Current Situation in Participatory Irrigation Management and Multifunctionality of Irrigation System in Thailand

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Land use in Thailand

Arable land = 16.2 mil ha
Rice cultivation land = 10.24 mil ha
## Water Development Project completed through 2003

<table>
<thead>
<tr>
<th>Region</th>
<th>Large and Medium Scale</th>
<th>Small Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Capacity (MCM)</td>
</tr>
<tr>
<td>North</td>
<td>138</td>
<td>24,087</td>
</tr>
<tr>
<td>Northeast</td>
<td>297</td>
<td>9,291</td>
</tr>
<tr>
<td>East</td>
<td>109</td>
<td>29,220</td>
</tr>
<tr>
<td>Central</td>
<td>66</td>
<td>605</td>
</tr>
<tr>
<td>South</td>
<td>84</td>
<td>7,316</td>
</tr>
<tr>
<td>Total</td>
<td>694</td>
<td>70,519</td>
</tr>
</tbody>
</table>
Overview of paddy cultivation in Thailand

- Paddy production area 14 million ha
  - 70% (10.5 million ha) is rainfed area
  - 30% (3.65 million ha) under irrigated area

- Paddy output of 27 million tonnes in 2003
  - 19.5 million tonnes for domestic consumption
  - 7.5 million tonnes for export

- Rice production could be classified into 2 main ecosystems:
  - Irrigated
  - Rainfed lowland
30% under irrigated area
(3.65 million ha)

70% rainfed area
(Large area in Northeastern Region)
30% of rice cultivation area that is irrigated. Produce 55% of annual rice production.

45% of annual rice production is from rainfed area.
Chao Phraya Plain

- Only 1/3 of net irrigated area can be served during dry season (Because of water shortage).

- 2/3 of dry season cropping is in Chao Phraya Plain area.
• 4% is well controlled (Land consolidation, Ditch & Dike)

• 44% is partially controlled (Main system sub-lateral canal)

• 52% is minimal control (inadequate distribution & drainage system)
• Remaining 70% mostly in the northeastern region still under rainfed condition

• Some attractive irrigation possibilities remaining to be exploited.
Participatory Irrigation Management
Water User Organization (WUO) Development Past - Present
Present Situation

Irrigation area
3.65 million ha

Water management direction
- Increasing an efficiency of water use
- Qualitative development
- Promote farmer's participation

Number of water user groups in the area of 8.84 million rai
- 26,651 base groups
- 410 administrative groups
- 40 associations
As of December 31, 2004

Percentage of irrigation area having...
To increase irrigation areas with WUGs of 7.7 million rai

To increase WUGs: 25,750 groups

To continually create the strength of WUGs

To increase number of irrigation committees: 162 committees

To increase 154 funds

To create irrigation youth of 30,400 persons
To set up number of WUGs:

Year | WUGs
--- | ---
2002 | 19,530
2003 | 21,278
2004 | 23,219
2005 | 26,651
2006 | 32,311
2007 | 38,571
2008 | 45,401
2009 | 52,401

Total number of WUGs: 254,444
There was an increase in irrigation area having
Irrigation area (Million rai)

Year

2001 2002 2003 2004 2005 2006 2007 2008 2552

Participatory Irrigation Management of the Operation and Maintenance: PIM
Participatory Activities

in O&M

Activity 3 To establish irrigation group
Activity 4 To create strength of WUO
Activity 5 To raise WUGs level
Activity 6 To establish irrigation management committee
Activity 7 To establish irrigation funds
Activity 8 To hire contractor for maintenance
Activity 9 To participate in Operation and Maintenance
Activity 10 To assess WUO’s strength
Activity 11 To conduct database of the project
Implementation cycle for participation in O&M

11 activities in participation

- To create understanding on participation
- To conduct an agreement for participation
- To establish WUGs (Base group)
- To raise WUGs level
- To establish irrigation funds
- To establish irrigation management committee
- To hire contract or for maintenance
- To create strength of WUO
- To assess WUO's strength
- To participate in O&M
- To conduct database of the project
- To create strength of WUO
Multifunctionality of Thailand’s irrigation system
1. Livelihood and economic functions

- Farmhouse water supply

Most people in Chao Phraya Plain settle their house along water courses, rivers and irrigation canals, thus the living style makes them depend on irrigation water for household water use especially in dry season.
Aquatic resources and aquaculture:

Characteristics of flat floodplain and function of irrigation system, designed to spread the floods more evenly, provide favorable condition for fish living in the paddies. Depression area where farmer can only grow a low-yield floating rice, production from fish make additional income.
Trap to get fish
Duck is under growing
Rural enterprises:

Most rural communities where domestic water supply networks are not established or completed, agriculture water management system still service as the major water supplier to rural enterprises, such as agro-processing, small manufacturing, shops and restaurants.
Domestic water supply:

Rivers and canal feed by irrigation water in Central plain are the major sources of water supply for municipality areas and industrial uses.
Flood Control

Paddy field amount 20,000 km² is in the flood inundation area. Estimation maximum water vol. stored in the inundation area without inflicting significant damage is about 6 bil.mcm.

In the flooded in 1995, total inundation vol. amounts about 16 bil.mcm. System improvement is purposed for better floodwater distribution in paddy field of 5,600 km² in Northern Chao Phraya area through the improvement of irrigation channel and flow control structures.
Multi-functionality of floating rice farming:
Flood mitigation

Paddy field are inundated!
Bangkok is safe!
• **Groundwater recharge**

Hydro-geological condition of Central plain indicates at delta area the thick layer of clay formation lies over the aquifer where the recharge area in which the aquifer layer approaches to the ground surface is located a hundred kilometer further in the upstream direction. The recharge area is also in the rice-growing irrigation service area. Though the contribution of irrigation water to the ground water have not been yet investigated.
3. Social and cultural functions

- Community empowerment

For centuries, small scale irrigation projects have been operated in the upper part of the basin and organized by small farmer groups. In lower part, supplementary irrigation and flood protection project have been implemented. Many projects are relatively large, and construction work is beyond the capacity of small farmer groups. Because of water is abundant in wet season. The WUG is not so strong if comparing with northern part.
The multifunctionality of the irrigation system, though newly introduced recently, seems to be a useful measure to provide necessary information for inter-sectoral water allocation. The multiple roles of the existing large irrigation systems were not well addressed from the beginning and it can be observed the existence of multifunctionality and its changes with time and economic conditions. The knowledge of
Thank you for your attention