



# Urban Water Management in Bangkok, Thailand

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# Contents

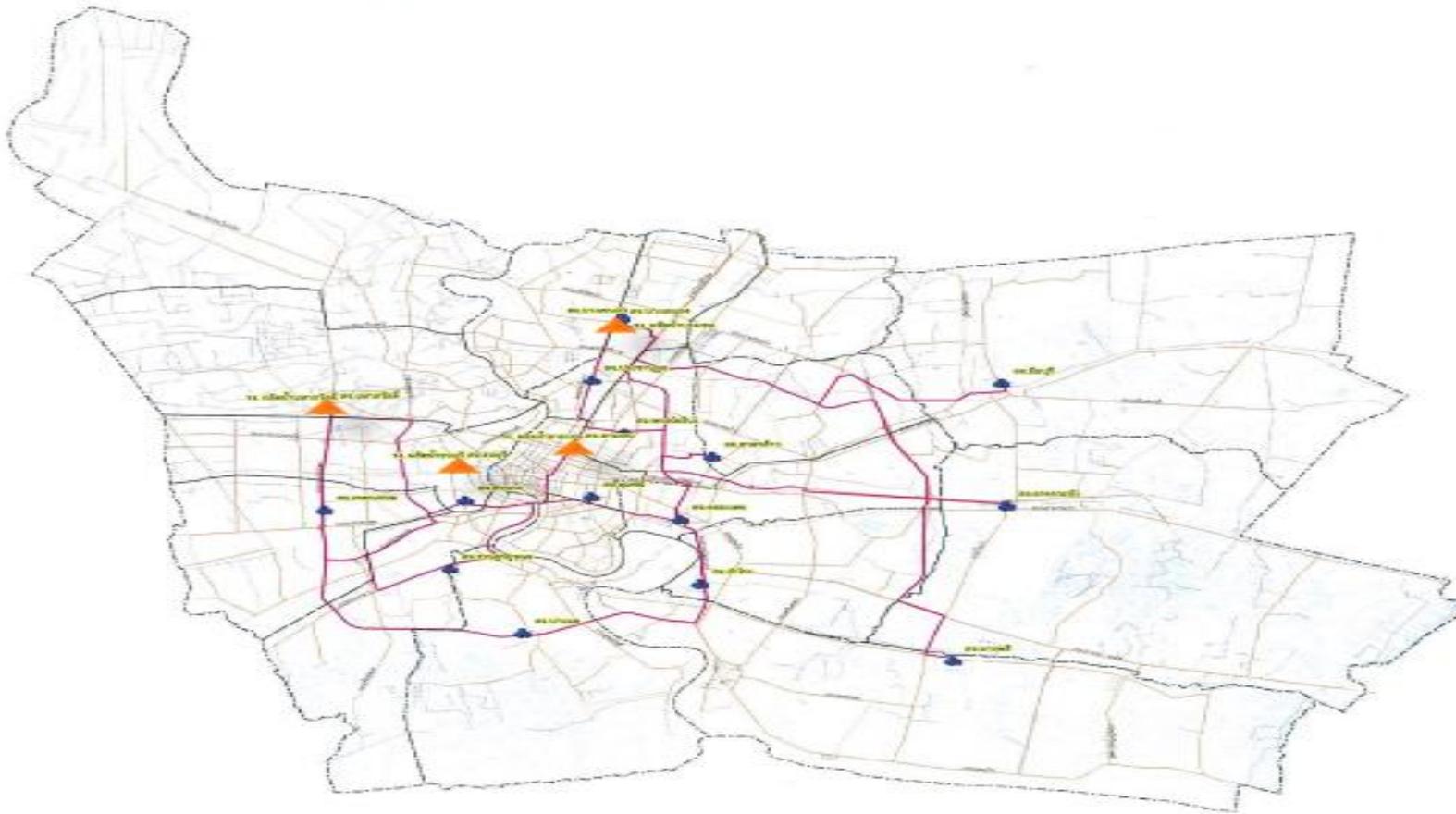


- 1. Water supply, floods measures in BKK**
- 2. Water resources and flood measures in neighboring areas**
- 3. National water master plan**
- 4. Linkage of water security index and development indicators**
- 5. Remarks**

# Water Supply Master plan in BKK and vicinity



แผนที่แสดงโครงสร้างพื้นฐานระบบประปาของการประปานครหลวงที่ได้ดำเนินการตามแผนแม่บท กปน. ฉบับ ปี พ.ศ. 2533 (ปี พ.ศ 2533 – 2560) และที่อยู่ระหว่างดำเนินการตามโครงการปรับปรุงกิจการประปาแผนหลักครั้งที่ 9 (ปี พ.ศ 2560 – 2565)



▲ - โรงงานผลิตน้ำ จำนวน 4 แห่ง      ■ - สถานีสูบน้ำ 18 แห่ง      — (yellow) - สถานีสูบน้ำ      — (red) - อุโมงค์ส่งน้ำ

# Floods and water way rehabilitation



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Past



Present



# Water sources and floods in the neighboring areas

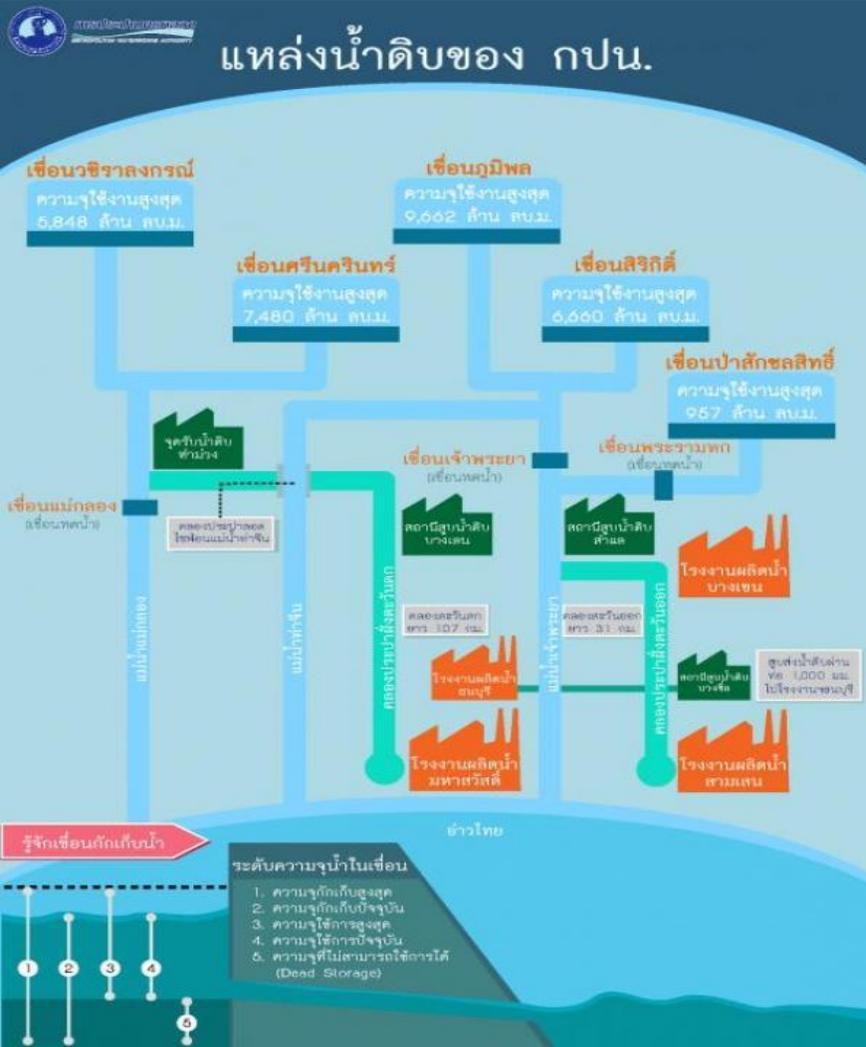


Figure 4.1.2 Discharge distribution in RID Plan

# 2<sup>nd</sup> level: Master plans under national strategy (2018-2037)

Office of the National Economic and Social Development (NESDB)



## 23 master plans

- 1.Security
- 2.Foreign issue
- 3.Agriculture
- 4.Manufacturing
- 5.Tourism
- 6.City
- 7.Logistic and digital
- 8.Business
- 9.Sufficiency economy
- 10.Culture
- 11.Lifelong learning
- 12.Education
- 13.Mental issue
- 14.Sport
- 15.Social power
- 16.Local business
- 17.Social welfare
- 18.Sustainable development
- 19.Water management
- 20.Government
- 21.Corruption issue
- 22.Laws
- 23.Innovation

**3rd level : Master plan on water resources management**

**2nd level**

19th issue: water master plans under national strategy

**1st level**

National strategy 20 yrs.  
5th strategy: Green development

- Input, project, indicator**
- 1: Water for domestic**
    - 1. Tap water for village
    - 2. Tap water for urban/economic zone
    - 3. Drinking water under standard and acceptable price
  - 2. Water for production**
    - 1. Demand management
    - 2. Water efficiency
    - 3. Water allocation in rainfed area
    - 4. New water storage
    - 5. Water distribution system
    - 6. Increase water productivity
    - 7. Increase water by artificial rain making
  - 3. Flood management**
    - 1. Increase drainage efficiency
    - 2. Urban flood protection
    - 3. Flood area/retention pond management
    - 4. Area-based flood management
    - 5. Adaptation support
  - 4. Water quality**
    - 1. Wastewater reduction at source of origin
    - 2. Increase treatment efficiency
    - 3. Preserve ecological balance
    - 4. Recover national water resources
  - 5. Upstream forest conservation & Soil erosion protection**
    - 1. Conserve upstream forest
    - 2. Soil erosion protection in upstream area
  - 6. Water management**
    - 1. Water laws & institutional management
    - 2. Water management plan
    - 3. Monitoring and evaluation
    - 4. Database of decision support system
    - 5. R&D
    - 6. Communication and citizen participation

**KD1 Household Water security: 3 → 4**

**KD2 Economic Water security: 4 → 5**

**KD3 Urban Water security: 1 → 4**

**KD4 Environmental Water security: 2 → 4**  
- Water quality in river

**KD5 Resilience to water-related disaster: 2 → 4**  
- Damage reduction 50 %

**Water governance: 64 → 80 score**

**Water productivity: 10 times**

**To improve national water security**

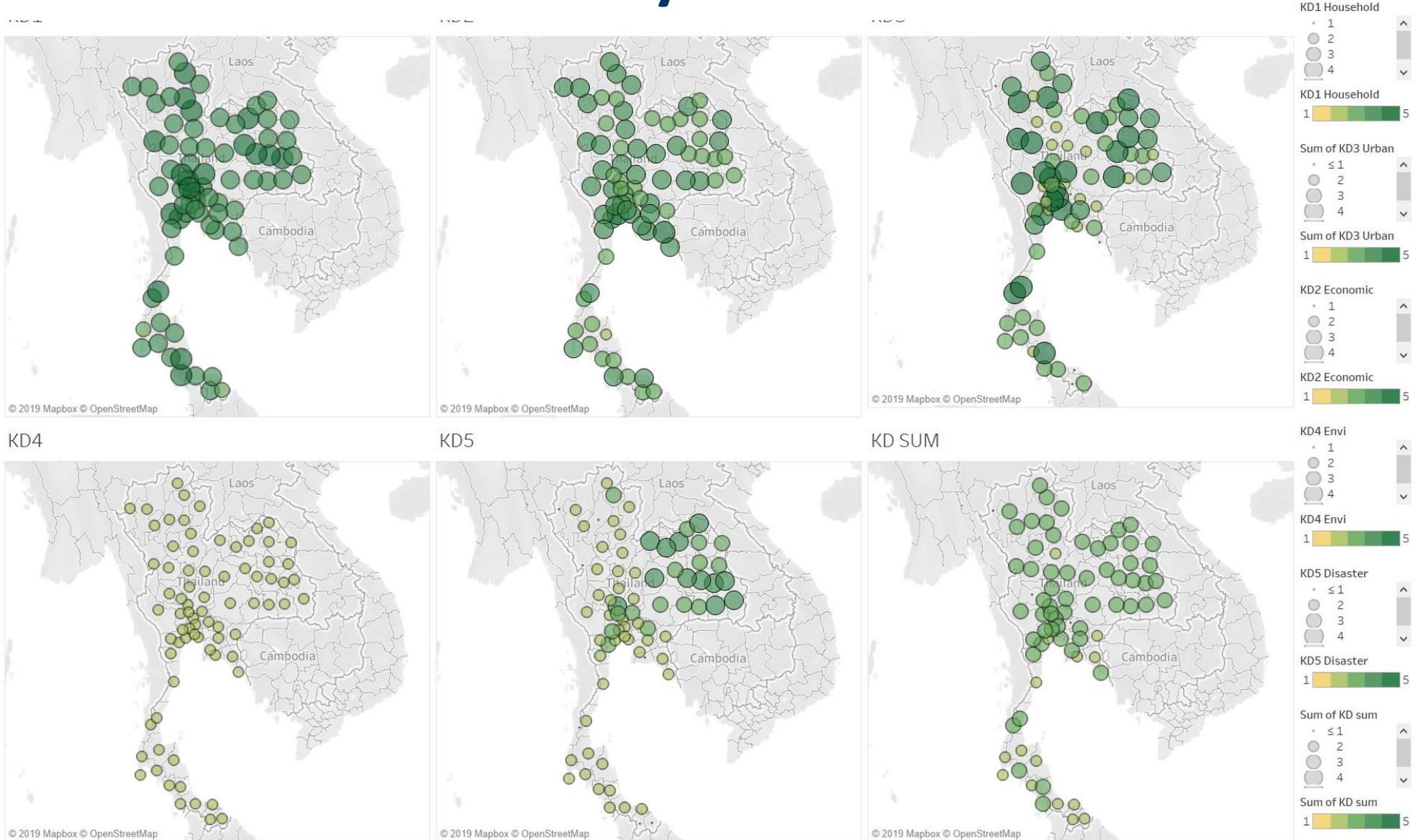
**To increase water productivity**

**To recover national water ways/conservation**

**Develop water-energy-food security & NEXUS**

**Sustainable green development**

# Adapting AWDO 2016 Framework for Provincial Water Security Assessment



# Water Security Index and SDGs



## THAILAND East and South Asia

### OVERALL PERFORMANCE

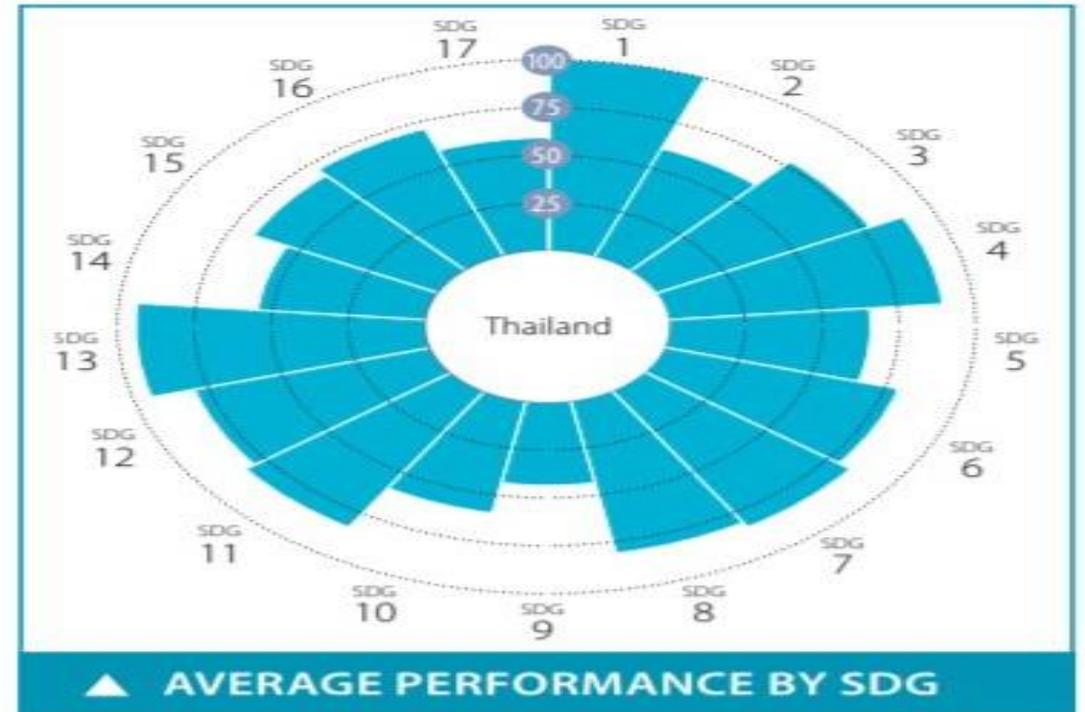
Index score



Regional average score



SDG Global rank 40 (OF 162)



### SPILOVER INDEX

100 (best) to 0 (worst)



# Discussion meeting among stakeholders



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## Water Security Workshop in Bangkok on 19 August 2019

ADB, OECD, IWC, Chulalongkorn University, Thai Water Partnership, CRI, and Representatives from Office of the National Water Resources (ONWR) and water-related government agencies  
Supported by **Thailand Science Research and Innovation (TSRI)**

Policy evaluation by Office of the National Economic and Social Development (AWDO + Water Productivity + Water Governance)

Monitoring & Evaluation of National Water Resources Projects by Office of the National Water Resources

OECD: Water Governance in AWDO 2020

OECD: Water Finance in AWDO 2020

IWC, Australia: Environmental Water Security

# UNESCO Chair on Water, Disaster Management and Climate Change



## Current areas of activity

- Water Security Assessment in ASEAN
- Vulnerability and Risk assessment due to Climate Change
- PERSIANN-CCS Estimation for Water and Disaster Management
- Climate Change Impact Assessment on Groundwater Management for sustainable development

## Future Activities to address the SDGs

- Water-Energy-Food NEXUS's data base and model development for Sustainable Development
- Flood and Drought Monitoring and Warning System with application from Remote Sensing Images
- Sustainable Groundwater Management under Climate Change
- THA2021 International Conference on Water, Disaster Management and Climate Change
- Smart System for Dam Operation

**Chair holder:**

**Assoc. Prof. Dr. Sucharit Koontanakulvong**

**[http://project-wre.eng.chula.ac.th/watercu\\_eng/](http://project-wre.eng.chula.ac.th/watercu_eng/)**

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- Urban Water Management in BKK :  
Water Supply coverage and service  
Flood Protection  
Waste water system  
Waterway Rehabilitation
- Flood mitigation System in the neighboring areas
- National Master Plan in Water management and water security index
- Regional collaborations

# References



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- Office of the National Water Resources (ONWR), **Master Plan on Water Resources Management (2018-2037)**
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- Ruangrassamee et al. (2019), **Research Project on “Analysis of water security, water productivity and water-related disaster for water resources master plan”,** supported by Thailand Science Research and Innovation (TSRI)
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# Research on water security assessment in Thailand and related



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- Piyatida Ruangrassamee (2018-2019): update R&D on water security assessment at provincial and basin scales of Thailand
- Pongsak Suttinon (2019): mainstream water security index into national water strategy and master plan (cooperation with Office of National Water Resources) “Project on monitoring & evaluation of national water master plan”
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- Piyatida R., Sucharit K., Pongsak S. (2019) Thailand- Implementing AWDO Framework to Mainstreaming Water Security Strategy into National Water Strategy, Water Security for all: Asian Water Development Outlook 2020, 29 August, Stockholm, SIWI World Water Week
- JICA (2018), Data Collection Survey on the Outer Ring Road Diversion Channel in the Comprehensive Flood Management Plan for the Chao Phraya River Basin in the Kingdom of Thailand, Draft Final Report, Mar.