

**IRRIGATION WATER PRICING:
THE CASE OF AN AGRICULTURAL COOPERATIVE
IN KHON KAEN PROVINCE**



Mikayo Yamazaki

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Environmental and Natural Resource Economics

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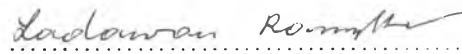
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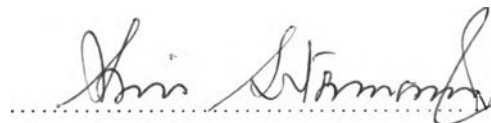
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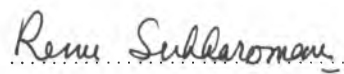

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Agriculture is the major consumer of fresh water. In Thailand, dry season irrigated paddy cropping has expanded, and Thai farmers now face water shortages during the dry season. Despite the water shortage, it has been observed that farmers tend to use water wastefully. There are three main factors contributing to the wasteful water use: the fact that irrigation water is virtually provided for free, allowing farmers to over irrigate; farmers' lack of awareness of wasting scarce water resources; and inefficiency of irrigation systems in delivery of water.

It has been argued that water should be fully priced to reflect increasing production and environmental costs and scarcity. This research applies the concept of full-cost pricing to the Nong Wai Irrigation System located in the Northeastern region of Thailand. In the calculation of full-cost prices for irrigation water, Average Incremental Costs (AIC) were used to estimate the marginal opportunity cost of irrigation water. AIC figures covering the incremental investment cost and opportunity cost of incremental volume of water are calculated to be 0.24 baht/m³ to 1.79 baht/m³. These prices for irrigation water appear relatively low if compared with the prices of water for household or industrial use.

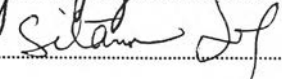
If the unit prices are multiplied by the irrigation water requirement of paddy, full-cost water charges would be in the range between 376 baht/rai and 4,476 baht/rai. A preliminary field test suggests that farmers' willingness to pay for irrigation water is well below the calculated full-cost prices. The result of the interviews with 23 farmers in the Nong Wai Irrigation area shows that the farmers would be willing to pay for irrigation water, on average, at the rate of 11 baht/rai for the rainy season and 17 baht/rai for the dry season. These figures may imply farmers' lack of awareness of water being valuable resources and their resistance to paying for what used to be free.

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ลายมือชื่อนิติกร 

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Abbreviation and Glossary

1) Agencies

ALRO	Agricultural Land Reform Office, MOAC
ARD	Office of Accelerated Rural Development, MOI
BAAC	Bank for Agriculture and Agricultural Cooperatives
CPD	Cooperative Promotion Department, MOAC
DLD	Department of Land Development, MOAC
DEDP	Department of Energy Development and Promotion, MOSTE
DMR	Department of Mineral Resources, MI
DOH	Department of Health, MPH
DOLA	Department of Local Administration, MOI
EGAT	Electricity Generating Authority of Thailand
JICA	Japan International Cooperation Agency
MI	Ministry of Industry
MOAC	Ministry of Agriculture and Cooperatives
MOI	Ministry of Interior
MOSTE	Ministry of Science, Technology and Environment
MPH	Ministry of Public Health
NESDB	Office of National Economic and Social Development Board, PMO
NGOs	Non-Governmental Organisations
PMO	Prime Minister's Office
PWA	Provincial Water Works Authority, MOI
PWD	Public Works Department, MOI
RID	Royal Irrigation Department, MOAC
TDRI	Thai Development Research Institute

2) Units of Measurements

m	metre
mm	millimetre
km	kilometre
km ²	square kilometre
ha	hectare
rai	Thai unit of area: 1 rai = 0.16 ha
CMC	cubic meter per second
MCM	million cubic meter

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