

## Dynamic of Vulnerability in Jakarta: Drivers and challenges in the future



**Gusti Ayu Ketut Surtiari**

**Supervised by: Prof. Dr Joern Birkmann and Dr Matthias Garschagen  
Prof. Dr. Yekti Maunati**

# Background



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security

- Jakarta : vulnerable to several climate-related hazards according to its geographical and environment condition.
- Response to disaster especially floods has been moved from flood management to flood risk management: more consider its consequences.
- To response climate change, Jakarta has been progressively implemented several measures to reduce its vulnerability: as an strategic issue in mid-term development planning
- Lack of dynamic assessment to support adaptation program

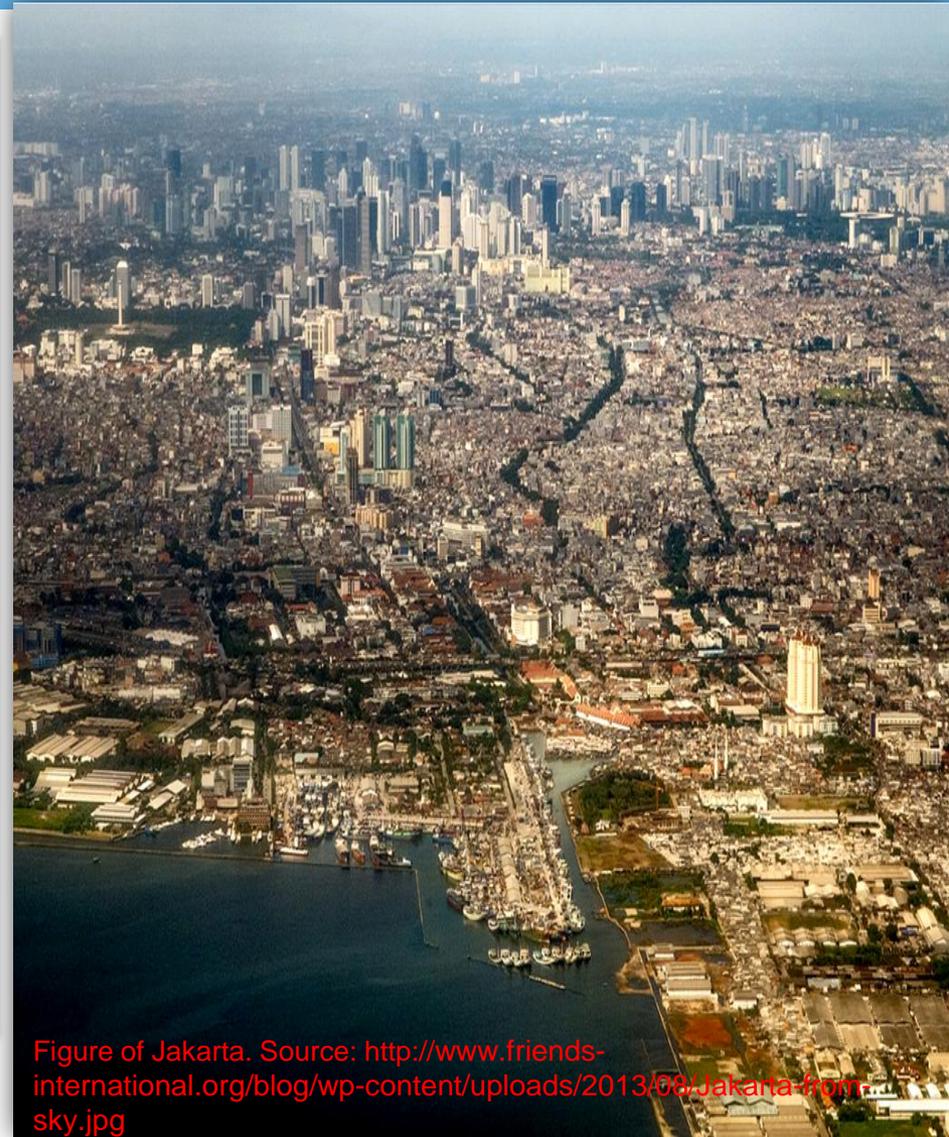


Figure of Jakarta. Source: <http://www.friends-international.org/blog/wp-content/uploads/2013/08/Jakarta-from-sky.jpg>

# Problem Statement



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security



- Vulnerability has its nature as a dynamic and multifaceted.
- Vulnerability needs to be assessed as component of disaster preparedness and adaptation strategies.
- Current dynamic of development in Jakarta will influence dynamic of vulnerability

Main research question:

**“What are the key drivers for dynamic vulnerability in Jakarta”?**

*What are the socio-economic dynamics of Vulnerability in Jakarta? (Susceptibility and Adaptive Capacity)*



# Methodology



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security

## Qualitative:

- In-depth Interviews
- Semi structure interviews to local people
- Semi structure interviews to government and non government institutions



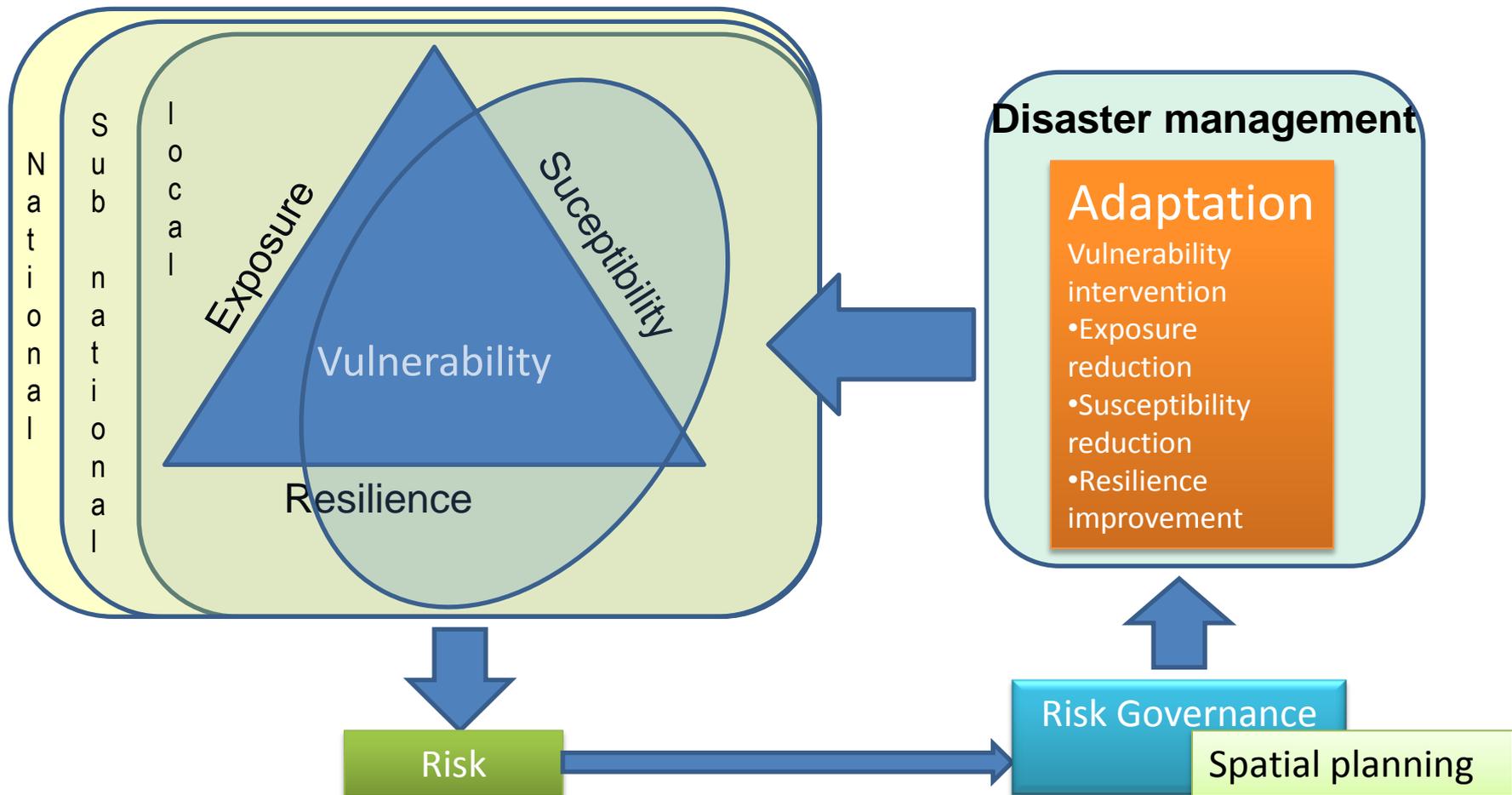
# Framing Dynamic of vulnerability



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security



Source: modify from The MOVE framework, Birkmann et al, 2013

# Vulnerability intervention



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security

❑ Exposure reduction : adaptation measures in Jakarta development planning document →

❑ Susceptibility reduction : slum management , poverty reduction, empowerment program

❑ Resilience improvement: capacity building to cope and recover from extreme event , basic services provision



# Community along the coast of Jakarta



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security



- Living along reserve areas, under sea level with small dyke
- Limit drainage and sanitation system
- Working depend on fisheries activities, informal, low income labors
- Migrants without housing “ownership”
- The existence of informal leader
- Limited access to resources: water, formal house

# Progression of vulnerable



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security

Center of  
fishes

Growing of  
firms



In-  
migrants  
increase

Illegal  
and  
slums  
growth

Low  
income  
workers



Worsen  
floods

Loss and  
damage  
increase



Reservoir / river  
normalization



Relocation



1980s

1980-1990

2002, 2012-2013

2013-now

Lack of supporting  
infrastructure i.e.  
housing

Lack of law  
enforcement

Lack of capacity  
to anticipate  
and to cope

Un-safe  
condition:  
sustainability

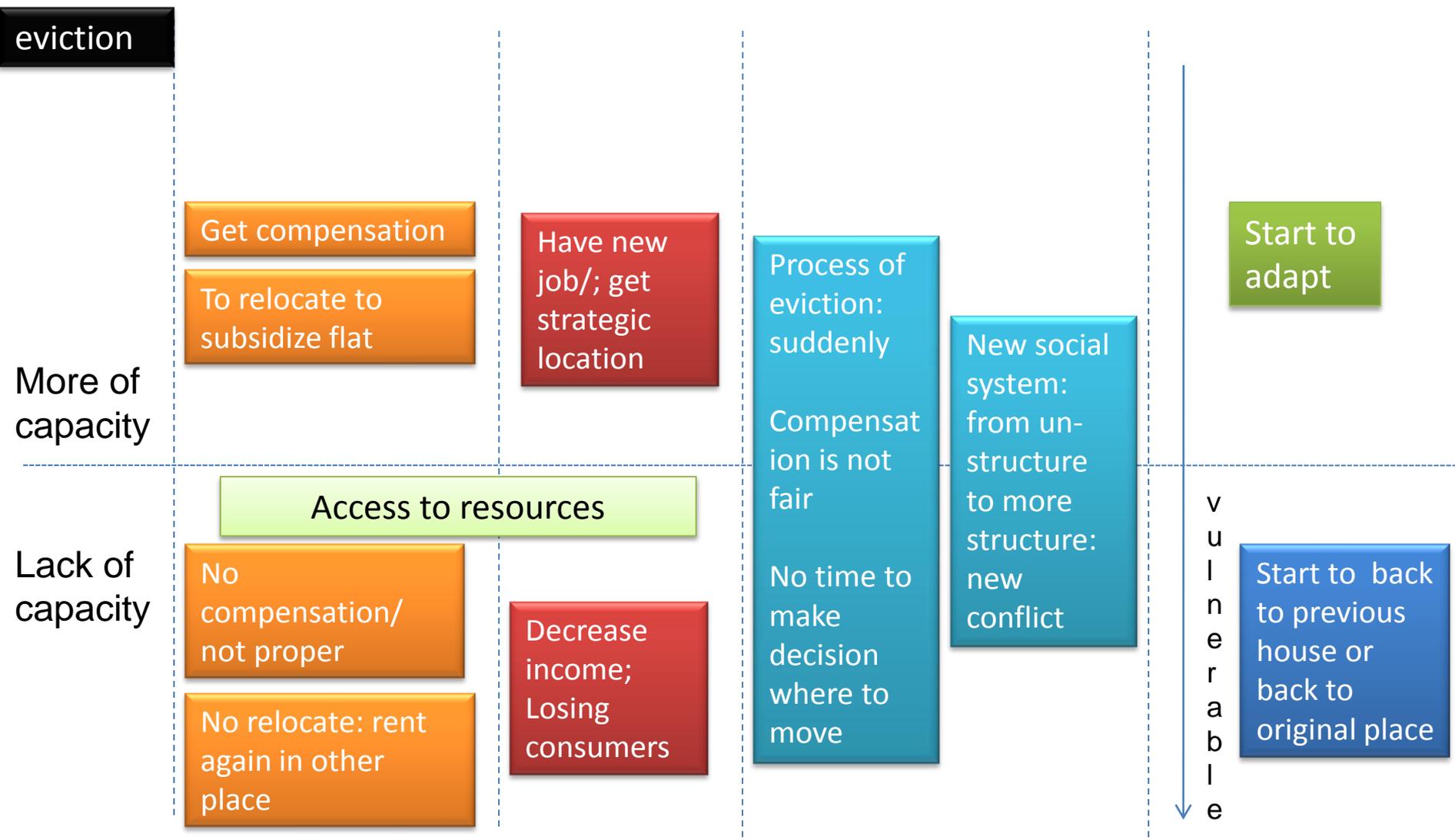
# Dynamic of vulnerability: learning from program of reservoir normalization



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security



# Dynamic of vulnerability: learning from relocation process



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security

Relocation

Provision services  
Government and non  
government

Getting new  
job near  
house

Start to  
adapt

Transportati  
on

Training at  
firms

Status of  
ownership:  
rent only  
(don't  
really  
aware)

New social  
system:  
from un-  
structure  
to more  
structure:  
new  
conflict

More of  
capacity

Education

Lack of  
capacity

Access to resources

Lack of  
access to  
water,  
transportat  
ion

Failed at  
training

Working far  
from house

From  
horizontal  
to vertical  
housing

v  
u  
l  
n  
e  
r  
a  
b  
l  
e  
↓

Start to  
back to  
previous  
house or  
back to  
original  
place



# Root causes of dynamic vulnerability

## Lack of resilience

### -Capacity to anticipate:

- Depend on external support to adapt new environment condition (impacted by adaptation measures implementation): public services and economic sustainability support
- Perception on vulnerability reduction program
- Limited knowledge on the measures (ex. Knowledge on housing rent status)
- Limited participation on program

### -Capacity to recover:

- Limited capital (economic, social, physical) to return back to normal activities.
- Feeling unsecure and perceived that they are thrown to worse condition



Political agenda:  
government  
orientation/ target



Resistance from local  
community: gradual  
program impact of the  
program



Trust of governance  
system: power elation



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security

## Joint paper - visiting scientist from LIPI at UNU EHS under TWIN SEA Program (august-Sept 2014)

-Rotterdam: Delta in Time II

*Potential Conflicts on implementation of Spatial  
Master Plan and the Challenges of Law  
Enforcement: **Yekti M, Matthias G, Gusti Ayu***

-based on literature review – will be developed  
with empirical studies

-violation spatial master plan- e.g. greenbelt,  
PIK, etc. –

-huge gap marginalisation – urban poor, -land  
disputes – potential conflicts



# Root causes of dynamic vulnerability: spatial planning lens



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security



- Imbalance number of housing provision for the poor
- Inconsistent utilization of land
  - Many new high risk buildings for public were built in reserved area
- Impact of reclamation: high water inundation into the land
- Strong power relation orientation

# Next challenges



UNITED NATIONS  
UNIVERSITY

**UNU-EHS**

Institute for Environment  
and Human Security

To find the indicator to measures the dynamic as supporting document in develop adaptation evaluation

# Key measures for climate change adaptation especially for Flooding event in Jakarta



City level	Implementation
<b>Canal construction</b>	Ongoing process (continuing past period program)
<b>Dyke</b>	Along the Northern part of Jakarta – had been done
<b>Giant Sea wall</b>	Still in progress in socio economic assessment (by consultant)-consultation process between consultant and government
<b>Reclamation</b> (it would be for 21 small islands in Northern part of Jakarta)	On going (developer)
<b>Normalization of reservoir areas</b> (lakes that already narrowed because they are occupied for illegal housing)	On going (Jakarta government and local state own company))
<b>Normalization of river</b> (river has been narrowed because the sedimentation and it occupied by illegal building)	On going (Jakarta government within World Bank soft loan)
<b>Early warning system</b>	By public work agency and local disaster and mitigation agency
<b>Relocation</b> (especially for people who living in vulnerable and occupying reservoir and river bank areas)	National Housing and settlement ministry and Housing and settlement agency of Jakarta
Household level	Implementation
<b>Elevating the house</b>	By their own initiative and own financial support
<b>Putting sacks of shells surrounding the house</b> (to protect house from inundation)	Individual initiative
<b>Looking for another job</b> (especially for people who work as traditional fisherman)	Individual initiative
<b>Looking for side job</b> for increasing their income (traditional fisherman have been faced problem regarding the reducing fish production due to the sea pollution from reclamation construction and due to the uncertainty weather).	Individual initiative
<b>Changing water sources</b> (from local wheel to buying clean water)	Individual initiative
<b>Constructing a small reservoir</b> surrounding their areas (to retain over flowing water)	Community initiative
<b>Local early warning system</b>	Information from local mosque
<b>Household member/ Women empowerment</b> (to increase their quality of live in	Facilitated by NGO (Indonesian Red Cross)