

From Project to Sustainable Development:
The Case of the Environmental Research and Training Centre
Ministry of Natural Resources and Environment
Thailand

Dr. Monthip Sriratana

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ERTC

Environmental Research and Training Centre



International Cooperation: The JICA project to establish ERTC

ศูนย์วิจัยและฝึกอบรมด้านสิ่งแวดล้อม

โดย

ความช่วยเหลือจากรัฐบาลแห่งประเทศญี่ปุ่น

เพื่อเป็นสัญลักษณ์แห่งมิตรภาพและความร่วมมือ

ระหว่าง

ประเทศญี่ปุ่น และ ประเทศไทย

พ.ย. 2534

ENVIRONMENTAL RESEARCH AND TRAINING CENTRE

GRANTED BY

THE GOVERNMENT OF JAPAN

AS A TOKEN OF FRIENDSHIP AND COOPERATION

BETWEEN

JAPAN AND THE KINGDOM OF THAILAND

NOVEMBER 1991

Sustainable Development Goals



- The Sustainable Development Goals (SDGs) were born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012.
- The objective was to produce a set of universal goals that meet the urgent environmental, political and economic challenges facing our world.
- The 17 Goals were adopted by all UN Member States in 2015, as part of the 2030 Agenda for Sustainable Development which set out a 15-year plan to achieve the Goals.
- The success of the Sustainable Development Goals rests to a large extent on an effective monitoring, review and follow-up process.

Contributions of ERTC to Agenda 2030 for Sustainable Development under the following SDGs

- SDG 6 – Clean Water and Sanitation
- SDG 3 – Good Health and Wellbeing
- SDG 4 – Quality Education
- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production
- SDG 13 – Climate Action
- SDG 14 – Life Below Water
- SDG 17 – Partnership for the Goals

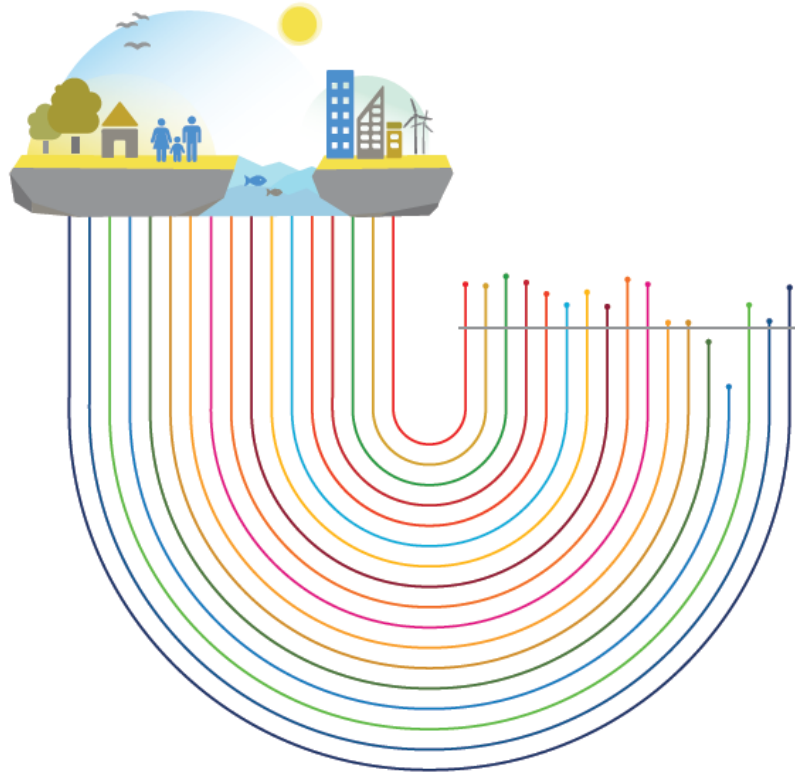
SDG 6 Clean Water and Sanitation



**Ensure availability
and sustainable
management of water
and sanitation for all**

Recent Update on SDG 6 Assessment

ASIA AND THE PACIFIC SDG PROGRESS REPORT 2021



Anticipated Progress on SDG 6 Targets In Asia-pacific Region



CLEAN WATER AND SANITATION

- 6.1 Safe drinking water
- 6.2 Access to sanitation & hygiene
- 6.6 Water-related ecosystems
- 6.a International cooperation on water & sanitation
- 6.b Participatory water & sanitation management
- 6.4 Water-use efficiency
- 6.3 Water quality
- 6.5 Trans-boundary water cooperation

- MAINTAIN progress to achieve target
- ACCELERATE progress to achieve target
- REVERSE trend
- Insufficient data to measure

Thailand Profile

▼ CURRENT ASSESSMENT – SDG DASHBOARD



■ Major challenges
 ■ Significant challenges
 ■ Challenges remain
 ■ SDG achieved
 ■ Information unavailable

SDG6 – Clean Water and Sanitation

| | | | |
|--|------|---|----|
| Population using at least basic drinking water services (%) | 98.2 | ● | ↑ |
| Population using at least basic sanitation services (%) | 95.0 | ● | ↑ |
| Freshwater withdrawal as % total renewable water resources | 17.5 | ● | ●● |
| Imported groundwater depletion (m ³ /year/capita) | 2.9 | ● | ●● |
| Anthropogenic wastewater that receives treatment (%) | 12.1 | ● | ●● |

There is no sufficient method and data to monitor SGD 6.3, 6.4 and 6.5.

SDG6 Target & Indicators

TARGET 6-1



SAFE AND AFFORDABLE DRINKING WATER

TARGET 6-2



END OPEN DEFECTION AND PROVIDE ACCESS TO SANITATION AND HYGIENE

TARGET 6-3



IMPROVE WATER QUALITY, WASTEWATER TREATMENT AND SAFE REUSE

TARGET 6-4



INCREASE WATER-USE EFFICIENCY AND ENSURE FRESHWATER SUPPLIES

TARGET 6-5



IMPLEMENT INTEGRATED WATER RESOURCES MANAGEMENT

TARGET 6-6



PROTECT AND RESTORE WATER-RELATED ECOSYSTEMS



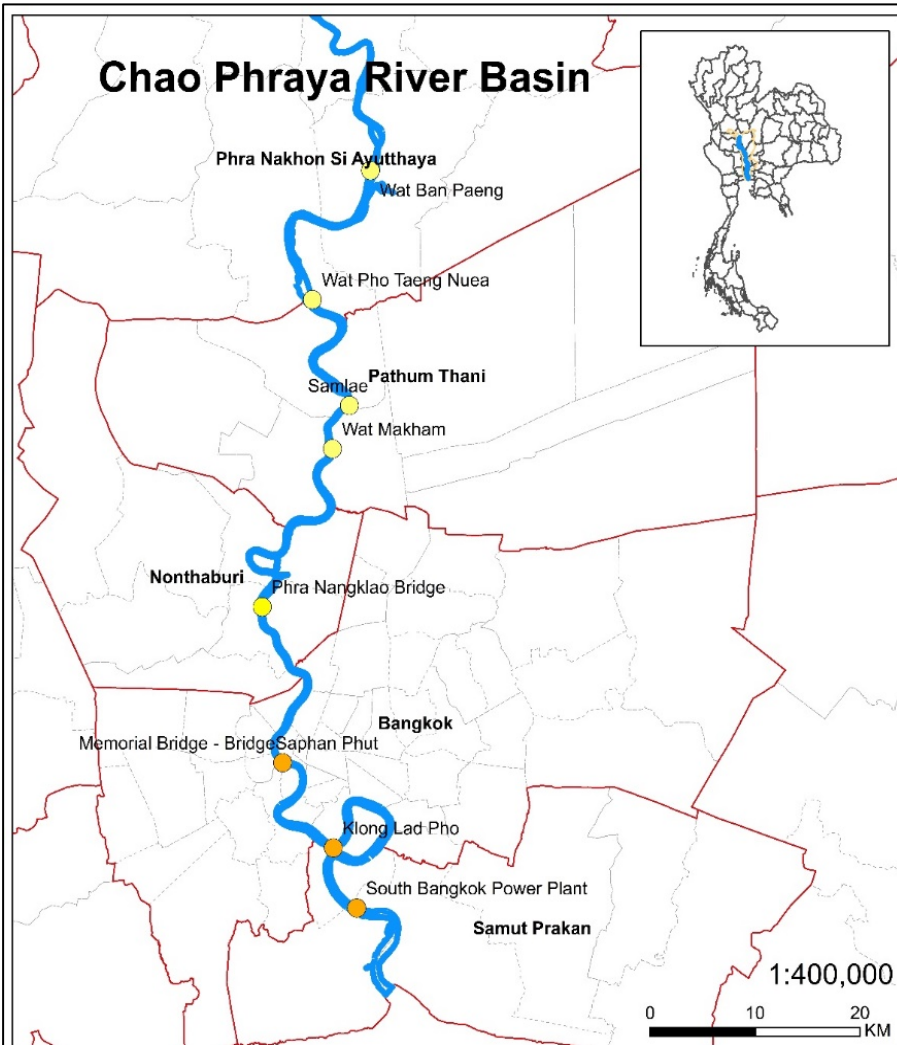
Thailand's Voluntary National Review

SDG 6 Global Indicators

| INDICATORS | TIER | CUSTODIANS |
|---|------|---------------------------|
| 6.1.1 Proportion of population using safely managed drinking water services | II | WHO, UNICEF |
| 6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | II | WHO, UNICEF |
| 6.3.1 Proportion of wastewater safely treated | II | WHO, UN-Habitat, UNSD |
| 6.3.2 Proportion of bodies of water with good ambient water quality | II | UN Environment |
| 6.4.1 Change in water-use efficiency over time | II | FAO |
| 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources | I | FAO |
| 6.5.1 Degree of integrated water resources management implementation (0-100) | I | UN Environment |
| 6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation | I | UNESCO, UNECE |
| 6.6.1 Change in the extent of water-related ecosystems over time | I | UN Environment, Ramsar |
| 6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan | I | WHO, UN Environment, OECD |
| 6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management | I | WHO, UN Environment, OECD |

Baseline Assessment

| Name of stations | Temperature °C | pH | Conductivity | Salinity | Total Dissolved Solids (TDS) | DO | Chlorophyll | Turbidity |
|------------------------------------|-------------------|-------------|----------------------|--------------|------------------------------|-------------|---------------|----------------|
| Year: 2018 | | | | | | | | |
| Wat Ban Paeng | 30.04 ± 1.51 | 7.67 ± 0.53 | 328.50 ± 41.47 | 0.14 ± 0.02 | 194.74 ± 25.61 | 4.35 ± 0.73 | 5.50 ± 6.85 | 37.10 ± 28.48 |
| Wat Pho Taeng Nuea | 30.03 ± 1.6 | 6.95 ± 0.21 | 340.34 ± 38.11 | 0.15 ± 0.02 | 201.89 ± 24.45 | 3.60 ± 0.87 | 1.96 ± 2.21 | 19.78 ± 105.47 |
| Samlae | 29.87 ± 1.52 | 7.10 ± 0.29 | 350.65 ± 36.74 | 0.15 ± 0.02 | 208.25 ± 24.18 | 3.72 ± 0.84 | 1.87 ± 1.95 | 27.48 ± 14.66 |
| Wat Makham | 29.89 ± 1.51 | 7.01 ± 0.09 | 352.79 ± 37.41 | 0.15 ± 0.02 | 209.34 ± 24.13 | 3.07 ± 0.95 | 1.33 ± 6.46 | 5.80 ± 26.29 |
| Phra Nangklao Bridge | 29.98 ± 1.37 | 7.54 ± 0.50 | 382.77 ± 36.13 | 0.16 ± 0.02 | 227.10 ± 21.7 | 2.29 ± 1.05 | 5.76 ± 16.04 | 38.58 ± 26.64 |
| Saphan Phut Bridge/Memorial Bridge | 29.89 ± 0.84 | - | 579.38 ± 637.26 | 0.25 ± 0.3 | 380.00 ± 451.01 | - | - | - |
| Klong Lad Pho | 29.45 ± 1.50 | - | 1,113.46 ± 2,035.93 | 0.57 ± 1.1 | 693.50 ± 1,262.71 | - | - | - |
| South Bangkok Power Plant | 29.14 ± 1.76 | - | 11,764.40 ± 7,308.88 | 6.36 ± 4.24 | 4,523.67 | - | - | - |
| Year: 2019 | | | | | | | | |
| Wat Ban Paeng | 30.36 ± 1.90 | 7.59 ± 0.52 | 328.10 ± 43.35 | 0.14 ± 0.02 | 193.33 ± 24.37 | 4.9 ± 1.04 | 6.24 ± 9.27 | 26.51 ± 24.26 |
| Wat Pho Taeng Nuea | 30.5 ± 1.69 | 7.84 ± 0.37 | 259.07 ± 36.26 | 0.15 ± 0.02 | 210.49 ± 25.01 | 4.47 ± 0.86 | 7.29 ± 34.62 | 29.18 ± 164.92 |
| Samlae | 30.36 ± 1.59 | 7.96 ± 0.64 | 397.75 ± 122.61 | 0.17 ± 0.06 | 233.84 ± 77.89 | 4.15 ± 0.92 | 5.96 ± 4.69 | 21.41 ± 16.40 |
| Wat Makham | 30.38 ± 1.55 | 7.03 ± 0.18 | 452.91 ± 303.69 | 0.2 ± 0.15 | 266.40 ± 187.97 | 3.13 ± 1.06 | 3.56 ± 4.07 | 23.11 ± 96.63 |
| Phra Nangklao Bridge | 30.26 ± 1.55 | 7.26 ± 0.44 | 1248.76 ± 1885.86 | 0.63 ± 1.07 | 788.29 ± 1254.69 | 2.13 ± 0.83 | 13.97 ± 51.98 | 25.15 ± 25.18 |
| Saphan Phut Bridge/Memorial Bridge | 29.96 ± 1.56 | - | 3282.21 ± 4249.87 | 1.65 ± 2.33 | 1939.64 ± 2577.32 | - | - | - |
| Klong Lad Pho | 29.94 ± 1.68 | - | 7785.32 ± 7240.67 | 4.09 ± 4.08 | 4627.51 ± 4403.97 | - | - | - |
| South Bangkok Power Plant | 29.78 ± 1.78 | - | 26911.65 ± 16125.60 | 15.33 ± 9.93 | 300081.64 ± 2976113.52 | - | - | - |
| Year: 2020 | | | | | | | | |
| Wat Ban Paeng | 30.38 ± 1.74 | 7.53 ± 0.5 | 326.75 ± 67.67 | 0.14 ± 0.03 | 192.07 ± 37.54 | 4.60 ± 1.13 | 4.79 ± 4.32 | 31.62 ± 26.46 |
| Wat Pho Taeng Nuea | 30.88 ± 1.45 | 7.75 ± 0.43 | 381.04 ± 66.54 | 0.16 ± 0.03 | 221.86 ± 35.52 | 4.67 ± 0.56 | 1.87 ± 1.39 | 12.36 ± 4.91 |
| Samlae | 30.20 ± 1.52 | 7.71 ± 0.45 | 626.08 ± 324.8 | 0.27 ± 0.15 | 366.28 ± 195.9 | 3.87 ± 1.26 | 6.73 ± 5.43 | 21.86 ± 14.77 |
| Wat Makham | 30.22 ± 1.52 | 7.12 ± 0.33 | 881.90 ± 654.22 | 0.39 ± 0.29 | 516.76 ± 375.41 | 2.33 ± 1.32 | 3.44 ± 5.24 | 12.05 ± 13.03 |
| Phra Nangklao Bridge | 30.20 ± 1.44 | 7.44 ± 0.81 | 2181.29 ± 1994.53 | 1.03 ± 0.99 | 1289.92 ± 1189.28 | 2.05 ± 0.98 | 5.90 ± 13.71 | 19.72 ± 16.71 |
| Saphan Phut Bridge/Memorial Bridge | 29.88 ± 1.46 | - | 5321.69 ± 5028.4 | 2.69 ± 2.64 | 3168.65 ± 3006.82 | - | - | - |
| Klong Lad Pho | 29.96 ± 1.55 | - | 10136.63 ± 8890.52 | 5.39 ± 4.9 | 6043.67 ± 5338.92 | - | - | - |
| South Bangkok Power Plant | 29.74 ± 1.65 | - | 23414.08 ± 13463.5 | 13.18 ± 7.88 | 247895.45 ± 1949322.85 | - | - | - |

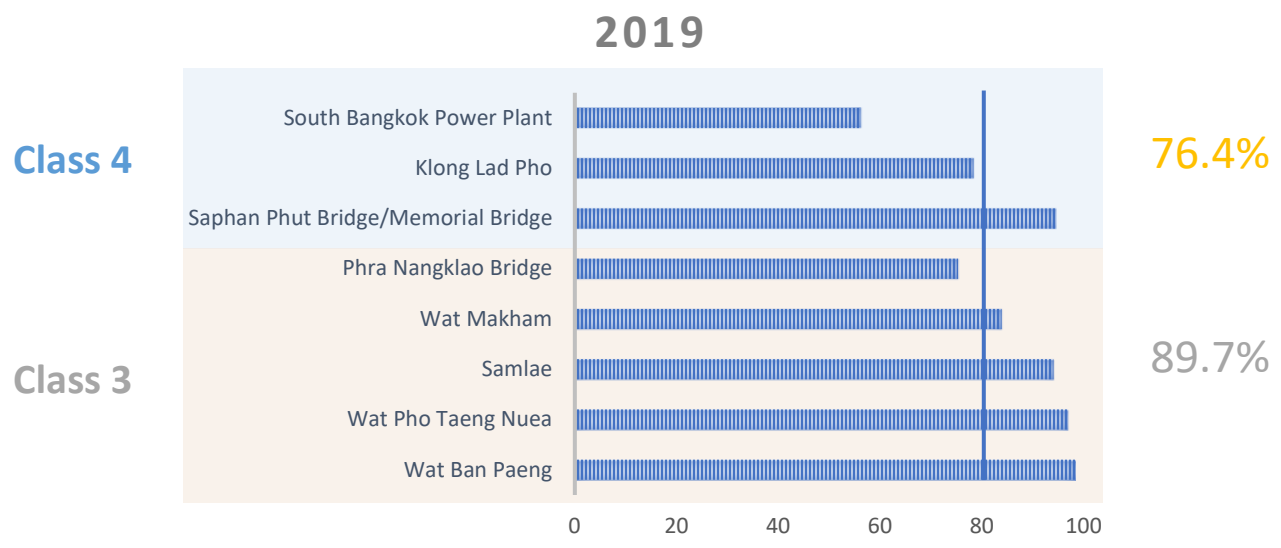
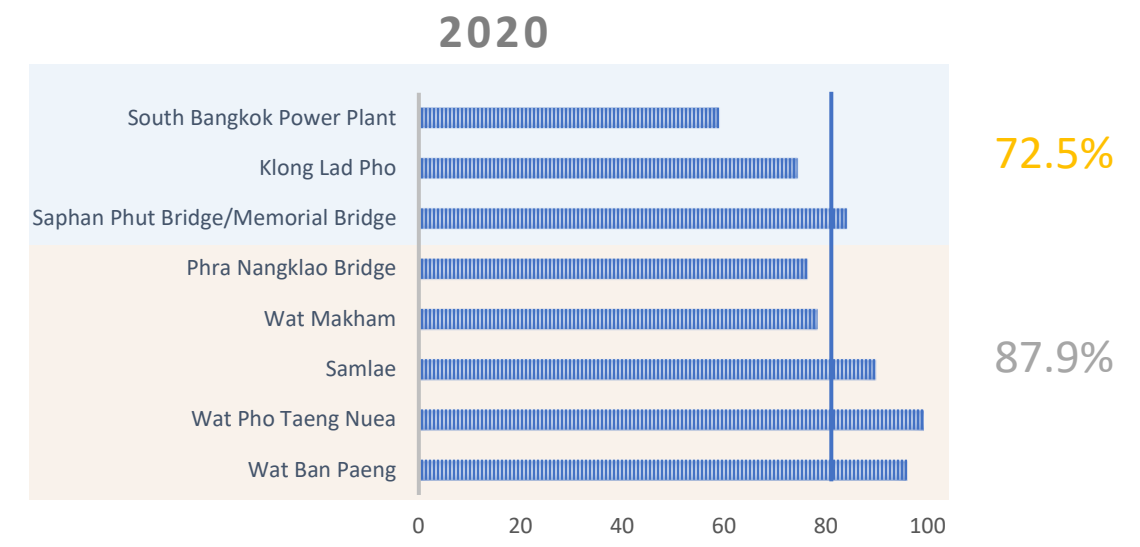
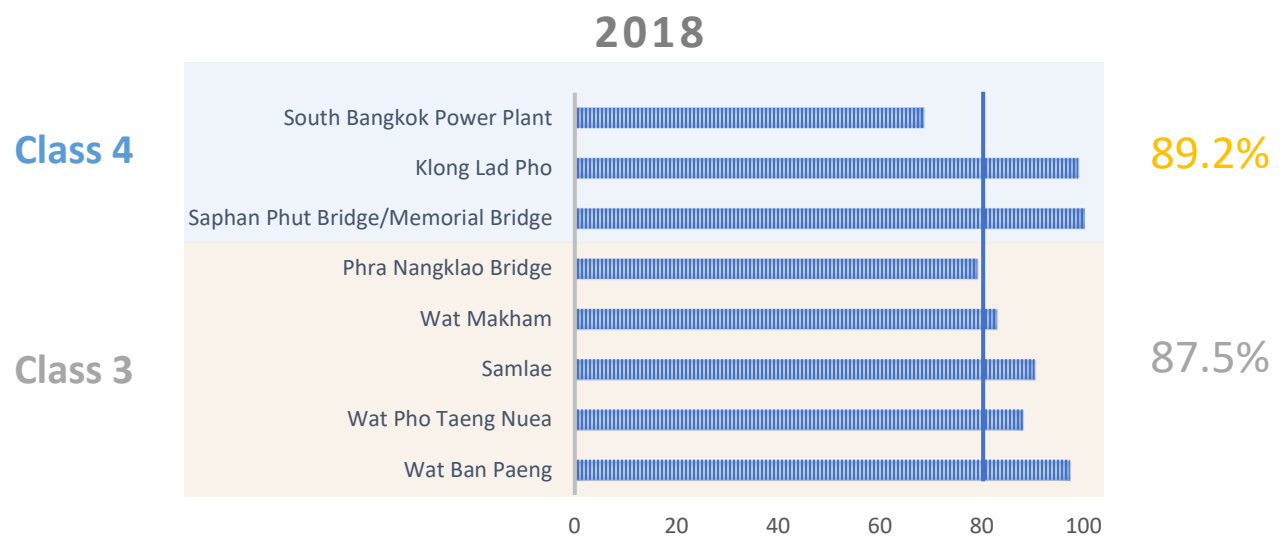


Legend

- Yellow dot: Station of Surface Water Quality Type 3
- Orange dot: Station of Surface Water Quality Type 4
- Blue line: Chao Phraya River
- Red outline: District
- Red outline: Province

Data source from Metropolitan Waterworks Authority (MWA)

Water Quality Baseline Assessment (2018-2020)



- Based on UN's criteria, proportion index < 80% is considered as poor water quality
- Water quality deterioration occurred in downstream of the Chao Phraya river
- Not all suggested water quality parameters are taken into the assessment



SDG 6: Clean water and sanitation

- Development of membrane bioreactor for water reuse purposes in municipal and agricultural sectors
- Removal Efficiency of Bacteria in Domestic Wastewater Treatment Plant of Thailand for Water Reuse in Agriculture
- Evaluation of Exposure Assessment on Emerging Organic Contaminants in Water Supply at Rayong Pollution Control Zone
- Gray Water Treatment by Advanced Subsurface flow Constructed Wetland for Water Reuse
- Research Efficiency of Air Fine Bubble to separate Grease and Oil from domestic waste water



SDG 6: Clean water and sanitation

- Pollution management of soil and groundwater contamination relating to point source in community area
- Research and promotion of wastewater treatment technology for water reuse



SDG 3: Good health and wellbeing

- Study of Noise Sensitive Areas for Regional Airport Noise pollution Management
- Develop an early warning system for heat and haze for the upper northern area of Thailand
- Development of methodology for determination of Volatile Organic Compounds (VOCs)
- Study on Area based Environmental Management Model and Mechanism
- Study on Noise Propagation and Noise Management in City
- Study on the contamination of dioxin, mercury, VOCs and Polycyclic Aromatic Hydrocarbons (PAHs) in ambient air



SDG 3: Good health and wellbeing

- The Study of Noise and Vibration from Freight Train (East Line)
- Development of tools for warning of extremely hot weather at community level
- Study on mitigation of urban heat island and air pollution by green space
- Determining the PM10 and PM2.5 source areas affecting the concentration in the atmosphere
- Health risk assessment of water reuse for agriculture
- Study and Data Development of Noise Construction Equipment

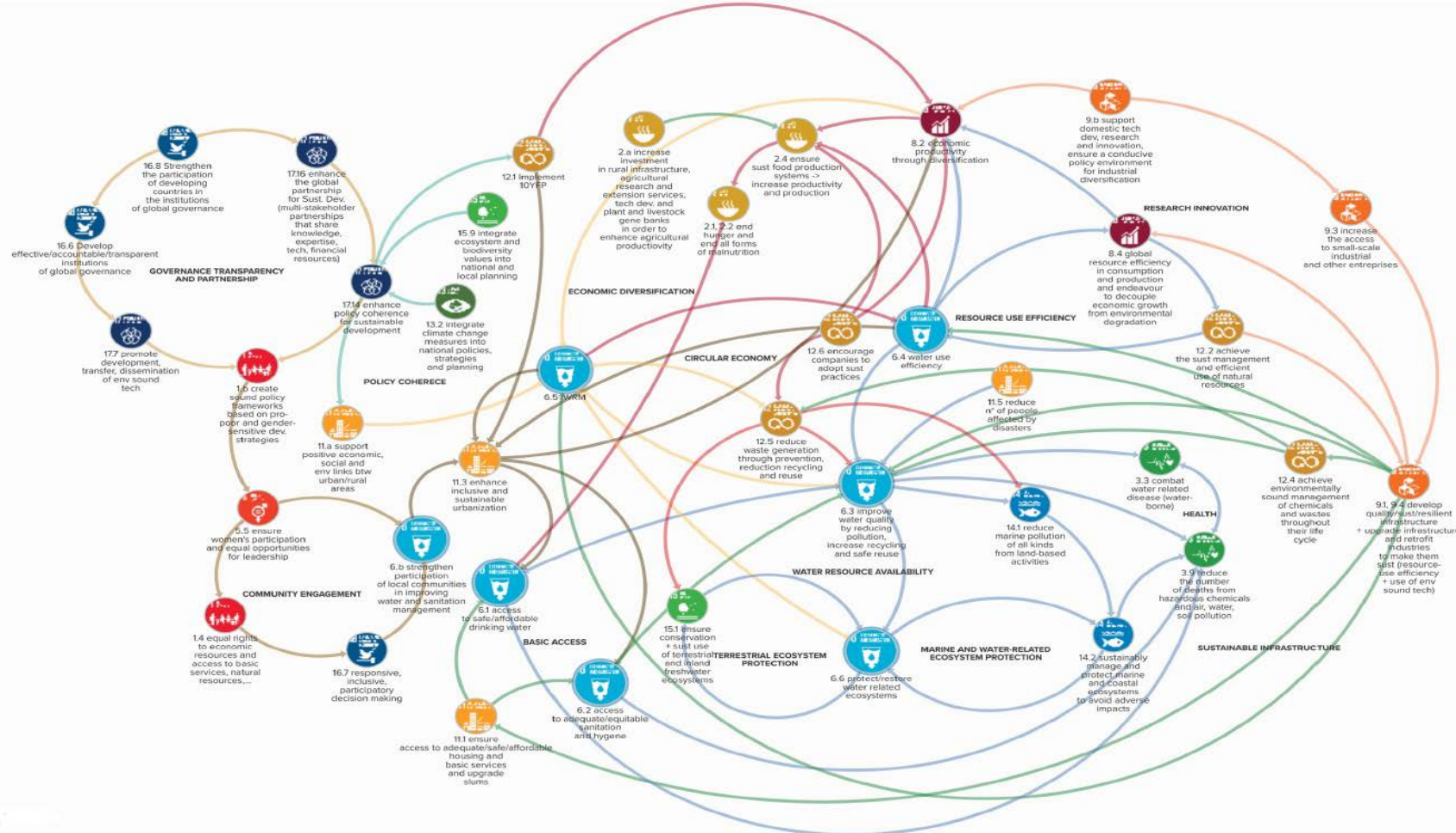
SDG 4: Quality education



- ERTC conducts capacity building for high level government officials responsible for policy formulation and good governance to transfer new and appropriate new technology in environmental management and exchange information to all stakeholders.



SDG 11: Sustainable cities and communities



SDG 12: Responsible consumption and production



- Appropriate aeration feeding model for underground organic waste compost tank
- Application of earth worm on reducing hazardous residues in residuals derived from domestic solid waste treatment
- Pollution Management of Municipal Solid Waste and Electronic Waste
- Development of high performance food waste composting machine
- Black soldier fly (*Hermetia illucens*) apply for organic waste management



SDG 13: Climate action

- Development of the Index and Tool for Assessing Public Climate Change Awareness
- Development of Future Drought Information System and Environmental Impacts for Community-level Management
- Assessing Adaption Options of Coastal Cities along the Gulf of Thailand from Sea Level Rise, Coastal Erosion and Storm Surge
- Study on indigenous adaptation to climate change impact



SDG 14: Life below water

- Coastal Ecological Risk Management in Environmental Contamination of Volatile and Semi-Volatile Organic Compounds and Heavy Metals for Sustainable Consumption at Pollution Control Area, Rayong Province
- Study on Appropriate Approaches to Manage and Assess Urban Eco-forest and Development of Eco-forest Model to Reduce the Impact of Sea Level Rise, Coastal Erosion and Storm Surge
- Contamination and treatment performance of micro-plastics in municipal wastewater treatment system



SDG 17: Partnership for the goals

- Increase awareness and promotion of participatory action research by community and promote innovation from agricultural waste
- ERTC conducts capacity building for government, public and private sectors researchers utilizing the outcomes of various research and development projects



Conclusions

- ERTC, throughout its 30 years of existence, contributes to the sustainable development of the country through research and development as well as capacity building that promotes environmental sustainability towards achieving Agenda 2030 and the Sustainable Development Goals.





Conclusions

- ERTC is good model for international cooperation that supports Thailand and countries in the region.
- Thailand is profoundly grateful to the Government of Japan for the generosity provided in establishing ERTC.



Thank You

