

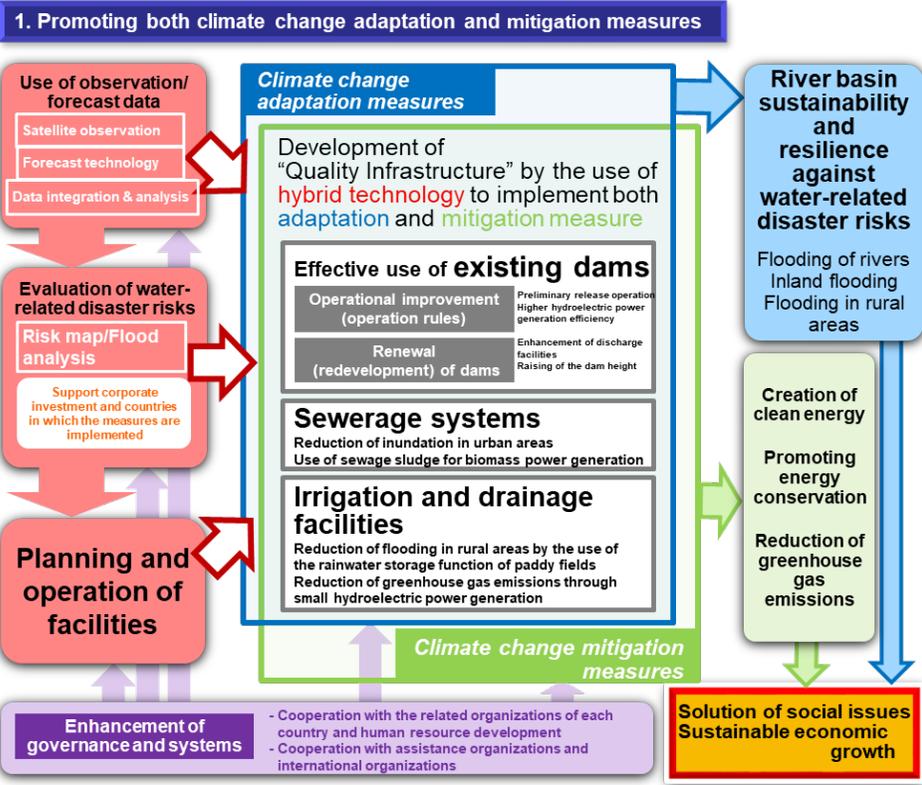
[4th Asia-Pacific Water Summit] Kumamoto Initiative for Water (Outline)

- Proactive Contribution to the Development of “Quality Infrastructure” based on a “New Form of Capitalism” -

Japan will proactively contribute to the solution of water-related social issues faced by the Asia-Pacific region by developing “Quality Infrastructure” capitalizing on Japan’s advanced technologies, and based on a “New Form of Capitalism”, which means promoting public-private partnerships and fostering digitization and innovation to solve social issues as a growth engine for sustainable development and the formation of a resilient society and economy.

1. Promoting both climate change adaptation and mitigation measures

- (1) **Promoting the development of “Quality Infrastructure”**
 - Develop and provide **hybrid technology** to develop **dams, sewerage systems and agricultural facilities** to reduce the damage caused by flooding for river basin sustainability and resilience against water-related disaster risks for climate change adaptation and also to reduce greenhouse gas emissions for climate change mitigation (Improve and renew existing dams to bring about the effects more speedily)
 - Propose the introduction of “Quality Infrastructure” through public-private partnership
- (2) **Contribution to fill gaps of observation data**
 - Provide **satellite data** obtained from the meteorological satellite “Himawari” and Advanced Land Observing Satellite-2 (ALOS-2) “Daichi-2” as well as from the core satellite of the Global Precipitation Measurement (GPM) mission
- (3) **Contribution to governance (systems, human resources and capacity)**
 - Sophisticate the **evaluation of water-related disaster risks** by the use of **AI/IoT-based forecast and analysis technologies**
 - Support **human resource development** through the Asia-Pacific Climate Change Adaptation Information Platform (AP-PLAT) and the Data Integration and Analysis System (DIAS)
- (4) **Utilization and expansion of the Joint Crediting Mechanism (JCM)**



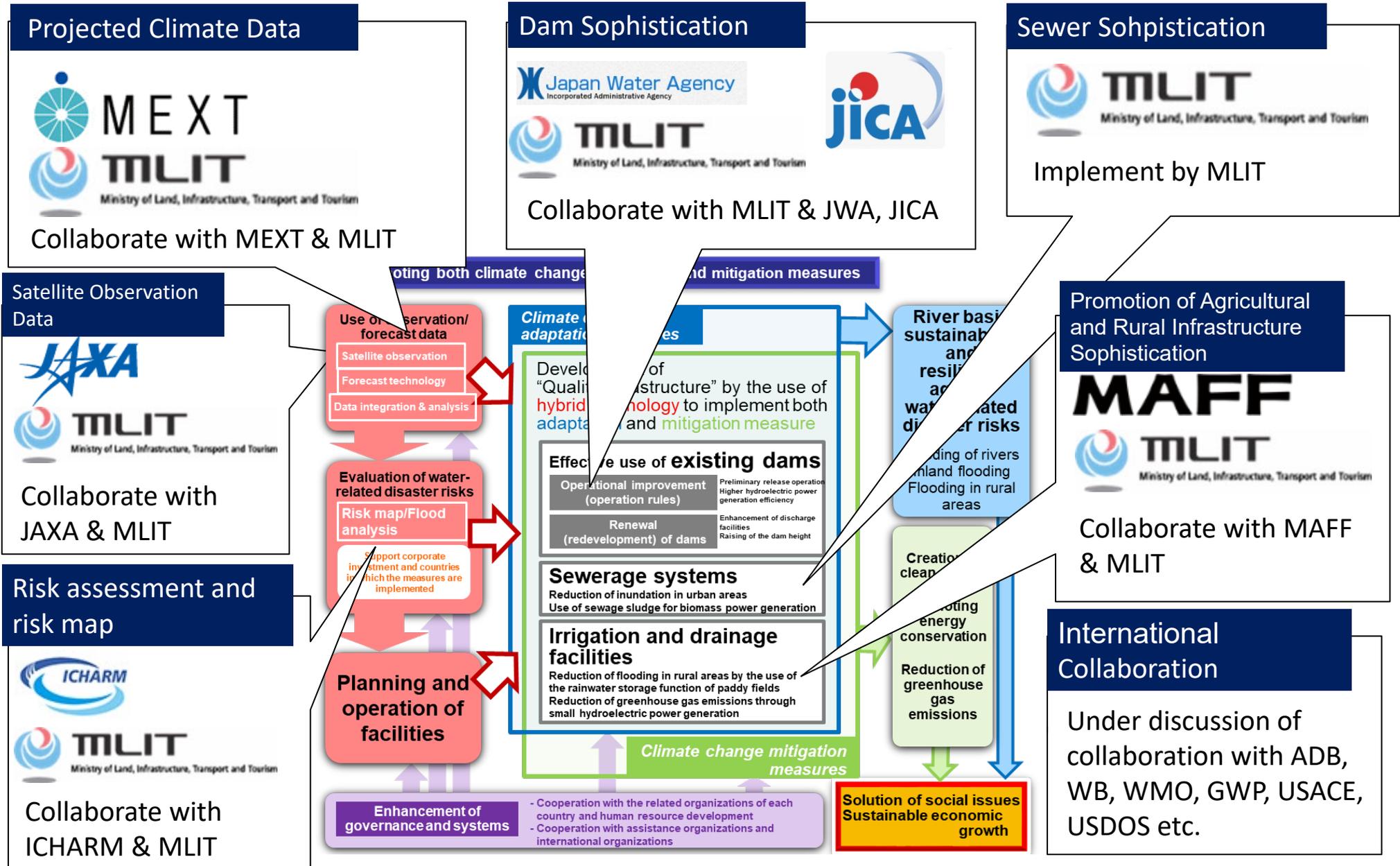
2. Promoting measures to improve people’s basic living environment

- (1) **Promoting the development of “Quality Water Supply Systems”**
 - Introduce **advanced technologies, including IoT technologies** for the development of water supply facilities
- (2) **Promoting the development of “Quality Sanitation Facilities”**
 - Develop sewerage systems and on-site treatment facilities and **enhance abilities to operate comprehensive treatment facilities**



Providing financial assistance worth approximately 500 billion yen over the next five years

The Inter-Institutional Cooperation for the Kumamoto Initiative for Water



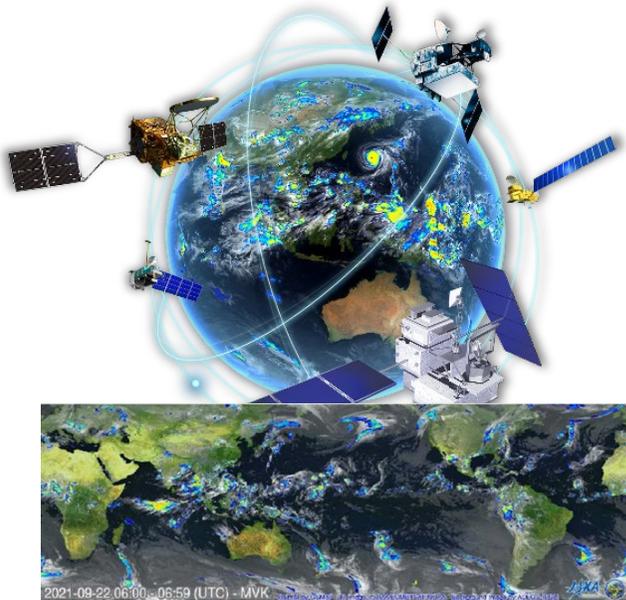
Perspectives to Pay Attention to the Actions

- The Kumamoto Declaration and Chair's Summary from the 4th Asia-Pacific Water Summit have set out the following concepts.
 - (1) The water sector plays a vital role in recovering from the COVID19 pandemic.
 - (2) Recovery from the pandemic must require transformation into quality-oriented societies that are resilient, sustainable, and inclusive.
 - (3) The acceleration of such transformation must presuppose the improving governance, closing the financial gap, and appealing science and technology community.
- Keeping an eye on the public relations at an international level and the well-being of local individuals and making sure that no one will be left behind.
- Combining adaptation and mitigation measures, and optimizing the combination should be encouraged. For example, energy-saving and using alternative energy are highly compatible with adaptation, and nature based solutions and Eco-DRR include both adaptation and mitigation.
- The benefits from the actions must be presented to beneficiaries and decision-makers in the form of visualization or economic benefits.
- Capacity development is critical. Notably fostering "Facilitators" that is, catalytic beings who can lead the way toward resolving problems by providing professional advice on-site using a broad range of scientific and indigenous knowledge.

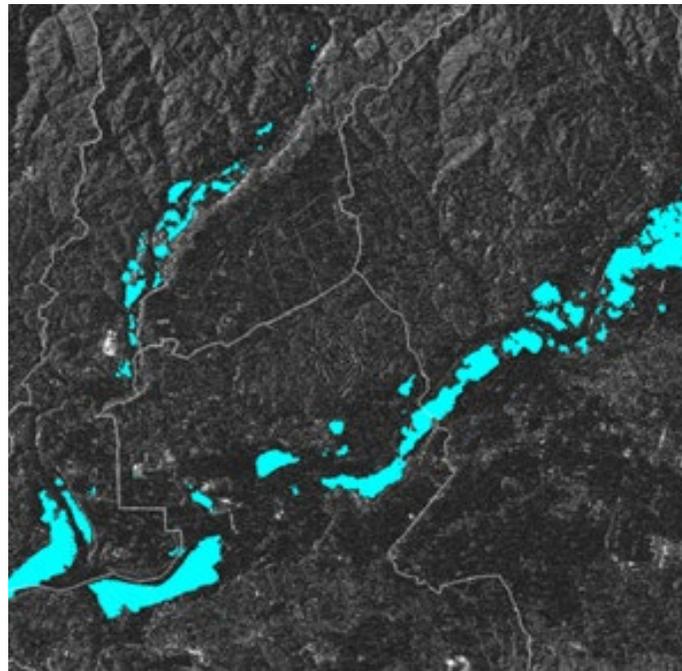
Using Satellite Observation Data

● Acquisition and Utilization of High-Quality Satellite Observation Data

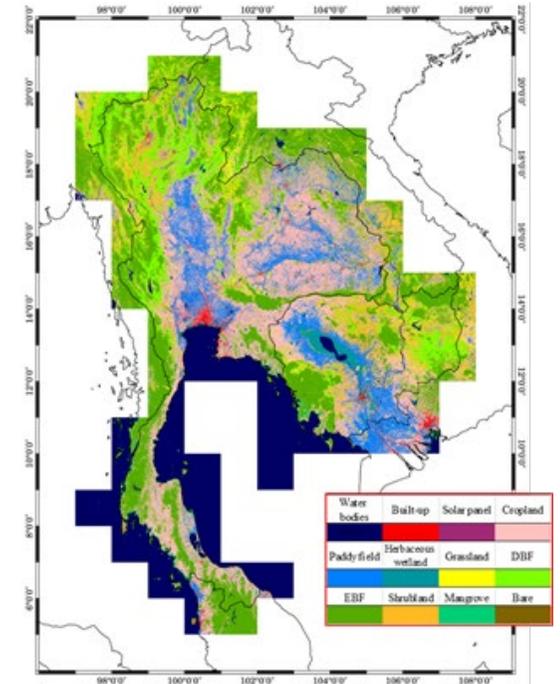
Japan Aerospace Exploration Agency (JAXA) and MLIT will collaborate to enhance the utilization of satellite observation data and the information created from such data (include global precipitation data, information on heavy rains and droughts, hydrological circulation simulation results, soil moisture data, ground elevation data, and land use maps).



Global satellite mapping of precipitation "GSMaP"



Emergency satellite observations during floods



Classify multiple satellite data to create high-resolution land-use maps

Producing Climate Change Prediction and Data Integration

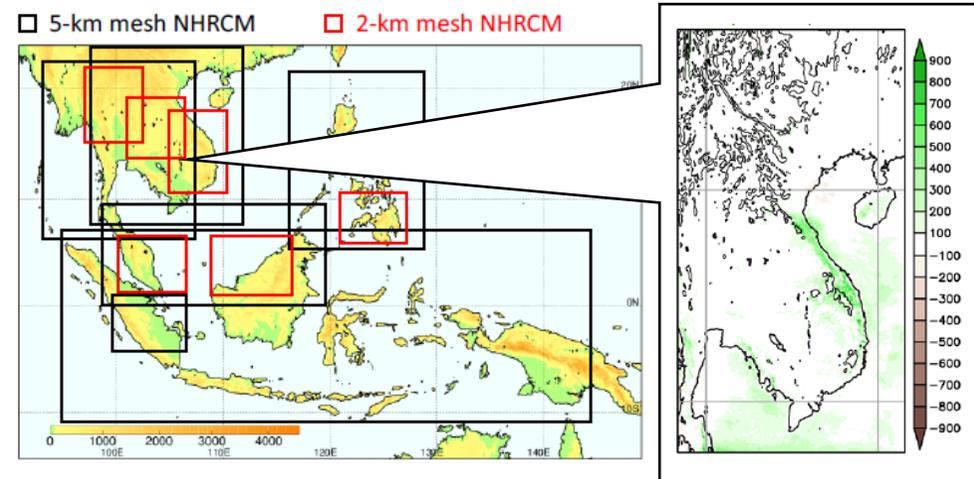
● Production of Climate Change Projection

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) will promote joint research on climate change projection using Japanese climate models in collaboration with universities and research institutes in various countries.

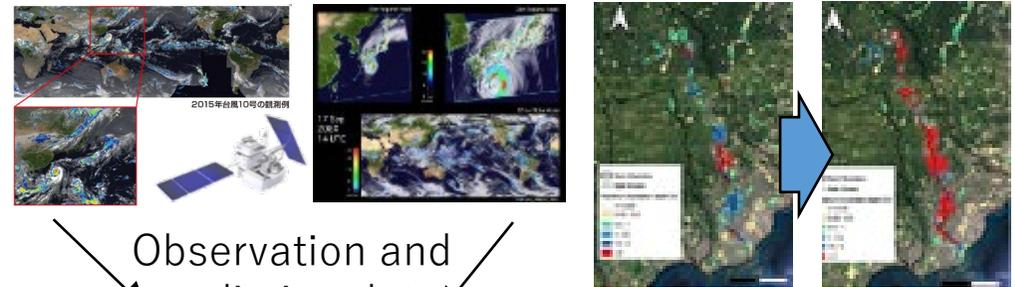
The produced data will serve MLIT in its water-related disaster risk assessment in some Asian countries. Outcomes from the risk assessment will be fed back to the team for its quality improvement

● Provision of Services of the DIAS

MEXT and MLIT will collaborate to provide some countries with data integration and analysis services through the DIAS (Data Integration and Analysis System) to encourage their water-related risk assessment activities.



Creation of climate change prediction data (changes in precipitation)



Archive and analyze big data

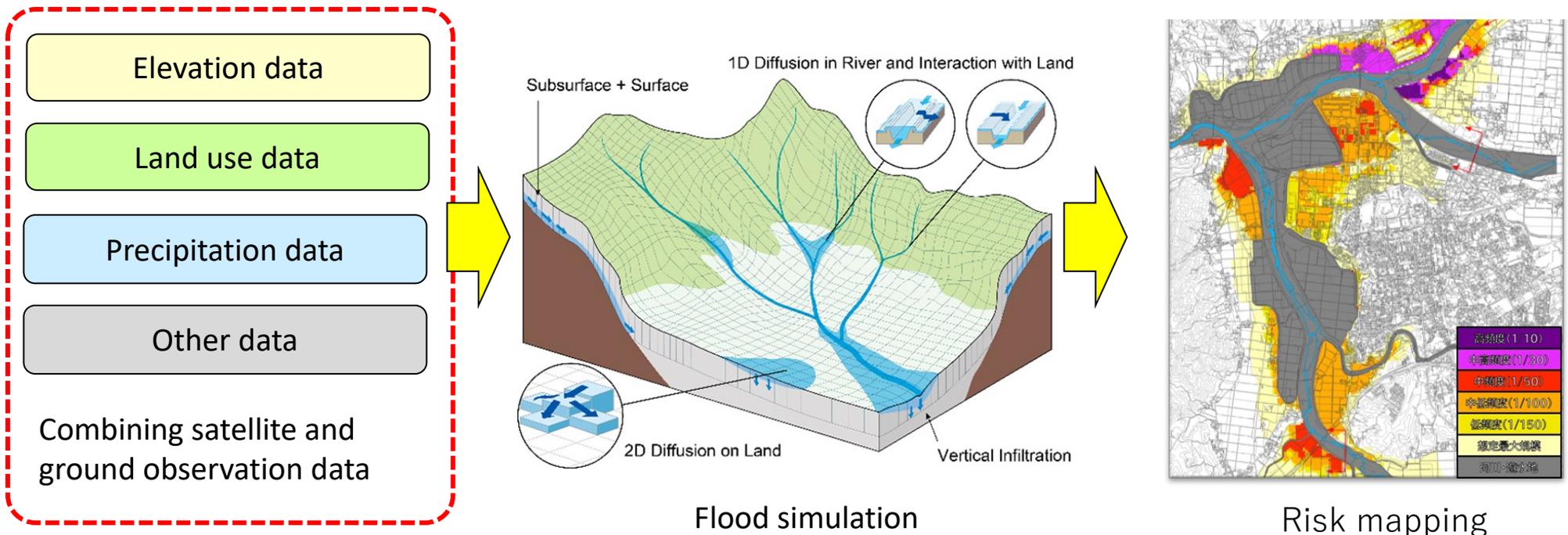
Examine measures based on changes in flooded areas caused by climate change

Flood Risk Mapping

● Flood Risk Mapping in some countries

Necessary actions cannot progress without accurately locating water-related disaster risks in an easy-to-understand manner for decision-makers and local communities. Therefore, MLIT will work to produce Flood Risk Maps that show the potential inundations in target areas in some Asian countries. Combining satellite data with ground observation data, applying climate change projection if possible, and providing it to computer flood simulations.

Also, MLIT will put together guidelines for producing the Flood Risk Maps. And with the collaboration with MEXT for DIAS-based training programs, MLIT will contribute to capacity development support for data utilization and Flood Risk Mapping.



Assessment of Water-Related Disaster Risks

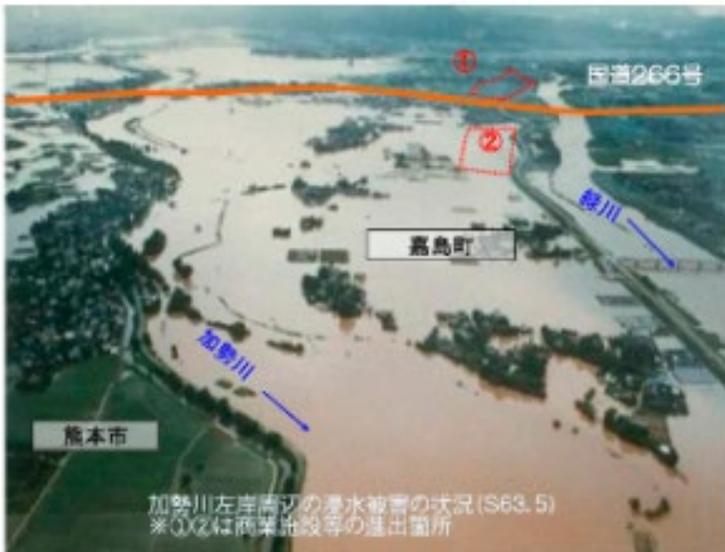
- Identifying the Economic Benefit of Infrastructure Improvements

Appropriate infrastructure improvement against disaster risks would likely exert a positive spillover effect on the local economy.

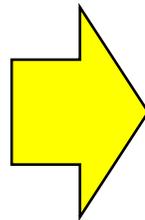
After the levee construction for the Kase river, it has doubled the number of commercial business site and 4 times the number of industry business employment. MLIT is trying to acquire changes in tax revenues in order to find more direct economic spillover in the area.

This assessment would likely encourage decision makers and investors to invest in disaster risk reduction.

Flood Disaster in 1988



After the levee construction in 2010z



Before & After of Kase River improvement project

Early Warning and GEO Partnership

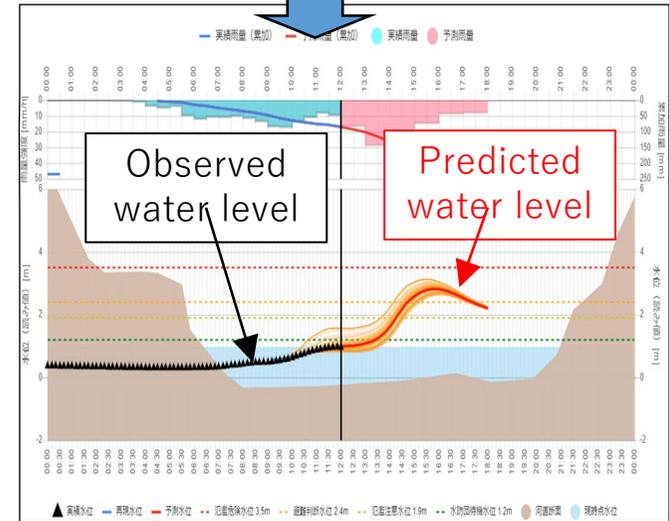
● Early Warning Based on Water Level

Proper early warning will encourage residents to evacuate and businesses to carry out their protection before the disaster strikes.

A New early warning system will leverage ICHARM's real-time river water level observation and the water level prediction system based on ensemble precipitation forecasts.



Select a water level observation site from the map

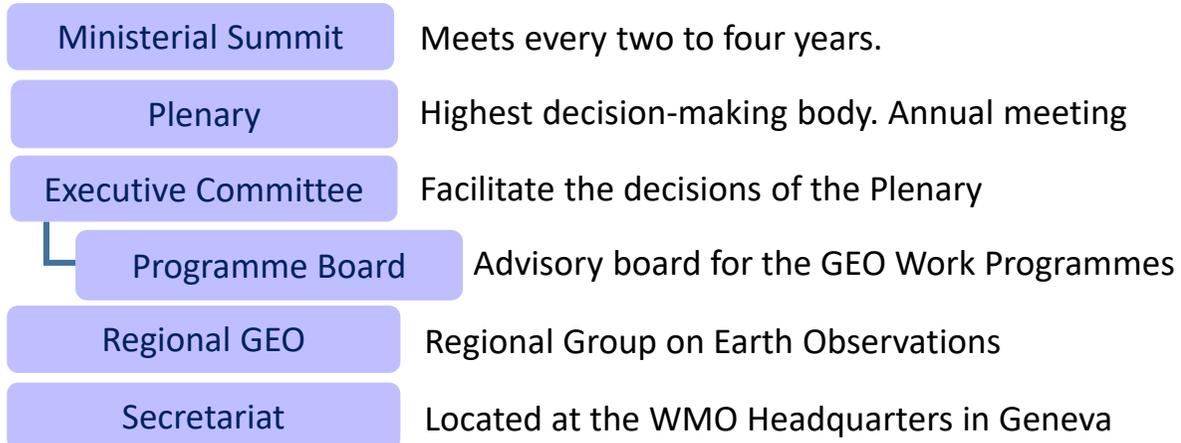


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● Collaboration with an International Partnership for Earth Observation

MEXT and MLIT will jointly leverage the network of the Group on Earth Observations (GEO) to identify challenges and capabilities of the target area while sharing Japan's actions and experiences.

【Structure of GEO】

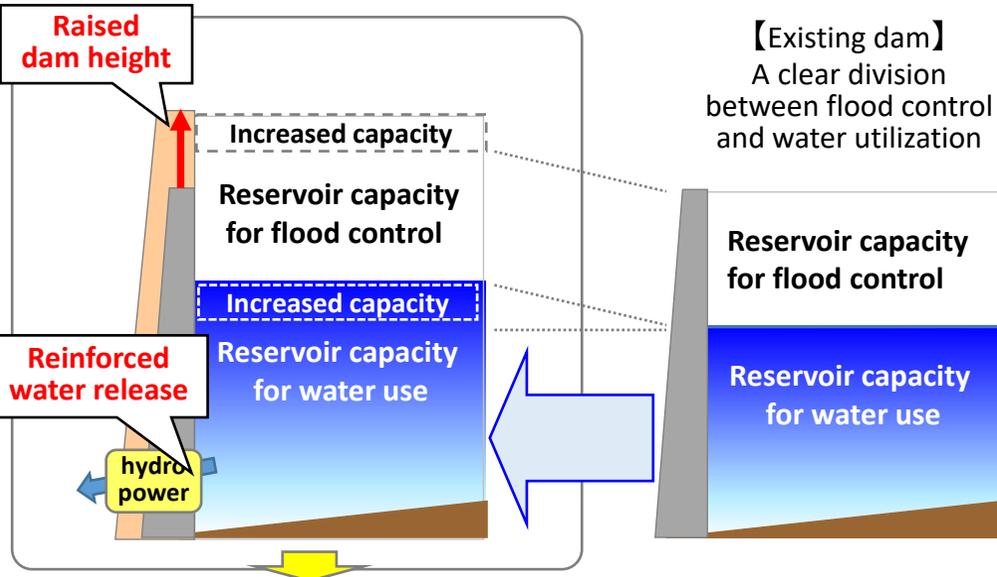


Development of Quality Dams

● Development of Quality Dams

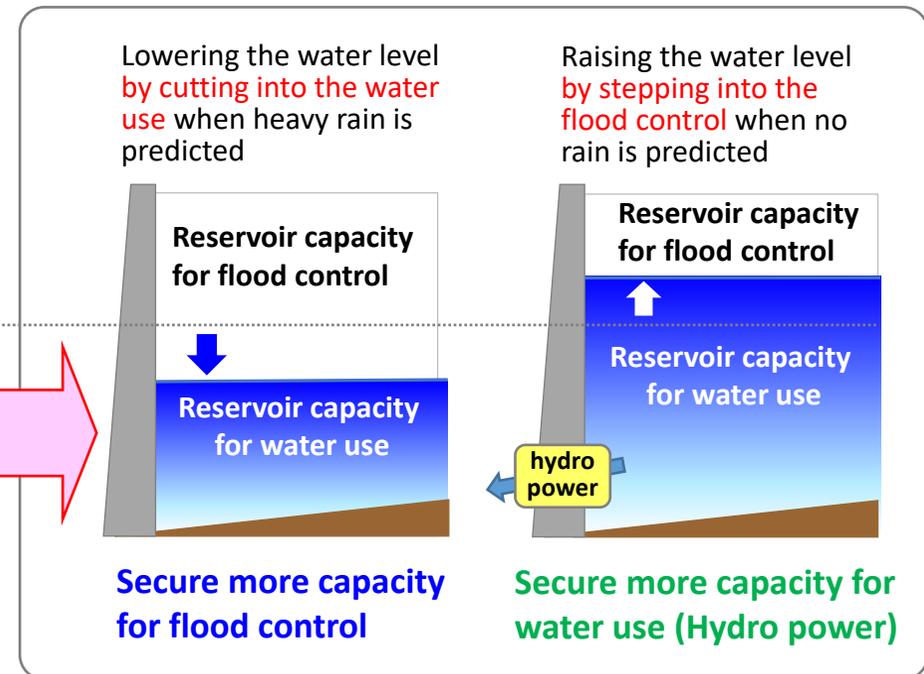
Since new dam construction would not be a major option, more effective and sustainable use of existing dams will be the way to take. Japan Water Agency (JWA), JICA, and MLIT will collaborate to formulate projects for the development of existing dams. The development will consist of both adaptation and mitigation measures. The development will also address sedimentation issues to extend the life of existing dams.

Example of the Structural Improvement



Climate change **adaptation**
(Increased flood control function)
& **mitigation**
(increased hydro power capacity)

Example of the Operational Improvement



Climate change **adaptation** & **mitigation**

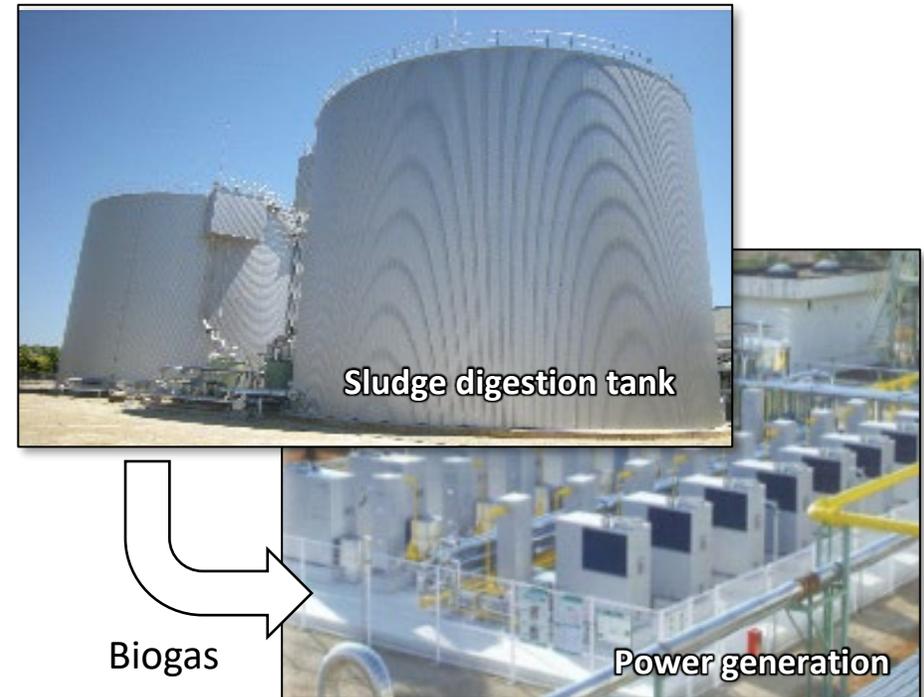
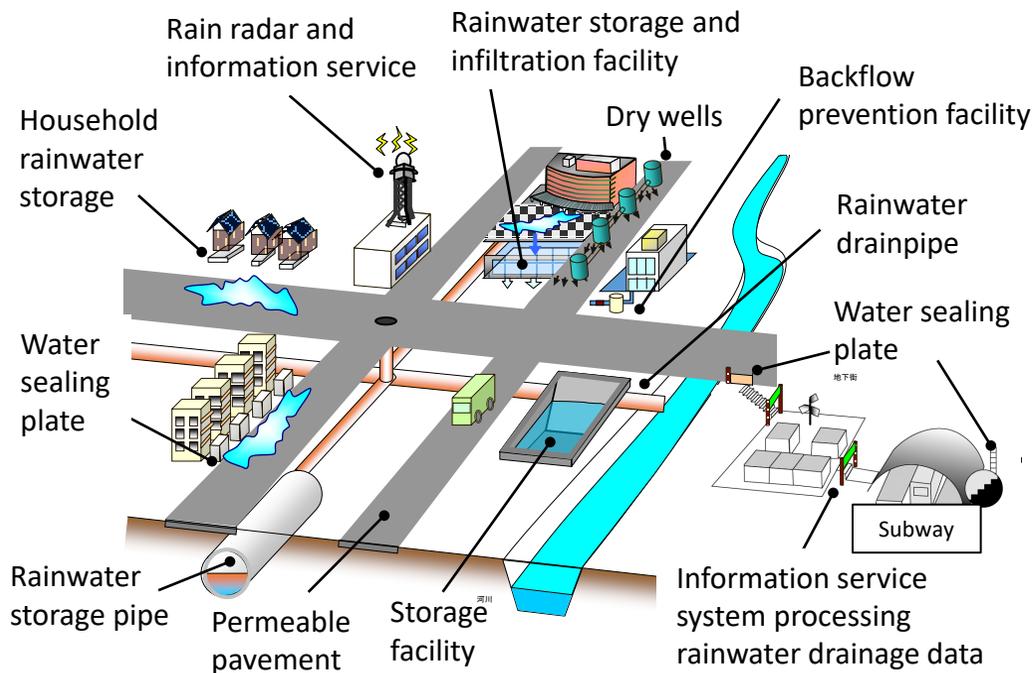
Development of Quality Sewerage Systems

● Development of Quality Sewerage Systems

The Ministry of Environment (MOE) and MLIT work together in Asia Wastewater Management Partnership (AWaP) for the mainstreaming and increased investment in waste water treatment. Besides developing sewerage system and decreased urban flood, it will help resolving sewage sludge issues by providing biomass power generation technologies, leading to increased renewable energy production.

Climate change **adaptation**
(**comprehensive urban flood protection**)

Climate **change mitigation**
(**renewable energy production**)



Quality Agricultural Infrastructure Improvement and Rural Development

● Quality Agricultural Infrastructure Improvement and Rural Development

Agricultural dams, reservoirs, and waterways, as well as farmlands, can prevent not only droughts but also floods. Ministry of Agriculture, Forestry and Fisheries (MAFF) and MLIT will collaborate to formulate projects for the development of irrigation water management and flood management, leveraging existing agricultural and rural infrastructure facilities.

Greenhouse gas emission reduction
Introduce agricultural water management system that helps reduce greenhouse effect gas emissions from farmland

Utilization of paddy fields
Mitigating flooding risks in downstream areas by keeping rain water in paddy fields

Utilization of agricultural dams
Lower the reservoir water level in advance as a flood control function

Promotion of small hydroelectric power generation
Make use of irrigation and drainage facilities for power generation

Utilization of drainage facilities
Establish and improve agricultural drainage facilities (drainage pump stations, sluice gates, etc.) to prevent/reduce flooding in both urban and rural areas

Reduce the generation of methane by keeping farmland under aerobic conditions

In anaerobic condition In aerobic condition
[Source] Japan Science and Technology Agency

Example of water management (Alternate wetting and drying*)

Water level (Surface)
+5 cm +5 cm +5 cm +5 cm
0 cm
-15 cm -15 cm -15 cm
Cultivation Period = 1.3 months
Time

*Alternate wetting and drying (AWD) irrigation method
[Source] International Rice Research Institute

Overseas Land Improvement Cooperation Office, Design Division,
Rural Development Bureau, Ministry of Agriculture, Forestry and Fisheries
<https://www.maff.go.jp/e/index.html>