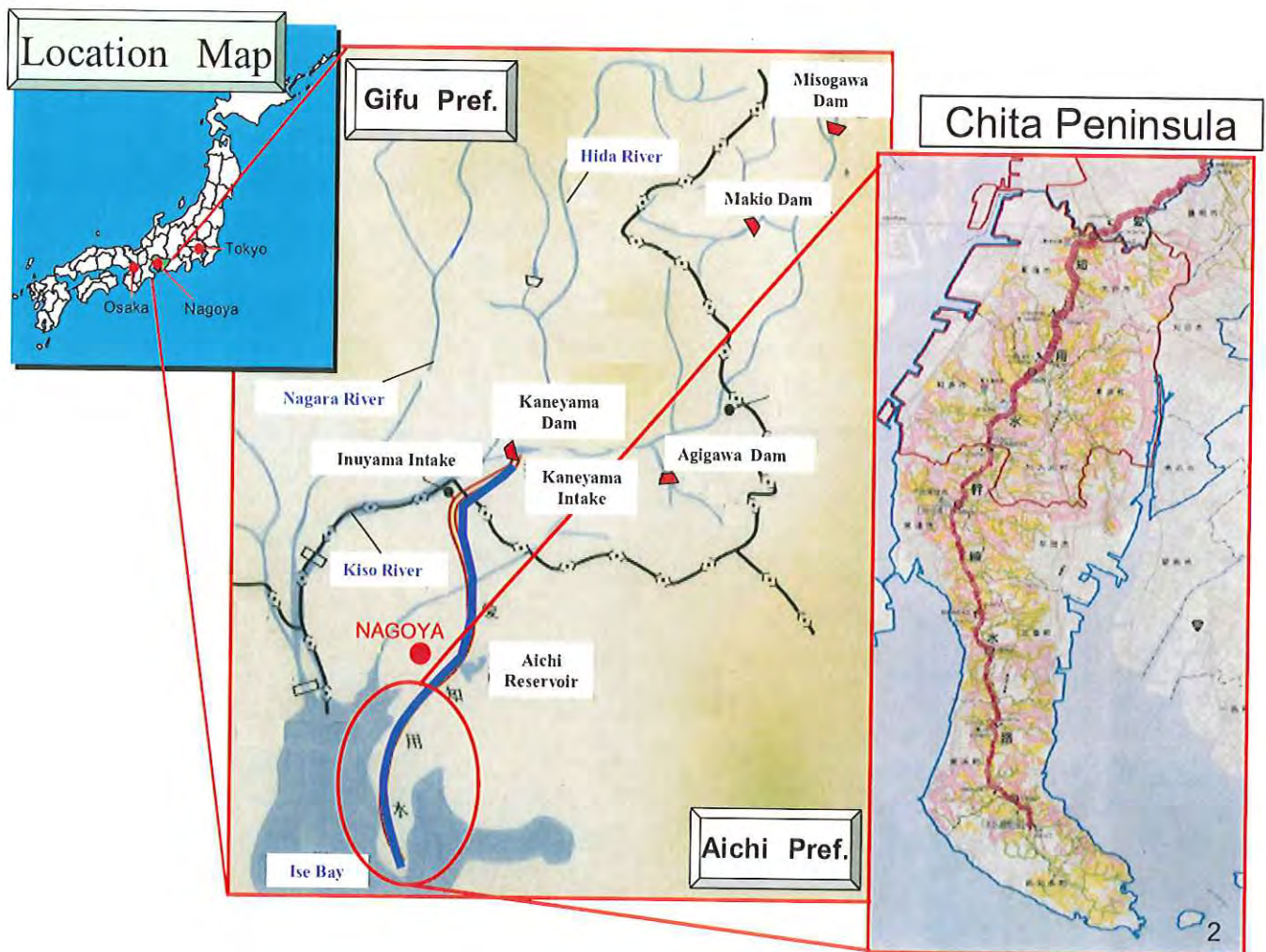


The Aichi canal project 50 years of operation and improvement

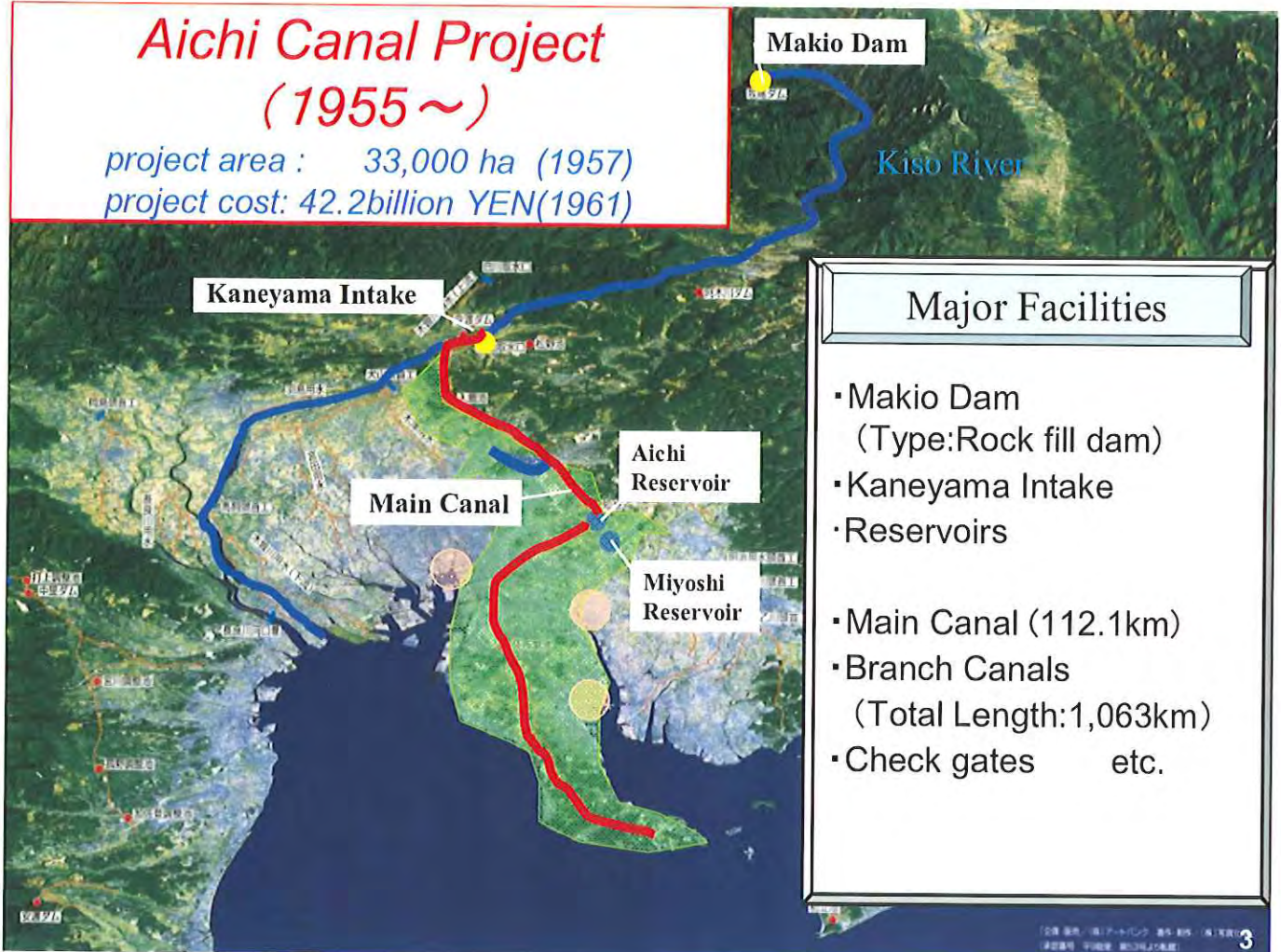
Yasuro Nakajo
Japan Water Agency

1



Aichi Canal Project (1955 ~)

project area : 33,000 ha (1957)
project cost: 42.2billion YEN(1961)



Major Facilities

- Makio Dam
(Type:Rock fill dam)
- Kaneyama Intake
- Reservoirs
- Main Canal (112.1km)
- Branch Canals
(Total Length:1,063km)
- Check gates etc.

Before the Project

1) Frequent droughts

With no perennial river to draw water from, farmers would depend on unpredictable rainfall and numerous ponds.



13,000 ponds in 33,000 ha of the project area



Watching on the night



Watering with a dipper



Scooping water from a well

2) lack of domestic water

Providing people with domestic water was urgent.

[Domestic water]

- People in the Chita peninsula would have trouble in securing domestic water.
- The demand for water increased due to both increase of population and improvement of living standard.



Women carrying water from a public well



Rainfall water reserved for multi-purpose usage

5

Beginning of the Project

Original idea of the project was planned by local people

Mr.Kuno, a farmer in Chita, had an original idea of the Aichi Canal Project, and Mr.Hamajima, a local agricultural school teacher, prepared the blueprint of the Project.



Mr.Kuno, leading person for the realization of the project



Left : Mr.Hamajima

Right: Mr. Kuno

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Associations were organized to realize the project

Associations petitioned to both the local and central government with blueprint



Chita-Farm Villages Fellow Thinker's Association(1948)
one of the leading association to promote Aichi Canal Project

「AICHI CANAL PROJECT ITS PROSPECT & IDEAL (1949)」

By Aichi Canal Project realization league

(outline)

- aiming river integrated development
- making use for the way of rehabilitating Japan
- wishing to accomplish in a democratic manner

(Blueprint of the project)

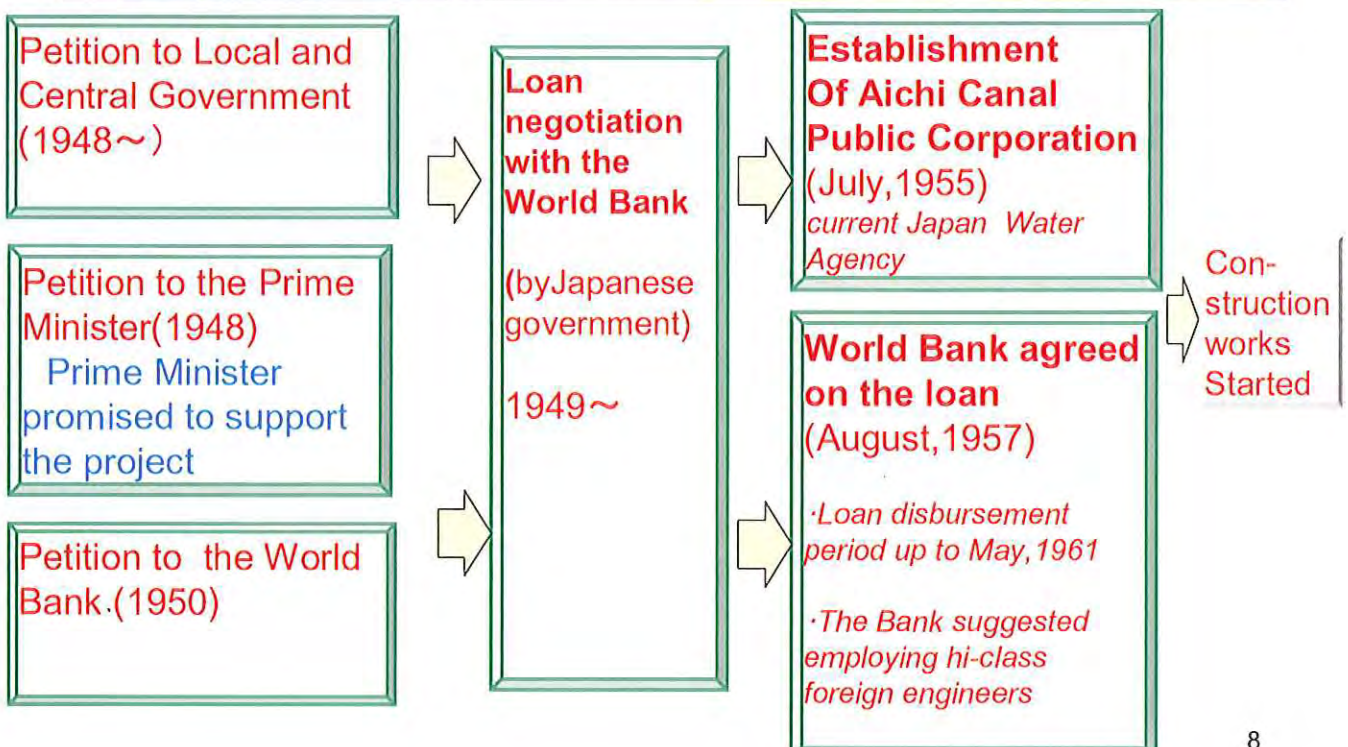
- Volume of canal water 33m³/s
- Estimated total cost 20~25 billion yen



Promotion Pamphlet (English Version)

With the World Bank loan, Aichi Canal Project started

Aichi Canal Project is Japan's first Agricultural Development Project for Water Supply financed by the World Bank



Technical services were provided by the foreign professors and engineers.

20 engineers from U.S.A. company were engaged in consultation and inspection of the construction work.

A team of agricultural advisor (leader : Prof.Bishop, Utah State University) had been sent for establishing the technical criteria of upland irrigation in Japan.



Engineers from Eric Floor & Associates Inc. ,their head office in Chicago, USA, inspected the construction of the main waterway



Prof. Bishop , Utah State University, USA, was a special advisor for the upland irrigation system which had not been managed in Japan



A model farm for upland irrigation with sprinkler

9

Construction

The construction of the project started in November,1957

The whole project completed in June 1961, and water distribution began on September 30, 1961

MAKIO DAM



MAIN CANAL



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Outcome of The Aichi Canal Project

<Agriculture>

- Agricultural production has increased significantly (vegetable, fruit, flower and livestock production jumped up)
- Aichi Canal provides the region with nearly 100 % of irrigation water they need.

Hand scooping of groundwater



Profitable and Reliable horticulture and floriculture are widely decimated thanks to Aichi Canal.



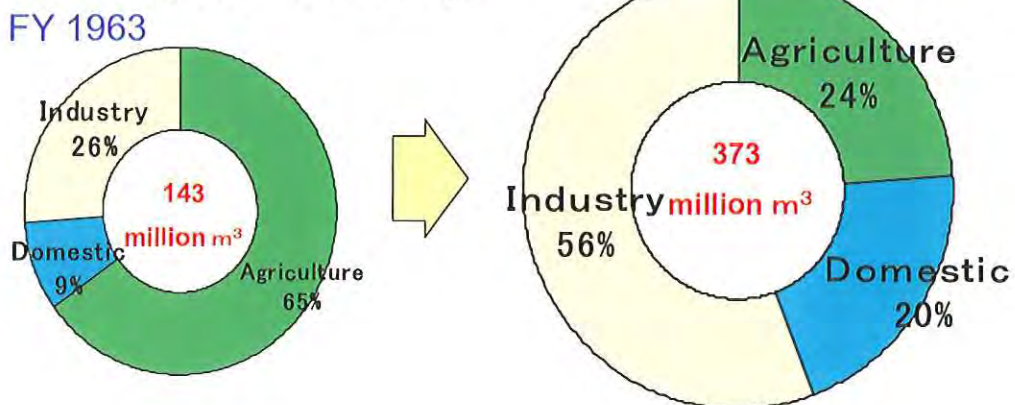
The agricultural production in the region has increased significantly since the Aichi Canal 2nd phase project.

Outcome of The Aichi Canal Project

<Social and Economic Development>

- As the population and the number of factories served with water from Aichi Canal increased remarkably, annual water consumption in FY1975 become twice as much as that in FY1963
- Population benefited : 200 thousand in FY1963 → 860 thousand in FY 1975
- Industrial production in the area : 334 billion YEN in FY1963 → 1,986 billion YEN in FY1975
- The ratio of urban water to total consumption is 76% in FY1975.

Changing of Water Usage in Aichi Canal Project



Background of the 2nd Phase Project

1) The demand for water changed.

- Rapid increase in the demand for industrial water due to economic growth
- Increased population under domestic water service
- Decreased farmland area due to expanded urban areas (33,071ha→15,012ha)
- Increased demand for irrigation water in winter due to the development of irrigated horticulture and floriculture ($0.438\text{m}^3/\text{s} \rightarrow 1.100\text{m}^3/\text{s}$ in winter)



Steel industry in Nagoya City

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2) Modification & rehabilitation needed

- Needs for continuous canal maintenance and operation
- Needs for facility rehabilitation after decades of operation
- Demands for higher standards of structural and operational safety due to urbanization around the canal

Urbanization around the canal



Sedimentation in the canal



Cracks and Leak in the canal



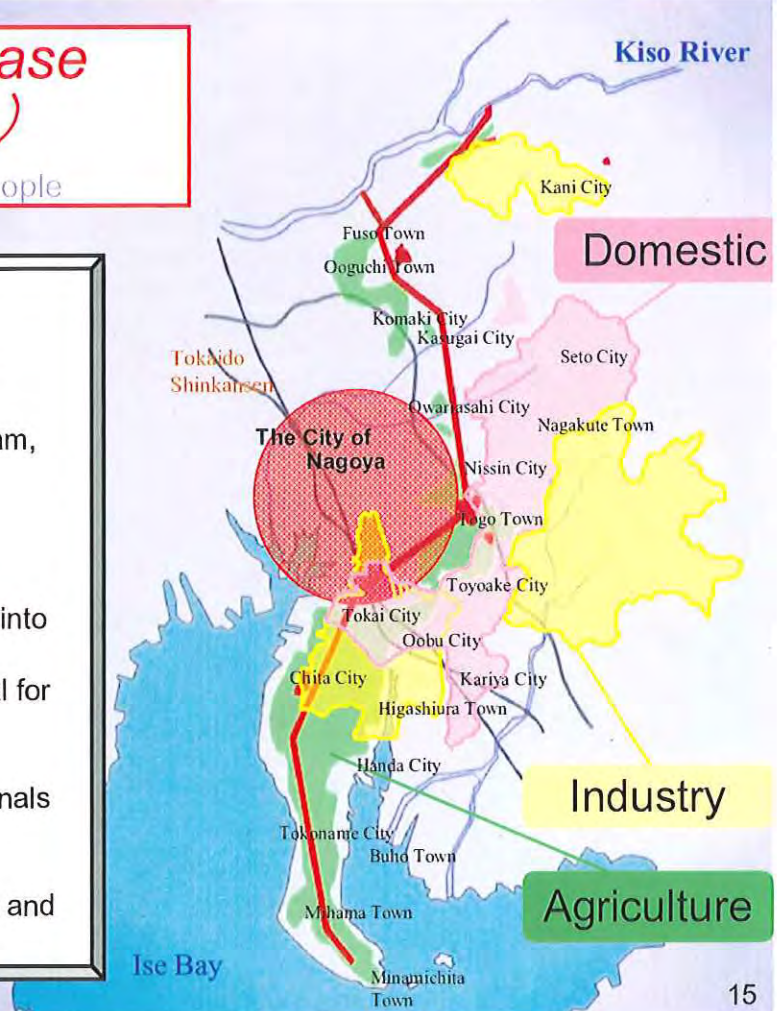
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Aichi Canal 2nd Phase Project (1975~)

Service Population: 840,000 people

Major Construction Plan

- 1) Development of additional water resources
 - Agigawa Dam, Misogawa Dam, etc.
- 2) Increasing canal capacity
- 3) Lined-embankment restructured into two-way flume
 - 85 km of commonly use canal for farm & urban
- 4) Secondary and tertiary gravity canals reconstructed to pipelines
- 5) Introduction of remote monitoring and controlling systems



NEWLY DEVELOPED WATER RESOURCES

1) Development of additional water resources

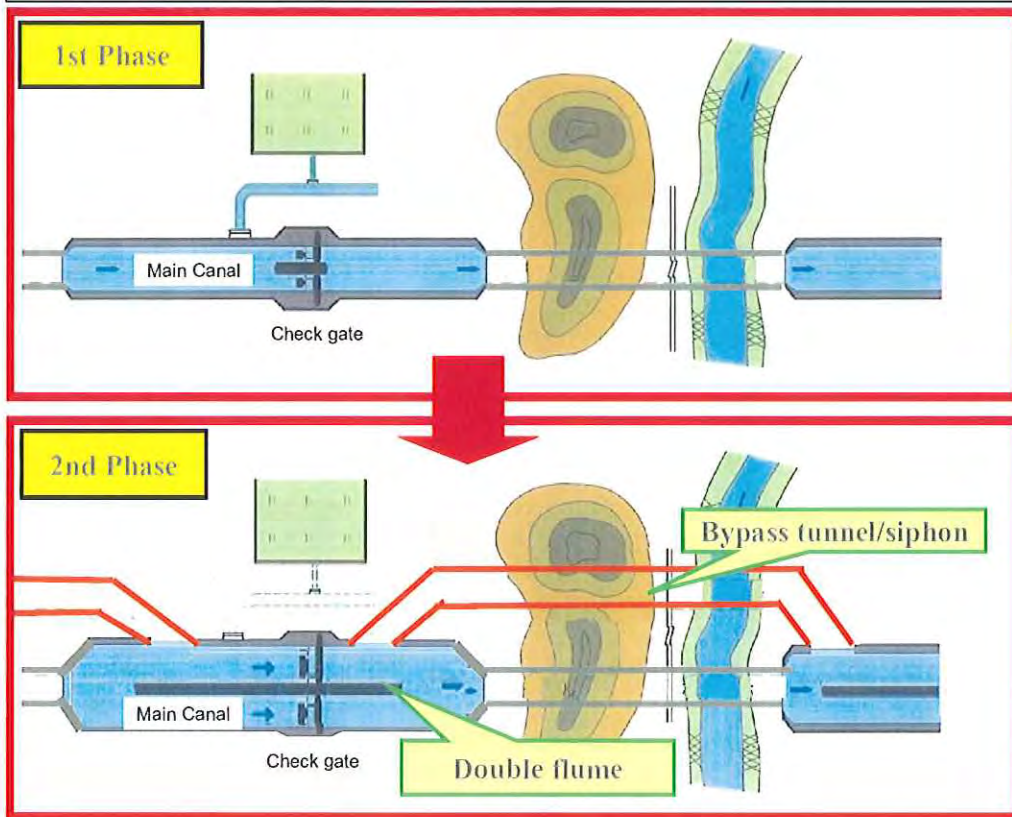


Agigawa Dam (Completed in 1990)



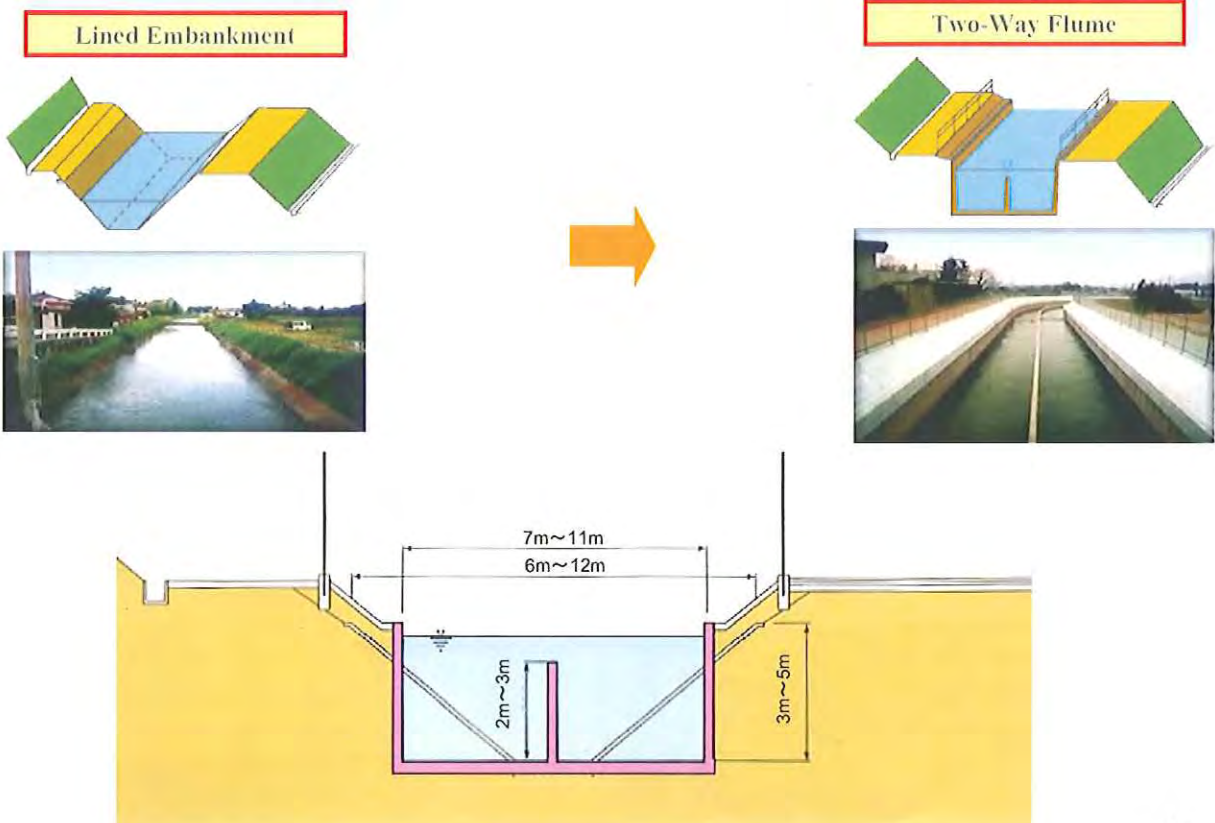
Misogawa Dam
(Completed in 1996)

2) Increasing canal capacity



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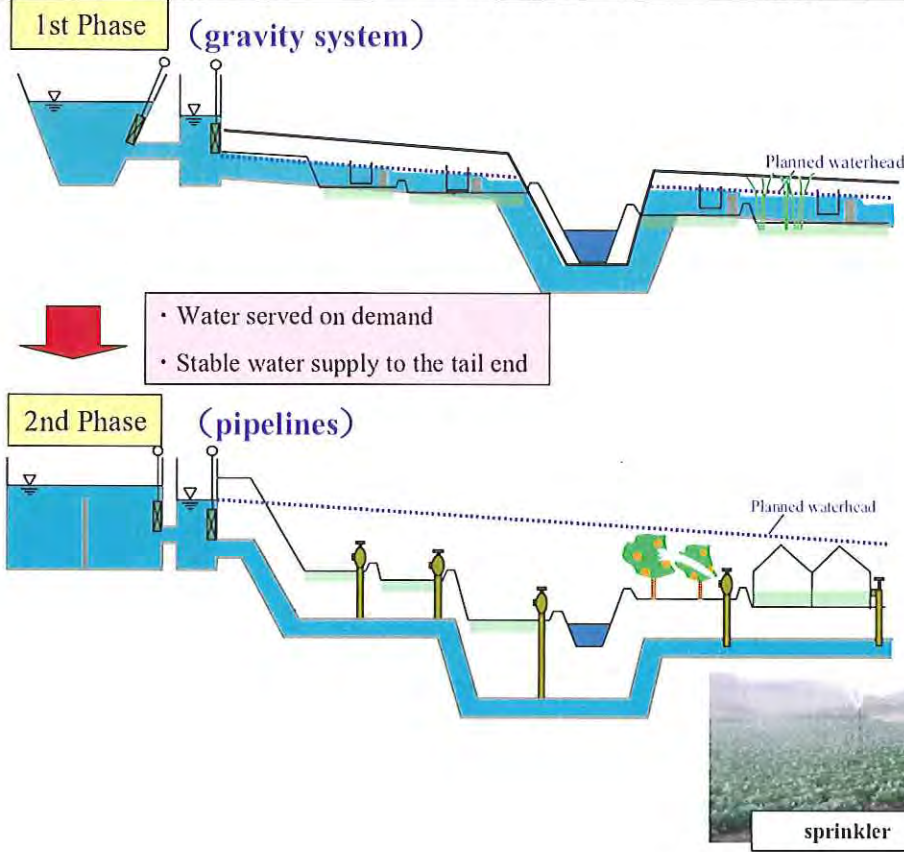
3) Lined-embankment restructured into two-way flume



18

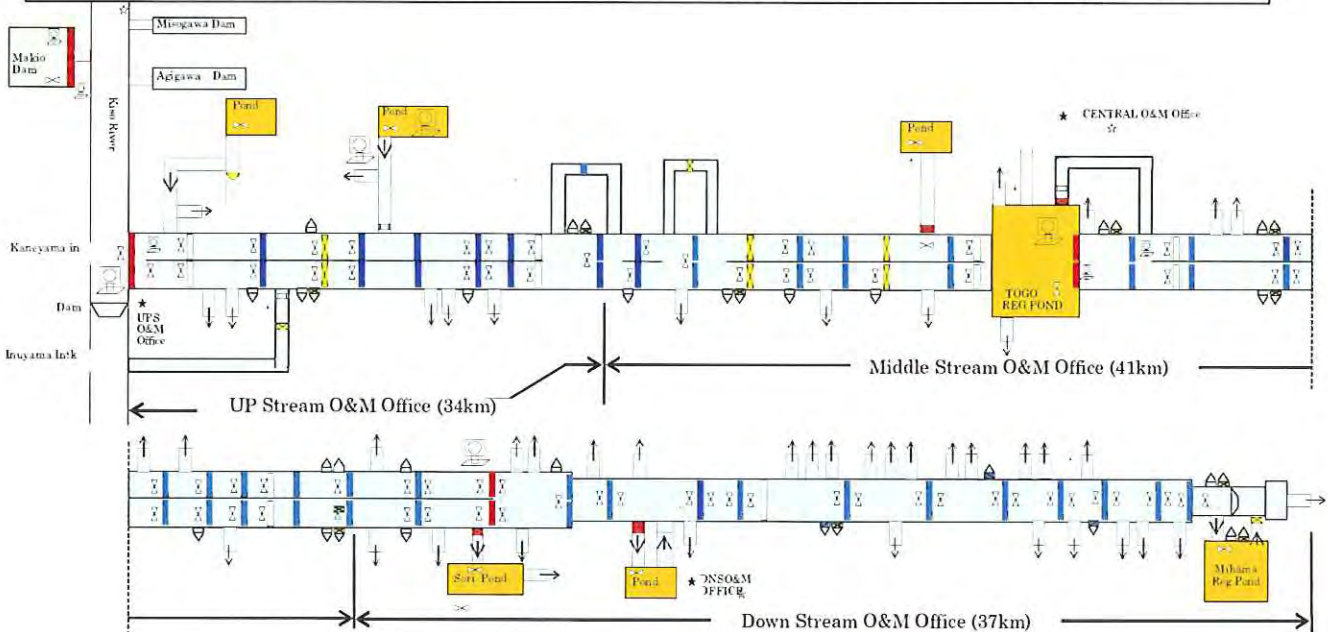
For the advanced farming

4) Secondary and tertiary gravity canals reconstructed to pipelines

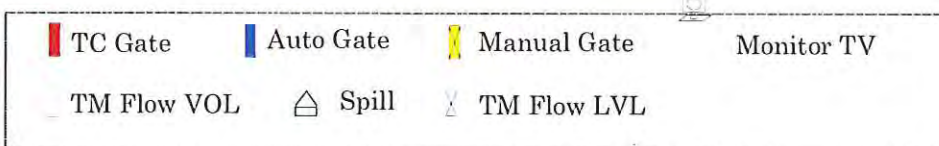


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5) Introduction of remote monitoring and controlling systems



Water Management Facilities



Modernization of water management systems



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Cooperation between the dam areas and downstream beneficiaries

• Since the project started, the cooperative activities between beneficiaries and people living in the dam areas have been expanded.



Young representatives from upstream and downstream declared 'band of water' at the ceremony to express their deep thanks for those who was forced to evict their residence due to construction works

Planting activities are being conducted by the beneficiaries around Makio Dam annually.

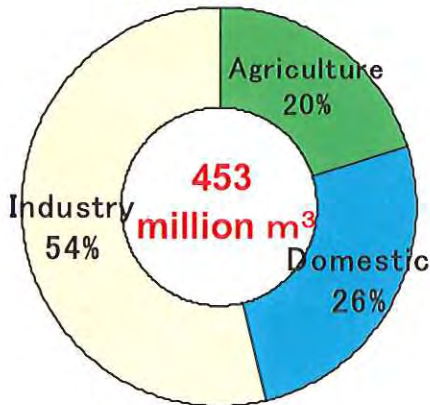


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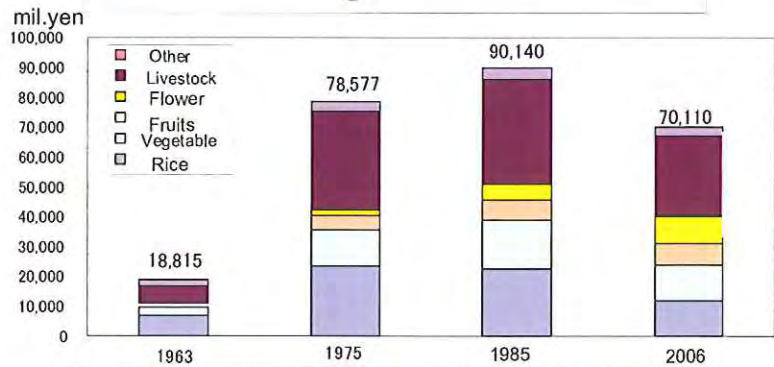
Aichi Canal's Contribution

Agriculture sector has also developed with the water supply from the Aichi Canal and the production of horticulture, floriculture and livestock have increased.

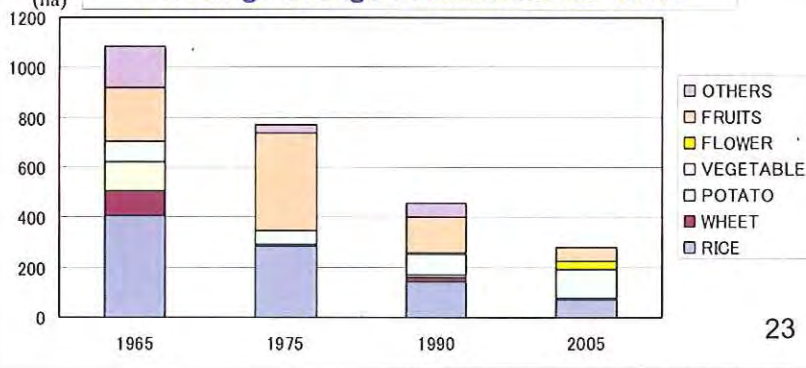
Consumption of water in FY 2010



Transition of Agricultural Production



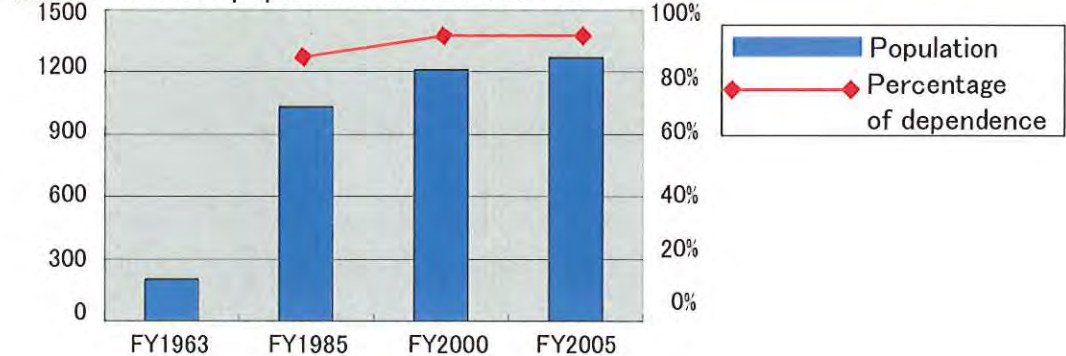
Planting Acreage of Minamichita-town



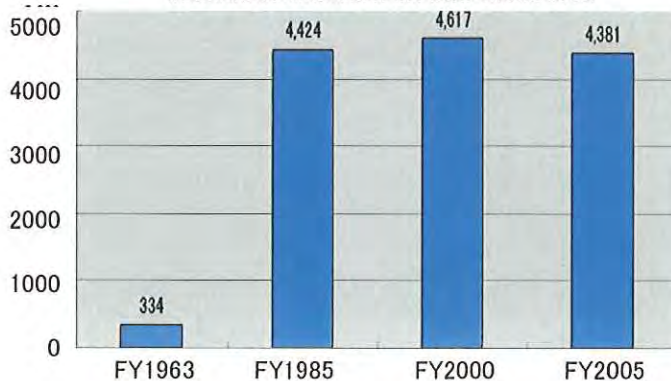
Aichi Canal's Contribution

Aichi Canal has successfully been operated for 50 years, and contributed to the social and economic development.

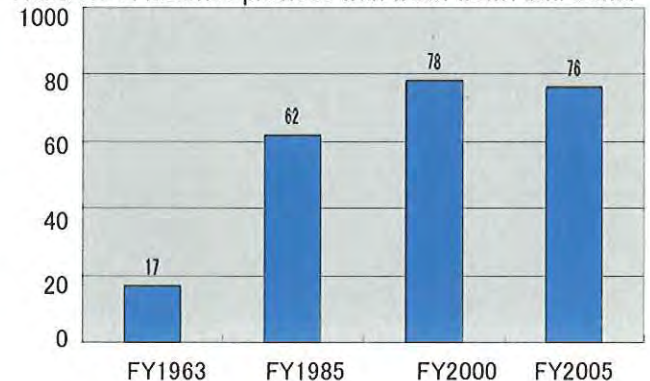
Service population of domestic water



Industrial Production in Aichi Canal area



Numbers of factories provided with water from Aichi Canal



EVOLUTION OF IRRIGATION SYSTEMS IN ACCORDANCE WITH CHANGING WATER DEMANDS

