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Rule formation process in communal forest management: cases in Yasothon province, northeast Thailand

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Abstract: During the last 20 years, theories regarding common property resource management had developed in many fields of research, particularly in economics and anthropology. There are a lot of disagreements between them, however, especially on how the community members come to form groups and take collective action to manage these resources. In fact, the importance of the anthropological approach seems increasing, as rural communities in many development countries are increasingly involved in the process of social, economic, and cultural globalization, or under the strong influences of external actors. So how the community members can develop managing their resources under such contemporary social settings? Taking the cases of 113 villages in K district, Yasothon province, northeast Thailand, this study tries to examine the rule formation processes in communal forest management. Both qualitative and quantitative data were collected to examine the decisive factors of rule formation and to conceptualize the process of rule formation. The results suggested that, firstly, the induced institutional innovation theory, which insists the resource scarcity is the main driving force for the local collective action, could not solely apply to the study area. Secondly, different rule formation processes were observed according to the geographical and social conditions, and type of interactions between community members and external actors. This led to the different consequences and problems in managing the resources. I categorized these into four outstanding types of process. Each process seems to require different explanation, which varies from economic theory to anthropological understandings. In the study area, it is considered that the strong effect by the external actors after the 1990s altered and diversified the logic of collective action, and so did the situation of resource management.

Keywords: rule formation, communal forest, resource scarcity, external actors, Thailand

1. Introduction

Many scholars, aid agencies and governments now focus on common-pool resource management (CPR), or community-based natural resource management (CBNRM), for rural development in developing countries. During the last 20 years, theories in this regard have developed in many fields of research, particularly in economics and anthropology.

There are a lot of disagreements between them, however, especially in regards to how the community members come to form groups and take collective action to manage their resources. Taking the rational choice approach, the "CPR school" economists tend to seek conditions of successful collective action by community members under given social settings. They point out that, in many cases, the CPR regime can

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evade the CPR dilemmas, as the communities can develop institutions to monitor and sanction "free riders" with low transaction costs (Wade 1988, Ostrom 1990, Bromley 1992, Baland and Platteau 1996). They also insist on a rational approach in understanding the dynamics of collective action. For example, some apply a framework of game theory (Ostrom et al. 1994), and others apply induced innovations (Otsuka and Place 2001).

On the other hand, anthropologists tend to criticize economists on a number of points and emphasize the social and cultural contexts that affect local, regional and global actors in managing resources. Some point out static, isolated and harmonized images of communities by economists, leading them to neglect the dynamic aspects of community formation itself (Li 1996, Mosse 1997). Others mention an underestimation of external influences, as economists often overemphasize the incentive structures inside a community (Agrawal and Gibson 1999, Leach et al. 1999, Johnson 2001). Most fundamentally, there is a criticism of a one-sided nature in the rational choice approach on the grounds that individual behaviour is embedded in society, culture and history (Cleaver 2000, Mosse 1997).

Many of these criticisms are worth serious consideration. In fact, the importance of the anthropologic approach seems to be increasing, as rural communities in many developing countries are increasingly involved in the process of social, economic, and cultural globalization, and may also be under the strong influences of external actors such as central governments and business enterprises.

How then can the community members develop ways to manage their resources under contemporary social settings? How are the economic and anthropologic theories related in the real world? And how can we conceptualize the dynamics of local institutions under these social contexts? Using case studies of 113 villages in K district, Yasothon province, northeast Thailand, this study tries to examine the overall rule formation processes in communal forest management.

In the paper, I will first introduce recent social conditions surrounding communal forest management in Thailand, with general information on the research area. Second, to examine the relationship between resource scarcity and the rule formation of communal forest management, the factors affecting these rule formations are statistically analyzed. Third, four types of rule formation processes are categorized and examined with case studies, according to resource conditions and governmental intervention. Finally, I conclude with the recent changes of rule formation processes in the study area, and refer to the nature of collective action under the contemporary 'connected' community.

2. Communal forest management in Thailand

Communal forest (*pa satharana*[2]) is the forest managed collectively by the community members to serve various activities in the community[3]. For instance, sacred forest (*don puta*) and cremation forest (*pa cha*) are

[2] "Community forest (*pa chumchon*)" is another word indicating forest managed collectively by the community members. In fact this word is more commonly used in Thai academic and policy frameworks. In the community, it sometimes suggests communal forests with official registration. As my analysis includes both informal and formal management, I have applied the term "communal forest" for the paper.

basically conserved for ritual purposes. Other communal forests are conserved for the villagers' daily use; gathering forest products, grazing, etc. These are commonly observed in rural areas of Thailand, especially in the northern and northeastern regions.

In the past, like most developing countries, official legislation and policies supporting management of communal forests were weak[4]. Therefore, most were informally managed by the community members and how these forests are managed simply depended on the community. Most of their management rules were also implicit, and relied on cultural beliefs and community norms[5]. The boundaries of the forests were not clearly defined, although there was some consensus among the villagers.

These situations have been gradually changing, however. First, villagers themselves have introduced "tighter" management rules. Shigetomi (1998) pointed out that the expansion of agricultural land in the region made forest resources more scarce and caused conflicts, and this led to the introduction of "tighter" resource management, including clearer definitions of resource users and physical boundaries, introduction of sanction rules, etc. This view is similar to the induced institutional innovation theory, which Otsuka and Place (2001) applied in their comparative study of Asia and Africa.

Second, central and local governments have also been trying to formalize rules in order to narrow the gap between *de jure* and *de facto* rights of management. In 1980s, the forest department launched a community forest project to support communal forest management including registration, material supply, training, etc. Since the 1990s the budget spending for this project has seen significant increases (Table 1). In 1989 military also started a "Forest Conservation Volunteer Training Project (*ro so tho po*)", which "educates" villagers to understand the importance of the forest and awards royal flags from the Queen to the forests with good governance[6]. The ministry of interior has also increased the issuing of public land titles for communal land. Moreover, the Tambon Administrative Organization (TAO), a local autonomy entity which was established after the enactment of "the Tambon Council and Tambon Administrative Organization Act of 1994", empowered local people to manage their own resources.

Third, villagers' resource use patterns themselves have changed in accordance with the rapid socioeconomic changes. Though many villagers still rely on natural products from the communal lands for

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[3] Local administration in Thailand consists of province (*changwat*), district (*amphoe*), sub-district (*tambon*), and village (*muban*). In many cases in the research area, the management unit of communal forest (regarded as a "community" in this study) coincides with a village or several villages which share the same identity.

[4] According to Shigetomi (1997), Thai Civil Code assures citizens' rights to collectively utilize certain categories of public land (public land in Thailand is the land that is not granted private land ownership). Currently this is regarded as a legal basis for the communities to manage their communal forest. Until recently, however, the government neglected to take serious measures to defend the villager's rights. For example, few public land titles (*no so lo*) were issued for these communal forests until the 1980s.

[5] Villagers believe that destroying a sacred forest angers the village guardian spirit and risks one's fortune. They are also afraid of entering the cremation forest, because there are many ghosts there.

[6] In 1997 this project was integrated with a similar program carried out by the forest department. After government reforms in 2002, the project was partly transferred from the forest department to a newly established National park, wildlife and plant conservation department.

daily life, some of them have gradually substituted natural products with industrial products such as concrete piles for timber and gas for fuelwood (Tonpan et al. 1990). In addition, socioeconomic changes have altered community norms and raised new types of community demands on communal land. All of this has at least altered the objectives of management[7].

How these complicate changes affect local collective action in resource management, of course, depends on the communities. This is because the dynamics of collective action is basically site-specific and path dependent. I believe, however, that there are some patterns in the dynamics that can be conceptualized.

Table 1: Annual Budget of the Community Forestry Development Activities

Fiscal year	Amount (million baht)
1985	9.8
1990	16.5
1995	69.7
1997	84.7
2000	59.2
2004	114.5

Sources: Annual Reports of the Royal Forest Department and documents of the community forest management office, Royal Forest Department.

Note: Nominal value. 1USD=about 25 baht before 1997 and about 40 baht after the 1997 economic crisis. Due to the tight budget policy after 1997, the amount of the budget was drastically cut during 1998-2000.

3. Research area and methodology

The research area is K district, Yasothon province (Figure 1). It is located 25 km southeast of the provincial capital, Yasothon city. The population of the district is 74,165 and its area covers 638.4 km^2 (K district n.d.). The Sebai and Chi rivers flow along the eastern and western district borders, respectively. The topography consists of flood plains, lowlands (approx. 120m above sea level) and gently undulating hills (approx. 140m above sea level) scattered in the lowlands. Most of the forest patches are distributed in the flood plains, natural levees and hills, while paddy fields are dominated in the lowland area. Accessibility is relatively good, as a highway connecting Yasothon and Ubon Ratchathani city runs through the center of the district.

The villagers' basic occupation is, of course, agriculture. Farmland covers about half of the district area, and ninety percent of this is lowland paddy fields. Most are rainfed and planted with both glutinous rice for self consumption and non-glutinous rice for commercial purposes. Other field crops are planted on the largest hill located in the northern part of the district. Cassava is the most popular field crop, but tree crops such as para rubber and eucalyptus are expanding in the area. In addition, the current cattle boom has drastically increased the number of cattle being bred, and the areas under fodder production are also increasing.

[7] See Rigg and Nattapolwat (2001) for the transformation of the community culture due to the globalization and "deagrianization".

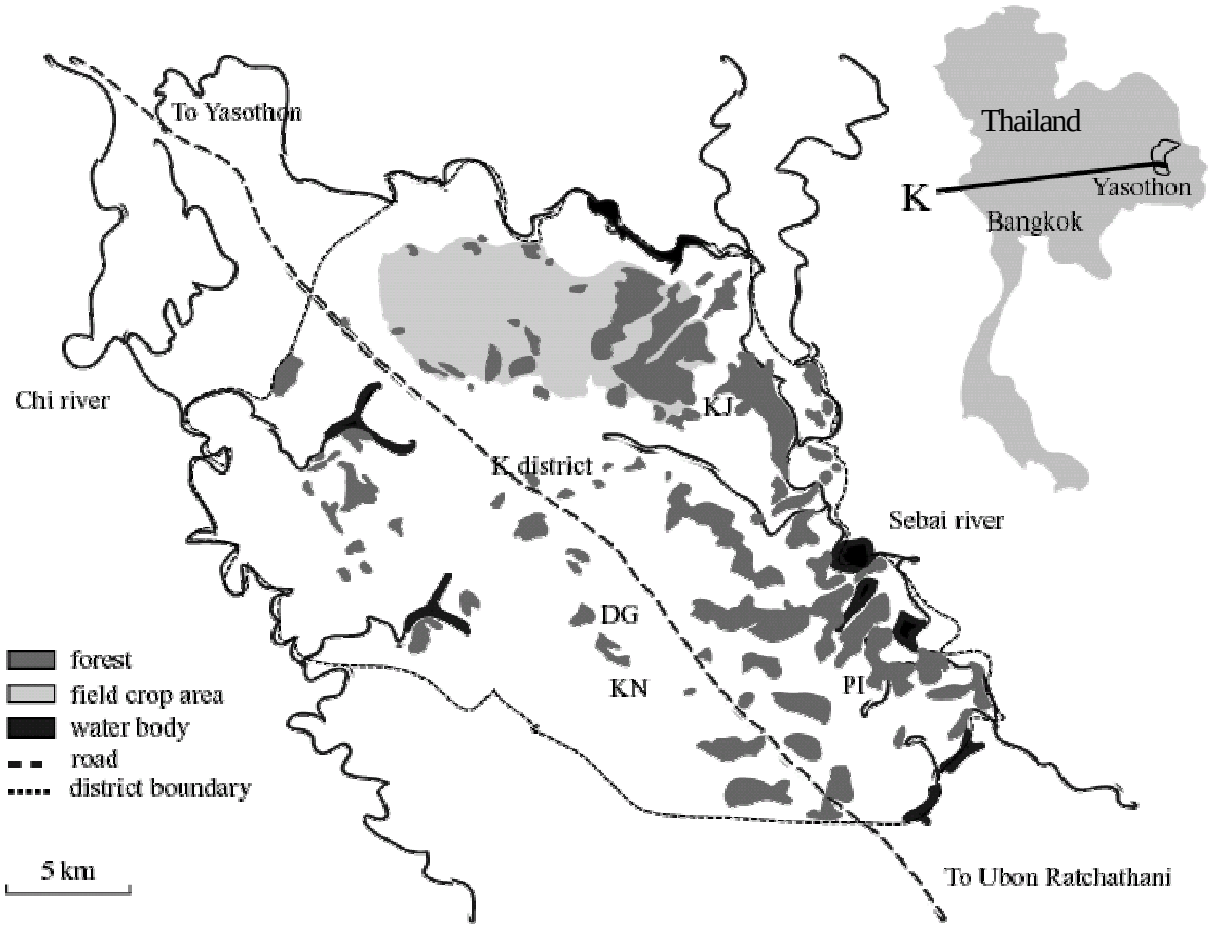

Figure 1: The study area (ETM Landsat 2000)
Note: case study villages are indicated on the map.

There are no outstanding non-farm industries in the district. In fact, Yasothon province is one of the poorest provinces in Thailand[8]. Therefore, many villagers migrate to Bangkok for non-farm income during off-farm seasons. On the other hand, the villagers' dependency on natural resources is higher[9]. Together with paddy fields and water bodies, most of the forest patches distributed in the district are important sources of natural products necessary in the daily life of the villagers.

Field surveys were conducted in the province in October 2004, March 2005 and August – October 2005. 113 of 114 villages in the district were surveyed during those periods. Both qualitative and quantitative data were collected. Quantitative data related to the basic socioeconomic attributes of the villages was obtained during August – October 2005 by questionnaire surveys, with a list of communal forests, management status, and villagers' resource use status. Secondary sources, such as a "*ko cho cho 2 ko (KCC2K)*" and "*jo po tho (JPT)*" village databases, data from district offices and TAOs, etc. were also utilized to complement the basic

[8] According to the NSO (2003), the average monthly income per household in the province was 6,045 baht (151USD), the lowest in Thailand in 2002.

[9] According to the NSO (2001a, 2001b), 80.6 percent of the households in the province use fuelwood or charcoal for cooking, while the regional average in the northeast is 62.4 percent.

data[10]. During the survey, data on 200 plots (4,784 ha) of communal forest in 113 villages was recorded. This translates as 1.8 plots (42 ha) of communal forest per village on average.

Qualitative data were obtained from a series of interviews with the villagers, local officers and members of TAO council, and from secondary sources. To examine the decisive factors of rule formation and to conceptualize the process of rule formation, the obtained data was analyzed by both statistical and case study analysis.

4. Resource scarcity and management rules

4.1. Management rules in communal forests

Management rules in communal forests are classified into three categories. The first group (group 1) has implicit rules that simply rely on the villagers' morals or norms. These somewhat traditional style regulations generally worked well in the past, but if community norms change, the management is prone to erode. The second group (group 2) has explicit (oral or written) rules but no monitoring and sanction rules, and the third one (group 3) has explicit rules (mostly written) with monitoring and sanction rules as well.

Clearly, group 3 has the "tightest" and most sophisticated rules, and group 1 has the "loosest" ones. Generally, certain activities including encroachment, burning, and logging without allowances are prohibited, and hunting and gathering are regulated. Basically, only community residents may obtain timber and fuelwood, but non-wood forest products such as resin, mushrooms, herbs, and insects may be collected by outsiders.

Table 2 shows the relationship between types of rule and violations (forest encroachment). Non-violation rate is similar for the groups 1(58%) and 2(55%), but different in group 3(42%). In group 3, current violation rate is the lowest (15%), and the elimination rate of encroachment is the highest (42%). As the results include both *ex ante* and *ex post* situations of rule introduction, the lower violation rates are not necessarily associated with better governance. It is possible to say, however, that the introduction of the group 3 type of rules altered rule performances. In fact, this is partly because some encroachers were persuaded to give up cultivation and return to communal lands when new rules were introduced.

It is also obvious that the average area of forest plot is the largest in group 3 and the smallest in group 1. This suggests that larger forests tend to include more sophisticated rules; totally contrary to the scarcity-led induced institutional innovation theory. In fact, Kono et al. (1994) surveyed changes of land use pattern on a northern hill of this district, and insisted that "most of the communal forests seem to have been established for common use after the villagers foresaw a scarcity of accessible forest resources (p. 30)". Thus, the results provide contrary implications in terms of induced institutional innovation. How then, can we interpret this remarkable gap?

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[10] *KCC2K* is a village database that covers all rural villages in Thailand. The data covers various kinds of information in the villages and utilized by the Community Development Department (CDD). *JPT* is another village database that focuses mainly on the identification of the households whose quality of life is below the standard.

Table 2: Management rules and its violations (encroachment)

		Encroachment				Ave. plot area (ha)
		Never	Encroachment eliminated	Continuing up to now	Total cases	
Rules	Group 1 (norms only)	19 (58)	6 (18)	8 (24)	33(100)	3.2
	Group 2 (without sanctions)	33 (55)	11 (18)	16 (27)	60(100)	17.8
	Group 3 (with sanctions)	42 (42)	42 (42)	15 (15)	99(100)	36.8
	Total cases	94(49)	59(31)	39(20)	192(100)	25.1
Ave. plot area (ha)		17.0	32.2	34.1	25.1	25.1

Source: field surveys.

Note: Unit; number of cases. The proportions to the total cases of each group of rules are in parentheses.

4.2. Determinants of rule formation

In order to provide more detailed information on the determinants of rule formation, I applied multiple regression analysis. The dependent variable is the type of management rule; the groups 1 to 3 and independent variables are associated with 1) physical attributes of the forest, 2) socioeconomic attributes of the community and households, and 3) external support by the central government (Table 3). These are assumed to affect rule-making behavior through following mechanism. The physical attributes, such as natural and geographical factors, function as natural constraints that limit villagers' potentials and capabilities to utilize or conserve the resources. Then the socioeconomic attributes, including resource scarcity, income, resource use, education and social capital, directly affect the internal incentives and costs to facilitate local collective action. And finally the external factors, namely governmental interventions in the area, create frames that facilitate, force, or even discourage local rule-making. Variables are compared across the groups in Table 3, and the results of the regression analysis are shown in Table 4[11].

What is the most outstanding in Table 3 is that forest area per household is the largest in group 3 and the smallest in group 1. Landholdings per household, another indicator for the resource scarcity, have a similar trend though statistically insignificant. Results in Table 4 also confirm these trends, indicating smaller resource endowments are associated with "looser" rules. Again, this suggests that the induced institutional innovation theory, which insists that resource scarcity is the main driving force for local collective action, cannot be applied to the current study area[12].

[11] As of this writing, the data analysis has not been completed. Tentative results are presented here.

[12] In fact, the work of Tachibana et al. (2001) in Nepal that support scarcity-led innovation did not indicate significant relationship between forest per household and type of forest user group (p.295, Table 8.8) either. Instead, they supported the theory on the ground that "forest user group management was more likely to be initiated in forests that were more degraded in 1978 (p. 296)." As for this district, case studies suggest that degradation in the past may have some effect in forming rules. In this sense, this theory may be to some extent applicable in the past, although detailed analysis is required.

Table 3: The variables used in the regression analysis

Factors		Items	Group1	Group2	Group3	Ave.	Remarks
		Total cases	33	60	99		(plot)
Physical attributes of forest		Plot area**	3.2	17.8	36.8	25.1	(ha)
		Flood dummy	0.12	0.18	0.18	0.17	Valued one in case that flood is frequent
		Number of user	177	229	205	208	(HH)
		Ritual use dummy**	0.52	0.67	0.35	0.48	Valued one in case that the plot is used as ritual purposes
Socioeconomic attributes of HH and community	Resource scarcity	Forest per HH**	0.72	1.44	9.64	5.47	Communal forest area in the village per HH (ha)
		Landholdings per HH	14.0	15.3	16.1	15.4	(ha)
	Income and assets of HH	Cars owned per HH	0.15	0.11	0.10	0.11	KCC2K database in 2005
		Cattle per HH*	1.3	1.5	1.2	1.3	
		Annual per capita income	34	31	31	31	JPT database in 2005 (Thousand baht)
	Resource use attributes	Use rate of gas	3.3	2.7	2.7	2.8	Ranked 1-5(five is the highest)
		Use rate of mushrooms**	3.6	4.2	4.5	4.2	Ranked 1-5(five is the highest)
	Temporal migration	Work away index	2.8	2.9	2.5	2.7	Ranked 1-5(five is the highest)
	Social capital	Performance of village fund*	2.3	2.3	2.5	2.4	Ranked 1-3(three is the highest); from provincial CDD office
	Education	Bachelor holders per HH	0.07	0.07	0.08	0.07	KCC2K database in 2005
External supports by the central government		*No so lo* dummy**	0.52	0.63	0.78	0.69	Valued one in case that *no so lo* was issued; from district land office
		Project dummy*	0.12	0.13	0.29	0.21	Valued one in case that there was community forest project in the last 5 years; from provincial forest office

Sources: field surveys, *"ko cho cho 2 ko (KCC2K)"* and *"jo po tho (JPT)"* village databases, and various documents at TAO and district offices.
Note: HH means household. *, and ** denote variables significant at 5 and 1 percent level, respectively (ANOVA).

Table 4: Results of the regression analysis (multinomial logit model)

Dependent variables	Independent variables	Model 1			Model 2		
		Coefficient	St. error	*p*-value	Coefficient	St. error	*p*-value
Group 3=0	Intercept	3.652	2.058	.076	7.355	1.961	.000
Group 1=1	Plot area	-.022	.011	.040	-.032	.009	.001
	Number of user	-.007	.003	.013	-.003	.002	.100
	Ritual use dummy	-1.475	.667	.027	-1.419	.613	.020
	Forest per HH	-.841	.322	.009			
	Landholdings per HH				-.107	.051	.035
	Cattle per HH	.644	.468	.169	.760	.410	.064
	Use rate of gas	.119	.245	.629			
	Use rate of mushrooms	-.342	.284	.229	-.660	.229	.004
	Performance of village fund	.308	.622	.621	-.248	.506	.624
	Bachelor holders per HH				-10.145	4.871	.037
	No so lo dummy	-.640	.644	.320	-1.338	.575	.020
	Project dummy	-1.351	.942	.152			
Group 3=0	Intercept	-3.538	1.829	.053	-2.784	1.507	.065
Group 2=1	Plot area	.004	.001	.008	.000	.001	.638
	Number of user	-.001	.001	.442	-.001	.001	.381
	Ritual use dummy	.520	.480	.278	.790	.411	.055
	Forest per HH	-.475	.158	.003			
	Landholdings per HH				-.016	.028	.576
	Cattle per HH	1.029	.347	.003	1.029	.347	.003
	Use rate of gas	-.292	.198	.141			
	Use rate of mushrooms	-.352	.250	.159	-.339	.199	.088
	Performance of village fund	-.578	.452	.201	-.842	.380	.027
	Bachelor holders per HH				-5.300	3.233	.101
	No so lo dummy	-.536	.519	.301	-1.220	.442	.006
	Project dummy	-1.851	.676	.006			
	Number of samples	170			182		
	-2log likelihood	213.8			279.9		
	Chi square	128.7	df = 20	.000	89.3	df = 18	.000
	MacFadden R2	.374			.241		

Source: using variables in Table 3.

On the other hand, governmental supports are highly significant factors in both Table 3 and 4. Chances of rule formation are higher for the forest where *no so lo* was issued. The existence of community forest project is also one of the key factors that distinguish groups 2 and 3. Official supports by community forest project include advices on rule making, training for forest management, silvicultural practices and tree planting, provision of tree seedlings, signboards, fire fighting instruments and other materials. Kono et al. (1994) also described a case where training by the forest department initiated communal forest management. As shown in Table 1, current budget has been much higher for such supports. Obviously, larger forests have higher priorities for the forest department in the allocation of funds. In fact, most of the large forests in the district have, more or less, been given such aid by the government.

Then, is it enough to explain that the rule formation processes for the communal forests in the district are characterized by this "soft enclosure" by the government? I believe not. Table 4 suggests that higher rates of non-destructive forest use such as mushroom gathering and ritual use may have a positive impact on rule formation, though the effect is less significant. This implies that certain types of forest utilization lead to high internal incentives for local collective action. In addition, some other variables associated with internal incentives (such as village fund and bachelor holders) can have some impact[13]. In short, it is important to consider how both internal incentives and external support affect the rule formation processes. The following case studies can provide some insights on how certain combinations lead to certain types of processes.

5. Variation of rule formation: four case studies

These case studies seek to exemplify the variations of rule formation process seen in the area[14]. They are categorized with regard to two factors; the physical amount of resources and governmental interventions (Figure 2). The former seems to affect the villagers' internal incentives, and the latter represents external forces and support.

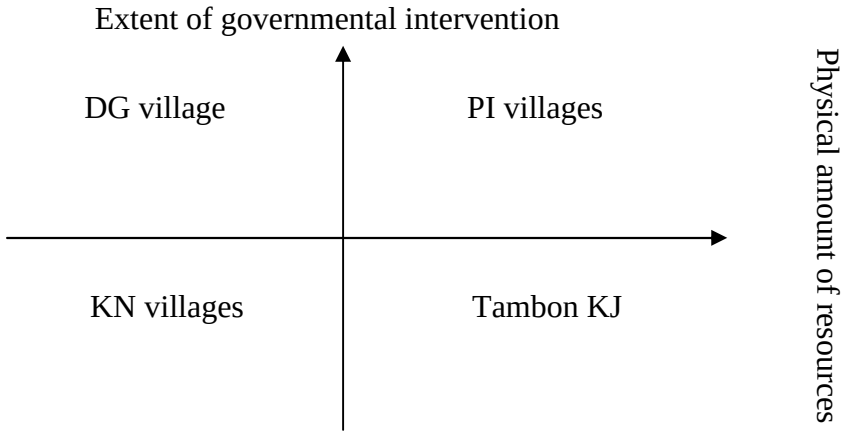

Figure 2: Configurations of case studies

[13] Number of cattle per household also has a significant impact. This is probably because of differences in agro-ecological conditions or farming systems, as well as in assets among user households.

[14] The actual name of Tambon and the village are not stated here, as some information may be considered sensitive to the villagers.

5.1.Strong governmental initiatives: PI villages

PI villages, consisting of 202 households, are located in the southeast of the district (Figure 1)[15]. There are abundant forests in the area, including along the flood plain of the Sebai river and scattered hills. Most of them are communal lands utilized by the villagers. There are 7 communal forests in the village, covering more than 270 ha. Of them, the forest named "*ban kao* (old village)" is particularly famous for its richness[16].

As the name tells us, this forest is located where the old village once stood. In 1932 the village was abandoned because malaria broke out and many villagers died there. At that time, some moved to the current location, 4 km away[17]. The area has been communal land ever since. Like the other communal lands in the village, it was a source of forest products, and in some parts, villagers planted various crops such as beans and gourd by shifting cultivation. During the kenaf boom in the 1960s, kenaf was planted in the area and some parts of the forest were degraded.

The situation changed in 1983. A monk came to live in the forest and started meditation there. He initiated forest conservation, and after that shifting cultivation stopped[18]. Under his initiative, communal forests in the village were managed by a forest care committee. Managing rules with sanctions were formed to punish violators. The remaining forest was well conserved and the degraded area gradually recovered.

Then the year 1999 became another turning point. The provincial forest office noticed that the forest here was well conserved, and chose it as a target of the "*ro so tho po*" project. The officers then nominated the forest for the award. To meet the project standard, certain conditions had to be met, including forming a forest care committee, management rules, violation controls, volunteer patrols. In all, about 100 people from PI and neighboring villages in the two Tanbols (Tambon NK and DY) participated in the training project. After the training, a new committee consisting of forest conservation volunteers in the 9 villages was established and new management rules were formed. The volunteers build signboards and firebreaks, and "educated" villagers on the importance of the forests. As a result, they were awarded a royal flag by the Queen in 1999[19]. The forest was renamed "*Pa chum chon charoem prakiat 72 pansa* (the community forest in honor of H. R. H. the Queen's 72nd birthday)". In 2002 the conservation area was expanded to 20 plots (around 700 ha) in 16 villages, and at the same time the committee was re-organized. These plots were then registered as "community forests" by the forest department.

This is a brief history of the PI village case. The rule formation process here is, in short, outsider-oriented. The first-stage rule formation was from the monk's initiative, and during

[15] There are 2 villages (*muban*); village no.2 and no.8, which share the same name and origin. Village no.8 diverged from village no.2 in 1978. They also share the same school, temple and communal lands. In the description, therefore, I regard them as a single community.

[16] There are other local names for the forest; *wat kao* (old temple), *pa cha kao* (old cremation forest) and so on.

[17] In the forest, we can still find large mango trees and old trails, recalling the old village.

[18] He was born in the PI village. After living in Bangkok as a taxi driver and a while in a military camp in Lopburi, he decided to become a monk at the age of 30. He is a pupil of a famous abbot residing in Ubon Ratchathani, and many city-dwellers come to worship and contribute to the temple. During the interview, the village head told me that the forest would have disappeared if this monk had not initiate conservation at the time.

[19] The Queen came to the forest and gave a flag directly to them. This was a significantly honorable event in the history of the village.

the second stage the government expanded its area and formalized its management. The whole process was underpinned by a cultural apparatus such as religion, and a state apparatus such as the royal family.

The villagers' everyday life is much more pragmatic, however. Thus there is a wide gap between such cultural and state discourses and everyday life. During the survey, a village elite and his wife in NK village, one of the neighboring villages of PI villages, asked me how they could increase benefits from the forest. They told me, "We wish to get something from the forest, but now we cannot fully utilize it because of the strict management rules. We are now discussing this issue and if you have some good ideas please tell us."

In fact, NK village participated in the forest care committee in 1999, but did not participate in the re-organization of the committee or register its communal forests in 2002. According to them, "Registration causes other problems. When we registered (the communal forests in Tambon NK and DY), we had conflicts concerning which Tambon to register first. Management by committee members results in the villagers being uncooperative, as they rely entirely on the committee members. We have successfully managed (the forest) for a long time, and we will continue to do so. We do not have to register."

Thus they felt that their communal forests would be beyond their control if they accepted formalization. In this context, ironically, the formalization may deprive villagers' access to the forest. The names of the communal forest in PI village, "*pa chum chon charoem prakiat 72 pansa*" and "*ban kao*" seem to symbolize the gap between the discourse and everyday life, and the dilemma of formalization. The NK villagers might become critical due to this dilemma.

5.2.A response to outside threats: Tambon KJ

Tambon KJ, which is located in the northeast of the district (Figure 1), consists of 12 villages with 1,263 households (6,187 people). The forests here (25 plots with 520 ha) are distributed along the natural levees of the Sebai river and on a hill in the western part of the Tambon. Most of these forests are communal forests, and villagers have utilized them for a long time. Up to now the management of these forests was done by each village (or villages), therefore, there were significant differences of management rules between them[20]. Even with the variation in rules, the forests here were not seriously depleted because of the mild pressure of land and forest (Kono et al. 1994).

The situation, however, has changed recently. New road constructions and repairs in the 1990s improved access to the Tambon. After access improved, many outsiders from various places came into the forests and extracted significant amounts of forest products for selling in the market. Especially during the beginning of the rainy season (May – June), they come by pick-up trucks in groups of 10 or more. They often arrive early in the morning and look for mushrooms in the forests[21]. As a result, many villagers in the Tambon have felt uneasy, for "*the outsiders* are benefiting from our forests while *we*, the owners, are still poor". In addition, the outsiders often disturbed the forests by cutting, setting fires, disposing the waste, and so on. The village elite felt that something must be done to save the forests from this destruction.

As the outsiders come by vehicles, the accessible range is large, and the conventional management was not effective. Members of the TAO council then started to discuss the

[20] For instance, NG village, located in the western part of the Tambon has had strict rules since 1989, while there were no such rules in KS village, located along the Sebai river.

[21] Some of the mushrooms have a high value. According to the villagers, a mushroom called *het puak* is valued at 170-200 baht (4-5USD) per kilogram in the local market. They say there are a lot of such mushrooms in the forests there.

unification of the management rules in the Tambon. After several rounds of discussion, they asked forest officers to hold a training session. After the training, a public meeting was held on June 3, 2005. The attendants included members of the TAO council, village heads, TAO officers, school teachers, district forest officers and ordinary villagers. After the meeting, a new management rule was introduced and a forest volunteer committee was formed by 61 members from 12 villages.

The new rule consists of 11 articles. It prohibits tree cutting, fires and cultivation in the communal forests in the Tambon. Villagers can ask the committee for construction poles from the forests. The articles also regulate hunting in the forests and fishing in the water bodies[22]. Violators are fined by the committee, according to the nature of the violations.

The most unique point of the rule lies in its regulations on outsiders. It stipulates that outsiders need to ask permission to the committee before they obtain resources, and they pay fees of 20 baht each. Resources are also limited to 4 kg each[23].

Quite naturally, this rule created a stir among the villages nearby. For a long time they had utilized the forests and water bodies in the Tambon to obtain natural products for their livelihoods. With this rule, however, they became "outsiders" and were excluded. Some of them appealed to the district to allow them use of the resources, but the district and TAO tried to defend themselves, explaining that they do not totally exclude outsiders[24].

On the other hand, some villagers were also against the rules. Outside influences varied significantly across the villages and the motivations were different. Some villagers also utilized resources in other Tambons. For example, some NG villagers often fish in the Tambon LH, which has a lot of marshes in the flood plain of the Sebai river. They feared that the introduction of such rules would anger Tambon LH villagers and result in the same kind of rule formation there. After all, they accepted the proposals because they were in the minority.

In the case of Tambon KJ, I can point out three notable points. First, there was strong motivation for the rule formation by the villagers, even though the resources were abundant. The improvement of access induced outside disturbances in the forest, and this led to high motivations for the rule formation. As in this case, many anthropologists studying in Thailand reported that outsiders' threats triggered villagers' collective action (Wittayapak and Dearden 1999, Ganjanapan 2000, Johnson 2001). Moreover, this logic is also easy to explain using the game theory (Ubukata forthcoming).

Second, the villagers did not recognize "scarcity" but rather the "affluence" of the forest resources in the area during the process. In other words, they were incorporated into the broader system of "scarcity" by the invasion of outsiders whose resources were already scarce. In this sense, "scarcity" is not necessarily an actual concept that is identical to the physical amount of resources. As Aguilera-Klink et al. (2000) and Mehta (2001) pointed out,

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[22] It bans the capture of aquatic animals during periods of fertility (May – July). Illegal means of capture both in the forests and water bodies are also prohibited.

[23] Violators are penalized up to 1,000 baht and informants are rewarded 25% of this. Fines and fees collected are part of the committee's revenue, and are utilized for conservation activities. Some measures are to be taken for collecting fees. For example, the members of the committee patrol the Tambon regularly. Many signboards stating the rule are posted at check points.

[24] When the issue was raised during interviews, the villagers around the Tambon often passionately appealed to me regarding the current situation. In fact, during the year 2005, the committee only cautioned outsiders and did not collect fees. This may have been a temporal compromise by the committee. A village head did say, however, that they are going to collect fees beginning in the rainy season of 2006.

it is a human perception, which is socially and politically constructed, and depends heavily on the social context itself. It seems, at least, that something should be mediated between the physical amount of resources and the recognition of scarcity (or recognition of the need for rule making) by the villagers. Some events, or a diffusion of ideas or feelings create a common recognition among the people. In this case, "a sense of deprivation" by the outsiders was diffused in the Tambon (or at least among the village elite). This constructed a "Tambon identity" (i.e. *we* as forest owners and *they* as invaders), and created incentive structures for rule making.

Third, the introduction of the rule created conflicts both inside and outside the Tambon. This is because the villagers' original resource use pattern was not territorially restricted, but rather created geographical networks with various options. The attempts to "territorialize" the resources, as in this case, necessarily forced the networks to change. It is very likely that the neighboring Tambons will take on similar measures and at the same time, such conflicts will also increase.

5.3.Norms in transition: KN villages

KN villages (village no.1 and no.2) are located in the south of the district (Figure 1), with 330 households (1,622 people). It is said that the rice produced in the area is of high quality. Here the demand for paddy field is high and few forests remain in the Tambon area[25]. There are 5 communal forests in KN villages; 50 ha of communal forests in all, but this has been degraded and partly encroached on due to high demands of land and forest. The land encroachment in the "cremation forest" (18.4 ha) has created an especially serious conflict among the villagers.

This forest, as the name indicates, was once utilized as a burial place for the villagers. For the last since 25 years, though, villagers have been buried in the temple and not in the forest. The area has been gradually encroached on from the border by those who own the land nearby. Currently paddy fields encroach on about 10 meters inside the border.

In the village there are some rules concerning this forest, but both formal and informal rules are incomplete. They are oral and without sanctions. Moreover, the forest area has not been issued with a public land title (*no so lo*). Thus, the management of the forest largely relies on the villagers' social norms. According to a village head, "we did not have to introduce sanction rules, for everyone knows about the rules. We have many encroachers here but we understand most encroachers are poor, and they need land. In addition, most of them utilize the land temporarily, and do not claim ownership". This implies that social norms are woven with sympathy in actual management.

Recent cases concerning three households have been different, however. In 2003 they boldly opened up paddy fields in the center of the forest (around 6.4 ha), although they have enough land, have stable incomes, and are relatively affluent. When they started cutting trees and leveling the ground, a village head and his supporters feared that the forest would vanish if they overlooked this conduct. They preferred to conserve the forest "for the common good" of the villagers, even though their natural resource use had gradually been declining[26].

The village head then tried to negotiate with the three households to return the encroached plots. They refused, insisting that they had official land documents called *no so 3* for their

[25] Due to this scarcity, villagers in the Tambon sometimes rely on forest products from outside.

[26] The villagers feel that diffusion of cooking gas and concrete poles is gradually replacing their natural resource use, but they still believe that the forest is one important source of natural products needed for everyday life.

plots[27]. Both sides appealed to the district land office about the issue, and TAO offered a budget for the land office to measure the plot. Up to now, however, the conflict continues.

In this case, land and resources are scarce and conflict levels are high. This is exactly the kind of situation which induced institutional innovation theory assumes. Of course with this situation the demand for rule innovation may be high, but it is not likely that the villagers will solve the conflict and formulate new rules. The solution will depend on the outside authorities in the district and province. Currently the social norms regarding the villages are in transition. If the villager side wins, the norms will be maintained, and new rules may emerge. If the three households win, however, such norms will totally collapse and the forest will surely vanish quickly.

5.4.Following authority: DG village

DG village, with 115 households (579 people), also belongs to the same Tambon as KN villages (Figure 1). The resource conditions are similar to KN villages, whose resources are scarce with only a few degraded forests. There are only 3 plots of communal land in the village: a pond (0.64ha) utilized for tap water, "sacred forest" (0.4 ha) and "cremation forest" (4.8 ha). The "sacred forest" has no vegetation, and is currently a children's playground. The cremation forest is a part of degraded forest extending over the neighboring LF and NL villages[28]. Due to the poor soil fertility, villagers did not create paddy fields and the place has remained as communal forest for forest products, as well as for burial purposes. Since 2003, it has been partly used as a garbage dump in the Tambon.

Like the KN village case, villagers ceased to bury their dead here in the 1980s, and since then the forest has been gradually encroached on by them. LF and NL villages probably reacted by forming written rules in their own areas during this time, but DG villagers did not. Thus encroachments continued, especially by the LF and NL villagers.

The situation changed in 2000. Forest officers came to the village and asked villagers to participate in a conservation project. LF and NL villages, though they already had written rules, also joined the project. Interestingly, the attitudes toward the project varied among the villages. In LF villages, some village elite repeatedly emphasized that "there should be forest in the communal land". They thought they should get ahead on reinforcing the conservation, as they saw many conflicts over the communal lands in the surrounding villages. To protect the forest from encroachment and fire, they got a budget from TAO and started to construct a surrounding road. In 2003 forest measurement was done by the forest office and in 2005 a total of 80 thousand tree seedlings were planted.

On the other hand, LN and DG villages did not seem to feel it was necessary. The village head of LN village told me that they just joined "because the forest officer urged us". Anyway, DG village took a measure, for the communal forest was cultivated by neighboring villagers. In 2000 the village head negotiated with the encroachers, and some part was

[27] In Thailand it is widely known that many official land documents for private ownership or use are issued for land which cannot be privately owned or used. In most cases this indicates that there were some illegal conducts in the process. In this case, two of the three households are the offspring of the ex-*gamnan* (the head of the Tambon: now deceased), and the remaining one is the offspring of the ex-assistant *gamnan*. The village head, therefore, suspects that ex-*gamnan* asked the head of the district at that time (he was a close friend of the ex-*gamnan*) to issue the documents illegally.

[28] The total area covers around 40 ha (27 ha for LF villages, 8.3 ha for LN village, and 4.8 ha for DG village).

returned as communal land. After that, eucalyptus was planted on the border to show the border line clearly. And finally in 2003, written management rules were introduced.

In 2005, LF, NL, and DG villages joined another conservation project called "New Forest Village Project (*khrongkan muban pamai phen mai*)", launched by the forest department. The "new" point of the project was that 70 thousand baht (1,750USD) per village of subsidies were granted to cover management costs. This seemed to please the village elite. In March 2005, they were invited to a training course held in Khon Kaen; a regional center. After the training, the village head in DG village delightedly explained to me how nice the hotel was, and how generous the department was.

In this case, there are mixed motivations for the rule formations in the three villages. One is scarcity-led internal initiatives by the villagers in LF villages, and another is government-led external initiatives in DG village (and partly in NL village). This indicates that, like previous examples, the physical scarcity does not necessarily create the villagers' need to tighten management rules. The former and latter belong to different Tambons, and each has different management rules. Thus the future consequences will also be different. In fact the latter type, which is based on the patron-client relationship between the village elite and officers, are quite common in government-led community forest projects. The establishment of a long-term conservation system would be questionable, though the village elite do at least temporarily follow the official guidance.

6. The pattern of rule formation in the study area

The above case studies exemplify the outstanding rule formation processes in the district. As the study indicates, different rule formation processes were observed according to the geographical conditions, and type of interactions between community members and external actors (namely, the government and outsiders). This led to different consequences and problems in managing the resources. I categorized these into four types of process by two conditional axes; "internal incentives" and "external forces" toward rule formations (Figure 3). Each process seems to require different explanation, which varies from economic theory to anthropological interpretations.

In PI village case, strong external forces such as cultural and state apparatus took initiatives. In Tambon KJ, the outsiders' threat induced local collective action. The logic of the former is similar to other cases where there are conflicts in forest use between the government and villages (i.e. national park etc.), and is regarded as one end of the spectrum in Figure 3. In the latter, both internal and external factors seem to be well-mixed. Villagers' motivation was high enough to take the initiative in rule making, and government aid helped them.

In these two examples, it is also noticeable that conservation units have been expanding beyond the communities. In this context, the roles of TAOs and district offices were important. In particular, TAO offered an "arena" of rule formation, as Ostrom (1990) explained. "A sense of community" is growing among the village elite, as they frequently meet at the TAO office. Thus, it is likely that the governance of TAO will take on more and more important roles in local rule formations.

The KN villages may have the nearest conditions to that of induced institutional innovation theory, though rule formation in the near future is unlikely. This is almost a completely decentralized process and can be regarded as another end of the spectrum in Figure 3. The case of DG village can be characterized as a patron-client relationship. The village elite here may be taking advantage of the governmental project. This is also very common when the government initiates top-down conservation projects.

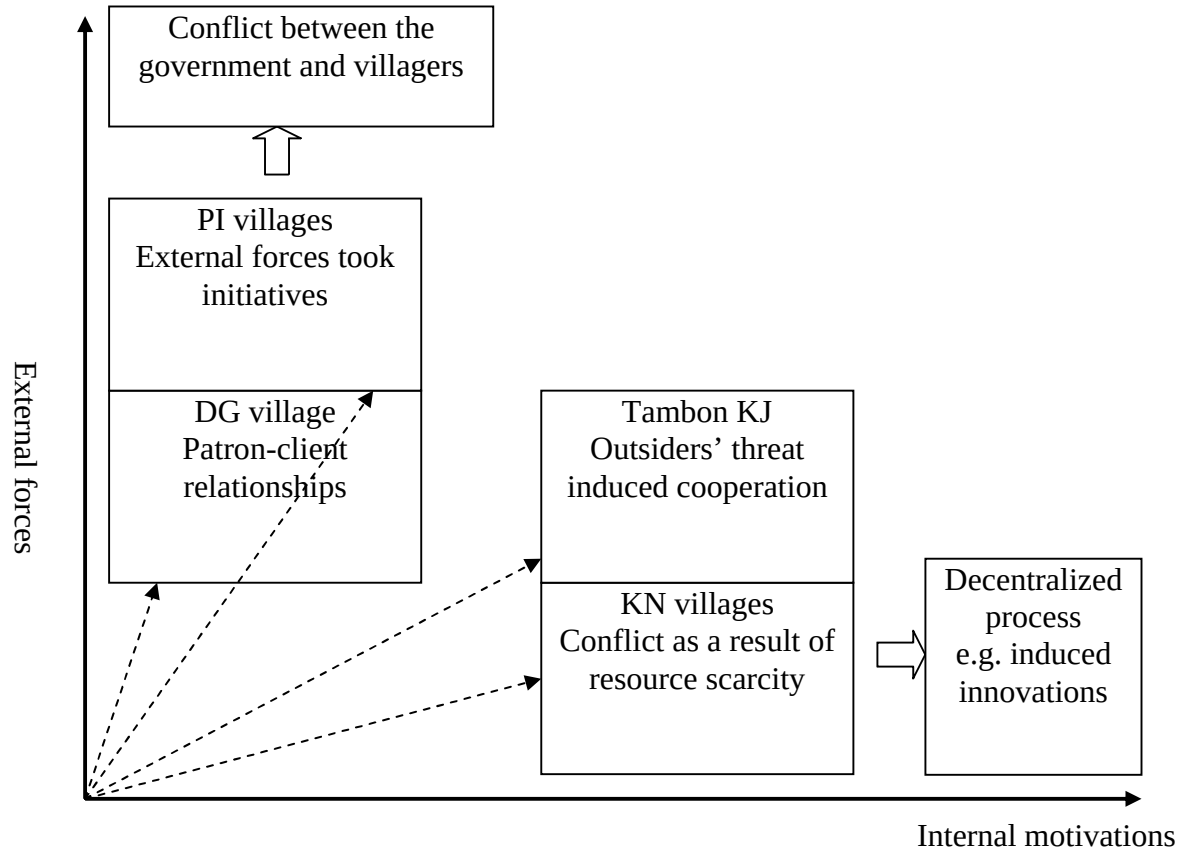

Figure 3: Rule formation processes in the case study villages

Thus we can see how the rule formation processes vary among the villages. It is only in KN villages (and maybe LF villages) that the logic of rule formation can be clearly explained by scarcity-led innovation. In other cases, the influences from external actors were outstanding and villagers' reactions to them held a key. As a result, physical resource scarcity does not necessarily associate with the demand for rule formations. In addition, even the situation in the KN village case does not assure scarcity-led rule formations. Something should be mediated between a physical amount of resources and recognition of the need for rule making by the villagers. It can be some events, or diffusion of some ideas or feelings to create a common recognition (and incentive structures) among them. That is why social contexts are very important in considering the logic of collective action.

Let us turn to notice the work of Kono et al. (1994) again. They pointed out that many communal forest managements were introduced after villagers foresaw resource scarcity. Before the 1990s, external forces such as governmental interventions or outsiders' invasion were considered to be weaker. Therefore the players of the repeated CPR games were confined only to the villagers. In the 1990s, however, these external actors could no longer be neglected, as their influences became stronger. The effect of these actors into the games varied, as we see in the case studies. As a result, their entrance as players has transferred and diversified the rule formation processes of communal forests, as shown in the dotted arrows in Figure 3.

7. Conclusion: commons in the "connected" communities

This study attempts to explain the dynamics of institutional change in the commons, by examining the rule formation processes in the communal forest management in Yasothon province, northeast Thailand.

The results suggested that, first, the induced institutional innovation theory, which insists that resource scarcity is the main driving force for local collective action, cannot solely apply to the current study area. Meanings of "scarcity" or how it is recognized by the actors should be seriously considered. Second, different rule formation processes were observed according to geographical conditions, and type of interactions between community members and external actors. This led to different consequences and problems in managing the resources. I categorized these into four types of processes by using two conditional axes; "internal incentives" and "external forces" toward rule formations. Each process seems to require different explanation, which varies from economic theory to anthropological interpretations.

In the study area, the strong impact of the external actors after the 1990s altered and diversified the logic of collective action, along with the situation of resource management. This means that we can no longer assume "isolated communities", but should examine how the global, national and local external actors affect collective action in contemporary "connected communities". Even Tachibana et al. (2001) refer to "a dilemma of forest management policy (p. 311)"; community forest management will not be effective in case of resource abundance, unless truly strong support measures are provided by the government. This necessitates consideration of social contexts and actor-based models of collective action.

Currently some economists are also considering the effects of such contextual factors and external actors seriously. Further efforts on both theoretical and empirical research would help in developing an integrated understanding of the dynamics of collective action under contemporary social settings.

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