Water Resources Agency,
Ministry of Economic Affairs
Profile

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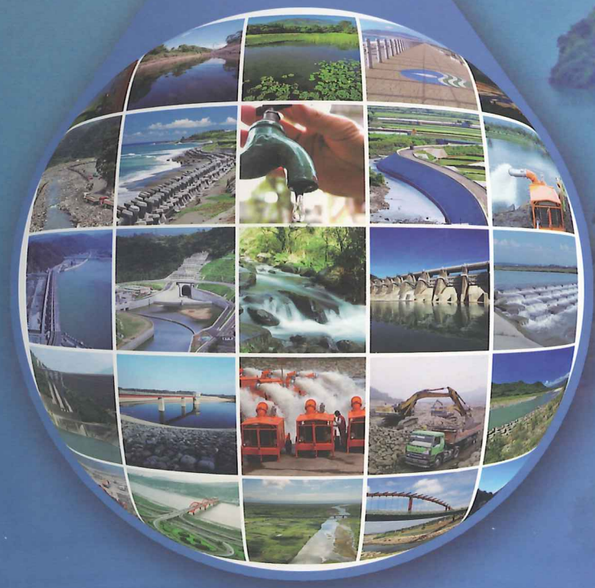
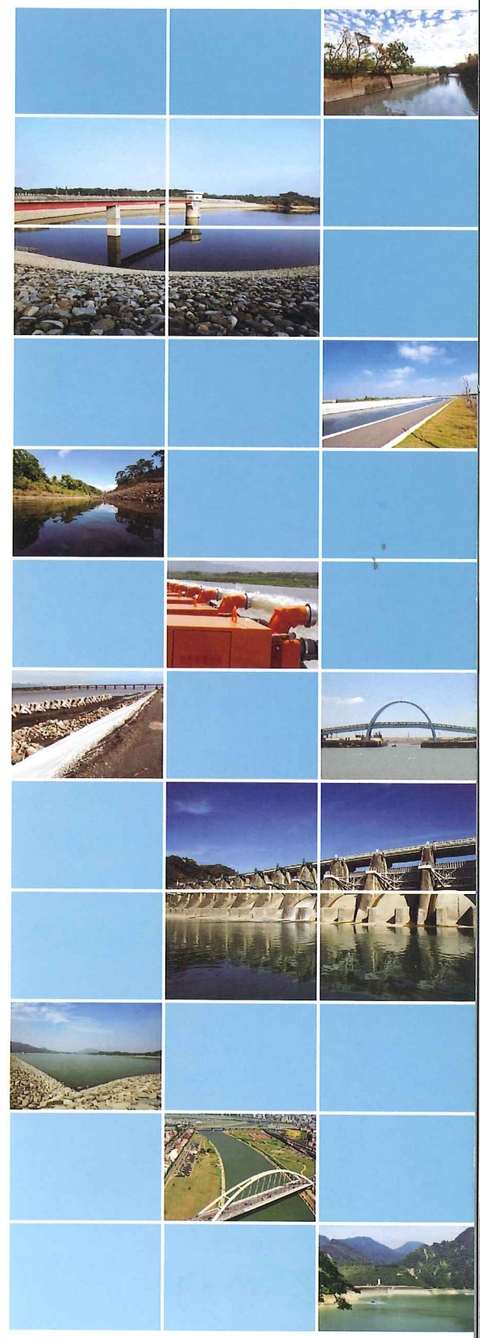
Profile



CONTENTS



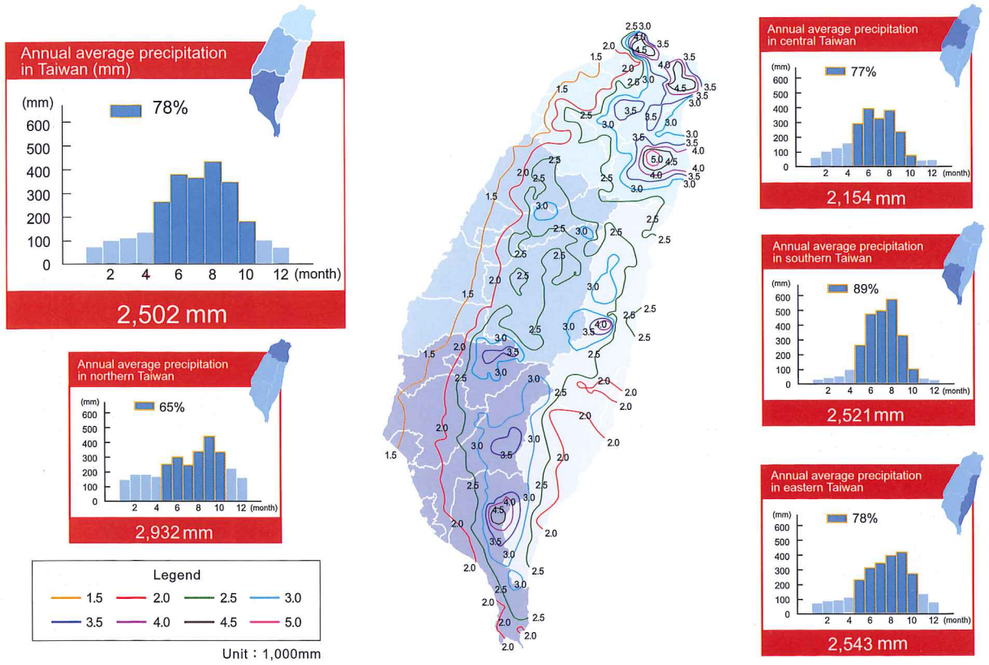
I. Water Environment in Taiwan

The Long-term Average Annual Precipitation in Taiwan from 1949 to 2009 is estimated at 2,502 mm.

A. Hydrological Environment

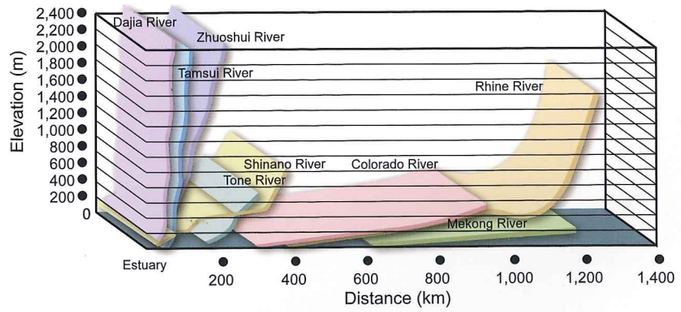
◆Precipitation in Taiwan

- Isohyetal Map Indicating Distribution of Average Annual Precipitation in Taiwan (1949 – 2009)

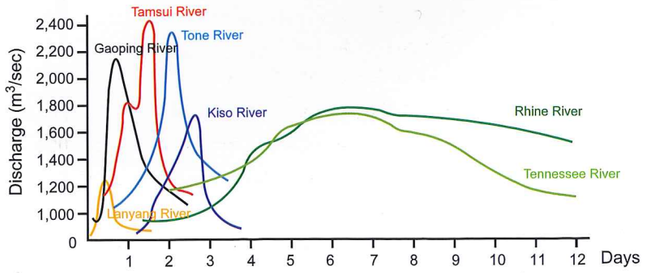


◆Rivers of Taiwan

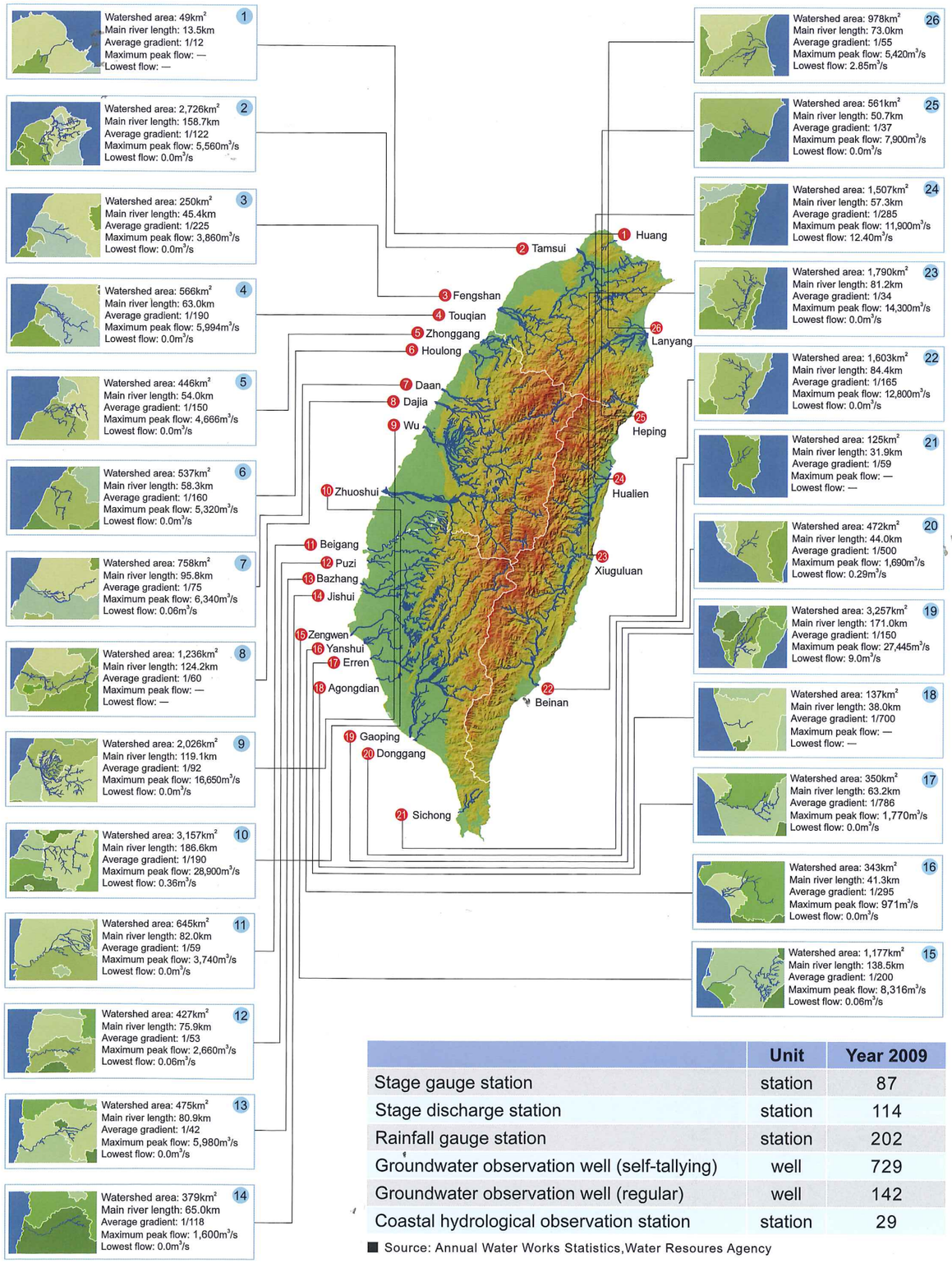
- Comparison of river slopes



- Comparison of flood hydrographs



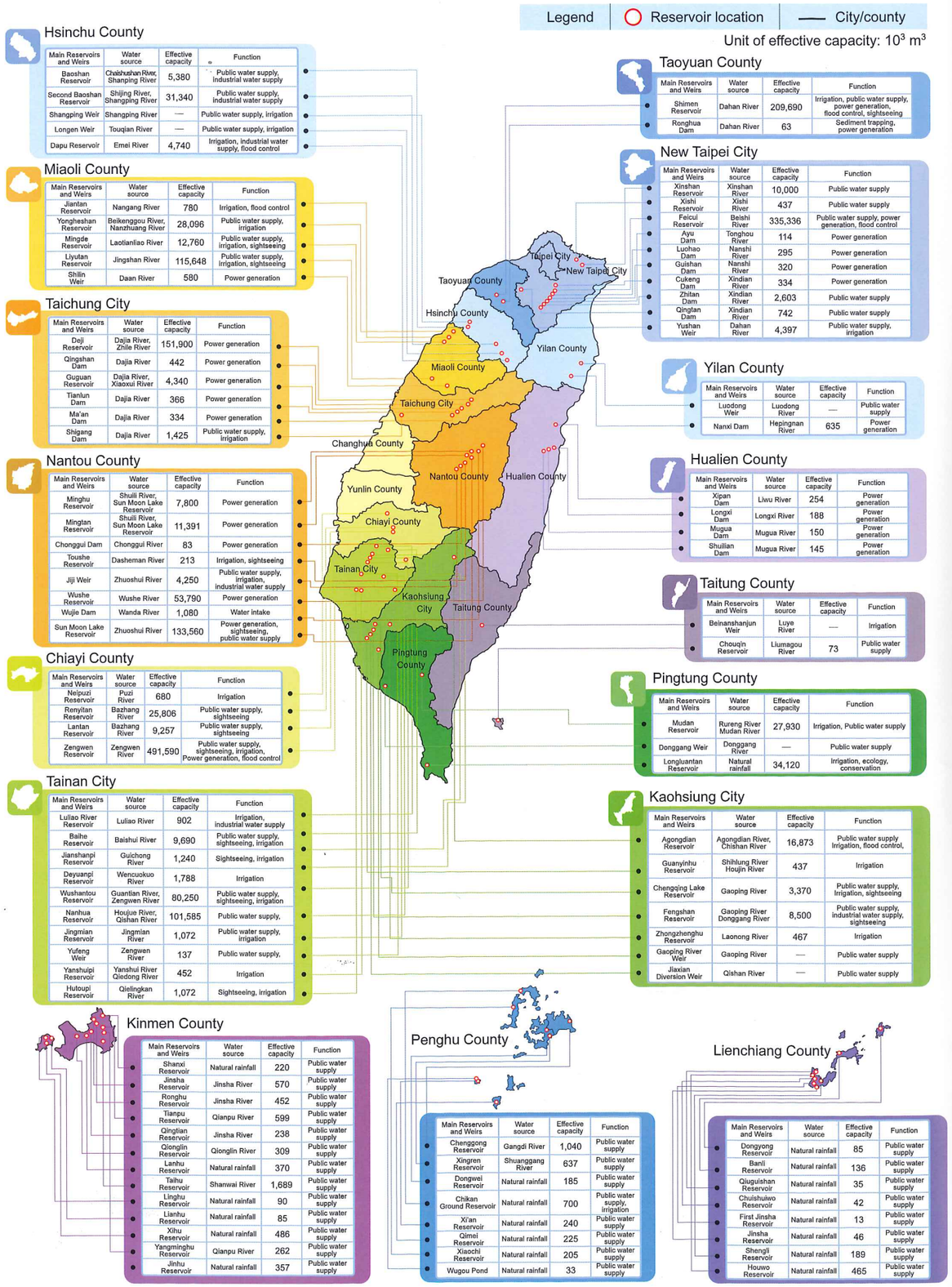
◆Basic hydrological data



	Unit	Year 2009
Stage gauge station	station	87
Stage discharge station	station	114
Rainfall gauge station	station	202
Groundwater observation well (self-tallying)	well	729
Groundwater observation well (regular)	well	142
Coastal hydrological observation station	station	29

■ Source: Annual Water Works Statistics,Water Resoures Agency

◆Reservoirs, dams and weirs of Taiwan



Hsinchu County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Baoshan Reservoir	Chaishushan River, Shanping River	5,380	Public water supply, industrial water supply
Second Baoshan Reservoir	Shijing River, Shangping River	31,340	Public water supply, industrial water supply
Shangping Weir	Shangping River	—	Public water supply, irrigation
Longen Weir	Touqian River	—	Public water supply, irrigation
Dapu Reservoir	Emei River	4,740	Irrigation, industrial water supply, flood control

Miaoli County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Jiantan Reservoir	Nangang River	780	Irrigation, flood control
Yongheshan Reservoir	Beikenggou River, Nanzhuang River	28,096	Public water supply, irrigation
Mingde Reservoir	Laotianliao River	12,760	Public water supply, irrigation, sightseeing
Liyutan Reservoir	Jingshan River	115,648	Public water supply, irrigation, sightseeing
Shilin Weir	Daan River	580	Power generation

Taichung City

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Deji Reservoir	Dajia River, Zhile River	151,900	Power generation
Qingshan Dam	Dajia River	442	Power generation
Guguan Reservoir	Dajia River, Xiaoxui River	4,340	Power generation
Tianlun Dam	Dajia River	366	Power generation
Ma'an Dam	Dajia River	334	Power generation
Shigang Dam	Dajia River	1,425	Public water supply, irrigation

Nantou County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Minghu Reservoir	Shuili River, Sun Moon Lake Reservoir	7,800	Power generation
Mingtan Reservoir	Shuili River, Sun Moon Lake Reservoir	11,391	Power generation
Chonggui Dam	Chonggui River	83	Power generation
Toushe Reservoir	Dasheman River	213	Irrigation, sightseeing
Jiji Weir	Zhuoshui River	4,250	Public water supply, irrigation, industrial water supply
Wushe Reservoir	Wushe River	53,790	Power generation
Wujie Dam	Wanda River	1,080	Water intake
Sun Moon Lake Reservoir	Zhuoshui River	133,560	Power generation, sightseeing, public water supply

Chiayi County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Neipuzi Reservoir	Puzi River	680	Irrigation
Renyitan Reservoir	Bazhang River	25,806	Public water supply, sightseeing
Lantan Reservoir	Bazhang River	9,257	Public water supply, sightseeing
Zengwen Reservoir	Zengwen River	491,590	Public water supply, sightseeing, irrigation, Power generation, flood control

Tainan City

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Luliao River Reservoir	Luliao River	902	Irrigation, industrial water supply
Baihe Reservoir	Baishui River	9,690	Public water supply, sightseeing, irrigation
Jianshanpi Reservoir	Gulchong River	1,240	Sightseeing, irrigation
Deyuanpi Reservoir	Wencuokuo River	1,788	Irrigation
Wushantou Reservoir	Guantian River, Zengwen River	80,250	Public water supply, sightseeing, irrigation
Nanhua Reservoir	Houjue River, Qishan River	101,585	Public water supply,
Jingmian Reservoir	Jingmian River	1,072	Public water supply, irrigation
Yufeng Weir	Zengwen River	137	Public water supply,
Yanshuipi Reservoir	Yanshui River Qiedong River	452	Irrigation
Hutoupi Reservoir	Qielingkan River	1,072	Sightseeing, irrigation

Kinmen County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Shanxi Reservoir	Natural rainfall	220	Public water supply
Jinsha Reservoir	Jinsha River	570	Public water supply
Ronghu Reservoir	Jinsha River	452	Public water supply
Tianpu Reservoir	Qianpu River	599	Public water supply
Qingtian Reservoir	Jinsha River	238	Public water supply
Qionglin Reservoir	Qionglin River	309	Public water supply
Lanhu Reservoir	Natural rainfall	370	Public water supply
Taihu Reservoir	Shanwai River	1,689	Public water supply
Linghu Reservoir	Natural rainfall	90	Public water supply
Lianhu Reservoir	Natural rainfall	85	Public water supply
Xihu Reservoir	Natural rainfall	486	Public water supply
Yangminghu Reservoir	Qianpu River	262	Public water supply
Jinhu Reservoir	Natural rainfall	357	Public water supply

Taoyuan County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Shimen Reservoir	Dahan River	209,690	Irrigation, public water supply, power generation, flood control, sightseeing
Ronghua Dam	Dahan River	63	Sediment trapping, power generation

New Taipei City

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Xinshan Reservoir	Xinshan River	10,000	Public water supply
Xishi Reservoir	Xishi River	437	Public water supply
Feicui Reservoir	Beishi River	335,336	Public water supply, power generation, flood control
Ayu Dam	Tonghou River	114	Power generation
Luohao Dam	Nanshi River	295	Power generation
Guishan Dam	Nanshi River	320	Power generation
Cukeng Dam	Xindian River	334	Power generation
Zhitan Dam	Xindian River	2,603	Public water supply
Qingtan Dam	Xindian River	742	Public water supply
Yushan Weir	Dahan River	4,397	Public water supply, irrigation

Yilan County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Luodong Weir	Luodong River	—	Public water supply
Nanxi Dam	Hepingnan River	635	Power generation

Hualien County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Xipan Dam	Liwu River	254	Power generation
Longxi Dam	Longxi River	188	Power generation
Mugua Dam	Mugua River	150	Power generation
Shuilian Dam	Mugua River	145	Power generation

Taitung County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Beinanshanjun Weir	Luye River	—	Irrigation
Chouqin Reservoir	Liumagou River	73	Public water supply

Pingtung County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Mudan Reservoir	Rureng River Mudan River	27,930	Irrigation, Public water supply
Donggang Weir	Donggang River	—	Public water supply
Longluantan Reservoir	Natural rainfall	34,120	Irrigation, ecology, conservation

Kaohsiung City

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Agongdian Reservoir	Agongdian River, Chishan River	16,873	Public water supply Irrigation, flood control,
Guanyinhu Reservoir	Shihlung River Houjin River	437	Irrigation
Chengqing Lake Reservoir	Gaoping River	3,370	Public water supply, Irrigation, sightseeing
Fengshan Reservoir	Gaoping River Donggang River	8,500	Public water supply, industrial water supply, sightseeing
Zhongzhenghu Reservoir	Laonong River	467	Irrigation
Gaoping River Weir	Gaoping River	—	Public water supply
Jiaxian Diversion Weir	Qishan River	—	Public water supply

Penghu County

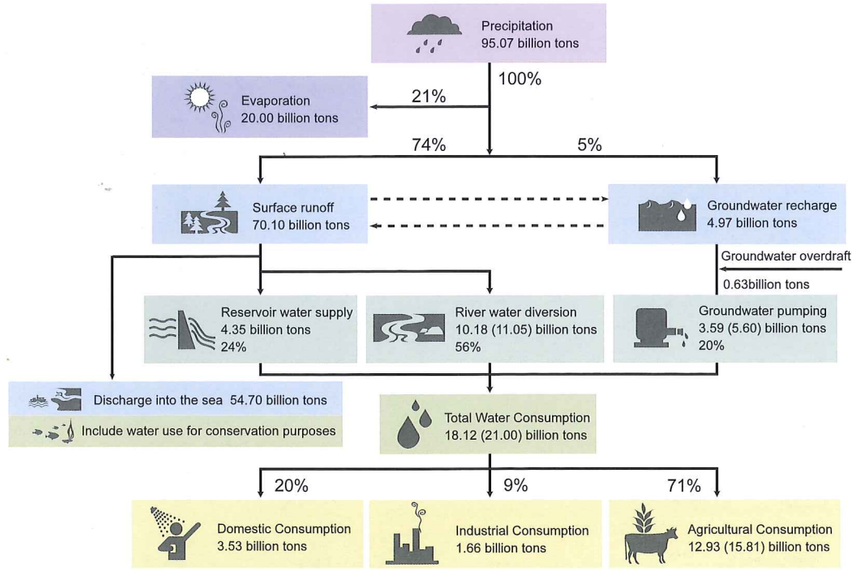
Main Reservoirs and Weirs	Water source	Effective capacity	Function
Chenggong Reservoir	Gangdi River	1,040	Public water supply
Xingren Reservoir	Shuanggang River	637	Public water supply
Dongwei Reservoir	Natural rainfall	185	Public water supply
Chikan Ground Reservoir	Natural rainfall	700	Public water supply, irrigation
Xi'an Reservoir	Natural rainfall	240	Public water supply
Qimei Reservoir	Natural rainfall	225	Public water supply
Xiaochi Reservoir	Natural rainfall	205	Public water supply
Wugou Pond	Natural rainfall	33	Public water supply

Lienchiang County

Main Reservoirs and Weirs	Water source	Effective capacity	Function
Dongyong Reservoir	Natural rainfall	85	Public water supply
Banli Reservoir	Natural rainfall	136	Public water supply
Qiuguishan Reservoir	Natural rainfall	35	Public water supply
Chuishuiwo Reservoir	Natural rainfall	42	Public water supply
First Jinsha Reservoir	Natural rainfall	13	Public water supply
Jinsha Reservoir	Natural rainfall	46	Public water supply
Shengli Reservoir	Natural rainfall	189	Public water supply
Houwo Reservoir	Natural rainfall	465	Public water supply

B. Water Resources Utilization

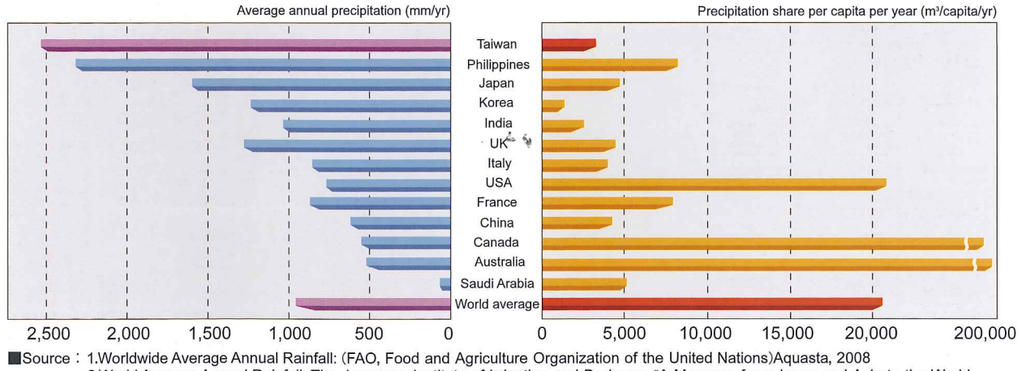
◆Current water resources utilization



Note: numbers in ( ) include irrigation water use in addition to that of regional irrigation associations and farms belonging to Taiwan Sugar Corporation

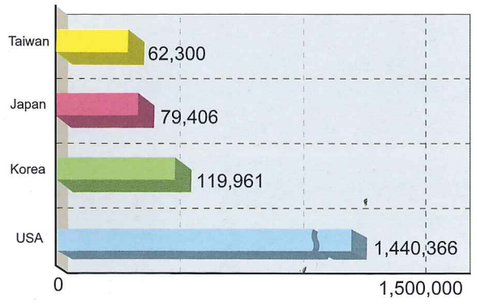
Utilization of Water Resources in Taiwan (Average Water Resources Utilization from 2000 to 2009)

◆Comparison of average annual precipitation

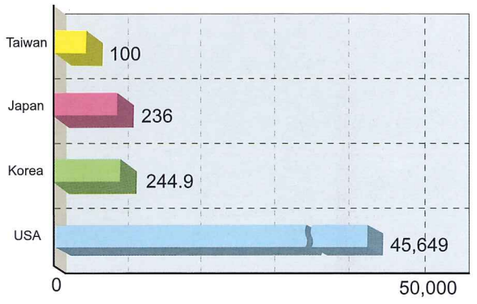


■Source：1.Worldwide Average Annual Rainfall: (FAO, Food and Agriculture Organization of the United Nations)Aquasta, 2008
2.World Average Annual Rainfall: The Japanese Institute of Irrigation and Drainage, "A Message from Japan and Asia to the World Water Discussion—prepared for the 3rd World Water Forum", 2003

◆Water storage capacity per unit area of national land (tons/km²)



◆Per capita share of reservoir water storage (tons/person)



■*Data Sets of the 16th World Water Day*, Korean Institute of Water and Environment, KOWACO. 2008

Water Environment in Taiwan

II. Organization

A. History

Central Water Agencies

1946 Ministry of Water Conservancy

reduction and merger

1949 Water Conservancy Agency, MOEA

curtailment

1949 Water Conservancy Department, MOEA

merger and formation

1954 Dajia River Planning & Development Committee

1955 Water Resources Unified Planning Committee, MOEA

merger

1959 Water Conservancy Experiment Department

1996 Water Resources Bureau, MOEA

1999 Water Conservancy Agency, MOEA

1999 Taipei Water Resources Specific Committee, MOEA

merger and formation

2002 Water Resources Agency, MOEA

merger of affiliated agencies

Provincial Water Agencies

1947 Irrigation Conservancy Bureau, Department of Agriculture and Forestry, TPG

1947 Public Construction Bureau, Department of Construction, TPG

reorganization and partial merger

1947 Water Conservancy Bureau, Department of Construction, TPG

1956 Water Conservancy Bureau, TPG

1976 Land Resources Development Committee, TPG

streamlining of provincial government

reduction and merger

1997 Water Conservancy Department, TPG

The Sixth Section of Department of Construction, TPG

merger and formation

1984 Taipei Water Resources Specific Committee, TPG

- Shihmen Reservoir Administration
- Liyutan Reservoir Administration
- Tsengwen Reservoir Administration

B. Functions and Responsibilities

Water Resources Agency, MOEA

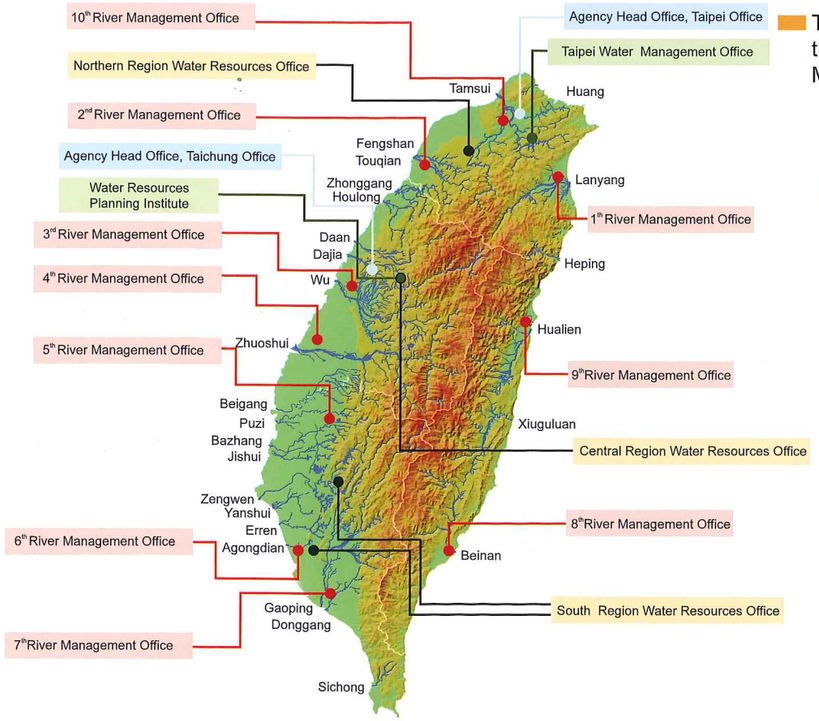
Planning Division	Water resources policies and laws, organizational planning, climate change, water resources industry, sustainable development of water resources, management and review of administrative plans, development of water resources technologies, and international cooperation
Hydrology Division	Hydrological observations of surface water, groundwater and coastal water, prevention and treatment of land subsidence, and development of deep-sea water technologies
Management Division	Water resources development, management, and regulation
River and Coast Division	River and drainage improvement, coast protection, flood mitigation planning, and river environment improvement
Conservation Division	Reservoir storage area management (including protection buffer zone) , water saving, administration of hot spring enterprises, water supply enterprises; Planning, conservation, compensation, management, and supervision of regions dedicated for water quality and quantity protection
Construction Division	Water engineering works, supervision, construction management, and regulation
Water Administration Division	Water laws and regulations, water rights registration, and management of rivers, drainages, and coastal dikes
Land Management Division	Construction land acquisition, water resources land use management, and spatial planning for water environment plan
Information Management	System management and information service
River Survey Team	Survey, delineation, and promulgation of the scope of river basins, sea dikes area, and drainage facilities area
Water Hazard Mitigation Center	Flood and drought disaster mitigation and relief
Secretariat	Administrative and general affairs, disbursements and receipts, and supervision and review of administrative procedures
Personnel Office	Development of organizational systems, personnel employment and discharge, reward and discipline, and welfare affairs management
Accounting Office	Preliminary budget estimation and planning, settlement of accounts, and statistics of revenues and expenditures
Civil Service Ethics Office	Prevention and investigation of government ethics violation, general government ethics

Affiliated Agencies

Water Resources Office (Northern, Central, and South Region)	Management of regional water resources, water rights, reservoir operations, and watershed conservation
River Management Office (1st to 10th)	Management and regulation of rivers under central government jurisdiction and regional drainages crossing city-county boundaries; Flood control and emergency response
Taipei Water Management Office	Land use control, watershed management, and improvement with maintenance of environment and water quality of Qingtan Water Quality and Quantity Protection Area along Xindian River
Water Resources Planning Institute	Investigation, planning, research, and analysis of water resources engineering projects

Organization

C. Affiliated Agencies

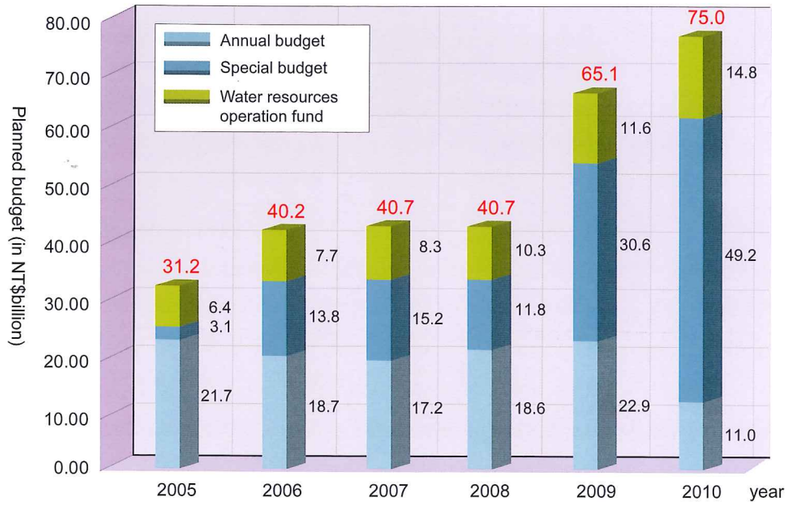


Affiliated Agencies	Location	Jurisdiction		Regional drainages under central goverment jurisdiction
		River (s)	Coast (s)	
1st River Management Office	Yilan City	Lanyang and Heping Rivers	Yilan County, part of New Taipei City and Matsu coasts	—
2nd River Management Office	Hsinchu City	Fengshan, Touqian, Zhonggang, and Houlong Rivers	Taoyuan County, Hsinchu City and Hsinchu County, and part of Miaoli County coasts	8
3rd River Management Office	Taichung City	Daan, Dajia, and Wu Rivers	Part of Miaoli County and Taichung City coasts	13
4th River Management Office	Changhua County	Zhuoshui River	Changhua County coast	1
5th River Management Office	Chiayi City	Beigang, Puzi, Bazhang, and Jishui Rivers	Yunlin County, Chiayi County, and part of Tainan City coasts	7
6th River Management Office	Kaohsiung City	Zengwen, Yanshui, Erren, and Agondian Rivers	Part of Tainan City and Kaohsiung City coasts	8
7th River Management Office	Pingtung City	Gaoping, Donggang, and Sichong Rivers	Pingtung County and Penghu County coasts	3
8th River Management Office	Taitung County	Beinan River	Taitung County, Kinmen County, Lienchiang County coasts	—
9th River Management Office	Hualien County	Xiuguluan and Hualien Rivers	Hualien County coast	—
10th River Management Office	New Taipei City	Tamsui and Huang Rivers	Part of New Taipei City and Keelung City coasts	4

Affiliated Agencies	Location	Scope of Jurisdiction	
		Jurisdiction	Major Reservoirs, Dams and Weirs
Northern Region Water Resources Office	Taoyuan County	From northern border of Hsinchu County up to Yilan and Hualien Counties in the east	Shimen, Xinshan, Baoshan, Second Baoshan, Dapu Reservoirs, and Longen Weir
Central Region Water Resources Office	Taichung City	From southern border of Miaoli County up to northern boarder of Yunlin County	Yongheshan, Mingde, Guguan, Deji, Liyutan, Wushe, Sun Moon Lake, Minghu, Mingtan Reservoirs, Shigang Dam, and Jiji Weir
South Region Water Resources Office	Tainan City Kaohsiung City	From southern border of Chiayi County down to Pingtung and Taitung Counties in the east, and Penghu County	Renyitan, Lantan, Baihe, Jianshanpi, Nanhua, Wushantou, Zengwen, Mudan, Agongdian, Fengshan Reservoirs, Gaoping River Weir, and Jiaxian Weir
Taipei Watersh Management Office	New Taipei City	Chintan water source, quality and quantity reservation area of Hsintien River	Feicui Reservoir
Water Resources Planning Institute	Taichung City	Investigation, planning, research and analysis of water resources engineering projects	

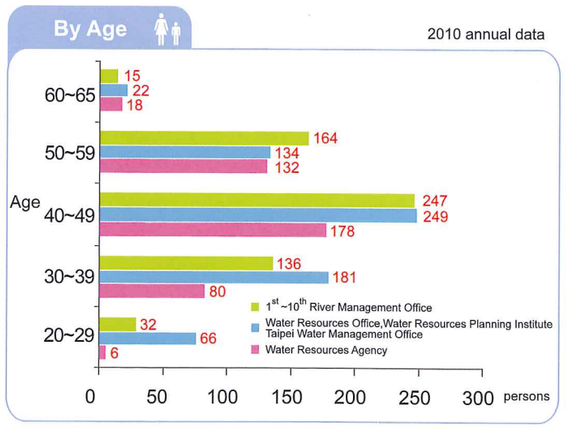
D. Budget and Workforce

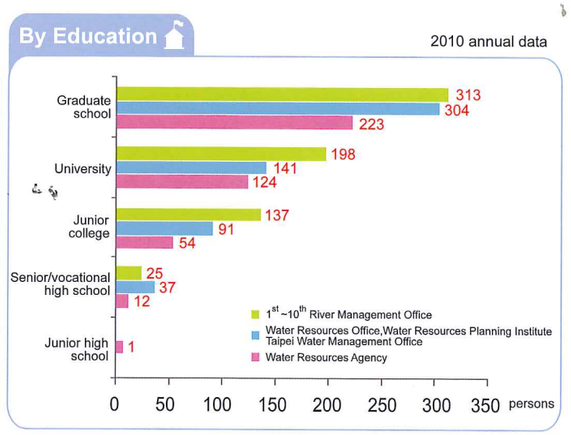
◆Budget

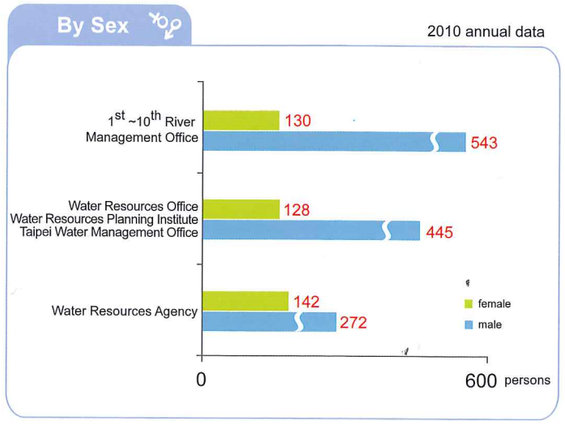


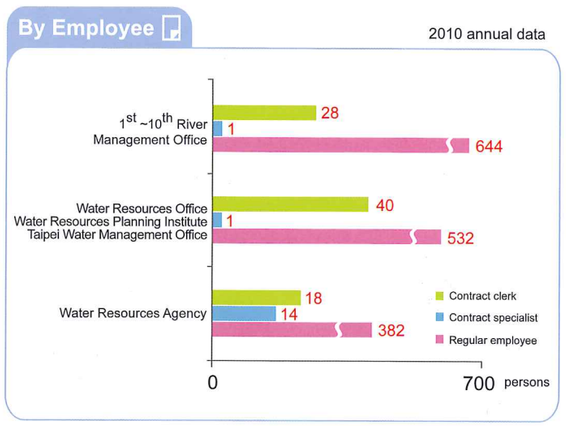
◆Workforce

Water Resources Agency: 414 employees / Affiliated Agencies: 1,246 employees
Total: 1,660 employees









III. Key Operations

A. Flood Control and Protection against Tidal Waves

◆River flood control and water regulation under central government jurisdiction

- Scope: 26 watersheds including 24 rivers under central government jurisdiction and 2 cross-city rivers (Tamsui River and Huang River), starting from the regulation boundary announced by the government
- Scope of operations:
  1. Administration of integrated river flood control and water regulation plans
  2. Formulation and promulgation of fundamental river regulation projects
  3. Allocation and implementation of budgets for river regulation and environmental construction
  4. Planning land implementation of river survey projects
  5. Planning land implementation of natural disaster relief and reconstruction projects
  6. Planning land implementation of river flood control and mitigation projects
  7. Safety inspection on river flood control facilities

◆Regional drainage and flood control operations in areas under central government jurisdiction

- Scope: Regional drainage operations within the start and end points of regulation boundaries for 44 river segments under central government jurisdiction
- Scope of operations:
  1. Administration of integrated water drainage and regulation plans
  2. Formulation and promulgation of fundamental drainage management plans
  3. Allocation and implementation of budgets for drainage regulation and environmental construction
  4. Survey, research, and planning of drainage projects
  5. Maintenance and management of drainage systems

◆Management of sea dikes

- Scope: implementation of regular sea dike management
- Scope of operations:
  1. Development of coastal protection and maintenance plan with relevant regulations
  2. Administration and implementation of coastal land use plans
  3. Allocation and implementation of annual budgets for coastal engineering projects
  4. Promotion and implementation of coastal protection plans
  5. Planning and implementation of sea dikes construction and maintenance projects
  6. Safety inspection on sea dikes and related facilities

B. Water Resources Development and Allocation

◆Water resources planning

- Formulation of water resources management plans and regional water resources programs
- Review and supervision of the survey and planning of water resources distribution and development projects
- Formulation of supervision procedures and specifications on water resources planning and operations
- Impact assessment of water resources development on the environment, with preparation and implementation of water resources plans

◆Water resources development

- Review, supervision, and implementation of water resources development plans
- Allocation, distribution, adjustment, and control of annual budget for water resources development
- Review of water resources development engineering design principles
- Establishment of water resources engineering design specification

◆Safety maintenance of water resources facilities and water supply engineering works

- Review, preparation, and supervision of water supply engineering investment or subsidy plans
- Management, distribution, and audit of funds for water resources operations
- Assistance in implementation of irrigation operations
- Preparation, implementation, and supervision of inspection plans for reservoir preparedness
- Implementation and review of hydraulic structure inspection and safety assessment

◆Water resources management

- Statistics, analysis, and total quality control for each water consumption purpose
- Planning, development, review, supervision, and implementation of reservoir operation and management
- Supervision of reivew, announcement, utilization, and management of reservoir storage area
- Review, tracking, and examination of water utilization proposals
- Survey, analysis, distribution, and coordination of current water resources utilization including conflict management of water consumption issues

■ Second Baoshan Reservoir

■ Penghu Desalination Plant

C. Water Administration and Management

◆Key operations

- Planning, announcement, and management of rivers under central government jurisdiction, regional drainage systems, and sea dikes and their respective boundaries
- Establishment and supervision of regulations and plans for dredging and gravel exploitation operations at rivers and drainages
- Formulation and supervision of regulations governing the management of hydraulic structure construction, reconstruction, and demolition
- Formulation and supervision of management system and plan for water rights registration
- Formulation and supervision of management system and plan for well drilling industry
- Establishment, implementation, and supervision of illegal wells management
- Formulation, implementation, and supervision of land subsidence prevention proposals and groundwater conservation management plans
- Planning and announcement of groundwater control zones and severe land subsidence zones

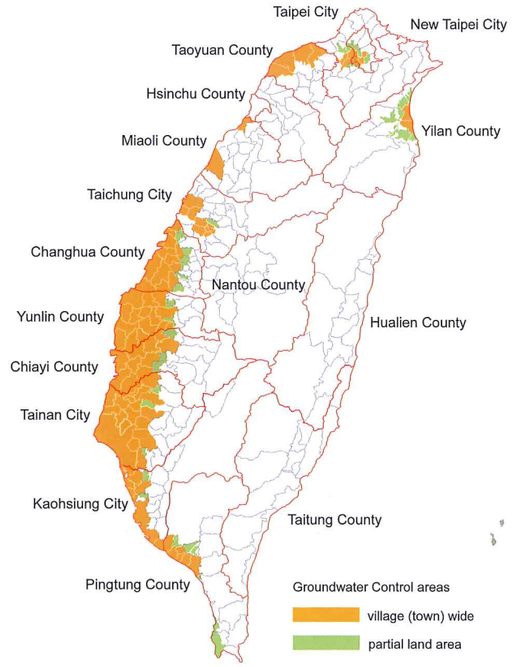
◆Key tasks

- Management of rivers, drainages, and regular sea dikes:
  1. Evaluation, establishment, amendment, and interpretation of river, drainage, and sea dike management laws, orders, and administrative regulations
  2. Establishment of river, drainage, and sea dike management information system to enable automatic, instantaneous, and statistical management of information, thereby enhancing efficiency of management and realizing modern management operations
  3. Supervision of river, drainage, and sea dike management conducted by the River Management Offices, especially on forbidden and restricted behaviors subjected to government authorization
  4. Organization of education and training programs for management personnel to enhance practical knowledge, ability, and application of law and regulation
  5. Application of satellite remote sensing technology for reporting land use variation to control infractions
  6. Assistance in implementation of fugitive dust control and industrial waste management with environmental landscaping concepts
- Water rights management:
  1. Enhancing management of water usage scope of water rights
  2. Model improvement and system building for the computation of potential surface water quantity
  3. Implementation of strategies for illegal wells management
- Dredging and management of sand and gravel:
  1. Acceleration of dredging operations at rivers and drainages
  2. Improvement of sand and gravel management system
  3. Enhancing functions of monitoring center and management of the center for equipment confiscation

◆Groundwater management

- Groundwater control areas

City/County	Administrative Districts Covered
Taipei City	Datong, Songshan, Wanhua, Zhongzheng, Da'an District and part of Beitou, Wenshan, Shilin, Neihu, Nangang, Xinyi, and Zhongshan Districts
New Taipei City	Sanchong, Banqiao, Luzhou, Yonghe, Xinzhuang Districts and parts of Wugu and Zhonghe Districts
Taichung City	Xitun, Nantun, West, North, East, Central, South, Qingshui, Wuqi, Shalu Districts and parts of Beitun District
Tainan City	Annan, Anping, North, West Central, South, East, Guantian, Houbi, Yanshui, Xinying, Beimen, Xuejia, Xiaying, Madou, Jiali, Shanhua, Anding, Xinshi, Xinhua, Yongkang, Rende, Guiren, Qigu, Xigang, Jiangjun Districts and parts of Liuying, Liujia, Dongshan, and Guanmiao Districts
Kaohsiung City	Yancheng, Gushan, Zuoying, Nanzi, Sanmin, Xinxing, Qianjin, Linya, Qianzhen, Qijin, Xiaogang, Hunei, Qieding, Luzhu, Yongan, Gangshan, Mitou, Ziguan, Linyuan Districts and parts of Alian and Qiaotou Districts
Taoyuan County	Dayuan, Luzhu, Guanyin, and Xinwu Townships
Miaoli County	Zhunan and Tongxiao Townships
Changhua County	Shengang, Xianxi, Lugang, Xiushui, Fuxing, Fangyuan, Puyan, Erlin, Dacheng, Zhutang, Pitou, Xihu Townships and part of Hemei, Tianwei, Huatan, Dacun, Puxin, Xizhou, Yuanlin Townships
Yunlin County	Mailiao, Erlun, Lunbei, Taixi, Tuku, Baozhong, Huwei, Dongshi, Yuanchang, Dapi, Beigang, Shuilin, Kouhu, Sihu Townships, and part of Dounan and Xiluo Townships
Chiayi County	Xikou, Xingang, Minxiong, Liujiao, Dongshi, Taibao, Puzi, Budai, Lucao, Yizhu Townships, and part of Shuishang, Dalin Townships
Chiayi City	Part of western region
Pingtung County	Fangliao, Xinyuan, Donggang, Linbian, Jiadong, Nanzhou Townships and part of Fangshan, Checheng, Kanding, Hengchun, Wandan, and Xinpi Townships
Yilan County	Zhuangwei and Wujie Townships and part of Su'ao, Dongshan, Yuanshan, Toucheng, Jiaoxi Townships, and Yilan City
Penghu County	Magong City, and part of Xiyu and Baisha Townships
Total area	5503.44 km²

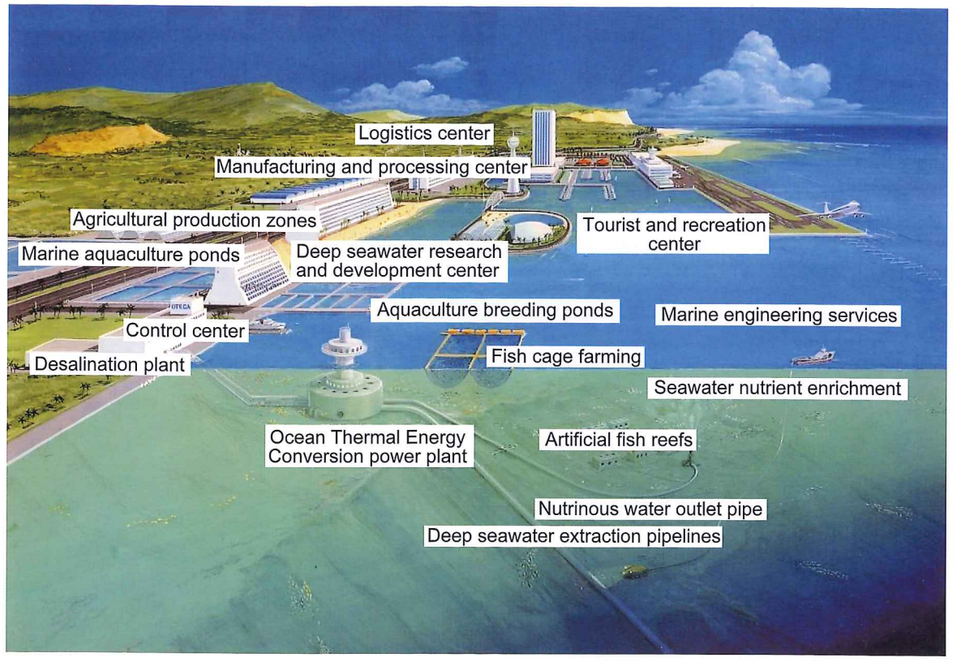


- Areas of severe land subsidence

City/County	Villages/Town
Changhua County	Dacheng Township and part of Fangyuan Township
Yunlin County	Mailiao, Taixi, Sihu, Kouhu, Tuku, Yuanchang, and Shuilin Townships and part of Lunbei, Baozhong, Huwei, Dongshi, Dapi, and Beigang Townships
Chiayi County	Dongshi and Budai Townships
Tainan City	Xuejia District and parts of Yanshui and Beimen Districts
Pingtung County	Donggang, Linbian, Jiadong, and Fangliao Townships
Total area	1277.86 km²

D. Hydrological Observation

- Formulation, planning, implementation, and supervision of surface water and coastal hydrological plans
- Establishment, updating, and maintenance of surface water and coastal hydrological information website
- Compilation, analysis, and utilization of surface water and coastal hydrological information, including promulgation of related laws
- Research, analysis, and review of hydrological studies
- Research and development of hydrological observation technologies
- Formulation, planning, implementation, and supervision of groundwater observation and recharge plans
- Establishment, updating, and maintenance of groundwater observation website
- Collection, analysis, and utilization of groundwater hydrological information including promulgation of related laws
- Formulation, planning, implementation, and supervision of groundwater conservation management proposals
- Promulgation, amendment, and interpretation of groundwater control related laws
- Promotion of deep seawater resources development technologies



■Use and development of deep seawater resources

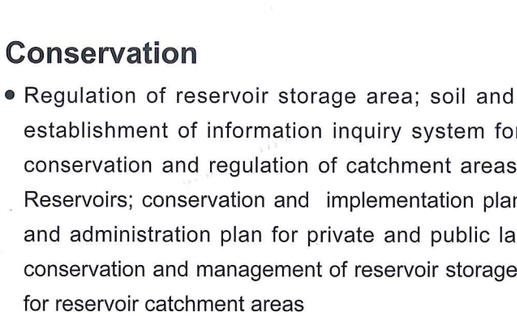
■Radar water level gauge

■Ultrasonic water level gauge

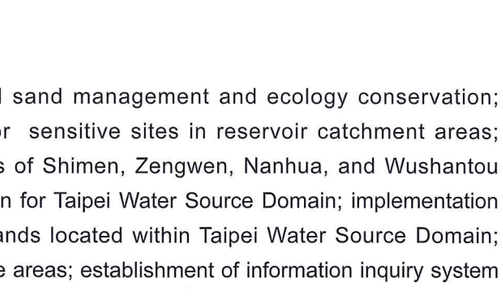
■Tipping-bucket raingage

E. Conservation

- Regulation of reservoir storage area; soil and sand management and ecology conservation; establishment of information inquiry system for sensitive sites in reservoir catchment areas; conservation and regulation of catchment areas of Shimen, Zengwen, Nanhua, and Wushantou Reservoirs; conservation and implementation plan for Taipei Water Source Domain; implementation and administration plan for private and public lands located within Taipei Water Source Domain; conservation and management of reservoir storage areas; establishment of information inquiry system for reservoir catchment areas
- Supervision and management of water utilities; review of bylaws of water utilities management; evaluation of the technical personnel of water utilities; water supply personnel mobilization and disaster mitigation and response operations; management of contractors and technicians of water supply pipe installation; study and evaluation of the subsidies for differences between the water tariff in Taiwan and her offshore islands; promotion of water tariff rationalization and adjustment
- Establishment, amendment, and abolition of water source quality and quantity protection areas; management and supervision of protection area restrictions and limitations; implementation and promotion of conservation and compensation mechanism at protected area; and establishment of protection area information inquiry system
- Implementation of water saving operations; promotion of the popularization of water-saving certificate and water-saving facilities; promotion of rainwater storage and recycling and reuse of domestic polluted water
- Conservation, utilization, and management of hot spring resources; implementation of the Hot Spring Laws; supervision of official registration for private entities in the hot spring business; implementing conservation and sustainable utilization of hot spring resources



■Wushantou Reservoir



■Hot spring industry

■Ecological pond (Rainwater reuse)

■Water-saving certificate

■Hot spring certificate

F. Disaster Mitigation

◆Key operations

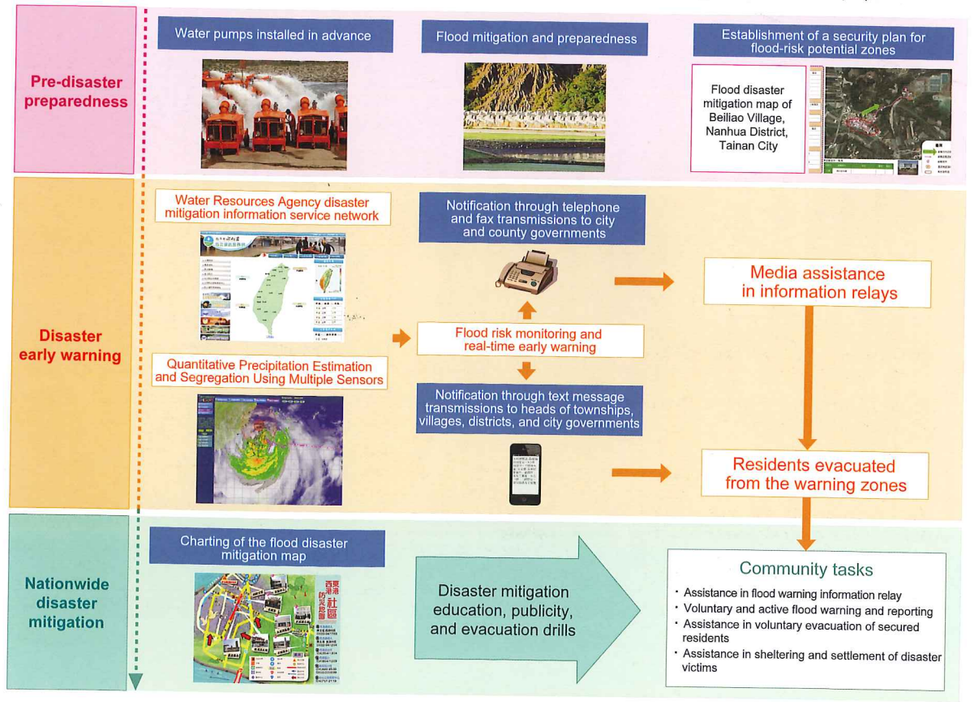
- Establishment of flood and drought disaster mitigation and response operation plan and system
- Formulation and implementation of flood disaster mitigation and response promotion plan
- Processing of motions, operations, and presentation of flood and drought disaster reports in disaster mitigation and response related meetings
- Establishment of emergency water disaster response system; supervision of education and training for water disaster mitigation, rescue, and relief operations; and supervision of drills for flood control and drought relief operations
- Implementation and execution of National Science and Technology Program for Hazards Mitigation
- Supervision of equipment inspection and preparedness for flood control and drought relief conducted by city and county governments and WRA affiliated offices
- Establishment and maintenance of early warning software and hardware systems for water disaster mitigation
- Related operations and measures in response to earthquake and other disasters

◆Disaster mitigation and information reporting

- Reporting through website: the public may report current disaster conditions through the *Flood Status Reporting Platform for the Public and Flood Control Volunteers* (Website:http://579.wra.gov.tw/dn/)
- Reporting by phone: The public may call the flood control hotlines of local river management offices to report status of disaster

Unit	Flood control hotline	Unit	Flood control hotline
1st River Management Office	0800-324031	6th River Management Office	0800-022266
2nd River Management Office	0800-017276	7th River Management Office	0800-868878
3rd River Management Office	0800-033838	8th River Management Office	0800-333667
4th River Management Office	0800-200699	9th River Management Office	0800-081999
5th River Management Office	0800-015237	10th River Management Office	0800-037885

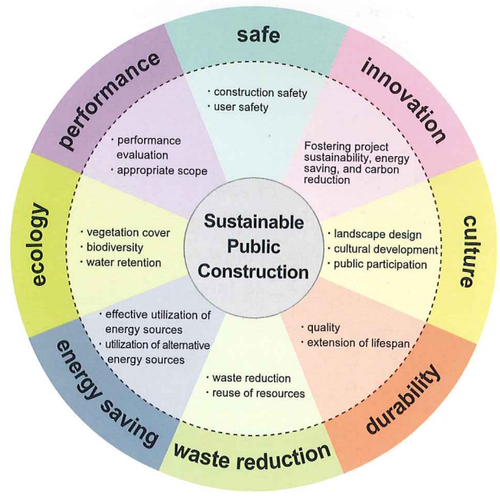
- Potential inundation maps: Information is available on the website of Water Resources Agency for disaster mitigation information services (Website:http://fhy.wra.gov.tw/Pub_Web/index.aspx)



G. Water Engineering Project Construction and Quality Control

◆Key operations

- Administration of operations during construction stages of WRA projects, including pre-budget review, project procurement, implementation of quality and progress management, environmental protection, and worker's safety during project construction period
- Quality assurance of hydraulic engineering projects through establishment of administrative procedures and respective construction monitoring and quality management regulations for public works
- Upholding the concept of full project life cycle assessment in sustainable public engineering works through realization of eight major indicators – safety, performance, ecology, energy saving, waste reduction, durability, culture, and innovation



Framework of sustainable public construction indicators

◆Construction project quality control

Through the concept of full life cycle assessment in sustainable public engineering works and proper control of project quality, each WRA project produced excellent results. Moreover, the WRA projects have won an outstanding performance award, three work of excellence awards, and three nomination awards in the Public Construction Golden Quality Awards by the Public Construction Commission of the Executive Yuan from 2003 to 2010. The WRA projects have also won three awards for excellence from the Ministry of Economic Affairs from 2009 to 2010.

- Project title: Second Baoshan Reservoir Spillway Construction Project
- Execution agency: Central Region Water Resources Office, WRA
- 4th Public Construction Golden Quality Awards - Award for Excellence
- Performance: After the construction of the project, Second Baoshan Reservoir Spillway provides not only an outlet channel for overflow at full storage during typhoon and extremely torrential rainfall periods, but also a solution to the domestic, public, and industrial water consumption in Hsinchu Area.

- Project title: Yuanshanzi Flood Diversion Project of Jilong River
- Execution agency:10th River Management Office, WRA
- 6th Public Construction Golden Quality Awards - Award for Outstanding Performance
- Performance:The completion of this project would enable the diversion of flood upstream of Jilong River to the Pacific Ocean. Residents in the downstream areas would benefit directly from the apparent reduction in flood stages and frequency, thereby provide better protection of residents' lives and properties.

- Project title: Gate Renewal Project of Shigang Dam
- Execution agency: Central Region Water Resources Office, WRA
- 2nd Award for Excellence of the Ministry of Economic Affairs
- Performance: In line with the implementation of the Joint Utilization Plan of Daan and Dajia Rivers, the project shall enable the optimization of a minimal public construction investment to full advantage and stabilize water supply for the projected 1.78 million ton daily water consumption requirement of the greater Taichung area in year 2021.

H. Land Acquisition and Management

- Supervision of land expropriation, price negotiation, and land acquisition for engineering project with coordination and execution of resident relocation plans
- Land management for water resources projects, conversion of zoning assignment of non-urban land to river zones, administration of private lands at river zones, administration of land variation of river zones, and deliberation and evaluation of non-urban land development cases
- Maintenance and management of river bank parks, evaluation of urban design plans, and promotion of private sector participation in public construction projects

In realization of sustainable management of riverbank ecological environment with maintenance and management works for high-quality water-based leisure space, rivers and river bank recreation grounds under central government jurisdiction are managed pursuant to the provisions of Article 3 of the *Regulations on River Management.* Moreover, the promotion of park adoption and related maintenance and management operations for these recreation zones shall be implemented in accordance with the provisions of the *Guidelines for the Adoption of Rivers and River Bank Recreation Grounds under Central Government Jurisdiction* and the *Guidelines for the Management and Maintenance of Rivers and River Bank Recreation Grounds under Central Government Jurisdiction.*

Table indicating land acquisition and compensation cases in the period from 2006 to 2010

Year	Number of cases	Area (hectare)	Amount of compensation (in thousands NT$)
2006	2,433	384.3	297,416
2007	1,953	246.5	446,896
2008	1,802	202.1	290,146
2009	2,658	270.5	539,392
2010	5,475	858.5	912,193

Table of national lands reserved for public water utilization under WRA (including the respective river management offices and regional water resources offices) jurisdiction (as of Dec. 31, 2010)

Number of cases	Area (hectare)	Amount of compensation (in thousands NT$)
70,861	9435.4105	64,035,241

■Jilong River regulation project

■Constructed wetlands along Gaoping River

I. Electronic Information Platform

◆Key operations

- Establishment of electronic river information system – establishing the river information communication platform and providing additional channels for public participation
- Establishment of water resources information system – a service oriented framework for information exchange and communication with a single sign-on platform for data inquiry within reach of the public
- Development of government agency accounting system and water resources operations fund accounting system – significantly simplifies accounting procedures of the WRA and its 17 affiliated offices, including 7 special budgets and operation funds
- Development of an online official letter development and approbation system: The system shall be equipped with modular system functions; such as, official letter writing and approbation, confirmation memo writing and approbation, superintendence online approbation, offline development and approbation, and personnel substitution mechanism. Moreover, system shall contain information transmission and security features; such as using the Extensible Markup Language (XML) as the foundation for file transmission, the single sign-on service, access control features, and electronic signature, etc.
- Implementation of the electronic application form system for duty assignment, general affairs, and accounting statements services
- Implementation of an archive information system – storage of historical project implementation and accomplishments; establishing internet-based information storage and management, information inquiry and acquisition; access control management; and knowledge acquisition services; enabling WRA employees to peruse personal book borrowing records or reservations, book borrowing or borrowing renewal services.

◆Significant accomplishments

In line with promotion of the data bank of water resources geographic information system in 2000, the Hydrological Water Resources Data Management and Supply System was established to provide data required in policy decision making and its related applied analysis, including water resources management, river management, and disaster mitigation and relief operations.

- Award for excellence in execution performance under the establishment of National Geographic Information System (NGIS) project by the Ministry of the Interior in 2003
- Award for outstanding IT application and Product during the IT Month in 2003
- Report on successful case of electronic government by the Global Views Monthly Magazine in September 2005
- Award of Excellence in Application Systems in the 2nd Gold Library Awards by Taiwan Geological Information Society in 2006
- Reports on successful projects posted in Yahoo News in 2009
- Invited to join the 2009 ESRI International User Conference and Virtual Map Gallery exhibit organized by Environmental Systems Research Institute (ESRI, Inc) in the United States.

■e-River website

■Hydrological Water Resources Data Management and Inquiry System

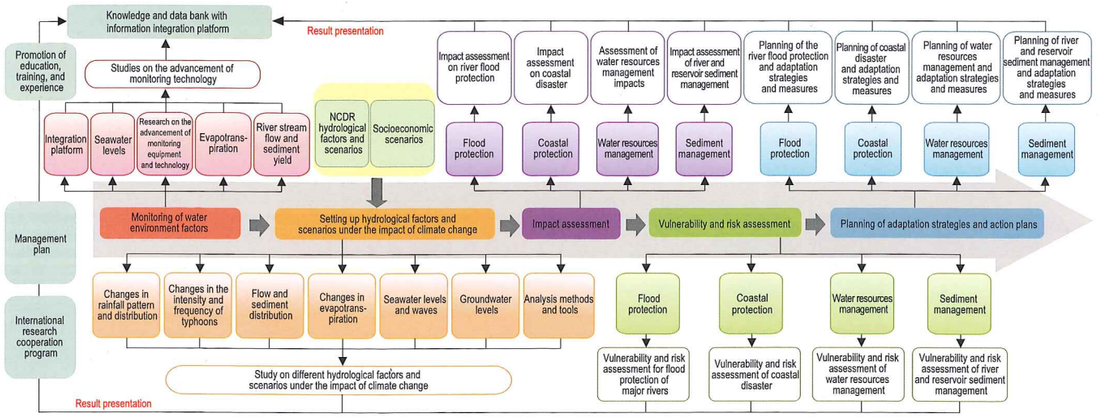
J. Comprehensive Water Resources Operations

◆Key operations

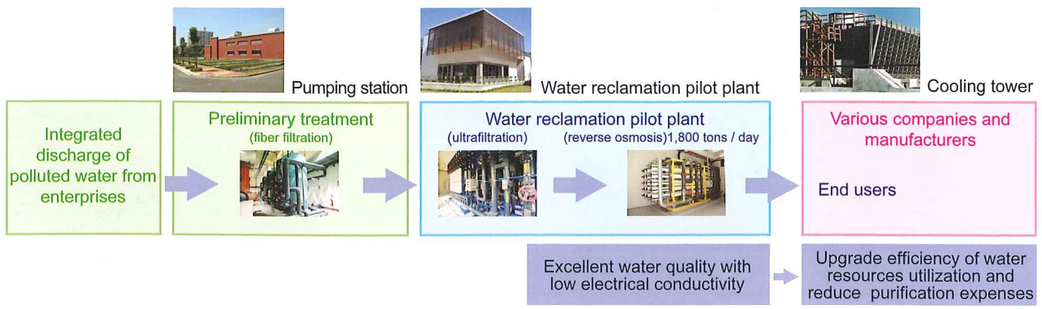
- Continued implementation of policy planning and development of foresighted water resources policies
- Timely amendment of the Water Act and reinforcement of the legal system
- Efficiency enhancement of organizations in line with government organizational reform and restructuring
- Strengthening educational training and reinforcing of know-how and skills
- Active promotion of international cooperation and technology upgrade with broader international perspectives
- Implementation of water resources technology development with foresight, innovation, and enhancement of application efficiency
- Promotion of researches on technologies related to climate change and establishment of adaptation strategies for water resources systems in response to the impact of climatic change
- Promotion of research and development of technology in water recycle and reuse in order to establish a water-recycling based society
- Enhancement of water resources project evaluation and management to ensure the quality and performance of project implementation
- Enhancement of publicity programs and public relations, thereby manifesting the accomplishments of the water resources administration

◆Important projects and achievements

- The technology research and development project: “Research on Adaptation Strategies in Response to the Impact of Climate Change on the Water Environment”:



- Completion and certification of the water reclamation pilot plant in Nanzi Export Processing Zone have set a milestone in the campaign for integrated industrial wastewater reclamation with daily soft water production of 1,800 tons and water quality better than domestic water supply.



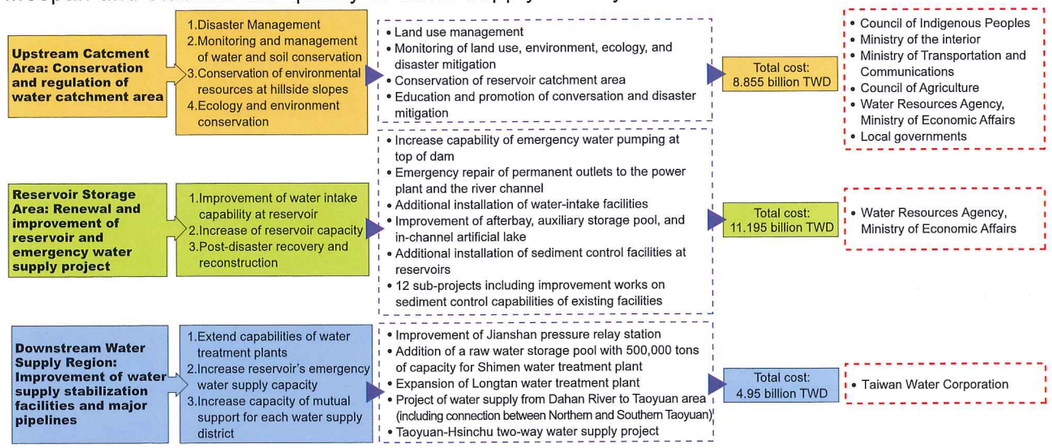
IV. Current Significant Project Plans

A. Special Plans

(1)Shimen Reservoir and Catchment Area Management

◆Regulation principles and work distribution

The catchment area of Shimen Reservoir is about 76,340 hectares. In order for the regulation project to cover the upstream catchment area, the reservoir storage area and the downstream water supply region, a comprehensive strategy has been proposed to extend the reservoirs' lifespan and stabilize the quality of water supply in Taoyuan Area.



◆Project content

- Project duration: 2006~2013 (Divided into 2 phases: Phase 1 from 2006 to 2009; Phase 2 from 2009 to 2013)
- Total investment: Up to 25 billion TWD (Phase 1: 13.97 billion TWD; Phase 2: 11.03 billion TWD)
- Project contents: The project consists of 3 sub-projects, namely conservation and regulation of upstream reservoir catchment area, renewal and improvement of emergency water supply at reservoir storage area, and improvement of water supply stabilization facilities and major pipelines at downstream water supply region.
- Work distribution: The Ministry of Economic Affairs would be the competent authority from the central government for overall project management. Ministries and commissions with respective compiled budgets would be given responsibility from the central government for project execution. Local executive authorities include New Taipei City, Taoyuan County, Hsinchu County, and Yilan County governments.

◆Projected benefits

- Increase water supply capability during typhoons and floods in the short term to ensure water supply at all districts during the flood-prone area.
- The mid to long-term goals include improvement of reservoir water intake capability, reduction of reservoir siltation, increase capability of auxiliary water supply, mitigation of disaster and lost at the catchment area, maintenance of stable water supply, extend lifespan of reservoir, thus ensuring the public's rights of access to water supply.

■Shimen Reservoir

■Installation of control room for stratified water intake operation at Shimen Reservoir

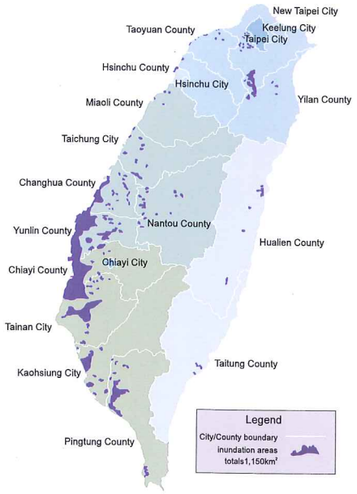
(2)Regulation Project of Flood-Prone Areas

◆Flood-prone areas

The total flood-prone area in Taiwan is about 1,150 km^2 with 80% located in land subsidence regions or regions that have not finished improvement projects for river systems, drainage systems, or sea dikes; especially at coastal districts, villages, and townships of Yilan, Taipei, Changhua, Yunlin, Chiayi, Tainan, and Kaohsiung.

◆Project principles

- The planning, design, and construction stages of the projects shall comply with ecological conservation principles to reduce their impacts on the ecological environment.
- Planning and design works shall observe the safety standards and suit the local circumstances. Moreover, they shall meet the integrated water regualtion concepts and the overall basin management principles for holistic management at upstream, midstream, and downstream regions.
- Planning and design of hydraulic structures should be compatible with the local landscape, environment, and building structures to avoid visual obstruction.
- Planning and design should incorporate local cultural elements and tourist attractions to create a distinctive environment. New business opportunities would be created through the development of local culture and tourism industry.



◆Planning division of work and costs

Unit: billion TWD

Project Items		Phase 1 (2006 – 2007) approved expenses	Phase 2 (2008 – 2010) approved expenses	Phase 3 (2011 – 2013) remaining balance	total cost
Ministry of Economic Affairs	expenditures	22.090	27.880	30.030	80.000
	% of total expenditures	28%	35%	37%	100%
Ministry of the Interior	expenditures	1.115	3.520	1.365	6.000
	% of total expenditures	19%	59%	22%	100%
Council of Agriculture, Executive Yuan	expenditures	7.760	13.100	9.140	30.000
	% of total expenditures	26%	44%	30%	100%
Overall budget	expenditures	30.965	44.500	40.535	116.000
	% of total expenditures	27%	38%	35%	100%

◆Projected benefits

- Expected mitigation of flood hazards at a total of 500 km^2 of areas with high potential for inundation
- More than 60% of the flood control facilities completed
- Protecting approximately 2.5 million people from the threat of floods
- An annual reduction of at least NT$12 billion of losses resulted from related disasters

■Disaster mitigation and reduction engineering works: levees along Jishui River within Hedong and Zhuangnei Village

■Guogo levee project

(3) Economic Revitalization Policy – Project to Expand Investment in Public Works

Efficient implementation of project of leakage rate reduction and water supply stabilization (including Kinmen County)	• Implementation of engineering project for reduction of water leakage rate	• duration: 2009-2011 • Total cost: 15.4 billion TWD	• After project completion, water leakage rate of Taiwan Water Co. is estimated to reduce by 2.83% which means saving 244.2 thousand tons of water from leakage loss per day. • The Kinmen Water Supply Plant could reduce water leakage loss by 3.6% per annum which means saving 230 thousand tons of water from leakage loss.
Efficient implementation of the project of water leakage control and water supply stabilization in Taipei	• Replacement of water supply pipelines • Enhancement of mutual support mechanism across different water supply districts	• duration: 2009-2010 • Total cost: 4.8 billion TWD	• Reinforcement of the water facilities and water supply pipeline network to stabilize the water supply system • Overall enhancement to the efficiency of water resource useage
Enhancing implementation of the water supply improvement project for areas without public water supply	• Water supply pipeline extension project • Simplified water supply improvement projects	• duration: 2009-2011 • Total cost: 2.2 billion TWD	• An addition of 14.1 thousand households accessible to water supply • Expected to raise water supply coverage rate by about 0.242%
Renewal and improvement of irrigation facilities beyond the jurisdiction of irrigation associations	• Improvement of canals to facilitate planning of the interconnection of regional waterway systems • Renewal and extension of farm irrigation and drainage canals outside the irrigation system zone • Renewal and improvement of hydraulic structures located outside the irrigation areas	• duration: 2009-2011 • Total cost: 1.215 billion TWD	• Improvement of 121.6 km of irrigation and drainage canals with construction of 134 related hydraulic structures • The project shall benefit an area of around 134 thousand hectares (including remote areas and regions where indigenous people reside) covering 30.25% of land beyond the current irrigation areas
Renewal and improvement of water storage structures	• Renewal, improvement, and assessment of reservoir facilities • Desiltation and dredging at reservoir storage area • Conservation projects at reservoir storage area	• duration: 2009-2011 • Total cost: 0.899 billion TWD	• Function enhancement of water storage structures and facilities • Effective extension of service life • Impact reduction of probable droughts • Fostering water conservation • Effective reduction of deposited siltation in reservoirs • Improving water quality of water bodies
Efficient execution of demonstration projects for the drainage and environmental improvement at land subsidence areas	• Adjustment of soil and water resources utilization pattern within the project scope • Implementation of regional drainage improvement system engineering project	• duration: 2009-2011 • Total cost: 4 billion TWD	• Protection enhancement for village settlements • Inundation disaster mitigation • Raising the quality of life • Fostering balanced development of regional districts • Narrowing development gap between urban and rural areas
Efficient implementation of river regulation and environmental construction projects for rivers under central government jurisdiction	• Implementation of disaster mitigation and reduction projects for rivers under central government jurisdiction • Environment landscaping and improvement project • Study and planning of maintenance, management, and basic data survey	• duration: 2009-2011 • Total cost: 29.705 billion TWD	• Projected to increase 147 km of disaster mitigation facilities • Improvement of 47 km of river environment • Improved inundation conditions in an area of around 6,812 hectares

■Engineering project for drainage improvement in Luermen, Tainan city

■Yangzicuo creek and Shisun drainage improvement project in Dacun village

(4) Typhoon Morakot 2009 Post-Disaster Recovery and Reconstruction Project

Typhoon Morakot 2009 brought the highest rainfall ever recorded in the history of Taiwan, causing severe damages to levee systems and water resources facilities. The WRA has spent NT$21.859 billion to complete post-disaster recovery operations which involved land acquisition for dredging projects, reconstruction work of rivers under central government jurisdiction, reconstruction work of rivers under county and city government jurisdiction, and water resources reconstruction projects. Related operations implemented included the following:

◆Acquisition of land for dredging projects – enhance dredging at rivers, upstream creeks, and reservoirs (budget allocation: NT$6 billion)

- Project objectives: sediment and soil accumulation estimated at 1.2 billion m^3 was left in the wake of Typhoon Morakot 2009, including about 800 million m^3 of sediment washed into rivers and reservoirs. It was necessary to continue the dredging operations to ensure smooth river channel flow and to increase reservoir storage capacity.
- Implementation status:

Phase (Period)	Estimated dredging volume (million m^3)	Actual dredging volume (million m^3)
Phase I (Aug. 2009 – Nov. 2010)	65	108.51
Phase II (Dec. 2010 – Nov. 2011)	53	33.735 (as of Apr. 3, 2011)
Phase III (Dec. 2011 – Aug. 2012)	According to evaluation of actual variations of scour and deposition in river channels after the flood-prone period of 2011	—

Dredging objectives and delegation of duties		
	River dredging: Phase I: 45 million m^3 Phase II: 35 million m^3	• Water Resources Agency, MOEA: 25 million m^3 (Phase I) and 21.5 million m^3 (Phase II) • Ministry of National Defense • Respective county and city governments (including operations assisted by local administration offices): 20 million m^3 (Phase I) and 13.5 million m^3 (Phase II)
	Sediment transportation and colmatage of reservoirs: Phase I: 10 million m^3 Phase II: 9 million m^3	• Water Resources Agency, Ministry of Economic Affairs • Taiwan Power Company • Irrgation Association,Taiwan Water Corporation
	Dredging and desiltation at upstream creeks: Phase I: 10 million m^3 Phase II: 8 million m^3	• Forestry Bureau, Council of Agriculture: 3.5 million m^3 (Phase I) and 3 million m^3 (Phase II) • Soil and Water Conservation Bureau, Council of Agriculture: 6.5 million m^3 (Phase I) and 5 million m^3 (Phase II) • Respective county and city governments (including operations assisted by local administration offices)
	Other complementary measures	• Respective government ministries and agencies, state-owned enterprises and institutions, local governments • Increase of transportation capacity: limitation of pavement load, asphalt paving, and extended work hours • Expanded soil & gravel utilization: reconstruction, public construction, land reclamation, and establishment of the soil bank • Reduction of sand and gravel importation while prioritizing the utilization of available local sand and gravel resources • Efficient dredging at private lands: coordinated with monetary incentives for construction projects and land division

◆Recovery and reconstruction projects for rivers under jurisdiction of central government and local county and city governments (budget allocation: NT$14.6 billion)

- Project objectives: Reconstruction according to levee protection standards and re-evaluation of the regulation boundaries, engineering method, and construction materials pursuant to climatic change factors, thereby reducing risks of repeated damages of levees

◆Water resources recovery and reconstruction projects (budget allocation: NT$1.2 billion)

- Project objectives: Repair of damaged facilities and restoration of reservoir water supply to normal levels, thereby ensuring availability of sufficient water supply to the public
- Implementation status: The recovery and reconstruction projects include Gaoping Weir, Jiaxian Weir, Zengwen Reservoir, and the Mudan Reservoir

■ Linyuan levee under construction

■ Linyuan levee project completed

(5) Regulation of Zengwen, Nanhua, and Wushantou Reservoirs and Stabilization of Water Supply in Southern Taiwan

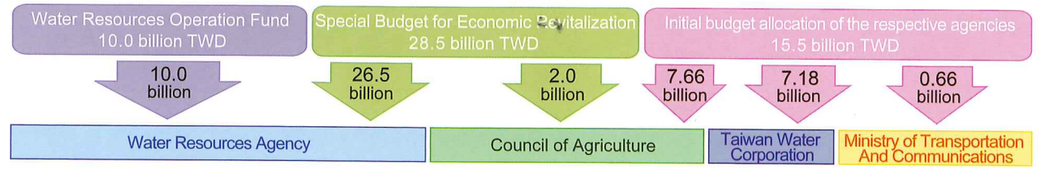
◆Project background

After Typhoon Morakot 2009, there was substantial increase in accumulated siltation at Zengwen and Nanhua Reservoirs (total siltation of about 110 million m^3). Severe landslides and debris flow at the upstream catchment areas have greatly lowered the capability for water resources conservation and water supply capacity of reservoirs. This seriously affected the stability of water supply in the southern region which required immediate actions to accelerate conservation of catchment areas, desiltation of reservoir storage areas, and renewal and upgrade of facilities. There were also apparent needs to develop dispatch and backup water supply systems and water sources for the stability of mid-term water supply and extension of reservoir service life in the southern region during the post-disaster period. A water supply stabilization plan was therefore defined under the provisions of the "Special Act for Management of Zengwen, Nanhua, and Wushantou Reservoirs and Stabilizing Water Supply conditions in Southern Area". The bill was submitted to the Executive Yuan for ratification and has been implemented.

Work items	Details of operations	Budget	Enforcement agency
Reservoir catchment area conservation and regulation	• Realization of proper land management • Strengthening of disaster mitigation monitoring at catchment areas • Acceleration of conservation and regulation at catchment area • Implementation of conservation and disaster mitigation publicity plans	12.204 billion TWD	• Ministry of the interior • Ministry of Transportation and Communications • Council of Agriculture, Executive Yuan • Taiwan Water Corporation • Water Resources Agency, Ministry of Economic Affairs • Chiayi County, Tainan and Kaohsiung City Government
Reservoir facility renewal and improvement with siltation management	• Renewal and siltation mitigation measures for existing hydraulic facilities • Removal of driftwoods and silt • Installation of additional facilities for flood and siltation mitigation • Improvement of water supply facilities	16.551 billion TWD	• Water Resources Agency, Ministry of Economic Affairs • Taiwan Water Corporation • Chia-Nan Irrigation Association
Upgrade of dispatch and backup water supply systems	• Groundwater backup and dispatch system with preliminary treatment of raw water from Donggang River • Improvement of water intake and transfer and water source dispatching measures	7.514 billion TWD	• Water Resources Agency, Ministry of Economic Affairs • Taiwan Water Corporation
Development of new water sources	• Water recycling and reuse measures for wastewater treatment plant • Ligang well restoration project • Artificial lake and water source development	17.731 billion TWD	• Water Resources Agency, Ministry of Economic Affairs • Taiwan Water Corporation

◆Project objectives and delegation of duties

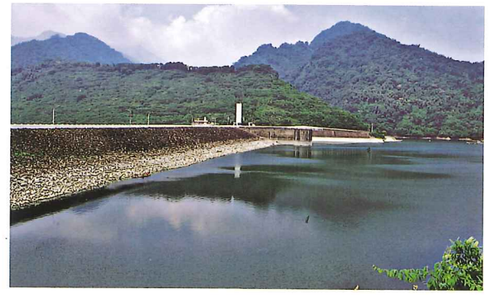
◆Plan period：2010~2015



◆Budget source

◆Projected benefits

- To ensure facility safety and extend reservoir service life, the project aims to reduce sediment production at the catchment areas, reduce siltation and driftwood accumulation at the reservoir storage area, and enhance capacity for flood and siltation control of reservoirs.
- In addition, the project is expected to strengthen the water source dispatching and backup capacity and provide diversified water sources development for the stabilization of mid-term water supply requirements of the southern region.



■ Zengwen Reservoir

■ Nanhua Reservoir

B. Significant Projects

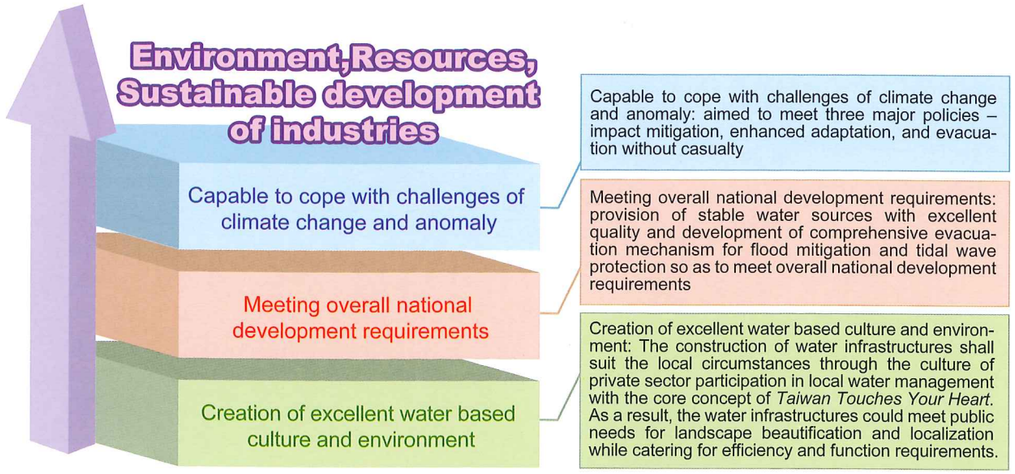
Name of project	Work items	Period	Budget (billion TWD)	Remarks or outcome
1.Plan for Active Implementation of Water Saving Measures (2008 – 2012)	• Implementation of water conservation guidance to major water consumers • Exhibition and promotion of water-saving devices • Granting certificate for use of water-saving label to commercial products	2008-2012	0.267	• The plan implements sustainable national water resources management built upon past experiences in water saving, according to the environmental policy: "Lower average annual per capita water consumption to 250 l/day through the promotion of water saving measures and greywater system for water reuse". • Enhancing public water saving consciousness, improving water saving efficiency of government agencies and schools, and establishing water saving based society
2.Development of Water Resources Technologies	• Improvement of flood and drought disaster risk assessment • Establishment of performance assessment indices for flood disaster mitigation and rescue operations • Study and evaluation of emerging disasters and response strategies	2002-2012	2.302	• Upgrading standards of water resources technologies • Enhancement of research and development of water resources technology • Integration of human resources of all research institutions in the nation • Mitigation of typhoon and flood disaster loss
3.Groundwater Conservation and Management Project	• Inspection of groundwater monitoring well using Television Inspection System • Feasibility assessment and preliminary planning of the enhanced groundwater recharge project for Changhua and Yunlin Regions • Assistance in the completion *of Phase I of Dachaozhou Lake Project for Groundwater Recharge*–establishment of hydrometeorological stations	2009-2014	2.598	• Increase of groundwater recharge • Reduction of groundwater consumption • Efficiency upgrade of well management
4.Hushan Reservoir Engineering Project	• Reservoir construction project • Water diversion project • Land allocation project	2002-2014	20.475	• Upon its completion, Hushan Reservoir shall be jointly operated with Jiji Weir. • It is capable to provide stable annual water supply of 694 thousand tons to reduce groundwater withdrawal and ease land subsidence.
5.Construction of Water Intake Facilities for Power Generation and Discharge Outlets for Dispatch and Backup at Liyutan Reservoir	• Construction of outlets for dispatch and backup purposes • Coordination with the Joint Water Source Utilization Project of Daan and Dajia Rivers	2009-2011	0.529	• Reduction of water shortage risks in the greater Taichung area • Higher flexibility for water resources dispatching and transfer • Increase back up & dispatch functions of water supply
6.Major River Environment Building Project	• Mainly for implementation of survey, monitoring, planning, and study of rivers under central government jurisdiction and cross-city rivers • Disaster mitigation and reduction projects, river environment improvement, maintenance, and management project	2012-2014	29.7	• Achieving objectives of flood mitigation and disaster mitigation • Increase of area under protection • Assuring fruits of socioeconomic development • Restoration of the natural river ecology • Construction of excellent landscape environment
7.Coastal Environment Building Project	• Implementation of coastal protection and environment improvement in Taiwan • Maintenance and management of sea dike facilities and planning, investigation and study of coastal areas	2009-2014	8.0	• Assuring the safety of lives and properties at coastal regions • Maintenance of the coastal ecological system • Improvement of coastal environmental • Landscape construction • Provision of public recreational space at coastal area • Assurring fruits of socioeconomic development
8.Regional Drainage Management and Environment Building Project	• Implementation of regional drainage improvement operations in areas under central government jurisdiction • Implementation of environmental construction projects • Implementation of maintenance projects	2009-2014	17.0	• Improvement of 69 km of drainage facilities under central government jurisdiction; construction of 60.5 hectares of environmental landscape; and maintenance of 254 km of drainage canals • Estimated to reduce area of inundation by around 14,315 hectares
9.Conservation Project at Taipei Water Resource Domain	• Catchment area conservation project • Promotion and integrated application of sustainable water source conservation education • Electronic information for construction management including the establishment of electronic construction layout and photograph files	2008-2012	1.0	• Enhancing sustainable water resources utilization through measures including reduction of soil erosion and increase of water storage capacity • Reduction of improper land use and loss of top soil; Conservation of water sources; Improvement of water quality; Environmental landscaping • Enhancing treatment efficiency of wastewater sewage systems and hot spring discharge
10.Offshore Island Water Supply Improvement Project	• New desalination plant construction projects • Lake & reservoir dredging and improvement project • Improvement of water supply system • Improvement of separated treatment of rainwater and polluted water	2007-2015	4.267	• A total of 7,900 tons of fresh water supply after construction of desalination plants at offshore islands • An additional of 755 tons of water supply after completion of dredging operations at lakes and reservoirs
11.Deep Seawater Resources Utilization and Industry Development Project	• Promotion of deep sea water operations • Establishment of deep sea water technical inspection and certification system • Marketing and guidance for deep sea water products	2006-2011	1.147	• Proper utilization of excellent deep sea water resources at the eastern region of Taiwan with balanced regional development • Development of deep sea water utilization technologies while increasing added values for traditional industries
12.Subsequent Projects of Joint Jiji Weir Water Diversion Project	• Specific facilities for industrial water consumption including settling pond engineering project • Operation and management system projects • Irrigation project during drought period at Bagua Mountain	2002-2011	2.460	• Stabilization of water sources for irrigation at Bagua Mountain regions in Nantou County • Water quality upgrade for industrial consumption at Yunlin Offshore Industrial Parks
13.Flood Disaster Mitigation, Rescue, and Relief Strategies and Promotion Plans	• Construction of regional rainfall radar networks and flood disaster monitoring networks • Maintenance and expansion of respective flood monitoring centers • Update of flood disaster emergency response operating systems • Capacity enhancement for building flood mitigation and flood outflow control at catchment area	2011-2015	2.097	• Enhancing overall efficiency in disaster mitigation, rescue, and relief operations • Strengthening flood mitigation functions, including management, response, command, dispatch, and support • Establishment of nationwide public flood mitigation awareness • Integration of flood mitigation information of all related government ministries, agencies, and local governments • Rational utilization of national lands • Grasp of projected future environment
14.Taiwan Long-term Hydrological Observation Development Project	• Maintaining hydrological monitoring capacity and strengthenin of instantaneous transmission performance • Enhancing hydrological system regulations and upgrading administrative management efficiency • Enhancement of data quality control and expansion of hydrological data inquiry system • Grasp of hydrological environment information and fostering of diversified, value-added applications • Reform and innovation in hydrological monitoring technologies with capacity upgrade of local research and development	2010-2014	1.185	• Acquisition of comprehensive hydrological observation data of fine quality to upgrade quality of water resources planning • Immediate acquisition of water resources status and timely activation of necessary disaster warning system • Establishing highly efficient hydrological information service system to achieve objectives of an e-government
15.Private Sector Participation in Taoyuan Desalination Plant Project	• Land use processing (negotiation and cancellation of land cost and fishery right) • Overall operations and procedures for the selection of consultants • Private sector participation in the business invitation, design, build, operation, and transfer of desalination plants	2007-2010	2.877	• The desalination plant is projected to provide 30,000 tons of daily water supply to Taoyuan High-Tech Industrial Park, thus alleviating the water shortage risks of the park. • Land acquisition and overall operations and procedures for the selection of consultants have been completed.
16.Planning and Operation of Water Resources Management	• Regular planning required for water resources policies, water resources administration projects, regional water resources dispatching and management strategies, and diversified water source development projects	2006-2013	1.920	• Planning of water resources engineering projects to meet future water supply demand in response to the increases of domestic and industrial water consumption and water shortage problems caused by highly turbid raw water intake.

V. Future Outlook

A. Water Policies for the New Century

◆**Development objectives: to provide capacity in reponse to the water environment in 2030**

◆**Vision**

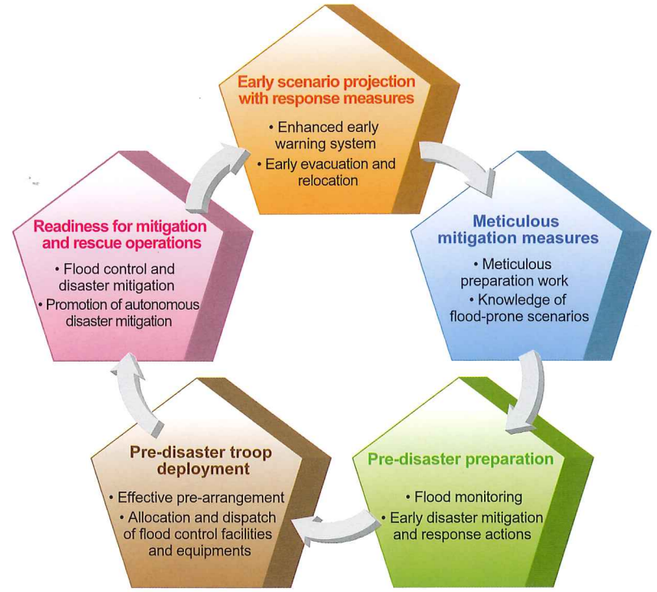


◆**Policy theme**

Implementation of integrated basin management and water regulation	Implementation of integrated water resources management	Implementation of integrated soil and sand management	Strengthening of coastal area protection
• Establishment of guiding principles for national land development projects; Comprehensive consideration of upstream, midstream, and downstream characteristics and water management measures within respective basins; Implementation of upstream water conservation, midstream flood detention, and downstream flood drainage and detention strategies • Function improvement of infrastructures and buildings with integration of environmental landscapes and humanity systems of surrounding grounds; Disaster loss reduction through disaster mitigation, emergency response, and disaster evacuation systems; Upgrade of disaster resistance capacity of protected objects through coordination of engineering and non-engineering measures • Provision of thorough citizen participation mechanism to enable policies to better suit public demands and to enhance public identification with policies	• Planning of integrated water quality and quantity management with water resources gross control to ensure safety in water utilization • To build a society with water reuse and recycling concepts through promotion of water saving, enhancement of diversified water source acquisition, and rainwater storage and utilization. • Effective use of existing facilities and construction of a backup water supply network • Guidance provision for private sector participation in water industries (desalination plants and water resources recycling centers) for implementing joint utilization of surface water, groundwater, and new water sources (desalinated water, reclaimed water, and stored rainwater)	• Enhancement of catchment area management and soil & water conservation in order to control sediment output • Management of balanced sediment scour and deposition at watersheds in achieving sediment restoration at riverbed and coastal seabed • Enhancing sediment dredging and sluicing capacity of existing and new facilities for better operating efficiency and flexibility • Reinforcement of disaster mitigation, emergency response, and disaster evacuation system for the mitigation of disaster losses; Upgrading disaster resistance capacity of protected objects through coordination of engineering and non-engineering measures	• Sediment restoration of coastal seabed and provision of sediment sources for maintenance of existing natural coastal shorelines and wetlands • Under effective operation of existing facilities, the concept of double sea dike construction shall be incorporated to provide further protection • Strengthening of coastal land use management and creation of a new culture structured on local natural scenery, recreational activities, humanities, and culture • Reinforcement of disaster mitigation, emergency response, and disaster evacuation system with coastal pollution mitigation and control operations, for the coordination of engineering and non-engineering measures in order to minimize disaster losses

B. Emphasizing Disaster Mitigation over Disaster Rescue and Relief Disaster Avoidance Prioritized over Disaster Reduction

◆**Objectives**



◆**Action**

Action	Strengthening of flood disaster monitoring and early warning operations	• Construction, operation, maintenance, and capacity upgrade of instantaneous disaster monitoring stations, stage gauge stations, and rainfall gauge stations • Construction, operation and maintenance of regional rainfall radar stations • Development of disaster mitigation tests at chosen watersheds
	Capacity building of disaster mitigation, preparedness, and response	• Function enhancement of WRA disaster emergency response team • Development of additional essential regional flood monitoring centers and early flood warning systems • Enhancement of water monitoring efficiency, disaster mitigation, response, command, and dispatch efficiency of each River Management Office • Reinforcement of preparedness and management of mobile water pumps and flood control equipments
	Implementation of resident evacuation and relocation with the concept of autonomous public disaster mitigation	• Supervision of local government efforts in updating and realization of the *Security Plan for Flood-risk Potential Areas* • Implementation of autonomous disaster mitigation for communities in flood-risk potential areas • Reinforcement of organization and task execution of flood control volunteers • Strengthening of disaster evacuation and relocation drill exercises and implementation of community education and publicity
	Acceleration of disaster mitigation information integration and service provision	• Update of disaster emergency operation system • Organization of disaster mitigation service team to aid disaster response units of central and local governments in the study and determination of flood related information • Strengthening information transmissions and disaster mitigation information services
	Revision of flood mitigation related laws and regulations	• Reinforcement of land utilization control and flood mitigation capacity of building structures • Promotion of the establishment of flood discharge control regulations at catchment area • Feasibility study of integrated natural disaster insurance • Promoting the expansion of Chapter 7 of the *Water Act: Waterway Protection*, into *Water Disaster Mitigation, Rescue, and Relief*
	Promotion of research in flood and drought mitigation and strategic early warning technologies	• Research and development of foresighted early flood/peak flow warning technologies • Research and development of foresighted early inundation warning technologies • Research and development of latest information technologies for disaster decision making and support • Research and development of drought response technologies
	Implementation of flood (drought) disaster mitigation, rescue, and response operation plan	• Establishment of flood and drought disaster mitigation indices for each region and basin • Establishment of regional drought disaster mitigation, rescue, and response operation plans • Establishment of basin flood disaster mitigation, rescue, and response operation plans

VI. Further Information

A. International Cooperation

◆Promotion of International Cooperation

- The United States Bureau of Reclamation (USBR), Department of the Interior, the United States of America - Agreement for Technical Assistance in Water Resources Development
- The U.S. National Oceanic and Atmospheric Administration (NOAA), Department of Commerce, the United States of America - Climate Variation and Severe Weather Monitoring and Forecasting System Development Program: Quantitative Precipitation Estimation and Segregation Using Multiple Sensors
- The Foundation for Riverfront Improvement and Restoration, Japan - River Environment Technology Exchange Program
- Ministry of Industry, Trade and Labor, Israel - Memorandum of Understanding on Water Technology Cooperation
- Russian Academy of Sciences, Russia - Memorandum of Understanding on Water Resources Technology Development

◆Organization of International Seminars and Conferences

- 2011 International Conference on Climate Change: Impacts and Adaptation to the Water Environment

◆Promotion of International Exchange and Training Programs for Talents in Water Resources Technologies

- WRA Youth Ambassador and International Negotiation Training Program
- Japan-Taiwan Bilateral Environment Interchange and Technical Cooperation Program
- AIT-TECRO Water Resources Technical Cooperation Program Workshop

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1. The 23rd (2010) Annual AIT-TECRO Technical Cooperation Convention
2. Japan-Taiwan Bilateral Technology Interchange Seminar
3. Vietnam-Taiwan Bilateral Conference on Water Resources Technology Exchange
4. WRA Youth Ambassador Training Camp Program
5. A group photo of Minister Shih Yen-Shiang of the Ministry of Economic Affairs with guests of 2011 International Conference on Climate Change: Impacts and Adaptation to the Water Environment

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B. Laws and Regulations

Law	Sub-laws or ordinances promulgated	Remark
1.Water Act	・Enforcement Rules for Water Act ・Regulations on River Management ・Regulations on Drainage Management ・Regulations on Reservoirs Area Management ・Regulations on Building Inspection and Safety Evaluation ・Regulations on Water Allocation or Alternate Use of Water During Water Shortage ・Regulations on Groundwater Control ・Regulations on Embankment Management ・Regulations Governing Groundwater Drilling Business ・Regulations Governing Irrigation Business ・Regulations on the Control of Floodplains of Tamsui River ・Regulations on the Control of Land Use in Jilong River Floodplain ・Regulations Governing the Revenue, Expense, Custody, and Utilization of Water Resource Operation Funds	—
2.Disaster Prevention and Protection Act	・Regulations for Publication of Flood Potential Information ・Regulations for Simplification of Administrative Procedure for Emergency Repairs of Traffic and Reconstruction of Public Facilities in Flooding Areas ・Regulations for Simplification of Administrative Procedures for Resettlement and Reconstruction in Flooding Areas ・Types and Standards of Disaster Relief for Public Gas and Oil Pipelines and Power Lines affected by flood ・Categories and Standards of Assistance for Drought Disasters	—
3.Water Supply Act	・Enforcement Rules for Water Supply Act ・Rules Governing the Concession of Water Supply Enterprises ・Standards Governing Water Supply Facilities ・Regulations on Water Pipe Contractors ・Water Supply Businesses Reports-making Regulations ・Regulations on the Inspection of Water Supply Equipment ・Regulations on the Examination of Technical Personnel of Water Supply Enterprises ・Criteria for Water Supply Quality ・Regulations on the Examination of Water Pipe Technicians ・Standards for the Water Equipment of Water Users ・Standards for Installation of Fire Hydrant ・Regulations for the Organization of Water Tariff Review Board, Ministry of Economic Affairs ・Water Resources Conservation and Compensation Charge Regulations ・Subsidy Regulations on Water Resources Conservation and Compensation Fee ・Standards for Exemption/Reduction of Land Value Increment Tax and Inheritance Tax on Land in Designated Watershed Areas ・Guidelines for Setting up a Water Quality and Quantity Protection Area Account Management Team ・Regulations on Compensation for of Displaced Restricted Land Use in Water Quality and Quantity Protection Area ・Regulations Governing Awards for Encouraging Private Sectors to Participate in the Research and Development of Water Conservation Technology	—

Law	Sub-laws or ordinances promulgated	Remark
4.Hot Spring Act	• Enforcement Rules for Hot Spring Act • Standards for Hot Springs • Regulations for Hot Spring Outcrop Specific Range Delimiting • Regulations for Hot Spring Water Right Renewal Assistance Procedure • Regulations for Hot Spring Development Permit • Regulations for Hot Spring Development Permit Transfer • Regulations for Levy and Usage of Hot Spring Taking Fee • Regulations for Reporting Hot Spring Data	Ministry of Economic Affairs
	• Regulations for Permit Application by Hot Spring Providers • Regulations Governing the Formulation, Deliberation and Administration of Hot Spring Area Management Plans • Regulations Governing Land and Building in Hot Spring Areas • Regulations Governing Application to Use the official Hot Spring Logo	Ministry of Transportation and Communications
	• Regulations for Guiding and Encouraging Indigenous Individual or Group to Operate Hot Spring in Indigenous Habitation Area	Council of Indigenous Peoples, Executive Yuan
5.Special Act Governing the Management of Keelung River Basin		Implementation period of ten years (from Nov. 2, 2001 to Nov. 1, 2011)
6.Special Act for Flood Management	• Rules on Establishment and Responsibilities of Steering Committee for Regulation Program for Flood-prone Areas	Implementation period of eight years (from Jan. 29, 2006 to Jan. 28, 2014)
7.Special Act Governing the Management of Shihmen Reservoir and Its Catchment Area		Implementation period of six years (from Jan. 29, 2006 to Jan. 28, 2012)
8.Special Statute Governing the Typhoon Morakot Post-Disaster Reconstruction Work	• Regulations of Land Use Control on River Flood Zones in Areas of affected by Typhoon Morakot 2009 • Regulations for the Simplification of Administrative Procedures for the Reconstruction of River Spanning Structures Destroyed during Typhoon Morakot 2009 Disaster	Implementation period of three years (from Aug. 30, 2009 to Aug. 29, 2012)
9.Special Statute for the Management of Zengwen, Nanhua, and Wushantou Dams and Stabilization of Water Supply conditions in the Southern Region		Implementation period of six years (from May 14, 2010 to May 13, 2016)

Dedicated to establish a government free of corruption and malfeasance

Report of corruption is welcomed through telephone calls. Reports would be treated confidentially.
A reward of NT$10 million would be granted if proven accurate and led to criminal conviction.

To report corruption and malfeasance, please dial: +886-2-2316-7586.
Anti-corruption hotline for the Water Resources Agency, MOEA: 0800-001250
Post Office Box dedicated for reporting corruption: Taichung PO Box No. 47-7

Contact Us

If you have any suggestions, comments or questions, please contact the relevant offices below.

Water Resources Agency, Ministry of Economic Affairs
http://www.wra.gov.tw

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Tel: +886-4-2250-1250; +886-4-2250-1499
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Affiliated Agency	Address	Tel	URL
1st River Management Office	No.4, Minquanxin Rd., Yilan City, Yilan County 26050, Taiwan (R.O.C.)	03-9324031	http://www.wra01.gov.tw/
2nd River Management Office	No.97, Beida Road, Hsinchu City 30044, Taiwan (R.O.C.)	03-5322334	http://www.wra02.gov.tw
3rd River Management Office	No.37, Legun St., West Dist., Taichung City 40357, Taiwan (R.O.C.)	04-22203151	http://www.wra03.gov.tw/
4th River Management Office	No.640, Zhongshan Rd., Xizhou Township, Changhua County 52441, Taiwan (R.O.C.)	04-8897773	http://www.wra04.gov.tw
5th River Management Office	No.123, Qinshui Rd., Chiayi City 60065, Taiwan (R.O.C)	05-2304406	http://www.wra05.gov.tw/
6th River Management Office	No.15, Liuqiao W. Rd., Gangshan Dist., Kaohsiung City 82050, Taiwan (R.O.C)	07-6279018	http://www.wra06.gov.tw
7th River Management Office	No.29, Jianquo Rd., Pingtung City 90093, Taiwan (R.O.C)	08-7554502	http://www.wra07.gov.tw
8th River Management Office	No.24, Baosang Rd., Taitung City, Taitung County, 95046, Taiwan (R.O.C)	089-322023	http://www.wra08.gov.tw
9th River Management Office	No.19, Ren'ai St., Hualien City, Hualien County 97046, Taiwan (R.O.C)	03-8325103	http://www.wra09.gov.tw
10th River Management Office	No.1, Qiaotou,Sec.2,Sihchuan Rd., Banqiao Dist., New Taipei City 22061, Taiwan (R.O.C)	02-29519870	http://www.wra10.gov.tw/
Northern Region Water Resources Office	No.2, Jia'an Rd., Jia'an Village, Longtan Township, Taoyuan County 32547, Taiwan (R.O.C)	03-4712001	http://www.wranb.gov.tw
Central Region Water Resources Office	No.1340-6, Zhongzheng Rd. Jifeng Village, Wufeng Dist.,Taichung City 41350, Taiwan (R.O.C)	04-23320579	http://www.wracb.gov.tw/
South Region Water Resources Office	No.70, Mizhi Village, Nanxi Dist., Tainan City 71544, Taiwan (R.O.C.) No.1, Gongcheng Rd., Yanchao Dist., Kaohsiung City 82442, Taiwan (R.O.C.)	06-5753251 07-6166137	http://www.wrasb.gov.tw/
Taipei Water Management Office	4~5F.,,No.5, Lane 45, Beixin Rd., Xindian Dist., New Taipei City 23147, Taiwan (R.O.C.)	02-29173282	http://www.wratb.gov.tw/
Water Resources Planning Institute	No.1340, Zhongzheng Rd. Jifeng Village, Wufeng Dist., Taichung City 41350, Taiwan (R.O.C)	04-23304788	http://www.wrap.gov.tw/