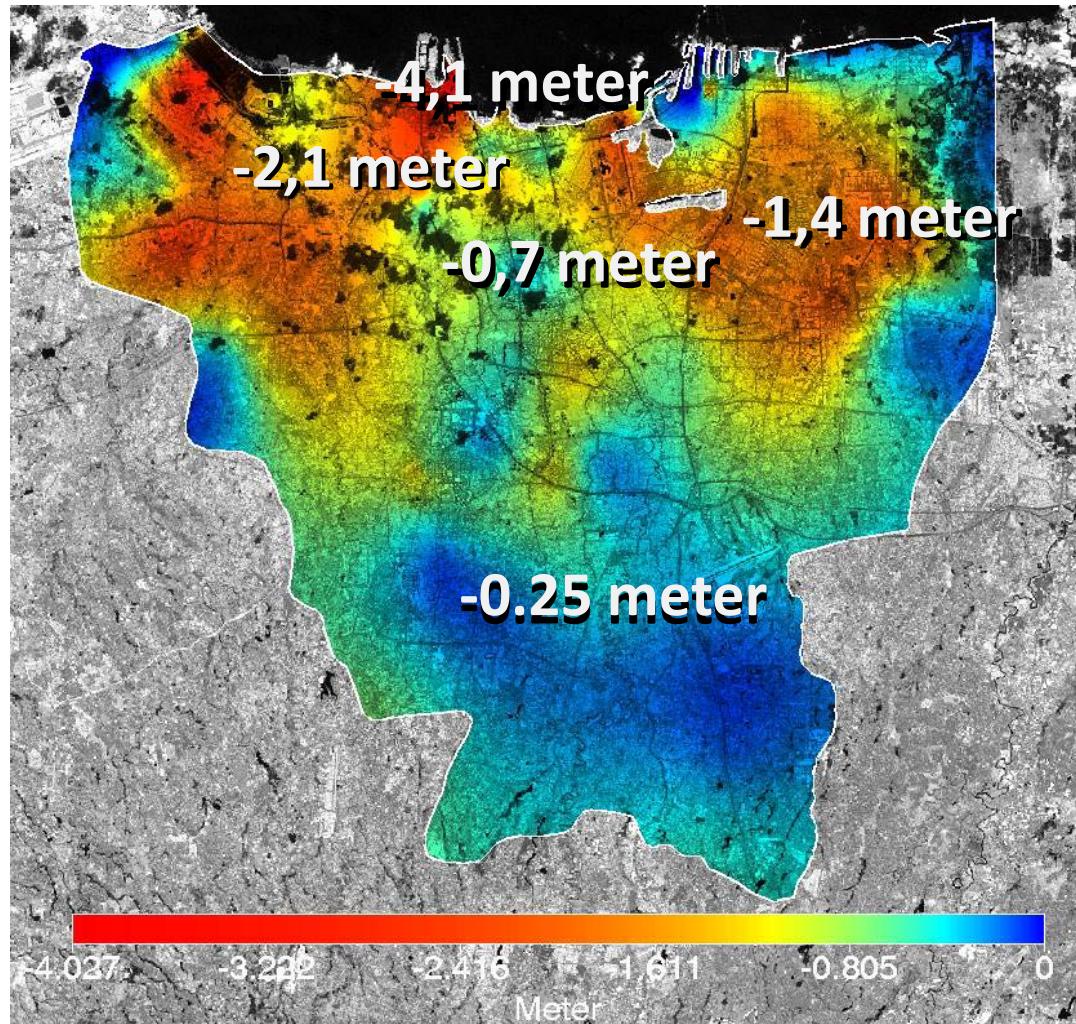
Subsidence Map

Subsidence map of Jakarta 1974-2010:

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

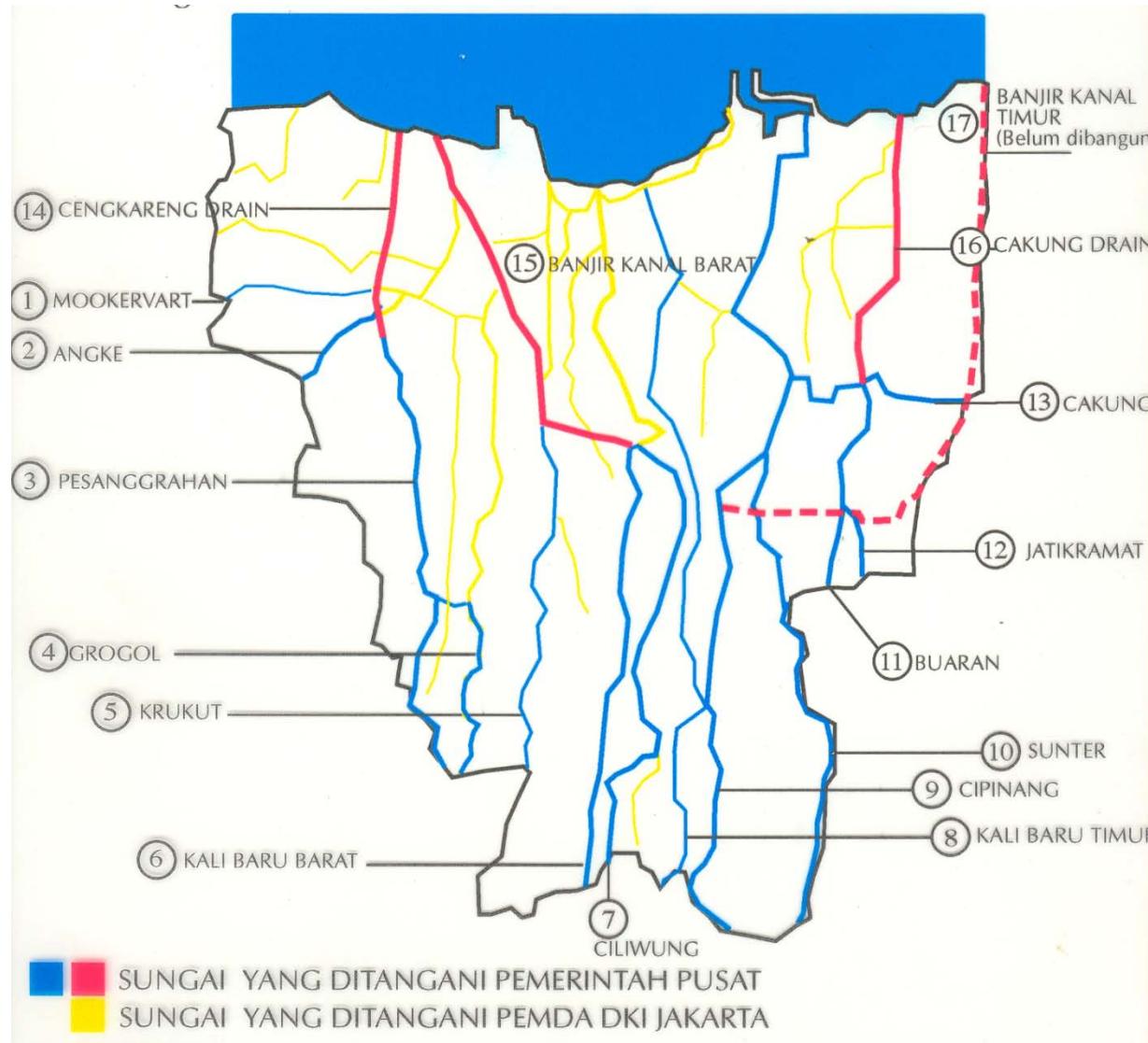
First recorded of leveling data were in 1974. Base on accumulated data, interpolation and extrapolation we can make subsidence map of Jakarta from year 1974 up to 2010.

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



**RAINFALL
LANDUSE
CLIMATE CHANGE**

**THE THREAT OF FLOODING FROM
RAINFALL (UPSTREAM)**



BANJIR DKI – JAKARTA

13 Kali melalui Jakarta

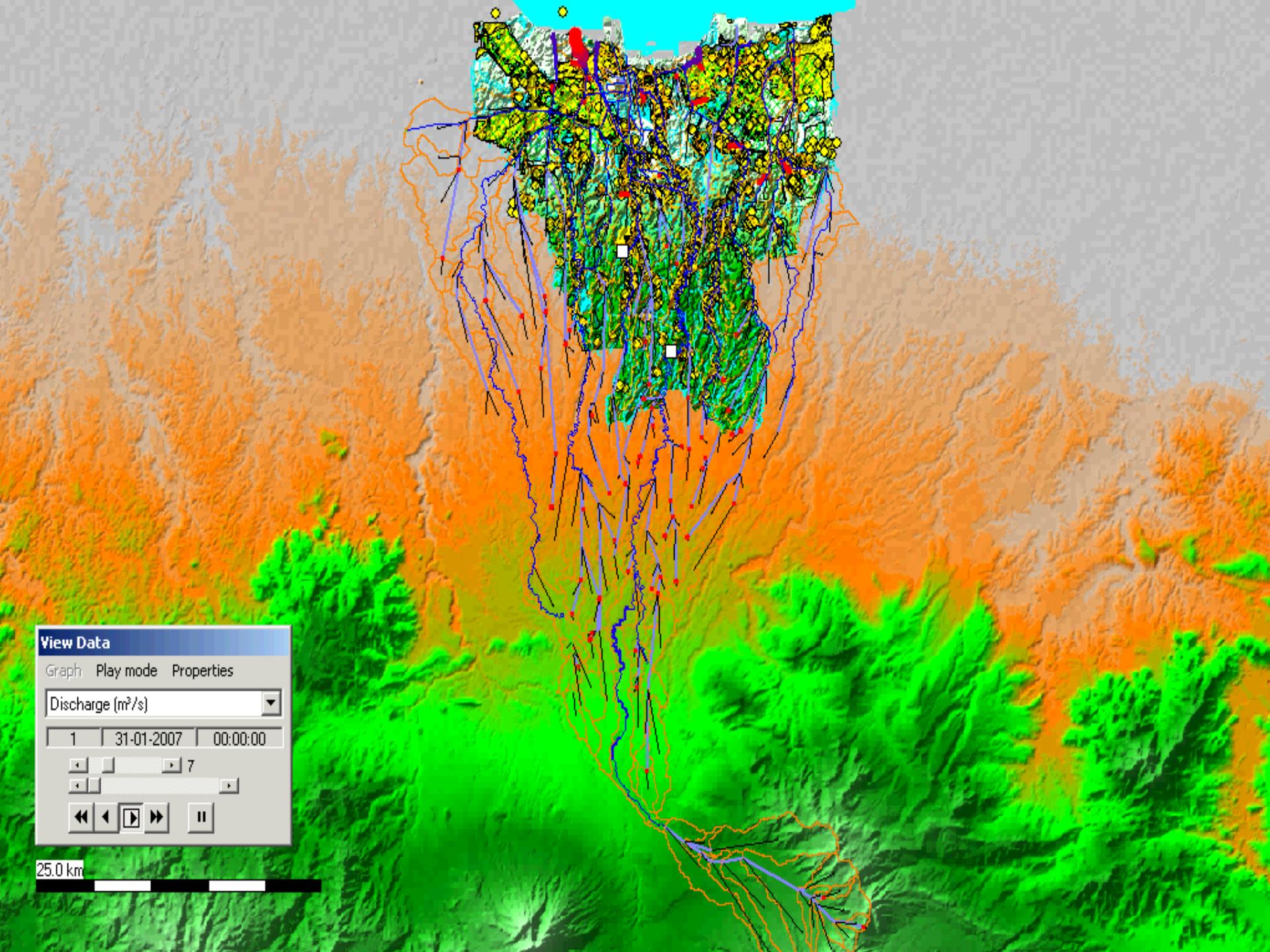
1. Mookervart
2. Angke
3. Pesanggerahan
4. Grogol
5. Krukut
6. Kalibaru Barat
7. Ciliwung
8. Kalibaru Timur
9. Cipinang
10. Sunter
11. Buaran
12. Jati Kramat
13. Cakung

Banjir Kanal

14. Cengkareng Drain (1981)
15. Banjir Kanal Barat (1920)
16. Cakung Drain (1981)
17. Banjir Kanal Timur (2011)

Waduk/Pompa:

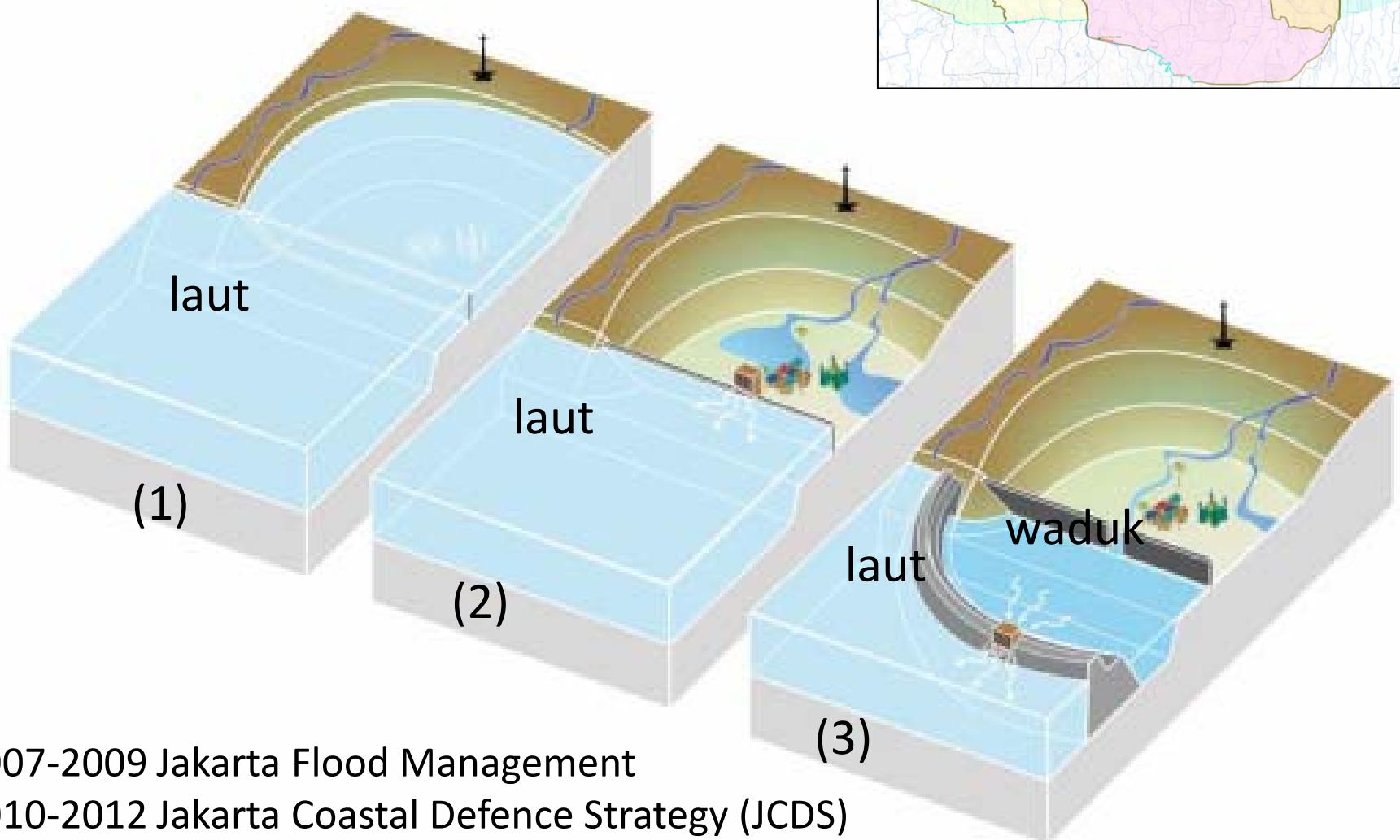
Pluit, Cideng, Ancol, Sunter dll



SOLUTION & STRATEGY

SOLUTION TO JAKARTA FLOODING

1. Let North of Jakarta inundated
2. Sea dike along the shoreline and retentinn basin in the inland
3. Sea dike and retention on the offshore

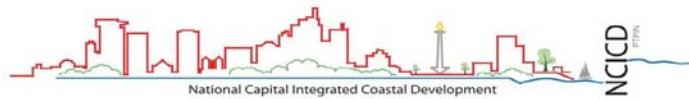


2007-2009 Jakarta Flood Management

2010-2012 Jakarta Coastal Defence Strategy (JCDS)

2013-2014 National Capital Integrated Coastal Development (NCICD)

PHASING for LONG TERM SOLUTION



Design: 2014-2017

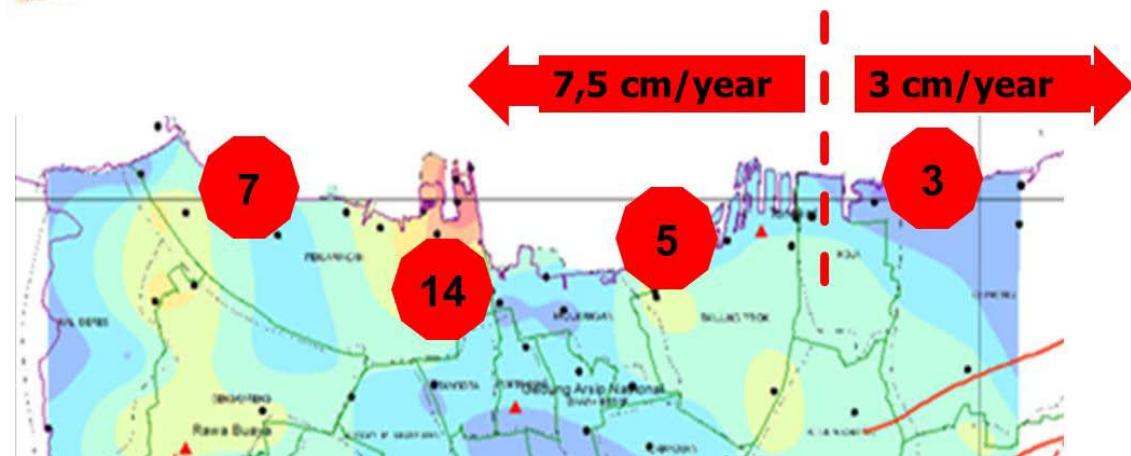
Construction: 2018-2022

Flood safety: until 2080



Construction: 2014-2017

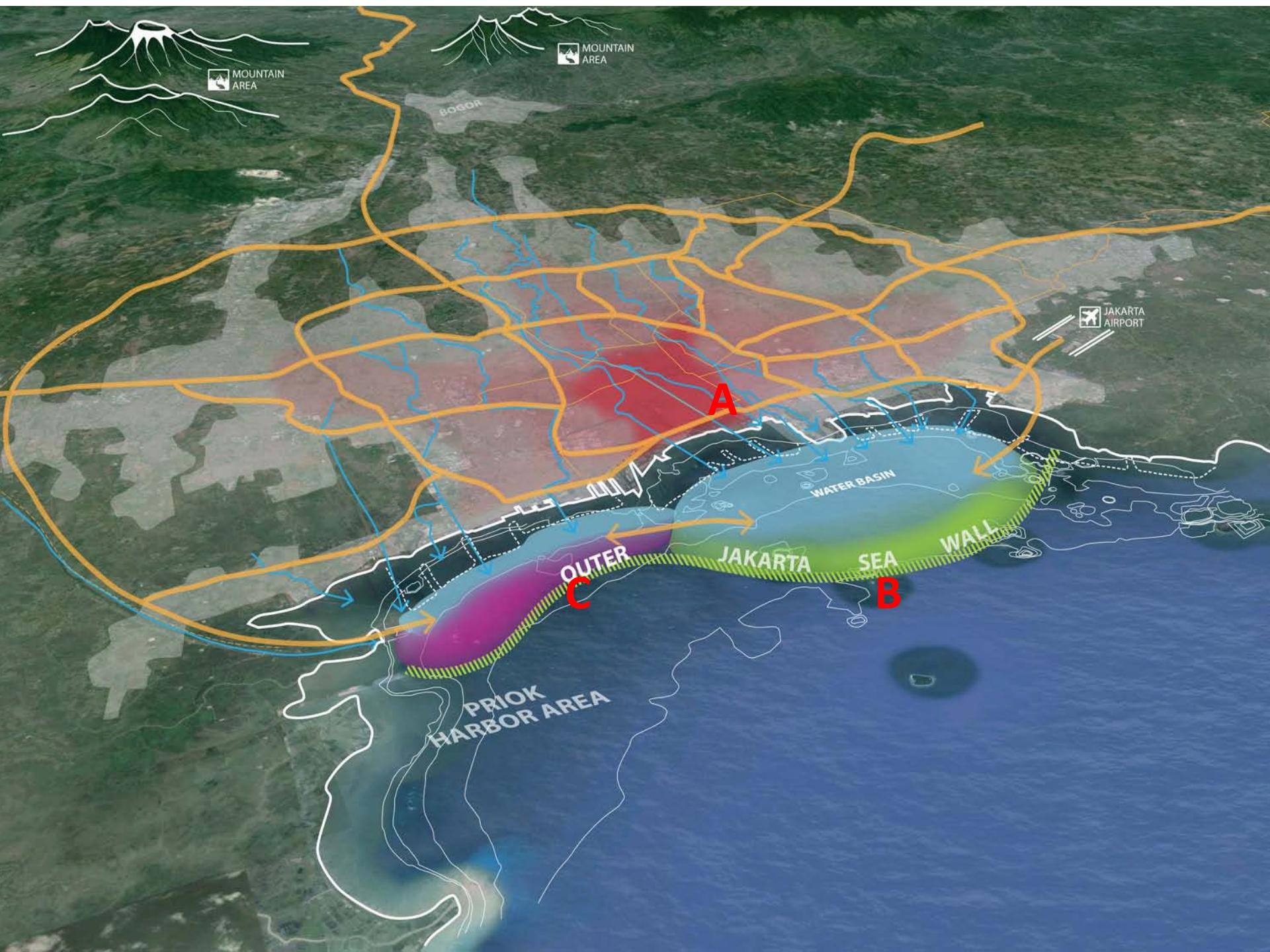
Flood safety: until 2030



NATIONAL CAPITAL INTEGRATED COASTAL DEVELOPMENT

MASTERPLAN NCICD





An aerial photograph of a coastal city, likely Jakarta, showing a massive bridge spanning a body of water. The city is densely built with numerous skyscrapers and industrial structures. In the upper right corner, there is blue text overlaid.

STOP
THE SINKING

THANKYOU

From
Coastal Defence
to
Coastal Development
but always
Towards a safe and resilient
Jakarta

