

URBAN *KAMPUNG* GETTING MORE VULNERABLE: JAKARTA CHALLENGES IN RAPID URBANIZATION AND CLIMATE CHANGE

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OUTLINE

- **Characteristics of Urban *Kampung***
- **Urban *Kampung* Vulnerability in Jakarta**
 - **Rapid Urbanization and Population Growth**
 - **Climate and Environmental Changes – related disasters**
- **Community At Risk in Urban *Kampung***
 - **Community Vulnerability**
 - **Livelihood at Risk**
- **Summary**

URBAN *KAMPUNG* IN JAKARTA

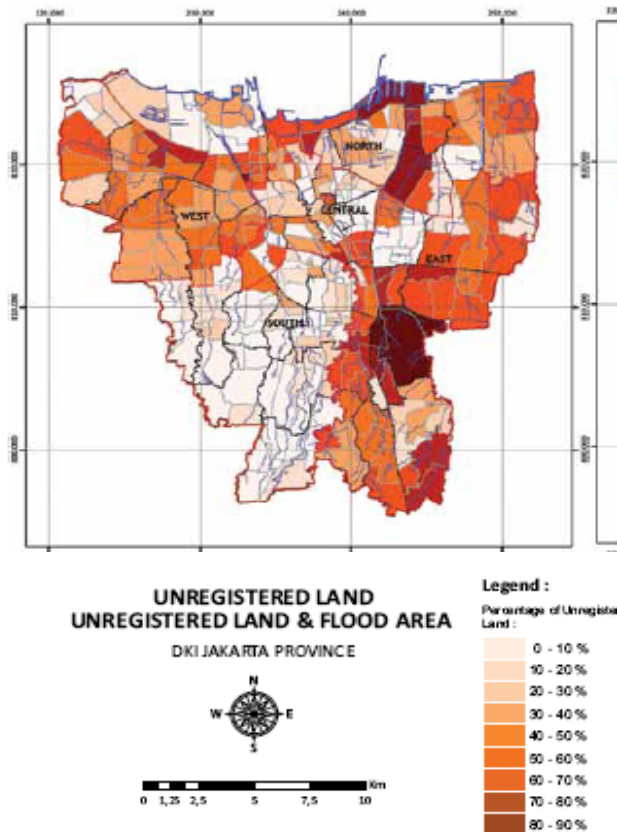
Wide spread with Characteristics:

- Unplanned urban settlements
- High densely populated & housing area
- Poorly housing, environmental & sanitation condition
- Lack space for basic infrastructures, traffic congestion
- Lack of basic services delivery, e.g. clean water, sewers, solid waste & garbage collection
- Nature and behavior of the community still similar to villagers

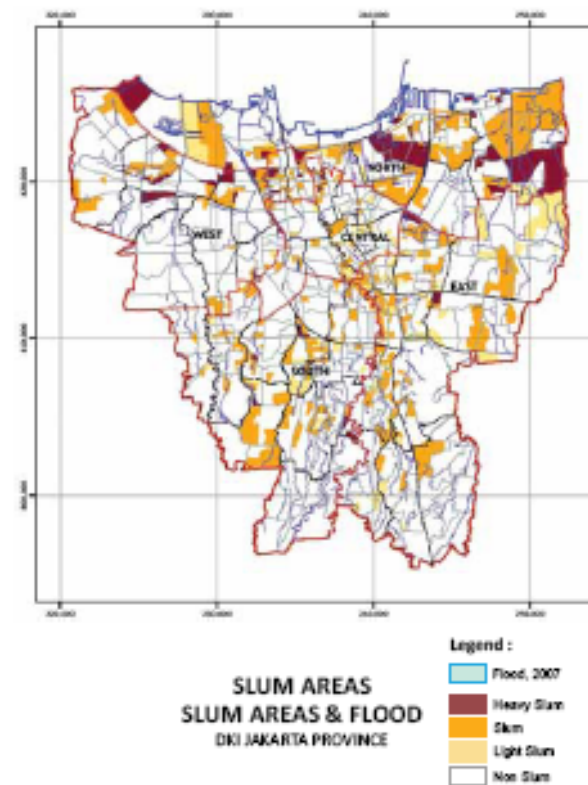


URBAN *KAMPUNG* IN JAKARTA

- Unregistered land



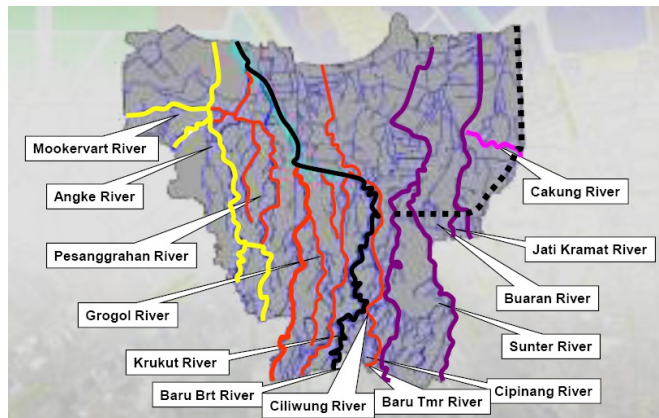
- Slum Areas



Source: WB, 2011

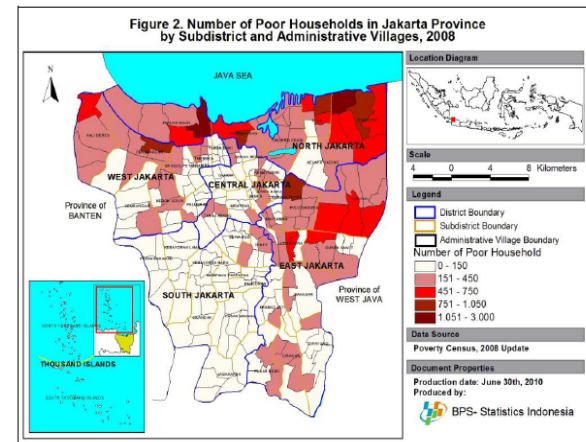
URBAN KAMPUNG IN JAKARTA

- Along water ways and on the coast

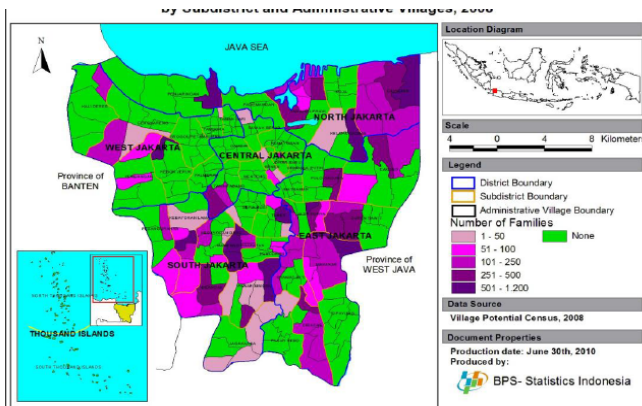


Source: Hasanuddin, 2008)

Pocket of Poverty



- North Jakarta
- East Jakarta
- West Jakarta

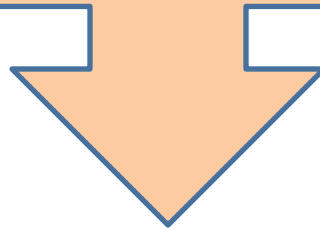


Number of families living on river banks in Jakarta

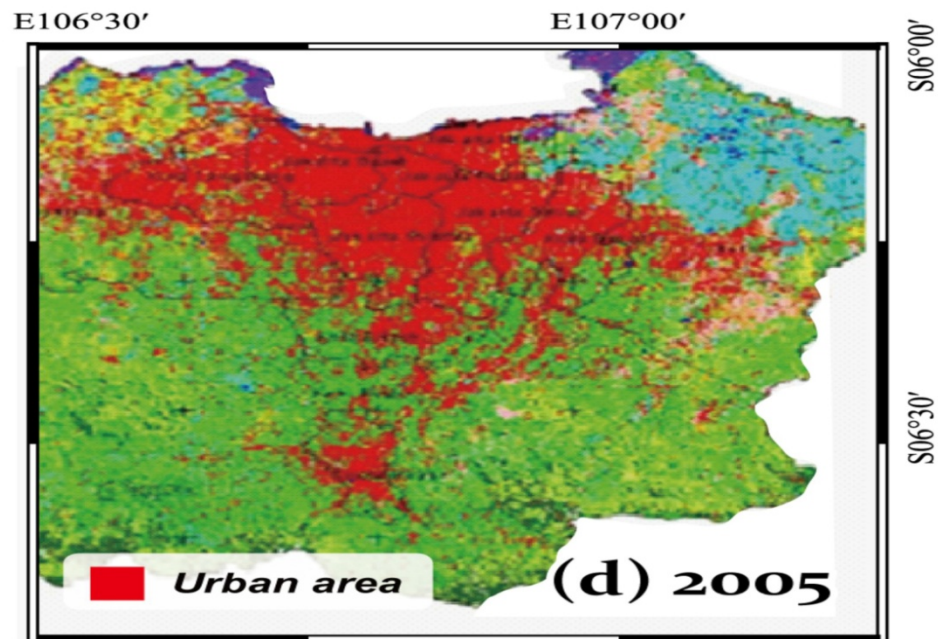
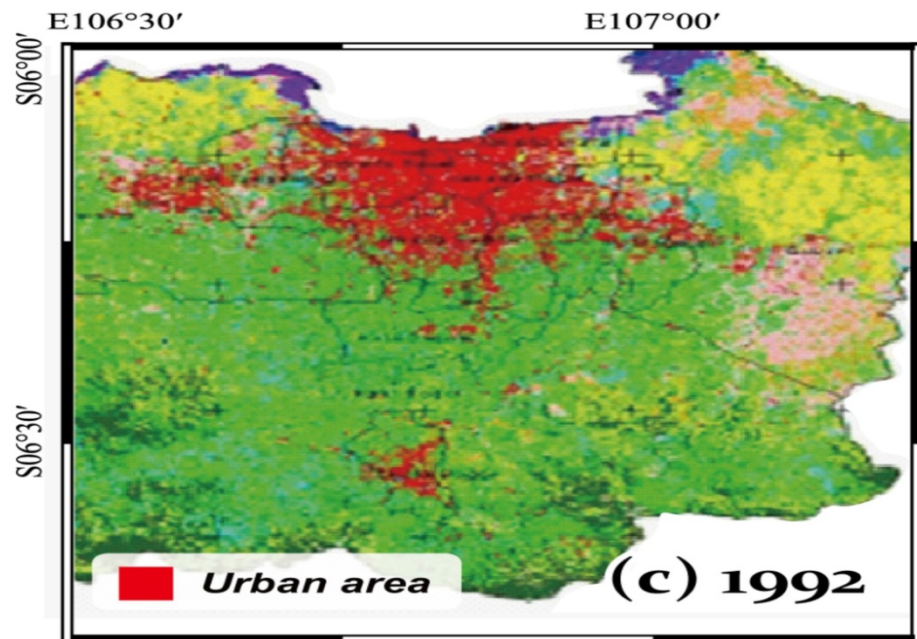
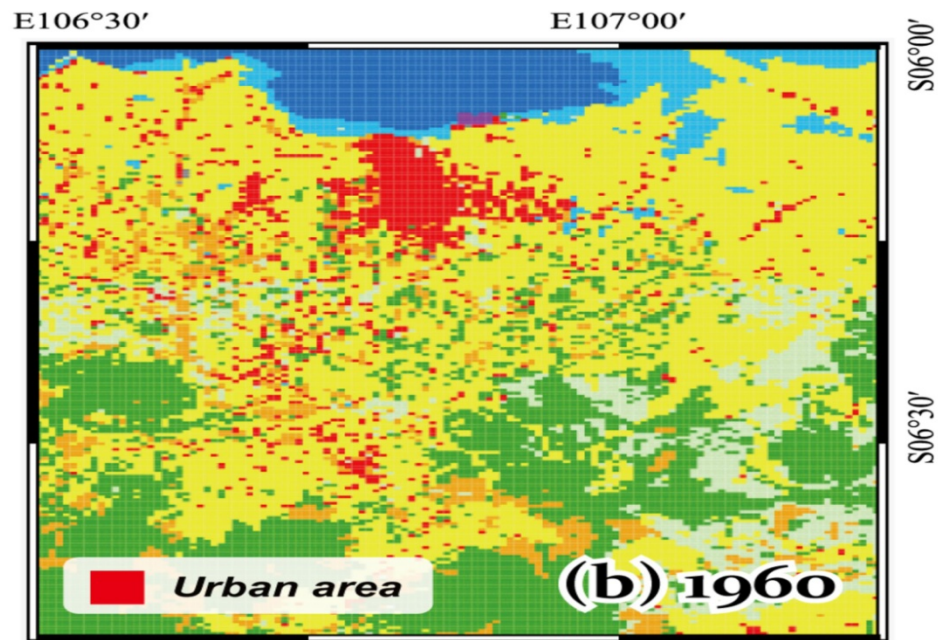
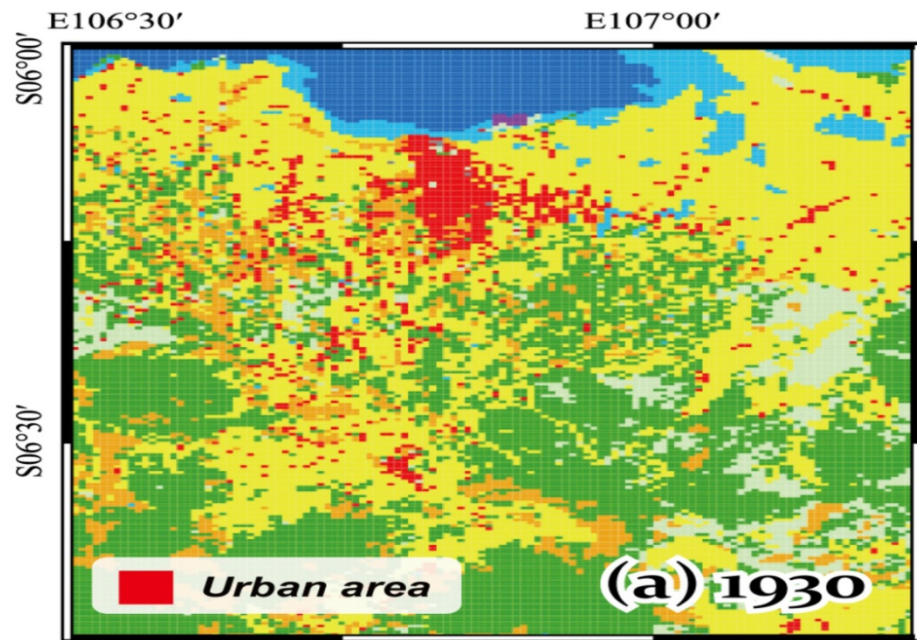
RAPID URBANIZATION IN JAKARTA

During Over two decades: 1989 – 2002

¼ of all DKI lands (agriculture, wetland and water) was converted from non urban areas to urban areas (industry, commerce, and housing)



**Pressure to the Remaining Green Areas →
High economic value of land – increase market prices**



Source: Delinom et al, 2011

INCREASE URBANIZATION RATES

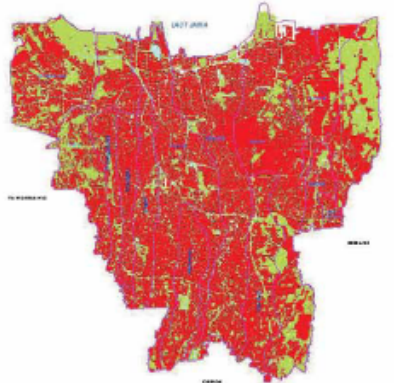
- Increased in development and economic activities
- Increase in population numbers

- Increase built up areas
- Decrease green areas
- Change in population number during working hours & night

Spill over into adjacent areas
(Bogor, Depok, Tangerang, and
Bekasi)

MORE VULNERABLE OF URBAN *KAMPUNG*

The Built-up Areas in Jakarta Cover 90 % in 2008

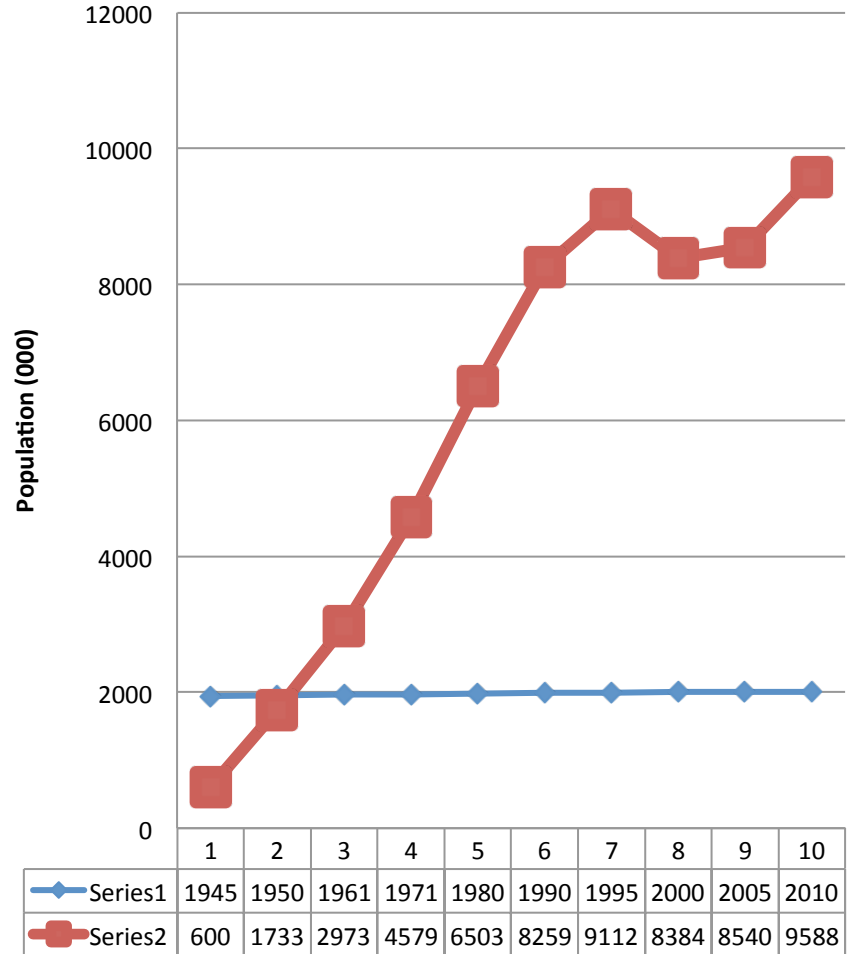


Legend :

-  Rivers
-  Wetland
-  Open Space and Farmland
-  Developed Area



Source: Abidin *et al*, 2010



Population Trend, 1945 - 2010

Population growth 2000 – 2010 : 1.39

Commuters : 1.5 million

Table 1: Population Growth in DKI Jakarta

Year	Population	Increase over previous decade
1961	2,906,500	28%
1971	4,546,500	56%
1980	6,503,400	43%
1990	8,259,300	27%
2000	8,385,600	2%
2010	9,588,200	14%

Source: Badan Pusat Statistik Provinsi DKI Jakarta, 2009.

During the workweek

Population reach to more than 12 million → 1.5 million people commuting from Bogor, Depok, Tangerang and Bekasi and Cianjur(Bodetabekjur)

DEVELOPMENT - MAN MADE PROCESS

- Extensive development in coastal areas
Sea ports, coastal resorts, golf course, residential areas, condominium, malls, hotels, industries, commercials and office buildings & **coastal reclamation**
- Excessive construction in Jakarta water catchment areas
 - poor watershed management
 - Poor drainage
- Negligent behavior of urban people



JAKARTA -- SHINKING FAST

Average land subsidence: 5 cm per year
Coastal areas : up 12 cm/year

Land subsidence contributors:

Building construction : 80 %
Water usage : 17 %
Natural process : 3 %

About 66,000 gallons of water are sucked from beneath Jakarta every year

Annual tax revenue from Ground water : 5.5 million USD

About 60% : pump ground water For personal use

Location	Height above sea level in 1993 (in m)	Height above sea level in 2005 (in m)	Land subsidence (in cm)
North Jakarta	2.03	1.46	57
West Jakarta	2.32	2.11	21
East Jakarta	11.62	11.45	17
South Jakarta	28.76	28.46	30
Central Jakarta	3.42	2.40	102

Source: Jakarta City Mining Agency, ITB, 2010

JAKARTA PRONE AREA TO CLIMATE CHANGES

- The most vulnerable in Southeast Asia (EEPSEA)
- The third worst in Asian Mega Cities (WWF)

Increase temperature
1.42°C in July and 1.04°C in January
every 100 years

Sources: ITB (2010, 2011) and
World Bank (2011)

Change in Temperature 1996 - 2005

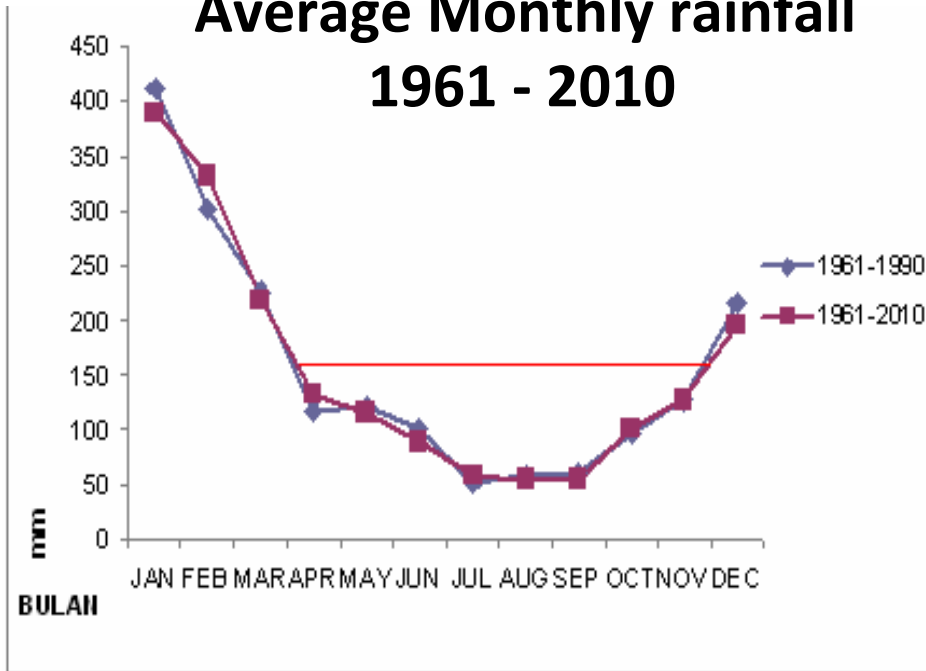
Stasiun	Mar	Jun	Sep	Dec
Darmaga	0.46	0.13	0.57	0.80
Pd.Betung	0.78	-1.22	0.89	0.59
Tj.Priok	1.03	-0.06	0.65	0.93
Cengkareng	1.92	1.00	1.86	1.83
Kemayoran	-0.75	0.51	1.40	0.97

Source: *Susandi et al*, 2006

CHANGE IN RAINFALL IN JAKARTA

Total, Frequency, Intensity

Average Monthly rainfall 1961 - 2010



Source: BMKG, 2011

Rainfall, 1996 - 2005 (mm)

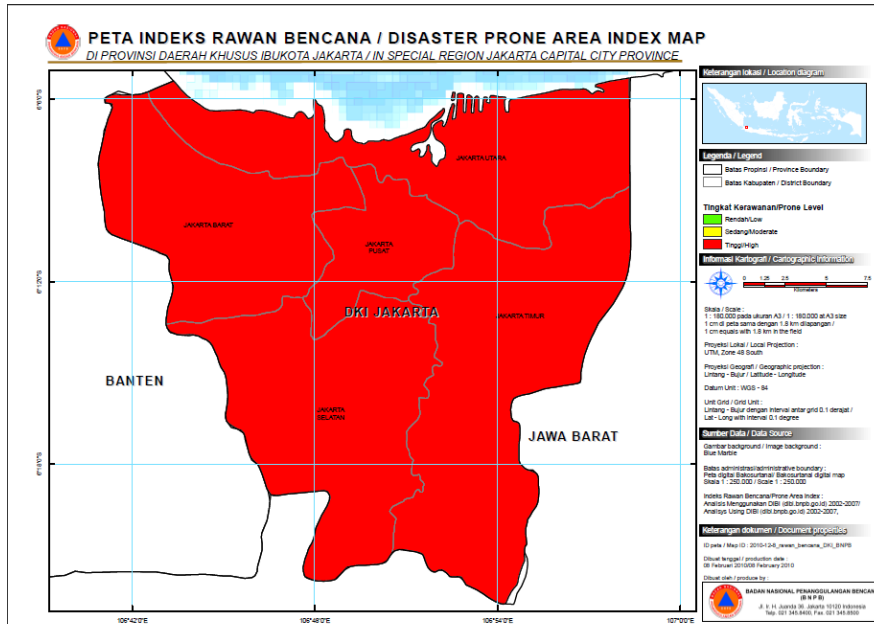
Stasiun	Mar	Jun	Sep	Dec
Darmaga	175.3	543.6	-22.5	68.1
Pd.Betung	-8.4	223.1	-136.3	-152.6
Tj.Priok	-86.4	95.3	-45.8	-100.3
Cengkareng	97	104.5	-42.7	-11.2
Kemayoran	223.3	42	-250.2	-351

Source: Susandi et al, 2006

Rise in sea-level
• 5 cm rise by 2025

Sources: World Bank (2011)

JAKARTA PRONE AREAS



Climate Change

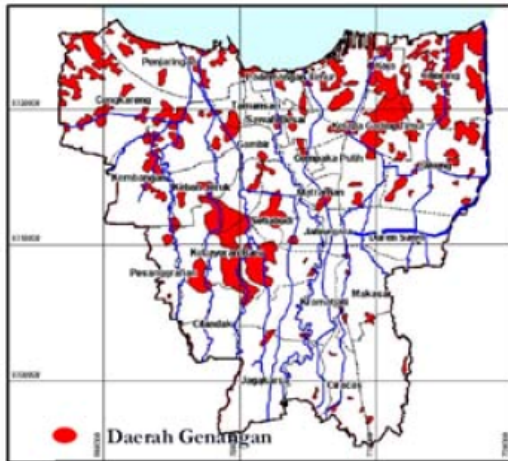
- The top list :
North, Central and West Jakarta
- The second top list : East Jakarta

Source:(EEPSEA)& WWF

Source: BNPB, 2011

Flood (out of 174 list)		Drought (out Of 182 list)		Earthquake (out of 151 list)	
2	North Jakarta	8	North Jakarta	80	West Jakarta
3	West Jakarta	9	East Jakarta	95	North Jakarta
		10	Central Jakarta	122	East Jakarta
		11	West Jakarta	137	South Jakarta
		37	South Jakarta		

FLOODING AREAS IN JAKARTA



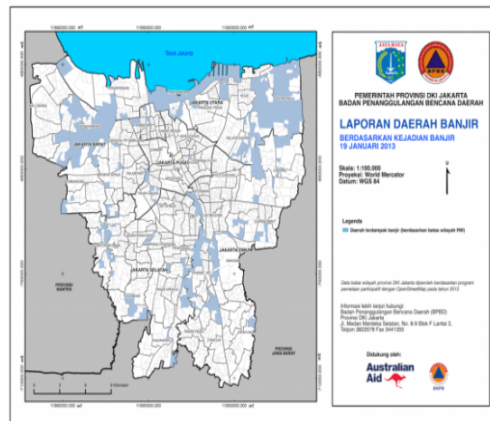
Flooding of 2002, courtesy of LAPAN



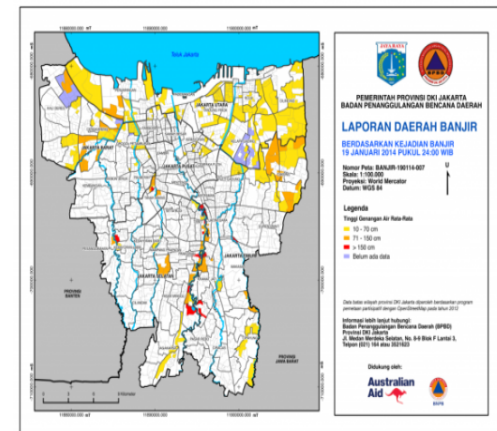
Flooding of 2007, courtesy of Kompas (10 February)

Figure 12. Flooding inundation areas in Jakarta.

Source: Abidin *et al*, 2010



Flooding of 2013

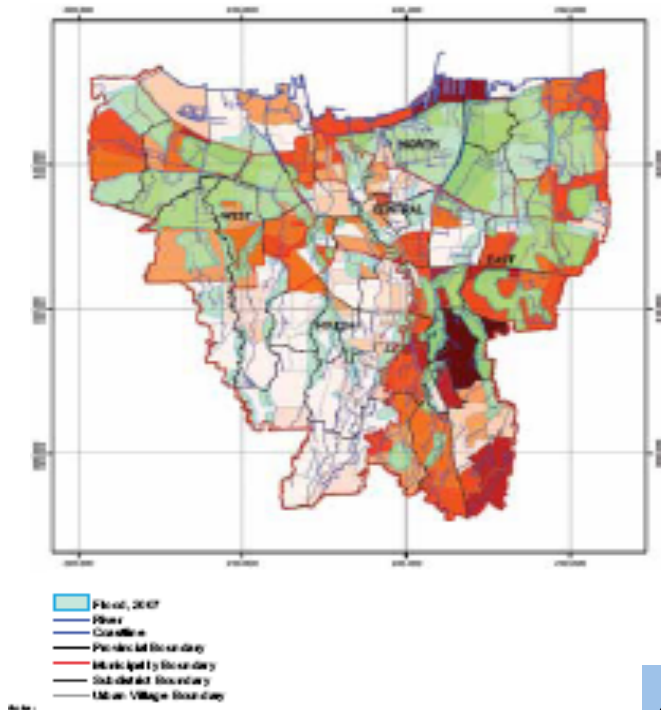


Flooding of 2014

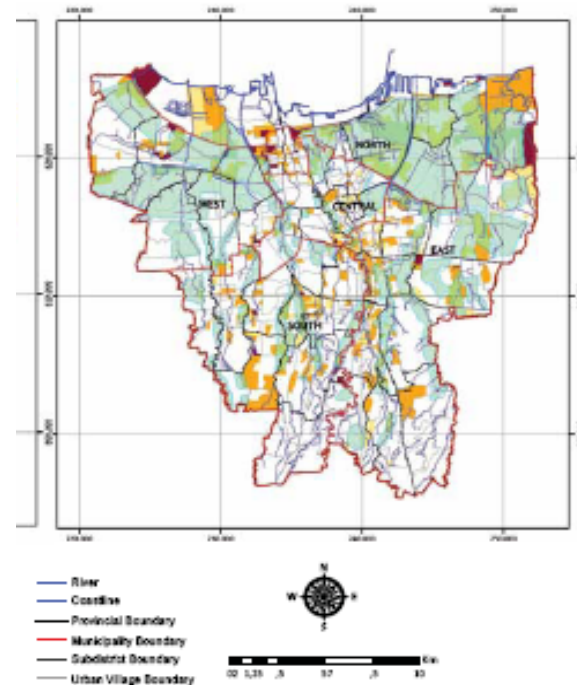
Source: BPBD DKI Jakarta, 2014

FLOODING AREAS IN URBAN *KAMPUNG*

Unregistered Land With Flooded Areas In 2007



Slum With Flooded Areas in 2007



Source: WB, 2011

**416 RW out of 2.196,
mostly in North Jakarta**

Number of Poor People in Jakarta and North of Jakarta, Year 2006 and 2010

Year	Jakarta	North of Jakarta	
		Number	Percentage
2006	407,100	109,400	26.9
2007	316,200	91,700	29.0
2008	342,500	85,200	24.9
2009	339,600	76,200	22.4
2010	388,200	92,600	23.9

Source : BPS Jakarta Utara, 2012

*) Base on SUSENAS 2006-2010

POOR COMMUNITIES IN URBAN *KAMPUNG*

VULNERABLE

- Physically
- Economically
 - Livelihood and employment in the same areas



- Settle in unregistered lands and slum areas

→ Unregistered Inhabitants

- Informal settlements
→ pocket of poverty

- Unskilled labor
- Informal activities
Mostly working in informal jobs
- Low income
- Many in below poverty line

COMMUNITY AWARENESS AND RESPONSE TO FLOOD RELATED DISASTERS

Lack of Awareness & Choices of Response

- Low income
- Lack provision of basic services (adequate housing, clean water, garbage collection)
- The use of rivers/canals for disposal of their solid wastes
- Settle in dense, but tenuously constructed housing
- **Have less information**
- **Fewer safety net**
- **Reluctant or unable to leave their homes and assets**

THE POOR COMMUNITY AT THE GREATEST RISK

- **Settle in physically vulnerable areas (near water bodies and in low lying areas)**
- **High degree of exposure to climate and environmental changes & related disasters**
- **High risk for loss of property, economic, social disruption and displacement**
- **Limited adaptive capacity**
- **Livelihood at risk**



LESSONS FROM THE MOST VULNERABLE COMMUNITY IN NORTH OF JAKARTA

- **The top list of the most vulnerable area of climate change**
- **The second top list of Jakarta land subsidence**
- **Degradation of ecosystem (mangrove destruction, sand and coral extraction, destructive and over fishing, water pollution)**
- **The Jakarta bay as the mouth of waste (domestic and industrial activities) - transported through 13 rivers and canals**
- **Slum with flood areas**
- **Pocket of poverty**



LIVELIHOOD AT RISK, KAMAL MUARA, JAKARTA BAY

Fishing at Risk:

- Significant decrease in green oyster cultivation units/area
- Substantial decrease in fishing areas and activities
- Significant impact to community Livelihood
 - 80 % of people in RW 1 & RW 4 are fishermen
 - Most fishermen are green oyster cultivators
 - Most women work in oyster & fishing related activities



Major Causes of Fishing at Risk

- **Coastal reclamation**
 - A half of cultivation area (around 13,000 units or 360 ha) has been closed, reimbursed & converted to reclamation purposes
 - Limited suitable area for oyster cultivation
- **Unmanaged water pollution**
 - Liquid waste from nearby factories and industries (textile, metal and plastic)
 - domestic /solid waste. About 1100m³ of waste flows directly to the bay
 - Green oyster cultivation waste
 - Waste from activities at the sea
- **Impacts of climate change on the cultivation & fishing activities**



FISHERMEN'S EFFORTS TO ADAPT TO CLIMATE CHANGES, KAMAL MUARA, 2010

Efforts	Percentage
Change in fishing cultivation type/aqua culture	16.7
Changes in fishing gears/technology	40.0
Changes in fishing boats	33.3
Changes in fish catching area	66.7
Changes in fishing time	86.7
Changes in types of fish catching	70.0
N	30

Source: LIPI and BMKG-ICCTF, 2010

COMMUNITY WITH LACK OF FRESH AND CLEAN WATER

- Mostly rely on well water → increased numbers of bored well
- Well water is still unhealthy for drinking
- Have to purchase expensive clean water, especially for drinking and cooking
- **Salt water intrusion to well → water fresh during rainy season and become salty during dry season**
- **Water contamination due to unmanaged waste disposal**



SUMMARY

- **Urban *Kampungs* are wide spread in Jakarta, particularly in the pocket of poverty and prone areas**
- **Community in the *kampungs* are physically and socio-economically vulnerable to climate and environmental changes - related disasters**
- **The poor communities therefore face the greatest risk to rapid growing development and a changing climate**
- **The crucial need to increase community awareness, poverty alleviation and disaster risk reduction into mainstreaming sustainable development in Jakarta.**

Thank You

