

# River Water Resources Allocation and Participatory Irrigation Management in Japan today

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## 1. Introduction

Japan's experience will be introduced as one of the basis for the comparative discussions on the subjects mainly focused here, which are water resources allocation and Participatory Irrigation Management.

Rice-paddy irrigation for small farms in the monsoon area in the tropical region are the main target here. As the control for comparative discussions, some categories or classifications are considered; such as humid(H) vs semi-arid(A), tropical(Tr) vs temperate(Tm), small farm(S) vs large farm(L), diversion(D) vs tank-fed(T), and natural river flow(N) vs reservoir-fed(R).

Afghanistan(Af)	A, Tm, S, ?, N
India(I)	H, Tr, S, T, R
Thailand(T)	H, Tr, S, D, N
Cambodia(C)	H, Tr, S, ?, N
Philippine(P)	H, Tr, S, D, R
Korea(K)	H, Tm, S, D, R
Japan(J)	H, Tm, S, D, R
Australia(Au)	A, Tm, L, D, R

## 2. Main Subjects ;

THE major subjects here discussed are as follows;

- 1) River water resources allocation
- 2) Participatory Irrigation Management

in Japan today

There are two kinds of water resource such as;

- 1) Ground water: private property; stable but less availability in quantity
- 2) River water: public property; fluctuating but more availability in quantity

## 3. Water Rights System in Japan

River water resources allocation are managed, and river flow conditions (both floods and low flow) are controlled and regulated by the National Government.

Government Permission is indispensable for water users' diversion of river water.

Buying and selling, borrowing and lending between users are forbidden, because river flow water are "national" or "public" water, which cannot be owned by anyone as his/her property.

River water resources allocation in Japan today is administered by the National Government through the legal systems, "Water Rights" since 1896.

Existing diversions, almost most of which were for irrigation of rice-paddy, were regarded as already "permitted" water rights.

Principles of river water resources allocation are "Appropriative Right: "First in time-First in Right".

Procedure is that potential water users shall apply to the National Government.

A complete application shall include:

- The name and address of the applicants
- The nature and the proposed place of use
- The proposed place of diversion
- The location and description of the proposed head works and other works
- The amount of the use  
for irrigation of rice-paddy, the applied amount of the use changes against stages such as nursery bed~/ puddling and transplanting~/ growing~ etc. and only in a irrigation (summer) season, not in a off-season
- others

Application and Permit fee are not charged in reality.

The Government gives permission to an applicant, when no protests based on alleged injury to prior rights

#### 4. "Standard" "Normal" Low Flow:

"Standard Low Flow" and "Normal Low Flow" technically defined by the Government is a basis of regulation and control of low flow in river channels in drought.

The definition of standard low flow or normal flow is:

90% exceeding probability of low flow discharge in a river channel

10% risk probability=90% safety probability (occurrence: once-in-ten-years)

"Standard low flow" discharge minus "Maintenance flow" discharge is available to diversion of river flow by an applicant.

"Standard low flow" should be more than or equal to Maintenance flow discharge and all of prior right discharges.

- "Maintenance flow" is in-stream flow discharge for environment conservation and others such as navigation, dilution of polluted water etc

River flows are controlled and regulated by administration of the Government

If available waters are not enough for a new applicant, a reservoir should be constructed by an applicant's pay at the order of the Ministry.

In drought, the Ministry officials administer to release stored water in a reservoir or reservoirs to augment low flow in river channels to augment natural river low flow discharge to keep flow conditions to satisfy maintenance flow and prior rights.

When emergent Drought occurs, and river flow discharge becomes less than standard low flow, river water resources could be temporarily reallocated by conference of all of water right holders, sometimes not in proportion of water rights in quantity.

#### **5. Participatory Irrigation Management (PIM)**

Principles or philosophy built in the setting behind the concepts of PIM proposed by staff of the World Bank are as follows;

1) farmers (stake holders)(water users) should participate in Operation, Maintenance and Management (OMM) of Irrigation Systems to establish "democratic" organization (association) of "Water Users" (WUA) of the farmers, by the farmers, for the farmers.

2) Market mechanism:

Beneficiaries should Pay Principle (BPP), in other words no public subsidy for OMM costs (exceptionally for construction cost internationally)

#### **6. Land Improvement District (LID)**

= Japanese farmers' irrigation association = Japanese water user-farmers' association  
LIDs were, are and will be established based on Land Improvement Act enforced in 1949. to replace "(Land owners') Irrigation and Drainage Association" or "(Agricultural) Land Consolidation Association" before the War II, and has got a reputation as the most successful organizations of PIM by their performance

Organizational structure and functions of LIDs are briefed by using the typical model of a LID shown here for your understanding.

Suppose, a typical LID has 6,000 member-farmers, 5,000 ha beneficial rice-paddy fields.

Procedures of management are;

- 1) 6,000 farmers elect 700 "representatives" among them by secret voting  
one person, one vote. equity! (no discrimination: rich/poor, gender etc. democracy!)
- 2) 700 representatives elect 8 directors among them, who form the Board of Directors
- 3) A Director General is elected by elected directors
- 4) The Board of Directors can invite some (1~3) experts as non-member directors
- 5) The Board employs some staff in their office, who are in charge of OMM works
- 6) Every activities are discussed and decided by the assembly of representatives
- 7) the Board of Directors conducts administrative works of OMM on a basis of policies

made and approved by representatives

Major functions of LIDs are;

1) Application of a construction project to the MAFF

MAFF=Minister of Agriculture, Forestry and Fishery

so-called “construction project” in Japan embraces many different kinds of projects such as construction, reconstruction, replacement, upgrading, rehabilitation.

2) Repayment for Construction Cost, 80~90 percentage of which is subsidize (the other 10~20% will be levy on member-farmers)

Typical Subsidy Ratio is shown below;

project conducted by	National G.	Local G.	Municipality (city/town)	LID (%)
National Government	60	20	10	10
Local Government	50	25	12.5	12.5

3) OMM of constructed irrigation facilities such as a diversion dam, irrigation canals, pump(s) etc, OMM of which are handovered/transferred from the Government to a LID without “official” public subsidy

cf. Since foundation of WUAs before the War II, OMM has been done by land-owner- or tenant-farmers by their own pay and labor, paying land tax or tenant fee before LIDs.

rf. Cost of major repair originated from severe natural disaster such as an earthquake and floods are fully subsidized by National Government

4) Charge membership fee (water charge) on his/her paddy fields on area basis

7. Income of a LID

1) membership fee (typically ¥50,000= US\$450/year/ha-rice paddy=3~5 % of the yield)

rf. typical paddy yield: 7~8 tons/ha/year(one crop)

2) charges, rent etc. upon persons for their using LID's operated facilities such as canals for their sewage and runoff drainage

3) “detour” public subsidy for OMM costs of a LID

8. Typical diversion requirements for rice-paddy:

for predominant river flow diversion systems; 20~30 mm/day

for few tank-fed systems; 10 mm/day

Management Project ----- Land Improvement Project ----- Construction Project

new construction  
reconstruction  
upgrading  
rehabilitation

