

Original Article

Assessment of Common Property Resources Utilization and Management in Valley and Hill Regions of Manipur, India

Janee Yumlembam¹, Y. Chakrabarty Singh² and Dibakar Naik³

¹Assistant Professor, Department of Agricultural Economics, Faculty of Agriculture Science, Arunachal University of Studies, Namsai-792103 NH-52, Arunachal Pradesh, India

² Professor and Head, Department of Agricultural Economics, College of Agriculture, Central Agricultural University, Iroisemba -795004, Manipur, India

³ Professor, Department of Agricultural Economics, College of Agriculture, Odisha University of Agriculture and Technology, Bhubaneswar, Orissa, India

Abstract - Management of common property resources (CPRs) has long been an important issue for policy analysts. The importance of the study is much to do with the fact that agriculture goes hand in hand with these resources. CPRs such as canals provide irrigation water in many villages in the country. Common property land resources are utilized for agricultural purposes, livestock rearing, etc. This article, based on empirical study in hill and valley regions underlines the nature, degree of CPRs uses, and existing mode of management of the resources in northeast Indian state Manipur. And thereby assessed the potential measures for proper management of the resource. CPRs considered in the study include a pond, forest, agricultural land, and lake the uses of which are de-facto and de-jure in nature. These have been the source of food, fodder, and fuel to the extent of 80-100 percent. The management system of CPRs in northeast India depends on certain factors such as the definition of CPRs itself viz., land owned collectively, and land owned by the village chief. There were Participatory management- community-based and Communal tenure- collective action of management in the villages of hill and valley regions respectively. However, there were accounts of no proper management of forest and lake resources. Here we have recommended Community-based Participatory management of the forest resource and for the lake resource, the formation of a committee for collective action in which state government plays the role of a catalyst in mitigating the limits of effective voluntary collective action.

Keywords - Common property resources, Collective action, Participatory Management, Conservation, and Sustainability

I. INTRODUCTION

Management of common property resources (CPRs) has long been an important issue for policy

analysts. Agriculture and CPRs are inseparable. CPRs supplement our agriculture; Culturable Waste-Land can be brought under cultivation after improving it through reclamation practices. An estimation of the total stock of agricultural land resources (i.e. total cultivable land) can be arrived at by adding up net sown area, and Common property land resources (all fallow lands and culturable wasteland). CPRs provide fodder for the livestock and fuel for the households along with other minor forest products like fruits, nuts, fiber, medicinal plants, etc. In rural areas, such land is of particular relevance for the livelihood of the landless and marginal farmers and other weaker sections since many of them depend on income from their livestock due to the fact that they have limited access to land. Agriculture is a purely land-based activity, unlike secondary and tertiary activities. In other words, the contribution of land in agricultural output is more compared to its contribution in the outputs in the other sectors. Thus, lack of access to land is directly correlated with the incidence of poverty in rural areas (NCERT, 2016). Apart from these, the development of watershed which is a common property resource has been adopted to better manage the resource to enhance agricultural productivity in many dry regions of the country.

Owing to the diverse nature of CPRs in terms of geography, location, the extent of human dependence, etc, it is really difficult to formulate a uniform measure to solve the problem of CPRs to conserve and sustain its productivity.

“When multiple appropriators are dependent on a given CPR as a source of economic activity, they are jointly affected by almost everything they do. Each individual much takes into account the choices of others when assessing personal choices.....The key fact of co-appropriators is that they are tied together in a lattice of interdependence so long as they continue to share a single CPR. The physical dependence doesn't disappear when effective



institutional rules are utilized in the governance and management of the CPR” (Ostrom, 1990).

Notwithstanding the difficulty of managing the CPRs, many researchers have encountered successes in governing and managing CPRs in diverse locations across the globe. A significant amount of academic work has explored the characteristics and challenges associated with CPRs. It is widely recognized that all commons are prone to the sort of environmental challenges currently faced within the space domain such as pollution, congestion, overuse, or irresponsible use. However, sustainable CPR use is possible and has been achieved in other areas (Chow and Weeden, 2012). Nobel Laureate Elinor Ostrom’s from her decades-long research revealed eight principles of successful self-governance and sustainable CPRs:

1. Clearly Defined Boundaries
2. Congruence
3. Collective-Choice Arrangements
4. Monitoring
5. Graduated Sanctions
6. Conflict-Resolution Mechanisms
7. Minimal Recognition of Rights to Organize
8. Nested Enterprises

Discussing each of these principles in length is not the scope of the current paper. However, it is to be noted that for common-pool resources that are part of larger systems principle 8 has been put forth by Ostrom (Ostrom, 1990).

In the context of India, though there have been many studies on management “Participatory Management” of common property or common-pool resources, a scanty effort has been made in northeastern hill regions of the country. In Manipur, one of the northeastern states of the country, there’s been long dependence of the people on CPRs for livelihood. This is evident from the findings of the study “Common Property Resources in India” conducted by the National Sample Survey Organisation (NSS 54th round) in 1998. A total of 873 rural households and 414 urban households from 60 villages were surveyed under the study. The findings of the study revealed that CPR land per household was 0.17 ha. In the Churachandpur district, forests and forest-based products are found to be mostly (68 percent cases) used common property resources among the sampled villages. Every household has access and rights over forests and forest-based resources (GoI 2008). Thus there is the need to manage these resources for sustainable use. People should have co-responsibility for the use and management of these resources. The study has thus been conducted in four villages of northeast Indian state Manipur to assess the existing management system and to suggest measures for participatory management with the following set objectives:

1. To assess the nature and degree of CPRs uses in the selected regions

2. To determine the existing system of CPRs management in the selected regions
3. To assess feedback and suggest measures for proper management of CPRs

II. METHODOLOGY

A. Sampling

A two-stage sampling technique has been followed. In the first stage, four districts namely *Imphal East* and *Thoubal* from the valley region and *Churachandpur* and *Senapati* from the hill region out of a total of 9 districts in the state have been selected purposively. In the second stage, one village from each district namely *Ishingthembi mapan* in Imphal East, *Kharungpat* village in Thoubal district, *M. Lhahvom* village in Churachandpur, and *Mongneljang* village in Senapati has been selected purposively based on the pilot survey where the HHs depends on CPRs. Complete enumeration was done in these sampled villages during 2015-16 with the help of a well-structured and pre-tested interview schedule to determine the nature and degree of uses of CPRs and the existing management system. And thereby assess feedback and suggest measures for proper management of CPRs.

B. Common Property Resource Utilization: Nature and degree of uses and management system

The interview schedule provided information on how the available CPRs in the village have been utilized by the resident HHs.

The degree has been analyzed through the extent of contribution of CPRs products to the total requirement by HHs (Saha, 2014).

III. RESULTS AND DISCUSSION

A. Nature and degree of CPRs uses

Nature of CPRs used by HHs in the valley region (table 1) indicated that the available CPRs in *Ishingthembi mapan*, namely village big pond (*Pukhri achouba*), village small pond (*Pukhri macha*), village forest are de jure and agricultural land is de facto in nature. HHs utilize these resources for fish culture, domestic water use, firewood collection, grazing of animals, collection of food items, and fodder. In *Kharungpat* village, CPRs namely the *Kharung* lake is de facto in nature and *Lamyeng* hill forest is de jure. Fishing is done in the lake and collection of firewood from the hill forest. However, the food item is collected from both the resources. It has been reported that on average a person catches 2-3kg per day. The villagers sell their catch at *Wabagai lam hai*, *Wabagai bazaar*, *Wangjing bazaar*. Natural fishing is the mainly practiced form of fishing. *Rohu*, *Grass-carp*, *Silver*, *Common –Carp (puklaobi)*, *Porom*, *Ukabi*, *Ngamu* are some of the common fishes found in the lake. Collected items are both consumed and sold.

Table 1. Nature of CPRs uses in Ishingthembi mapan and Kharungpat village in valley region during 2015-16

Village	CPRs	Category	Purpose
Ishingthembi mapan	Village big pond (Pukhri achouba)	De jure	Fish farming
	Village small pond (Pukhri macha)	De jure	Domestic water use
	Village forest (hill forest) area	De jure	Firewood cutting, Grazing of animals
	Agricultural land	De facto	Collection of food items Collection of fodder Fishing
Kharungpat	Kharungpat lake	De facto	Collection of food items
	Laming hill forest	De facto	Collection of firewood

Source: Tabulated by the author from the village survey data

In the hill region also, the nature of CPRs uses was found to be both de jure and de facto (table 2). Village hill forest in *M.Lhavom* is de jure in nature which the HHS utilizes for collection of food items, fodder, and firewood for free, collection of firewood (paid basis), collection of bamboos (paid basis and Charcoal making (paid basis). The canal is de facto in nature which the HHs depend on for irrigating their field and domestic use in times of water scarcity. The main source of fuel for cooking is firewood which the villagers collect. Non-timber forest products like *Pheija*, *Peeruk*, *Pomelo*, *Ching-Yenjin*, *Heidi*, *Yen-dung*, *Moirang Khanam*, *Heirit*, *Heikru*, etc., are available seasonally and are both consumed and sold. A portion of the forest area is reserved by the village chief and its resources are sold after every five years. Contractors purchase the reserved forest resources in bulk in which the villagers are employed as laborers for harvesting the resource. The major portion of the revenue is kept by the chief himself and the remaining is funded for the village development activities.

In *Mongneljang* village hill forest area was found to be de jure in nature. HHs are engaged in many activities practiced in the area namely dairy farming, piggery, vermicompost, beekeeping, nursery raising, afforestation, plantation of horticultural crops, agricultural activities, *jhum* cultivation, collection of food items like *Shijau*, *Banana stem*, *leaves*, and *flower*, *Pulei*, *Itil*, *Jormoh*, *Canvas*, etc., and firewood collection for home consumption. The concept of de jure and de facto utilization of CPRs has also been done by Bon (2000). He reported in his study in Himachal Pradesh that forest lands which are de jure public lands are used de facto as a

commons open to all. The remaining parts of the hamlet which have not been encroached upon but, vested in the state government, have been bifurcated into grazing land (50 percent) and, for landless farmers and not owning farmers (50 percent).

Table 2. Nature of CPRs uses in M. Lhahvom and Mongneljang village in hill region during 2015-16

Village	CPRs	Category	Purpose
M. Lhahvom	Village hill forest	De jure	Collection of food items Fodder collection Collection of firewood Collection of firewood (Paid basis) Collection of bamboos Charcoal making
			Canal
Mongneljang	Village hill forest	De jure	Collection of food items Fodder collection Collection of firewood Collection of firewood (Paid basis) Collection of bamboos Charcoal making
			Canal

Source: Tabulated by the authors from the village survey data

Coming to the degree of CPRs uses in the study areas, it has been found that 100 percent of fuel supplies for cooking were from CPRs. Food supply was comparatively low in the valley region (5% in Ishingthembi mapan & 15% in Kharungpat) than in the hill region (84% in M.Lhavom and 88% in Mongneljang). In *Ishingthembi mapan* 100 percent and in *Mongneljang* 80 percent of fodder requirements were from CPRs. In a study in Odisha, on average nearly 75 percent of fuel requirements of the poor, 65 percent of the non-poor, and 70 percent of all households are met through fuelwood. Fodder was another important derivative of the common property resource (Sahoo & Swain 2013). Joshi et al. (2014) in their study in two villages of Madhya Pradesh stated that there is a dependency of a large proportion of households on common lands for fuelwood and fodder.

Figures 1, 2, and 3 which the authors have prepared from the survey data depict diagrammatically the degree of CPRs used in valley and hill regions of our study.

CPRs products	Valley region		Hill region	
	Ishingthembi mapan	Kharungpat	M. Lhahvom	Mongneljang
1. Fuel supplies from CPR	100	100	100	100
2. Food requirement	5	15	84	88
3. Fodder requirement	100	N.A	N.A	80

Source: Computed by the authors from household survey data

1. Fuel gathered from CPRs as the proportion of total fuel used by HHs in each village
2. Food items gathered from CPRs as the proportion of total food requirement of HHs in each village
3. Fodder collected from CPRs as the proportion of total fodder requirement by an animal unit in the village

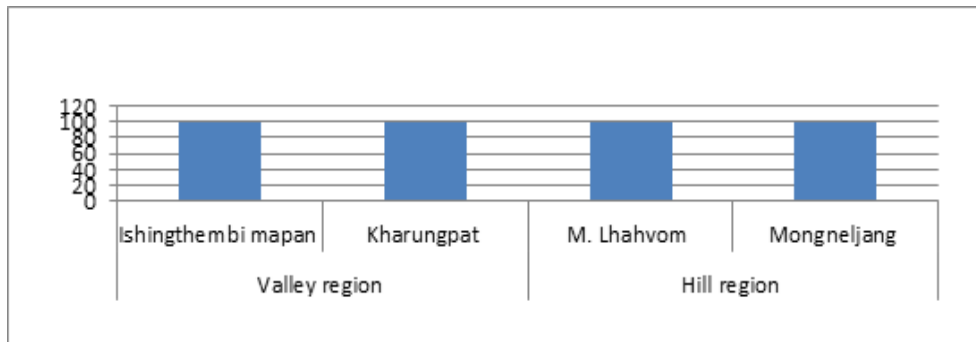


Fig. 1 Fuel supplies from CPRs (%)

Source: Computed by the author from village survey data

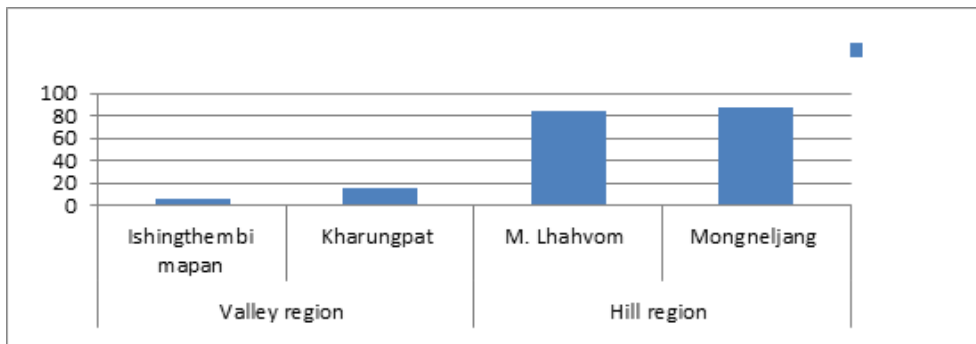


Fig. 2 Food requirement from CPRs (%)

Source: Computed by the author from village survey data

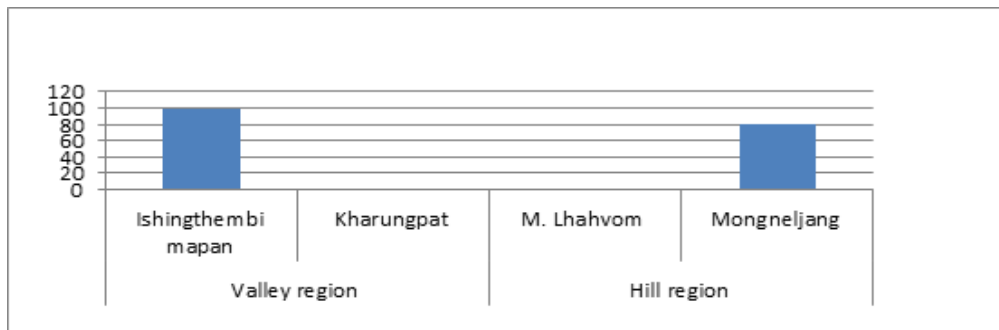


Fig. 3 Fodder requirement from CPRs (%)

Source: Computed by the author from village survey data

B. Management of Common property resources

Sustainable management of CPRs in northeast India depends on certain factors such as the definition of CPRs itself. There are three main categories: i. land owned by the village collectively, ii. land owned by the chief who distributes it among individual families and iii. land owned by the individual families. The first two categories are CPRs and the third is private land. Because of the diversity, the whole region does not have a common definition (J. B. Ganguly, 1978). For “i” participatory management- community-based and for “ii” Communal tenure- collective action of the management of CPRs were followed in the present study areas. Communal tenure refers to a situation where a group holds secure and exclusive collective rights to own, manage and/or use land and natural resources, referred to as common-pool resources, including agricultural lands, grazing lands, forests, trees, fisheries, wetlands, or irrigation waters. Communal tenure – as can be noted in by its prevalence in Africa and Asia for centuries (World Resources Institute, 2005) – can be customary and age-old, its rules relying upon community decisions, or it can be newly designed for a specific purpose. These are necessary conditions to exclude outsiders and to secure the rights of group members so that these rights cannot be taken away or changed unilaterally (Andersen, 2011).

The management system of CPRs in our study areas (Table 4) revealed that in *Ishingthembi main* type of management is the communal tenure system which is a self-governing form of collective action by a group of people, often a village. In common property or common pool resources theory, communal tenure can be defined as self-governing forms of collective action by a group of people, often a village... Common property theory addresses five kinds of rights, namely access, withdrawal, management, exclusion, and alienation (Schlager and Ostrom, 1992). In our study village, the villagers formed a committee with one representative from each HHs. There are set rules governing resource utilization. A monthly meeting is held for the proper functioning of the committee for regulating resource utilization. Afforestation was done at times through assistance from the state forest department. Collection of firewood was reported to be done every 3 years. In *M. Lhavom* also there was a communal tenure system of governing and managing the resource. However, proper management of the resource was not done. *Kharung lake*, the de facto CPR in *Kharungpat* village was not under proper management system neither from the HHS nor from the state government. In *Mongneljang* village an identified watershed area, management of CPR was found out

to be a community-based participatory model, in which the villagers form user groups and self-help groups (SHGs).

The hill forest areas in the three selected villages namely *Ishingthembi mapan*, *Mongneljang*, and *M. Lhavom* belongs to the category of unclassified or unclassified forests that are generally under the control of the state or autonomous councils. These are allowed to use by tribal communities for all practical purposes. In Manipur, the de facto controllers of these lands are informally resting in the hands of traditional tribal Chiefs though legally the owner of these forests belongs to the state. However, it has been found out through our study that the forest area of *Lamyeng hill* in *Kharungpat* village, also an unclassified forest, where the HHs in *Kharungpat* village depend on for fuel is de jure in nature owned by the chief of the neighboring tribal village.

Table 4: Management system of CPRs during 2015-16

	Village	CPRs	Type of management
Valley region	Ishingthembi mapan	Village ponds and hill forest	Communal tenure - collective action
	Kharungpat	Kharung lake	No proper management
Hill region	M.Lhavom	village hill forest	Communal tenure
	Mongneljang	Village hill forest	Participatory Management- community based

Source: Tabulated by the authors from the village survey data

Feedback assessment on CPRs management strategies of HHs has been done for common property resource viz., hill forest and *Kharung lake* in *M. Lhavom* and *Kharungpat* village respectively (table 5&6). For the other two villages, namely *Ishingthembi mapan* and *Mongneljang* proper management of the CPRs have been reported during the study period.

It has been determined that in *M. Lhavom* village. 100.00 percent of the HHS were interested in participatory management of the forest under government development projects (as that in *Mongneljang* village); 56.00 percent HHs has positive feedback on reduction of dependency on forest if an alternative source with secure income is created and 78.00 percent were found to be aware of environmental degradation. HHs who has reported “No” as their opinion to the particulars mentioned in table 5 above has given their reasons as follows:

- No faith in the government
- Change is not acceptable for them for alternative means of income.

Views of the HHS regarding what could be done to better manage the CPR for prolong sustainability are as under:

- The government should take initiatives in the planning for resource management.
- Management should not disturb the normal profile of forests and hamper the livelihood of the HHS
- There should be 100 percent participation of the villagers in each step of management planning
- The entire management strategy and the system must increase the livelihood of the community as a whole.

Table 5: Feedback assessment on management strategies of HHs in M. Lhavom village during 2015-16

Sl.no.	Particulars	Number of HHs	
		Yes	No
1	Participatory management of the forest under government development projects (as that in Mongneljang village)?	50 (100.00)	0
2	Ready to reduce dependency on forest if an alternative source with secure income is created?	28 (56.00)	22 (45.00)
3	Aware of environmental degradation and the need for sustainability?	39 (78.00)	11 (22.00)

Source: Computed by the authors from HH survey data Figure in bold gives absolute number; Figure in parenthesis gives a percentage of total HHs

Thus our study found out that the HHS was aware of the degradation of CPRs and the environment as a whole and is ready to contribute to conserving and prolonging its sustainability through participatory management of the resource with aid or support from the government.

For the management of *Kharung* lake resources, HHs in Kharungpat village (100.00 percent) were in favor of the formation of a committee for collective action. 65.00 percent of the HHS was ready to reduce dependency on the lake if an alternative source with secure income is created. All the HHs aware found to be aware of environmental degradation and felt the need to conserve the sustainability of the resource.

Views of the HHS regarding what could be done to better manage the lake resource for prolong sustainability has been given below:

- There should be frequent cleaning of the lake by the government to reduce outgrowth of floating mass “*phumdis*” as pollutes and reduce fish population.
- Effective implementation of a culture of fingerlings at the coastal of the lake via participatory management with HHs as the beneficiaries; aquaculture must be adopted.

- Authority should be given to the community to patrol the site to restrict outsiders who come for fishing
- Proper road construction that connects the site with the main town must be done by the concerned authority.

Table 6: Feedback assessment on management strategies of HHs in Kharungpat village during 2015-16

Sl.no.	Particulars	HHs	
		Yes	No
1	Formation of the committee for managing the <i>Kharungpat Khong</i> site of the Kharungpat lake?	40 (100.00)	0
2	Ready to reduce dependency fishing if an alternative source with secure income is created?	25 (62.5.00)	15 (37.50)
3	Aware of environmental degradation and the need for sustainability?	40 (100.00)	0

Source: Computed by the authors from HH survey data Figure in bold gives absolute number; Figure in parenthesis gives a percentage of total HHs

Thus management of *Kharung* lake can be thought of through collective action between the HHS and the government. It has been reported by Murty (1994) that in developing countries, the people’s capabilities to harness the preserved commons and the fairness in the appropriation of benefits from them are the limits on the voluntary collective action. It shows that collective action is possible if an outside agency plays the role of a catalyst in mitigating these limits.

C. Recommendations for participatory/collective action mode of management of CPRs in a sustainable form

As a follow up of determining the existing CPRs management system in the selected villages (as has been summarised and presented in table 4 above) and feedback assessment for the management of CPRs in two of the villages where there was no management of the resource has entailed the need of management for two types of common property resources namely in *M. Lhavom* village, the de facto CPRs and the other in *Khatungpat* village, the de jure CPRs. Thus, recommendations, as gathered from the households and from literature reviews to back up the crude HHs information on participatory or collective action mode of management of CPRs in a sustainable form, have been dealt with in this section.

Management refers to the responsible supervision or handling of resources. There is a wide spectrum of managing these resources based on the resource regimes. The regime is a structure of rights and duties characterizing the relationship of

individuals to one another with respect for that particular resource. It is essential to point out here that resource property is not an object such as land, but is rather a right to a stream of benefits. Moreover, implicitly such benefits are secured in the sense that it is the duty of all others to respect the conditions that protect that stream of benefits. In the context of the common property regime (CPRs in Ishingthembi mapan and Mongneljang in the present study), it is not a new thing to highlight that for successful management of common property resources participatory management in the form of community-based resource management is gaining popularity with success. Participatory methods have been defined as “methods to structure group processes in which [stakeholders] play a central role and articulate their knowledge, values, and preferences for different goals” (Van Asselt 2001). Community-based resource management is to obtain the voluntary participation of communities in a flexible program that incorporates long-term solutions to problems arising from the use of natural resources, (Bandura 1977). Based on the information gathered from the villages mentioned above, the suggested policy measures for the participatory management of these resources in a sustainable form are presented hereunder:

The village community land “hill forest” in *M. Lhavom* is under communal tenure-ship. The ownership is in the hand of the village chief though the forest area belongs to the unclassified category of state forest area. The mode of accruing benefits by the HHS is entirely on the mutual understanding of the participating HHs and the chief. The area of forest being enormous in size hasn’t affected the benefits accrued to the HHs up-till now or more formally resulted to what we call as “tragedy of the commons”, a phenomenon labeled by Hardin (1968). Activities like charcoal making, firewood collection, and bamboo cutting practiced by the HHS could be sustained by the enormous size of the resource up-till now but assuming that the nature would continue sustaining would be naive. In the word of Ostrom, “resource unit” which refers to the amount of harvest will soon be visibly vanished (Ostrom, 1990).

Suggested recommendations as processed by the authors from information gathered from HHs are highlighted below:

- Formation of committee with one representative from each HHs and integrative approaches for active participation.
- The state forest department should assess the potentiality of the village for watershed development.
- Cent percent involvement of people to increase and protect the forest, tree cover,

agroforestry, etc., to achieve the main objective of reducing pressure on existing forests and meeting the livelihood of the HHS and resource sustainability.

- Creation of awareness on environmental degradation of tree felling and measures to replenish forest resources.
- Proper road connectivity is a must for any development work to be carried out.
- Provision of basic requirements like fuel for cooking to replace firewood, in the village itself.
- Encouragement of village committee to become an independent and self-governing organization to execute a proper operational strategy which involves preparing plans, harvesting, and sharing the benefits.

Thus, community participation in forest resource management would prove to be an effective measure thereby ensuring collective action of the villagers. In collective action literature, participation, especially in the decision-making process and rule-making, is attributed to be one of the drivers for successful collective action (Bamberg et al, 2015: Turnhout et al, 2010).

Notwithstanding different views and debates on the efficiency of resource utilization under common property rights regimes, it is generally agreed that resource management under common property institutions is the most viable option for a long-term economic and ecological sustainability of the commons (Adhikari 2001).

An important point to notice here is that the CPRs considered in *Kharungpat* village are de jure in nature. The very nature of the resource makes it difficult in formulating measures for proper participatory management. The de jure CPR for the HHS “Kharung lake” basically falls under state regime where the government or state may either directly manage the use of state-owned natural resources through government agencies or leave them to groups or individuals who are thus given usufruct rights over such resources for a specified period of time. Under this regime, there is an allowance of cooperative ownership where access to the resources is controlled by the authorities like the government (Guerin 2003). Tree growing associations in West Bengal (and elsewhere in India) consisting of groups of landless or marginal farmers is such an example. Unlike other property regimes viz., private property regime and common property regime there arises a question of two different property rights in case of state property regime, the state has been acting as the custodian and the people acting as the beneficiaries of CPRs. Between these two property rights arrangements,

there can arise certain conflicts and contradictions. Scholars have long questioned the incentive for efficient use of common-pool resources under the CPR regime and solutions have been proposed, such as state control and management and privatization (Hardin 1968). Management effectiveness of state-owned and managed protected areas is strongly linked to community involvement and benefit streams (Coad et al. 2010; Leverington et al. 2010). In recent decades, several synergetic novel initiatives that include contractual parks and trans-frontier conservation areas have been experimented upon to marshal multi-level support to property regime functions under collective property, owned by a group of individuals, whose access and use are biodiversity conservation and appear to be promising (Child 2009; Grossman & Holden 2009).

Suggested recommendations based on the current study have been highlighted below:

- Information from fishermen can be used to form local institutions for management through a participatory decision-making process.
- Setting up management groups to monitor fishing and levy penalties.
- Democratic decentralization– It is a concept, which associates people with local administration through popularly elected bodies. It recognizes the right of the people to take initiative and to execute policy decisions in an autonomous way; therefore, it could be called both an end and a means (Prabhat 1994).
- The government as an institution must intervene in the collective actions of the fisherman. Collective action theory, by investigating group decision making, is useful for understanding how group members develop, reinforce and change institutions in which they interact (Heltberg, 2018)

IV. CONCLUSION

Our study has led to the conclusion that in hill and valley regions of northeast Indian state Manipur there is the existence of de-jure and de-facto CPRs uses. Evidence of CPR's contributions to requirements such as food, fodder, and fuel to a great extent was also recorded. In determining the types of management of the existing CPRs, ownership of the resource as highlighted by the definition of CPRs itself played a significant role; collective action for village collectively owned CPRs and participatory management for village chief owned. The research has highlighted the need for support from the government for effective

participatory management of the de-facto lake resource, giving the HHS the right to form a committee through the process called democratic decentralization for effective collective actions. The same is the case for forest resources in hill villages; community-based forest management could mark the way for effective collective actions of the villagers in managing the resource.

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