

# Policy to Fulfill Water Resource Conservation Function of Forests by Forestry Agency

Kenji Hayashi  
Conservation Division,  
Forestry Agency



**4th APWS**  
Kumamoto Japan 2022

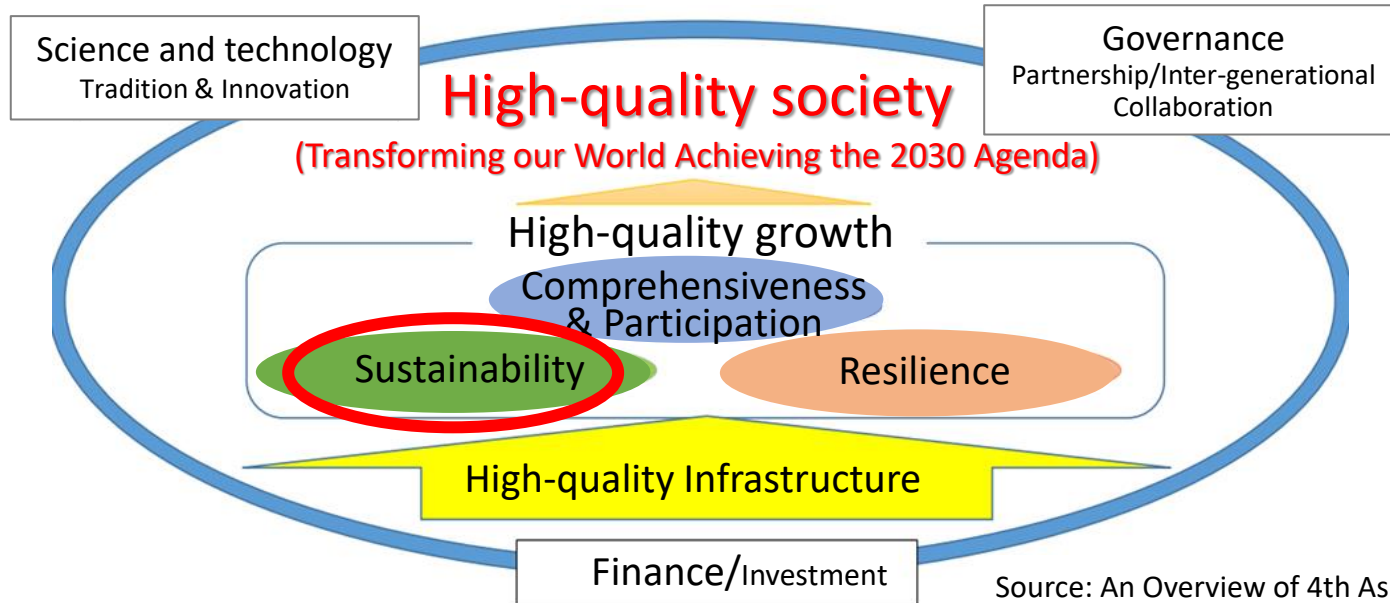
# Asia-Pacific Water Summit

The Theme of the 4th APWS : "Water for Sustainable Development:  
Best Practices and the Next Generation"

Messages based on the theme from the Summit (Expected)

**Achieving the water-related SDGs and moving toward a secure, safe, and sustainable future strongly resilient to any disaster, with no one left behind.**

○ Point of discussion: Building a high-quality society after COVID-19 pandemic



Source: An Overview of 4th Asia-Pacific Water Summit (Japan Water Forum)

- The theme of the summit is "Water for Sustainable Development: Best Practices and the Next Generation," in which it is included to achieve sustainability and SDGs.

# Contribution to SDGs by forest & forestry

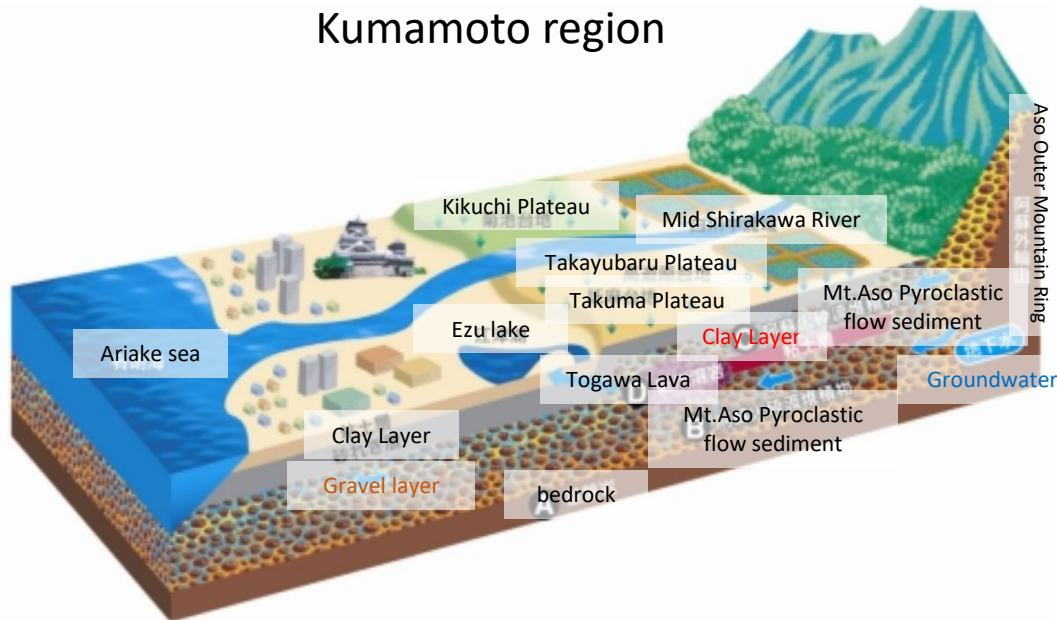


Source: The Current Situation and Challenges in Forests, Forestry, and Timber Industries (Forestry Agency)

- We have been contributing to various SDGs, such as Goal 15, “sustainably manage forests.”
- Also, forest management plays a significant role in Goal 6, “Ensure availability and sustainable management of water.”

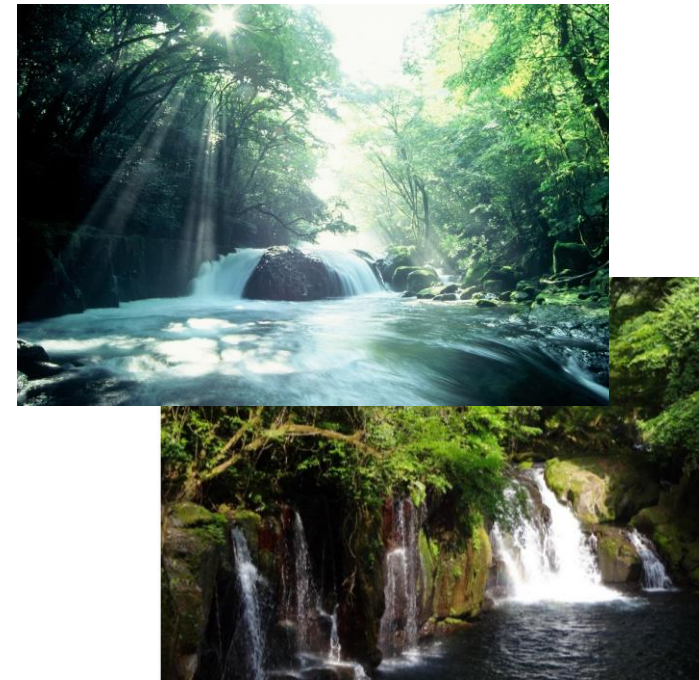
# Relationship between forests and water

Water cycle system in Kumamoto region



Source: Kumamoto, a World-Class Groundwater City (Kumamoto City)

Kumamoto Recreation Forest(Kikuchi Gorge)

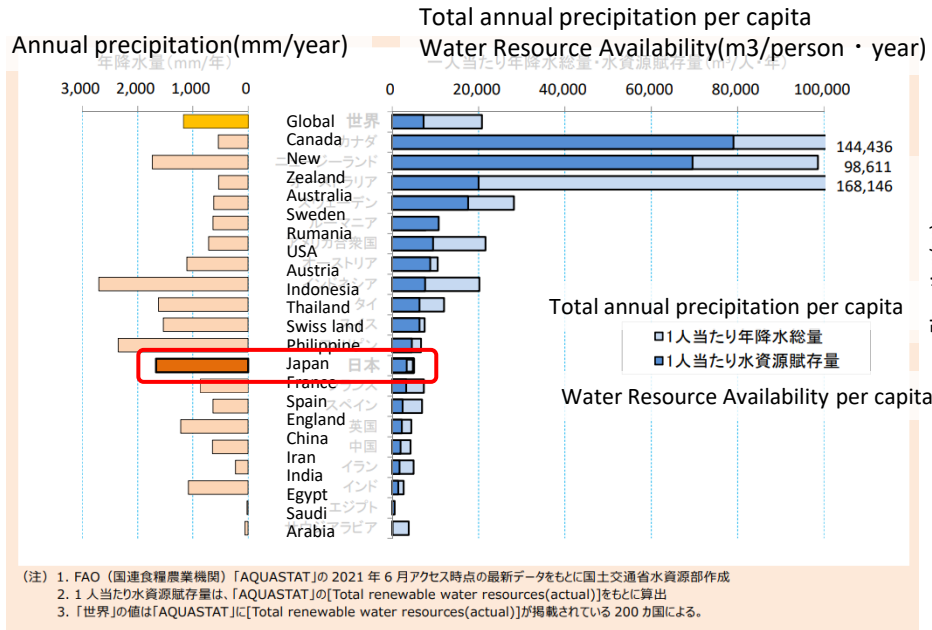


Source: Recreation Forest  
One Hundred "Watershed Forests"  
(Forestry Agency)

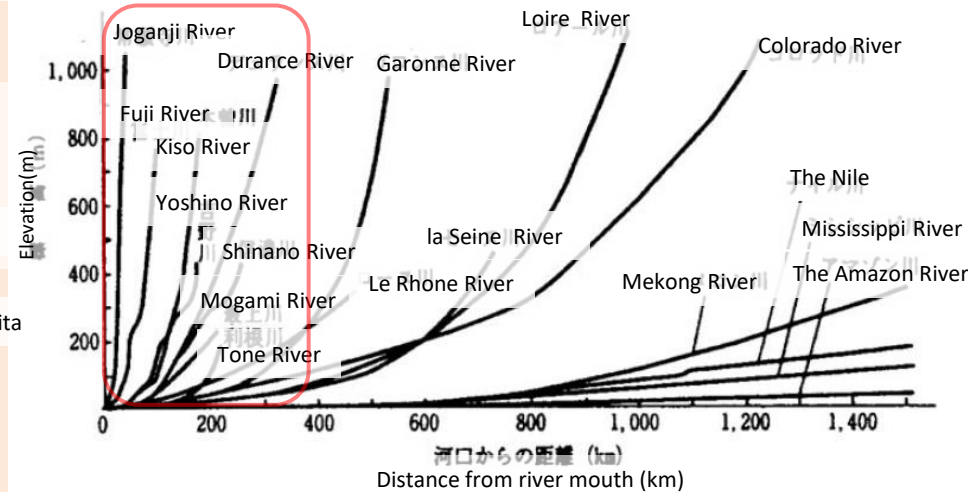
- Forests conserve water resources, and provide water abundantly for downstream areas.
- In Kumamoto City, groundwater can satisfy all the needs of 740,000 people.

# Water resources in Japan

## Precipitation and Water resources in other countries



## Slope of rivers in the world



Source: Yutaka Takahashi, "River Engineering" (University of Tokyo Press)

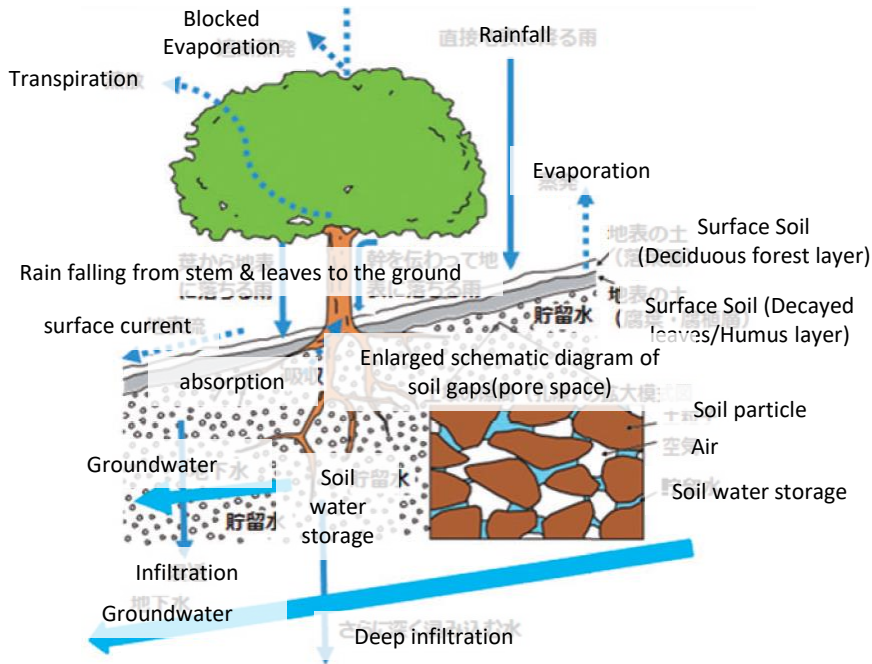
Source: Current Situation of Water Sources in Japan, 2021 (Ministry of Land, Infrastructure, Transport and Tourism)

- Japan has a large amount of annual precipitation compared to other countries, but it is extremely low per-capita.
- Because of its steep land, water flows out so fast. It is necessary to consider how to ensure water for use.



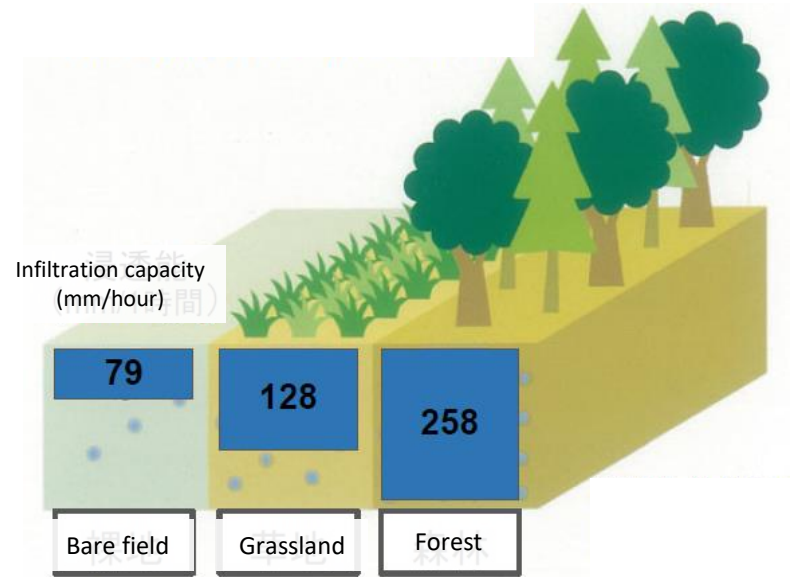
# Fulfillment of water resource conservation function of forests

## Water infiltration to ground in forests



Source: Created by Forestry Agency based on "Forest Seminar No. 1: Forests to Conserve Water, Water to Conserve Forests," (National Forestry Improvement and Extension Association)

## Comparison of infiltration capacity



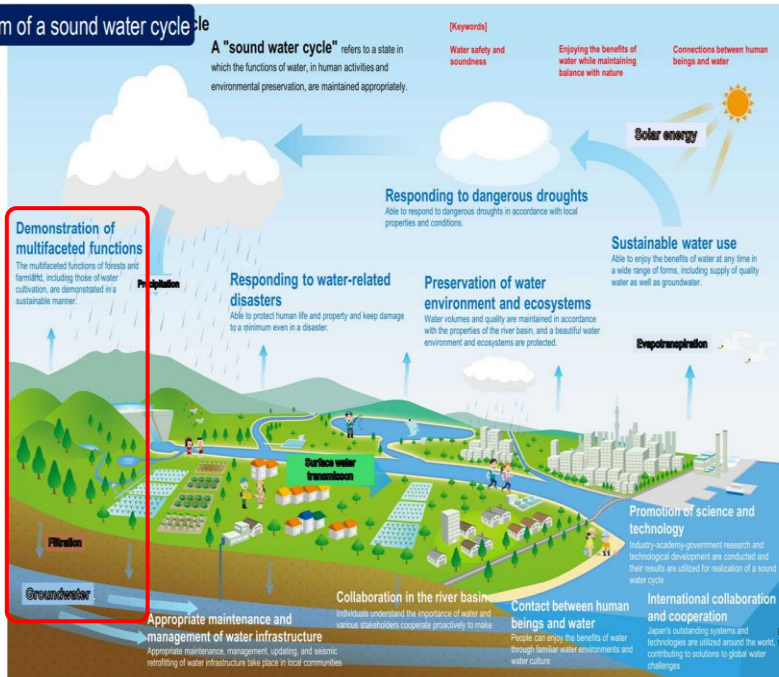
Source: Hiroshi Murai, Yusaku Iwasaki, "Research on Water and Soil Conserving Function of Forest."

- As tree roots extend deeper, the soil grows, and water is reserved.
- Forests can infiltrate more than grasslands or bare fields.

# Conservation and restoration of water circulation / Fulfillment of multiple functions of forests

## Promotion of Basic Plan for Water Cycle

The form of a sound water cycle



Source: the Basic Plan for Water Cycle (The secretariat of the Headquarters for Water Cycle, Cabinet Secretariat)  
[https://www.kantei.go.jp/jp/singi/mizu\\_junkan/english/pdf/Overview\\_of\\_Basic\\_Plan\\_on\\_Water\\_Cycle\(a4size\)\\_EN.pdf](https://www.kantei.go.jp/jp/singi/mizu_junkan/english/pdf/Overview_of_Basic_Plan_on_Water_Cycle(a4size)_EN.pdf)

## Promotion of Basic Plan for Forests and Forestry

"Green growth" by forest, forestry and timber industry

By properly managing forests, achieving growth of the forestry and timber industries, and increasing their sustainability, we will realize a prosperous social economy that anticipates a carbon-neutral economy in 2050!



**Managing and using of forest resources appropriately**  
 Promoting reforestation and multi-tiered forests in order to guide them to a diverse and healthy form while promoting the use of recycled resources. In addition, we will accelerate efforts to conserve and manage natural forests, strengthen the nation's forests, and secure carbon absorption.

**Developing initiatives for "new forestry"**  
 Developing a "new forestry" that enables a positive shift in income from logging to reforestation and nursery. In addition, the company has achieved "sustainable management over the long term."

**Strengthening the competitiveness of the timber industry**  
 Improvement of international competitiveness by developing a supply system for domestic timber products that can compete with foreign timber and other materials. In addition, small and medium-sized local factories will improve their local competitiveness by supplying multi-purpose products that meet diverse needs.

**Creating a "second forest" in urban areas, etc.**  
 Aiming to capture new demand for wood in mid to high-rise buildings and in the non-profit sector. By using water, carbon is stored in the city and contributes to global warming prevention.

**Creating of mountain village value**  
 In the rural areas, the forest service industry will be fostered and the number of people involved will be increased. In addition, to maintain the community, cooperative activities such as management and utilization of agricultural and forestry lands are promoted.

Source: Basic Plan for Forests and Forestry (Forestry Agency)

- Through forest maintenances, etc., we keep and fulfill water resource conservation function of forests, contributing to water circulation.

# Overview of forests in Japan

## Forests in Japan

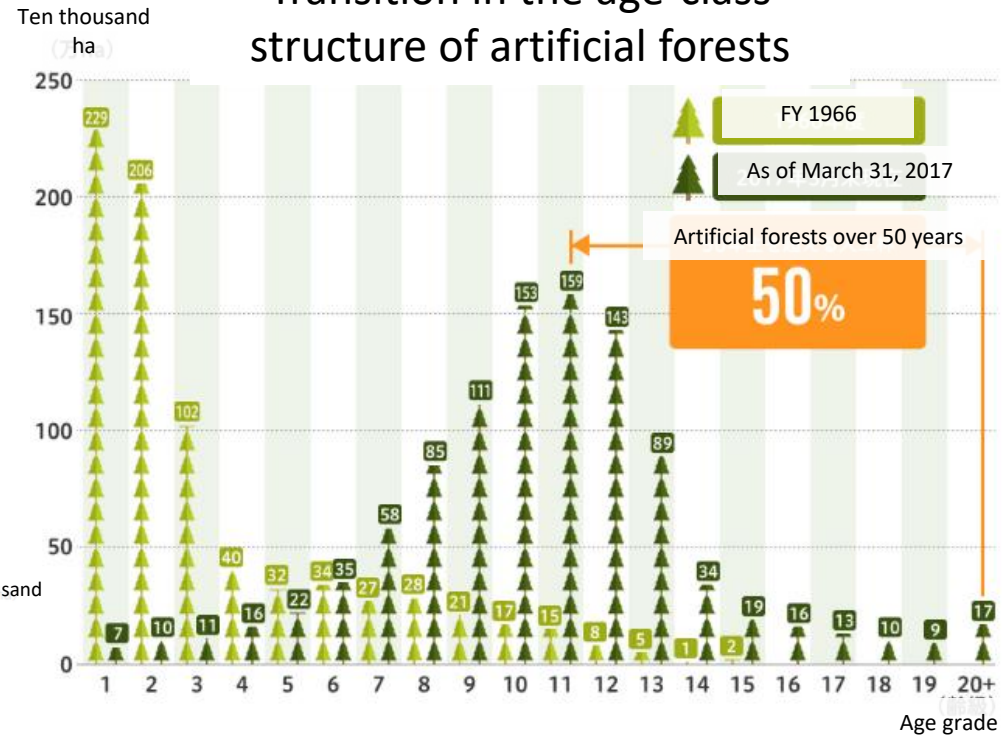


Source: Google Maps

Note: Some parts of the national land areas are not shown.

Source: The White Paper on Land, 2021  
(Ministry of Land, Infrastructure, Transport and Tourism)

## Transition in the age-class structure of artificial forests



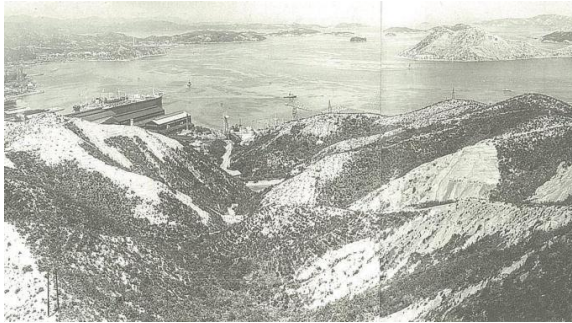
Source: Forests and Forestry in Japan Today (Forestry Agency)

- In Japan, forests cover two-thirds of the national land area and are highly important to conserve water resources and prevent natural disasters.
- As a result of promoting forestation, the area of mature artificial forests, which fulfill the water resource conservation function, has been increasing.



# Promotion of forestation & forest maintenance

Recovering forests in devastated mountain areas



Around 1950



Present

Source: Forest conservation to be passed on to next generation: Reforestation. (Forestry Agency)

Circular use of forest products through sustainable forest management



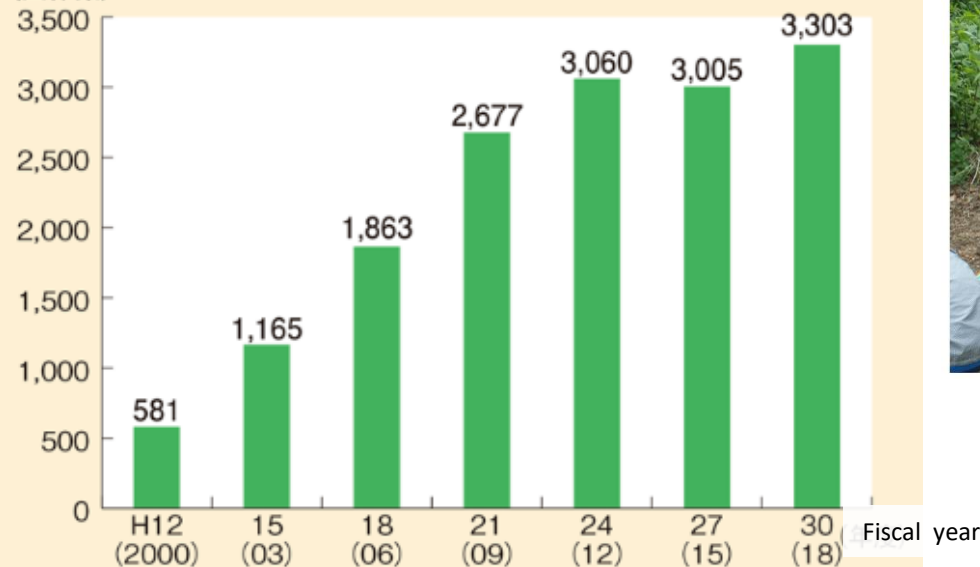
To fulfill the various functions of forests, circular use of forest "Harvest, Use, Plant" is necessary. To do so, it is important to transform forestry into a growth industry, maintain and conserve forests appropriately.

Source: Annual Report on Forest and Forestry in Japan, Fiscal Year 2018 (Forestry Agency)

- We have been promoted forestation and forest maintenances, such as planting, weeding, thinning.
- We also promote circular use of forest products.

# Efforts to maintain forests by Private-sector

Transition of number of groups contributing to forest maintenances



Source: Annual Report on Forest and Forestry in Japan, FY 2020  
(Forestry Agency)

Efforts by children and local communities



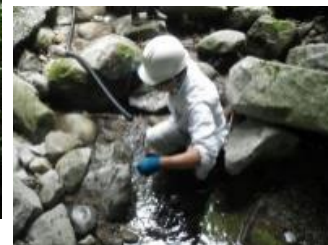
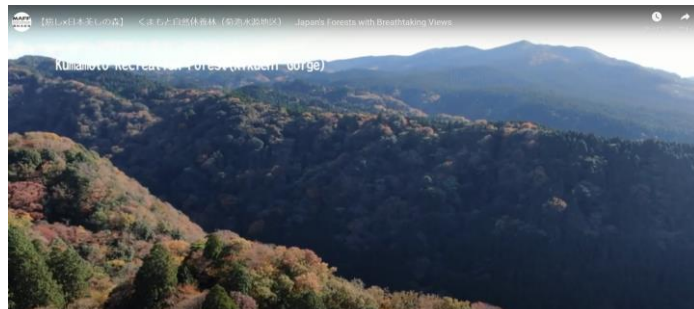
Source: Cultivating Forests with Nationwide Participation Based on Agreements (Forestry Agency)

- Corporations, local communities, etc. have been taking part in forest maintenances actively, and the number of groups involved in such activities has been increasing.
- Many of these groups do activities for maintenance, conservation of countryside forests and forest environment education.



# Researches on water resource conservation functions of forests

Investigation and analysis related to the influence of forests on the environment of Ariake Sea



Investigation on water quantity and quality by Forestry and Forest Products Research Institute



九州支所 熊本県熊本市 (Kyushu Research Center, Kumamoto city)



鹿北林相 (タワーより)



鹿北林外雨採取



鹿北量水堰

Source: Forest Atmospheric deposition and Stream water Chemistry Database (Forestry and Forest Products Research Institute)

Source: Recreation Forest (Forestry Agency)

- Forestry Agency has been investigating and analyzing the influence of forests on the water area of Ariake Sea.
- Forestry and Forest Products Research Institute has also been conducting a long-term investigation on water quantity and quality in forests throughout Japan.

# Measures against natural disasters

Collapsed mountainside, caused by heavy rainfall  
(Ashikita-machi, Kumamoto Prefecture)



A driftwood-catching dam  
(Kuma-mura, Kumamoto Prefecture)



Recovery from disaster by forest conservation  
(Fukuchi-machi, Tagawa-gun, Fukuoka Prefecture)



On-site technical support



Source: Recovery from the Large-Scale Disasters in Mountain Areas,  
Annual Report on Forest and Forestry in Japan, Fiscal Year 2020

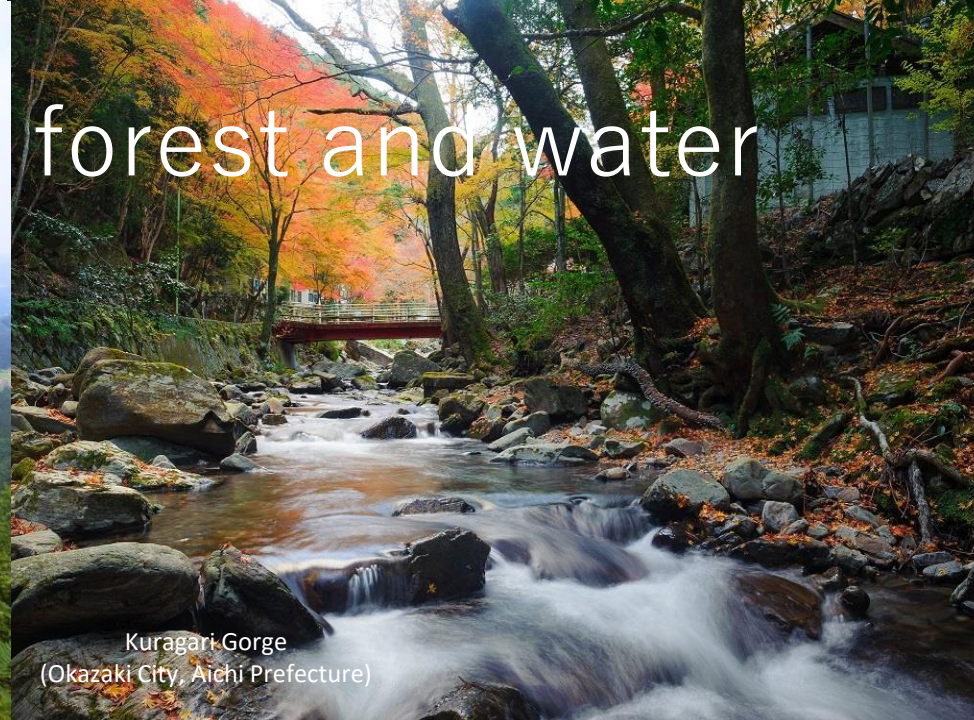
- Forest conservation programs and on-site technical supports have been provided for recovery from rainfall disasters.



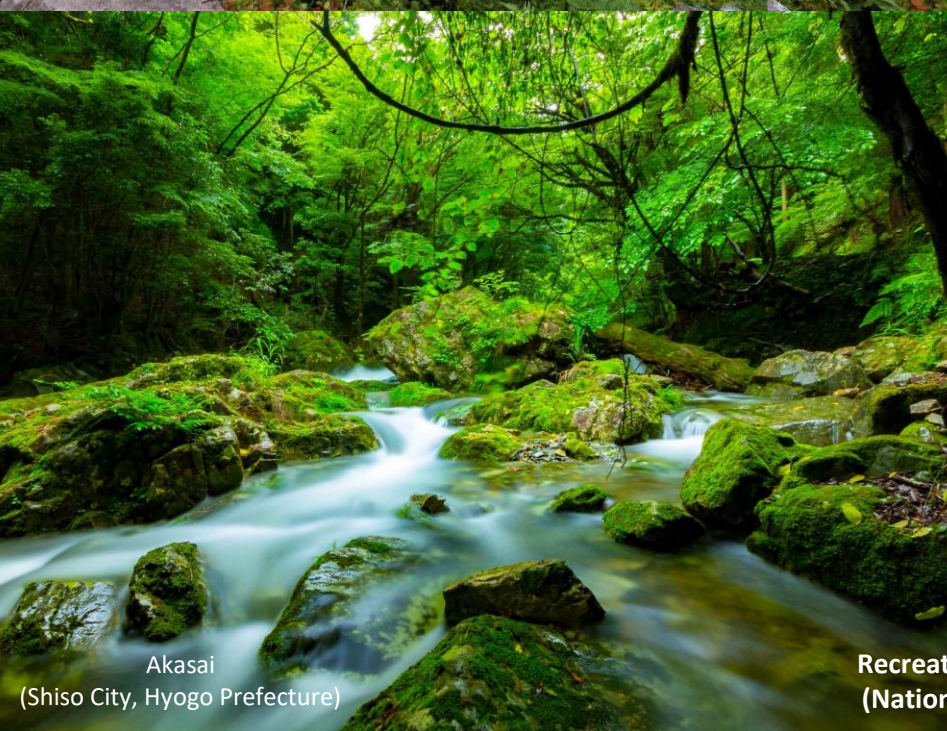
# Landscape with forest and water



Numazawa Ko (Lake)  
(Kaneyama Town, Fukushima Prefecture)



Kuragari Gorge  
(Okazaki City, Aichi Prefecture)



Akasai  
(Shiso City, Hyogo Prefecture)



Recreation Forest  
(National Forest)

Shikaribetsu  
(Shikaoi Town, Hokkaido)