Chapter 5
Willingness to Pay

For the purpose of assessing farmers' willingness to pay for irrigation water, a preliminary field test was conducted with farmers who grow rice using irrigation water from Nong Wai Irrigation System. An assumption was made that the government might become short of financial resources to operate and maintain irrigation systems in the future. Based on this assumption, farmers were asked how much of irrigation water fees they would be willing to pay to support the operation and maintenance of Nong Wai Irrigation. The findings will be used to analyse the calculated full cost price, and implications for policy will be subsequently discussed.

5.1 Survey Method

5.1.1 Sampling Method

Cluster random sampling technique was used to select 25 farmers to be interviewed. Six villages taking irrigation water from different secondary canals were visited. This was to reflect diversity in the quality of irrigation service at different secondary canals. In each village, 4-5 farmers were randomly chosen. Another consideration was made to choose both well-to-do farmers and subsistent farmers in each village so as to ensure their representation of the population.

5.1.2 Question Format Regarding Prices of Water

In order to facilitate farmers thinking in terms of pricing irrigation water, some reference prices were presented to the farmers. Considering that the Nong Wai Agricultural Cooperative used to collect 30 baht/rai/year around 10 years ago, reference prices were set higher than 30 baht. For the rainy season, farmers were asked whether they would be willing to pay water fees of 40 baht to 80 baht per rai of their paddy field. Forty baht is roughly 10% of the pre-calculated full-cost of water needed to grow one rai of paddy in the rainy season, and around 20 % of the net benefit per rai from rice production in rainy season. Eighty baht is roughly 20% of the full cost of water needed to grow one rai of paddy in rainy season, and around 40 % of the net benefit per rai from rice production in rainy season.

For the dry season, farmers were asked whether they would be willing to pay water fees of 60 baht to 120 baht per rai of their paddy field. Sixty baht is about 10 % of the full cost of water needed to grow one rai of paddy in dry season, and around 8 %

of the net benefit per rai from rice production in dry season. A hundred and twenty baht is about 20 % of the full cost of water needed to grow one rai of paddy in dry season, and around 16 % of the net benefit per rai from rice production in dry season. These questions were followed by an open-ended question asking what would be the most that they could afford to pay as irrigation water fees (see questionnaire design in Appendix 1).

5.2 Findings

5.2.1 Description of the Samples

Interviews were conducted with 25 farmers in the following six villages in Khon Kaen Province*.

1. Tora Village, Sila Subdistrict, Muang District
2. Na Pieng Village, Samran Subdistrict, Muang District
3. Amphawan Village, Samran Subdistrict, Muang District
4. Tapo Village, Tagrasem Subdistrict, Nam Phong District
5. Tamadua Village, Tagrasem Subdistrict, Nam Phong District
6. Khok Ua Village, Saimoon Subdistrict, Nam Phong District

Out of 23 cases, there were 14 male (61%) and 9 female (39%). One reason for having more males than females in the sample group might be that the male head of household tended to answer the questions when the interview was conducted with a family. Age of the 23 cases ranges from 30 to 75, with the average of 48. Most of the interviewees had four years of primary education, while two cases had 6 years and one case 3 years of primary education. Household size ranges from 3 to 11 household members, with on average of 5.8 people in a household.

Annual household income ranges from 10,000 baht to 130,000 baht. The average household annual income is 44,565 baht, and the median is 25,000 baht. As for sources of household income, 5 cases have income from wage labour or other types of employment aside from income from agriculture. Some farmers specified the revenue from selling rice to be the main, if not only, source of income.

Interviewed farmers have, on average, 12.1 rai of farm land. The smallest crop area of a household was 3 rai, while the largest crop area was 24 rai. Most of the farmers interviewed allocate all the crop area to paddy cropping during rainy season

---

* Among 25 farmers interviewed, two cases had to be removed from consideration. For one case, the farmer provided only incomplete information for the questions asked. For the other, it was found out that the farmer did not grow rice. Therefore, the analysis here is made on the remaining 23 cases.

except for two cases; one growing jasmine aside from rice, and the other practising mixed cropping of vegetables, fish pond and beans in addition to paddy. For dry season, two farmers out of 23 cases do not grow rice at all. On the other hand, 16 cases allocate all of their farmland to grow rice in dry season as well as rainy season. Five cases grow rice and other crops such as beans and vegetables during dry season. Overall, the average area allocated for paddy cropping per household is 9.2 rai. Fifteen out of 23 cases grow only rice on their farmland, while others grow other crops in addition to rice including vegetables, beans, potato, and lotus.

Table 5-1 Crops grown by 23 farmers

Crop	Rainy Season	% of respondents	Dry Season	% of respondents
Rice only	21	91 %	16	69 %
Rice and other crops	2	9 %	5	22 %
No rice	0	0 %	2	9 %
Total	23	100 %	23	100 %

Source: interview outcome

Asked about the irrigation services, 18 out of 23 cases answered that they are satisfied with the present irrigation services they receive, while 5 farmers said they are not satisfied. Those who were not satisfied were asked what they thought should be improved. The following suggestions were raised.

- A water pump should be installed so that irrigation water can be taken into paddy fields located higher than water ditches.
- Farm ditches should be improved so that more water will flow into the rice field.
- More water should be released to the main canal so that enough water will reach to the rice fields that do not receive enough water at present.

5.2.2 Willingness to Pay for Irrigation Water

First of all, none of the 23 farmers is currently paying for irrigation water or the irrigation services. The interview provided a proposition that the government might become short of financial resources to operate irrigation services and require some contribution from irrigation users. Using reference prices of 40/80 baht per rai of paddy field for rainy season and 60/120 baht for dry season, the interviewer asked farmers how much they would be willing to pay for irrigation water. Farmers responded with much lower prices than the reference prices. As seen in the table below, the average price which 23 farmers are willing to pay is 10.65 baht/rai for rainy season, and 17.48 baht/rai for dry season. The most frequent answer for both seasons is 0 baht/rai, or do not want to pay anything for irrigation water. The largest value is 50 baht/rai for rainy season and 60 baht/rai for dry season.

An additional question was asked to seek farmers' view on the calculated AIC prices of 380 baht/rai for rainy season and 590 baht/rai for dry season. They had a uniform reaction to these prices saying they are way too expensive. Some argued how unrealistic and unreasonable these prices are given already high production inputs and the low price of rice.

Table 5-2 Willingness to pay

Statistics	Rainy Season (baht/rai)	Dry Season (baht/rai)
Average	10.65	17.48
Median	5	10
Mode	0	0
Minimum Value	0	0
Maximum Value	50	60

Source: interview outcome

Farmers mentioned the following reasons for which they have rather low willingness to pay for irrigation water.

- The price of rice has been dropped and revenue from selling rice has become smaller.
- Production inputs are already expensive and water fees would be an additional burden*.
- There are other kinds of collection of money such as electricity bills and local taxes.
- Payment of 1,444 baht/rai for land consolidation has been collected.

All the 23 cases indicated higher prices for dry season than for rainy season or the same price for both seasons. The tables below show that for rainy season, as many as 11 out of 23 cases (47.83%) answered that they would not be willing to pay anything, whereas for dry season, 7 cases (30.43%) would not pay anything.

* The most frequently mentioned production inputs are chemical fertiliser and pesticide, and some other inputs include the cost of hiring wage labour and the cost of transportation of rice harvest.

Table 5-3 Willingness to pay

Rainy Season		
Price (baht/rai)	Frequency (cases)	% of respondents
0	11	47.83%
5	3	13.04%
10	2	8.70%
20	4	17.39%
40	2	8.70%
50	1	4.35%

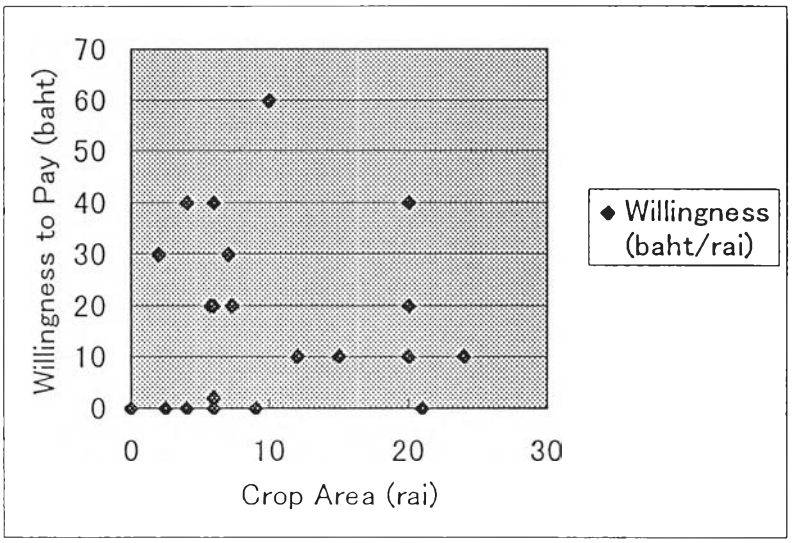
Dry Season		
Price (baht/rai)	Frequency (cases)	% of respondents
0	7	30.43%
2	1	4.35%
10	4	17.39%
20	4	17.39%
30	2	8.70%
40	4	17.39%
60	1	4.35%

Source: interview outcome

There seem to be two main reasons for which farmers are willing to pay higher prices for irrigation water for the dry season farming. One is the definite need for irrigation in order to grow rice during dry season, whereas they use irrigation less intensively during rainy season because of significant rainfall. The other reason is that farmers earn cash revenue from selling dry season rice harvest, while rainy season rice harvest has to be kept mainly for household consumption. As for the payment form and timing, all the 23 cases indicated their preference for water charges in cash after rice harvest.

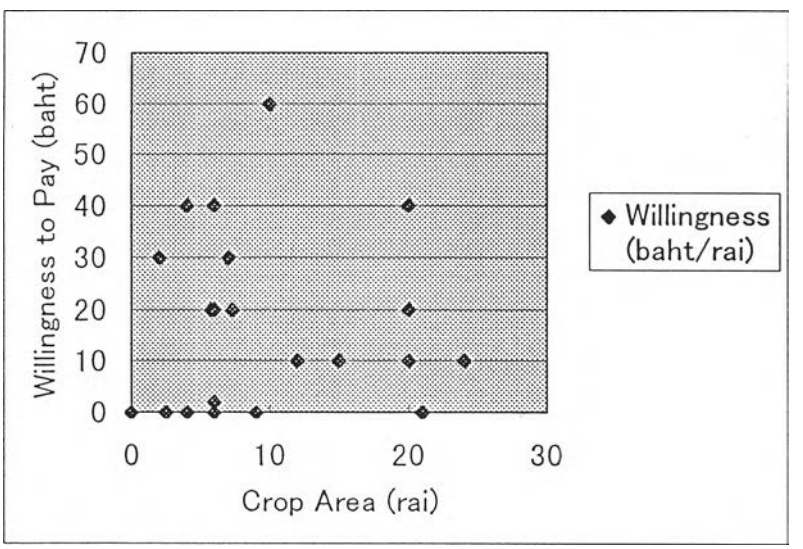
One interesting finding is that farmers' willingness to pay for irrigation water does not seem to be influenced by their financial well-being. The charts below show no apparent correlation between farmers' crop area / annual household income and their willingness to pay for irrigation water. Their financial well-being, or affordability, is not a significant factor to form their decision on how much they would be willing to pay for irrigation water.

Chart 5-1 Willingness to pay (rainy season)



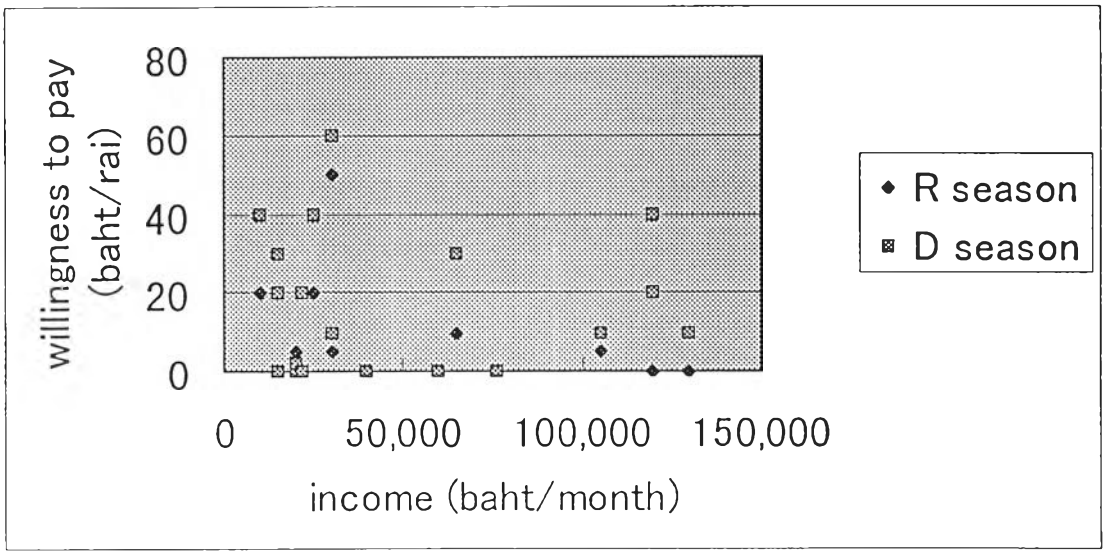
Source: interview outcome

Chart 5-2 Willingness to pay (dry season)



Source: interview outcome

Chart 5-3 Willingness to pay and income



Source: interview outcome

Only one factor in the interview questionnaire, farmers' satisfaction with the irrigation services, seems to influence their willingness to pay for irrigation water to some extent. Out of 23 cases, only 5 cases said they were not satisfied with the current irrigation services. The rest of 18 cases are satisfied with the service. The average willingness to pay for irrigation water among 5 cases that are not satisfied with the present irrigation services is 9 baht/rai for rainy season, and 10.4 baht/rai for dry season. On the other hand, the average willingness to pay among 18 cases that are satisfied with the services is 11.11 baht/rai for rainy season, and 19.44 baht/rai for dry season, as shown in Table 5-4.

Table 5-4 Satisfaction with irrigation services

Response	Willingness to Pay for Irrigation Water (baht/rai)	
	Rainy Season	Dry Season
Satisfied (18 cases)	11.11	19.44
Not Satisfied (5 cases)	9.00	10.40

Source: interview outcome

The difference between those satisfied and those unsatisfied in willingness to pay for water is larger for dry season than for rainy season. This might be because irrigation services are more critical in dry season than in rainy season, and insufficient or untimely irrigation water supply may affect harvest significantly. It is only understandable for those who do not receive satisfactory irrigation services not to be willing to pay for them before witnessing quality improvement.

5.2.3 Irrigation Management Issues

Farmers were asked, if water fees were to be introduced, what they think would be a good way to collect the fees. RID was most frequently mentioned by respondents as an institution suitable to undertake fee collection. Some farmers suggested that RID officials come down to the communities and collect from each household. Some others suggested that water users' groups collect the water fees from members and send them to RID. Water users' groups was the second popular mechanism for the fee collection, followed by Tambon Administrative Organisations (TAOs).

Table 5-5 Water fee collection mechanism

How to collect water fees	Cases	%
RID, RID officials	8	35 %
Water users' groups	7	30 %
Tambon Administrative Organisations	3	13 %
Water users' groups collect for RID	2	9 %
Villagers	2	9 %
Agricultural cooperative	1	4 %

Source: interview outcome

Many of the farmers who preferred RID to be responsible for water fee collection thought that water users' groups do not have the capacity to collect water fees from their members and manage the budget to maintain canals and ditches. Farmers with such a view on water users' groups tend to trust RID more than water users' groups in financial management, and would rather rely on RID and its officials to undertake the duty. On the contrary, there are responses supporting water users' groups. One farmer believes that water users' groups should collect water fees and use them for the maintenance of irrigation canals and ditches. He prefers water users groups to other mechanisms because members of his water users' group know each other very well and they also understand common problems of irrigation in their farm area. Farmers seem to have different experiences with water users' groups depending on which one they belong to. Some might be functioning better than others, and thus trusted by their members.

The interview also asked who should use the collected water fees to manage irrigation at the main canal, secondary canal and farm ditch levels. The most popular opinion was to have RID look after all three levels. Five out of 23 cases suggested RID for the main canals, and villagers for the secondary canals and farm ditches. Another 5 cases suggested RID for the main canals and secondary canals, and villagers for farm ditches. The majority wants RID to be responsible for the main canals which often are not of farmers' immediate concern. The answer villagers mentioned here does not specify whether they would be maintaining the secondary canals and farm ditches individually or working in groups. In any case, 5 farmers out of 23 cases think

that farmers using irrigation themselves should manage the farm ditches. Another 8 farmers think that they should manage both the secondary canals and farm ditches.

Table 5-6 Irrigation management responsibility

Main Canals	Secondary Canals	Farm Ditches	Cases
RID	RID	RID	7
RID	Villagers	Villagers	5
RID	RID	Villagers	5
Water users' groups	Water users' groups	Water users' groups	2
RID	Water users' groups	Water users' groups	1
TAOs	TAOs	TAOs	1
Agricultural cooperative	Agricultural cooperative	Agricultural cooperative	1

Source: interview outcome

5.2.4 Other Suggestions

At the end of the interview, farmers were invited to make any other suggestions regarding irrigation. The following is the list of suggestions given by the farmers.

Management issues
- There should be somebody to monitor the opening/closing of water gates to prevent water from being stolen.
- RID officials should come down to solve the problem of water not flowing well in particular canals and ditches.
- There should be somebody to monitor the amount of water delivered to farmland and ensure each plot receives enough water.
- Before collecting water fees, RID officials should visit villages to see whether farmers have received enough water.

Technical issues
- Farm ditches should be coated with concrete.
- Water pumps should be installed where farmland is higher than farm ditches.
- Opening/closing of water gates is not convenient, and it needs to be improved.

Water delivery
- RID should release more water so that farmland could receive enough water.

Other comments
- It is difficult for villagers to organise themselves into a group.
- Farmers at the head of canals take too much water and not enough water comes to the tail of canals.
- Water fees should not be introduced as farmers have spent 1,444 baht/rai for land consolidation.