

NARBO 4th Training Programme

9th November 2006

Effective and Sustainable Management on Existing Water Infrastructure

- The Case Study on Mie Canal Operation and Maintenance Office -

Takuji Oikawa

Director

Mie Canal Operation and Maintenance Office

Japan Water Agency

A map of Asia with several countries highlighted in green: Japan, India, Sri Lanka, and various countries in Southeast Asia including Thailand, Laos, Cambodia, Vietnam, Myanmar, Malaysia, Indonesia, and the Philippines. Overlaid on the map are five yellow-bordered boxes containing text in pink font, arranged vertically from top to bottom. The text in the boxes is: 'Contents', 'Entry - Introduction of Japan', 'Overview of Mie Canal Construction Project', 'Overview of O & M of Mie Canal Facilities', and 'Closing Remarks'.

Contents

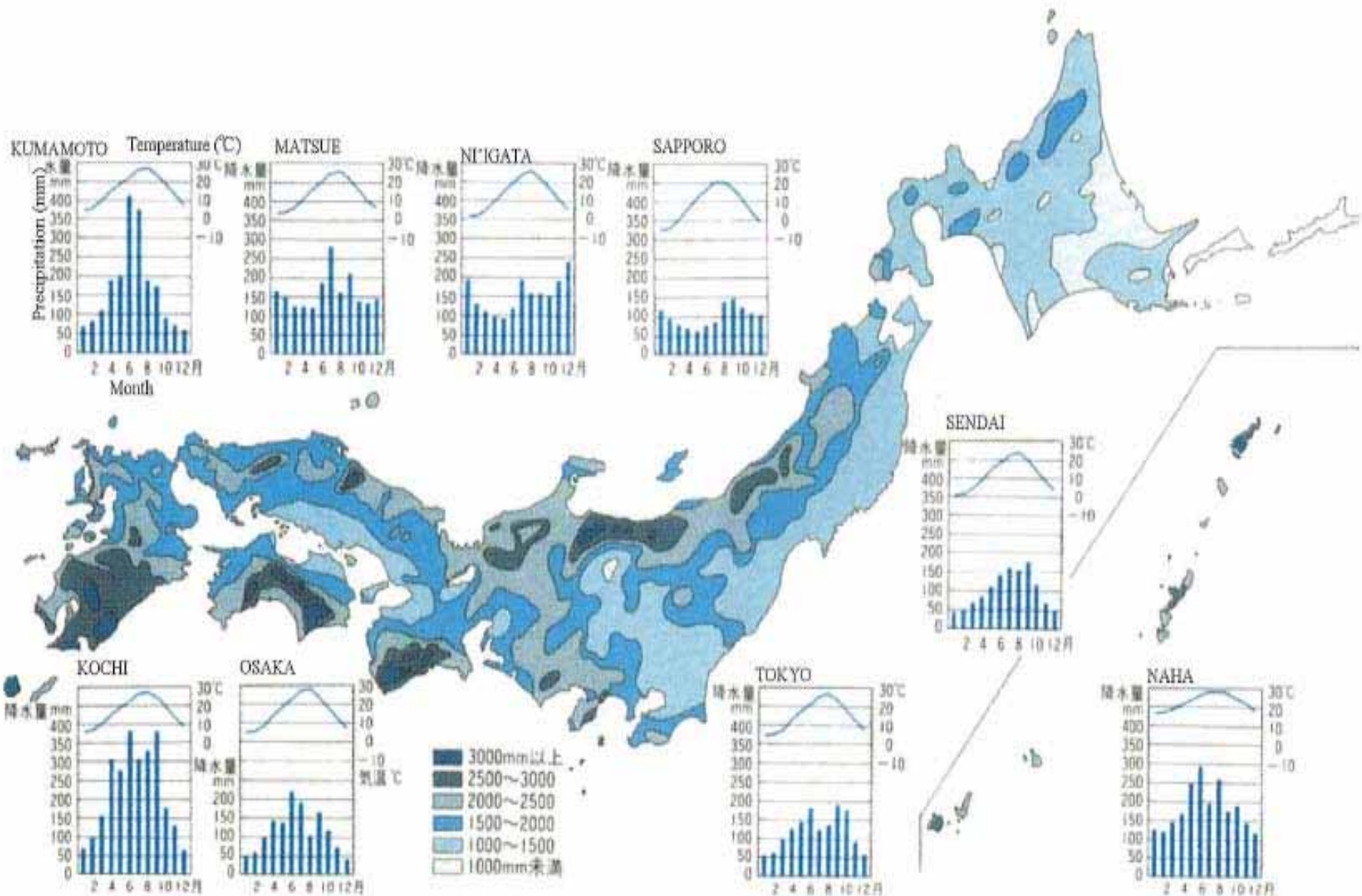
Entry - Introduction of Japan

Overview of Mie Canal Construction Project

Overview of O & M of Mie Canal Facilities

Closing Remarks

Distribution of precipitation and annual average temperature and monthly precipitation



Governments Related to Water in Japan

Ministry of Health, Labour and Welfare

Water Supply for Domestic Use, Quality Preservation of Water Source, etc.

Ministry of Agriculture, Forestry and Fisheries

Water Supply for Agricultural Use, Forest Development for Headwaters Conservations, etc.

Ministry of Economy, Trade and Industry


Water Supply for Industrial Use, Hydropower, etc.

Ministry of the Environment

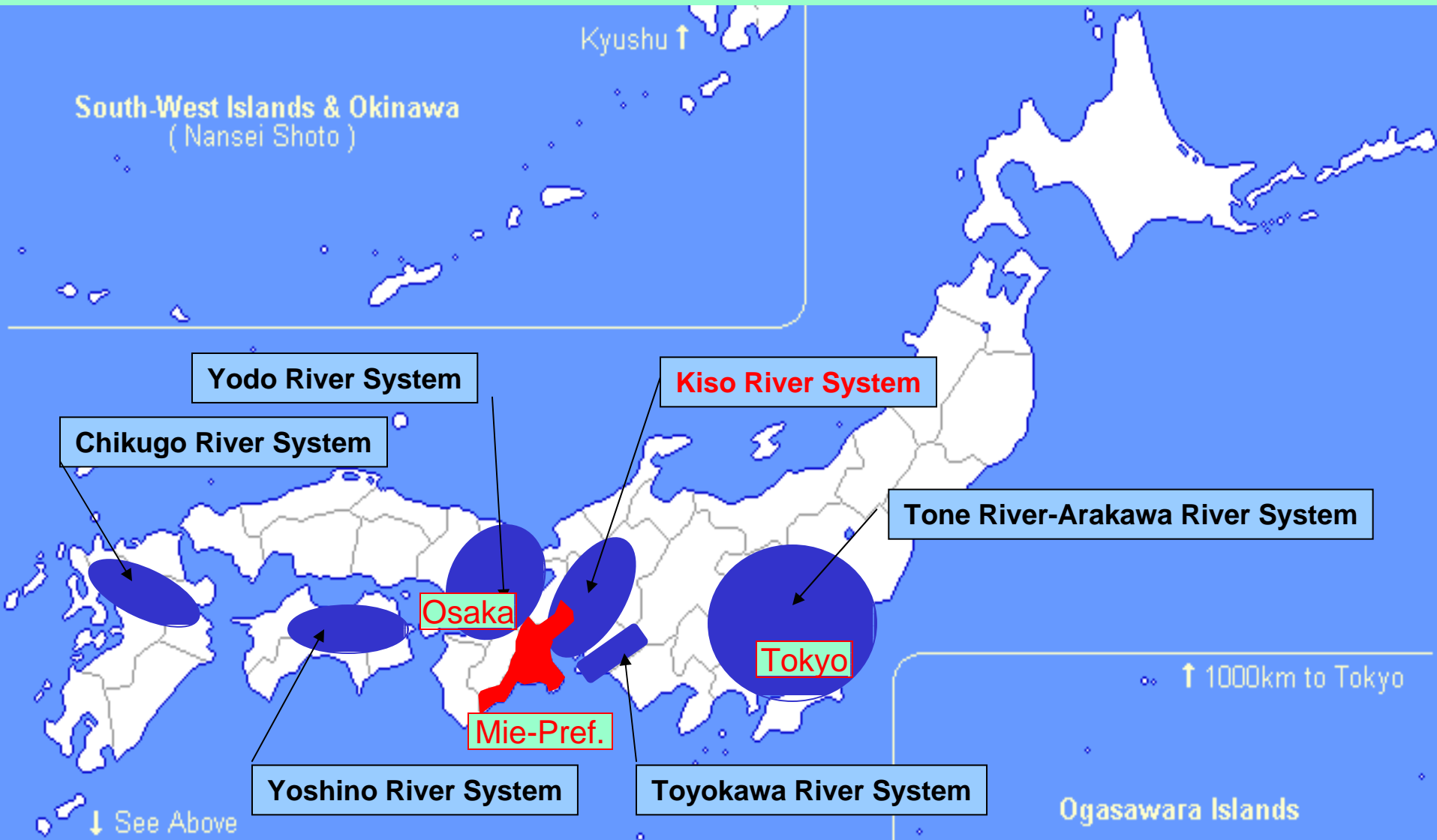
Water Quality, Environmental Preservation, etc.

Ministry of Land, Infrastructure and Transport

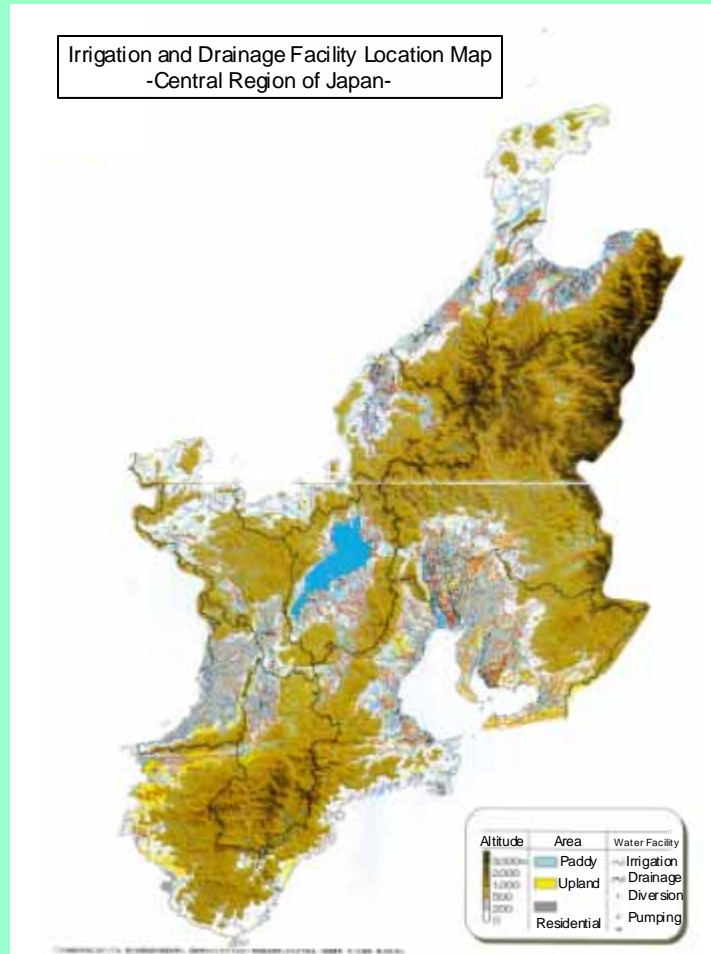
Sewerage, River Improvement for Flood Control and Environment, Reservoir Area Development, Water Supply and Demand Planning, etc.

- 
- > Principle of farmer's applications
 - > Compulsory participation under the high rate of farmer's agreement
 - > Financial support and sharing duties among farmers
 - > Implementation of On-farm project with full agreement of farmers and land offering for shared facilities

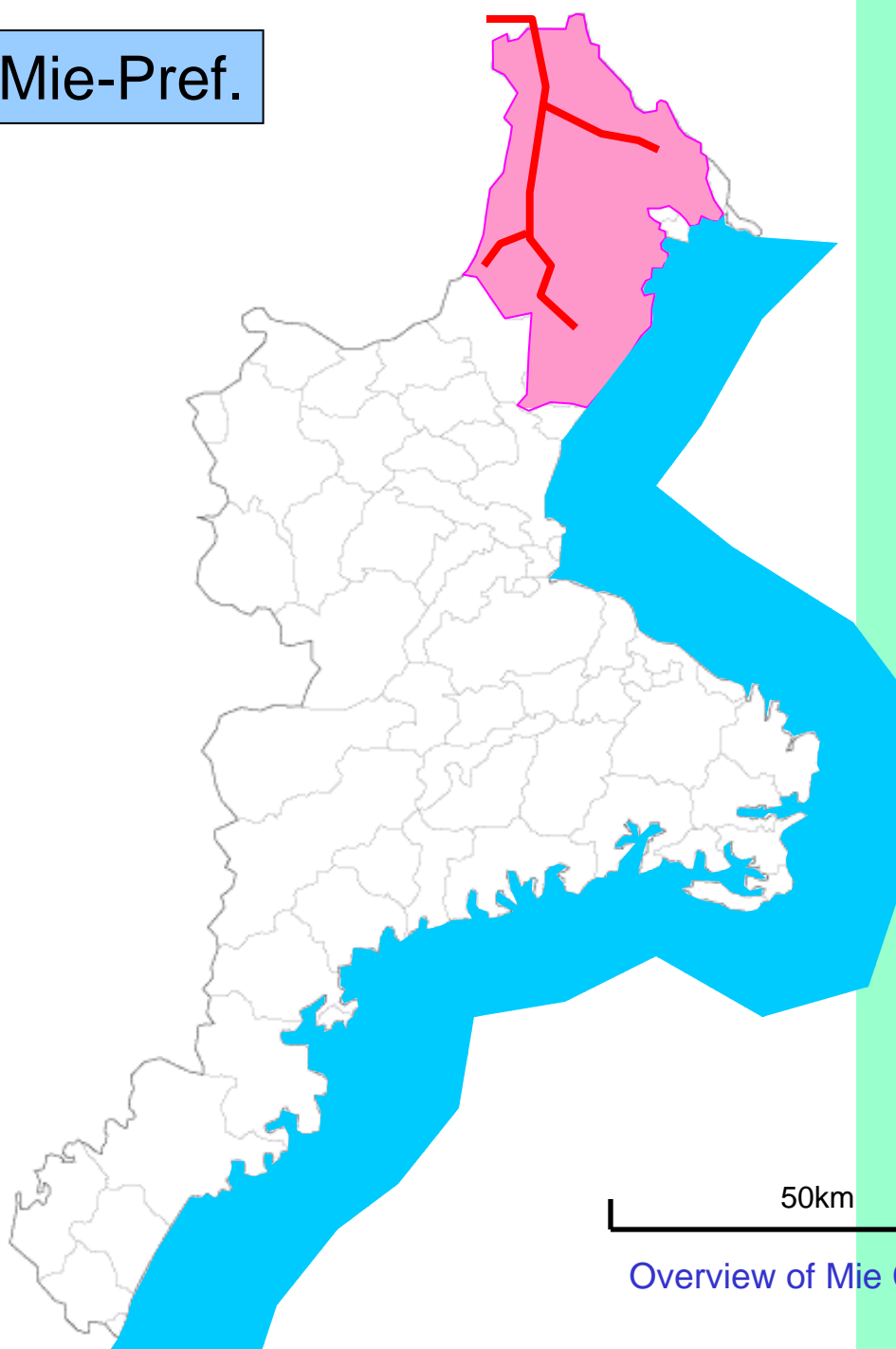
Location of Mie Canal Project



Irrigation and Drainage Facility Location Map
-Central Region of Japan-



Map of Mie-Pref.



50km

Overview of Mie Canal Construction Project

Agricultural Water Use



Paddy Field Irrigation



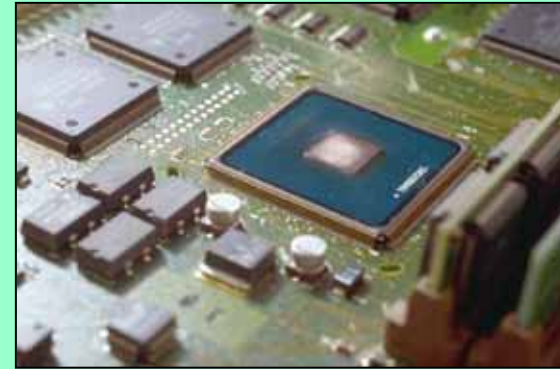
Upland Irrigation



Industrial and Domestic Water Use



FUJITSU Mie Plant



Memory LSI

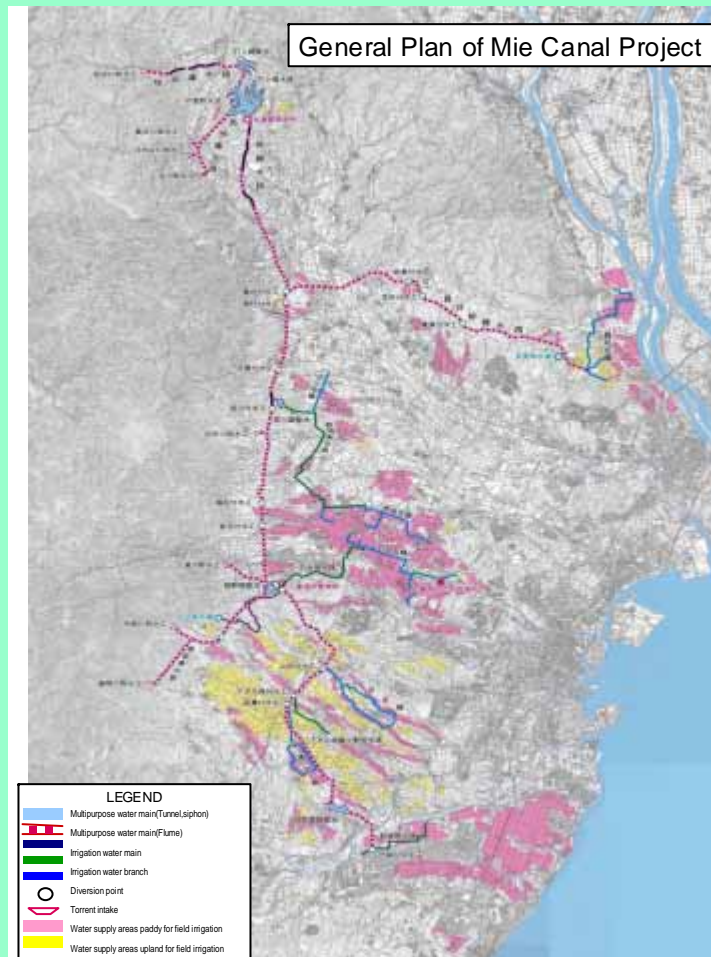


SUIZAWA Water Purification Plant



Overview of Mie Canal Construction Project

Project General Plan

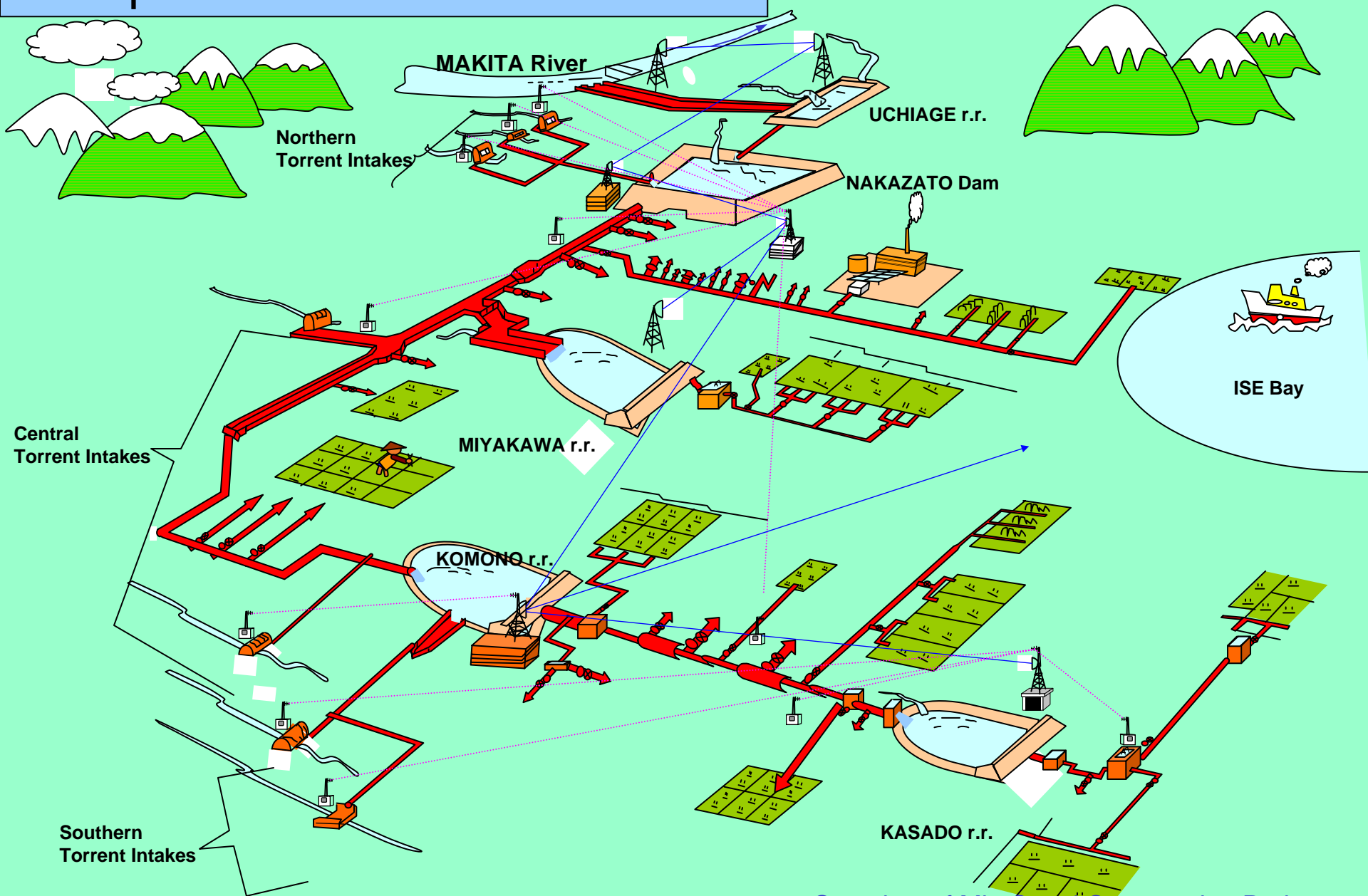


Features of Main Facilities

(Intake works)	Name of intake	Catchment area km ²	Irrigation area ha	Maxmam intake m ³ /s	Restraint flow		Droughty discharge m ³ /s
					Summer season	Winter season	
					m ³ /s	m ³ /s	
Makita River Intake	Makita river	26.0	7,310	5.0	1.20	0.32	0.28
	Inabe river	5.9	7,310	1.2	0.29	0.11	0.03
Northern torrent intakes	Koutidani river	6.6	7,310	2.6	0.43	0.23	0.06
	Hie river	2.8	7,310	0.5	0.13	0.05	0.01
Central torrent intakes	Tabika river	6.6	5,430	1.4	0.26	0.13	0.04
	Mitaki River	11.1	5,250	2.7	0.46	0.29	0.07
Southern torrent intakes	Utsube river	7.1	5,250	1.5	0.25	0.14	0.04
	Onbe river	9.5	5,250	1.7	0.54	0.18	0.04

(Reservoirs)	Catchment area		Irrigation area km ²	Effective storage 1,000m ³	Design Usage Volume 1,000m ³	Nos of Usage per Year	Maximum Intake Volume
	Direct	Indirect					m ³ /s
	km ²	km ²					
UCHIAGE	(1.40)	–	–	2,200	–	–	5.0
NAKAZATO	4.00	42.68	7,310	16,000	24,300	1.5	7.3
MIYAKAWA	1.80	–	910	800	5,800	7.3	1.4
KOMONO	0.80	34.30	5,250	1,600	31,300	19.6	2.5
KASADO	6.90	–	1,690	3,000	6,100	2.0	4.2

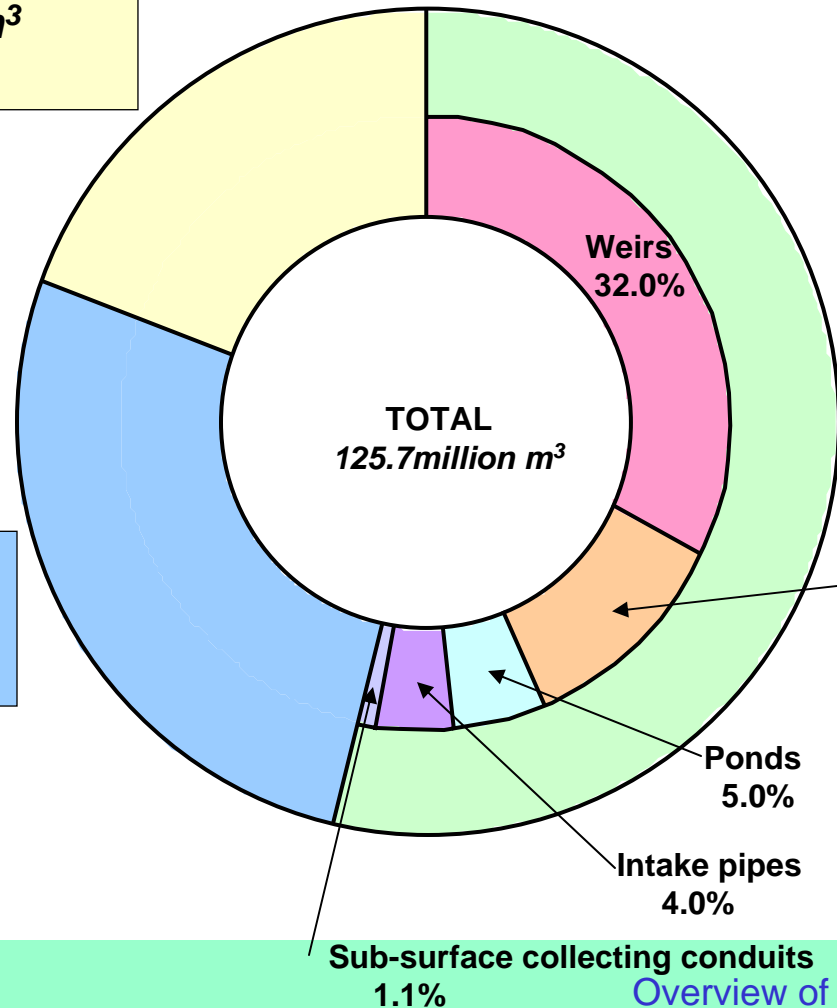
Descriptive Chart of Location of Facilities



Overview of Mie Canal Construction Project

Annual Agricultural Water Source Plan

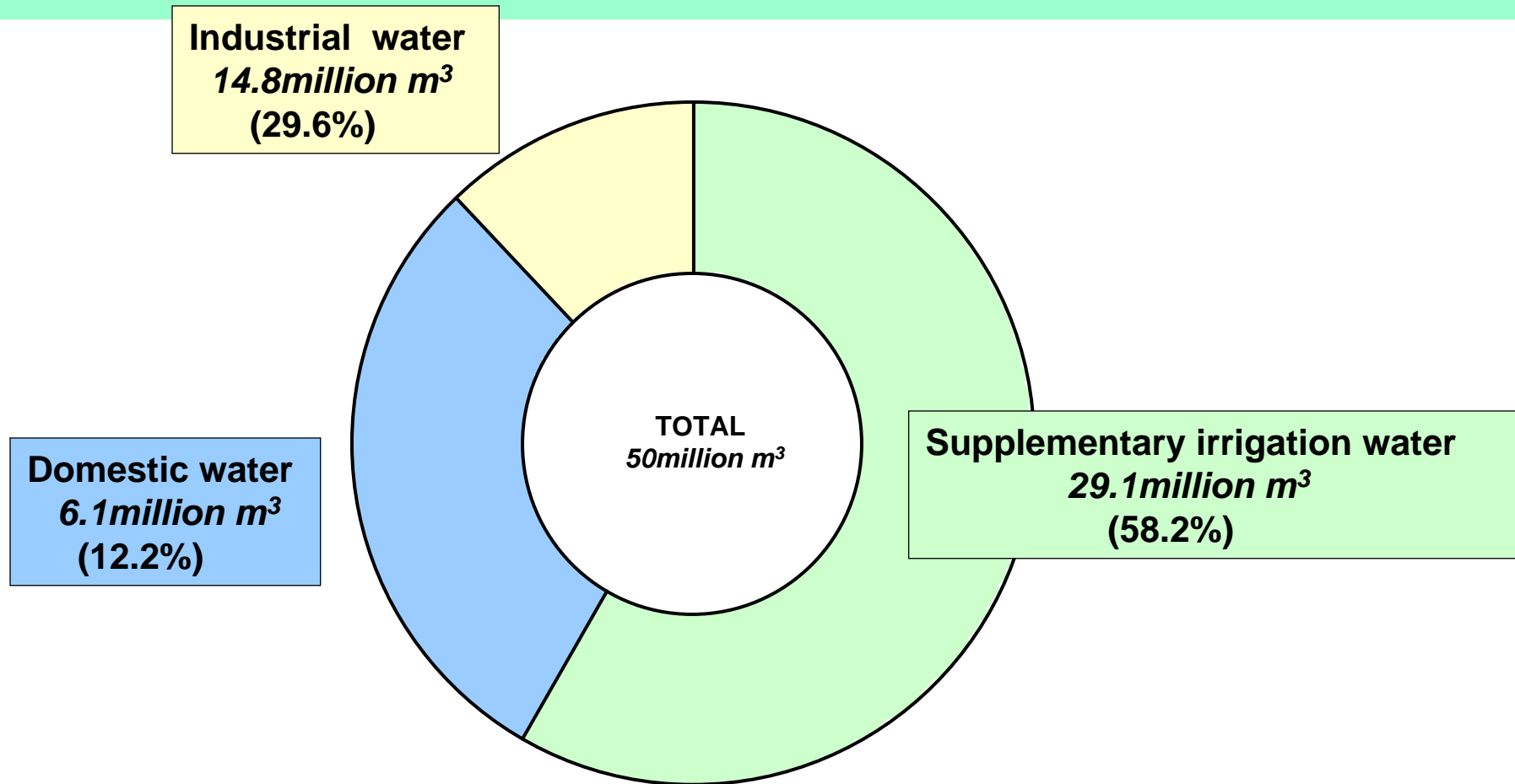
Net deficit water volume
24.4million m³
(19.4%)



Existing water sources
67.4million m³
(53.6%)

Rainfall
33.9million m³
(27.0%)

Annual Water Supply Plan of Mie Canal Project

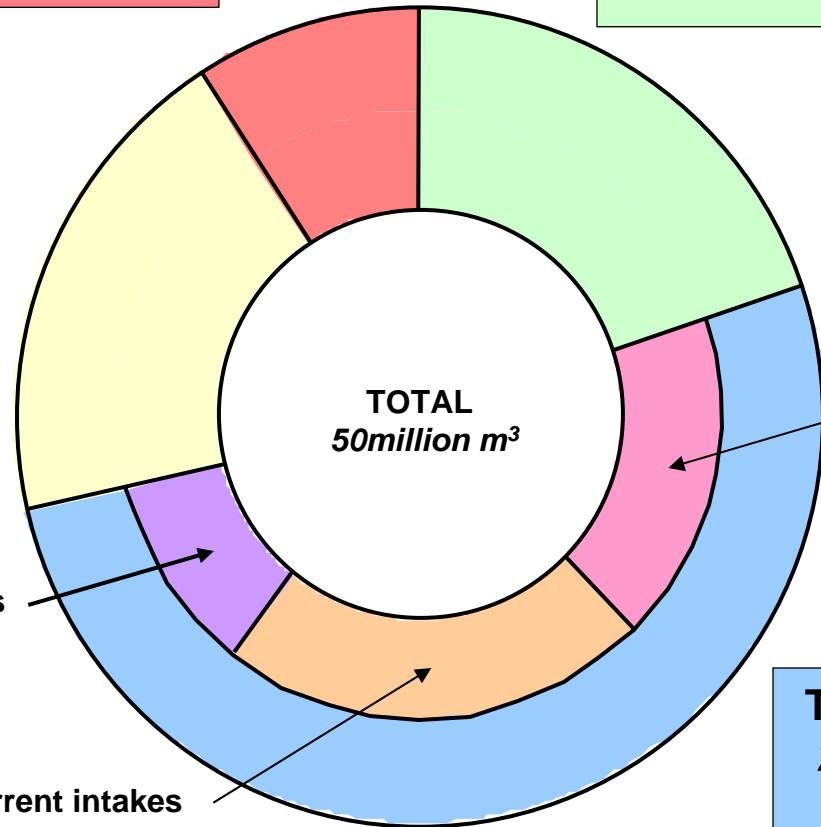


Annual water source plan of Mie Canal Project

Original inflow of dams
4.6million m³
(9.2%)

Interbasin transfer from R.Makita
10.0million m³
(20.0%)

Storage of dams
9.8million m³
(19.6%)



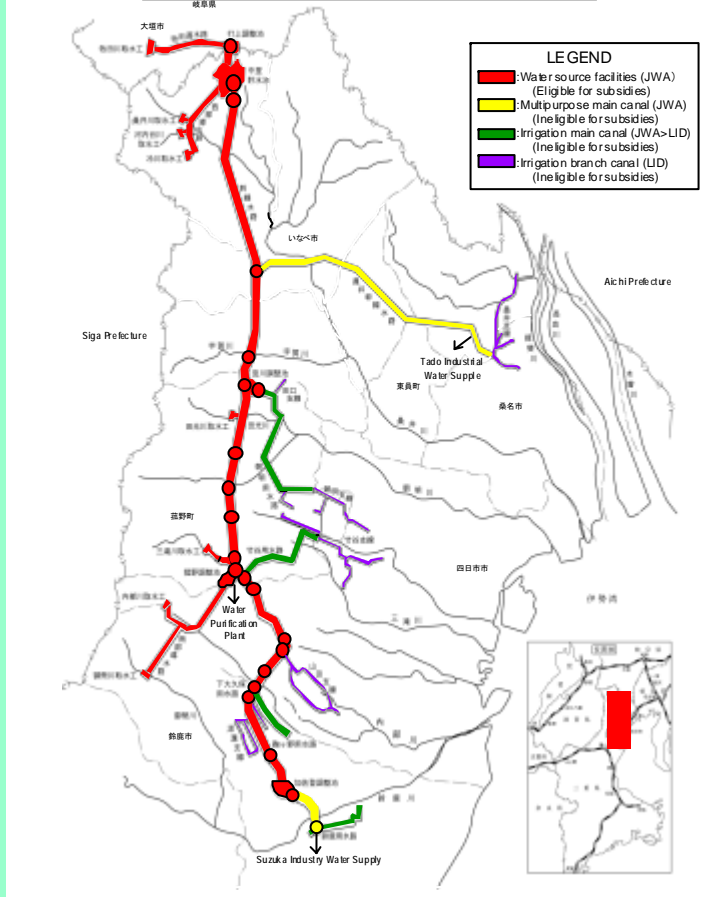
Northern torrent intakes
34.0%

Southern torrent intakes
20.7%

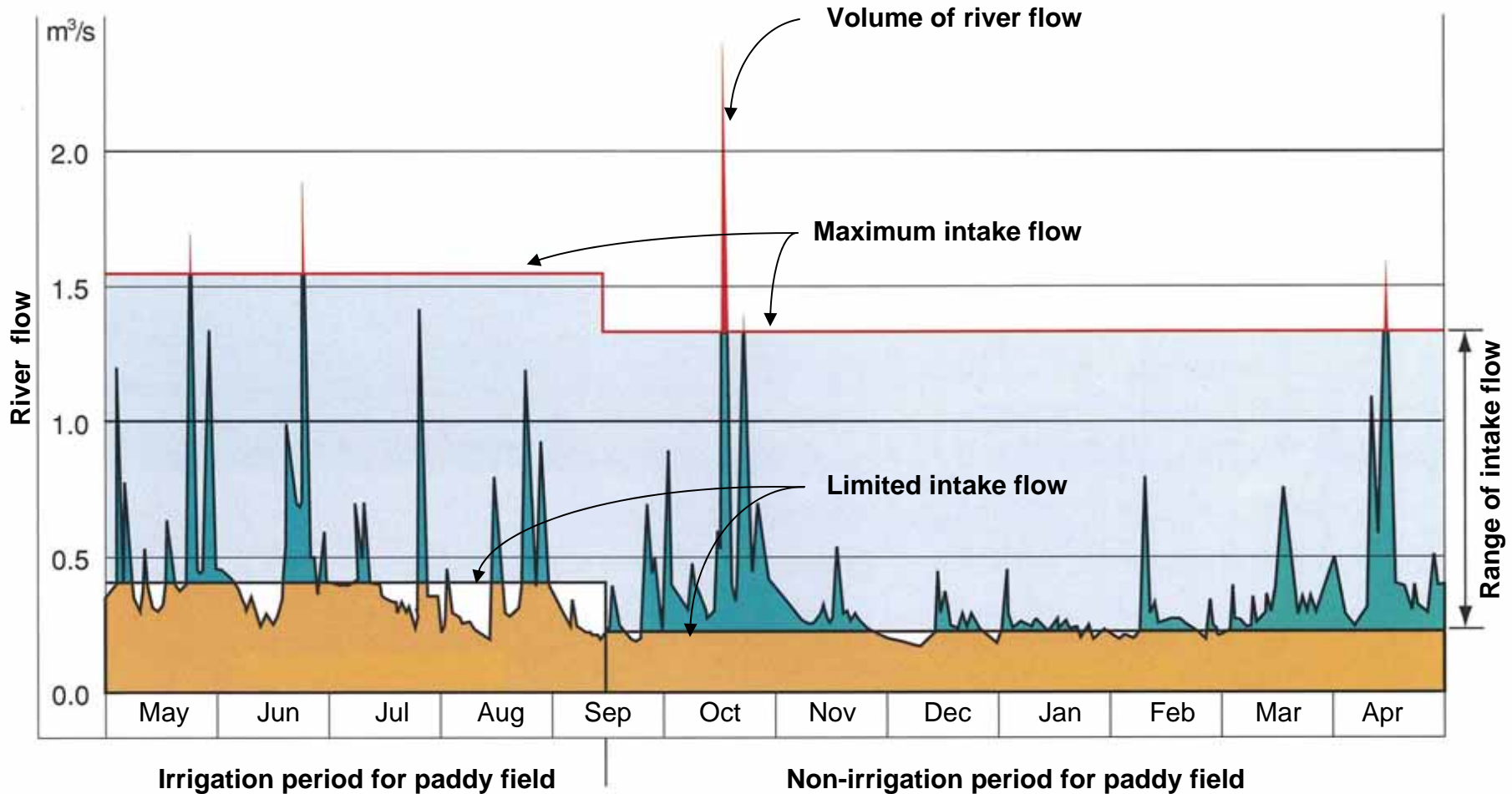
Central torrent intakes
45.3%

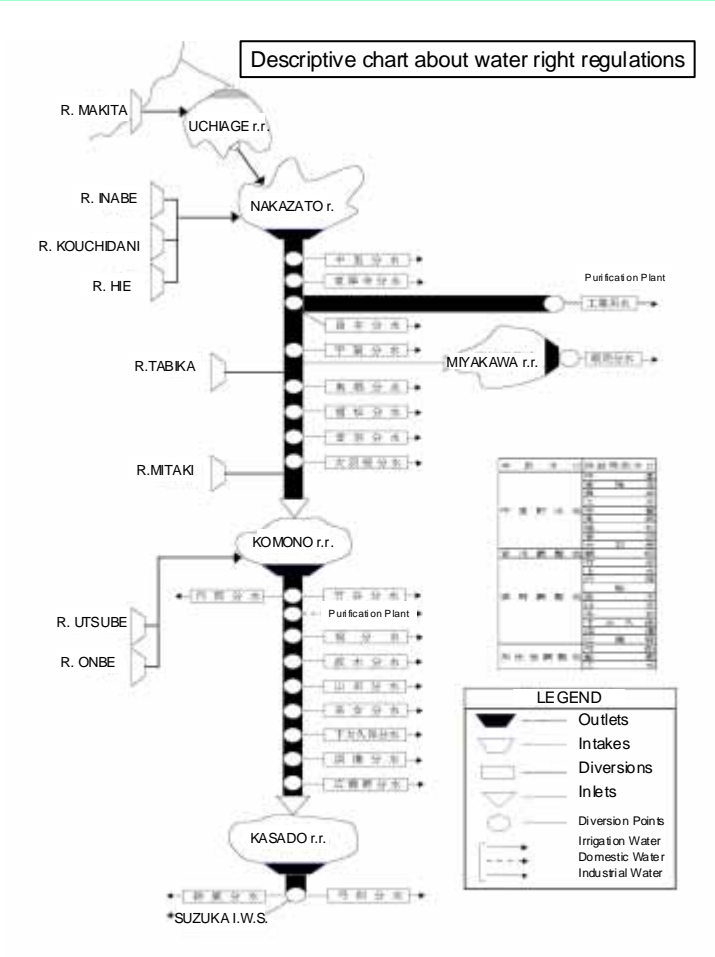
Torrent intakes
25.6million m³
(51.2%)

Descriptive chart on Classification of Facilities



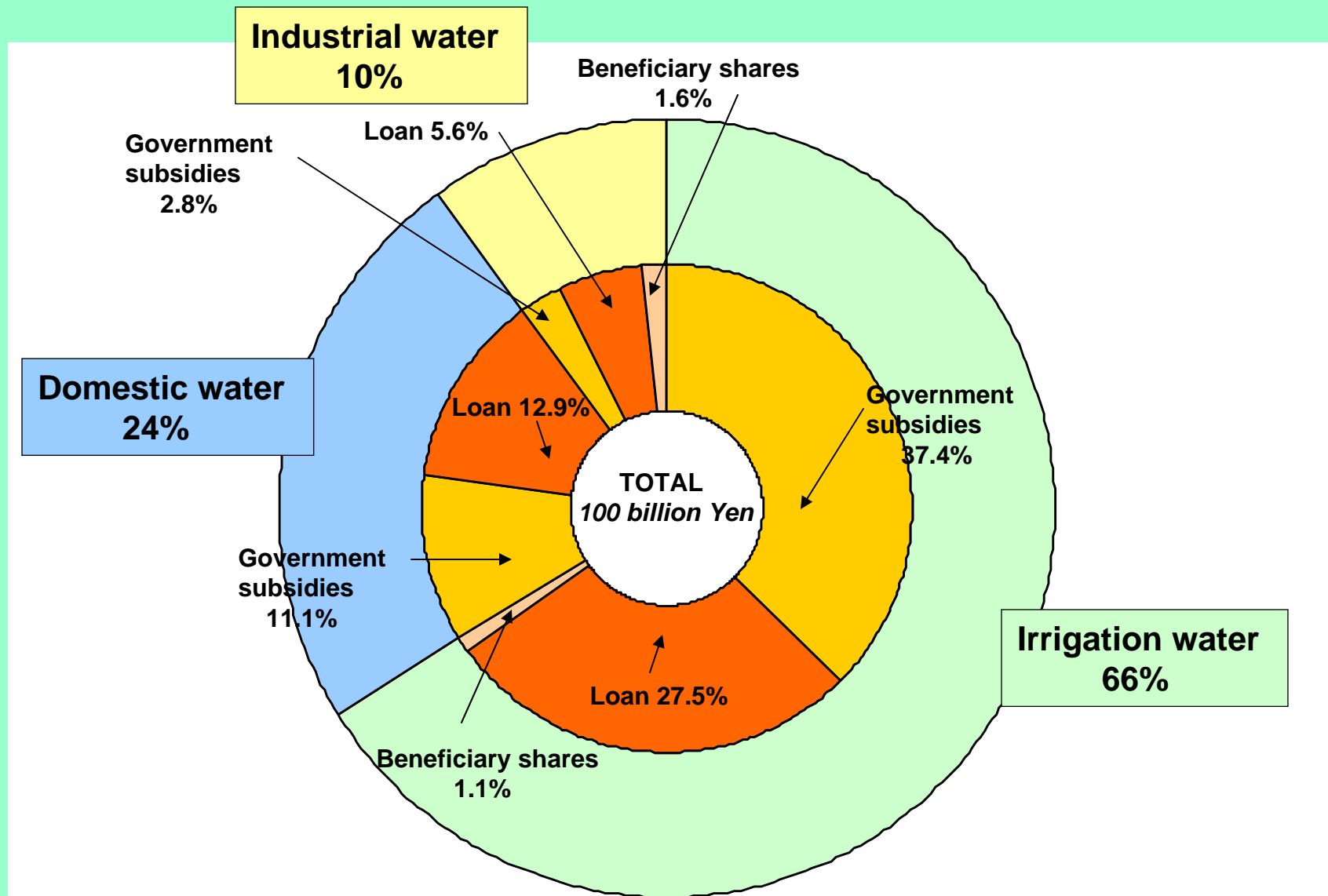
How do we take water from torrent intake?





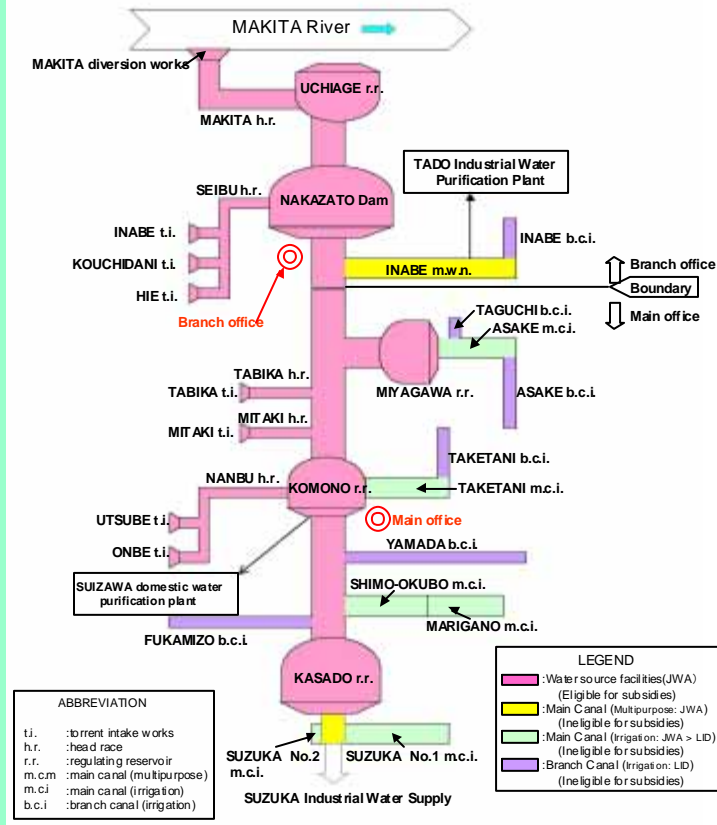
Construction cost sharing

(construction period:1971-1993)



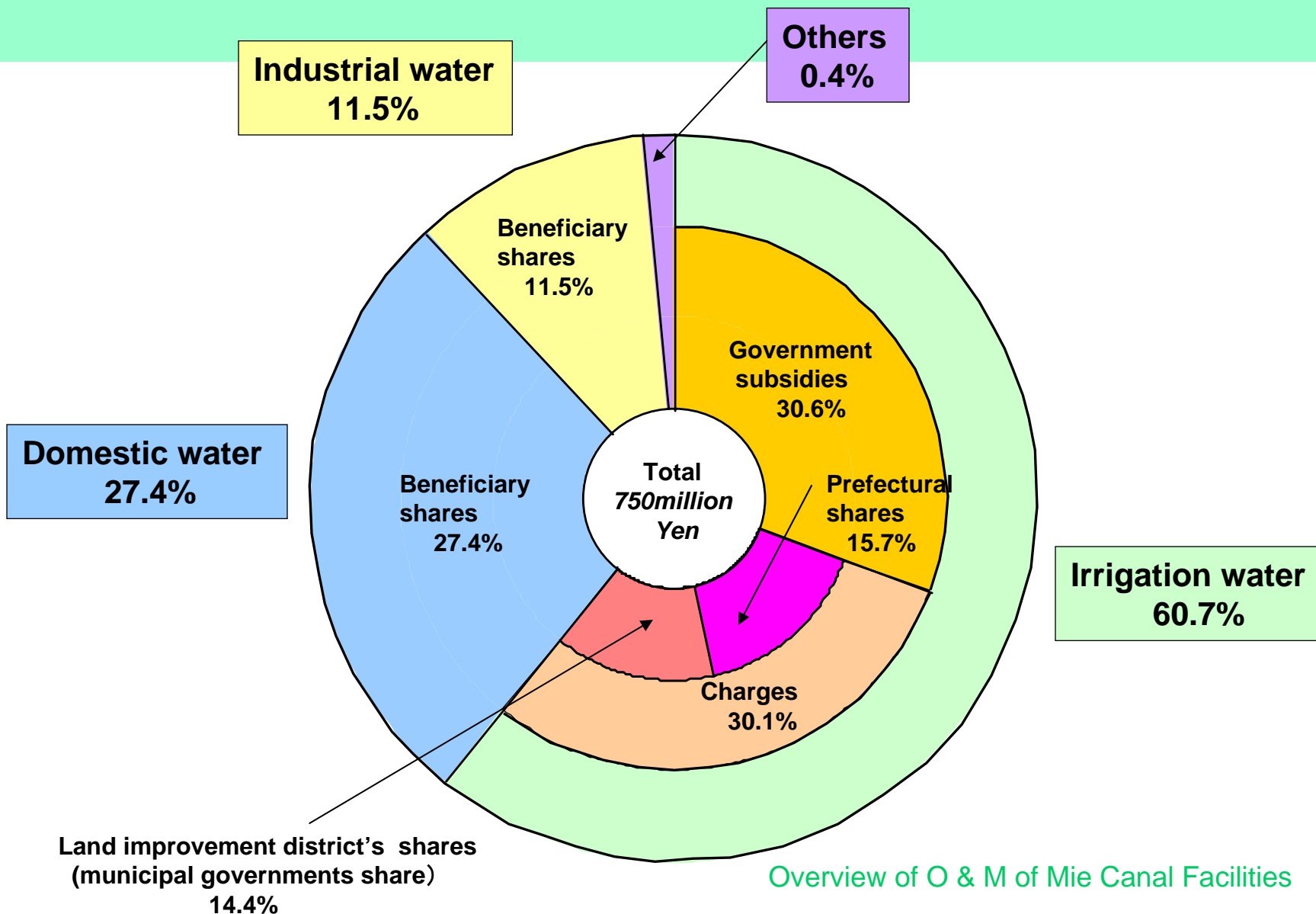
Overview of Mie Canal Construction Project

Classification of Property and Practical Jobs of Mie Canal Facilities

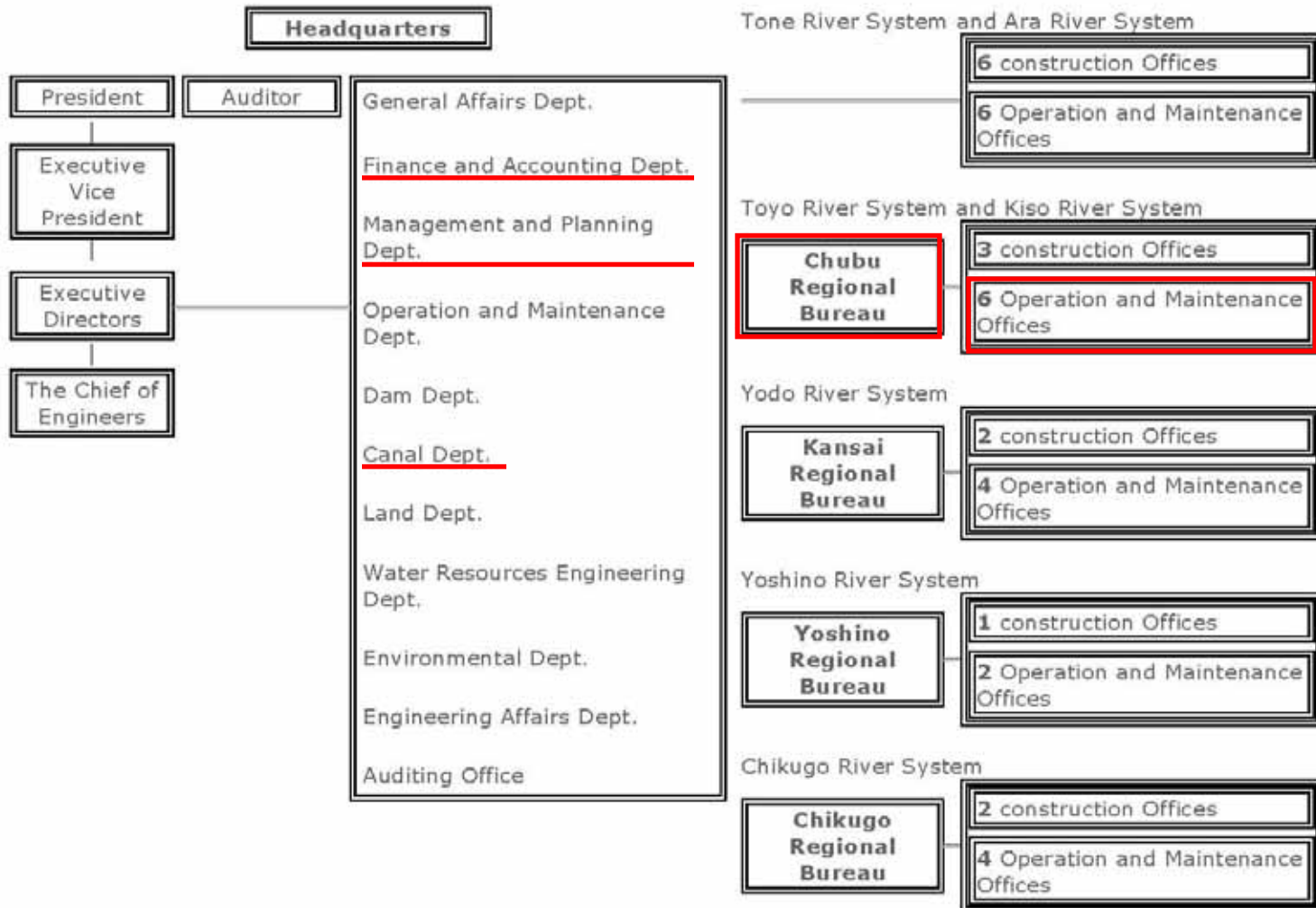


Overview of O & M of Mie Canal Facilities

Management cost sharing (JWA Mie Office :2005)



(As of April 1, 2005)

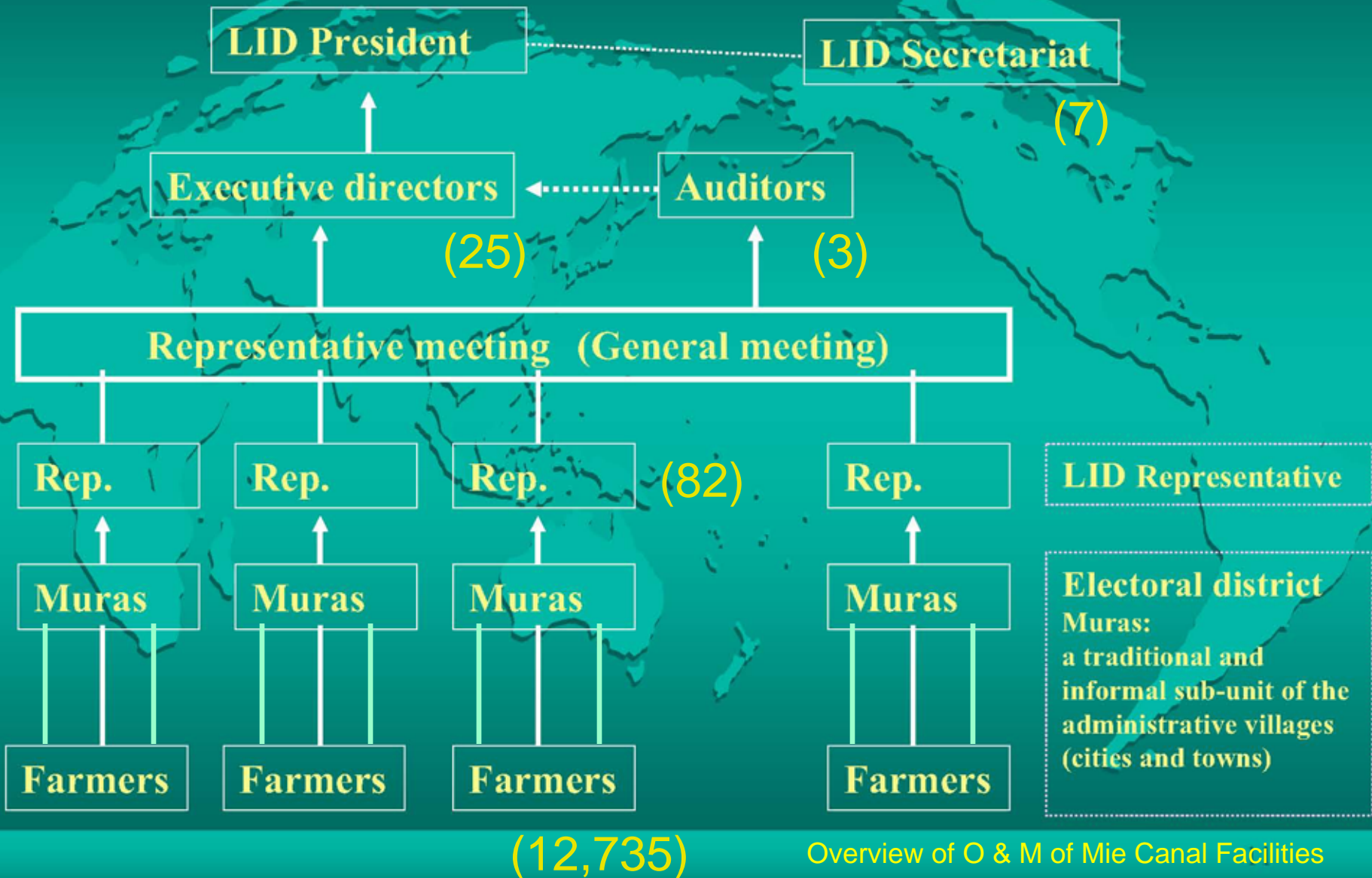


Number of employees: 1,694(as of April 1, 2005)

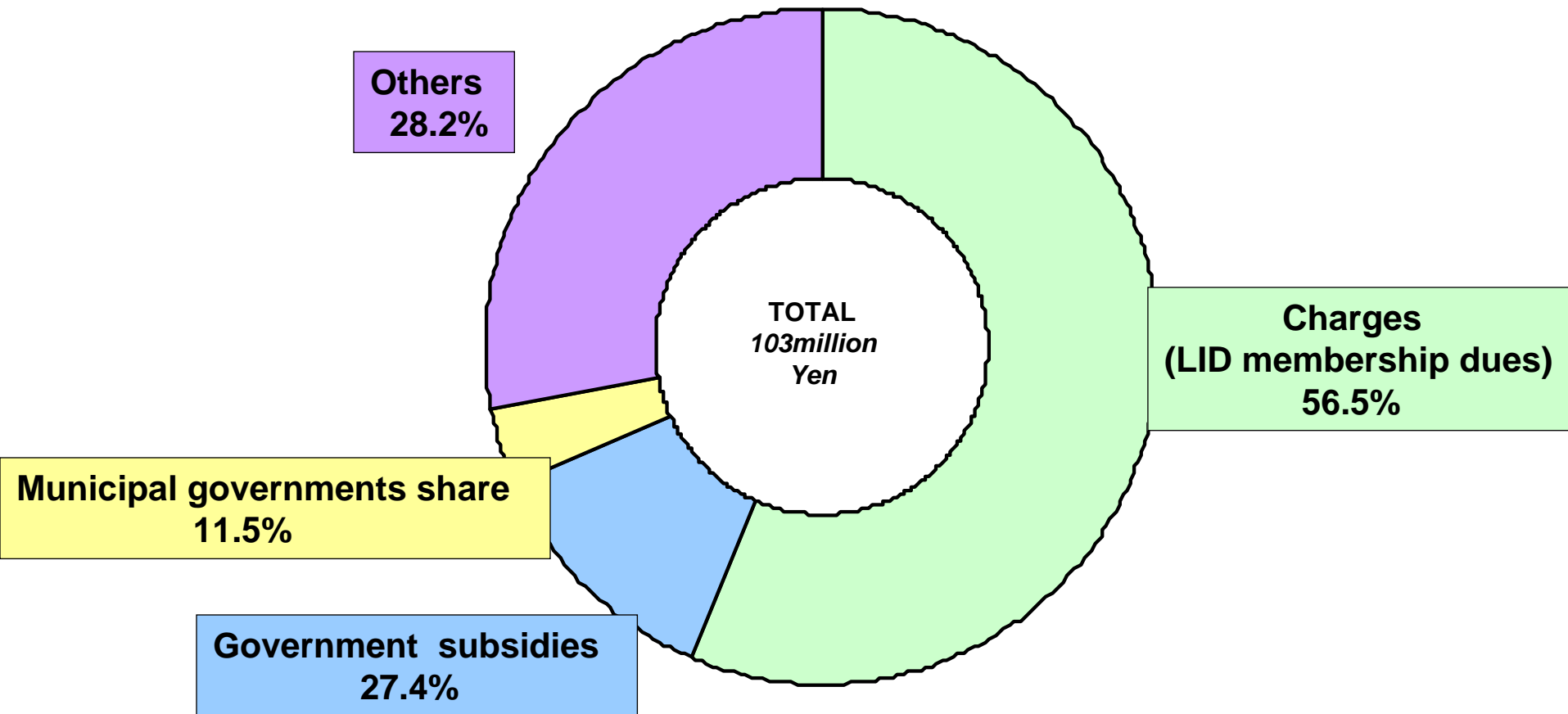
Notes

- 1)It is stipulated that the Japan Water Agency should be staffed with one president, one executive vice president, five executive directors (at most) and two auditors.
- 2)Construction offices include Management and Construction Offices.

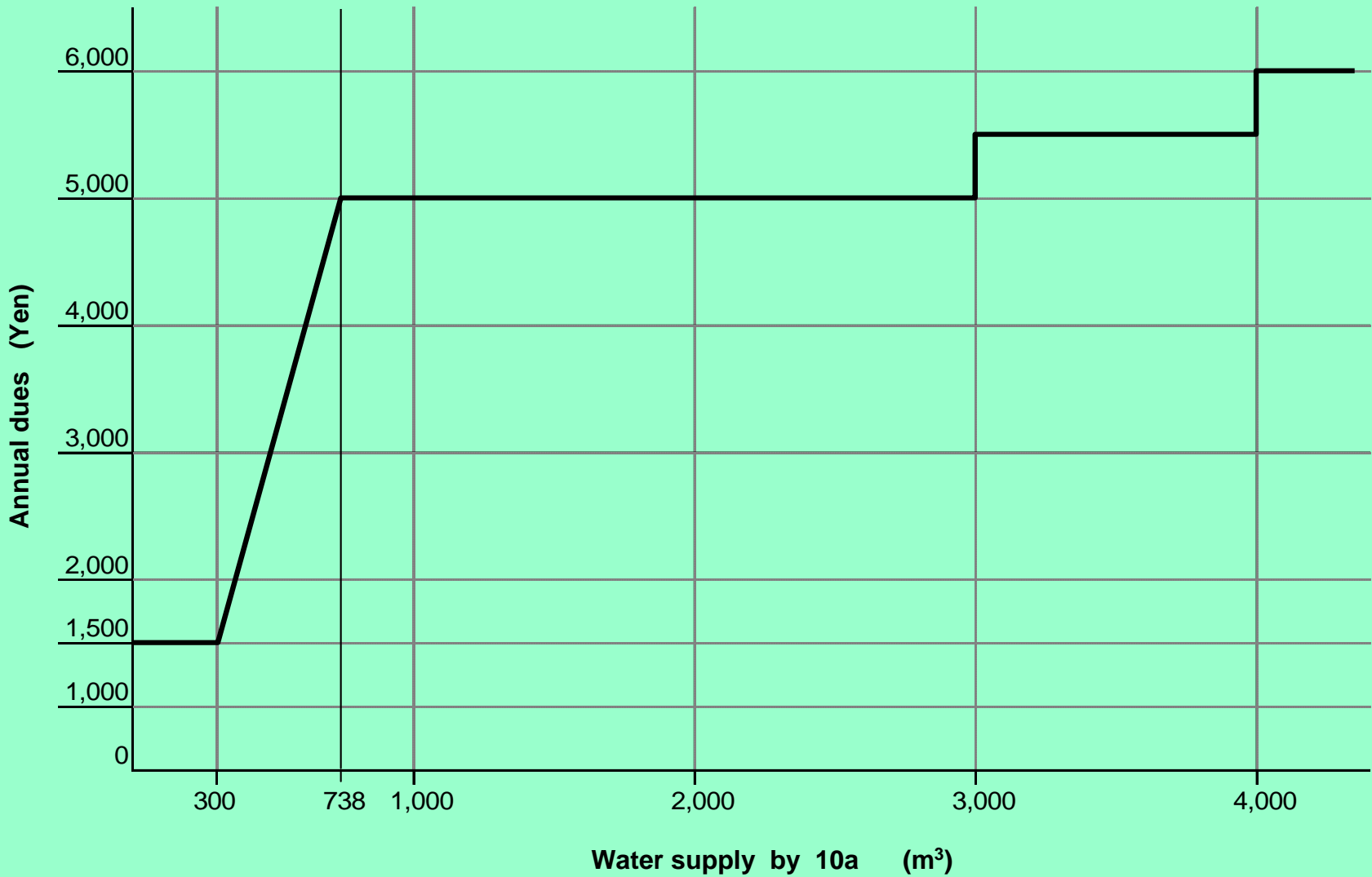
Organization Chart of Mie Canal LID



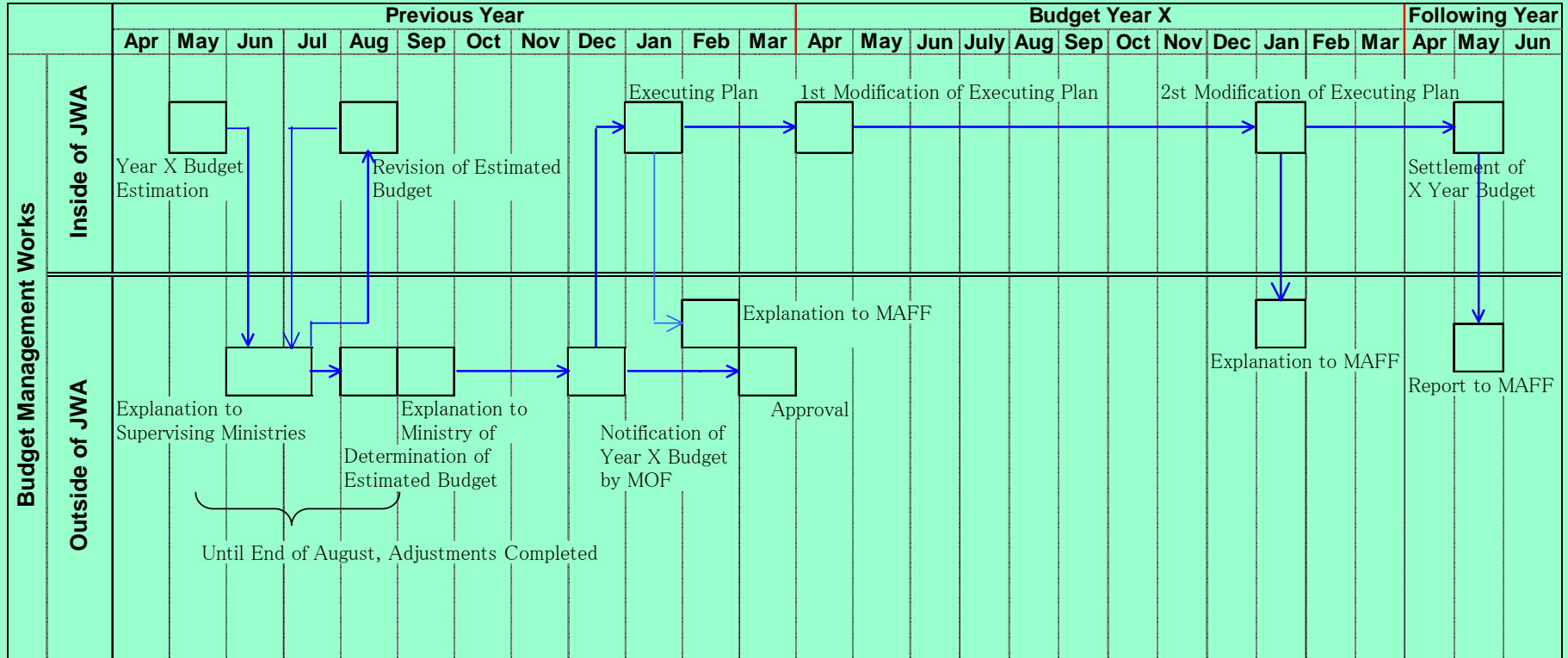
Management cost sharing (Mie Canal LID:2005)



Mie Canal LID's membership dues



Annual Work Flow of Budget Management



Annual Work Flow of Mie Canal Operation & Maintenance

Jobs		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Agricultural Water	Rice Cultivation Stage					↔ Paddy Planting	↔ Transport of Paddy	↔ Headin	↔ Maturin				
	Farmers Jobs				• Preparatory Plowing		• Weed-killer	• Disease	• Pest Control	• Paddy			
	Water Management		↔ Water for Frost Prevention of Tea Plantation			▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄ • Shallow Water Management		▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄ • Mid-summer Intermittent Irrigation		▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄▄ • Ponding Water Reliese			
Water Rights	Irrigation Water (m3/s)	0.562			3.463		5.169			2.939	0.936		
	Domestic Water (m3/s)	0.67											
	Industrial Water (m3/s)	0.131											
Japan Water Agency	Coordinating between Beneficiaries		@ Management Board			@ @ @ @		@ Management Board			@ Technical Meeting (LID)		
	Water Distribution	Sharing the Information and Water Distribution of Water based on the Request											
		Sharing the Information and Water Distribution of Water based on the Request											
		Collecting, Processing and analyzing Data, adjustment of Water Distribution, reporting of the Intake Water											
	Securing the Normal Function of Water Facilities	Repair Works of Canal and Overhaul and Adjustment of Electric and Communication Facilities											
		Inspection and Adjustment of Gate Facilities											
Adjustment of Water Saving Measures in Water Shortage	Renewal of Electric and Mechanical Facilities												
Property Management	Maintenance and Repair Works												
Disaster Prevention and Training	Adjustment of Water Saving Measures in Water Shortage												
	Property Management												
	Disaster Prevention and Training												

Water delivery operation (1)



Overview of O & M of Mie Canal Facilities

Water delivery operation (2)



Mie Canal Management Board



Technical meeting with Mie Canal LID



Overview of O & M of Mie Canal Facilities

Ordinary works (1) Inspection of Facilities



MAKITA Intake Works



Inside the Main Canal



Communication Facilities

Overview of O & M of Mie Canal Facilities

Ordinary works (2) Inspection & Maintenance



Electric Facilities



Removal of Rock and Sand

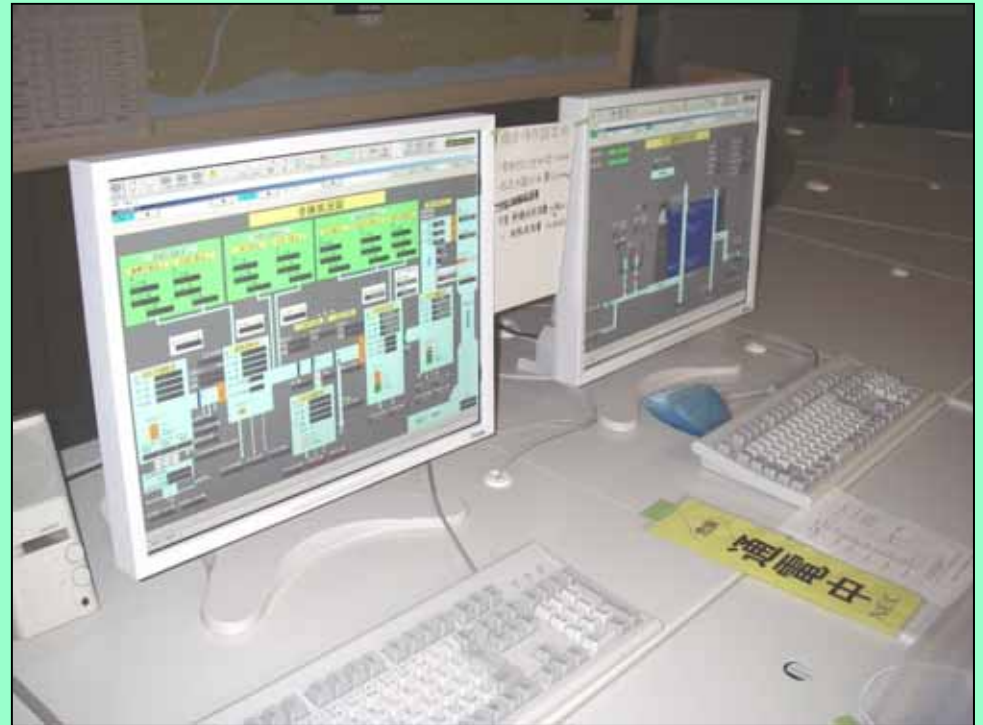
Overview of O & M of Mie Canal Facilities

Works occurred with certain intervals (1)

Renewal of Water delivery control and data processing system



Existing graphic panel

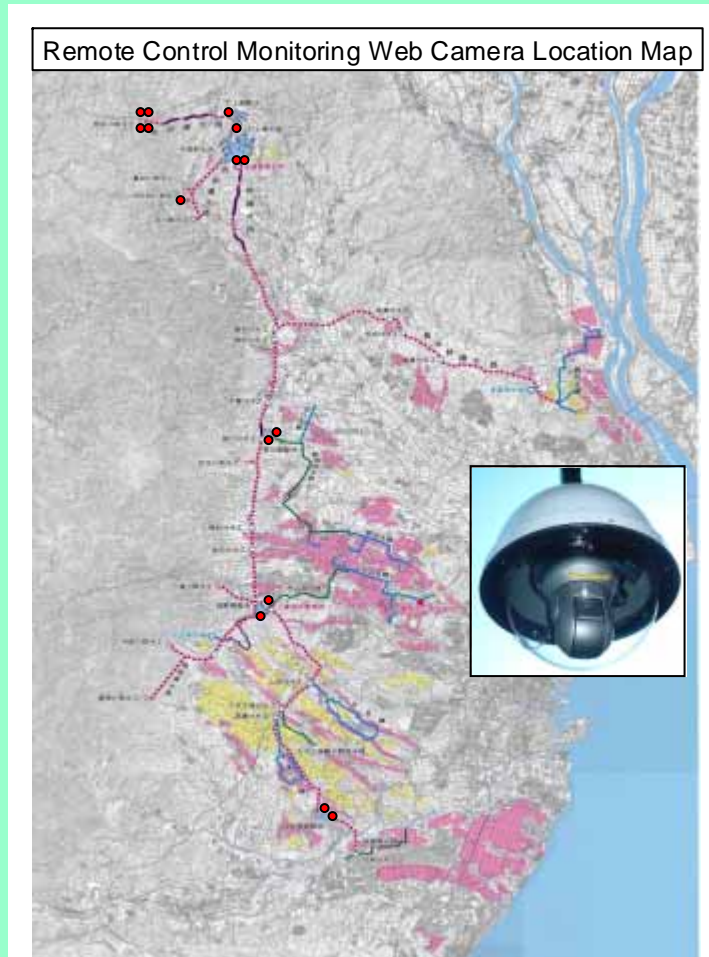


Graphic displays of new system

Overview of O & M of Mie Canal Facilities

Works occurred with certain intervals (2)

Introduction of Information and communication Technologies



Overview of O & M of Mie Canal Facilities

Introduction of Information and communication Technologies

http://10.105.130.9 - 三重用水ITVシステム - Microsoft Internet Explorer

ファイル(F) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)

三重用水
Mie Yousui

ユーザ名: master

全画面表示

画面自動切替

検知画像

ライブ画像

録画画像

2006年 03月 29日 11時

グループ

マルチ画面

牧田川取水工

閉じる

ライブ画像・全画面表示(マルチ画面)

牧田川 上流	牧田川 下流	牧田川 沈砂池	牧田川 河川
打上 鉄塔	打上 中里注水工	中里 鉄塔	中里 取水塔
宮川 鉄塔	宮川 注水工	菰野 別棟	菰野 取水工
加佐登 鉄塔(湖面)	加佐登 鉄塔(放流工)	河内谷 取水工	

状態
接続状態: 正常
異常状態: 正常

音声制御
状態:

地点選択

牧田川取水工	打上取水塔
中里注水工	中里取水塔
菰野調整池	宮川取水塔
宮川注水工	加佐登取水塔

操作選択

放送プレビュー

放送開始

アナウンスメッセージ選択

1	2	3	4	5
6	7	8	9	10

アナウンス起動

照明制御

地点選択

牧田川取水工	打上取水塔
中里注水工	中里取水塔
菰野調整池	宮川取水塔
宮川注水工	加佐登取水塔

照明選択

地点未選択

地点未選択

地点未選択

地点未選択

地点未選択

地点未選択

Overview of O & M of Mie Canal Facilities

Provision for large scale earthquakes and water pollution



Measures for large scale earthquakes



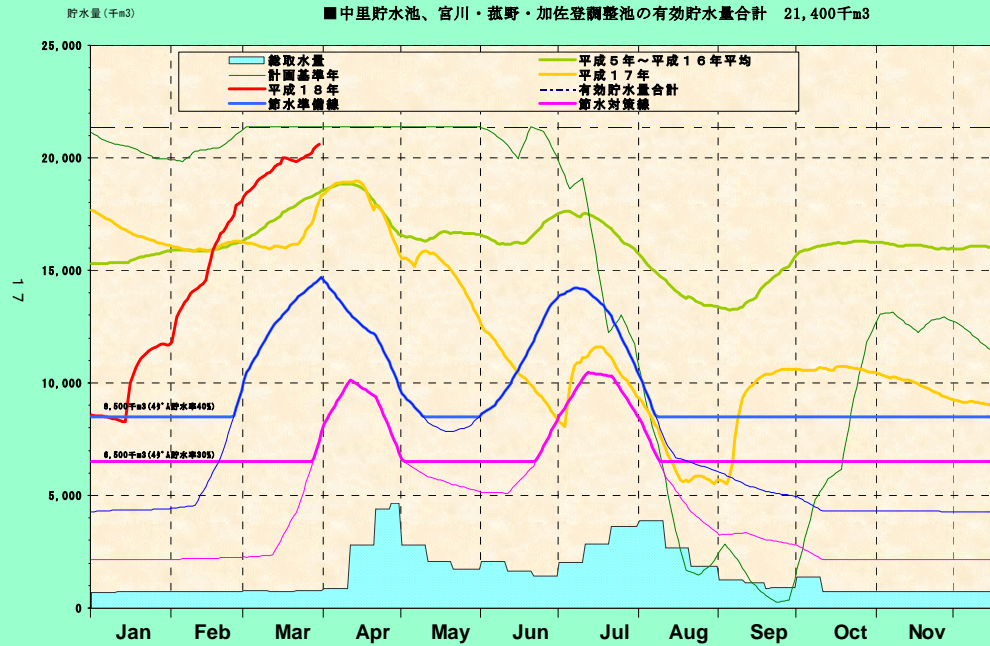
Measures for water pollution

Measures in the time of Drought



Managing Mie Canal Water Saving Measures Committee

Mie Canal Water Saving Measure Line



Overview of O & M of Mie Canal Facilities

NAKAZATO Dam showed its bottom. (2005)



27/08/2005
27%

21/09/2005
46%



One of problems which has to be tackled

- Public relations to kids (the next generation) -



INABE Intake Works



NAKAZATO Dam

Closing Remarks:

- Continuous challenges to reach proper facility management -

Let's improve daily works for the benefit of the users and the society of the project area!

Let's do our works properly to get the reliance upon the water infrastructures!

Let's challenge new jobs to take out the multifaceted functions from the water infrastructures!