

**Scarcity and Conflict of Resources:
Chom Thong Water Conflict**

Kensuke Yamaguchi

Researcher

Research Institute for Humanity and Nature (RIHN)

Email: kensuke_yamaguchi@chikyu.ac.jp

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Abstract

The causal relationship between resource scarcity and conflict is often treated as trivial. While the shortage and the conflict must be strongly correlated, one should not simplify the conflict within this mechanism alone, rather a focus on actors in local institutions should be included to make our understandings of conflict more profound for future resolution. As a case study, this paper focuses on the water conflict in Northern Thailand.

This conflict was reportedly sparked by a water shortage that blighted an orchard causing the lowlanders to become angry towards the highlanders, as there had been less precipitation in the rainy season of 1997 as a result of El Niño. By comparing the joining group and non-joining group in the event, this paper tries to reveal the water scarcity in a discursive level does not reflect the real scarcity.

In conclusion, author argues the irrationality of water conflict as way to deal with water scarcity. Moreover it is insisted that the opportunity cost of the conflict is large despite of its impracticality. In stead of conflict, three alternative ways are suggested: (i) an appropriate institution including majority, minority and the conservation group should be crafted in each small catchments; (ii) an establishment of de jure right of access to water resources in formally approved institutional setting; and (iii) a rethinking of balanced source of livelihood between on-farm and off-farm income.

Keywords

Northern Thailand, Upland, Water Scarcity, Water Conflict, Scarcity of Narratives

Introduction

The causal relationship between resource scarcity and conflict is often treated as trivial. Some macro-level comparative studies by political scientists such as Homer-Dixon (1994) and Beachler (1993) reveal the importance of this relationship. Meanwhile there are in-depth studies on resources conflict, which reveal the critical infusion of other elements among local institutions¹. While the shortage and the conflict must be strongly correlated, one should not simplify the conflict within this mechanism alone, rather a focus on actors in local institutions should be included to make our understandings of conflict more profound for future resolution.

In Thailand, water shortage has been increasingly severe occasionally escalating into conflicts. In Chom Thong district, Chiang Mai province in Northern Thailand, there was a conflict over water between highlanders and lowlanders in the dry season in 1998². This conflict was reportedly sparked by a water shortage that blighted an orchard causing the lowlanders to become angry towards the highlanders, as there had been less precipitation in the rainy season of 1997 as a result of El Niño. In this paper, I try not to limit the component within the mechanism of resources scarcity and conflict, but to capture the politics around this conflict.

Purpose

It is plausible that the lowlander makes conflict to accuse the water use by highlander under the tension of water resources in dry season. I try to challenge this simplified perspective in this paper.

In study site, there are “Active group”, which most villagers joined the conflict, and “Passive group”, which most villagers did not join though these two groups are located in the vicinity of each other. Considering the impact of highland water use is not significantly different between the two groups, one may ask the factors causing the difference in behavior. By identifying the factors causing different behavior, I try to challenge the simplified perspective stated above.

Background: Conflict in Chom Thong

Chom Thong district is located 80 kilometers southwest from downtown Chiang Mai (Figure 1). It is consisted of 6 sub districts. In this region, 75% of total household was engaged in agriculture (Table 1). Furthermore, longan³ cultivation has recently become

¹ The school of political ecology shows a number of studies. See, for example, Peluso and Watts (2001) and Giordano et, al. (2005).

² Conflict is cased by a variety of reasons. In Northern Thailand, the massive movement has often happened due to poverty, see Baker (2000).

³ Longan is closely related to the lychee and is similar in growth and fruiting habit. In this region, the longan cultivation has surged due to the export of both fresh and dries ones to Hong Kong and China.

popular with the price support policy by the government in addition to the traditional paddy cultivation. While agricultural sector has played a significant role in the region, an off-farm income such as construction labor as migrant in dry season become significant and will have more in the future.



Figure 1: Study Site in Northern Thailand

Source: Walker (2003).

Table 1: Basic Data of Chom Thong District

Sub District	Population	Households	Agricultural Households	Paddy Field (ha)	Orchard (ha)
Baan Ruan	13,632	3,039	2,454	1,706	396
Mae Soi	5,646	2,006	2,107	337	1,028
Baan Pae	12,815	3,844	1,943	481	1,388
Khun Pao	11,981	3,237	2,218	543	740
Doi Kaew	3,533	886	1,150	600	300
Sop Tiah	8,554	2,360	1,714	373	1,257
Total	56,161	15,372	11,586	4,040	5,108

Source: Ministry of Agricultural Cooperatives (2003)

The conflict in study site was consisted of a string of road blockades and demarcations. In this paper, a specific road blockade in April 27-28 1998, which no less than 5,000 lowland people participated, is focused on (Hereinafter, “water conflict” refers to this road blockade.).

The water conflict had two aspects: (i) Political movement led by a local conservation group in the lowland, and (ii) Accusation by lowlanders against the wasteful highland water use. The two aspects interlinked to set up a unique institution of Chom Thong.

First, the political aspect is attributed to the 1997 resolutions, which had acknowledged hill tribes to stay in forest with a certain condition. Concerning the deforestation in

highland, the local conservation group tried to overturn the resolutions, which potentially accelerate the deforestation by highlander given legitimacy. For this purpose, the group inflamed the lowland farmers⁴.

Second, it should be noted that there has been constant severe tension between supply and demand of water resources in the region since the demand of water in highland as well as lowland has skyrocketed due to the cultivation of cash crops and orchards respectively. The shortage of rainfall in previous year had an adverse effect on the balance of water resources. Thus, the relationship between highlanders and lowlanders in terms of water resources worsen during this period.

The resolutions in 1997 can be outlined as follows. First of all, the resolutions were in favor of 107 villages in Northern Thailand where the illegitimate dwelling by villagers in forest had been disputed seriously between the government and the Non Governmental Organizations (NGOs) that supported villagers. Under the resolution, the villagers, who had dwelled in conservation area including national parks and wild life sanctuaries before the resolutions, were acknowledged to remain staying with legal rights. Second, the resolutions also favored other villages besides the controversial 107 villages. Officers were prohibited to arrest or to conduct any violence toward the villagers seeking for legal rights even they don't hold any title at the moment.

Against the resolution, the lowland farmers had a similar adverse attitude to the conservation group have. Since the resolution might entitle the legitimacy of staying in forest, the lowlanders fear that the accelerated deforestation with the enlargement of cash cropping. Although the motivation of revoking the resolution is different between lowlanders and the conservation group, the overturn is favorable to both actors. Then lowlanders provoked by the conservation group came to be aggressive and eventually escalated into the Chom Thong water conflict.

In result, the resolutions were overturned in July just after the conflict. Since the social impact of the road blockade spreading the national highway to Doi Inthanon national park was significant⁵ along with the change of the ruling party, the resolutions were scrapped and the dwelling of highlanders remained illegal.

Literature Review

This paper relates to the water conflict and to the irrigation systems in Northern Thailand. Previous studies are reviewed in accordance with these two issues.

First, there are a number of previous studies either directly or indirectly regarding the water conflict in the region (Ekachai, 1998; Lofmann, 1999; Pinkaew, 2000; Ratner, 2000;

⁴ In the interview, it was cleared the farmers were threatened not to be provided with irrigation water unless joining the conflict.

⁵ In May 1998, the deputy of prime minister visits the Chom Thong to appease the tension. (Khuenkaew and Hutasingh, 1998).

Renald, 1994; Walker, 2003; Watershed, 1998). In the previous studies, approaches are mainly taken from social (Renald, 1994), political (Lofman, 1999), or hydrological (Perez, 2002; Walker, 2003) point of view.

Walker (2003) draws the importance of the demand side management with the shift of attention from only highlanders to whole watershed. The study is the milestone to combine the social aspect with the hydrological aspect in context of the watershed management. The missing, however, is that it does not articulate the diversity of lowland area. Thus this paper aims to address a diversity of lowland area thorough comparing a village that joined the conflict with a neighboring village that did not join.

Second, there are also abundant studies concerning with the irrigation management in Northern Thailand (Shigetomi, 1996; Tanabe, 1994; Tan-Kim-Yong 1995; and Wittayapak, 1994). In Northern Thailand, there is a traditional irrigation system, notably called “Muang Fai”, which is often taken as a typical example of Common Property Resources (CPRs)⁶. Wittayapak (1994), for example, compares four watersheds in terms of participatory irrigation management in the context of CPR theory. The participatory irrigation management is also partly mentioned in the study by Shigetomi (1996) as one of the participatory resource managements in the region. Furthermore, Tanabe (1994) throws the character of the irrigation system in Northern Thailand into relief by in-depth comparative study to the farming system in Central Thailand. In brief, it is the irrigation management system that those studies have thus far focused on. In this paper, the livelihood structure led by the water use is focused.

Overall, the following two points are original in a theoretical sense: (i) targets include the lowland village that did not join the water conflict in addition to that joining the conflict; and (ii) a different basic socio-economic conditions led by water use between adjacent villages is investigated. The diversity over the lowland villages is to be captured in the following chapter by comparing two groups in the way of statistical method.

Methodology

Research Design

The data was mainly collected on October 2004 by a quantitative method with subsidiary of a qualitative one. The quantitative research was carried out with the questionnaire selecting either head or appropriate alternative of each household as interviewees. The questionnaire entries are elaborated to clarify the basic structure of livelihood as well as the irrigation water use.

As a qualitative research, interviews without a questionnaire and a participatory

⁶ See Wade (1988) regarding the application of the CPR theory into irrigation management.

observation are used complementally for the purpose of validating the quantified data in the local unique institution⁷. Qualitative interviews and participatory observations had been conducted several times since the first brief survey in November 2003. Thus, upon the quantitative discussed above, the validity and the credibility of the data are confirmed by the qualitative interview.

Target

The target is limited within the villages located in Doi Kaew sub district, Chom Thong district. Doi Kaew sub district is consisted of nine villages, in which four villages are in the highland area while five villages are in the lowland where target villages are located.

The judgment whether “Active group” or “Passive group” was based on the interview with sub district heads, village heads, and NGOs. It should be noticed that the small farmers were exempt since the direct interview about the sensitive issue could spoil the reliability.

Target: Active Group

The active group is consisted of four villages (Table 2): Mae Klang Papu village, Doi Kaew village, Mai Mae Tia village, and Mae Tia Tai village. Due to the recent decline of paddy price and the promotion of cash crops by government, the farmer in this group has shifted the cultivation in dry season from secondary rice to cash crops such as corn, onion, red pepper, and so forth. Moreover, the acreage of longan orchard has rapidly increased by a purchase of dried longan by government at stable price.

Target: Passive Group

The passive group is composed of only Mae Tia village (Table 3). Most villagers in the group are hill tribe, “Karen”. Although Karen usually stays in upland area far away from Northern Thai villages in lowland area, the passive group in this study stayed at same level as neighbor Northern Thai villages. In fact, people in the group staying close to Northern Thai and exchanges of goods, money and people are rather frequent between them⁸. Indeed, in a general sense, the structure of livelihood is similarly consisted of on-farm and off-farm income compared to the active group.

Table 2: Basic Data of Active Group

⁷ The population, local history, and social relations were asked to village heads and sub district heads while the irrigation water use for agriculture was asked to heads of irrigation organization.

⁸ According to Iijima (1971) Karen in lowland area adapts themselves culturally to Northern Thai in Northern Thailand (Iijima, 1971).

Village	Population	Households	Administrative Area (ha)	Paddy Field (ha)	Orchard (ha)	Ethnicity
Mae Klang Papu	636	173	151	67	74	Northern Thailand
Doi Kaew	1,340	356	298	131	147	Northern Thailand
Mai Mea Tia	256	72	62	25	21	Northern Thailand
Mea Tia Tai	271	67	56	21	34	Northern Thailand

Source: Ministry of Agricultural Cooperation (2003).

Table 3: Basic Data of Passive Group

Village	Population	Households	Administrative Area (ha)	Paddy Field (ha)	Orchard (ha)	Ethnicity
Mae Tia	393	100	54	27	19	Karen

Source: Ministry of Agricultural Cooperation (2003).

Sampling

The interview with questionnaire are conducted not for all villagers but for villagers sampled randomly in each group (Table 4). In the sampling, it was noted that the numbers of samplings in each village are sufficient for statistical analysis. The sample that satisfies the conditions below was omitted in order to retain the reliability of data: (i) those who are never engaged in agriculture, e.g.) Fulltime construction worker; (ii) those who are not familiar with the local situation of agriculture and irrigation water use, e.g.) New comer from other village; and (iii) those who are not familiar with the recent situation even though familiar with the situation in the past, e.g.) Elder people.

Table 4: The Number of Sample Households

Active group	(n)	Passive group	(n)
Mae Klang Papu	10	Mae Tia	57
Doi Kaew	22		
Mai Mae Tia	8		
Mae Tia Tai	20		
Total	60	Total	57

Source: Data collected in October 2004.

Questionnaire

According to the purpose of this paper, the index was set up to clarify the subjects as follows: (i) basic socio-economic situations; and (ii) irrigation water utilization. The specific index was as follows:

(1) Annual income:

Incomes from each source are summed up as total annual income.

(2) Holding size of paddy field:

The total size of every holding of paddy is summed up. Yet, leased lands are not included in the index.

(3) Holding size of longan orchard:

The total size of every holding of longan orchard is summed up. Yet, leased lands are not included in total.

(4) Dependency on irrigation water:

The proportion of the income from selling rice and cash crops to market and government to annual income is measured.

(5) Ratio of income from cash crop:

The proportion of the income from selling cash crops to market and government to annual income is measured. The income from any wage labor is not included in this subject⁹.

(6) Ratio of income from wage labor

The proportion of the income from wage labor to annual income is measured. The labor is consisted of off-farm labor such as construction work and on-farm labor such as assistance in field or orchard.

(7) Available amount of irrigation water:

The possible number of rice farming in a year is estimated by farmers in case they focuses only on rice for annual cultivation. The nominal scale was measured as “1”, “2”, or “1.5” according to the number of the cultivation. If the response is not clear between “1” and “2”, it was counted as “1.5”.

(8) Participation of collective action:

Collective actions are consisted of meeting of irrigation group, drainage, and ceremony for the guardian for water. Participation for each activity is investigated. A measure of participation is as follows: to participate in every year is “1”, otherwise “0”.

(9) Perception of water shortage:

A perception for the cause of recent water shortage was investigated. Farmers were acknowledged to select the plural number to which they attribute from “Neighbor villagers”, “Capitalist”, “Hill tribes”, “Government”, and “Decreasing precipitation.”

Results

(1) Annual income:

⁹ Though the labor such as picking, cleaning, branch cutting is conducted in orchard, they are excluded in this index.

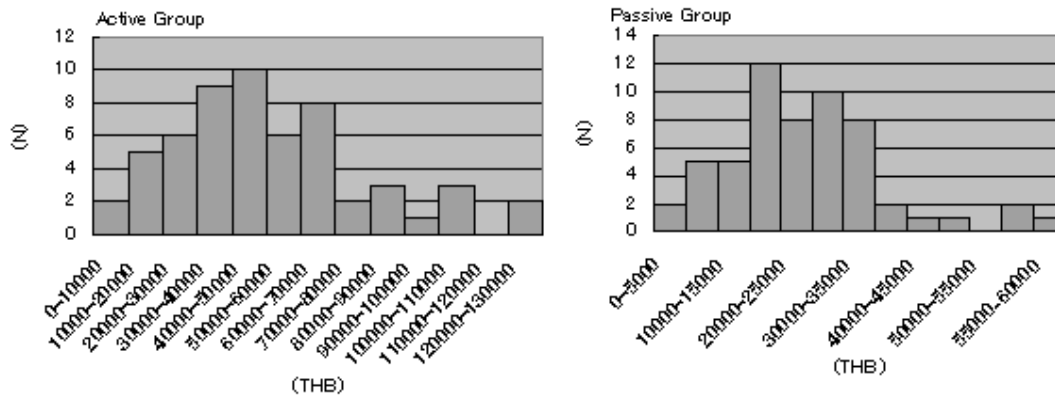


Figure 2: Income Distribution.

Source: Data collected in October (2004).

The averages of annual income are 58,000 baht and 24,000 baht for the active group and the passive group respectively. As Figure. 2 shows the normal distribution for both groups, the following statistical analyses are conducted based on the assumption. Hartley's Fmax-test shows:

$$F_{max} = 0.05$$

The result is not statistically significant at level of 1% ($n=2$, $df=59-1=58$). Therefore the variances of both groups are to be equated. Supposing the assumptions above, t-test can be allied:

$$t_0 = 4.51 > t_{0.01/2,114}$$

The result is statistically significant at level of 1%. Thus, the average incomes between two groups are shown to be different.

(2) Holding size: paddy field:

The date of this subject is not normal distribution, so the populations cannot be assumed to distribute normally. Thus Mann-Whitney U-test, which is nonparametric test applicable for the two independent groups, is to be conducted at significant level of 1%. In addition, since the numbers of samples of both groups are over 20, normal approximation formula is applied:

$$Z = -0.20 > -Z_{0.01/2} = -2.58$$

The result does not show the significant difference between both.

(3) Holding size: longan orchard:

This subject is not normal distribution and the numbers of samples of both groups are over 20. Thus the normal approximation formula of Mann-Whitney U-test is applicable:

$$Z = -7.16 < -Z_{0.01/2} = -2.58$$

The result shows the significant difference between both.

(4) Dependency on irrigation water:

This index cannot be regarded as normal distribution and the numbers of samples of both groups are over 20. Thus the normal approximation formula of Mann-Whitney U-test is applicable:

$$Z = -5.89 < -Z_{0.01/2} = -2.58$$

The result shows the significant difference between both.

(5) Ratio of income from cash crop:

This index cannot be regarded as normal distribution and the numbers of samples of both groups are over 20. Thus the normal approximation formula of Mann-Whitney U-test is applicable:

$$Z = -4.82 < -Z_{0.01/2} = -2.58$$

The result shows the significant difference between both.

(6) Ratio of income from wage labor:

This index cannot be regarded as normal distribution and the numbers of samples of both groups are over 20. Thus the normal approximation formula of Mann-Whitney U-test is applicable:

$$Z = -4.73 < -Z_{0.01/2} = -2.58$$

The result shows the significant difference between both.

(7) Available amount of irrigation water:

This index cannot be regarded as normal distribution and the numbers of samples of both groups are over 20. Thus the normal approximation formula of Mann-Whitney U-test is applicable:

$$Z = -2.86 < -Z_{0.01/2} = -2.58$$

The result shows the significant difference between both.

(8) Participation in collective action:

This subject is measured by nominal scale as follows: (a) to participate in every year is "1"; (b) not to participate in every year is "0". Chi-square test at the significance level of 1% is carried out to test the equivalence in each activity. First, for the participation in meeting, a result is:

$$\chi^2 = 7.87 > \chi^2_{0.01, 1} = 6.64$$

The result shows the significant difference between both.

Second, for the participation in drainage, a result is:

$$\chi^2 = 2.37 < \chi^2_{0.01, 1} = 6.64$$

The result does not show the significant difference between both.

Third, for the participation in ceremony, a result is:

$$\chi^2 = 0.1 < \chi^2_{0.01, 1} = 6.64$$

The result does not show the significant difference between both.

(9) Perception of water shortage:

The percentages of each causes identified by the target are as shown at Figure 3.

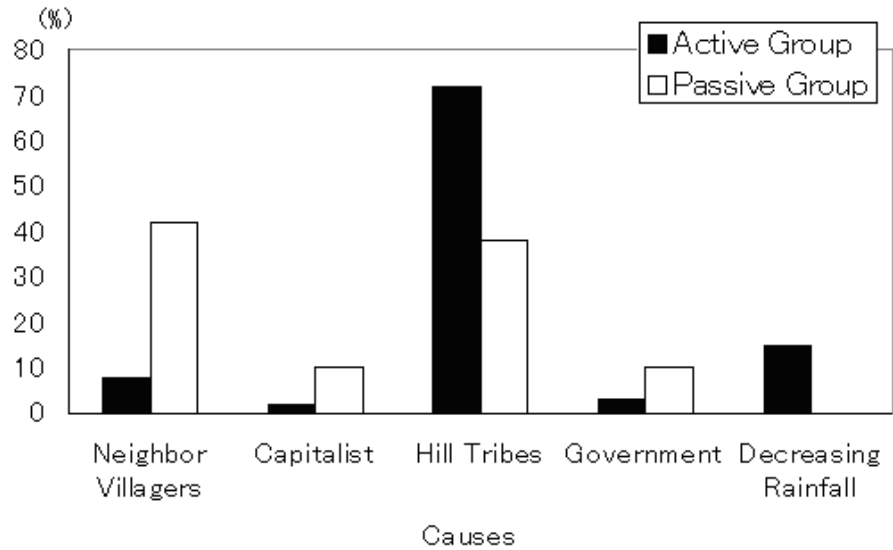


Figure 3: Perception of Water Shortage.

Source: Data collected in October 2004.

Summary of results

Table 6: Summary of Statistical Analysis Significant Difference Test

		Significant Difference	Test
Annual Income		*1%	t-test
Holdings: Paddy Field		-	u-test
Holdings: Lamyai Orchard		*1%	u-test
Dependency on Irrigation Water		*1%	u-test
Ratio of Income from Cash Crops		*1%	u-test
Ratio of Income from Wage Labor		*1%	u-test
Available Amount of Irrigation Water		*1%	u-test
Participation in Collective Action	Meeting	*1%	chi-square test
	Drainage	-	chi-square test
	Ceremony	-	chi-square test

Source: data collected in October (2004).

*: Significant at level of 1%

The statistical analysis above reveals the existence of significant difference between two groups in some subjects. First, there is a significant difference in annual income. Second, there is not a significant difference in the holding size of paddy field while there is in that of longan orchard. Third, there is a significant difference in the use of irrigation water in

terms of both demand and supply. There is a significant difference in the financial dependency on the irrigation water, at the same time, there is also in the available amount of irrigation of water. Fourth, there is a significant difference in the both ratios of the incomes from cash crops and wage labor to annual income. Fifth, there is a significant difference in the activity of meeting while there is not in other activities, drainage and ceremony. Finally, as Figure3 clearly shows, villagers in the active group attribute the water shortage more to hill tribes while passive group ascribe more to neighbor villages.

Discussion

After Mehta critically analyses the Sardar Sarvar dam in India, she point out the distinction between real scarcity and manufactured scarcity (Mehta 2001). She argues that, “The ‘manufacture’ of scarcity at the discursive level obscures several important aspects of ‘real’ scarcity,” and “the manufacture of scarcity might not result in the creation of solutions appropriate to local needs and conditions” Surely, a concept of manufactured scarcity is useful for the analysis of scarcity. In this chapter, adding a concept of coping with scarcity, a mechanism of vicious circle of scarcity tries to be captured (Figure4).

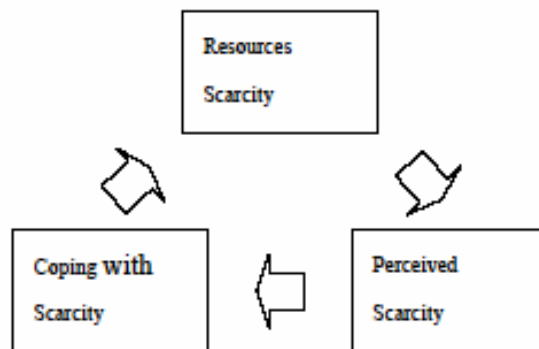


Figure 4: Vicious circle of scarcity.

In environmental debate, causal relationship is often uncertain¹⁰. Thus real or factual scarcity may be misperceived, which makes manufactured scarcity widespread¹¹. If manufactured scarcity makes people identify a wrong actor as a cause of scarcity, the

¹⁰ A real problem is “it is the uncertainty that contains the problem“ not but “the problem containing some uncertainty” (Thompson 1985). Because of environmental uncertainty, there emerges the problem caused by an arbitrary framing of environment “problem” by each actor. With regards to Environmental uncertainty and its function in society, see Fairhead and Leach (1996) and Sato (2000).

¹¹ The similar mechanism is pointed out in development project. Narrative on development is originally addressed by Roe (Roe 1991).

subsequent mitigating behavior against scarcity may be misled. In result, real scarcity remains and leads vicious circle over and over again. The model is applied into the water conflict and a policy implication tries to be drawn from the discussion.

Resources scarcity in reality with regard to water should be considered in terms of both supply and demand. As a supply side, “Available Irrigation Water (Item 7)” of the active group is significantly larger than that of passive village in Mann-Whitney U-test. Also, the active village is relatively rich so that the villager can afford to buy the pumping machine and oil for an access to underground water. Moreover, physically, underground water can be hardly accessed in the passive group due to its soil type¹². On the other hand, equity of access to irrigation water is secured between two villages. First, villagers, in interview, never claim inequity caused in irrigation system. Second, since “Participation in Collective Action (Item 8)” is not significantly different. Thus, equity, which refers to one of decisive factors of participation in collective action, can be treated as not twisted. Since the supply of water is abundant in the active group and the equity in the irrigation system is not twisted conspicuously, it can be concluded that the available amount of water is larger in the active group.

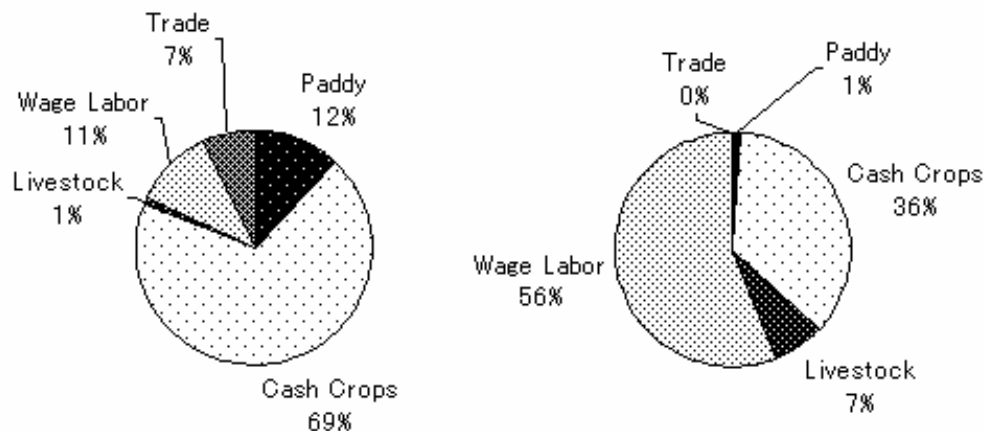


Figure 5: Structure of livelihoods

Source: data collected in October (2004).

On the demand side, the irrigation water is also consumed more in the active group, clearly suggested as “Dependency on Irrigation Water (Item4)”. The difference is derived from the different structure of livelihood in terms of longan, and wage labor (Figure 5). Longan cultivation and wage labor defers among groups though “Holding Size of Paddy (Item2)” does not have a significant difference. On one hand, both “Holding size: longan

¹² A hard rock prevents villagers from pumping up underground water. (Interview with a MAC officer, October 2004).

orchard (Item3)” and “Ratio of income from cash crop (Item5)” strongly show the relative preference of cash crop in the active group compared with that in the passive. On the other hand, “Ratio of income from wage labor (Item6)” suggested the passive group favors the wage labor rather than the cash crop cultivation especially in dry season. Indeed, in the quantitative survey in 2004, no less than 81% of total in the passive group is engaged in wage labor while only 33 % in the active group.

The wage labor is consisted of both the on-farm activity and the off-farm. Thus the relative preference of wage labor does not automatically mean the less dependency on water resources since water scarcity also decrease the opportunity of on-farm wage labor. Nevertheless, without initial investigation, the villager in the passive group shift from on-farm to off-farm labor more flexibly. Thus the water dependency is heavier in the active group.

As a next step, resources scarcity in reality causes perceived scarcity in perception (Figure 4). As discussed previously, both supply and demand of irrigation water is larger in the active group. Then no less than 90% of the total villager in the active group perceives water shortage. At the same time, 98% of that in the passive group also perceives the shortage¹³. Both groups perceive the shortage at the similar high percentage though the livelihood structure and the resource availability are significantly different. This implies that the perception of resource scarcity is not only caused from only one component such as water demand or water supply but the tension of supply and demand of resources.

Third, after the scarcity is perceived in perception, people identify the cause and try to cope with scarcity in behavior for the reduction of future tension (Figure 4). While the water shortage is perceived at the similar high rate between two groups, “Perception of water shortage (Item 9)” clearly suggests the distinct causal identification between the two groups (Figure 3). Although, both groups are similarly influenced by hill tribe’s water use in the similar geographical linkage to the highlanders, only the active group accuses the highland people of water shortage at high rate while the passive group does not.

One may ask the driving force which causes the difference in perception with regard to the cause of the shortage. There are two aspects to answer this question: (i) an interference of outsider; and (ii) ethnic difference.

First, there is politically strong outsider in this region¹⁴. Their main aim is to pursue conservation of natural resources funded by a descendant of royal family and foreign conservation foundations. Thus their ecological concern sometimes results in accusing the hill tribes, for they are often suspected as a cause of deforestation. In this region, especially after the ban of drug cultivation, the highland people have been suspected for its environmental demolition in upland. Deforestation is surely caused by the highlander, but

¹³ Source. Interview, October 2004.

¹⁴ For detail, see Lofman (1999) and Watershed (1998).

not all should be attributed to them¹⁵. Among the uncertainty of causal relationship, the conservation group put an emphasis on one factor in accordance with own interest. In Thailand, “Forest conserves water” is emphasized and this narrative may construct the belief among the active group that the cause of water shortage is deforestation by hill tribes (Figure 3)¹⁶.

Second aspect in terms of social construction of perception is ethnicity¹⁷. The ethnicity issue explains the different response toward the narratives that showed as first aspect. Although the strong conservation group has activated in the passive group, the passive group, the ethnicity Karen, is also the minority same as one of hill tribes. Since the kinship of Karen is strong, there are a number of families staying in the highland. This prevents them from receiving the narrative, which would accuse their families in highland¹⁸.

These two aspects imply that the narrative is legitimized in a specific institution and the legitimization process is rather artificial than factual. However, people behave on the narrative. It is implied that the active group, which believes the narrative, joined the conflict to mitigate the water shortage, while the passive group, which does not put legitimacy on the narrative, did not join.

Conclusion

The farmers cope with water scarcity in widespread narrative. However, the artificiality of constructed narratives in a certain institution makes people cope with water scarcity irrationally. Expected rational behavior actually never improves the access to water resources. Moreover, in this region, there is hardly any alternative site for evacuated hill tribes to resettle down, so the water conflict as the way to cope with water scarcity is impractical¹⁹. Rather, considering the opportunity cost, repeated water conflict even has an adverse effect on the welfare in lowland as well as upland.

More practically, there may be three effective ways to deal with water scarcity: (i) an appropriate institution including majority, minority and the conservation group should be crafted in each small catchments; (ii) an establishment of de jure right of access to water resources in formally approved institutional setting; and (iii) a rethinking of balanced

¹⁵ For example, insufficient amount of nitrogen makes the leaves wither. Furthermore, forest fire could be caused naturally in dry season.

¹⁶ For detail about the myth around forest, see Pinkaew (2000) and Walker (2003).

¹⁷ About the social construction of knowledge, see Berger et, al (1973).

¹⁸ “I feel sorry for my families. I do not think they are the cause of deforestation.” said a woman in the passive group. (Interview, October 2004).

¹⁹ “The ‘manufacture’ of scarcity at the discursive level obscures several important aspects of ‘real’ scarcity” (Mehta 2001). Mehta’s insight that a discursive level scarcity conceals the critical anthropogenic cause of real scarcity is applicable to this case. She takes two critical causes of “real” scarcity: (i) inequity of access to and control over water; and (ii) bad water management and land use.

source of livelihood between on-farm and off-farm income.

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