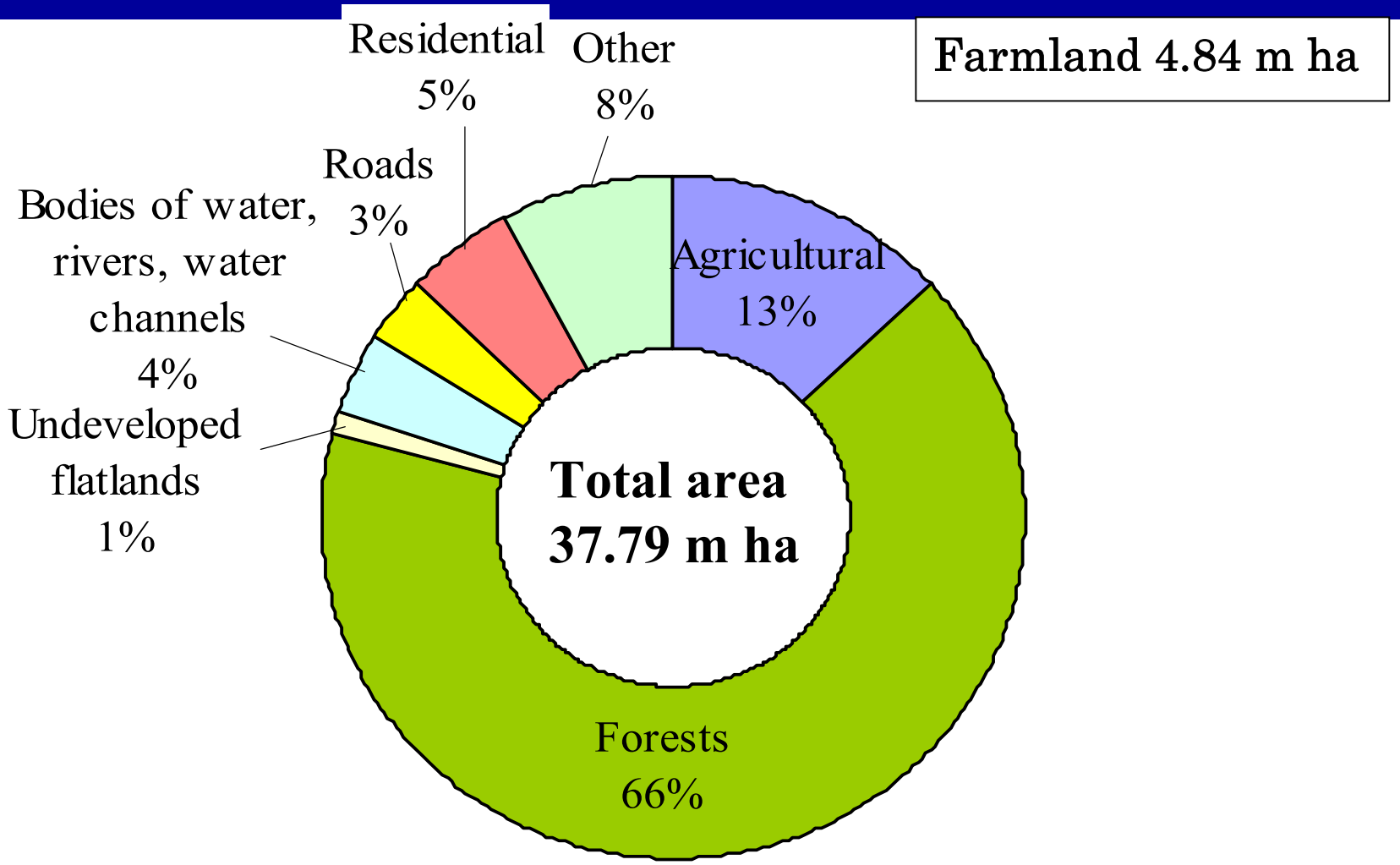
Disaster Prevention Functions and Conservation Measures in Rural Areas

Yohei Sato, Dr.

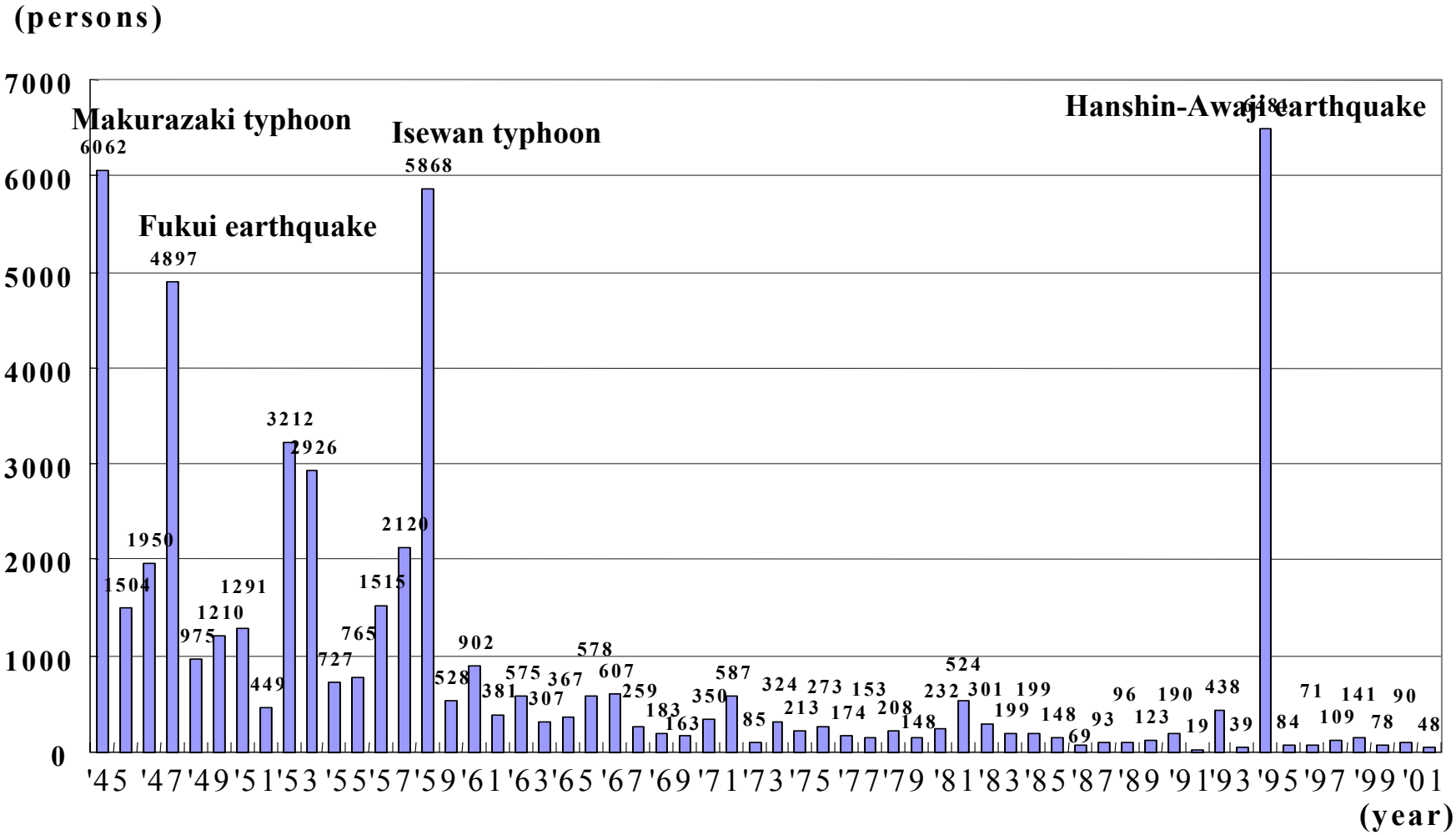
Professor, Tokyo University of Agriculture

President, International Society of Paddy and Water Environment Engineering

Introduction



Current Land Use in Japan



Number of dead and missing from natural disasters

Damage from recent disasters

1) Earthquake Damage

(Chu-Etsu Earthquake in 2004)

Damaged Dam and Irrigation Pond (Kawanishi Dam)

Caved-in road

Cave-in in spillway

Crack on embankment of irrigation pond

2) Damage from winds, floods and landslides

Crop damage from typhoons in 2004

Typhoons	Total damage (m\)
Typhoon No. 6	20,111
Seasonal rain front	67,993
Typhoons Nos. 10-11	23,725
Typhoon 15, seasonal rain front	55,108
Typhoon 16	96,075
Typhoon 18	176,860
Typhoon 21	81,845
Typhoon 22	12,000
Typhoon 23	174,248
Total	707,965

Disaster prevention functions of rural areas

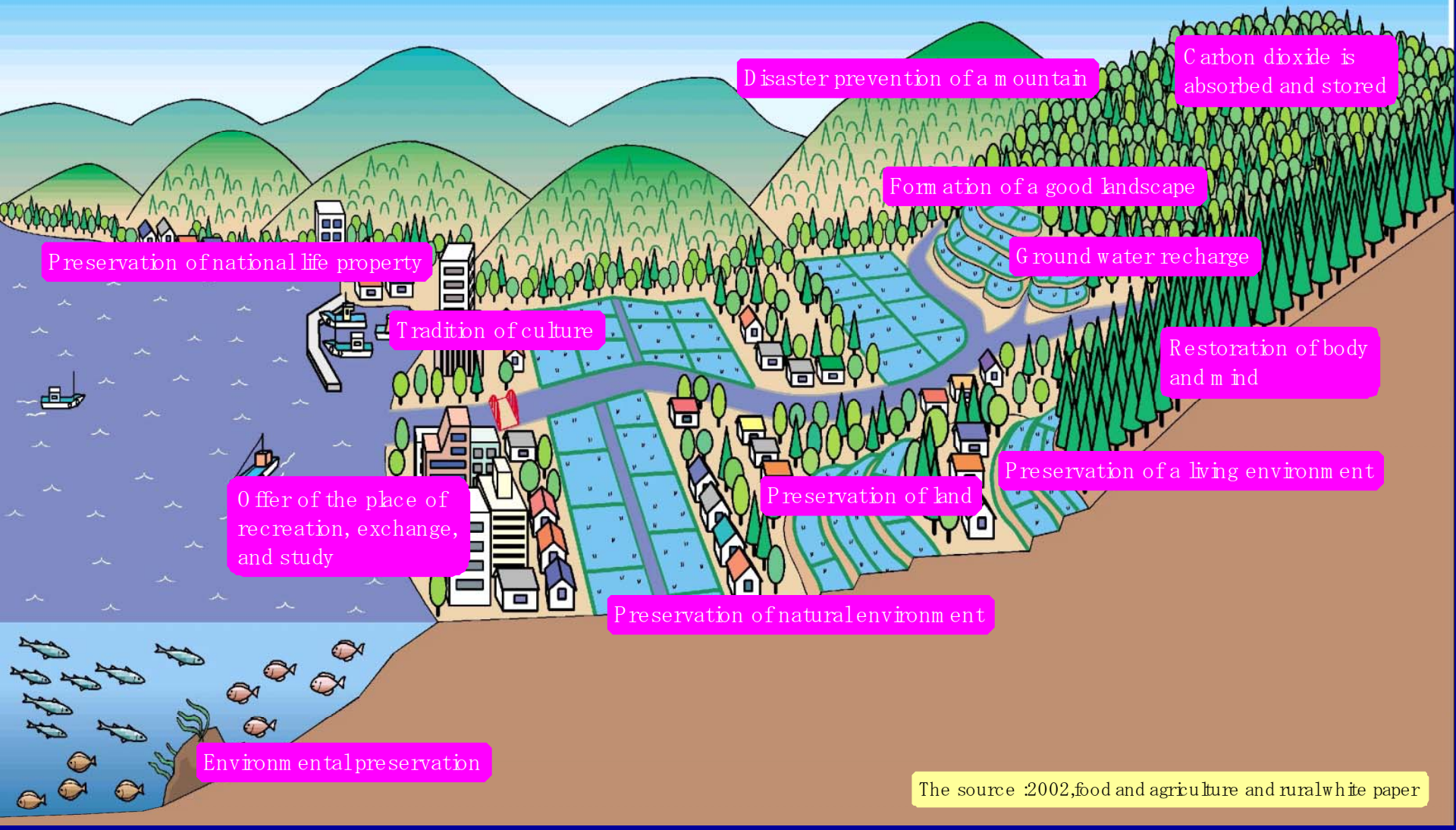


Illustration of Multifunctionality

The multifunctionality of agriculture can be broadly classified into:

(1) Ensuring a stable food supply,
(2) Ensuring the safety of the land,
(3) Groundwater recharge,
(4) Preserving the natural environment,
(5) Forming an attractive landscape,
(6) Transmitting cultural traditions.

The multifunctionality of forestry can be broadly classified into:

(1) Producing lumber and other materials,
(2) Preventing disasters in the mountains,
(3) Conserving watersheds,
(4) Absorbing and storing carbon dioxide,
(5) Maintaining biodiversity,
(6) Preserving the living environment,
(7) Promoting health and culture.

The multifunctionality of fisheries can be broadly classified into:

(1) Ensuring a stable supply of fisheries products,

(2) Protecting the lives and property of the people,

(3) Preserving the environment,

(4) Providing a place for recreation, interaction and learning,

(5) Passing on cultural traditions.

Values of the Multifunctionality of Agriculture

Category of Function	Annual value (bill. \)
Flood prevention	3,498.8
River flow stabilization	1,463.3
Groundwater recharge	53.7
Prevention of soil erosion	331.8
Prevention of landslide	478.2

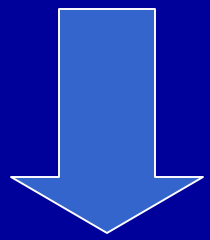
Values of the Multifunctionality of Forests

Category of Function	Annual value (bill. \)
Prevention of surface erosion	28,256.5
Prevention of shallow landslide	8,442.1
Flood mitigation	6,468.6
Storage of water resources	8,740.7

Disaster prevention functions performed by rural communities

Rural Communities

Maintaining and managing irrigation and drainage channels



Flood control brigades

Role of organizations related to agriculture, forestry and fisheries in rural communities

Organizations play a key role

- Cable broadcasts networks run by agricultural, forestry and fisheries cooperatives are used to broadcast alerts and warnings about weather conditions and tsunamis
- Land improvement districts perform a key role in local flood prevention efforts.
- Fisheries cooperatives play a major role in relief operations.

Farmlands registered under the disaster-prevention cooperative farmland system

At times of disasters:
Sign means that temporary housing can be built on farmland as the evacuation sites.

Conclusions

- **Rice paddies and forests play a key role in land conservation.**
- **Rural communities perform many functions related to disaster prevention on a community basis.**
- **It is necessary to deepen understanding of the role that the agriculture, forestry and fisheries sector plays in protecting countries against natural disasters.**

Many thanks for your attention!