

# Status of Climate Change Masterplan and effect towards Infrastructure Project Development and Engineering Design in Thailand

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(Disaster Preparedness Webinar (under CAFEO-38) on the title of Impact  
of Climate Change Affecting Engineering Design and Infra-structure in  
ASEAN)

# Synopsis

- Thailand had adopted Climate Change Masterplan and is in the process of Climate Change Act preparation. The large scale infrastructure development has to consider on climate change impact and risk assessment. This will affect to infrastructure project development and engineering design in Thailand.

- Video link

<https://youtu.be/HsWv63GPxB0>

# topics

- National Strategic Plan and Master Plan
- Climate Change Master Plan and (draft) Climate Change Act
- Infrastructure development  
(large scale development project, green procurement)
- Risk map and actions
- Engineering Design (robustness, natural based, resilient)

# The Strategy on Eco-Friendly Development and Growth (No. 5))

- 3. Promoting sustainable climate-friendly based society growth
  - (1) By mitigating GHG emissions;
  - (2) **adapting** to prevent and reduce losses and damages caused by natural disasters and impacts of climate change;
  - (3) focusing on **investment** in public and private sectors' climate-friendly **infrastructure development**; and
  - (4) developing **preparedness and response systems** for emerging and re-emerging infectious diseases caused by climate change.

## NS Master Plan-1

- Adaptation to reduce loss and damage from natural disaster and climate change impact
  - improvement of disaster management system
  - weather prediction and warning system
  - incorporate water adaptation with CC (sectorial and area based)
  - continuous monitoring and evaluation

## NS Master Plan-2

- Climate friendly investment for infrastructure development of both public and private sector
  - Introduce new measures (economic, finance, budget) to **promote and support**
  - **New Large scale public infrastructure** need to analyse and assess CC impact for project design

# Climate Change Master Plan

- Natural Risk Management

- (1) Research and development of weather prediction and extreme events
- (2) **Risk map** for agriculture and **natural disaster** to reduce risk and damage
- (3) Improve and develop **early warning system** for agriculture and natural disaster with communication

# Draft Climate Change Act

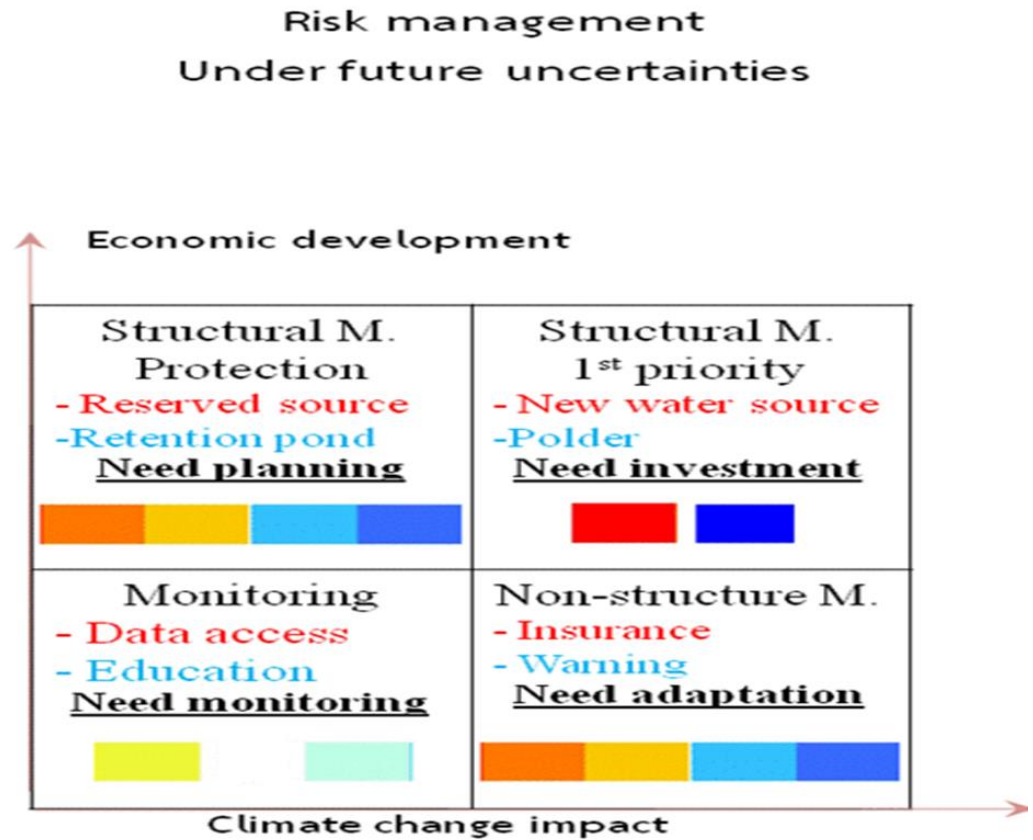
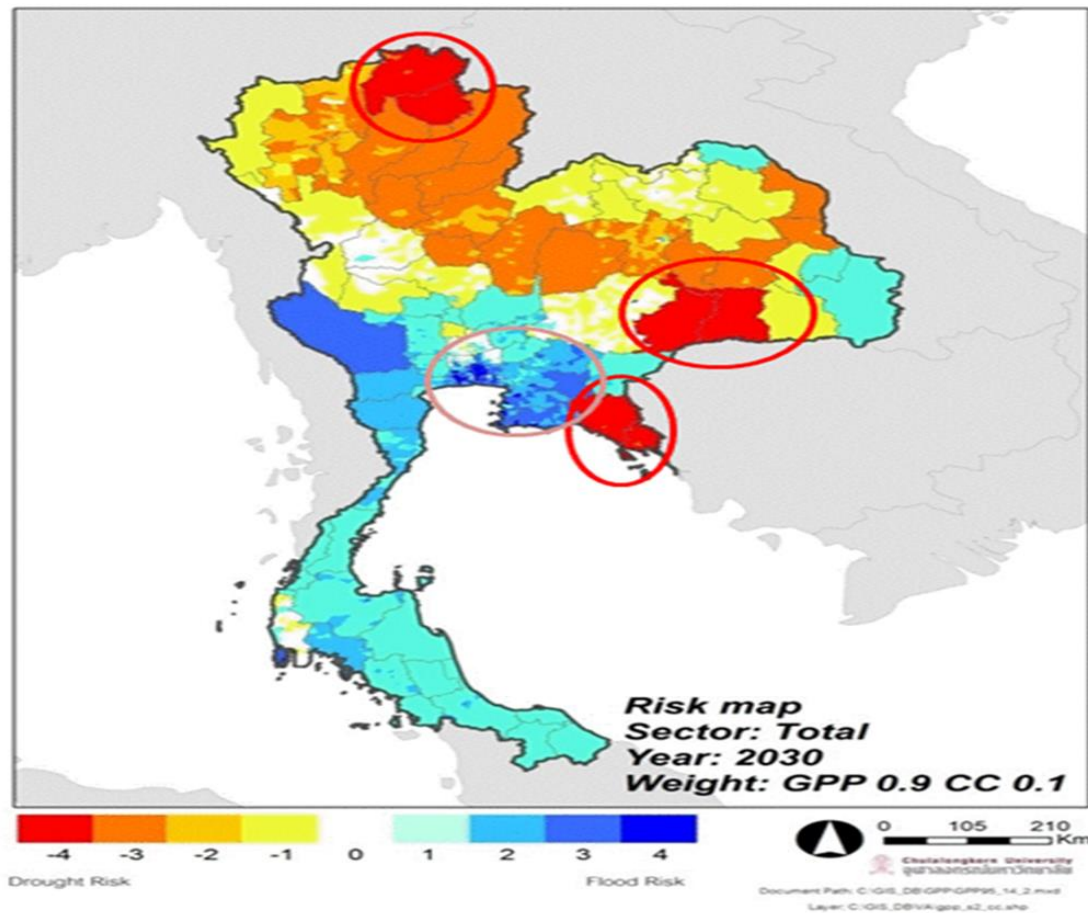
- Climate Change Adaptation
  - Weather prediction system and risk assessment by TMD and ONEB to inform to concerned agencies to prevent and mitigate risk
- In case no laws, inform National Climate Change Policy Board for cabinet approval
- National Adaptation Plan with monitoring mechanism under public hearing stage



# Infrastructure development (large scale)

- Large scale infrastructure development needs to consider climate change impact assessment for project design  
(above 1000 M B, 33 M US \$)
- Green Procurement

# Risk management map



# Engineering Approach and Design

- High risk, high impact area : need new investment/design criteria
- High risk, low impact area : need modified or supplement design
- Low risk, high impact area : need adaptation (warning/evacuation)
- Low risk, low impact area : need monitoring

## Each land use type

- City area

Mixed measures (polder, drainage, retention, zoning)  
with **higher return period design**,

- Municipal area

Improvement measures with more **green based solutions**,

- Rural area

Warning system, community plan, **natural based** (retention area)

## Dyke improvement works (Chao Phraya, Bangkok Noi, Mahasawad)



### K. Bangkaen Kao-Sapanput bridge



### Along Chao Phraya River, Ratchaburana District



## Heightening road as dyke (Samwa District)



Ratnimit Road



Pracharumchai Road

# Installation of pushing pumps (25 machines) supplemental

before



during



installed



Klong Prempracha area



## Dredging works (29 channels: khlongs/retentions)





# Retention pond, cultivation schedule shift (rural)



# Community Water Planning (Chang, Nan)





# Green Procurement MOU (Cement selection)



## Remarks

- NS Plan and CC Master plan touched on the risk map and supportive measures for green development/procurement.
- Draft CC Act is on the process of public hearing.
- Large Scale Infrastructure Development needs to concern with CC impact assessment starting from the design phase.
- Risk map will help identify risk level of the area.
- Each land use type will need different design and risk levels.

# References

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- Sucharit K., et al., Climate Change Impact Study for adaptation in the important sectors, Technical report submitted to ONEB, June 2017, 416 pp. (In Thai).

# Biodata

- Sucharit Koontanakulvong was born in Bangkok, Thailand in 1955. He received his B.S, MS and PhD degree in water use engineering from Kyoto University, Japan in 1983. He is an Associate Professor of Water Resources Engineering at Chulalongkorn University, Thailand. His research interests are in the field of hydrology, water resources planning including climate change impact assessment and adaptation. He has published more than 40 papers in peer-reviewed international journal and presented more than 40 conference papers ranging from hydrological modeling, groundwater modeling to climate impact and vulnerability assessment. He is assigned as an UNESCO Chair on Water and Disaster Management and Climate Change from 2016 and has been awarded PAWEES 2014 International Awards from the International Society of Paddy and Water Environment Engineering, Sak Intania Awards from Faculty of Engineering, Chulalongkorn University. He is assigned to be a Program Chair on Spearhead Research on Water Resources Management from National Research Council of Thailand from 2019 and he is also working as a member of National Climate Change Policy Board.