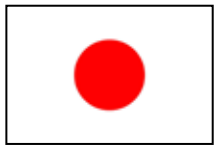
75th International Executive Council meeting & 9th Asian Regional Conference



Country Paper (Japan)

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Japanese National Committee on Irrigation and Drainage (JNCID)

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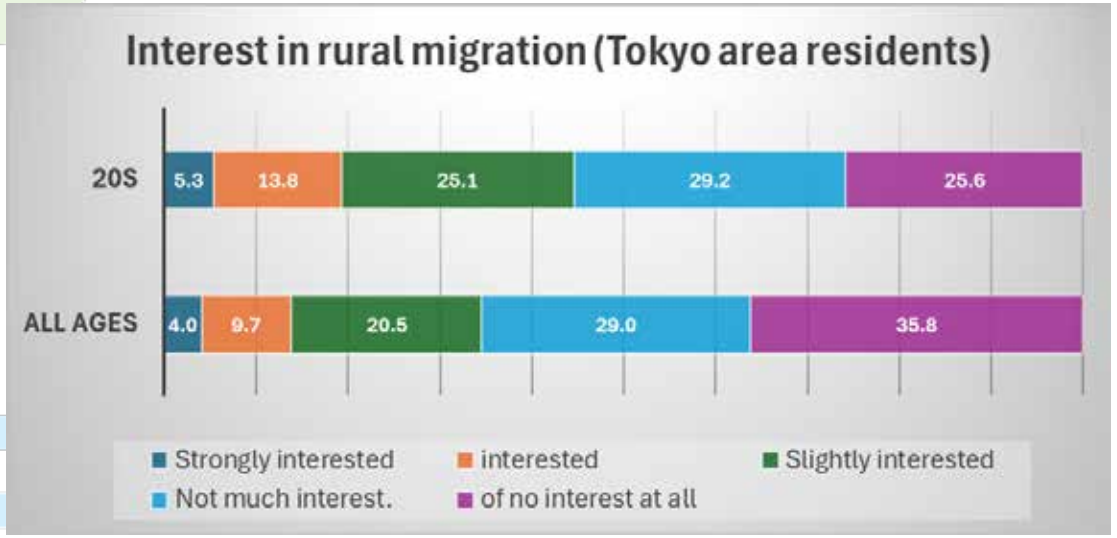
1-1. Population Dynamics

- Ø Japan has a population of 126 million, of which 1.7 million are in agriculture, including 1.4 million of core agricultural workers.
- Ø The number of farmers is decreasing and aging, with a decline of about 40% over the past 20 years, and the average age of farmers has reached 67.8 years old.
- Ø The value and attractiveness of rural areas have been reevaluated in recent years, especially for the younger generation living in the Tokyo area.

Number of Core Agricultural Workers

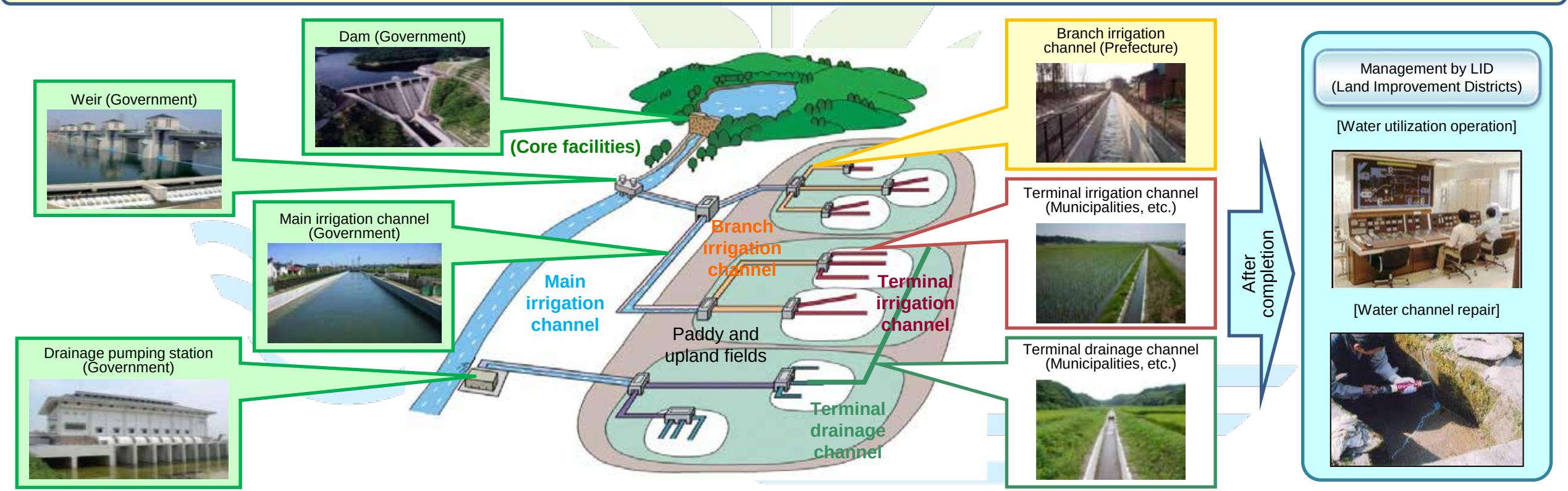
Item	2000	2010	2020
Number of Core Agricultural Workers (Thousands)	2,400	2,054	1,363
Number of Persons Aged 65 and Over (Thousands) (%)	1,228 (51.2)	1,262 (61.4)	949 (69.6)
Number of Persons Aged 75 and Over (Thousands) (%)	306 (12.7)	595 (29.0)	432 (31.7)
Average Age (Years)	62.2	66.1	67.8



1-2. Water Resource Management

Ø The construction and maintenance of irrigation and drainage facilities are carried out as Land Improvement Projects (LIPs) stipulated in the Land Improvement Act (LIA) (1949).

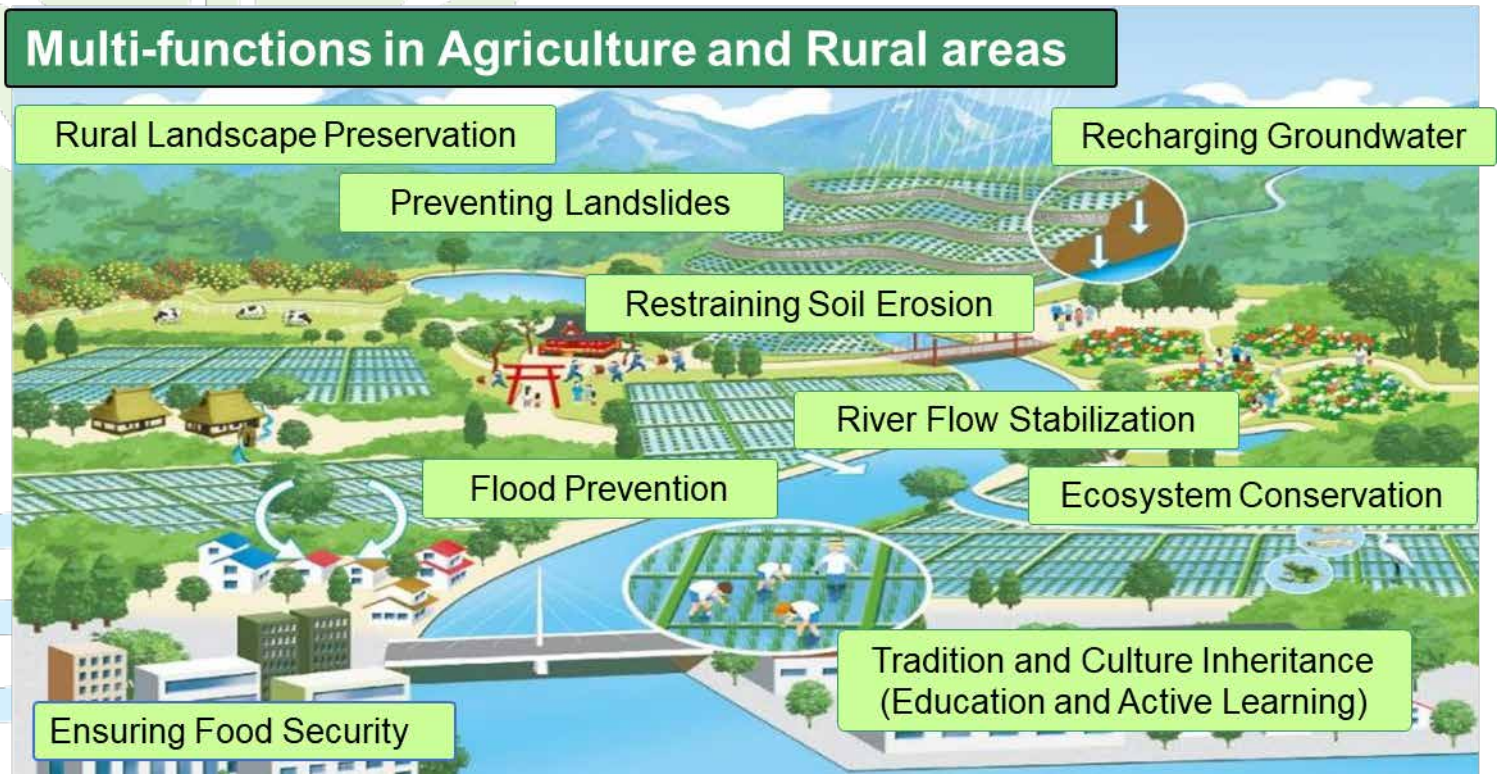
Ø Land Improvement Districts (LIDs) composed of beneficiary farmers operate irrigation and drainage facilities developed by LIPs with levies from beneficiary farmers.



1-3. Multi-functionality of Agriculture

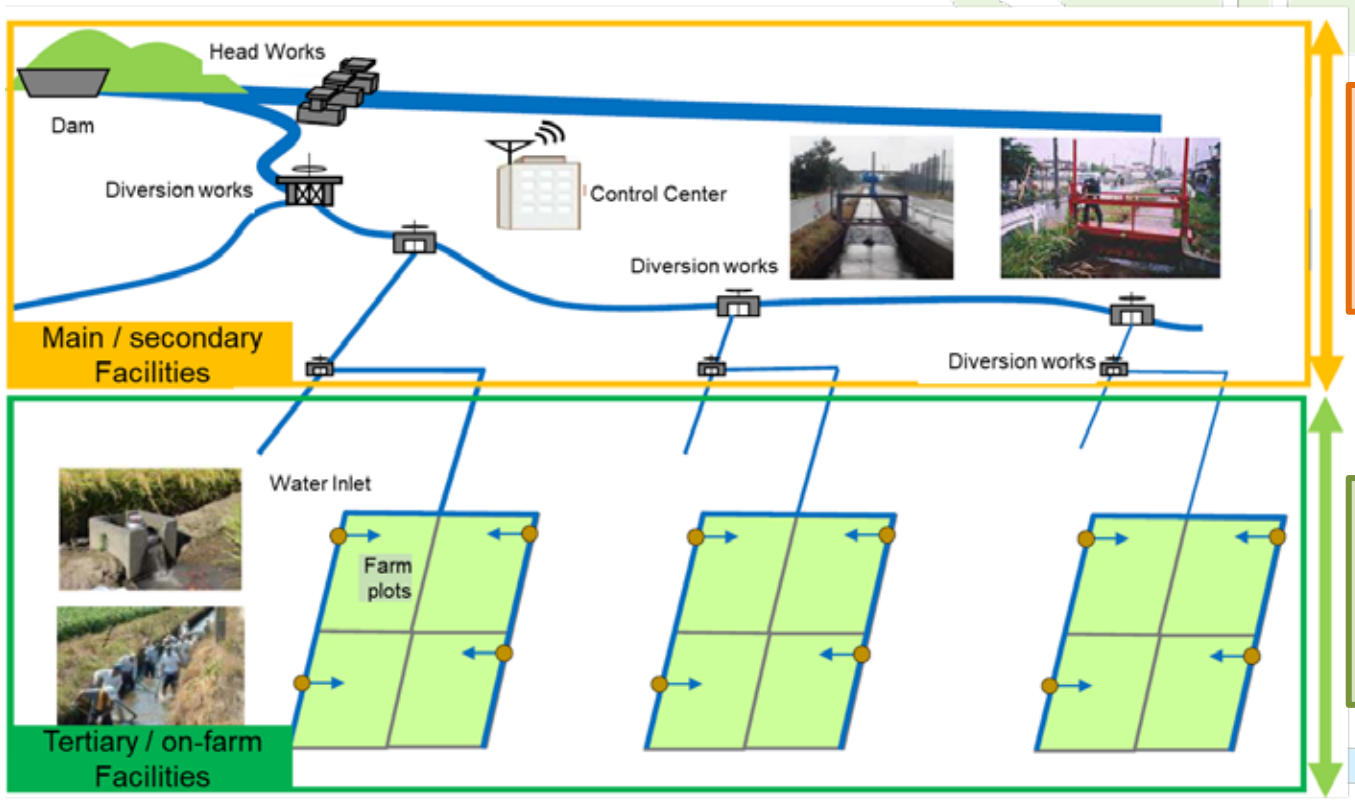
Ø Japan's agriculture, especially paddy agriculture, plays an important role in providing a variety of values in terms of land and environmental conservation.

Multi-functionality related to Agricultural Water Use & Paddy Agriculture	Estimated Value (million USD/year)
Flood prevention / mitigation	31,807
River flow stabilization	13,303
Land slide prevention	3,016
Ground water recharge	488



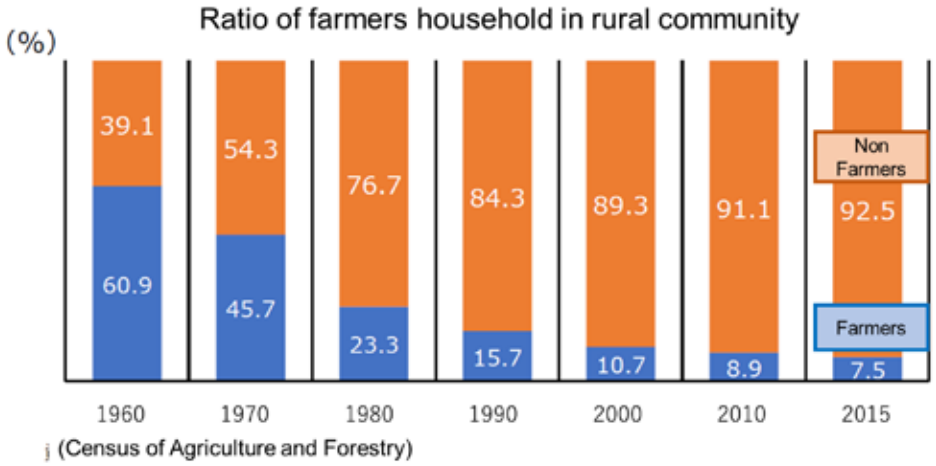
1-4. Risks of Deterioration in Multi-functionality

Ø The composition of rural communities has been changed due to the development of mixed residential areas, which has become difficult to obtain non-farmers' cooperation for maintenance.



LIDs & LGUs

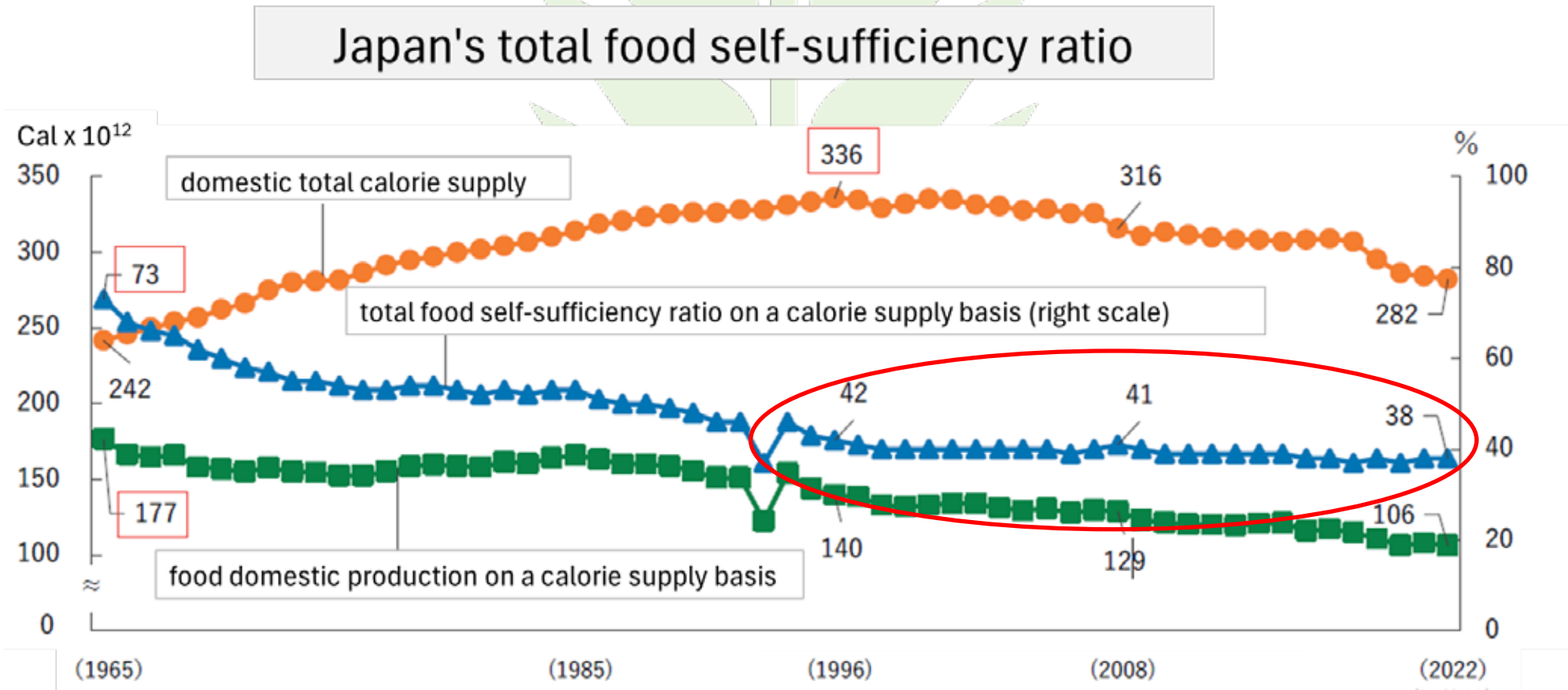
Farmers & Local residents



2. Status of Food Security

Ø The total food self-sufficiency ratio in Japan has been declining over the long term.

Ø After the ratio on a calorie basis fell to 40% in 1998, the value remains around 40%.



3-1. National Strategy

Ø **Establishing food security in time of peace**

- Strengthening stable domestic food supply to reduce import risks
- Securing the foundation of agriculture and food industry through expanding exports
- Building a sustainable food system and improving domestic access to food

Ø **Transformation to environmentally sustainable agriculture and food industry**

- Mainstreaming sustainable agriculture with reduced negative environmental impact
- Greening the entire food system, from agricultural production to processing, distribution, and retail

Ø **Establishing agriculture that can provide food in a rapidly shrinking farming population**

- Training and securing agriculture management entities
- Improvement of productivity through smart agriculture

Ø **Maintenance of rural community functions amidst a decrease in rural population**

- Sustaining Rural Communities
- Ensure functioning rural/agriculture infrastructure

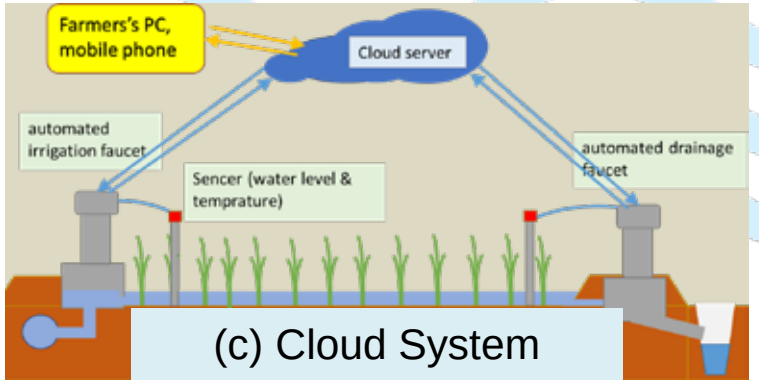
3-2. ICT on-farm Water Management System

Ø The system supplies the necessary bare minimum of water, which can avoid the risk of droughts.

Ø Automated water management is proven to be effective to avoid high-temperature damage to rice.

(a) Automated Water Facet

(b) Sensor (Water Level, Temperature, etc,)



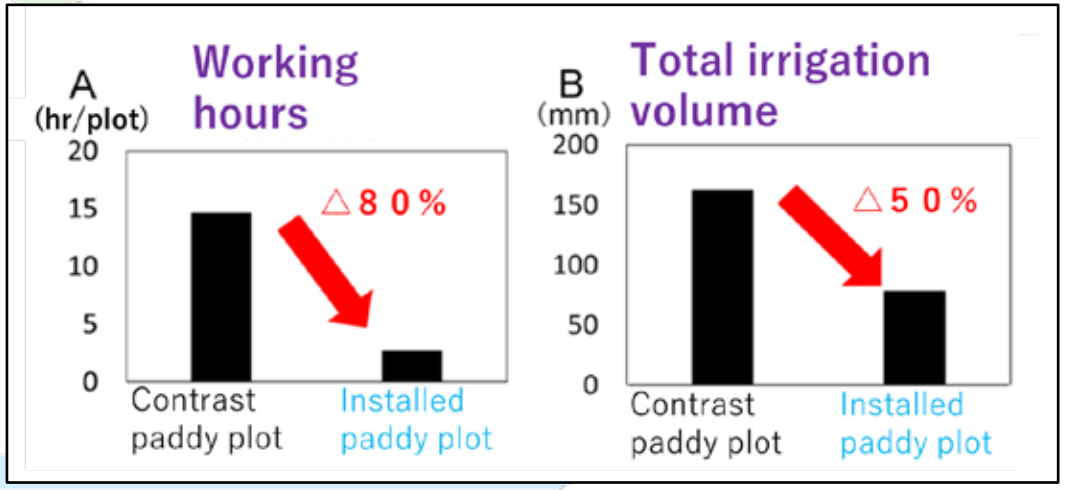
(c) Cloud System

Control water intake/drainage by;

- Scheduled timing (a)
- Water level (a+b)
- Remote instruction (a+b+c)

Expected Outcomes

- Reduce working hours for water management
- Reduce excess water intake
- Increase rainfall effectiveness

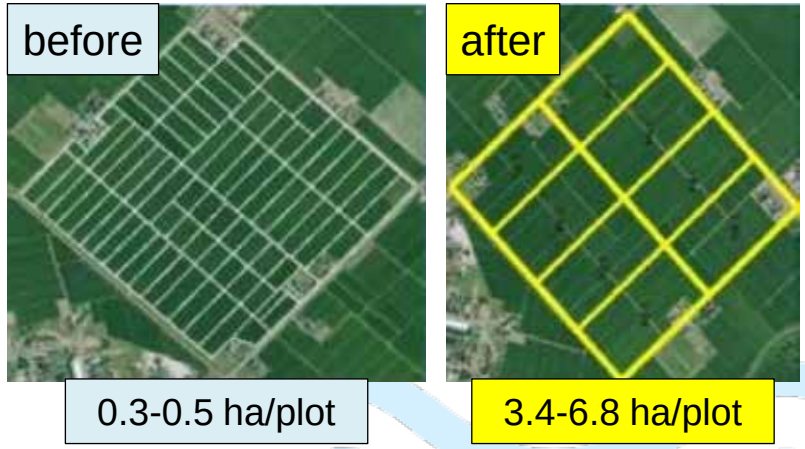


3-3. Land Development for Auto-Machineries

Ø Japan is promoting farmland consolidation with roads for agricultural machineries to turn and pipelining.

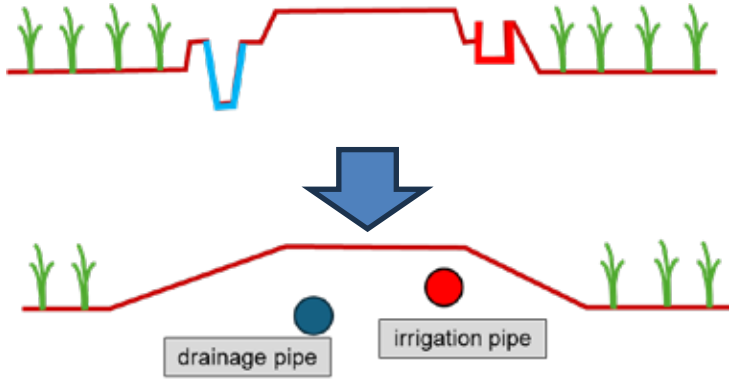
Ø With the use of automated agricultural machineries, they will shorten on-farm working hours.

Farmland Consolidation



Space to Turn Around

Pipelining Tertiary Canals



Automated machineries

Ø Shortened

- Machine operation hours
- Farming activity hours
- Travel time between farm plots

4. Conclusion

Ø **Issues**

- Declining population, shrinking domestic market, and aging and declining number of farmers
- Aging irrigation and drainage facilities, declining institutional capacity for operation and maintenance
- Emerging risks to food security caused by a change in global food supply and demand situation

Ø **Challenges**

- To promote advanced water management in irrigation and drainage by using advanced technologies such as robots, AI and ICT
- To promote advanced inspections, functional diagnoses, and monitoring of irrigation and drainage facilities
- To strengthen rural community functions and enhance the multifunctionality of agriculture


thank you!