

Annual Report



Department of Water Resources
Ministry of Natural Resources and Environment

Preface

In 2019, the implementations of the Department of Water Resources (DWR) are adhered to the National Strategy and the 12th National Economic and Social Development Plan, leading to the operational plans of the Department of Water Resources with the objectives to conserve, develop, improve and rehabilitate the water sources in order to maintain the balance of the eco-system and works, as well as to enhance the water storage efficiency of natural water sources and the existing sources to become the sources of water budget which can be used efficiently to tackle flood-drought situations. Moreover, there is also the construction of the solar-powered water distribution system in response to water use and solve the drought issue in rainfed agricultural areas under the concept of integrated water resources management by the participation of people. Furthermore, there are maintenance and development of the Early Warning System to be in good condition to reduce the loss of life and property of people in the critical area, and strengthen people to get ready and adapt themselves towards the climate change.

The DWR's Annual Report 2019 is considered as the summary of the dedicated works that all the officers have put their great efforts into achieving the set plans to create benefits of the people in accordance with the government's objective to improve people's quality of life and well-being, leading to the security, prosperity and sustainability.



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"I shall continue, preserve, and build upon the royal legacy and shall reign with righteousness for the benefit and happiness of the people forever."

*His Majesty King Maha Vajiralongkorn Phra Vajiraklaochaoyuhua
presented the First Royal Command on 4 May 2019*



Part 1

Overview





กรมทรัพยากรน้ำ
DEPARTMENT OF WATER RESOURCES

กรมทรัพยากรน้ำ
ทรัพยากรธรรมชาติและสิ่งแวดล้อม



Overview



VISION

“The core agency for managing water resources in rainfed agricultural area with sufficiency, balance and sustainability to comply with the Civil-State Principle within the year 2037”

CORE VALUE

Achievement Motivation, Service Mind, Integration and Harmony

MISSIONS

The Department of Water Resources (DWR) is the government agency under the Ministry of Natural Resources and Environment according to the Ministerial Regulation on the Administrative Organization of the Department of Water Resources, Ministry of Natural Resources and Environment B.E 2545 (2002) and B.E 2551 (2008). The missions of DWR concerning suggestions on formulating policy and plan as well as measures relating to water resources, management, development, conservation, rehabilitation including surveillance, cooperation, follow-up, evaluation and also problem solving regarding the water resources, academic development, standardization and technology transfer at overall and river basin levels to sustainably manage the water resources with integrity.

Additionally, the issuance of Order No. 46/2560 on 25 October 2018 and Order No. 2/2561 on 22 January 2019 by the Head of the National Council for Peace and Order (NCPO) to establish the Office of National Water Resources (ONWR) to be the core agency which is responsible for the water resources management planning and cascading policy of the country. By transferring the missions and manpower from the Department of Water Resources in terms of policy recommendation and water resources work plans in an overall picture of Thailand, formulation of action plans to manage the water resources, water resources management in the cross river basin, cooperation among foreign countries and international organizations in terms of water resources management, monitoring and evaluation as well as performing duty as the secretariat of the National Water Resources Committee for the Office of the National Water Resources.

Water Resources Act B.E. 2561 (2018) prescribes the responsibilities of the Department of Water Resources are under Chapter I: Water Resources, Chapter IV: Water Allocation and Water Use, Chapter VI: Conservation and Development of Public Water Resources and Chapter VIII: Civil Liability in the Case of Damage to Public Water Resources.



Department of Water Resources





MANDATES

1. Formulate plans and recommendations as well as promote and support to enhance the capacity of the integrated water resources management with people's participation from all sectors
2. Supervise, control and enforce the related law
3. Conserve, rehabilitate, develop and maintain the balance of water resources by considering the ecosystem
4. Support water resource management for consumption by applying technology, measures, and recommendations including climate change adaptation
5. Develop knowledge and research in hydrology and digital technology for water resources management
6. Follow-up, monitor, forecast and provide information for warning and managing the crisis

SERVICE TARGETS

1. Conserve, develop, improve and rehabilitate water sources and distribution system in response to the water demand in the agricultural rainfed area including maintaining the balance of ecosystem and watershed area
2. Increase the capacity of drainage, forecasting, preparing and managing the crisis including tackling the climate change
3. Water supply concession and water supply system in the village are monitored, supervised, followed up and evaluated the quality according to the standard for water-use efficiency
4. Develop the mechanisms, measures/action plans and rules for water resources management in order to supervise and monitor adhere to the law
5. Develop the cooperation, innovation, research works and technology regarding water resources
6. Improve the organization and employees to move forward to Thailand 4.0 (Government 4.0)

WORK PLANS AND TARGETS

1. Work plan for government personnel

- 1) Expenses for the implementation of the government sector

2. Primary work plan for water management and the promotion of environmentally-friendly growth with sustainability

- 1) Creating mechanisms for integrated water resources management at all levels by the participation of all sectors
- 2) Increasing storage efficiency of natural water sources and the maintenance of buildings, constructions and existing water sources to work effectively
- 3) Surveillance and warning of flood and landslide

3. Work Plan for Integrated Water Resources Management

- 1) Conserving, developing, improving and rehabilitating the water sources to become the sources of water budget as well as increasing efficiency of water distribution to solve flood and drought problems
- 2) River basin organizations are promoted and increased efficiency as well as developing the significant water resources management system

4. Work Plan for Research and Innovation

- 1) Research and development for knowledge and technology in terms of water resources

Relations Diagram of the National Strategy and DWR's Work Plan



The 20-year
National Strategy
(2018-2037)

Thailand becomes a developed country with security, prosperity and sustainability in accordance with the Sufficiency Economy Philosophy

Direct concern

Strategy 5: Eco-friendly Development and Growth

Development Goals

1. To conserve and preserve natural resources and environment as well as culture for the next generation's sustainability
2. To restore and reconstruct natural resources and the environment for mitigation of negative impacts that may arise from national economic and social development
3. To ensure balanced utilization and economic growth of growing the natural resource and environmental base by balancing development with ecosystem capacity
4. To ensure the country's paradigm shift for the determination the country's natural resources and environment, as well as culture, based on good governance and public participation

Partly Support

Strategy 1: Security, Strategy 2: Competitiveness Enhancement

The Master Plan
under National
Strategy
(23 plans)

19th issue: The management of national water resource as a whole

Targets

1. Increase in water security
2. Increase in water productivity by using water sparingly and creating value-added from water using
3. River, canals and natural water sources receiving conservation and rehabilitation for better eco-system

The 12th National
Economic and Social
Development Plan
(2017-2021)

Strategy 4:

Environmentally-Friendly Growth for Sustainable Development



The 20-year Master Plan on Water Resources Management

- No. 1 : Managing water for consumption
- No. 2 : Providing water security in the production sector, agricultural sector and industrial sector
- No. 3 : Managing floods and flood disasters
- No. 4 : Managing water quality
- No. 6 : Management and Administration

DWR's Service Targets

1. Conserve, develop, improve and rehabilitate water sources and distribution system in response to the water demand in the agricultural rainfed area including maintaining the balance of ecosystem and watershed area
2. Increase the capacity of drainage, forecasting, preparing and managing the crisis including tackling the climate change
3. Water supply concession and water supply system in the village are monitored, supervised, followed up and evaluated the quality according to the standard for water-use efficiency
4. Develop the mechanisms, measures/action plans and rules for water resources management in order to supervise and monitor adhere to the law
5. Develop the cooperation, innovation, research works and technology regarding water resources
6. Improve the organization and employees to move forward to Thailand 4.0

DWR's Work Plans

1. Work plan for government personnel
2. Primary work plan for water management and the promotion of environmentally-friendly growth with sustainability
3. Work Plan for Integrated Water Resources Management
4. Work Plan for Research and Innovation

Executives



Mr. Suwat Piampajjai

Director General



Mr. Anek Chompanich

Deputy Director General



Mr. Athiwat Sukontpradit

Deputy Director General

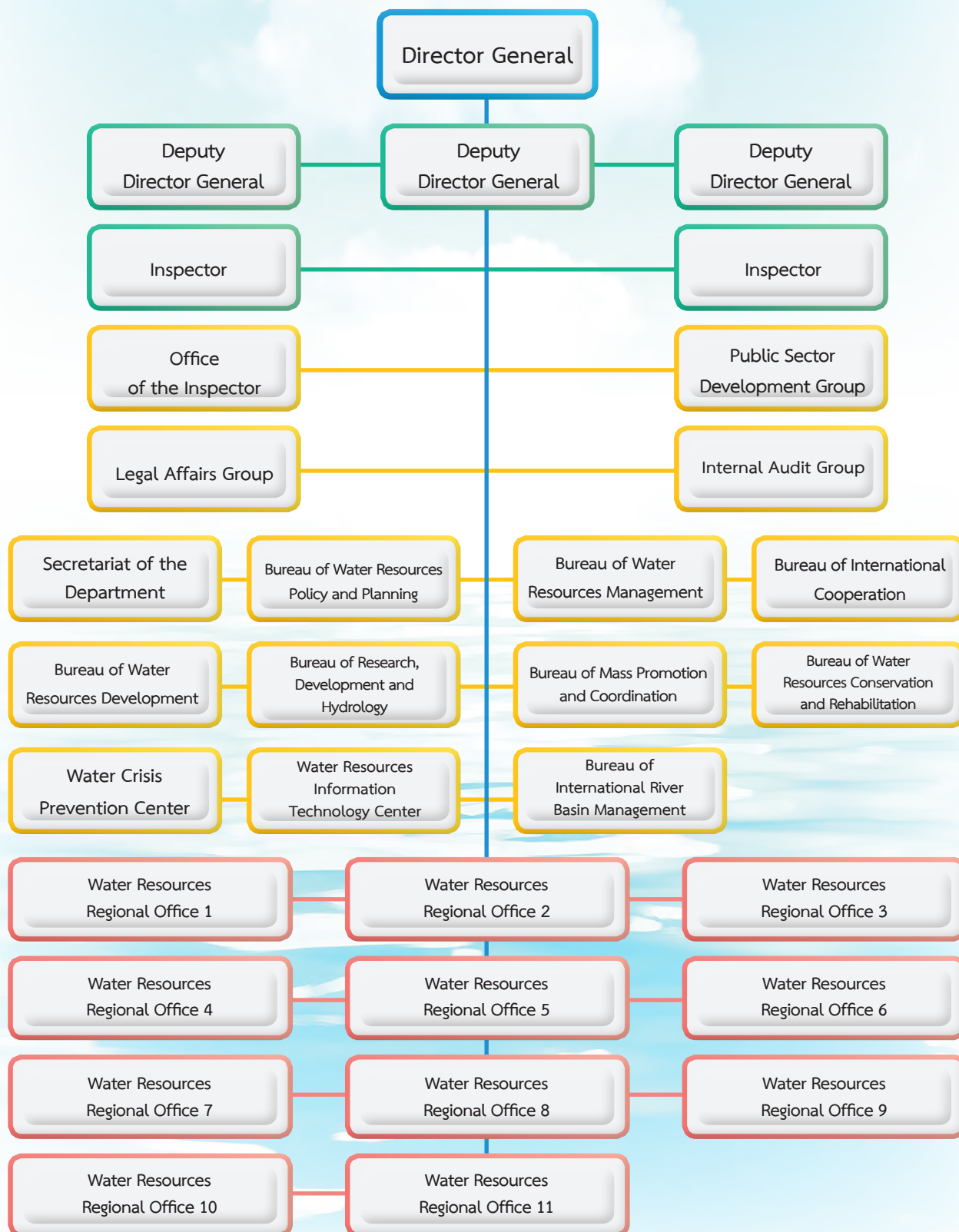


Mr. Snay Sathutham

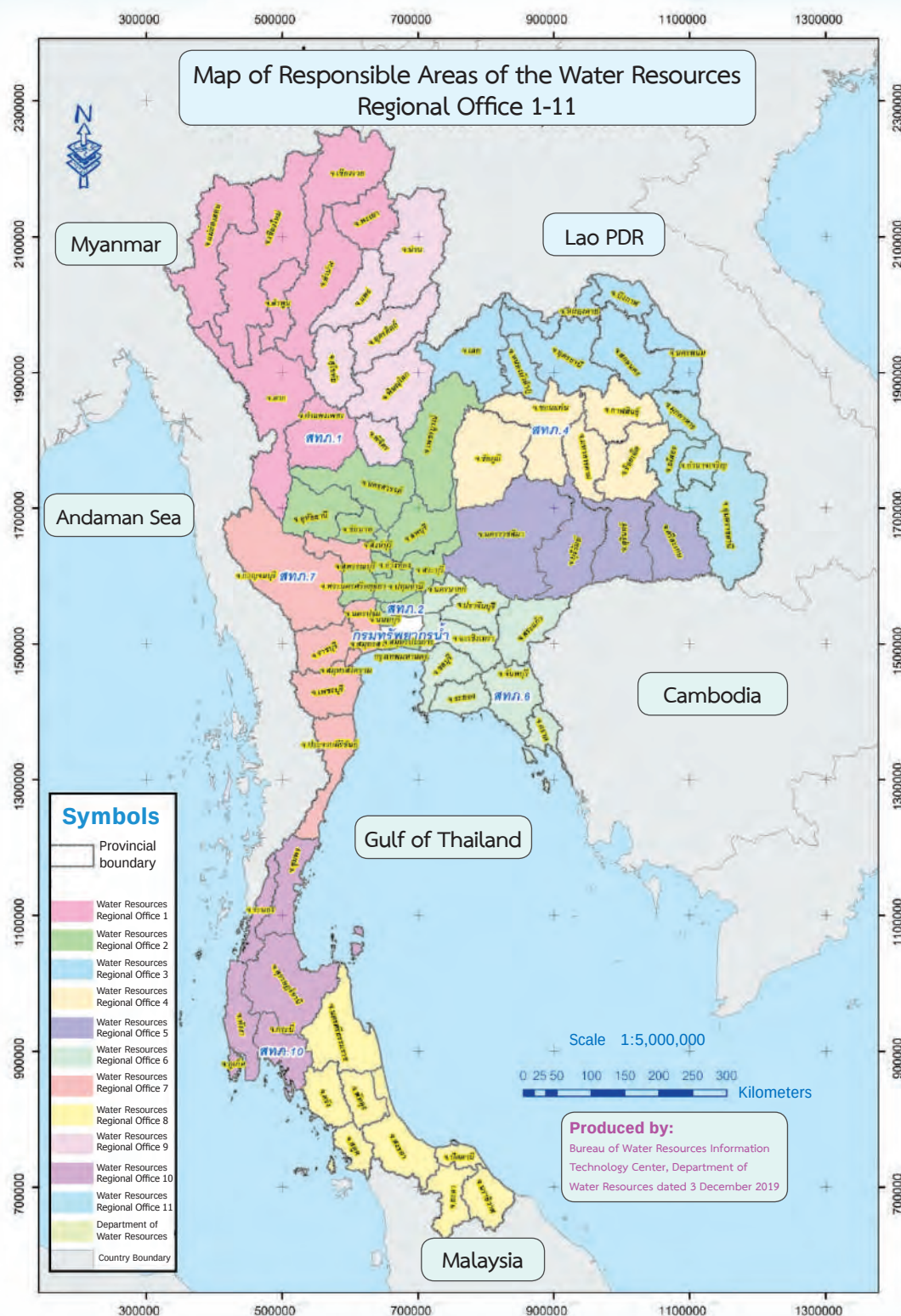
Deputy Director General



Organization Chart



Map of Water Resources Regional Office 1-11



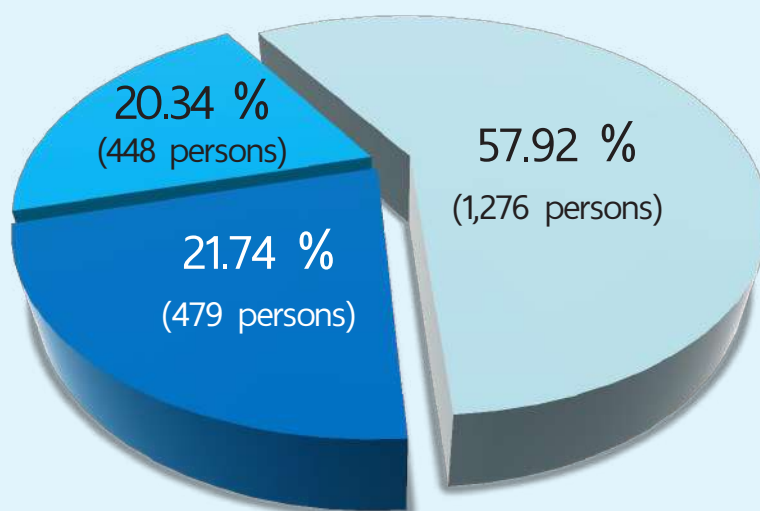


Manpower

as of 30 September 2019

	Amount (Person)	Percentage
Government official	1,276	57.92
Permanent employee	448	20.34
Government employee	479	21.74
Total	2,203	100.00

The Proportion of Government official, Permanent employee and Government employee of the Fiscal Year of B.E. 2562 (2019)



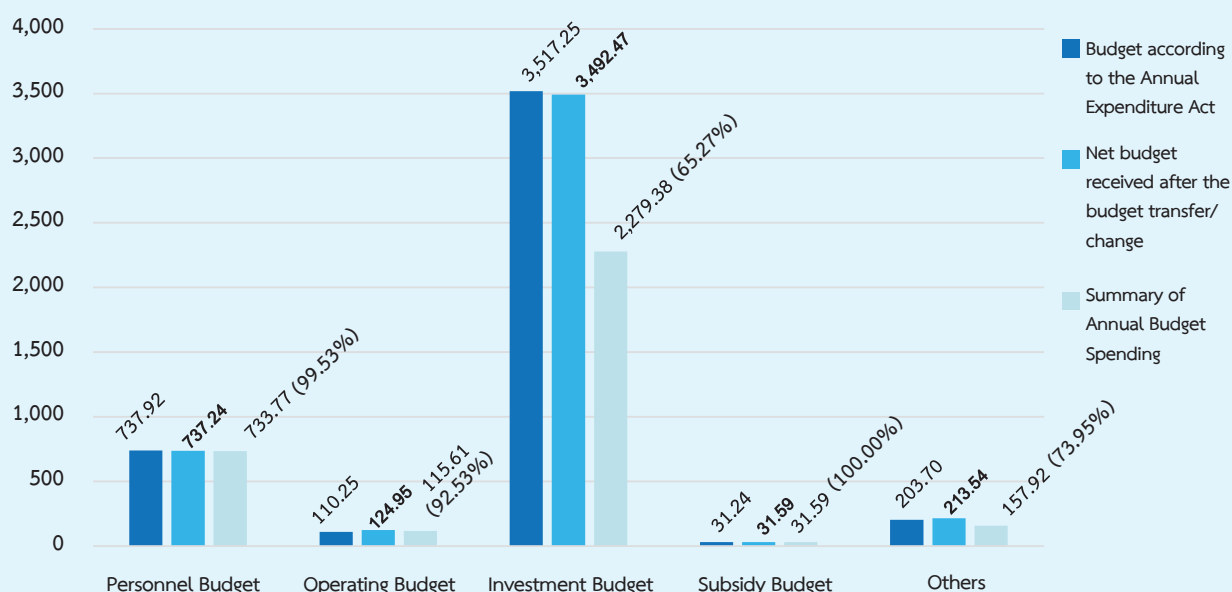
Government official Permanent employee Government employee

Annual Expenditure of the Fiscal Year of B.E. 2562 (2019)



Item	Budget according to the Annual Expenditure Act	Net budget received after the budget transfer/change	Summary of Annual Budget Spending	Percentage of Budget Spending
Personnel Budget	737,920,000.00	737,241,800.00	733,765,405.29	99.53
Operating Budget	110,252,700.00	124,947,200.00	115,608,145.64	92.53
Investment Budget	3,517,247,500.00	3,492,468,153.00	2,279,375,202.98	65.27
Subsidy Budget	31,244,900.00	31,593,247.00	31,593,246.85	100.00
Others	203,704,700.00	213,541,200.00	157,923,220.38	73.95
Total	4,600,469,800.00	4,599,791,600.00	3,318,265,221.14	72.14

Annual Expenditure of the Fiscal Year of B.E. 2562 (2019)



Unit: Million baht



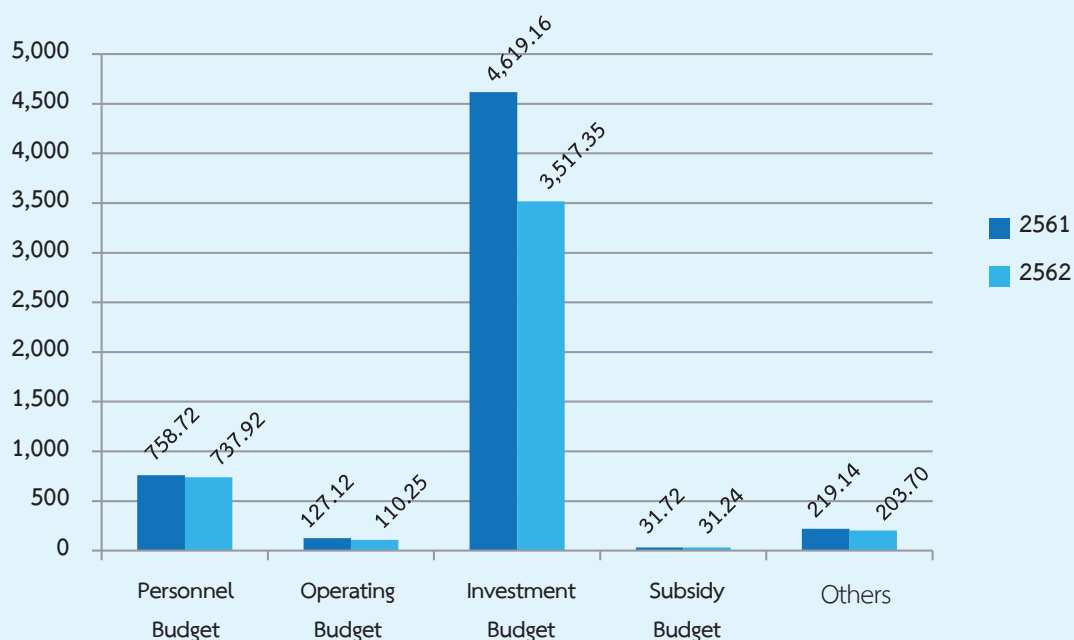
Comparison of Budget

in Fiscal Year 2018 and 2019



Item	Budget (Year)		Comparison Result	
	2018	2019	Increase (+) / Decrease (-)	Percentage
Personnel Budget	758,717,200	737,920,000	-20,797,200	-2.74
Operating Budget	127,124,500	110,252,700	-16,871,800	-13.27
Investment Budget	4,619,157,000	3,517,347,500	-1,101,809,500	-23.85
Subsidy Budget	31,715,800	31,244,900	-470,900	-1.48
Others	219,143,800	203,704,700	-15,439,100	-7.05
Total	5,755,858,300	4,600,469,800	-1,155,388,500	-20.07

Comparison of Budget in Fiscal Year 2018 and 2019



Unit: Million baht



Part 2

Performance Report





1

Performance Results

adhere to the Performance Efficiency Improvement Measures

The Performance results adhere to the Performance Efficiency Improvement Measures

The Department of Water Resources, in the Fiscal Year 2019
On 1 October 2018 – 30 September 2019

Function Base	Agenda Base	Area Base	Innovation Base	Potential Base	Average Score	Assessment Summary
61 scores	100 scores	-	100 scores	100 scores	90.25	 Quality Level

Indicator Components	Indicator Assessment	Target			Performance Report	Scores	Score Elements
		Low-Level (50)	Standard-Level (75)	High-Level (100)			
1. Function Base	1. Achievement of the formulation of water resources management plan	272 places	272 places - Water volume at 80% of the target (66,976,000 m³) - Household receiving benefit at 80% of the target (59,370 households)	272 places - Water volume at 100% of the target (83,720,000 m³) - Household receiving benefit at 100% of the target (74,212 households)	403 places¹ - Water volume of 73,506,100 m³ (87.79 %) - Household receiving benefit: 89,656 households 100% of the target	75.00 ²	61.00
	2. The increase in water quality of the mainstream is at a good level	56 places	57 places	58 places	53 places (Apply the score result from the Pollution Control Department)	47.00	



Indicator Components	Indicator Assessment	Target			Performance Report	Scores	Score Elements
		Low-Level (50)	Standard-Level (75)	High-Level (100)			
2. Agenda Base	1. Development project of water distribution and delivery Systems (Surface water)	19 places (Average project progress at 30%)	19 places (Average project progress at 80%)	19 places along with 4,878 households receiving benefits	- Construction completed in 61 places - Household receiving benefit: 6,604 households 100% of the target	100.00	100.00
	2. Clarification of the key issues to the prevailing condition (If any)	100.00 (Scores)			No issue in this indicator assessment	-	
3. Area Base	No indications in this element	-			-	-	-
4. Innovation Base	1. Proposals for innovation development	100.00 (Scores)			100.00 ⁴ (Scores)	100.00	100.00
5. Potential Base	1. Implementations in compliances with Government Reform Plan in the fiscal year 2019	100.00 (Scores)			100.00 (Scores)	100.00 ⁵	100.00*
Average score							90.25

Remark:

¹ Operational successes in compliances with the indicators which the Department of Water Resources (DWR) has increased the targets by using the residual budget of the fiscal year 2019 for 50 projects which water volume of 3,018,000 m³ and 9,091 households received benefits including using the residual budget of the fiscal year 2018 for 134 projects which water volume of 20,674,000 m³ and 16,683 households received benefits.

² Scores based on standard-level target due to the water volume doesn't reach the high-level target

³ Operational successes in compliances with the indicators which the Department of Water Resources (DWR) has increased the targets by using the residual budget of the fiscal year 2019 for 2 projects which 500 households received benefits and using the residual budget of the fiscal year 2018 for 46 projects which 3,909 households received benefits

⁴ Innovation Development in 7 areas such as (1) Water resources management in rainfed areas (Non-irrigated area) (2) Water resources construction progress tracking via CCTV (3) Preparation of online opinion surveys entitled: The Assessment for Satisfaction and Happiness in the Organization and Performance Appraisal System (4) Data collection system and information system services in the organization (5) Matpro software for reporting and assessing the material testing result (6) Key performance indicators report system of Department of Water Resources (7) Executive assessment (Survey Online)

⁵ Due to the impact of the external factors that cannot be controlled so that this score is not counted to assess in 2 sub-issues

- indicates standard level, the government sector that has average scores in each element from 90-100%
- indicates high-standard level, the government sector that has average scores in each element from 75-89.99%
- indicates low-standard level, the government sector that has average scores in each element from 60-74.99%
- indicates need improvement level, the government sector that has average scores in each element lower than 60%

2

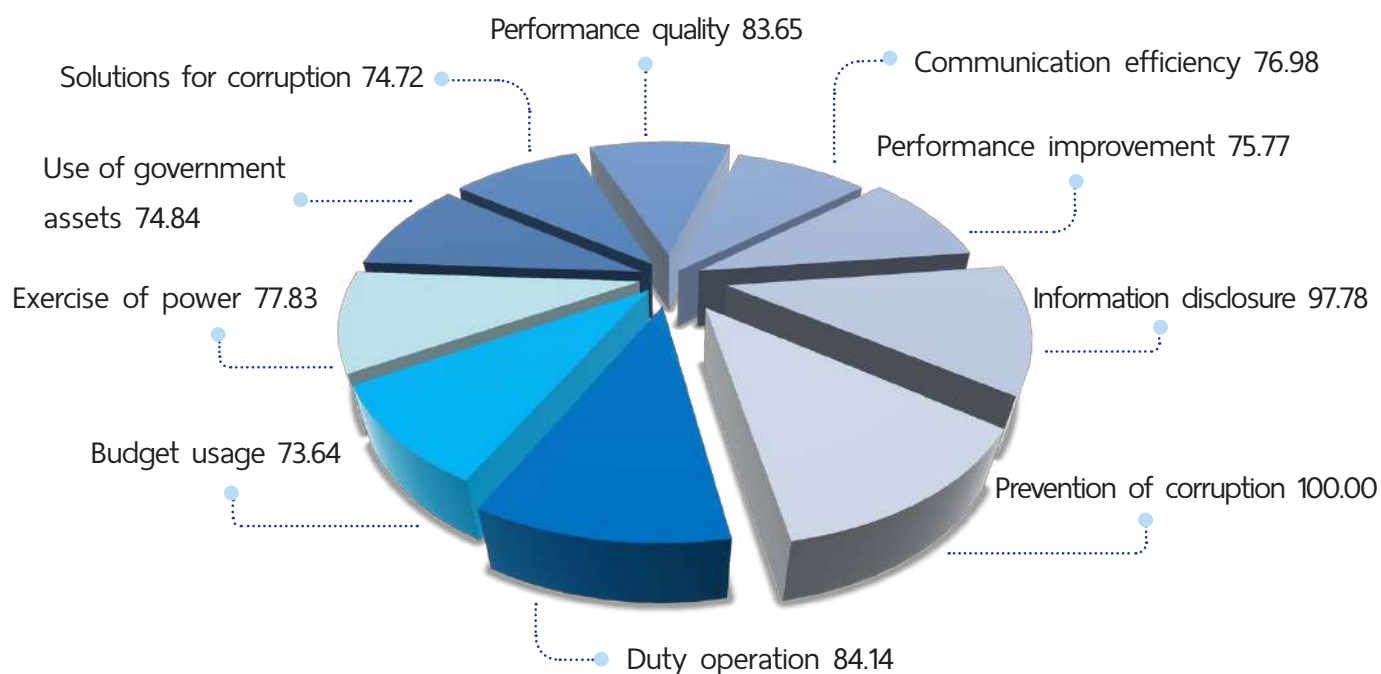
Performance Results of Integrity and Transparency Assessment – ITA

The Integrity and Transparency Assessment (ITA) in the fiscal year 2019 of DWR has been implemented in compliances with the rubric assessment of the Office of the National Anti-Corruption Commission that prescribes the assessment tools in 3 types with 10 indicators consist of:

1. Internal Integrity and Transparency Assessment (IIT) is for assessing the level of awareness of internal stakeholders towards their organizations by selecting the sample size at the minimum of 10% of the number of internal stakeholders; the executives, directors, government officials and employees as well as the employees who have worked with the organization for at least one year, which consists of 5 indicators: duty operation, budget usage, exercise of power, use of government assets, and solutions for corruption.
2. External Integrity and Transparency Assessment (EIT) is for assessing the level of awareness of external stakeholders towards the organizations by selecting the sample size at the minimum of 10% of the number of external stakeholders from 2 information sources, there are information in compliances with the name list from data collection that the organization has sent or the field survey, and the external stakeholders assess ITAS system to fill out the survey by themselves, which consists of 3 indicators: performance quality, communication efficiency and improvement of the working system.
3. Open Data Integrity and Transparency Assessment (OIT) is for assessing the level of organization's information disclosure to the public so that the public can access, which consists of 2 indicators: information disclosure and prevention of corruption.

The Office of the National Anti-Corruption Commission has announced the result of Integrity and Transparency Assessment (ITA) in the fiscal year 2019, the DWR has the total scores at 86.31 scores which are at the A-Level (Passed), the score rand table of assessment results of each indicator can be shown as follows:





Summary Table of the Integrity and Transparency Assessment Scores from the Operations

No.	Assessment Tools	Indicators	Scores
1	Internal Integrity and Transparency Assessment (IIT)	1.1 Duty operation	84.14
		1.2 Budget usage	73.64
		1.3 Exercise of power	77.83
		1.4 Use of government assets	74.84
		1.5 Solutions for corruption	74.72
2	External Integrity and Transparency Assessment (EIT)	2.1 Performance quality	83.65
		2.2 Communication efficiency	76.98
		2.3 Performance improvement	75.77
3	Open Data Integrity and Transparency Assessment (OIT)	3.1 Information disclosure	97.78
		3.2 Prevention of corruption	100
Total scores			86.31

3

Performance Results adhere to the mission of the Department of Water Resources in 2019

According to the missions of the Department of Water Resources and relations diagram of National Strategy, DWR has adjusted role from being the “Regulator” to become the “Operator” to operate the works in compliances with Master Plan under National Strategy, issue no.19, which focuses on the water resources management emphasizing on the development approaches of conservation and rehabilitation of the river, canals and natural water sources across the country by encouraging the rehabilitation of the river and canals as well as the prevention of riverbanks and check dams. Moreover, there is also the preparation of water resources conservation and rehabilitation plans on the basis of the balanced-ecosystem preservation, promotion of participatory mechanisms in the water resources management, conservation and development of rivers, canals and natural water sources as well

as encouraging public and private sectors to have knowledge, understanding and awareness toward the value and importance of the rivers, canals and natural water sources.

The performance results of DWR are as follows:

1. Conservation, Rehabilitation, Development, Efficiency Improvement and Maintenance of Water Resources
2. Development of Water Management Organization's Mechanisms
3. Warning and Hydrology
4. Water Management for Consumption
5. Foreign Affairs on Water Resources
6. Research on Water Resources
7. Human Resource and Organization Development
8. Information Technology Development for Bureaucratic System 4.0
9. Public Relations on Water Resources

3.1 Conservation, Rehabilitation, Development, Efficiency Improvement and Maintenance of Water Resources

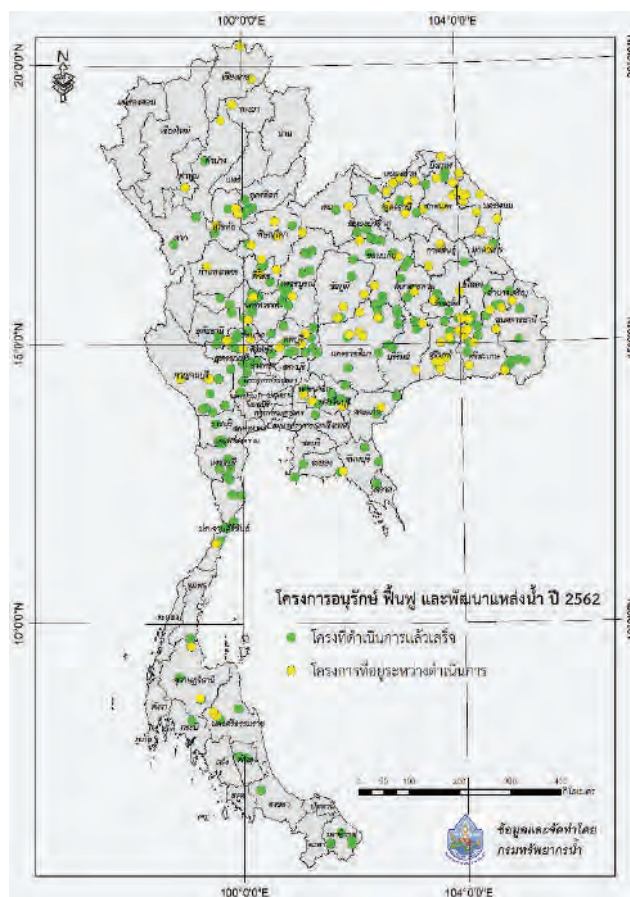
The Department of Water Resources has carried out the works regarding the improvement and rehabilitation of the natural water sources in small, medium and large scales as well as the swamps, rivers, canals or other names that have similar features. The implementation has been divided the areas into rehabilitation or conservation, or mainstream or tributary with the elements such as dredging, weeds removing, erosion prevention and control building

in order to maintain the ecosystem and enhance the efficiency of water retention, distribution and drainage. Moreover, this can become the water budget for consumption, agriculture and careers which can solve the problem or alleviate the suffering of water resources problems of people as well as to prevent and mitigate flood and drought problems and become the prevention lines for natural water sources encroachment by having the systematic approaches for the operation related

to the local and river basin levels to respond to the demand of local people. Furthermore, there is also the strengthening of participation from all sectors to place importance on the stakeholders and support the public to make benefits from the water sources with sustainability.

Besides, the Department of Water Resources has carried out the works regarding the water sources efficiency improvement and maintenance or repairing the unusable tools and equipment annually to maintain the good conditions such as the headwork maintenance, grasses and weeds removing, earth embankment repairing, soil aggregate addition, water control repairing, application of lubricant on sluice gates, flood or sluice gates changing/repairing or unusable tools and equipment repairing. For this reason, it can help to increase the efficiency of water retention, distribution and drainage due to after the project has been operating for a big while, the water sources may be shallow or the tools and equipment are unusable. Therefore, there is a need for the maintenance of these water sources to be available for making benefit.

Performance result: The project of water resources conservation and rehabilitation in compliance with the Budget Procedure Act's plan, in a total of 297 places, the completed projects are 197 places with water volume 35.19 m³, 35,787 households and agricultural lands of 170,124 rai receiving benefits. Besides, the remaining projects of 100 places are continuously operating adhere to the contract (The reserve budget for the overlapping fiscal year 2020), in a total of



98 places, and also 2 places are the contractual obligation projects in the fiscal year 2019-2020. Besides, DWR has been carrying out additional water resources conservation and rehabilitation projects (Residual budget of the fiscal year 2019), in a total of 148 places which are under operation as per the contract.

The performance result of the project of water resources efficiency improvement and maintenance has been carried out in 26 places which 6,845 households receiving benefits from the development, efficiency improvement and maintenance of this project.



The examples of the performance results of the conservation, rehabilitation, development, efficiency improvement and maintenance of water resources are as follows:

3.1.1 Water Sources Conservation and Rehabilitation



 **Nong Kud Prun Water Source Conservation and Rehabilitation Project, Ban Kradon Noi at Village no. 13, Prang Khu Sub-district in Srisaket Province**, the area of Nong Kud Prun wetland has the problem of shallowed water source causing the deterioration of the swamps and cannot be used at its maximum benefit since lack of maintenance and management. Hence, it leads to the deterioration of the ecosystem and creates an impact on livelihoods and the quality of life of the local people. Therefore, to restore the condition of water source in the area to be able to store water for the benefits of the community in several aspects as well as to solve flood and water shortage problems for consumption, DWR has carried out this project to comply with the government policy which aims to improve and rehabilitate the area conditions to increase the efficiency of water retention. For this reason, people can have water for consumption throughout the year and the area can be the place for aquaculture and promotion of fisheries to become the place for conservation tourism recreation areas.



After



Before

The operation regarding the water source dredging, there are swamps dredging with 1 kilometer in length and 3.50 meters in depth and the construction of appurtenant structures and intake structure in 2 places as well as the construction of road crossing culvert between Nong Kud Prun-Nong Ha in 1 place, other road crossing culverts in 4 places, concrete stairs to the swamps in 4 places, crushed rock soil aggregate type base with 4 meters in width and 2.767 kilometers in length including the water distribution system with the minimum capacity of 100 m³/day in 1 place which the new storage capacity is 1,111,101 m³. Therefore, there are 600 households and agricultural lands of 1,200 rai receiving the benefits.

 **Khuan Khao Wang Water Source Conversation and Rehabilitation Project at Village no. 1, Cha Lung Sub-district, Hat Yai District in Songkhla Province** has the existing water source in the area of the Forest Protection Unit No. 5 (Kuan Khao Wang) and Forest Management Bureau No. 13 (Song Khla) which the local people use this existing water source for their consumption and support the water supply in the village as well as the Forest Protection Unit No. 5 (Khuan Khao Wang), Forest Management Bureau No. 13 (Song Khla), Song Khla Seedling Nursery Center and Forest Conservation Project in Song Khla Lake Basin (Green Village) also use water from the existing water source for their consumption, seedling cultivation and forest fire suppression in the nearby areas in order to provide moisture to



Before



After



rehabilitate the forest. Since the condition of water source in this area is shallow and dried up by the sediment deposition and accumulation in a long time causing inadequate water to meet the demand which results in the water shortage in every year. And the local people and work units in the area of Khuan Khao Wang Forest Park are suffering from this problem.

The Department of Water Resources has carried out the dredging work in such water source to make it become the source of water budget to support water supply system for the village in Ban Huay Had-Suan Luang areas at Village no. 1, Chalung Sub-district, Hat Yai District in Song Khla Province and work units of Royal Forest Department which located around the water source as well as the water source can be used for controlling, preserving and maintaining the areas of National Reserved Forest of Khuan Kao Wang, Klong Thor and Khao Tuak Kaew in order to store

water and provide moisture to the areas around the water source.

The performance results are as follows:

- 1) The storage capacity of the water source of 68,900 m³
- 2) The source for providing moisture to the area to create richness to the ecosystem, support the forest fire control missions and seedling cultivation as well as support efficient operation of the work units related to the Royal Forest Department which the offices located around the water source area
- 3) The guideline to rehabilitate the water source in the area of national reserved forest by the integrated cooperation between government and public sectors for the highest benefits
- 4) The support of water supply for people in the village of Ban Huay Had-Suan Luang and work units under the Royal Forest Department which located around the water source



💧 **Bueng Jam Pang Water Source Conversation and Rehabilitation Project at Village no. 14, Na Yom Sub-district, Muang District in Phetchabun Province**, previously the existing area is facing the deterioration and shallow causing inefficient water storage at its maximum capacity. Moreover, during drought season, the water volume is decreasing and unable to make any benefit. For this reason, the Department of Water Resources has carried out the Water Resources Conversation and Rehabilitation Project of Bueng Jam Pang, so people living around the water source area can receive benefit from farming which the majority of farmers are growing cucumber, angled gourd, corn and paddy rice including releasing fishes. Therefore, after the implementation, the water source has the storage capacity of 609,200 m³ which 395 households and agricultural lands of 4,740 rai receiving benefits.

➡ In process



➡ After





 Bueng Bua Conversation and Rehabilitation Project at Ban Thadin Khao, village no. 6, Nam Ang Sub-district, Thorn District in Uttaradit Province, the Department of Water Resources has carried out the dredging work of Bueng Bua which aims to increase storage capacity and maintain the ecosystem to alleviate flood and drought problems, including being the place for freshwater aquaculture which has the storage capacity of 700,000 m³, 330 households and agricultural lands of 400 rai receiving benefits. Moreover, the local people also have better livelihoods.



Before



After



Before

💧 Kud Hae Yai Conversation and Rehabilitation Project at Ban Na Dokmai, village no. 2, Chum Phae Sub-district, Chum Phae District in Khon Kaen Province, Kud Hae Yai is the natural water source in the area of Chum Phae Sub-district, Chum Phae District in Khon Kaen Province. Previously, the condition of this water source is shallow and contains a lot of weeds causing the water shortage for consumption and agriculture as well as there is no check dam to support during the flood season and the waterlogging around the water source area. Therefore, the Department of Water Resources has carried out the dredging work in this area to rehabilitate the water source to be able to store water and become the retention area during flood season and the water source for consumption and agriculture with the storage capacity of 140,000 m³ which 150 households and agricultural lands of 500 rai receiving benefits.



After



 **Ban Khui Water Source Rehabilitation Project for Large Paddy Fields, located in Village no. 6, Khui Sub-district, Lum Thamen Chai District in Nakhon Ratchasima Province,** Ban Khui Water Source is located in the second part of Mun Sub-basin of the Mun River Basin covering an area of approximately 200 rai. A dense cover of aquatic weeds and sediment deposition poses particular problems. It cannot fully store the water causing water shortage during the dry season. Khui Subdistrict Administration Organization has requested financial support from Water Resources Regional Office 5 to restore Ban Khui Water Source to increase the water storage capacity in order to provide available water to support large paddy fields and alleviate the suffering of people in the area.

The Department of Water Resources has carried out the Ban Khui Water Source Rehabilitation Project for Large Paddy Fields by dredging the pond with 2,711 meters in length and 4.40 meters in depth which providing water storage capacity of 1,345,000 m³. Therefore, this project benefits 400 households and supports farming in agricultural land of 1,200 rai.

Before



After





💧 Klong Hin Ploeng Rehabilitation Project located at Village no. 8, 9, and 11, Patong Sub District, Soi Dao District, Chanthaburi Province, the Department of Water Resources has operated the project by dredging the channel with 4 meters in width, 2.5 meters and 8,750 meters in length. For this reason, this project is a solution for water scarcity in the area since it provides adequate water for consumption, agriculture, and enhances a better livelihood security. Moreover, the project increases the water storage capacity of 149,200 m³ which 57 households and the agricultural land of 463 rai receiving benefits.

Before



After






 Huai Sai Khao Rehabilitation Project, located in Village no. 1, Thung Kha Wat Sub District, Lamae District in Chumphon Province, the Department of Water Resource has operated Huai Sai Khao Rehabilitation Project by constructing the weir of 25 meters in width and 2.50 meters in height to prevent erosion in the front and the back of the building. Moreover, this project has the objective to provide a water source for consumption and agriculture to people with the water storage capacity of 10,000 m³ which benefits 50 households and the agricultural land of 200 rai.



After



💧 **Huai Salao Rehabilitation Project**, located in Ban Nong Hua Ling, Village no. 6, Nam Khun District in Ubon Ratchathani Province. Previously, the condition is a shallow creek with low storage capacity that provides insufficient water for people. Therefore, the Department of Water Resources has operated Huai Salao Rehabilitation Project by enhancing water storage capacity up to 62,000 m³. The project benefits 200 households and agricultural land of 450 rai. Presently, farmer groups of Ban Nong Hua Ling Village have used water for growing rice which generating income approximately 10,000 baht/person/year.

Before





 **Nong Pa Lan Reservoir Rehabilitation Project**, located in Ban Nong Hoi, Village no. 10, Nong Plub Sub District, Hua Hin District in Prachuap Khiri Khan Province. The Department of Water Resources has dredged the Nong Pa Lan Reservoir to increase water storage capacity with the objective to mitigate impacts of flood and drought, maintain the ecosystem, alleviate people's suffering and, in collaboration with Land Development Department, support the Operation Center of the Royal-initiated Nong Plub - Klad Luang Land Development Project.

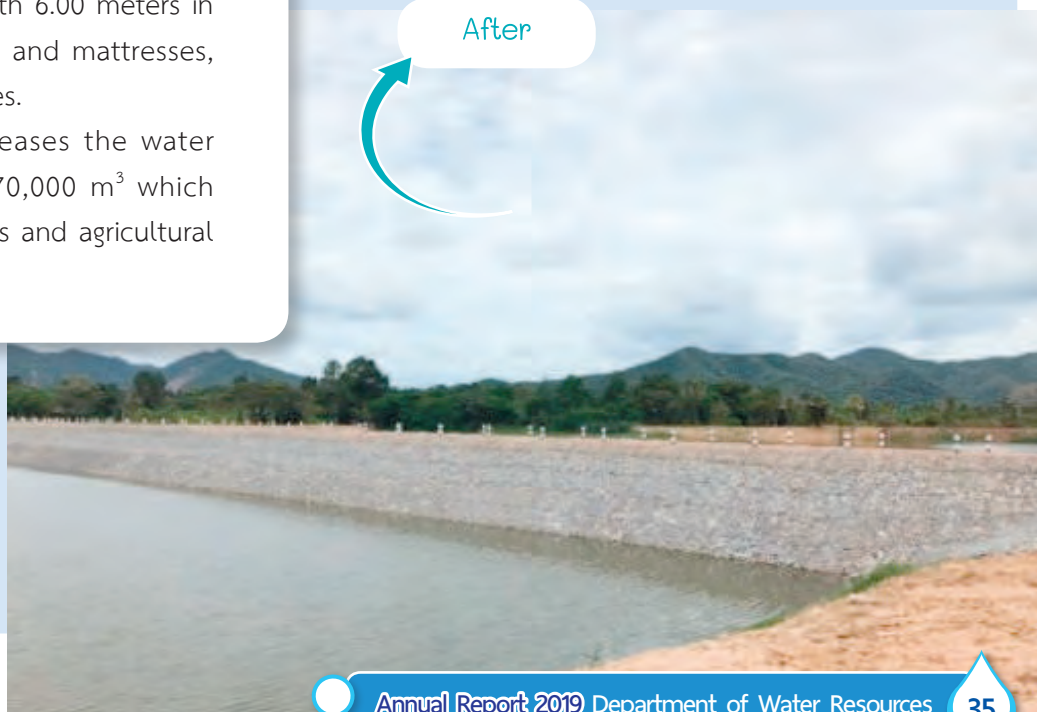
The operation consists of dredging reservoir with 65.00 – 199.50 meters in width, 300.00 meters in length, and 3.00 – 4.00 meters in depth, including constructing 2 rows of 1.75x1.75 meters of square inlet transition, 2 chute structures with the size of 2 – Ø 1.00 meters, 2 rest houses, 1 small port, soil erosion protection structures with 6.00 meters in height of gabions walls and mattresses, filled with 156 sheet piles.

The project increases the water storage capacity of 970,000 m³ which benefits 300 households and agricultural land of 150 rai.



Before

After





Before

The implementation of this project has increased the water storage capacity of 365,000 m³. Therefore, people can have source of water budget for their consumption in the area which benefits 10 households. Furthermore, there are additional water source to support the cultivation in the area of 60 rai.

Tod Luang Weir Maintenance Project, located in Village no. 6, Puk Kha Sub District, Watthana Nakhon District, Sa Kaeo Province, the Department of Water has operated the project by repairing sluice gates and chain hoist and brushing cement mortar to increase water storage capacity and improve drainage for flood control in the wet season. Moreover, it is a water source for consumption, agriculture, aquatic farming for people to consume and generate income. It ensures that Tod Luang Weir will be operated with its full potential, and can be transferred to the Local Administration Organization for future operation.

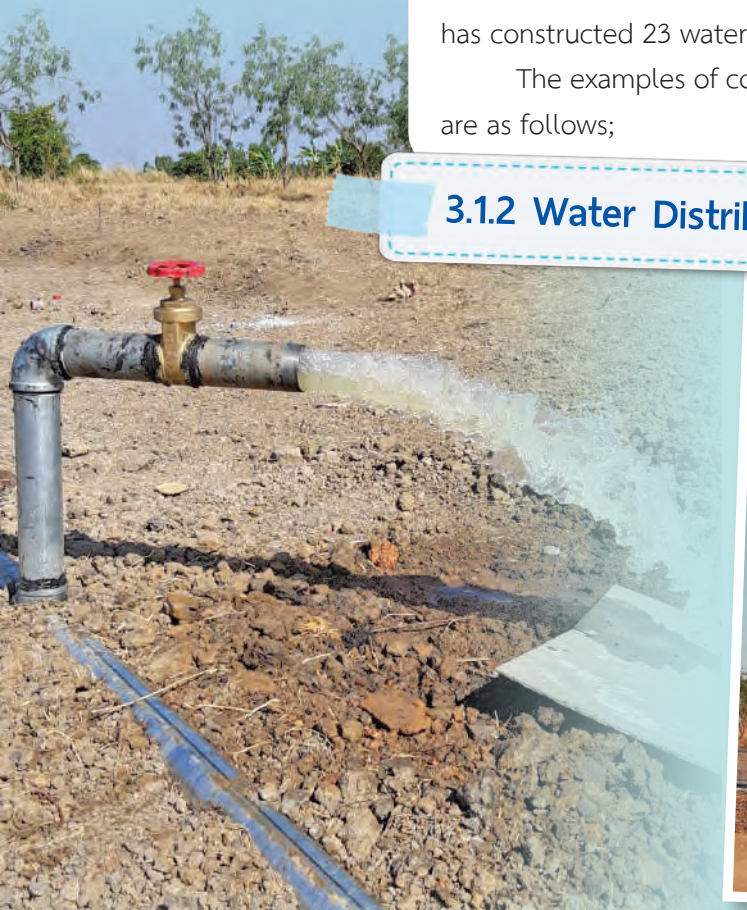


After

The water distribution system promotes the participation process and equitable sharing of water use benefit to create water security for the water user communities. In the fiscal year 2019, the Department of Water Resources has constructed 23 water distribution systems.

The examples of construction projects of the water distribution system are as follows;

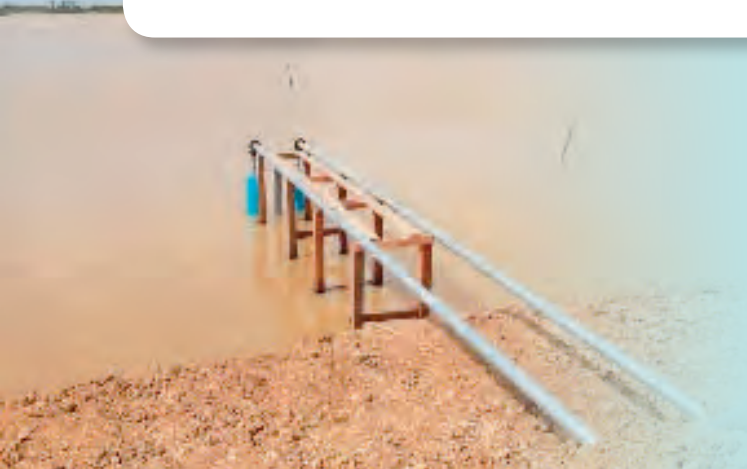
3.1.2 Water Distribution System



After

Ban Ngiew Solar-powered Water Distribution System Construction Project, located in Thong Thani Sub District, Thawat Buri District in Roi Et Province. The project promotes water management for consumption and agriculture in the non-irrigated area. Therefore, the local people can generate income and there is also an

electric energy saving due to it is a clean energy. The project emphasizes on the establishment of water users' networks as an important process to develop effective, value and sustainable water distribution systems. Moreover, it can generously allocate additional water to nearby villages. And people can effectively access to a water source.



Before

For the working process, 35 farmers have participated in the project and they can use water for consumption and home-grown farming such as cucumber, zucchini, papaya, galangal, yam, and yardlong bean. Moreover, the water users group is consolidated and they have established a committee. Besides, the purpose of the committee is to boost water use efficiency and raise awareness on water resources conservation and uses based on a mutual agreement such as bringing water to use in agricultural land, the members have to pay for the water fee in compliances with the water quantity that they have used (Based on water meter). For this reason, it results in the water use control for the farmers, so they can have sufficient water available throughout the year. In addition, the water from this project can be allocated for the village that lack of water in the dry season which can help to increase a better livelihood of all people in the project area.



Before



After



💧 **Bueng Kong Kok Water Distribution System Construction Project**, located in Ban Lub Mok at Village no. 6, Mueang Kong Sub District, Rasi Sai District in Sisaket Province. The Department of Water Resources has constructed Bueng Kong Kok Water Distribution System with a water storage capacity of 105,217 m³ to deliver water to all farmers in a remote area so they can have water to use thoroughly. Moreover, this project also promotes the cultivation of less-water crops during the dry season and creates the benefits to 128 households and agricultural land of 273 rai.

After



Before



💧 **Nong Moo and Nong Nam Cham Water Distribution Construction Project**, located in Ban Yang Oi, Village no. 4, Vieng Tan Sub District, Hang Chat District in Lampang Province, the Department of Water Resources has constructed the water distribution system, starting from Nong Moo to Nong Nam Cham, to deliver water to cover all of the agriculture land and solve water shortage problem for people in the project and nearby area. Besides, this project is an expansion of Yang Oi Reservoir Rehabilitation Project for Domestic Uses for Yang Oi Village, located at Village no. 4, Vieng Tan Sub District, Hang Chat District, Lampang Province, and the nearby village. Besides, the project benefits 245 households and agricultural land of 200 rai.





After

💧 **Klong Wang Pho Reservoir and Water Distribution Maintenance and Improvement Project**, located in Ban Dong Lan, Village no. 5, Wang Chan Sub District, Sam Ngao District in Tak Province, the Department of Water Resources has repaired Klong Wang Pho Reservoir and water distribution system to solve water scarcity for people in the project and nearby area. Previously, the condition of this project is shallow because of sediment deposition as well as the existing distribution lines are made of Asbestos Cement pipe (AC) have been used for a long time, causing water leaks and ineffective water delivery to the agriculture land. Therefore, the farmers and water users group have sent the request through Wang Chan Subdistrict Administration Organization to pass the request to Water Resources Regional Office 1 to start repairing Klong Wang Pho Reservoir

and water distribution system by dredging the reservoir to increase water storage capacity and repairing water pipelines. Besides, The project benefits 505 households and agricultural land of 4,800 rai. Moreover, it can solve the water problem for farmers in the area so that people can generate more income and have a better life.

Before



3.1.3 Water Sources Rehabilitation

 **Huai Mueang Reservoir Rehabilitation Project**, located in Ban Huai Mueang, Sop Tia Sub District, Chom Thong District in Chiang Mai Province, previously this reservoir has been used for a long time with a lack of maintenance. Therefore, it results in the deterioration of the elements of primary structure, appurtenant structures and the areas around the project. Hence, the Department of Water Resources has rehabilitated Huai Mueang Reservoir to deliver water to cover all the area of the agricultural land and solve water shortage problem for people in the project and nearby area. Besides, the project benefits 480 households and agricultural land of 200 rai.



Before

After



After

 **Lum Mas Weir Rehabilitation Project**, located in Ban Nong Ma Ma, Thung Seng Thong Sub District, Nang Rong District in Buriram Province, due to the Lum Mas Weir has been operated for a long time, so the sluice gates are damaged and unable to store water in the dry season. Therefore, the Department of Water Resources has repaired the damaged sluice gates to an excellent condition to ensure that its operation will bring maximum benefit to people. Moreover, this project can be the water source for consumption, agriculture, drought mitigation, aquatic ecosystem and biodiversity protection.

Besides, people in the area have also established the water users group to maintain the water source with sustainability.



Before

Successful Condition:

The outstanding points of conservation, rehabilitation, development, and improvement to increase efficiency and maintain the water sources are; public hearing from people in the area to address significant features of the project so that the public and stakeholders can acknowledge and create collaboration among the government agencies, local organization, and the public to take part in the implementation of the project together. Moreover, there is also a formation of the water user groups to jointly manage, supervise and maintain the water sources.

Problems/Obstacles:

1. External factors that cannot be controlled such as heavy rainfall in the project area causing the contractor cannot access the project area constantly.
2. Some projects are facing the problems of the hard layer after starting the construction so the construction drawing needs to be revised.



3.2 Development of Water Management Organization's Mechanisms



According to the National Water Resources Management Strategies (2015-2026), the Department of Water Resources (DWR) is the core agency for water resources management, especially the strategy 6, regarding the water resources management by the participation of all sectors, the Bureau of Mass Promotion and Coordination and the River Basin Management and Coordination Division of Water Resources Regional Office 1-11 administered by the Department of Water Resources are responsible for moving forward the related activities and implementation. Therefore, there are several activities have been organized such as forming the water users group (Network), providing knowledge about water resources management (Existing network), organizing a workshop to provide primary knowledge about the water resources management and the river and canal conservation by gaining the participation of all sectors, disseminating knowledge and creating awareness on water resources, including organizing the public hearing to acknowledge information and solve the water resources problems in the area (Community stage) to strengthen the management, maintenance, rehabilitation and conservation of the water resources as well as raising the awareness and building the capacity to achieve the goal of systematic water resources management.

Performance Results: The water resources development is provided to officers, public, river basin organizations, representatives from local administration organizations and networks with a total number of 38,273 persons.

Successful Condition: The capacity building is provided to the mechanisms, organizations, water resources management networks at all levels so that they can take part in driving effective management of water resources by gaining the participation of all sectors.









The examples of DWR's implementations are as follows:

3.2.1 Activities on Important Days of Water Resources



💧 The Project of the National River Conservation Day, according to the Cabinet has approved a resolution for the 20th September of every year is the National River Conservation Day. Due to the 20 September 1994, Her Royal Highness Princess Maha Chakri Sirindhorn travelled by the royal barge along Saen Saep Canal to monitor the canal's condition and visit the residents along the banks from Bangkok to Chachoengsao Province, during that time the Department of Water Resources was the core



agency which played a vital role in promoting and setting up the campaign as well as gaining the participation of all sectors to raise the awareness about the value and importance of the river and canal. Therefore, the Department of Water Resources has organized the event, National River Conservation Day in 2019 to raise the awareness of the organizations of all sectors and the public to realize the importance and value of rivers and canals including promoting people's participation and the integration of all sectors: government, private and public sectors.





In the fiscal year of 2019, the event of National River Conservation Day has organized on Friday, 20 September 2019 at Plai Na Temple, Wang Nam Sup Sub-district, Sri Prachan District in Suphanburi Province. The participants consist of representatives from government agencies, private sector, water user groups, networks, volunteers, schools, public, youth and DWR officers, a total of 1,025 persons have joined this event. The activities in this event consisted of 1) Planting, 2) Releasing fish, 3) Exhibition of fruits or outstanding products in the area/folk performances, 4) Singer contest, “Water Conservation Youth”, 5) Activity of River Conservation for 5 canals. Moreover, the Water Resources Regional Offices of DWR have also organized the activities that adhere to the event of National River Conservation Day in several locations around the region as well.





Successful Condition: Placing great importance on organizing the activities on the important day of water resources and gaining the participation of all sectors: government, private and public sectors in the area



 The Project of National River Conservation Day by the participation of people in Mae Klong River Basin, the event has organized in the areas of Ratchaburi Province as follows: Chaeng Charoen Temple and Wat Chaeng Charoen School located at Village no. 3, Jom Pratad Sub-district, Pleng Temple District in Ratchaburi Province. The activities concerning the conservation and rehabilitation of water sources by removing water hyacinth, improving the landscape along the canals, releasing fishes into Pradu Canal, preparing information sign and brochure to disseminate the knowledge of water quality and National River Conservation Day, slogan and painting competition to create the awareness of the river and canal conservation to the students in Jom Pratad Sub-district and nearby areas, including maintaining the eco-system and water resources security.



 The Project of National River Conservation Day by the participation of people in Songkhla Lake Basin, the event has organized in the areas of Wat Tha Hin Canal, Tha Hin Sub-district, Sathing Phra District in Songkhla Province and Sala Nen Canal at Village no. 5 and 7, Makok Nuea Sub-district, Khuan Khanun District in Phatthalung Province. The activities consist of: the campaign to create the awareness of National River Conservation Day by the participation of people, providing knowledge about the river and canal conservation in the basin area and the palmyra palm conservation to comply with the community's way of life and watercourse, the activities of conserving and developing rivers and canals such as removing weeds, planting and releasing fishes. Moreover, the participants are also divided into groups for exchanging opinions toward the river and canal conservation as well.



3.2.2 Project of Formation and Providing Knowledge for Water Users Group (Network)



💧 The Project of Formation and Providing Knowledge for Water Users Group (Network) in Nan River Basin has carried out in 12 groups which located in Uttaradit, Nan and Pitsanulok Provinces

by forming, developing and strengthening the water users group to receive benefit from the water sources and also can manage their water resources thoroughly and fairly.



💧 The Project of Formation and Providing Knowledge for Water Users Group (Network) in Pattani River Basin has carried out in 2 groups within the areas of Pattani Province by forming and providing knowledge for the water users group to

become the representatives for managing water sources in the areas as well as listening and exchanging opinions of people in the project area to create water-use efficiency and maintain the water resources project in the area.

3.2.3 Project of Water Resources Management (Existing Network)

 The Project of Water Resources Management (Existing Network) in the Eastern Coast Basin has carried out in 5 groups within the areas of Rayong, Chanthaburi and Trad Province. Therefore, it causes the water users group in the areas to have awareness



of the value of water resources so that they can manage it in a tangible way. Moreover, the participation of these water users group can expand the results to other communities as a part of the Environmental Protection Volunteer (NEV) Network administered by the Ministry of Natural Resources and Environment.

 The Project of Water Resources Management (Existing Network) in the Eastern Coast Basin has carried out in 4 groups by giving a lecture to enhance knowledge about water resources management, guidelines for task management of network groups and joining activities of the network groups by developing, conserving, dredging waterways, planting, removing weeds including gathering opinions about water resources development planning in their areas.



3.2.4 Community Stage

 The Project of Listening to Public Opinion to Acknowledge and Solve the Water Resources Problems in the Areas (Community Stage) of Ping River Basin has carried out 6 times in the area of Chiang Mai and Tak Provinces in order to acknowledge the problems and demand for water resources management. This community stage is opened for exchanging information, news and experiences to find approaches to prevent and solve the problems that occurs such as formulating approaches to solve the water distribution system in Huai Kaeo Reservoir and joining together to draft the rules and regulations for the groups to open-close the water system.



 The Project of Listening to Public Opinion to Acknowledge and Solve the Water Resources Problems in the Areas (Community Stage) of Mun River Basin has implemented the community stage to listen to the public recommendations and guidelines to the solution as well as the demand of people in the area.

3.3 Early Warning and Hydrology



The Department of Water Resources has been operating the works according to the project work plans to monitor, collect, track and disseminate the information of daily water situation report which people can follow up the report such as daily water situation, the situation of flash floods in mountainous areas, the water situation in river basin from telemetering and CCTV, daily runoff and rainfall monitoring and DWR flood and drought assistances from the website: <http://www.dwr.go.th>

The Department of Water Resources receives the budget allocation to increase the efficiency of water resources forecasting and warning system for 6 projects as follows:

3.3.1 Management Project of Tackle the Water Crisis

3.3.2 Maintenance Project of the Early Warning System for Flood and Landslide

3.3.3 Repair Project of the Early Warning System in Mountainous Areas

3.3.4 Maintenance Project of Mekong Hydrological Cycle Observation System

(Mekong – HYCOS)

3.3.5 Maintenance Project of Telemetering System and CCTV

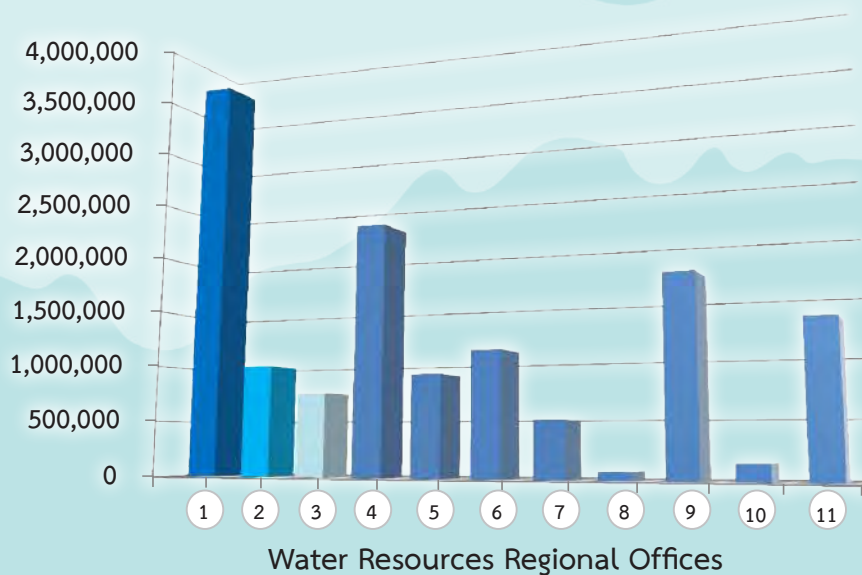
3.3.6 Project of the Discharge and Suspended Sediment Transport Measurements on the Mekong Mainstream (Thai-Lao PDR)

3.3.1 Management Project to Tackle the Water Crisis

The Department of Water Resources has received the budget allocation to operate the management project to tackle the water crisis since 2015-present under the responsibilities of the Bureau of Water Management and Water Resources Regional Offices 1-11. There is an establishment of the administration center to monitor and solve flood and drought problems in order to support the operation in the area.

Previously, the Water Resources Regional Offices 1-11 and working groups of management project to tackle the water crisis from the central office has provided supports to people living in flood and drought areas which covering agricultural and consumption assistance. The tools and equipment consist of water pump size: 8-30 inches, truck cranes, water trucks, portable water plants, and drinking water treatment.

Volume of clean water distribution

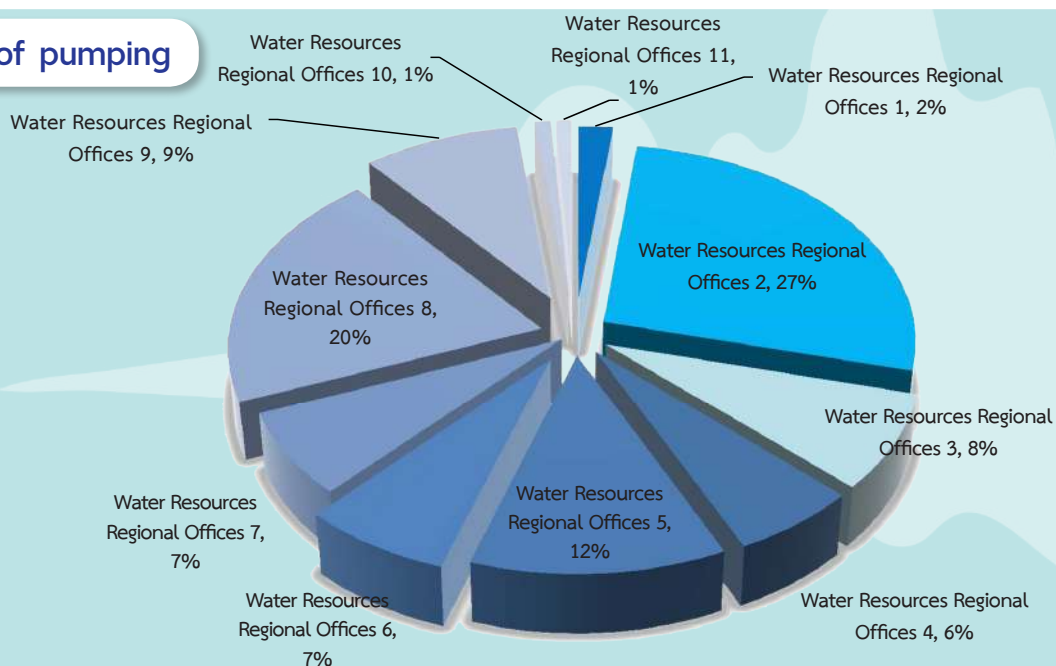


Output(s):

1) The results of operating such a project can help and alleviate flood and drought problems of the agricultural lands of 135,833 rai and support the consumption of 428,879 households, total pumping volume of 55,971,553 m³, clean water distribution of 13,420,681 liters and drinking water (bottle) of 64,240 bottles. The performance results of Water Resources Regional Offices 1-11 are as follows:



Volume of pumping



2) Performance Summary Reports of Management Project to Tackle the Water Crisis (2013-2019)

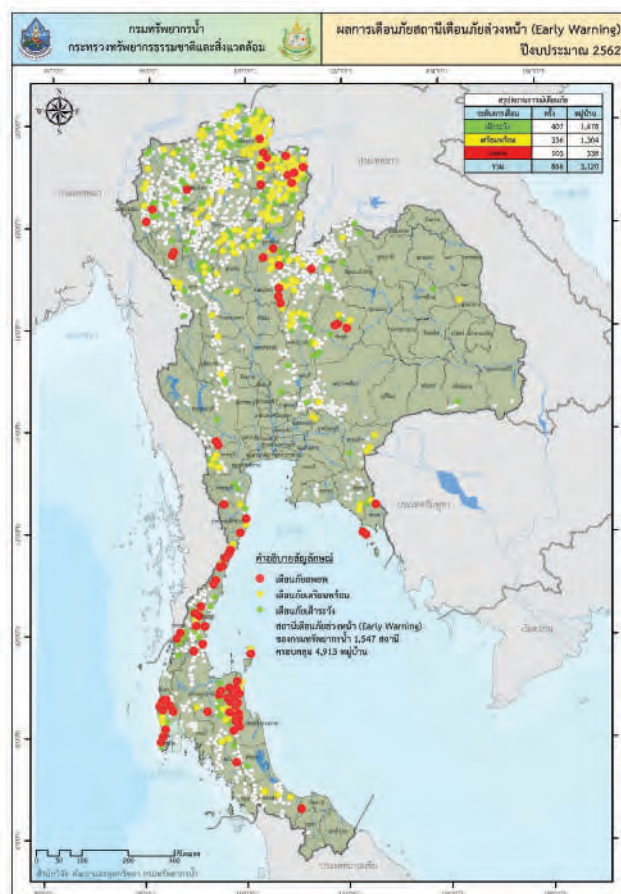
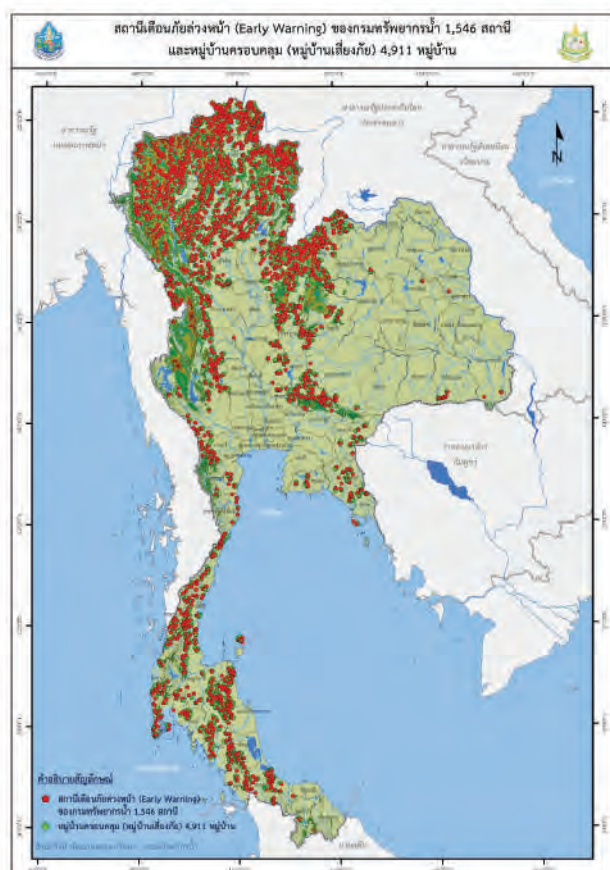
Outcome(s):

- 1) The mitigation of drought problems in which the residents can have more water budget for their consumption or agriculture.
- 2) The satisfaction of the local administration organization and people in the water crisis area toward the services is 98.50%.



3.3.2 Maintenance Project of the Early Warning System for Flood and Landslide

The Department of Water Resources has implemented the maintenance project of the early warning system for flood and landslide in hillslope and piedmont plain area to be the mechanism for tracking the water situation as well as monitoring and providing the early warning during a flash flood. Since the fiscal year of 2005-2015, DWR already installed the early warning system at 1,546 stations which cover the area of 4,911 villages. The completed stations had equipped with the electronic equipment for the



outdoor purpose which working 24 hours with long life expectancy. Moreover, the stations are located in piedmont plateaus, remote and inaccessible areas, so it is necessary to maintain the tools and equipment to be ready to use all the time by monitoring the system performance, maintenance, consistency of communication and information system, observation of water situation, including personnel development for maintaining the early warning system and surveillance networks in order to prepare them to work effectively.

Output(s):

1) A total of 1,546 stations of the early warning stations, covering the area of 4,911 villages have maintained in good condition.

2) In the fiscal year of 2019, there are the warning results of 866 times, covering the area of 3,120 villages as follows:

- Level: Monitor (Green warning) = 407 times, 1,478 villages
- Level: Get prepared (Yellow warning) = 356 times, 1,304 villages
- Level: Evacuate (Red warning) = 103 times, 338 villages



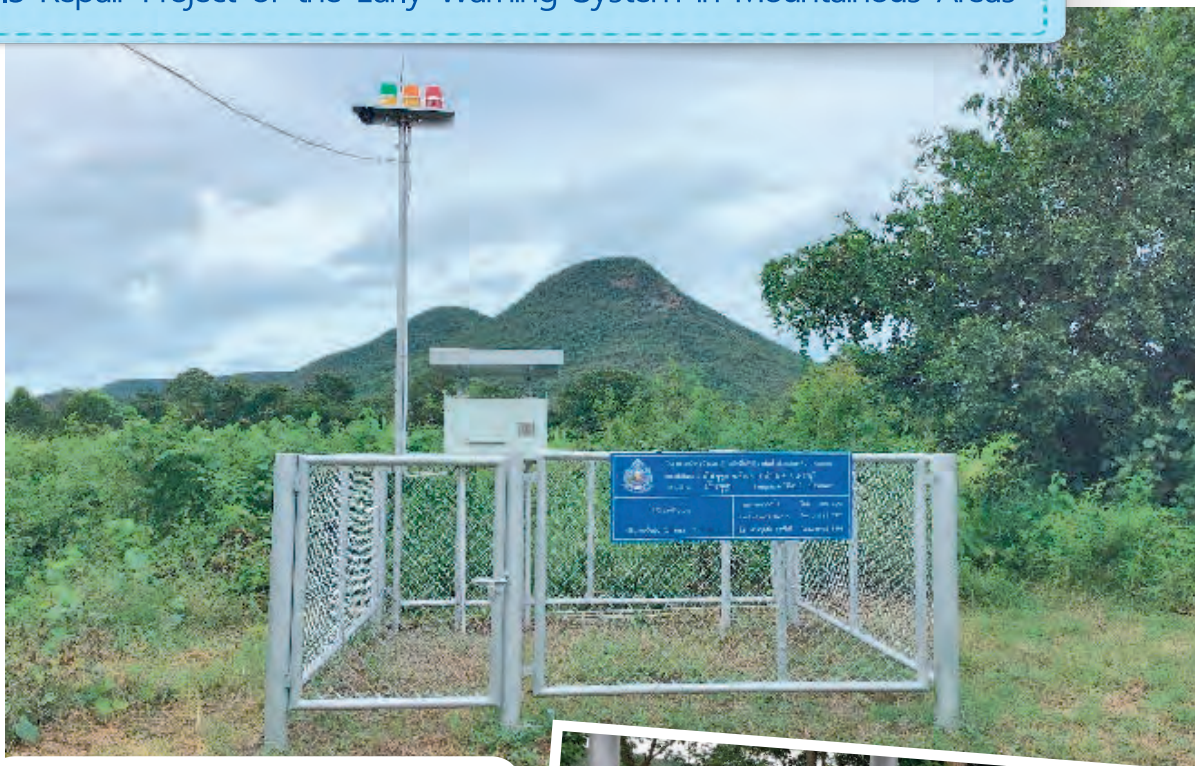
Outcome(s):

The residents in target areas and related work units have brought hydrological and meteorological data to use for tracking and monitoring the water situation in order to make decisions to reduce the loss of life and property of the residents in the area.

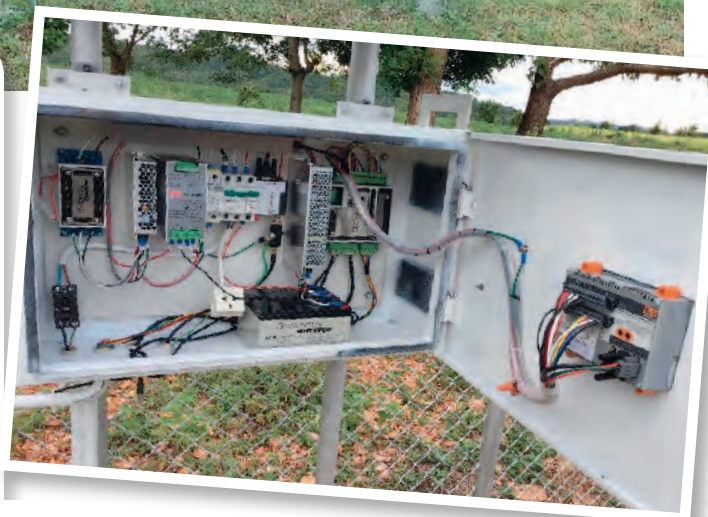




3.3.3 Repair Project of the Early Warning System in Mountainous Areas



A total of 1,546 stations of early warning stations, covering the area of 4,911 villages have equipped with the electronic equipment for the outdoor purpose which working 24 hours with long life expectancy. Therefore, after the equipment has been using for more than 8 years, it may result in low efficiency of the warning system (Durable articles of the early warning station have a life expectancy around 5 years). Thus, it is necessary to improve the early warning station in good condition to track and monitor the water situation effectively, so that the residents can receive accurate information in real-time. In the fiscal year of 2019, DWR has repaired the early Warning system in the piedmont plain area of 129 stations.



Output(s):

The total of 118 stations of the early warning stations have been repairing in good condition and ready to use (The project is expected to be completed on March 2019)

Outcome(s):

The early warning stations can connect the data to the system effectively.

3.3.4 Maintenance Project of Mekong Hydrological Cycle Observation System (Mekong – HYCOS)

The Department of Water Resources has collaborated with Mekong River Commission Secretariat (MRCS) to implement the monitoring project of Mekong - Hydrological Cycle Observing System (Mekong - HYCOS) by setting up Mekong – HYCOS stations to track, monitor, send and receive the meteorological and hydrological data via telemetry in Mekong River Basin and tributaries, totally 11 stations. The purposes of these stations are forecasting and providing the warning of water situation, and managing the water resources in Mekong River Basin.

The maintenance of Mekong – HYCOS station is the obligation that DWR has to take responsibility for maintaining the tools and equipment including manual and auto sending-receiving the Mekong – HYCOS data via 3G communication and reporting directly to MRCS.



Output(s):

- 1) A total of 11 stations of Mekong – HYCOS stations have maintained in good condition.
- 2) The training about the maintenance of Mekong – HYCOS stations has been provided to DWR officers.

Outcome(s):

The residents in target areas and related work units have brought hydrological and meteorological data to use for tracking and monitoring the water situation in order to make decisions to reduce the loss of life and property of the residents in the area.



3.3.5 Maintenance Project of Telemetry System and CCTV



The maintenance project of telemetry system and CCTV has set up to facilitate the information sending of telemetry station and CCTV back to the information center 24/7 with full efficiency. Moreover, since the systems and equipment are the electronic devices that have been installed and operated in the outdoor area for a long time, it results in damage and deterioration according to the operation. For this reason, it causes lower efficiency of data sending as well as ineffective data to support the decision making to forecast, monitor and observe the water situation to prevent the crisis. Therefore, the project has set up to inspect the telemetry system and CCTV which have been installed at different regions of Water Resources Regional Offices 1-11.

Output(s):

1) The total of 100 stations of telemetry system and CCTV have been inspected which the results are 90 stations can operate normally but 10 stations are unavailable. Therefore, DWR has repaired some of these stations to operate normally.

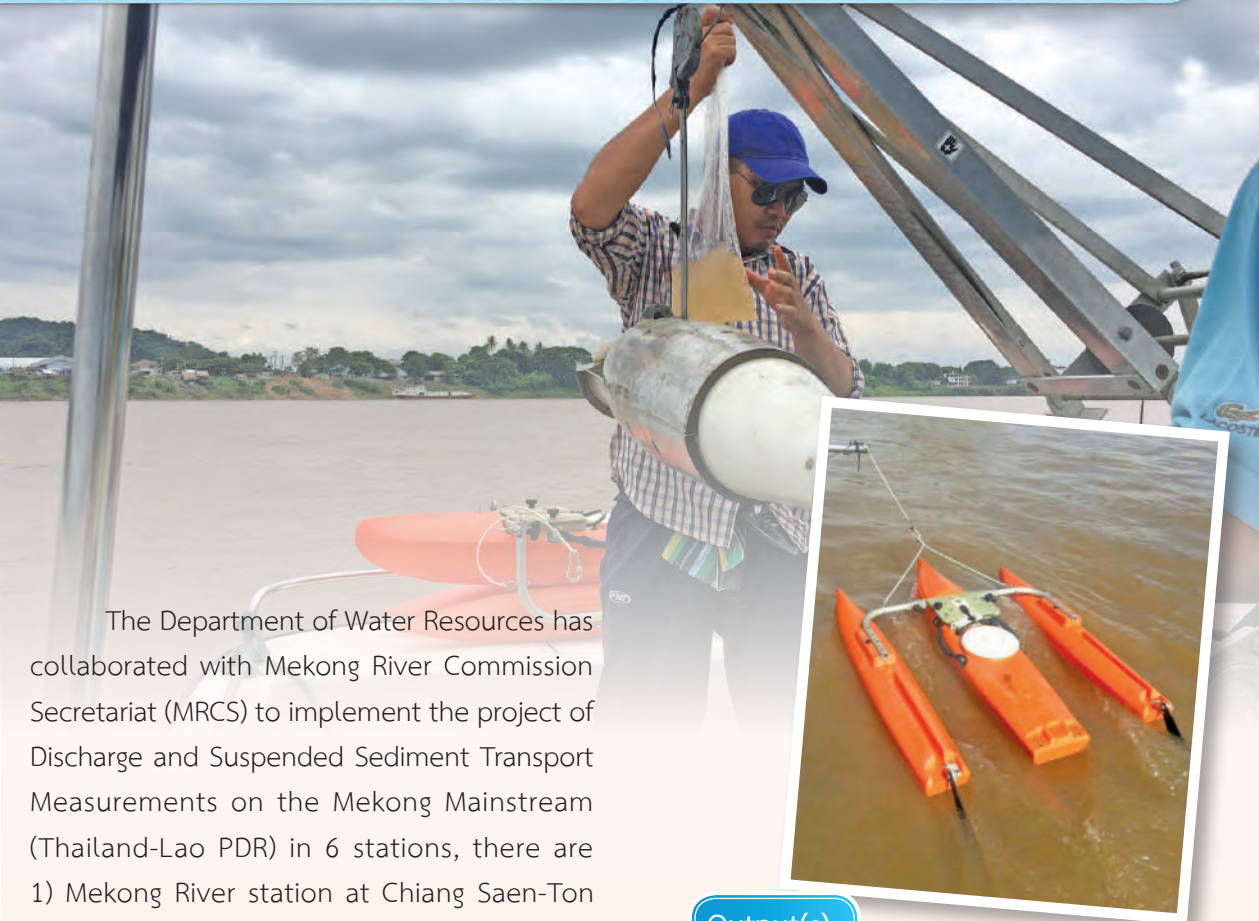
2) DWR has inspected the systems of 49 stations in addition to the plans, so the systems are operating normally.

Outcome(s):

The residents can monitor the 24/7 real-time data to support the water resource management in normal situations and crises in order to reduce the loss of life and property of the residents.



3.3.6 Implementation Plan of the Discharge and Suspended Sediment Transport Measurements on the Mekong Mainstream (Thailand-Lao PDR)



The Department of Water Resources has collaborated with Mekong River Commission Secretariat (MRCS) to implement the project of Discharge and Suspended Sediment Transport Measurements on the Mekong Mainstream (Thailand-Lao PDR) in 6 stations, there are 1) Mekong River station at Chiang Saen-Ton Phueng, 2) Mekong River station at Chiang Khan-Sanakham, 3) Mekong River station at Nong Khai-Thanaleng, 4) Mekong River station at Nakhon Phanom – Thakhek, 5) Mekong River station at Mukdahan – Savannakhet and 6) Mekong River station at Khong Chiam-Banmai Singsamphan. MRCS is the focal point to transfer the mission to DWR since 2015 to improve the relationship equation between water level and volume, and to develop the approaches to measure, collect and store accurate and reliable data of water level and volume, suspended sediment and bedload. Since, the hydrological data of Mekong River is very important for monitoring the Impacts of hydropower development in Mekong River Basin.

Output(s):

The hydrological data of 6 Mekong River stations which are the data of water volume, suspended sediment, bedload, cross-section and water level

Outcome(s):

The residents in target areas and related work units have brought the hydrological data and the data of discharge and suspended sediment transport measurements on the Mekong Mainstream (Thai-Lao PDR) to use for tracking and monitoring the water situation in order to make decisions to reduce the loss of life and property of the residents in the area.

3.4 Water Management for Consumption

According to the 20-year Master Plan on Water Resource Management, 1st issue: Managing water for consumption, the Department of Water Resources is responsible for developing the water infrastructure for domestic consumption to be in line with the National Strategy no. 5: Eco-friendly Development and Growth, which measuring the result based on the indicator: “The public has adequate water supply based on the standard of drinking-water quality with a fair price.” In the fiscal year 2019, DWR missions of managing the water for consumption have been implemented via 3 projects as follows:

3.4.1 The Supervision Project of Water Supply Concession

3.4.2 The Project of Promotion and Monitoring the Water-saving of Government Agencies

3.4.3 The Supervision Project of Drinking-water Quality Maintenance and Inspection in Schools adhere to the Development Plan of Children and Youth in the Wilderness Area of Her Royal Highness Princess Maha Chakri Sirindhorn

3.4.1 Supervision Project of Water Supply Concession

The water supply concession business is the operation under the central law which the Declaration of the Revolutionary Council No. 58, dated 26 January B.E. 2515 (1972) prescribing that any person who conducts water supply business which is considered as the public amenities business, they shall obtain the concession permit or a public amenities grant from the Minister of Natural Resources and Environment to conduct

such business under the rules and regulations as follows:

1) Notification of Ministry of Natural Resources and Environment entitled: Implementation guidelines towards the concession of water supply business for safety and peace of the public, B.E. 2554 (2001)

2) Notification of Ministry of Natural Resources and Environment entitled: Appointment of





a law enforcement officer to perform duties in accordance with powers and functions of any designated ministry as prescribed in this Declaration, especially the part of water supply concession dated 30 April B.E. 2553 (2010)

The Department of Water Resources has set up the supervision project of water supply concession to inspect and supervise the water concession business to be in line with the law. The operations are inspecting, supervising and providing the recommendations for operating provinces and concessionaires in order to protect the people who use water for their consumption with cleanness, convenience, safety and fair price. Moreover, DWR also promotes the water supply business by enhancing knowledge and understanding as well as disseminating the knowledge to the officers from DWR Regional Offices and the Provincial Offices for Natural Resources and Environment across the country to take their responsibilities as prescribed by law. The number of target areas to implement this project is 60 places.

Output(s):

1) The 53 places, covering the areas of 17 provinces operating the water supply businesses have been supervised. And DWR has also promoted the water supply business concession around 10 places, covering the area of 6 provinces. So, there are a total of 63 places that have been supervised and promoted which is 105% of the implementation targets of 60 places.

2) In the fiscal year 2019, DWR has organized the workshop for the supervision project of water supply concession during 10-12 July 2019 at Classic Kameo Hotel in Rayong Province. So, the officers of DWR Regional Offices and the Provincial Offices for Natural Resources and Environment can acknowledge the process of supervision and inspection of water supply concession as prescribed by law.

Outcome(s):

The people who are water users in the project area have received water protection with adequate quantity, quality and fair price.





3.4.2 Project of Promoting and Monitoring the Water-saving of Government Agencies



According to the cabinet resolution on 28 July 2015 had acknowledged the approaches of water-saving of the government agencies adhere to the resolution of the National Water Resources Committee requiring the cooperation of all sectors to use water sparingly in which the government agencies have to reduce the use of water by 10% and report the result monthly to the committee. Moreover, the approaches prescribed that the course of action for saving water in the short term so that the government agencies have to take water conservation measures to alleviate the problem of water shortage and also promote equality among all sectors to

reduce the use of water. Besides, the Office of the Public Sector Development Commission (OPDC) had prescribed the “Water-saving result” as the indicator to measure the efficiency of the Permanent Secretary, Director General and senior officials of every organization, state enterprises, local administration organizations, judiciary unit, parliamentary unit and schools administered by Office of Basic Education Commission. The project started in 2016 by OPDC and DWR joined together to consider and prescribe the criteria to be used in the evaluation. During that time, DWR as the secretariat of the National Water Resources Committee was assigned to be the host for monitoring and following up the result of water-saving of the government agencies. DWR had ordered to appoint the committee for monitoring and evaluating the water-saving in government agencies in which the committee had created the key performance indicator and online reporting system to measure and report the performance result. So, the government agencies





that participated in this project had taken steps to reduce the water use as prescribed by the committee and filled out the data of water-saving assessments of the government agencies via DWR website by the deadline on 30 November 2016, afterward, the committee had reported the information to DWR to endorse and sent the total scores to OPDC.

In 2019, in order to continue the implementation in compliance with the cabinet resolution, the Bureau of Water Management under DWR is responsible for developing the academic, technology and increasing water use efficiency. Moreover, it prescribes the measures to control

the water use efficiency including supporting the information, giving advice, collaborating with other sectors and jointly operating or supporting the work of other related work units/assigned work units. Therefore, the promotion of water-saving of the government agencies has been operating continuously due to the purpose of using water efficiently.

Output(s):

1) In 2019, DWR has organized the workshop of promoting and monitoring the water-saving of government agencies by dividing into 2 groups, 1st group on 29- 30 January 2019 and 2nd group on 24-25 July 2019 at Miracle Grand Convention Hotel, Bangkok with the total amount of participants from 210 work units.

2) The government agencies receive supports and promotion for water-saving and water-use efficiency so that they can operate their works to comply with the cabinet resolution.

Outcome(s):

The 25 work units or 47.17% of the total 53 work units have participated in this project and it appears that they can save more water.





3.4.3 Supervision Project of Drinking-water Quality Maintenance and Inspection in Schools adhere to the Development Plan of Children and Youth in the Wilderness Area of Her Royal Highness Princess Maha Chakri Sirindhorn



Since the fiscal year 2011-present, the Water Resources Regional Office 1 administered by the Department of Water Resources has been creating the drinking water treatment system in schools that adhere to the development plan of children and youth in the wilderness area of Her Royal Highness Princess Maha Chakri Sirindhorn. Moreover, DWR has installed the system as well as providing the training of how to use drinking water treatment systems to 3 types of schools; (1) Mae Fah Luang Mountain Thai Community Learning Center (NESDB), (2) Border Patrol Police School (3) Phrapariyattidhamma School. After the project implementation, the supervision towards drinking-water quality maintenance and inspection is also necessary in order to maintain drinking water quality for teachers and students in school as well as people in the villages to have an efficient drinking water treatment system based on the standard.

Output(s):

1) The supervision project of drinking-water quality maintenance and inspection has carried out to provide efficient drinking water treatment

systems based on a standard to teachers and students in school as well as people in the villages for adequate water for consumption persistently which covering 300 locations in Chiang Mai, Chiang Rai, Tak, Phayao, Mae Hongson and Lampang Provinces. Besides, the satisfaction of people toward the services in these locations is moderately satisfied and very satisfied.

2) The training project of technology dissemination toward drinking water treatment system with slow sand filtration (Capacity: 100 liters/hour) has organized for 2 times for the local administration organizations and related operating units in highland and schools in the area of Chiang Dao District in Chiang Mai Province and Mueang District in Mae Hongson Province with the participants of 105 people.

Outcome(s):

The target groups are teachers and students in school as well as people living in the project area so they can have an efficient drinking water treatment system based on the standard for their consumption.

3.5 Foreign Affairs on Water Resources

The Department of Water Resources has important missions to carry out the cooperation and coordination with the work units from foreign countries and international organizations continuously since 2002-present. The objectives are to implement the cooperation on water resources management as the international obligation to strengthen the networks, knowledge, technology and best practices of water resources management to apply to the water resource management in the context of Thailand as well as to develop the capacity building of DWR officers to have sufficient knowledge and skills to work on their tasks. Therefore, the capacity building to strengthen the efficient and sufficient knowledge and skills for DWR officers are very crucial for driving international cooperation works so it leads to the water resources cooperation has been

expanded progressively which can broaden the scope of cooperation as well. For this reason, in the fiscal year of 2019, DWR has carried out the important projects as follows:

3.5.1 25th Meeting of Mekong River Commission Council

3.5.2 Project of Hiring a Consultant to Study and Monitor the Transboundary Environmental Impact Assessment in Mekong Mainstream

3.5.3 Project of Strengthening the Groups of Civil Society Networks in 8 Provinces along Mekong River

3.5.4 Workshop on Risks and Impacts from Extreme Events of Drought in ASEAN Countries

3.5.5 THA 2019 International Conference on Water Management and Climate Change towards Asia's Water – Energy - Food Nexus and SDGs

3.5.6 International cooperation works

3.5.1 25th Meeting of Mekong River Commission Council

The meeting of Mekong River Commission Council the ministerial level meeting consists of the 4 countries from the Mekong River Commission Council's state members, there are Thailand, Cambodia, Lao People's Democratic Republic and Vietnam. Besides, the People's Republic of China and Myanmar also join this meeting as the Dialogue Partners of the Mekong River Commission (MRC).

The 25th Meeting of Mekong River Commission Council was convened during 26-29 November 2018, in Hạ Long City, the northern province of Quảng Ninh of Vietnam. The Thai delegation consisted of Ms. Wanthanee Viputwongsakul, Chargé d'affaires of the Royal Thai Embassy in Hanoi, Vietnam, and DWR high-level officials and also related work units joined this meeting. The delegates at the meeting reviewed and evaluated the operation of the MRC in 2018 and also discussed and endorsed the work plan of 2019. Moreover, there was an appointment of the CEO of Mekong River Commission Secretariat to acknowledge and support the progress of operational plans, budget disbursement, mission transfer on river basin management from MRC to the member states as well as monitor the work progress adhere to Siem Reap Declaration 2018



and formulate the strategic plans 2016-2020 on sustainable development of hydropower.

Output(s):

1) The formulation of operational plan 2018 to carry out the key activities in 7 aspects:

1) Studies and researches 2) Strategy formulation 3) Guidelines formulation for the implementation 5) Cooperation development 6) Water resources monitoring 7) Organization development which focuses on the priority of project activities, totally 32 key activities

2) The operational progress in compliance with Siem Reap Declaration 2018 that is bringing the outcome from “The study on sustainable management and development of Mekong Reiver Basin” and the outputs from MRC to the implementation, carrying out the operation according to the 5 issues of water-use regulations, developing the monitoring system of river basin situation and forecasting system for flood and drought, increasing cooperation with dialogue partners and regional cooperation organizations including preparing the document/MOU with different cooperation frameworks.



3.5.2 Project of Hiring a Consultant to Study and Monitor the Transboundary Environmental Impact Assessment in Mekong Mainstream

The Department of Water Resources has carried out the project of hiring a consultant to study and monitor the transboundary environmental impact assessment in Mekong mainstream which consists of 8 Provinces along Mekong River such as Chiang Rai, Loei, Nong Khai, Bueng Kan, Nakhon Phanom, Mukdahan, Amnat Charoen and Ubon Ratchathani with the purposes as follows:

- 1) Exchange opinions with the representative from educational institutions, river basin organizations and groups of civil society networks toward the important issues about participation in the implementation and recommendations between the public sector and concerned parties which benefit the study of the project

- 2) Discuss and formulate policies and plans together

- 3) Set a direction to solve the problems within the areas of Mekong River and tributaries which are the project areas, especially the problems caused by the Impacts of a hydropower project in Mekong mainstream

- 4) Present the performance result of civil society networks in each province, so the public can review the working results of other provinces and create knowledge among them cross the areas

Moreover, in responding to the concerns of public sectors, Thai National Mekong Committee had resolution since the meeting of Mekong River Commission Council on 10 January 2013 that the Department of Water Resources and Office of Natural Resources and Environmental Policy and Planning have responsibilities to follow up and



assess the transboundary environmental impact on Mekong mainstream in the phases of before, during and after the construction with a total study period of 15 years. The project has been carrying out since 2014-present which covering the areas of 8 provinces along Mekong River of Thailand and also the areas of 15 kilometers away from Mekong River. In the fiscal year 2019, this project is focusing on participation in the study of strengthening and capacity building to carry out measures to reduce, alleviate, adapt, disseminate, and apply the previous study results to public sectors along with monitoring the transboundary environmental impact.

Output(s):

- 1) The geographic information database system of natural resources in terms of environment, economy, society and Mekong ecosystem
- 2) The monitoring on carrying out measures for reduction, alleviation and adaption of people by the pilot activities in vulnerable areas
- 3) The enhancement of knowledge and capacity building by organizing the training for community leader and public
- 4) The recommendations and conceptual frameworks to expand the scopes of study and formulate indicator framework in terms of natural resources, environment, society and economy to be applied to the monitoring of the impact of the transboundary environmental impact by the participation of public sector

5) The people in the areas, stakeholders and government agencies acknowledge the trend of transboundary impact by hydropower project that may occur in both positive and negative ways

6) The increasing of close cooperation of the countries in Mekong-Lancang towards sustainable development as well as creating trust and reducing conflicts

Outcome(s):

The negotiating framework or stance for the international cooperation among MRC member states towards the transboundary environmental impact of hydropower development which will support the sustainable development in Mekong River Basin and well-being of people.



3.5.3 Project of Strengthening the Groups of Civil Society Networks in 8 Provinces along Mekong River

The Department of Water Resources has carried out the project of creating civil society networks to support the study on the transboundary environmental impact of hydropower development in Mekong mainstream in order to form the civil society networks to follow up the environmental impact that may result in the change in Mekong mainstream by relying on the participation process between the government sector and public sector stakeholders in the areas of 8 Provinces along Mekong River. For this reason, it will create the understanding and public sector cooperation as well as gain more information about the environment, economy, society, culture, tradition and natural resources. Moreover, the environment at the local community level, the stakeholders will take part in the participation, practices, information survey and exchange through the community stage in compliance with the local geographic condition of the Mekong River Basin from policy level to practice level. Furthermore, it is including organizing the platform of information exchange for civil society sector to strengthen public learning, create awareness and monitor the impact of hydropower development in Mekong mainstream as well as maintain the balance of ecosystem and community's way of life along Mekong River to move forwards the sustainable energy of the country.

Output(s):

- 1) The civil society sector/community of 8 provinces can assess the risks and identify the adaptation in terms of the ecological changes of the Mekong River in 8 Provinces.
- 2) The civil society sector of 8 provinces are network prototype for development and have vital roles toward the issues of environmental impact from the development of hydropower project on Mekong mainstream and can expand the results to the target groups in the areas.
- 3) The tools to reduce the risks of ecological changes by formulating the operational plans at the community level to tackle the situation at present and in the future
- 4) The cooperation networks between government and public sectors in 8 provinces to have knowledge and understanding about cooperation mechanisms between government and public sectors in the area that affected by changes in the water resources in the Mekong River
- 5) The dissemination of information towards the monitoring of environmental impact from the changes in Mekong mainstream from the project participants to people in the areas which lead to the adaptation plan that can expand the result to other communities/areas along Mekong River as well

Outcome(s):

The civil society networks in the areas of 8 provinces can follow up on the environmental impact of the changes in Mekong mainstream.

3.5.4 Workshop on Risks and Impacts from Extreme Events of Drought in ASEAN Countries

The Department of Water Resources as the focal point of ASEAN Working Group on Water Resources Management (AWGWRM) which is the working group or subsidiary bodies of ASEAN Senior Officials on Environment (ASOEN) has organized the Workshop on Risks and Impacts from Extreme Events of Drought in ASEAN Countries during 7-9 August 2019 at the Ambassador City Hotel at Pattaya City, Chonburi Province with the participants of 50 people from the ASEAN Secretariat and other work units concerning drought management of Thailand. The objectives of this meeting are brainstorming the opinion and exchanging knowledge and experiences toward risks and impacts from extreme events of drought in ASEAN countries including the best practices regarding the management, prevention and mitigation of drought problems. Therefore, the participants can apply all of the knowledge and experiences to their countries.

Output(s):

1) The participants from ASEAN countries have more understanding in the situation and



trend of drought crisis in the region by exchanging knowledge, experiences, and examples of optional prototypes to mitigate/respond to the drought problems in ASEAN community such as increasing water use efficiency, water productivity, water conservation, preparation and management of water account, water data system, new technology, water supply system, the innovation of water demand management, forecasting system, law enforcement, communication, organization management and participation of stakeholders.

2) The participants from ASEAN countries have realized the risks and impacts of economic and social development and also the key challenges of the drought situation.

3) The cooperation development of the ASEAN community in terms of the formulation of policies and measures to mitigate drought problems at the regional level including the strengthening of the networks on academic cooperation.



3.5.5 THA 2019 International Conference on Water Management and Climate Change towards Asia's Water – Energy – Food Nexus and SDGs

The Department of Water Resources and partnership networks from the government agencies and education institutions have organized THA 2019 International Conference on Water Management and Climate Change towards Asia's Water-Energy-Food Nexus and SDGs (THA 2019) on 23-25 January 2019 at Swissotel Le Concorde Hotel at Bangkok, Thailand. The co-host organizations of this meeting consist of Faculty of Engineering of Chulalongkorn University, Thai Hydrologist Association, Kasetsart University, Asian Institute of Technology, Royal Irrigation Department, Department of Water Resources, Department of Groundwater Resources, Thailand Research Fund and Office of the National Water Resources. The meeting has brought together 519 participants which are researchers, engineers, scientists, practitioners and representatives from government agencies that work on national and international water resources management. The objectives of this conference are to provide a platform for researchers, engineers, scientists, academicians, hydrologists, practitioners and policymakers who have missions concerning water resources management from both

government and private sectors around the world. Therefore, the participants can present the research findings, exchange knowledge and experiences toward the researches and continue their research findings with academic networks on water resources management including sharing the perspectives and experiences toward the water resources management, groundwater and water for irrigation, special interests, knowledge and skill development on the climate change adaptation and other issues that the academicians around the world pay attention to such as disaster management, integrated water resources management, sustainable energy and food management in Asia region and linkage among water-food-energy nexus in order to operate the works to achieve Sustainable Development Goals (SDGs). Moreover, the participants can extend and apply the knowledge to create efficient and tangible outcomes as well as the partnership networks of the related water resources agencies for the integrated operations in the future and also promote Thailand as the focal point of learning and operating in water resources.





Output(s):

1) The dissemination of knowledge, experiences, best practices, innovation and technology of flood disaster management, especially the linkage between water-food-energy nexus and climate change through the presentation of articles and research findings, discussion and exhibition in the conference which the participants can properly apply all the knowledge and experiences based on the context of each country and area

2) The network creation for academicians, researchers and related government officers to strengthen the cooperation among ASEAN member states on water resources management and linkage between water-food-energy nexus and climate change as well as the approaches for the integrated solution



3) The development of a vital role of Thailand as the focal point of the integrated water resources management, disaster management and climate change adaptation in the ASEAN region

4) The cooperation on water resources of ASEAN can partly support the implementation to achieve the sustainable development goals of the United Nations in response to water - food - energy security nexus

3.5.6 International Cooperation Works

The Department of Water Resources has assigned the officials to participate in the project implementation, monitoring and assessment, hydrological data collection, development of a model to support decision making, formulation of river basin development plans, exchanging knowledge, opinions, recommendations and experiences toward the water resources with the experts from foreign countries as well as the presentation of academic works in the international platforms such as the World Water Forum, International Water Week and also other academic meetings. Moreover, it is including the meeting that Thailand or DWR is the host to organize the event or participate as a partnership or member such as ASEAN Working Group on Water Resources Management (AWGWRM), Mekong River Commission (MRC), International Hydrology Programme (IHP), Asia Regional Meeting of the Ramsar Convention on Wetlands, NARBO General Meeting, Mekong – Lancang Cooperation (MLC), Lower Mekong Initiative (LMI), Mekong – Japan Cooperation, Limnology Association, Bilateral



Cooperation of Thailand-Lao PDR and other related meetings of the United Nations. Besides, on behalf of the Ministry of Natural Resources and Environment, DWR has also assigned the representatives for the international negotiation with related water resources agencies of foreign countries in both bilateral and multilateral levels such as the cooperation on water resources of Thailand- China, Thailand-Lao PDR, Thailand-Australia and Thailand-Korea.





Output(s):

1) The implementation adheres to the obligation and cooperation on water resources between the countries and international organizations totally 12 obligations/cooperation frameworks

2) The formulation of implementation plans at the policy level including project activities or operational plans of each cooperation frameworks

3) The water resources management of Thailand that DWR is responsible, proceeding based on good governance in compliance with international standards and obligations among the countries and have been improved to meet the global context. Moreover, there is also the risk reduction of flood, drought and climate change situations.

4) The application of knowledge, best practices, international standards and innovation from foreign countries/international organizations to the development of public sector management of DWR in response to the water resources solutions of Thailand

5) The strengthening and development of concrete cooperation with foreign countries and international organizations



3.6 Research on Water Resources

The Department of Water Resources has launched the projects on water resources knowledge and technologies development which aims to study methods for water management in different areas and conditions, as well as to strengthen cooperation mechanisms and make mutual understanding of area-based solutions on water management problems. In the fiscal year 2019, 2 research projects have been approved for grants as follows;

3.6.1 The Geophysical Study on Using Electrical Earth Resistance Measurement to Identify Potential Development Areas and Manage Surface Water Sources in the Saline Groundwater Areas in Ban Dung District, Udon Thani Province

3.6.2 Water Management for Domestic Uses and Household Agricultures using Royal New Theory

3.6.1 Geophysical Study on Using Electrical Earth Resistance Measurement to Identify Potential Development Areas and Manage Surface Water Sources in the Saline Groundwater Areas in Ban Dung District, Udon Thani Province

The study area in Ban Dung District, Udon Thani Province is a part of Sakon Nakhon groundwater aquifer. Geologically, in the past, the area in the northeast region was a great inland salt lake. When the lake was continuously heated by solar radiation, the evaporation rate increased until reaching saturation temperature. It results in sedimentation and accumulation of salt and potash, later, it becomes rock salt and potash layers alternating with sediment beds underlain in the ground called Maha Sarakham Formation. The rock salt layer is unconsolidated which the pressures cause salt deformation, underground salt diapirs pierce through overlying rock causing salt dome area. It causes saline soils and groundwater in the area. Moreover, the average annual rainfall is higher than 1,909.1 mm but it may receive less than 1,000 mm in some years. It is probably a factor of water shortage.

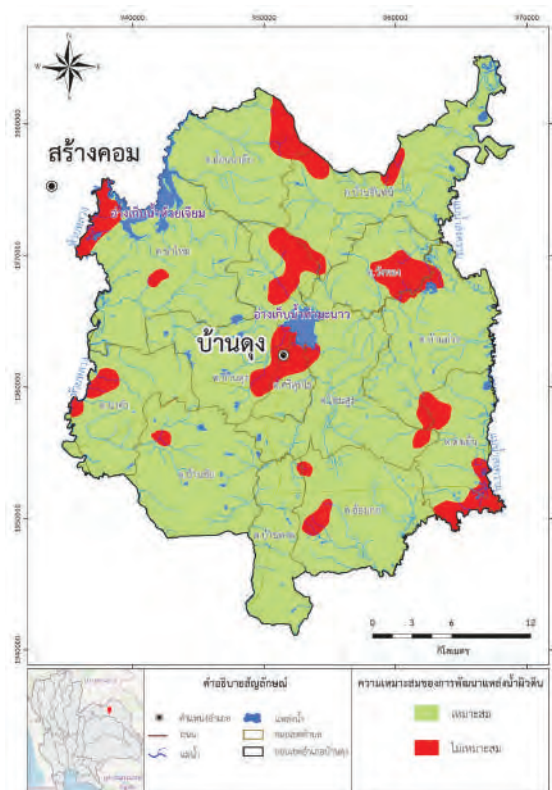


Electrical resistivity survey, soil and rock exploration, and education

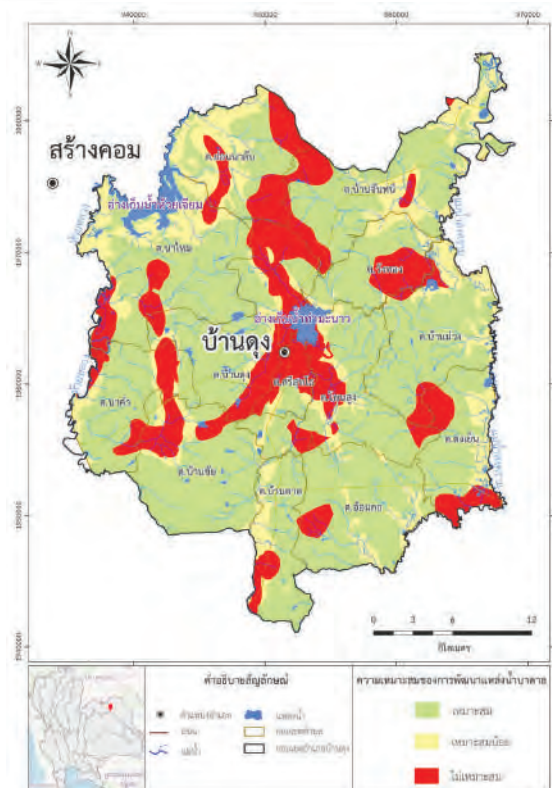
Ban Dung Sub-district in Udon Thani Province is a part of the Upper Songkram Sub River Basin (0224). Its geography is the blending of highlands and lowlands, an Important water source in the area are Huai Luang, Huai Songkram and Huai Tuan. Soil found in the area is sandy soil with high salinity. Ban Dung Sub-district has the second-highest population in Udon Thani Province. Most of them are farmers causing high water demands for domestic uses and agriculture. People, who have insufficient water for consumption and agriculture, are self-reliant by drilling shallow wells to pump groundwater for consumption. The well does not exceed 15 meters deep with a pumping capacity of 0.5 – 1.5 cm³/hr. On the other hand, this method provides insufficient water for agriculture development. For this reason, the Department of Water Resources has an idea to solve water scarcity by conducting a study of area's physical and hydrogeological characteristics, and electrical resistivity survey to identify boundary of groundwater salinity and available groundwater resources. Obtained data and water demand data are used to study and make a model on the evaluation of surface water and groundwater in the groundwater salinity area, and in adaptation to water scarcity, saltwater intrusion, and flood.

Output(s):

The set of geophysical data from electrical resistivity survey, characteristics of ground and rock, the volume of water consumptions, the potential of surface water and groundwater evaluated from the surface and ground-water flow model to identify potential area for surface water and groundwater development



Potential area for surface water development in Ban Dung District



Potential area for surface water development in Ban Dung District

3.6.2 Water Management for Domestic Uses and Household Agricultures using Royal New Theory

The Water Management for Domestic Uses and Household Agricultures using Royal New Theory is problem-based research deriving from water scarcity and degradation of water sources. It applies the principle of Royal New Theory initiated by His Majesty King Bhumibol Adulyadej. The project has objectives to study efficiency, cost, and attitudes towards the domestic water supply system and sewage water treatment for recycling in agriculture. They are specifically designed to be suitable and respond to problems of communities and households that apply the Royal New Theory.

For the study process, 2 testing equipments are installed in 4 target households in the areas of Ban Nong Ha Tawan Tok, Pong Saen Thong Sub-district, Mueang District, Lampang Province. There are (1) testing equipment for households using surface water as a resource for water supply (2) sewage water treatment system for recycling in agriculture. It is found that household water supply with a slow mixing system is functional with production rate 1, 1.5, 2, 2.5 and 3 m³/hr. Household targets can individually choose production rate via an automatic system



including 2 m³/hr. 1-hour production capacity is sufficient for water users in only 4 households. The sewage water treatment system is limited to the characteristics of wastewater. For attitudes towards a domestic water supply system and sewage water treatment for recycling in agriculture is positive in the condition of low-cost. The targets are having the knowledge and positive attitude about water-saving and water uses efficiency.

Output(s):

The set of knowledge about the domestic water supply system using water sources from the agricultural area and sewage water treatment for recycling in agriculture

Outcome(s):

The lists of domestic water supply system (cluster water supply system) and sewage water treatment for recycling in agriculture are disseminated and applied those to non-chemical households, resorts, tourist attractions in the agricultural area for promoting zero discharge recycling principle in water management and solving the water problem in the dry area or in drought season.





3.7 Human Resource and Organization Development

The missions and responsibilities of the Department of Water Resources have been changed because of the establishment of the Office of the National Water Resources, by the Order of National Council for Peace and Order No. 46/2560 dated 25 October 2017 and the Order of National Council for Peace and Order No. 2/2561 dated 22 January 2018 and Water Resources Act B.E. 2561 (2018), as the main regulator for water resources management in Thailand. According to those legislations, some missions and workforces of the Department of Water Resources have been transferred to Office of the National Water Resources including national policy and plan suggestion, action plan development, inter-basin water management, international cooperation, monitoring and evaluation, roles of a secretariat of National Water Resources Committee and River Basin Committee. However, the Water Resources Act B.E. 2561 (2018) determines that the Department of Water Resources has responsibilities in Section 1: Water Resources, Section 4: Water Allocation and Water Uses, Section 6: Public Water Resources

Conservation and the Development, and Section 8: Civil Liability on Causing Damage to Public Water Sources. The Department of Water Resources also has to integrate with related agencies in the implementation of Section 5: Flood and Drought.

In the fiscal year 2019, the Department of Water Resources has conducted missions review, structural revision, and human resources and organization development in preparation for changing missions and roles from a regulator to an operator who has duties and responsibilities to develop, manage, maintain, rehabilitate, and conserve water resources. Changed missions also include water uses monitoring and control, water damage prevention and mitigation in non-irrigated areas, the establishment of guidelines to control and supervise public water resources conservation and development according to Section 6: Public Water Resources Conservation and Development in Water Resources Act B.E. 2561. The Department of Water Resources has conducted human resources and organization development in 7 areas as follows;

3.7.1 Organization Structure Review

The Department of Water Resources has reviewed missions for revising organization structure following changed missions as an operator, whose operation area is the non-irrigated area covering 117 million rai. The review also conducts a comparative analysis of missions and responsibilities between related waterwork

agencies. The Department of Water Resources, by following the procedure, will submit the proposal to adjust Ministerial Regulation on the Organization of the Department of Water Resources, and Internal Divisions of the Department of Water Resources in the fiscal year 2020. The results of the analysis are as follows;



Comparison of missions and responsibility between waterwork agencies



Office of National Water Resources (ONWR) has missions to suggest policies, to conduct master plan, water management procedures, and water diagram, to interlink water resources information, work plans, projects, budgets, and to coordinate the international cooperation at the national level.

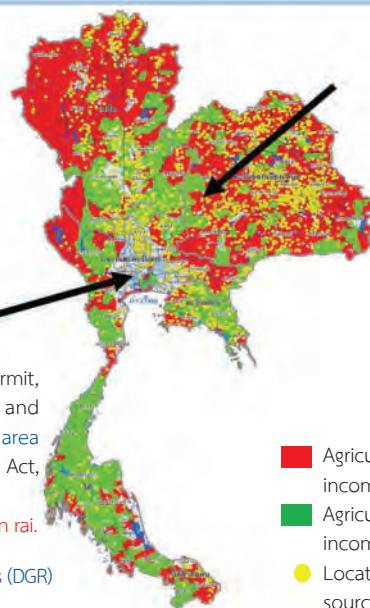
Royal Irrigation Department (RID)

- Water allocation, water uses permit, flood and drought prevention and mitigation plan **in the irrigation area** according to the Royal Irrigation Act, B.E. 2485 (1942)

The current irrigation area are 30 million rai.

Department of Groundwater Resources (DGR) has responsibility to;

- Manage/ grant a permission for ground water uses according to the Groundwater Act, B.E. 2520 (1977)



Department of Water Resources has responsibilities to;

- Gather water data, conduct water balance, allocate water, grant water uses permission, propose flood and drought prevention and mitigation plan in the non-irrigated area. It is necessary to set water management network in the non-irrigated area for basin-based water management.
- Uses, development, management, maintenance and rehabilitation of public water sources according to the Prime Minister's Order (Section 6)
- Conserve and develop public water sources in all regions according to Section 6, Article 78

The non-irrigated area 119.02 million rai.

- Agricultural area in the non-irrigated area whose annual income is below than average (87 million rai, 73%).
 - Agricultural area in the non-irrigated area whose annual income is higher than average (31 million rai, 27%).
 - Locations of the Department of Water Resources' water sources development projects
- *income basis is national income, approximately 32,000 baht/person/year.

The Department of Water Resources has a mission on development, management, maintenance, rehabilitation and conservation of water resources, water allocation, water uses, water damage prevention and mitigation which are beneficial to public utility services and

other public benefits. The Department of Water Resources has finished drafting of Ministerial Regulation on the Organization of the Department of Water Resources B.E. , and has to plan to revise it in the fiscal year 2020.

3.7.2 Operations under the 20-year National Strategy and the Country Reform Plan

The Department of Water Resources has conducted human resources and organization development supporting operations under Strategy for Public Sector Rebalancing and Development in the 20-year National Strategy, and Country Reform Plan on Anti-corruption, Environment, and Public Service which is indicated in the Constitution of the Kingdom of Thailand B.E. 2560 (2017). There are 2 main determined operations.

(1) Organization Development by conducting a 3-year reformation plan proposal (the fiscal year 2019-2021) according to the Department of Water Resources' Organization Reform Plan. There are 3 issues as follows;

Issue 1: study and review relevant legislations according to changing missions and organization structure after transferring some missions to the Office of the National Water Resources



Performance Result: It divides into 3 points;

1. The Department of Water Resources has reviewed the Declaration of the Revolutionary Council B.E. 2515 (1972) which is the trading business control law, specifically in a part of the water supply business, as a public utility and any subsidiary legislation, regulations, and conditions on water supply concession. DWR has reviewed the terms and regulations as necessary by using criteria for checking the necessity for enactment. It is for improving terms and regulations of the water supply business to be more suitable with the current situation, water supply technology, economic and social conditions and characteristics of water supply private companies, and to be reliable and meet international standards. It also improves granting permission or concession of water supply business system for private companies in the areas where the government is unable to provide services, to control the impact of public safety or people's well-being on water supply quality, services quality with reasonable price which may affect people's livelihood and the development of public utility, to be consistent with development procedures and proposal of enactment of all legislations according to Section 77 of the Constitution of the Kingdom of Thailand B.E. 2560 (2017) and the Royal Decree on the Ex-post Evaluation of Legislation B.E. 2558 (2015). The study found that there would have revision on the Ministerial Declaration of Ministry of Natural Resources and Environment regarding Guidelines on Water Supply Business Concession for People's Welfare B.E. 2554 (2011). Department of Water Resources has already set the action plan in the fiscal year 2020.

2. The Department of Water Resources has reviewed and adjusted organization structure in

accordance with changed missions indicated in the 20-year National Strategy, the Water Resources Act B.E. 2561 (2018), and the missions that transferred to the Office of National Water Resources. It has finished drafting of Ministerial Regulation on the Organization of the Department of Water Resources B.E. , and has plan to revise it in the fiscal year 2020.

3. The Department of Water Resources has drafted secondary legislation according to the Water Resources Act B.E. 2561 (2018). In the fiscal year 2020, the Ministerial Declaration on Guidelines and Procedures of Public Water Resources Conservation according to Category 6, Section 78, and drafted Notification on the Authority Card according to Category 7 have been drafted which are expected to be finished on May 2020.

Issue 2: develop Big Data Database such as water situation, river basin classification, risk areas, etc which can be shared with relevant agencies.
Performance Result: The Department of Water Resources has developed a set of open data and metadata for managing water in the rainfed area, as well as guidelines on data sharing which are publicized on www.data.go.th and the Department of Water Resources' website, and guideline on the development of DWR's Data Center.

Issue 3: adjust operation processes at basin and water users' group levels to be consistent with legislation and establish a mechanism that connects to the community appropriately and efficiently.

Performance Result: The Department of Water Resources has analyzed organization performance, problem on strengthening water users' network through discussion with water users' group/network.

Managing Water Resources for promoting Village Natural resource and Environmental Protected Volunteer Network in 76 provinces has the objective to set guidelines to support and promote the establishment of water user groups and water resources management networks in specific water sources in the rainfed area of all basins.

(2) For human resource development, the Department of Water Resources has

conducted a 5-year Strategic Plan on Human Resource Development (2020-2024) consisting of 5 dimensions of HR Scorecard; 1) Strategic Alignment, 2) HR Operational Efficiency, 3) HRM Programme Effectiveness, 4) HRM Accountability, and 5) Quality of Life and Quality of Work-Life Balance. It aims to set a framework and direction for human resources management of the Department of Water Resources to be consistent with the 20-year National Strategy and the Country Reform Plan.

3.7.3 Organizational Governance Policy

The performance regarding organizational governance policy covers 4 policies as follows;

Guidelines	Indicators	Targets	Results
1. Policy on State, Society, and Environment Main Policy: encourage, promote, and emphasizes environmental quality protection as well as duties and responsibilities to common interests			
1) Performance on solid waste sorting and reduction in government agencies. There are 4 types of waste reduction including solid waste reduction (10 percent), plastic bag reduction (20 percent), single-use plastic glass (20 percent), and foam food packaging boxes (100 percent)	Target achievement of solid waste sorting and reduction in internal divisions.	Reduction of solid waste as targeted.	100 percent
2) Green office program	Number of activities according to the green office program	At least 2 activities from totally 4 (electricity, tap water/ office supplies/ 5S activities)	At least 2 activities (Green office/reduce electricity and telephone cost)



Guidelines	Indicators	Targets	Results
2. Policy on Clients and Stakeholders Main Policy: provide quality of service to clients and stakeholders that truly meet their needs.			
1) Satisfaction survey from clients and stakeholders	Percentage of clients and stakeholders' satisfaction with the service	85 percent	85 percent
2) improving the work process to satisfy clients' and stakeholders' needs/expectations	Numbers of work process that open to receive feedbacks (needs/ expectations/ suggestions/ recommendations/ dissatisfactions) from clients and stakeholders.	At least 1 work process	2 work processes (water distribution system and water users group, and water sources construction project)
3. Policy on Organization Main Policy: establish performance management as a tool for promoting achievement motivation, transparency, and integrity in the organization by encouraging communication, engagement, organization development, learning, and application of technology for work processes that create innovations that meet clients' and stakeholders' needs.			
1) Communication of organization's vision, values, and missions to employees and stakeholders	Number of activities that communicate the organization's vision, values and missions to employees and stakeholders	At least 1 activity	3 activities
2) Internal Performance Agreement (IPA)	Percentage of employees that are cascaded key performance indicators according to Internal Performance Agreement (IPA)	100 percent	100 percent
3) Uses of technology to work and create innovation	Number of work processes that use technologies, innovations, and artificial intelligences (AI) to work	At least 4 work processes	7 innovations
4) Promotion of Integrity and Transparency in government organization	Integrity and Transparency Assessment (ITA) Score	ITA score has to higher than last year	ITA Score is 86.31, 2.77 higher than score of the fiscal year 2018.

Guidelines	Indicators	Targets	Results
4. Policy on Workforce Main Policy: support employees on achievement motivation, self-development, teamwork skill, organization engagement, good atmosphere, good quality of life, and capacity building for organization 4.0 development following Thailand 4.0 policy.			
1) Knowledge management and innovation development	Numbers of managed and disseminated knowledge in the knowledge management process.	At least 2 work processes.	3 work processes. (3-year manpower plan/ enterprise blueprint/ Internal Performance Agreement (IPA))
2) Employee Engagement Assessment	Percentage of activities that employees fully participate on target.	80 percent	100 percent
3) Human Resources Development	Percentage of employees who has been developed.	100 percent	100 percent





3.7.4 Turnaround the Department of Water Resources towards Public Service System 4.0 according to Public Sector Management Quality Award (PMQA) 4.0

“Thailand 4.0” is an economic development model of the Thai government with the vision ‘Thailand as a Developed Country has Security, Prosperity, and Sustainability’. Pursuing security, prosperity, and sustainability under the ‘Thailand 4.0’ model brings various challenges to any agencies, especially in public sector. They have to set direction and apply the framework to develop their organization to ‘Bureaucratic System 4.0’. So, the Department of Water Resources (DWR) has analyzed linkage of public management by Public Sector Management Quality Award 4.0 framework, organization’s strengths and weaknesses from self-assessment, opinions, and suggestions from assessors, internal consultation within organizations, key success factors, problems, obstacles, and limitation. It also conducts the Implementation Plan, a significant tool, as a model, for systematically developing DWR into Bureaucratic System 4.0. It includes communication to create awareness of common goals which make the system to be openness,

connectedness, and people-centric. Bureaucratic system 4.0 promotes high competency, modern, innovative, digital-driven organization, and integration following good governance principle which focusing on people’s well-being. It is trustworthy. The Department of Water Resources’ Public Sector Management Quality Award 4.0 score is 308; it is at a standard level.

Furthermore, the Department of Water Resources has organized Workshop on Reviewing of Work Process to make the Bureaucratic System 4.0 Development Plan. It has the objective to educate officers about the vision review process, main procedures analysis, enterprise blueprint support process, which could be implemented. It also includes revision and analysis of a 3-year manpower plan which aims to review process on usages of information technology and manpower planning to be consistent and prepared to support the changing mission systematically and efficiently.

3.7.5 Innovation Development

In the fiscal year 2019, the Department of Water Resources has developed 7 innovations as follows;

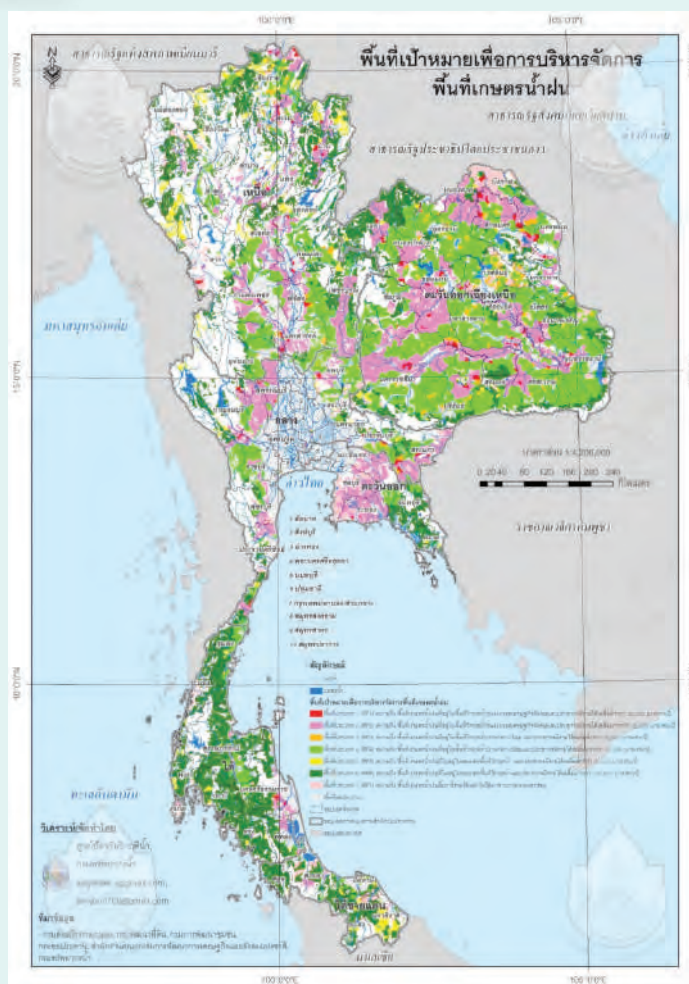
Innovation 1: Area-based Water Resources Management in the Rainfed Area (Non-irrigated Area). The project aims to prioritize crisis areas to specify flagship projects implemented under the 20-year National Strategy and the Country Reform Plan for effectively solving the water problem by using the area-based approach. It is operated by the Water Crisis Prevention Center.

Innovation 2: CCTV Monitoring System for Water Sources Construction Projects. The monitoring system aims to follow up on the progress of water source construction. It is operated by Water Resources Regional Office 4.

Innovation 3: Online Survey on Satisfaction and Happiness in the Organization, Key Performance Indicators Assessment, and Summary Report. It has objectives to improve the management system of the Department of Water Resources in the next year. It is operated by Public Sector Development Group.

Innovation 4: Internal Data Management and Service. The project aims to develop the Department of Water Resources' data management and service system. There is an identity authentication to verify the identity of the users who access the system. It is operated by the Water Resources Information Technology Center.

Innovation 5: Material Testing Evaluation and Report Software (MatPro). MatPro is an easy and accurate tool for evaluation and report of aggregate testing results. It is operated by Water Resource Regional Office 5.



Definition of Area Type 1-7 (RF1 – RF7)

- ❑ **Type 1 (RF1)** is a critical area or special economic zones, and the average personal income is less than 32,000 Baht/household/year.
- ❑ **Type 2 (RF2)** is a critical area or special economic zones, and the average personal income is higher than 32,000 Baht/household/year.
- ❑ **Type 3 (RF3)** is a moderate and low-risk area, and the average personal income is less than 32,000 Baht/household/year.
- ❑ **Type 4 (RF4)** is a moderate and low-risk area, and the average personal income is higher than 32,000 Baht/household/year.
- ❑ **Type 5 (RF5)** is a normal area, and the average personal income is less than 32,000 Baht/household/year.
- ❑ **Type 6 (RF6)** is a normal area, and the average personal income is higher than 32,000 Baht/household/year.
- ❑ **Type 7 (RF7)** is another type of rainfed area, which major income of local people are not from the agriculture sector.



Innovation 6: The Department of Water Resources' Key Performance Report System, It aims to update and report real-time operation progress based on lead indicators. It is jointly operated by Water Resources Technology Information Center and Public Sector Development Group.

Innovation 7: Online Executives Performance Evaluation. It is aimed to survey the opinions of subordinates to executives. It is jointly operated by Water Resources Technology Information Center and Public Sector Development Group.

3.7.6 Performance on Human Rights

The Department of Water Resources realizes that the foundation of a successful organization is morality and humanity; therefore, we adhere and comply with human rights principles in any work process to promote accountability in the organization. We prioritize and respect human rights according to international standards. Human rights are fundamental rights that all human beings are born free and equal in dignity and rights. The Department of Water Resources adheres to this principle and has committed that all officials and stakeholders are treated fairly and equally. So, the Department of Water Resources has developed human rights policies as a standard for organizations and staff to follow. It is publicized to staff to acknowledge and adhere to.



The Department of Water Resources is one of six government agencies that receive awards for the Role Model Organization on Human Rights. Office of the Permanent Secretary of Ministry of Energy win an Outstanding Award, while others win an Honorable Mention Award including the Department for Empowerment of Persons with Disabilities, Department of Fisheries, Central Institute of Forensic Science, and Department of Water Resources.

3.7.7 Human Resources Development for Bureaucratic System 4.0

In the fiscal year 2019, the Department of Water Resources continually has a capacity development plan. 8 training courses have been organized in topics of water management, site survey project management, materials analysis and testing, hydrology, public sector management, public relations, and anti-corruption awareness raising. Target groups are 518 staffs. 513 staffs, or around 99.03 percent of target, are trained. Capacity building programs consist of ;

1) Training Course on Materials Testing Technicians Batch 2, 31 participants

2) Training Course on Hydrological survey for Water Sources Development, Conservation and Rehabilitation Project Design Batch 3, 26 participants

3) Training Course on Terms of Reference, Cost Appraisal and Effective Contract Administration for reducing lodging complaints and appeals, 96 participants

4) Training on Enhancing Competency on Financial Management in Public Sector, 110 participants

5) Training Course on Enhancing Competency on Public Relations for being Bureaucrat 4.0, 74 participants

6) Training Course on Salary and Insignia Management, 55 participants

7) Anti-corruption Awareness Raising Programs, 86 participant

8) Workshop on Water Resources Engineering and Geographic Information System, 35 participants



The examples are as follows;

1) Training Course on Materials Testing Technicians Batch 2

According to Water Resources Management Strategy, the Thai government has intended to solve water problem comprehensively based on type of problems and area conditions in responding to water demands of any sectors. A materials testing is an important process for selecting quality of construction materials. The Department of Water Resources has materials testing lab in all regional offices. Officers require knowledge and skills on usages of equipment and testing in order to analyze quality of construction materials. It is to ensure structural strength, safe and stability of construction buildings for maximizing benefits to people.

Realizing on the importance of materials testing and equipment, the Department of Water Resources organized Training Course on Materials Testing Technicians for officers who work in materials testing lab in Water Resources Regional Office 1-11.



Outcome(s):

The trainees gain knowledge and understanding about quality of technical materials testing which could be applied into practices accurately and effectively. 31 trainees pass the post-test. All participants gain more knowledge evaluated by pre-test and post-test survey measurement.

2) 3rd Training Course on Hydrological Survey for Water Sources Development, Conservation and Rehabilitation Project Design

The Department of Water Resources has a role in providing water for consumption, agriculture and industry, to ensure adequate supply and maintain ecological balance. Site survey for water sources development, conservation and rehabilitation project is an important process to gather information for buildings design and construction that meet technical standard and worthiness. Technicians have to have knowledge



on surveying equipment, traversing, and general information of the projects.

Therefore, the Department of Water Resources has developed capacity for technicians who work on site survey for water sources development, conservation and rehabilitation project to have professional competency to develop the stable, strong and safe buildings that could greatly benefits all people.

Output(s):

The participants gain knowledge, skills and understanding about site survey for water sources development, conservation and rehabilitation project. They can apply into practices effectively. 26 trainees pass the post-test. From pre-test and post-test evaluation, it is found that all participants gain more knowledge. All participants gain more knowledge evaluated by pre-test and post-test survey measurement.





3.8 Information Technology Development for Bureaucratic System 4.0

The Department of Water Resources has launched Project of Information Technology Development for Bureaucratic System 4.0 emphasizing on comprehensive management system in accordance with the National Digital Economy and Society Development Plan. It promotes transformation of traditional management into digital-driven one which focusing on usage of digital technology

to improve public services which people can access to conveniently. In the fiscal year 2019, the Department of Water Resources has launched significant IT Projects. There are as follows;

3.8.1 Project on Development of Electronic Library (E-Library)

3.8.2 Internal Information Management and Service

3.8.1 Project on Development of Electronic Library (E-Library)

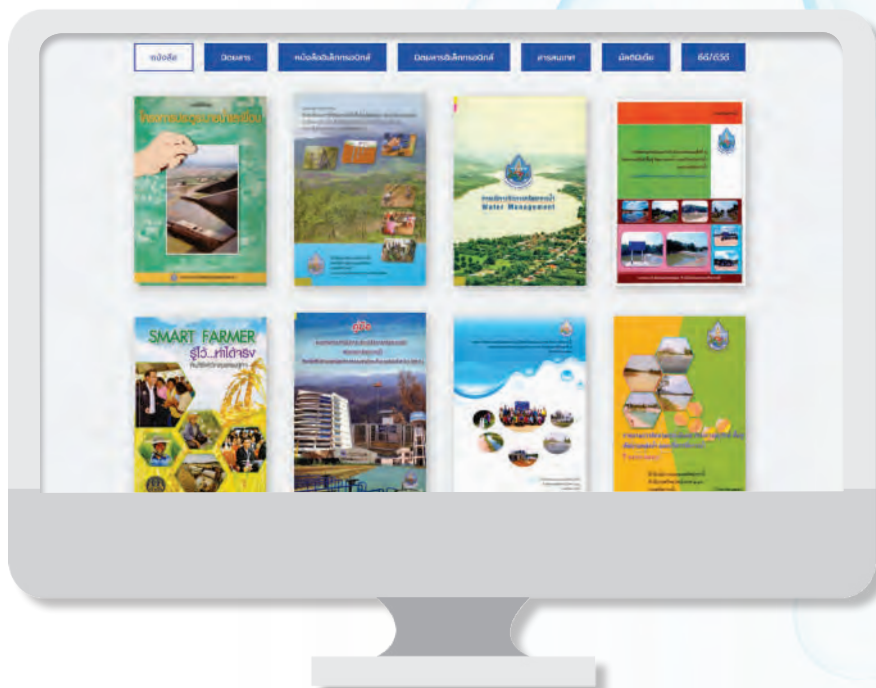
It refers to the Thailand Digital Economy and Social Development Plan, Strategy 3: create a digital-driven society ensuring inclusive and equal usage, Work Plan 3: produce media, library and digital learning platform for people to easily access via telecommunications, broadcasting and media convergence. Public agencies have to produce or transform information, news, knowledge of the organization into digital form that allow people or businesses to access those data for further usage.

The Department of Water Resources has realized the importance of information and knowledge dissemination. Presently, we have produced print medias, brochures, posters, books and videos for disseminating water resources knowledge to people and students. It also provides library service for people and staffs, but there has no digital media yet. So, development of Electronic Library (E-Library) service is useful for knowledge management since production of E-book and video, and categorizing media in digital forms. People and staffs inclusively can easily access to available water resources data and information via website and mobile application.



Output(s):

- 1) An electronic library (E-library)
- 2) An electronic library management and back-end system
- 3) An E-library mobile application
- 4) Totally 573 E-books and online English courses with manuals are published.





3.8.2 Internal Information Management and Service



Currently, information technology has highly significant role in public service. The Department of Water Resources realizes the usage of information technology for strategically performing water resources management at all processes. Presently, there have uses of technology in the workplace to create documents, reports, and information. Staffs will save data in personal computers. If those computers are damaged, files will be lost. Some information is large and has to share with others such as geographic map and mathematical data which, currently, there has no enough storage to store the files. Data is individually kept in own computers; it causes difficulty in sharing. Moreover, there has no secure access and authentication.

To improving process of data storage and usages, the Department of Water Resources should provide equipment, tools, and develop internal data management and service system

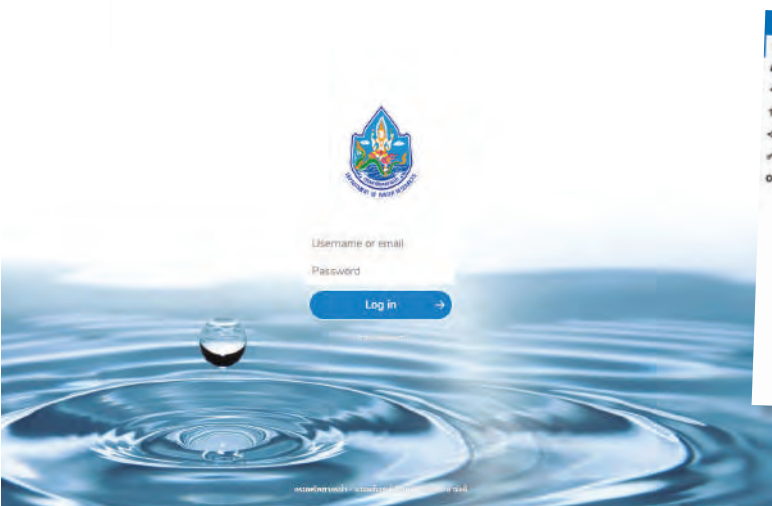
as well as identity authentication system (Active Directory) for users to verify their identity before accessing to information system.

Output(s):

- 1) Internal Data Management and Service
- 2) User Access Management System with manuals

Outcome(s):

The Department of Water Resources provides internal data sharing service at all time.



3.9 Public Relations on Water Resources

The Department of Water Resources has publicized organization's missions in accordance with the Government urgent policy on natural resources restoration and environment protection for sustainable growth, flood and drought preparedness, as well as Strategy of Ministry of Natural Resources and Environment, Strategy 2: Water Management. In 2019, the Department of Water Resources has publicized participation of water users groups as well as projects that support royal project, royal-initiated projects on water management, early warning system, an effective monitoring, forecasting and warning tool, that can reduce loss of life and property in disaster area.

The public relations make people acknowledge missions of the Department of Water Resources, and aware of value of water. There are timely warnings of drought, flash flood and soil erosion

in the area. In addition, people can access to the Department of Water Resources' Information Center.

The Department of Water Resources has promoted missions which benefits to people via mass Medias including video, television, newspaper and other Medias as well as prioritized online public relations to create awareness about water resources for people.





Output(s):

The Department of Water Resources has promoted its operations via media channels such as television, video, online Medias, newspaper and exhibitions in important days within organization and with other organizations. The Department of Water Resources also invited Mass Medias to visit project area to create awareness for people about organization's mission. In the fiscal year 2019, there are 5,911 public relations activities. It also conducts survey on satisfaction, public participation and public relations for people to access to DWR's Medias.



Part 3

Financial Report







Financial Report



Department of Water Resources Financial Statement As of September 30, 2019		(Unit : Baht)	
	2019	2018 (Revised)	
Asset			
Current assets			
Cash and cash equivalents	26,305,558.02	59,014,841.93	
Short-term receivables	128,018,148.05	139,517,322.02	
Balance of goods	22,032,113.78	21,129,052.82	
Other current asset	59,400.07	48,170.70	
Total current asset	176,415,219.92	219,709,387.47	
Non-current assets			
Long-term receivables	-	4,543.74	
Buildings, lands and equipment	2,390,219,299.73	3,320,067,366.62	
Infrastructure assets	37,420,802,807.59	37,278,550,057.06	
Intangible non-current assets	5,021,995.05	56,951,567.54	
Other non-current assets	417,318,685.02	231,678,611.79	
Total non-current assets	40,233,362,787.39	40,887,252,146.75	
Total assets	40,409,778,007.31	41,106,961,534.22	



Department of Water Resources
Financial Statement
As of September 30, 2019

(Unit : Baht)

	2019	2018 (Revised)
Liabilities		
Current liabilities		
Short-term creditors	18,714,232.28	133,408,201.72
Short-term deposits	47,685,173.73	100,145,411.30
Other current liabilities	4,543.74	8,400.00
Total current liabilities	66,403,949.75	233,562,013.02
Non-current liabilities		
Creditors by transfer and long- term sales	10,182,675.50	17,637,925.83
Long-term government advances from Treasury	3,100,000.00	3,100,000.00
Other non-current liabilities	-	4,543.74
Total non-current liabilities	13,282,675.50	20,742,469.57
Total liabilities	79,686,625.25	254,304,482.59
Net assets/equity	40,330,091,382.06	40,852,657,051.63
Net assets/equity		
Capital	451,953,929.02	451,953,929.02
Incomes higher/lower accumulated expenses	39,878,137,453.04	40,400,703,122.61
Total net assets/equity	40,330,091,382.06	40,852,657,051.63

Department of Water Resources
Presentation of Financial Statement
For Fiscal Year Ending, 30 September 2019

(Unit : Baht)

	2019	2018 (Revised)
Revenue		
Revenue from government budget	6,077,044,225.15	5,170,061,169.26
Revenue from loan and other government income	127,263,793.25	172,317,748.08
Revenue from sales and services	-	211,763.00
Revenue from grants	13,714,798.90	30,070,367.86
Other revenue	1,570,402.59	13,733,483.92
Total Revenue	6,219,593,219.89	5,386,394,532.12
Expenses		
Salaries and wages	840,928,384.95	845,630,081.91
Pension expenses	327,778,919.08	287,710,602.74
Remuneration	16,137,116.00	15,752,156.00
Operating expenses	361,270,664.60	387,943,105.08
Supplies expenses	32,938,970.64	37,173,026.00
Utilities expenses	33,706,163.00	33,931,200.55
Depreciation and amortization	4,531,032,113.05	4,979,437,143.78
Expenses from grants	597,129,183.47	369,512,857.39
Other expenses	1,237,374.67	4,418,896.89
Total expenses	6,742,158,889.46	6,961,509,070.34
Revenue higher/(lower) than net expense	(522,565,669.57)	(1,575,114,538.22)





Part 4

Other Significant Performances





1

The Loyal Initiative Volunteer Program

“We Do Good Deeds with Our Hearts”

According to the Loyal Initiative Volunteer Program “Good Deeds with Our Hearts”, His Majesty the King cares and concerns people’s well-being. He has a resolute determination to create a stable nation and improve people’s livelihood. His Majesty the King has royal intention to carry the continuation of the royal initiative projects which aims to nurture Thai citizens and develop the country.

Royal initiative volunteers can be divided into three categories including Development Volunteers, Disaster Volunteers, and Ad Hoc Volunteers. The activities of those types of volunteers are below;

1) Development Volunteers – Royal initiative volunteers whose objective is to develop local communities to improve the quality of life through activities that include public service, natural and environmental preservation, safety in daily life and career, public health, etc.

2) Disaster Volunteers – Royal initiative volunteers whose objective is to monitor, check, warn and make plans in the case of natural disasters or other disasters that affect the public,

as well as provide relief for disaster victims in the case of floods, storms or fires.

3) Ad Hoc Volunteers – Royal initiative volunteers whose objectives are to help in royal ceremonies or royal arrivals, working in conjunction with relevant government units to facilitate public participation, prepare venues as well as restore the venues after ending of the royal ceremonies and royal proceeding to their original states.

In 2018, representatives of the Department of Water Resources’ central and regional offices 1-11 organized activities and consecutively participated in the Loyal Initiative Volunteer Project “Good Deeds with Our Hearts”, e.g. promoting nature and environment conservation, organizing National Conservation and Improvement of Rivers and Canals Day. Key activities included waste collection, water hyacinth and weed removing, cleaning for buildings, offices, temples, markets, public places, landscape improvement, plant growing, fish releases and carrier plastic bags and foam box reduction campaign.



13 October 2018

On 13 October 2018, executives of Department of Water Resources, along with officials, participated in the Loyal Initiative Volunteer Project “Good Deeds from our Hearts” at the Royal Field, Bangkok



18 October 2018

On 18 October 2018, Mr. Bhadol Thavornkitcharat, Deputy Director-General of Department of Water Resources, and Mr. Athiwat Sukontpradit, Director of Bureau of Mass Promotion and Coordination, with totally 40 volunteers from the Department of Water Resources, joined the volunteer activities on the development of Prem Prachakorn Canal - Rangsit Prayurasakdi Canal, operated by the Ministry of Natural Resources and Environment, at Lamsamkaeo Sports Center, Lam Luk Ka District, Pathum Thani Province. The project area started from Rangsit Prayurasakdi Canal, Rangsit Klong 3, and ended in the 6th Connection Point with a total distance of 7.12 kilometers.





23 October 2018

On 23 October 2018, volunteers from the Department of Water Resources, and other agencies under Ministry of Natural Resources and Environment, jointly participated the Merit Making Ceremony and Commemoration on the occasion of the remembrance of the passing away of His Majesty the late King Chulalongkorn at the Royal Field. They provided mats for people, who were waiting for welcoming His Majesty the King, along the roadside from the Mother Earth Squeezing Hair Statue to the Temple of the Emerald Buddha, cleaned up places, collected and sorted out garbage, promoted garbage sorting, as well as joined the candle-lit activities in remembrance of His Majesty the late King Chulalongkorn.



5 December 2018

On 5 December 2018, the Ministry of Natural Resources and Environment (MNRE) organized the volunteer activity “Good Deeds from our Hearts” on the occasion of His Majesty King Bhumibol Adulyadej’s Birthday and Father Day. Mr. Wijarn Simachaya, Permanent Secretary of the Ministry of Natural Resources and Environment was a chair in the opening ceremony. The executives, civil servants, officers of the Ministry of Natural Resources and Environment, Ministry of Agriculture and Cooperatives, Bangkok Metropolitan Administration, and the representatives of Village Natural Resource and Environmental Protected Network, a total of 650 volunteers,



jointly participated the Volunteer Project on Development of Bang Khaen Canal.

On this occasion, participants made vows and joined the volunteer activity to clean up the project area by collecting waste and removing weeds in the canals, improving the landscape of the front courtyard of the Bangkok Cooperatives Audit Office in Kasetsart University, the opposite site of Royal Project and nearby. There are 4 voluntary activity points. Activities included weed removing, waste and garbage collection along roadside and canal as well as water quality monitoring in the canal.

In this regard, Mr. Suwat Pianpajjai, Director General of the Department of Water Resources and Mr. Bhadol Thavornkitcharat, the Deputy Director-General of the Department of Water Resources, with DWR staffs participated in the activity.





11 December 2018

On 11 December 2018, 30 December 2019 and 8 January 2020, volunteers from the Department of Water Resources jointly educated people in waste sorting method as well as facilitated them in the Winter Festival with the Theme “The River of Rattanakosin” at 16 waste sorting points around the courtyard of the Dusit Palace and Sanamsuepa. The volunteers consist of 161 officials from the Department of Water Resources and 4 public volunteers.





12 January 2019

On 12 January 2019, 8 officials of the Department of Water Resources participated in volunteer duty in the National Children Day 2020 by raising awareness on waste sorting and recycling to children, youth and people who participated in the event at the Government House.



20 January 2019



On 20 January 2019, the Department of Water Resources, led by Mr. Athiwat Sukontpradit, the Director of Bureau of Mass Promotion and Coordination, Mr. Mongkol Lukmuang, Director of Water Crisis Prevention Center and staffs, joined the big cleaning activity for the Winter Festival with the Theme “The River of Rattanakosin”. They cleaned up the auspicious cycling route for the ‘Bike Un Ai Rak’ cycling event around Territorial Defense Command.





29 January 2019

On 29 January 2019, the Department of Water Resources, by Water Resources Regional Office 4, participated in environmental management volunteer activity for the royal cremation ceremony for a head monk 'Phra Thep Wittayakhom' (Luang Pho Koon Parisutho) at Temporary Crematory Buddha Monthon E-saan, Khonkaen Province.



13 March 2019

On 13 March 2019 and 1 April 2020, the Department of Water Resources participated in lecture on "the Monarchy and Thailand" at the meeting room in Chakkapan Pensiri Building, Saketsart University, Bangkok.

Mr. Wijarn Simarchaya, Permanent Secretary of Ministry of Natural Resources and Environment was a chairman, and officers of the Ministry of Natural Resources and Environment attended



the event. It aimed to educate officers about the history of Thailand and operations of the Royal Initiative Volunteer Program following the royal aspiration of His Majesty King Maha Vajiralongkorn Bodindradebayavarangkun.





5 June 2019

On 5 June 2019, the Department of Water Resources, by Water Resources Regional Office 11, joined the Loyal Initiative Volunteer Program “Good Deeds from our Hearts” at Regional Environmental Office 12. Activities included getting rid of mosquito larvae and landscape improvement. Department of Water Resources also gave 288 bottles of drinking water to participants.





26 July 2019

On 26 July 2019, the Department of Water Resources, by Water Resources Regional Office 1, held a volunteer activity on growing plants to celebrate the auspicious occasion of the Coronation of His Majesty the King “Jointly Planting for the Land”. Plant species included Rice Sprouts, Golden Shower Tree, Rosewood, Padauk, Emblica, Champi Luang, Trumpet bushes and Silver Trumpet Tree, 142 in total.



2

The Project of Beautiful Swamp and Clean Canal in the Celebration of the Royal Coronation Ceremony of His Majesty the King



It was the auspicious year when His Majesty King Maha Vajiralongkorn Bodindradebayavarangkun has ascended to the throne as King Rama X of Thailand after accepting a ceremonial invitation to take the throne by the Head of the Interim Parliament in the name of Thai people at that time. There was a Royal Coronation Ceremony in 2019 according to royal tradition. To present royalty and do good deeds dedicating to King Rama X, on this occasion, the Ministry of Natural Resources and Environment, by the Department of Water Resources, recognized the importance of the promotion environment and conservation of natural resources and induced the aspiration of His Late Majesty King Bhumibol Adulyadej about community water resources management to mobilize water resources management. The Department of Water Resources organized the Project of Beautiful Swamp and Clean Canal for the Celebration on the Auspicious Occasion of the Coronation of His Majesty the King. The project aimed to improve and rehabilitate water sources by dredging up waterways, removing weeds, increasing the storage capacity of water sources, building erosion control lines, and constructing control building for being water sources for people. It also



included the construction of a water distribution system for distributing water to people. The project also had a purpose to raise awareness of public participation in the conservation and sustainable utilization of water sources. There are 11 projects in 11 provinces including 1) Construction of Water Distribution System for 'Le Tor' Royal Initiative Project, Tak Province, 2) Bung Chum Pang Water Sources Rehabilitation Project, Phetchabun Province, 3) Nung Luang Water Source Rehabilitation Project, Sakon Nakhon Province, 4) Nong Kok Sa-baeng Rehabilitation Project with Solar-powered Distribution System, Maha Sarakham Province, 5) Water Sources Rehabilitation Project for Large Rice Fields, Nakhon Ratchasima Province, 6) Hin Pleang Canal Rehabilitation Project, Chanthaburi Province, 7) Mae Li-pai Canal Rehabilitation Project, Song Kla Province, 8) Nong Pa Lan Reservoir Rehabilitation Project, Prachuap Khiri Khan Province, 9) Bueng Bua (Lotus pond) Rehabilitation Project, Uttaradit Province, 10) Nong Lai Water Source Rehabilitation Project, Phase 2, Krabi Province, and 11) Nong Nok Chum Water Source Rehabilitation Project, Ubon Ratchathani Province.



3

Royal Initiative Projects

supported by the Department of Water Resources

26-27 December 2018



Mr. Kraisorn Phengsakul, Director of Water Resources Regional Office 8, representative of the Department of Water Resource, along with DWR staffs, followed up and propelled Pa Payom Reservoir Royal Project in Phatthalung Province, and followed up the royal disaster prevention project at Hatyai District, Klong Lah Reservoir Royal Project in Songkla Province.

11 February 2019

Mr. Snay SathuTham, Director of Water Resources Regional Office 1, along with DWR staffs, jointly welcomed Her Royal Highness Princess Maha Chakri Sirindhorn on the occasion of proceeding to follow up the progress of Following Father's Footsteps Project at the 37th Military Cycle, Phraya Meng Rai's Camp, Mueang District, Chiang Rai Province. He presented DWR's solar-powered water distribution project plan that supports the Following Father's Footsteps Project by solving water scarcity and increase water distribution efficiency



to support activities in the 37th Military Cycle. The budget is 20.5000 million baht, which is already in the 2020 budget plan proposal.



28 May 2019

Ms. Phoschanan Supakkulthorn, Director of Water Resources Information Center, as a representative of Department of Water Resources, with DWR staffs received the certificate at the certificate ceremony for agencies who support the Royally-Initiated Projects of the Fund for the Development of Children and Youth in Remote Areas of Her Royal Highness Princess Maha Chakri Sirindhorn, held in Conference for the Development of Health for Children and Youth in the Remote Areas 2019 at Miracle Grand Convention Hotel, Bangkok.



29 May 2019

Mr. Snay SathuTham, Deputy Director-General of the Department of Water Resources, accompanying with executives and staffs, welcomed Her Royal Highness Princess Maha Chakri Sirindhorn on the occasion of proceeding to preside over the Academic Conference on Children and Youth Health Development in the Remote Areas to Health Literate School 2019 “Good Health Better Life” at Miracle Grand Convention Hotel, Bangkok.



17-18 June 2019

Ms. Chatsuree Hanwong, Director of Bureau of Water Resources Policy and Planning, with DWR staffs, in collaboration with Dr. Siripong Hungspreung and Mr. Chonlathorn Pancharoen from the Highland Research and Development Institute (HRDI), jointly advanced and followed up Royally-Initiative supported Water Distribution Project contributing to High Land Development using Royal Luang Pha Pueng – Sri Dee Luk Project in Chiang Thong Sub-district, Wang Chao District, Tak Province.



9 August 2019

Mr. Vesarush Sopondiregrat, Director of Water Resources Regional Office 7, jointly welcomed Her Royal Highness Princess Maha Chakri Sirindhorn on the occasion of proceeding to perform royal duties at Flower Garden Development Service Center, Chai Pattana Foundation and Good Soldier Project, 9th Infantry Division Headquarter, Lat Ya Sub-district, Mueang Kanchanaburi District, Kanchanaburi Province.





4

Meeting, Training, Seminar and Technical Visit on Water Resources Management



DWR visited Bangkok Design Week 2019

The Department of Water Resources, led by Mr. Suwat Piampajjai, Director General of Department of Water Resources, along with executives and officers, officially visited Bangkok Design Week 2019 under the theme 'Fusing Forward' on 1 February 2019 at Thailand Creative & Design Center (TCDC), Bangkok.

The Bangkok Design Week 2019 was held by the Creative Economy Agency (Public Organization). It aimed to promote the significant potential of Bangkok. The group visited innovative floating solar cells which can generate electricity (compatible with general electrical appliances) and plants that can improve water quality in rivers. The group technically learned about innovation and technology which will be applied to any projects of the Department of Water Resources in the future.



DWR welcomed Officials from Afghanistan, Nepal, and Bhutan

The official executives group from Afghanistan, Nepal, and Bhutan, under Asian Development Bank's Technical Assistant TA 9095 - REG: Strengthening Integrated Water Resources Management in Mountainous River Basins, attended a brief lecture on an early warning system for flood and landslide and telemetry system on 14 February 2019 at Mekhala Center, Department of Water Resources. Mr. Mongkol Lukmuang, Director of Water Crisis Prevention Center expressed welcoming speech, and Mr. Supapap Patsinghasanee, Director of Mekhala Center gave a brief presentation and answered the questions.





DWR held the Meeting on Follow up Planting Genetic Conservation Project

The Department of Water Resources held the 1st Meeting of Planting Genetic Conservation Project Committees under the Royal Initiatives of Her Royal Highness Princess Maha Chakri Sirindhorn on 4 March 2019 at Sai Chon Meeting Room, the Department of Water Resources. Mr. Suwat Piampajjai, Director of the Department of Water Resources is the chairman of the meeting.



The meeting aimed to report the progress of the Planting Genetic Conservation Project under the Royal Initiatives of Her Royal Highness Princess Maha Chakri Sirindhorn and reviewed the action plan. The Department of Water Resources has water sources conservation and water distribution construction projects which could reduce water scarcity benefiting people in the area well.





DWR exchanged knowledge with Hokkaido University, Japan

On 21 March 2019, the Department of Water Resources was honored by Professor Yusuyuki from Hokkaido University to give a special lecture on mathematical models about a flood, sediment movement, riverbank erosion, and river morphology to officials of Department of Water Resources. In this lecture, Professor Shimizu presented the application

of International River Interface Cooperative (iRIC) Software which is co-developed by Hokkaido University, River Center of Hokkaido, U.S. Geological Survey (USGS) and Civil Engineering Research Institute for Cold Region, etc. Representatives of the Department of Water Resources exchanged knowledge of actual operation in the area and also an idea to apply the model.



DWR held Training on Wildfire Prevention and Control Supporting Ministry of Natural Resources and Environment's Missions

The Department of Water Resources, by Water Resources Regional Office 4, held Training on Wildfire Prevention and Control during 2-3 May 2019 which aims to educate officers about wildfire prevention and control. It can supports the Ministry of Natural Resources and Environment on the integration of wildfire prevention and control. It promotes knowledge exchange and public awareness on water resources in the area of Nam Phong National Park, Nong Ruea District, Khon Kaen. Participants include officers from Water Resources Regional Office 3 and Water Resources Regional Office 4, in the total of 45 participants.





DWR welcomed Officials from Sri Lanka

Mr. Mongkol Lukmuang, Director of Water Crisis Prevention Center, welcomed executives of the Irrigation Department from Sri Lanka and professors from the Faculty of Liberal Arts, Rajamangala University of Technology Suvarnabhumi, totally 36, on 24 June 2019 at Mekhala Center, Department of Water Resources. The group visited the Center and took a brief lecture on water resources management, early warning system, and telemetry system.





DWR welcomed Officials from ADPC

The Department of Water Resources welcomed Dr. Pichit Rattakul, special advisor and officers from the Asian Disaster Preparedness Center (ADPC) to Mekhala Center, Department of Water Resources on 2 July 2019. The visit aims to exchange knowledge and coordinate technical cooperation between ADPC and the Department of Water Resources. Mr. Mongkol Lukmuang, Director of Water Crisis Prevention Center and related officers jointly welcomed the group and present brief information about the main missions and responsibilities of the Mekhala Center.





Meeting on Development of Master Plan for Highland Development Project Using Royal Project System

The Department of Water Resources and Highland Research and Development Institute (HRDI) organized Meeting on Development of Master Plan for Highland Development Project Using Royal Project System on 2 July 2019 at Sai Chon Meeting Room, the Department of Water Resources. Mr. Suwat Piampajjai, Director General of the Department of Water Resources, and executives participated in the meeting and welcomed Mr. Wirat Prabtuk, Director of the Highland Research and Development Institute (Public Organization), Dr. Siripong Hungspreung, Advisor of the Highland Research and Development Institute (Public Organization) and HRDI group.



Workshop on Development of Department of Water Resources' 5-year Action Plan (First Phase: 3 years from 2020-2022)



The Department of Water Resources held the Workshop on Development of the Department of Water Resources' 5-year Action Plan (First Phase: 3 years from 2020-2022) on 2-3 August 2019 at the Emerald Hotel, Ratchadaphisek, Bangkok.

It had objectives to set the direction of the action plan to be in line with the National

Strategy, Country Reform Plan, National Economic and Social Development Plan, Policy Statement of the Council of Ministers, and other plans of any levels. It also aims to educate officers on the development of the Department of Water Resources' 5-year Action Plan (First Phase: 3 years from 2020-2022).



Department of Water Resources visited Hydroinformatics Institute and Geo-Informatics and Space Technology Development Agency

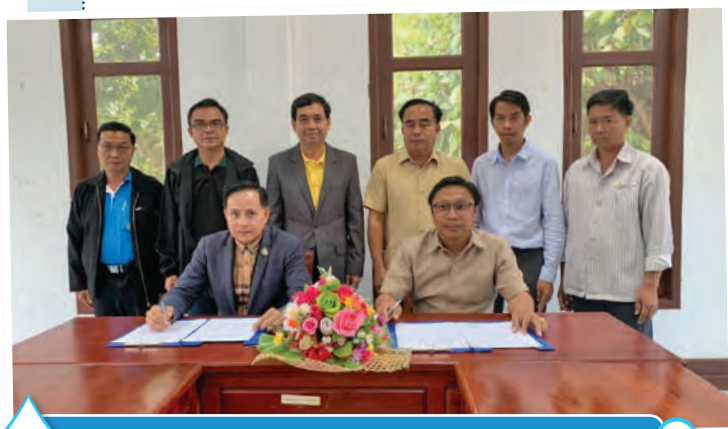
Mr. Mongkol Lukmuang, Director of Water Crisis Prevention Center, Ms. Nittaya Niyomrat, Expert on Training Course Development, Mr. Supapap Patsinghasanee, Director of Mekhala Center and 10 staffs from Department of Water Resources visited Hydroinformatics Institute and Geo-Informatics and Space Technology Development Agency on 19 September 2019 to study systems and related models that will be applied to improve operation efficiency.





DWR Participated in the Meeting and Conducted a Field Survey at the Lao People's Democratic Republic

Mr. Athiwat Sukontpradit, Deputy Director-General of the Department of Water Resources, accompanied by officials of the Department of Water Resources, had a meeting with representatives from the Department of Water Resources of the Lao People's Democratic Republic and Governor of Salawan Province, Lao PDR on 17-18 June 2019. The meeting aimed to jointly develop Huay Pra Ai National Demonstration Park. They conducted a field survey at Pak pui Village, Salawan Province on 19-21 June 2019. Moreover, the group visited Nam Turn 2 Reservoir and jointly explore Yom Lad Sub-district, Mahachai District, Kham Muan Province to find flood and drought management methods. The group also had a meeting with representatives of the Department of Water Resources of Lao PDR and related stakeholders to summarize future cooperation under the Memorandum of Understanding between the Ministry of Natural Resources and Environment of Thailand and the Ministry of Natural Resources of Environment of Lao PDR in the next phase.



DWR Participated Training Course on Leaving No one Behind: Sustainable WASH Services in a Rapidly Changing Context, Funded by Singapore Government

The Singapore Government provided scholarships, through Department of Thailand International Cooperation Agency (TICA), for Ms. Praon Udomprasert, Policy and Plan Analyst, Senior Professional Level, Bureau of International Cooperation, Department of Water Resources, to join a training course on Leaving No one Behind: Sustainable WASH Services in a Rapidly Changing Context. The program was organized by Singapore Water Academy, under Public Utility Board (PUB), Singapore National Water Agency, and the United Nations Children's Fund (UNICEF) on 19-23 August 2019 in Singapore. The course emphasizes applications of tools and mechanisms of water management for sanitation, and access to safe drinking water in responding to SDGs Target 6: Clean Water and Sanitation, in Target 6.1 that seeks to secure safe and affordable drinking water for all. The course also built a network of



SDGs implementation between the Department of Water Resources and UNICEF Thailand. They can exchange knowledge with each other and seek for future cooperation. Executive Director of UNICEF from New York Headquarter, Director of UNICEF Regional Office for Southeast Asia, and Director General of Department of International Cooperation of Singapore joined the Certificate Ceremony.





DWR Discussed Cooperation with the Republic of Korea

Mr. Athiwat Sukontpradit, Deputy Director-General of the Department of Water Resources, with executives and experts from the Department of Water Resources, had a bilateral meeting on cooperation with top executives of Korea Water Resources Corporation (K-water) on 18-20 September 2019 in the Republic of Korea. The meeting is an activity under Memorandum of Understanding between the Ministry of Natural Resources and Environment of Thailand and the Ministry of Environment of the Republic of Korea. In this regard, the group studied integrated water resources management, water management technology and canal conservation guidelines from the Republic of Korea which will be applied in Thailand context appropriately.



Department of Water Resources Cooperated with China to Solve Water Management Problems

Mr. Athiwat Sukontpradit, Deputy Director-General of the Department of Water Resources, along with executives and technicians from the Department of Water Resources, attended a bilateral meeting under Thailand-China cooperation on 23-26 September 2019 at Ministry of Water Resources, Beijing, People's Republic

of China. Both sides agreed to conduct capacity building and initiate a joint study on integrated flood and drought management. Furthermore, the group visited the South to North Water Diversion Project aiming to mitigate drought and experimental stations for increasing water efficiency which will be applied in Thailand in the future.





Project on Strengthening Knowledge about Water Resources Act B.E. 2561, Section 4: Water Allocation and Water Uses

of meeting, consultation and collaboration of working group, including representatives from Bureau of Water Management, Bureau of Water Resources Policy and Planning, Bureau of Water Resources Conservation and Rehabilitation, Bureau of Mass Promotion and Coordination, Bureau of Research, Development and Hydrology, Bureau of International Cooperation, Water Resources Regional Office 1, Water Resources Regional Office 6, Water Crisis Prevention Center, Public Sector Development Group and Legal Affairs Group, continually.

The study has reviewed documents and operations of relevant agencies including orders, laws, regulations related to water resources, best practices from other countries that are similar to Thailand context for being applied as guidelines studies, rules, procedures, conditions, for the Department of Water Resources' operations under the Water Resources Act B.E. 2561 (2018).

The Department of Water Resources, by collaboration between Bureau of Water Management and related internal agencies, organized Project on Strengthening Knowledge about Water Resources Act B.E. 2561 (2018), Section 4: Water Allocation and Water Uses in the fiscal year 2019. The course has objectives to 1) collect and review research studies and kinds of literature that related to Water Resources Act, B.E. 2561 (2018), Section 4: Water Allocation and Water Uses, 2) create a concept for Application for Water Uses Permit and Guidelines for Controlling the Type-2 and Type-3 of Water Uses, and 3) strengthen knowledge for staffs who have roles and responsibilities related to the implementation of Water Resources Act B.E. 2561. The project timeframe is 10 months, from December 2018 to September 2019. The Project was implemented through a process





Also, the Department of Water Resources held Workshop on Operations under Implementation of Water Resources Act B.E. 2561 (2018), Section 4: Water Allocation and Water Use “Think together, Work together” on 1 August 2019 in forms of the technical forum and academic presentation. There are 163 participants including experts, representatives from government agencies related to industry and agriculture clusters, legal experts, water resources consulting groups, public sectors, river basin committees, water user groups, stakeholders and international organizations. Participants, including officers of the Department of Water Resources, have opportunities to exchange experiences on the related issues about Water Resources Act B.E. 2561 (2018) as well as receive ideas, opinions, and recommendations about Water Resources Act B.E. 2561 (2018) preparing for work in the future. The project has conducted a study report as a reference and basic guideline for related parties or those interested in supporting the works under the Water Resources Act B.E. 2561 (2018) of the Department of Water Resources in the future.



5

Outstanding Activities in Fiscal Year 2019

DWR's Rewards

In the fiscal year 2019, the Department of Water Resources has received rewards from external agencies, a total of 3 rewards as follows:



1. Procurement Award 2019

- The fiscal year 2019: Excellent Award
- Work unit of the award presenter: The Revenue Department
- Presenter of the award: Director-General of the Revenue Department

2. IPv6 Award 2019

- Work unit of the award presenter: the Ministry of Digital Economy and Society
- Presenter of the award: the Permanent Secretary of the Ministry of Digital Economy



3. Human Rights Award 2019 (Honorable Mention Award)

- Work unit of the award presenter: the Ministry Of Justice
- Presenter of the award: the Prime Minister, General Prayut Chan-o-cha





DWR's Cooperation works

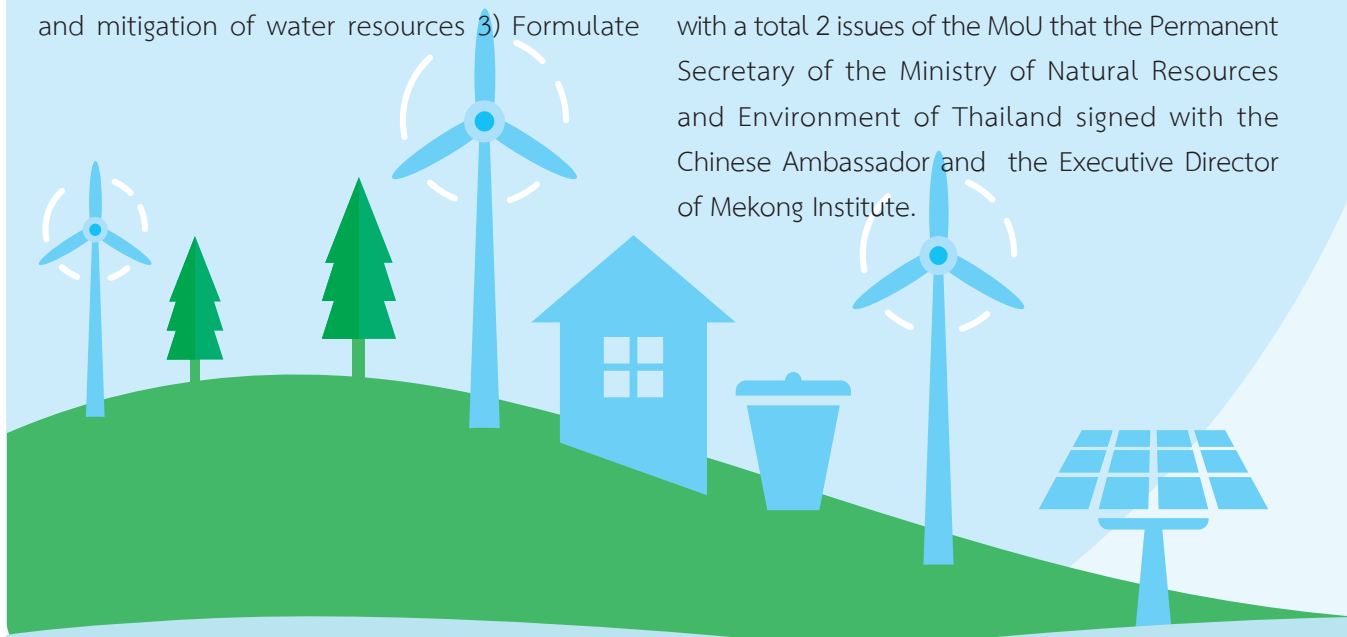
"Transboundary Cooperation Mechanism on Adaptation to Climate Change and Hydropower Development Project"

The cabinet resolution on 15 May 2018 had approved Memorandum of Understanding on the Cooperation on Project of the Mekong-Lancang Cooperation Special Fund which was "Transboundary Cooperation Mechanism on Adaptation to Climate Change and Hydropower Development Project". The Department of Water Resources under the Ministry of Natural Resources and Environment as the Thai National Mekong Committee Secretariat (TNMCS) had collaborated with Mekong Institute (MI) with objectives as follows: 1) Study and identify development mechanisms on data communication of the water level and volume in normal, severe and emergency conditions 2) Develop knowledge to create understanding on the impact of climate change towards water resources and the role of hydropower project which affects the adaptation and mitigation of water resources 3) Formulate

the cooperation for the development of technical cooperation to support risk reduction of sudden changes in water level and the impact of extreme events from the climate change which the project received supporting budget from the Chinese government through Mekong-Lancang Cooperation Special Fund at the amount of 389,600 US dollars.

The project implementation during, 11 October 2018 to 10 October 2019 had made significant progress as follows:

1. Signing Ceremony of the Memorandum of Understanding of Mekong-Lancang Cooperation on the projects under Mekong-Lancang Cooperation Special Fund which were the "Transboundary Cooperation Mechanism on Adaptation to Climate Change and Hydropower Development Project" that started implementing since 11 October 2018 with a total 2 issues of the MoU that the Permanent Secretary of the Ministry of Natural Resources and Environment of Thailand signed with the Chinese Ambassador and the Executive Director of Mekong Institute.





2. Organizing grand opening and inception meeting since 28 November 2018

3. Organizing the consultative meeting and arranging the interview of the agencies/member countries

3.1 Thai National Mekong Committee Meeting 2/2018 on 12 November 2018

3.2 1st consultative meeting and interview in Thailand had been organized 3 times from November 2018 - January 2019

3.3 1st Consultative Meeting and Interview in Lao PDR on 19 February 2019

3.4 Consultative Meeting and Interview in P.R. China on 6-9 March 2019

3.5 2nd Consultative Meeting and Interview in Thailand on 2 May 2019, the meeting acknowledged the result's presentation of

1st consultative meeting and interview (total 3 countries) and provided useful recommendations for the implementation and prepared the report.

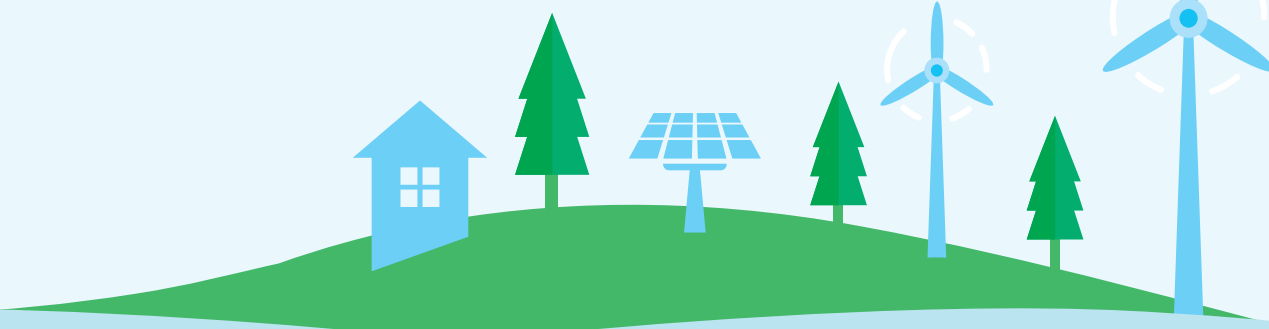
3.6 Reporting the project's progress to joint working groups on water resources in the extraordinary session on 4-5 June 2019 in Kunming, P.R. China

3.7 1st Regional Meeting on 28 June 2019

3.8 2nd Meeting and Interview in Lao PDR on 19 July 2019

3.9 2nd Regional Consultative Meeting and Project Closing on 6 August 2019

3.10 Working Group Meeting on Water Resource Management to support Mekong-Lancang Cooperation 3/2019 (Thai side) on 17 September 2019 to consider the project report (final edition) and close the project





4. Study result and operational data

4.1 Report no. 1: Impact of climate change on water resources in Mekong River Basin – the role of hydropower to reduce related risks

At present, the situation of the extreme event on water resources is more frequent and intense due to climate model data result in uncertainty of the rainfall, water flow in the river and water resources. Meanwhile, the rising of economic growth in the region has brought more energy demand causing the other countries in the region to develop the hydropower project in Mekong-Lancang. Especially, since 2010, there are a total of 64 of the construction projects of large scale hydropower in P.R. China and LAO PDR which can manage the water resources approximately 49,500 million cubic meters or 10% of annual flow volumes of Mekong-Lancang.

According to the preliminary study shows that the storage hydropower dam has the efficiency to manage flood whereas the run-of-river hydropower dam cannot anticipate how to solve the flood management problem so the strategic development for flood management by the use of hydropower /reservoir management in national and regional levels. Meanwhile, the water control by hydropower dam has the efficiency to increase water volume during the drought season. For example, in 2015-2016, there was an increase in water level and volume during drought season with no coordination or information given in advance. So, it affected people living along the Mekong River Basin in terms of lifestyle and economy such as fishery, riverbank agriculture and business in the local areas.

The sudden change in water level shows that since 2010, it had been found that the hydrological stations in Chiang Saen, Luang Prabang, Chiang Khan and Khong Chiam, especially in 2010-2017 caused by many factors whether it was the rainfall or water management of hydropower dam which was the result of electric power generation, navigation, drainage during flood season, sludge drainage.

The management of flood, drought and sudden change in water level by relying on hydropower dam and reservoir shall implement with integration. Due to it is necessary to consider the policy factors and implementation in several aspects: energy, drought/flood management, navigation, environment, international cooperation and people's lifestyle including the development of early warning for flood and drought situations as well as classification of the vulnerable area in various situations.

4.2 Report no. 2: Data and information Exchange mechanisms in Mekong-Lancang region - opportunities and challenges

According to the collection and analysis of data and information of the related cooperation frameworks in the region has found that 3 cooperation frameworks directly relate to the cooperation in information exchange on water resources in Mekong-Lancang which consist of key issues and implementation as follows:

In terms of Mekong River Commission (MRC) frameworks, there is data and information exchange on water resources according to the Agreement for the Cooperation on the Sustainable Development of the Mekong Basin 1995 and





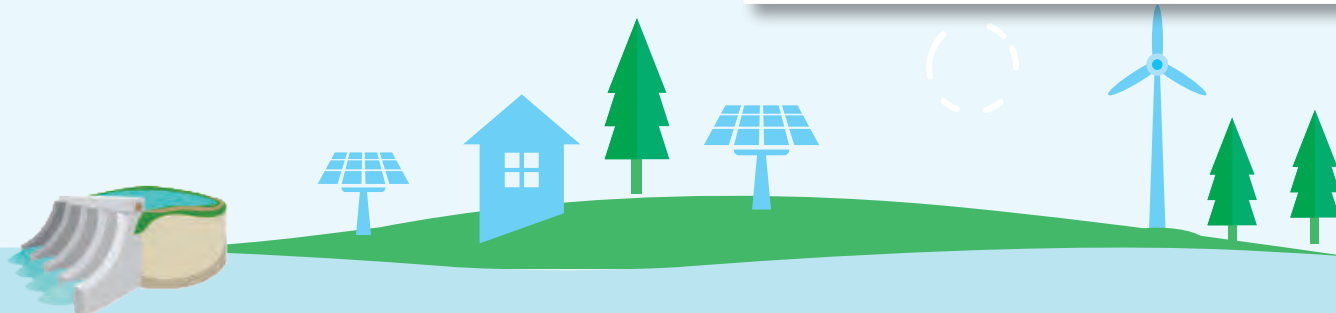
Procedures for Data and Information Exchange and Sharing 2001 by prescribing the categories of water resources data and information that will be shared among the member countries, in a total of 12 information groups including the preparation of flood forecasting system and tributary monitoring in order to disseminate in the forms of database and website. Moreover, in the part of Chinese cooperation, there is also the Agreement on Provision of Hydrological Information since 2008.

In term of Mekong-Lancang Cooperation (MLC) frameworks, there is the Memorandum of Understanding on the Sharing of Hydrological Information in Flood Season since June 2019 and notification of water release information from Jinghong dam to Mekong-Lancang River approximately 12 times since 2016, including the agreement towards the proposal of sharing of hydrological information in flood season.

It can be seen that even though the MRC or MLC will set up systems and share the hydrological information constantly, the hydrological information that sharing at present is

still limited for flood season (May-October of every year) which is not covering throughout the year and the notification of data in an emergency of flood and drought depends on the consideration of China which may be caused by hydropower management and electric power generation factors. It is still unclear about how to notify the information in any circumstances, the number of days to notify information in advance and including differences or definitions of a normal or emergency. Therefore, it is difficult for the downstream countries to forecast and provide early warnings toward the water situation which may impact people along the river banks so that they can respond to the situation in the nick of time.

Joint Committee on Coordination of Commercial Navigation on Lancang-Mekong River (JCCCN) has launched the agreement at the government levels and also the Memorandum of Understanding (MoU) in the part of the minimum water level should be designed to ensure the safe navigation as well as the information sharing of





navigation channels and water flow throughout the year especially the drought season. It is to ensure the safe navigation and development of the website containing the water data collection for navigation purposes which is currently under development and has not made much progress.

4.3 Report no. 3: Platform for Mekong-Lancang Cooperation-the Strengthening of Cooperation on Data Sharing, Joint Research and Other Cooperation Initiatives

The study and scientific data show that the policy challenges are extremely associated with climate change which continuously happens in Mekong-Lancang River Basin and has become more intense. Therefore, it leads to the uncertainty of the water flow in the Mekong River in the future, development of water infrastructures such as hydropower dam or large scale reservoir to increase the opportunity of climate change adaptation. However, from the data of water level monitoring from 4 Hydrological Stations of DWR at the upstream of Lower Mekong has found that the sudden change in water level since 2014 caused by the intense rainfall at the downstream of the dam or any other causes is needed to investigate. In the meantime, the management of hydropower dams also takes part in flood and drought control and supports navigation. On the other hand, it can also bring the risks of flood, riverbank erosion and impact on the living of people along the riverbank.

The results of cooperation in water resource information exchange show that it has been operating continuously under different cooperation frameworks which every party can have mutual benefit of close cooperation

development among member states based on improving the operational efficiency of the climate change adaptation, hydropower development and non-overlapping information exchange which encouraging the development of the existing data. From the analysis of the cooperation of international river basin organizations, it is noticeable that the water information exchange is not always the initial step for developing the cooperation, sometimes it is required to carry out simultaneously or after other cooperation activities whether it be the joint research and study, technical exchanges or cooperation projects that will bring benefits to all parties. Moreover, sometimes the agreement or treaty on water information exchange has been made but if there is no data classification or procedure to manage all of the information, it may cause the unsuccessful water information exchange as per the set goals.

The integration of the monitoring system of data and information, and the management system of MRC data and national information which is currently operating can increase the efficiency of existing water data and information exchange. Moreover, it also increases the efficiency of the impact assessment of the sudden change in water level to be able to respond to such issue in time. Furthermore, it requires the coordination of information on the management of hydropower dam and other water-related infrastructures in both mainstream and tributaries including the development of the early warning system. Meanwhile, the increasing roles and participation of work units in the energy sector are needed to carry out simultaneously.



DWR Signed the MoU with 8 Work Units to Join Forces to Enhance the Quality of Life for Farmers

The Department of Water Resources has signed the Memorandum of Understanding (MoU) on Integration of Land Reform Area Development of Seized Areas in compliance with the Announcement of the National Council for Peace and Order No. 36/2559 and Community Land Allocation Project in compliance with the government policy on 27 December 2018 at meeting room 115, Ministry of Agriculture and Cooperatives in which Mr. Suwat Piampajjai, the Director-General of DWR has signed the MoU. Moreover, the DWR executive team and officials have also joined this event.

The Memorandum of Understanding (MoU) on Integration of Land Reform Area Development of Seized Areas in compliance with the Announcement of the National Council for Peace and Order No. 36/2559 and Community Land Allocation Project in compliance with the government policy organized by Agricultural Land Reform Office collaborated with 8 work units, there are the Department of Water Resources, Department of Groundwater Resources, Royal



Irrigation Department, Provincial Electricity Authority, Department of Alternative Energy Development and Efficiency, Land Development Department, Department of Local Administration and Community Organizations Development Institute which focus on the farmers who living in the land reform area to receive the appropriate land allocation which contains essential public utilities and infrastructure to suit local conditions and the farmers can have benefits from that. Moreover, there was a promotion of farming careers for better livelihoods with stable income and better quality of life to ensure that they can make a sustainable living in the land reform areas.

Besides, the Department of Water Resources had been carried out the project of Integration of Land Reform Area Development such as topographic survey, public hearing and detail design of the construction, in a total of 86 projects since the fiscal year 2019. At present, it is still under the process of data collection of the project progress from Water Resources Regional Office 1-11 and the central office in order to report the Agricultural Land Reform Office.





DWR Signed the MoU with Department of Royal Rainmaking and Agricultural Aviation

The Department of Water Resources has signed the Memorandum of Understanding (MoU) on Academic Cooperation with the Department of Royal Rainmaking and Agricultural Aviation on 25 January 2019 in order to increase the efficiency of water resources management in which Mr. Anek Chompanich, the Deputy Director of DWR and delegation also joined this ceremony.

This MoU had objective to jointly implement the integrated water resources management in the rainfed area which focuses on the cooperation of information and academic exchange as well as the formulation of the operational plans. Therefore, it led to the efficiency of water



resources management in the rainfed area which could appropriately tackle the crisis condition and water resources disaster. Moreover, the Department of Royal Rainmaking and Agricultural Aviation brought the data analysis of soil moisture which analyzed by the Water Crisis Prevention Center of DWR to be applied to the aviation planning for efficient royal rainmaking in the rainfed area.





DWR Signed the MoU with Office of the Education Council

On behalf of the Department of Water Resources, Mr. Suwat Piampajjai, the Director-General of DWR signed the Memorandum of Understanding (MoU) on Academic Cooperation with Mr. Suphat Champatongthe, Secretary-General, on behalf of the Office of the Education Council on 31 January 2019. This MoU had objective to jointly implement and promote the cooperation on water resources management for the highest benefit and also place great importance on the development of learning management, knowledge creation and creativity and innovation of participatory water management. Moreover, there was also the strengthening and supporting for

community networks to understand each other through the series of activities organized by the Higher Education to create significant activities to promote sustainable water resources management in the community. For this reason, there was the organization of the workshop for water user groups/ water management networks for 6 times which the representatives from water use groups, water conservation networks, water management networks, natural resources and environmental protection volunteer networks and also the representatives from local administration organizations, private sector, government sector and officials from River Basin Management and Coordination Division also joined this workshop.

The Implementation of Research Project on Cooperation between Upper Ping River Basin Management and Coordination (Water Resources Regional Office 1) and Sukhothai Thammathirat Open University

On behalf of the Department of Water Resources, the Water Resources Regional Office 1, River Basin Management and Coordination Division granted the cooperation in terms of providing information in the context of the river basin to Sukhothai Thammathirat Open University and also collaborated with the river basin networks to construct linkage process of river basin networks in which Associate Professor, Dr. Sujja Banjongsiri and delegation of the study project of water resources management in different river basins, especially the research project entitled: “Participatory Water Resources Management for the Ping River Basin” in the fiscal year 2018. Moreover, there were also the projects under the research grant of integrated research and innovation program for the fiscal year 2019, requiring the implantation in the areas of Upper Ping River Basin by 2 projects as follows:

1. “Lesson and learning management toward water disaster management and water resources management of the community to create awareness and promote the development of public sector networks in the area of Ping, Wang, Yom, Nan and Upper Chao Praya River Basins” which the target group was Mae Kha Canal Network Group at Chiang Mai District, Chiang Mai Province. The network group proposed the project of water resources management in community entitled: “Mae Kha Canal’s crisis needs to be solved” which the process of creating a network for water disaster management and



water resources management consisted of 5 steps as follows:

- 1) Step for creating awareness (coordinate with related work units, organize clarification meeting and learning process)
- 2) Step for communicating with the community to join the network (coordinate with community leader, the study of community context)
- 3) Step for creating obligations (Launch rules and regulations for the network, network funds)
- 4) Step for developing relationship (Select the working group, prescribe roles, formulate a plan, carry out activities together)

5) Step for promoting and driving the network (Set up funds to be used for activity development of the network, use the social media for coordinating)

Benefit Receive

1. Mae Kha Canal Network Group and stakeholders of 80% had more understanding and also carried out activities regarding water disaster management and water resource management by taken part in sustainable water resources management.

2. SWOT analysis of Ping River Basin and Mae Kha Canal Network Group had been promoted and expended the result of water disaster management and water resources management.

2. “The capacity building on water resources management of community network with the participatory learning process in Upper Ping River Basin”, the target groups are the water user groups in the area which are 23 network groups and also 2 groups from other networks, totally 25 network groups. DWR had organized the orientation for the network groups on 7 March 2019 at Chiangmai Grandview Hotel & Convention Center in Chiangmai Province and also clarified the implantation plan of the research projects which divided into 4 phases as follows:

Phase 1: Project orientation to clarify and create understanding among water use groups

Phase 2: Researchers interview the committee and members of water user groups to study the context and prepare media related to water resources management

Phase 3: Knowledge management by 25 network groups that join the event and also carry out the activities such as dredging drainage of



ditches, improving ditches, building ditch bridges, removing weeds, building check dam, developing reservoir, performing Liang Phi Khunnam ritual, performing Liang Phi Fai ritual, organizing activity to create awareness of conservation, constructing grease trap and planting homegrown vegetables to comply with sufficiency economy philosophy.

Phase 4: Formulation of network development plans

1) Prepare the draft of network development plans on 7 March 2019 at Chiangmai Grandview Hotel & Convention Center in Chiangmai Province with the representatives from 25 network groups of Upper Ping River Basin, in a total of 150 people which consist of DWR officials, Sukhothai Thammathirat Open University officers and participants from related government agencies.

2) Organize the participatory workshop entitled, the formulation of network regulations and funds regulations, SWOT analysis and integrated plans on 21 June 2019, the participants consist of representatives from 25 groups, in a total of 50 people, DWR officials, Sukhothai Thammathirat Open University officers and participants from related government agencies around 20 people. The integrated plan of water



resources management networks of the Upper Ping River Basin community consisted of 6 aspects as follows:

Integrated plan no. 1

Network management and policy driving

Integrated plan no. 2

Promotion of culture and tradition related to water resources

Integrated plan no. 3

Capacity building and promotion of the network

Integrated plan no. 4

Funds raising

Integrated plan no. 5

Communication/publication and creation of the conscious and awareness

Integrated plan no. 6

Participatory water resources management

On 15 October 2019, Sukhothai Thammathirat



Open University had organized 1/2019 the meeting of water resources network committee of Upper Ping River Basin community at Chiangmai Grandview Hotel & Convention Center in Chiangmai Province to deliver information back to water user group networks and propose the plan of a funding proposal for the research project that will continue implementing in Upper Ping River Basin by Mr. Chainarong Kanthaprom, the chair of water resources network committee was the person who informed the meeting to acknowledge the information of database preparation in the context of the community of each water user group networks, and policy and strategic plans of the network and river basin. Moreover, there was also the consideration of appointing a person to be in a position of the committee including providing the advice and approaches for organizing the activity of the network as well as Associate Professor, Dr. Sujja Banjongsiri granted the supporting funds with the amount of 100,000 baht to the committee for further management.





Benefit Receive

1. The water user members of Upper Ping River Basin (25 groups, 335 people) had opportunity to learn and enhance the capacity of water resources management which the project launched the series of learning media and knowledge which the learners could study about the water disaster through the mobile application and they could access and repeat the learning any time so that the government didn't have to spend a lot of budget on organizing the training. Moreover, this project had launched the knowledge management handbooks for the network groups with the supporting budget of 5,000 baht that had been granted to each group.

2. 25 of water user groups gathered together to be 1 water user group network and the research project supported the initial budget of 100,000 baht to be the funds of the water user group of Upper Ping River Basin so that the group could bring this amount of money to use for organizing the activity for developing and strengthening the water resources management.

3. There was a process of information and experience exchange among the water user group and

also the information sharing about the water resources management and the lesson learned from each group. Therefore, it created an opportunity to learn from the community model of how to manage good water resources management in the Upper Ping River Basin.

4. The strengthening of group networks by moving forward the water resources development activities to cover the areas of 25 groups in which the research project had granted 5,000 baht to each group which totally the budget of 125,000 baht to organize the group activities such as performing Liang Phi Khunnam ritual, improving ditches, dredging drainage of ditches, developing the weeds around the reservoir and setting up campaigns to create awareness of water conservation

5. The research project had summarized the lesson learned about water resources management in the areas of each group in order to review the situation and problems to find the solution, monitor and prevent the problem occurs to become the guidelines for the development of the groups/their own areas.

6. The research project had improved and made the water user group and network database up to date.

7. The research project had received the integrated plan of water resources management networks of the community in Upper Ping River Basin.





The Expo, "Valuable Woods, Forest Community, People with Forest, Value-added to Thai Sea, Environmental Focus with Water in the Field, Water Supply for Every Household"

The Ministry of Natural Resources and Environment organized the expo, "Valuable Woods, Forest Community, People with Forest, Value-added to Thai Sea, Environmental Focus with Water in the Field, Water Supply for Every Household" in 4 regions of Thailand, there are north, central, north-east and south in order to promote and support people in the areas to have knowledge and understanding about the

missions of the Ministry of Natural Resources and Environment. In this exhibition, the work units under the Ministry of Natural Resources and Environment had organized the service center "MONRE Clinic" to provide service to people in the areas and the recommendations as well as receive complaints about the natural resources and environment.



The Department of Water Resources had participated in this kind of exhibitions 4 times as follows:

- 1st Exhibition on 15 - 17 February 2562 at Forest Ranger institution, Phrae Province
- 2nd Exhibition on 22 - 24 February 2562 at Dragon Paradise Park, Suphan Buri Province
- 3rd Exhibition on 1 - 3 March 2562 at Forest Management Bureau No.7, Khonkaen Province
- 4th Exhibition on 8 - 10 March 2562 at Suratthani Rajabhat University, Suratthani Province

Moreover, DWR set up an exhibition to publicize the department's missions so that people in the event could acknowledge the information such as the water resources rehabilitation project, the water distribution with solar-power project, early warning system, the monitoring system of water situation with CCTV, soil boring, drought assistances and daily situation report of Ping River Basin including the presentation of agricultural productivities from the areas that DWR had implemented the water distribution with solar-power project in order to distribute to local people in the event.





Projects under Promotion Virtue and Ethics Protection Plans of DWR in the Fiscal Year 2019

Under the promotion virtue and ethics protection plans of DWR in the fiscal year 2019 adhere to National Strategy no. 1: promoting and cultivating the good sense of virtue and ethics in the organizations, the Department of Water Resources had carried out several projects for DWR officials such as developing knowledge and cultivating virtue and ethics, adopting cooperate social responsibility, resisting corruption, learning of religion and culture in Buddhism manner and practicing to become a good Buddhist. These project implementations consist of:



The Project of Meet the Monk

- Meet Dharma

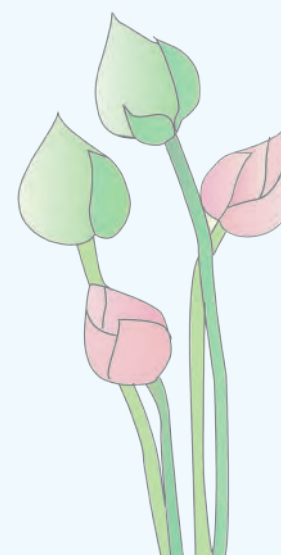
No. 1: On 10 June 2019 at Chaiyapruerk Mala Temple

No. 2: On 9 July 2019 at Mai Yai Pan Temple

No. 3: On 8 August 2019 at Taling Chan Temple

No. 4: On 6 September 2019 at Pracha Sattha Tham Temple

The Project of Happy Seminar with Nine Temples Worship
on 19 September 2019 in Nakhon Nayok Province





The Project of Dhamma Programme “Meditate” to Promote Meditation and Conscious for Livelihood

No. 1st On 23 May 2019

No. 2nd On 20 June 2019

No. 3rd On 25 July 2019

No. 4th On 22 August 2019

No. 5th On 26 September 2019

At the Department of Water Resources



The Project of Sharing for Society and Environment on 11 July 2019

at Phra Nakhon Si Ayutthaya Special Education Center



Operational Plans to Prevent and Mitigate Flood and Drought Issues



On behalf of the Department of Water Resources, the Water Crisis Prevention Center visited the area of Water Resources Regional Offices 1-11 to formulate operational plans to prevent and mitigate flood and drought issues according to the water resources calendar of the Office of the National Water Resources including launching the handbooks/operational planning guides as well. Besides, the details of the operational plans to prevent and mitigate flood and drought issues can be reviewed from the QR Code below:







DWR Joined the Government Policy on Organizing Activities for Waste Separation and Reduction in DWR Area

The Department of Water Resources organized the activity for waste separation and reduction in the area of DWR on 26 November 2018 led by Mr. Suwat Piampajjai, the Director-General of DWR was the chairman of this activity. Besides, DWR also appointed this date to be the beginning day to start No foam-No plastic campaign which already applied throughout DWR central office and Water Resources Regional Office 1-11.

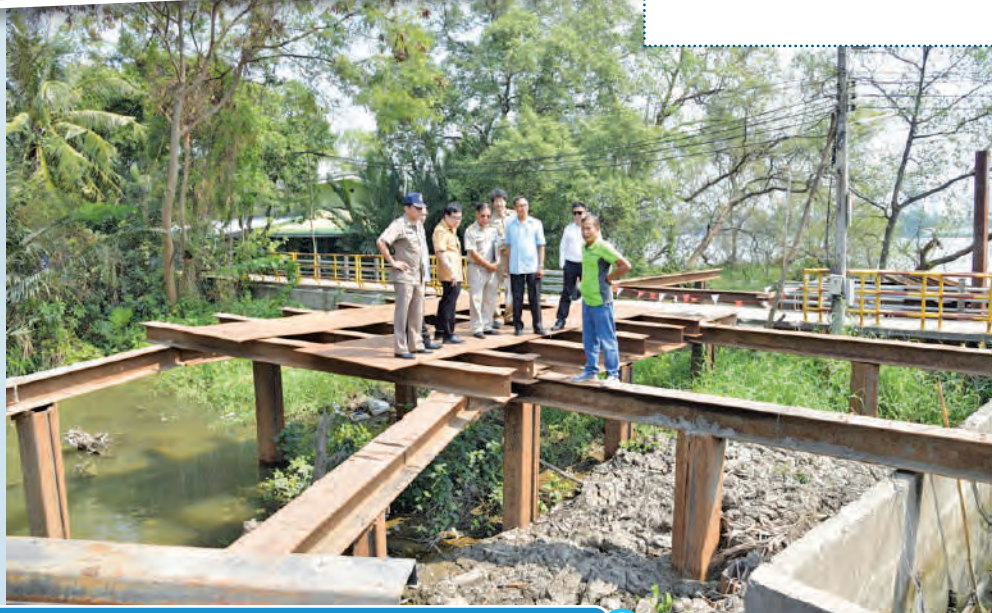


DWR Visited Khung Bang Kachao Area to Urge Saltwater Intrusion Solution

On 21 January 2019, the Department of Water Resources led by Mr. Suwat Piampajjai, the Director-General of DWR along with DWR executive team and local government agencies such as the Royal Irrigation Department, Local Administration Organization, Sheriff of Prapa Daeng District, Public Network and concerned parties of 6 sub-districts in Khung Bang Kachao area joined to listen to the problems and find approaches to solve the impact of saltwater intrusion solution to the agricultural land and traffic area around the entrance of Khung Bang Kachao according to the public complaints so that it could return to its full capacity utilization.



Moreover, the Ministry of Natural Resources and Environment had assigned DWR to find actual root causes of the problem in the area and urge for the solutions to relieve the suffering of people in Khung Bang Kachao area adhere to the government policy of promoting a good livelihood under the natural resources and environment management with sustainability.



Part 5

Appendix



มหาวิทยาลัยเทคโนโลยีราชมงคล
กรุงเทพ

Order of Appointment of the Working Group for Considering the Department of Water Resource's Annual Report Issuance



คำสั่งกรมทรัพยากรน้ำ
ที่ ๓๔๒/๒๕๖๑

เรื่อง แต่งตั้งคณะทำงานพิจารณาการจัดทำรายงานประจำปีของกรมทรัพยากรน้ำ

เพื่อให้การจัดทำรายงานประจำปีของกรมทรัพยากรน้ำ เป็นระบบและมีมาตรฐานเดียวกัน สามารถแสดงความก้าวหน้าและความสำเร็จของการดำเนินงานตามยุทธศาสตร์หรือแผนกลยุทธ์ของหน่วยงาน ได้อย่างเป็นรูปธรรม และเพื่อสร้างความรู้ความเข้าใจในบทบาท ภารกิจ และการดำเนินงานเกี่ยวกับการพัฒนาประเทศ ของส่วนราชการ อันจะนำไปสู่การมีส่วนร่วมในกระบวนการพัฒนาประเทศ หรือการนำไปใช้ประโยชน์ของ สาธารณชน จึงแต่งตั้งคณะทำงานพิจารณา การจัดทำรายงานประจำปีของกรมทรัพยากรน้ำ โดยมี องค์ประกอบและหน้าที่ ดังนี้

องค์ประกอบ

๑. รองอธิบดีกรมทรัพยากรน้ำ (อธิบดีกรมทรัพยากรน้ำมอบหมาย)	ประธานคณะทำงาน
๒. หัวหน้าผู้ตรวจราชการกรม หรือผู้แทน	คณะทำงาน
๓. ผู้อำนวยการศูนย์ป้องกันวิกฤตน้ำ หรือผู้แทน	คณะทำงาน
๔. ผู้อำนวยการสำนักบริหารจัดการน้ำ หรือผู้แทน	คณะทำงาน
๕. ผู้อำนวยการสำนักประสานความร่วมมือระหว่างประเทศ หรือผู้แทน	คณะทำงาน
๖. ผู้อำนวยการสำนักพัฒนาแหล่งน้ำ หรือผู้แทน	คณะทำงาน
๗. ผู้อำนวยการสำนักวิจัย พัฒนาและอุทกวิทยา หรือผู้แทน	คณะทำงาน
๘. ผู้อำนวยการสำนักส่งเสริมและประสานมวลชน หรือผู้แทน	คณะทำงาน
๙. ผู้อำนวยการสำนักอนุรักษ์และฟื้นฟูแหล่งน้ำ หรือผู้แทน	คณะทำงาน
๑๐. ผู้อำนวยการสำนักบริหารจัดการลุ่มน้ำระหว่างประเทศ หรือผู้แทน	คณะทำงาน
๑๑.-๒๑. ผู้อำนวยการสำนักงานทรัพยากรน้ำภาค ๑-๑๑ หรือผู้แทน	คณะทำงาน
๒๒. ผู้อำนวยการกลุ่มพัฒนาระบบบริหาร หรือผู้แทน	คณะทำงาน
๒๓. เลขาธิการกรม	คณะทำงานและ เลขานุการ
๒๔. ผู้อำนวยการสำนักนโยบายและแผนทรัพยากรน้ำ	คณะทำงานและ เลขานุการ
๒๕. เจ้าหน้าที่สำนักนโยบายและแผนทรัพยากรน้ำ	คณะทำงานและ ผู้ช่วยเลขานุการ

อำนาจหน้าที่...

-๒-

อำนาจหน้าที่

๑. กำหนดรูปแบบ กรอบเนื้อหาการจัดทำรายงานประจำปีของกรมทรัพยากรน้ำ ตามกรอบรูปแบบและแนวทางที่สำนักงานคณะกรรมการพัฒนาการเศรษฐกิจและสังคมแห่งชาติ (สศช.) กำหนด
 ๒. พิจารณาข้อมูล เนื้อหา รูปภาพ และอื่นๆที่เกี่ยวข้องในการจัดทำรายงานประจำปีของกรมทรัพยากรน้ำ
 ๓. ดำเนินการอื่นๆ ที่เกี่ยวข้องตามที่ได้รับมอบหมาย
- ทั้งนี้ ตั้งแต่บัดนี้เป็นต้นไป

สั่ง ณ วันที่ ๒ สิงหาคม พ.ศ. ๒๕๖๑



(นายวรวิทย์ วัฒนศิริ)
อธิบดีกรมทรัพยากรน้ำ



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Bureau of Water Resources Management
Bureau of Water Resources Conservation and Rehabilitation
Bureau of Mass Promotion and Coordination
Bureau of Research, Development and Hydrology
Bureau of Water Resources Development
Bureau of International Cooperation
Bureau of International River Basin Management
Water Crisis Prevention Center
Water Resources Information Technology Center
Public Sector Development Group
Legal Affairs Group
Water Resources Regional Office 1-11

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