Recent Water Use Conditions in the Upper East Bank of the Chao Phraya Delta

チャオプラヤデルタ上流東岸域における最近の水利用状況

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1. Introduction

This study aims to investigate recent practices in water allocation and cultivation in the Upper East Bank of the Chao Phraya Delta, by using the data collected by RID local offices, a questionnaire survey conducted by the authors, and analyses of satellite images.

The model area of this study is set on the Upper East Bank (UEB) of the Chao Phraya Delta (**Figure 1**). The UEB area occupies an area of 244,000 ha, and roughly corresponds to the command areas of Maharaj, Manorom, Chong Khae, Khok Kathiam and Roeng Rang O&M Project Offices, all of which are under the responsibility of the Regional Irrigation Office 10 (RIO-10) of RID. Main water sources for the area are the Chainat-Pasak and the Chainat-Ayutthaya main canals, both of which intake water from the Chao Phraya River.

All the data on water use and cultivation were obtained at the RIO-10 and the Project Offices. In addition, a questionnaire survey was conducted in May 2003 to the zone-men within the UEB area in order to count the number of shallow wells in each zone. In order to analyze land use conditions in the UEB area, remote sensing analysis was conducted using LANDSAT satellite images. Detailed methods of remote sensing analysis are described elsewhere (Ueda *et al*., 2004).

2. Results and discussion

One of the major problems in water use was the unfair water allocation between the upstream and downstream Projects. The dry season in 2002 enjoyed relatively plenty supply of water from the upstream reservoir dams and stable rainfall during the season. As a result, 153 % of the target discharge was supplied to the UEB area as a whole (**Table 1**). However, such “excess” water was primarily taken by the upstream Projects, which showed larger ratio of actual to target discharges (**Table 1**).

In addition to such advantageous water allocation from irrigation canals, farmers in the upstream areas further tried to increase and stabilize water supply by installing private shallow wells. According to our questionnaire survey, shallow wells were largely concentrated in Manorom Project and the upper part of Maharaj Project (**Figure 2**). Farmers were supposed to use those shallow wells for supplementing irrigation water when the water supply from canals was suspended or not enough for cultivation. Such a sort of water use is known as “conjunctive use of surface and ground water”. In summary, many farmers in the

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upstream areas enjoyed timely water supply from irrigation canals and private shallow wells, while in the downstream areas, most farmers could not get any water in some periods in a year, especially in the beginning of the dry season.

Such a difference in water use between the upstream and downstream areas affected the cropping patterns in the UEB area. According to our remote sensing analysis, most farmers in the upstream areas were thought to practice an intensive pattern of rice cultivation, while those in the downstream areas normal or extensive patterns (**Figure 3**).

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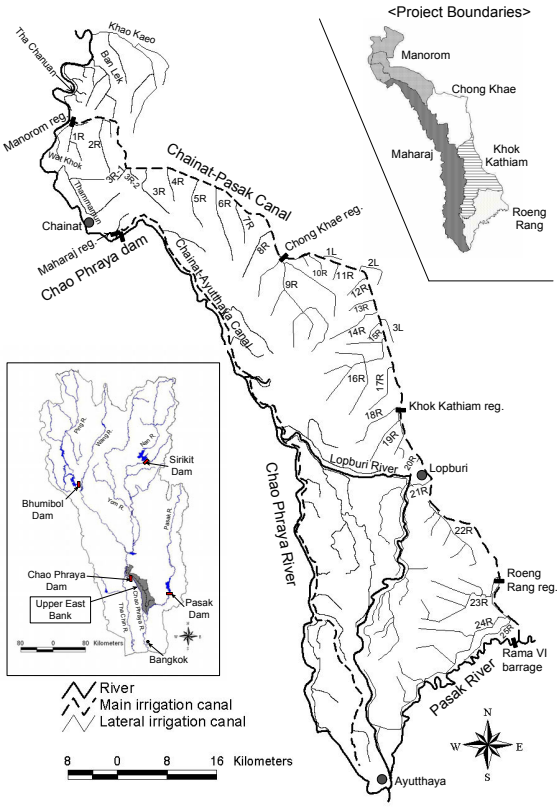
Reference: Ueda, T. and the Basin & Delta Level Water Management Working Group: *Final report in the field of basin & delta level water management*, the MWMS Project, RID, DOAE, JICA, March 2004.



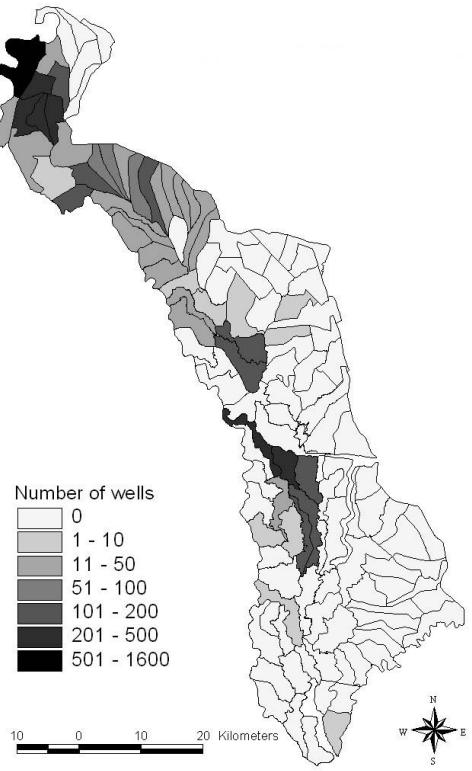


Figure 1 The UEB of the Chao Phraya Delta

Figure 2 Distribution of shallow wells

Table 1 Seasonal water allocation in the dry season 2002 in four O&M Projects in the UEB

O&M Project Offices	Manorom	Chong Khae	Khok Kathiam	Roeng Rang	4 Projects
Discharge, target (MCM)	116	148	134	114	512
Discharge, actual (MCM)	239	249	150	145	783
Ratio of actual/target discharges (%)	206	168	112	128	153

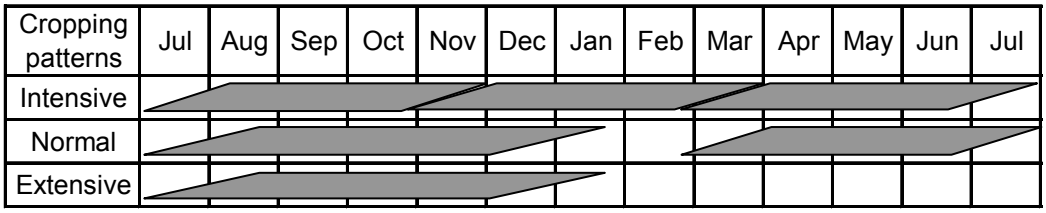


Figure 3 Typical cropping patterns of rice in the UEB