



Evaluating Factors Affecting Resilience of Natural Resource Dependent Community: A Case of the Tai Khamtis of Arunachal Pradesh, India

Heerock Jyoti Baruah

Ph.D. Research Scholar, Department of Anthropology, University of Hyderabad, Hyderabad; email: heerockbaruah07@gmail.com

KEYWORDS

Community resilience, conservation, natural resource, livelihood, vulnerability

ABSTRACT

Following forest regulations and conservation interventions, many forest-dependent communities across India has experienced a gradual transition from their traditional livelihood based on natural resources to a more diversified economy. To better understand the differences in the ability to adapt to change, this paper focuses on the concept of community resilience and identifies factors that can contribute to successful economic transitions among indigenous communities. This is a regional case study of the Tai Khamti tribe of Arunachal Pradesh, India, which has experienced drastic socio-economic transition following the Supreme Court's ban on timber in 1996. It proposes that efforts towards enhancing the resiliency factors of any forest-dependent community can contribute to their sustainable development as well as help to mitigate the shortcomings of forest policies.

Introduction

In the Indian context, a forest is considered far more than being a part of the physical environment, it accounts for the lives of several million, who strictly depend on it for their existence. Over 53 million tribal people and 60 per cent of the rural communities directly rely on the forest for their day-to-day requirements (Saha and Sengupta 2014). A significant section of the forest-dependent communities across India consists of the Scheduled Tribes who have traditionally inhabited the interior landscape and thus share a close coherence to their surrounding ecology. Regarding the relationship of tribals with the forest, the Committee on Forests and Tribal in India (1982) stated that “they are not only forest dwellers but also for centuries they have evolved a way of life which, on the one hand, is woven around forest ecology and forest resources, on the other hand, ensures that the forest is protected against the degradation by man and nature” (Tripathi 2016). However this symbiotic relationship has been subjected to change since the advent of the British through their ‘forest for revenue’ approach (Guha 1983). The forest tribes were alienated from their habitat and their rights were curtailed. Even though the co-management approach focused on the active involvement of local communities in forest conservation, yet lack of proper implementation still creates woes for the tribes and they continue to experience economic and social restructuring owing to the changes in policies and regulations governing forest resources.

Please cite this article as: Heerock Jyoti Baruah, Evaluating Factors Affecting Resilience of Natural Resource Dependent Community: A Case of the Tai Khamtis of Arunachal Pradesh, India. Antrocom J. of Anthropology 15-2 (2019) pp. 109-121.

In the face of such forest regulations, tribes have gradually shifted from sole dependence on natural resources to a more service-based economy. Any large scale economic shift is associated with infrastructural changes and social restructuring which in turn affects local socio-economic conditions. Most studies associated with resource-dependent communities have focussed on the physical and structural changes occurring in these communities in the aftermath of any regulation. Literature on community's ability to adjust and recover from the impact of such changes has been limited. In this study, effort has been made to bridge this gap by analysing the concept of community resilience with regard to the changing context of forest-dependent communities. This qualitative study evaluates the factors that determine the ability of resource users to cope with and adjust to the changes in the rules that govern their access to natural resources. The aim of the study is to examine the variation in people's responses to the changing circumstances by focussing on the semi-urban and rural households and highlight the factors that led to the variations in their resilience conditions. This study is an attempt to help policy planners to predict the probable impacts of a new policy and thus help them to structure policies that balance socio-economic stability along with the resource sustainability goals.

Operational definitions

Resource dependent community

Field and Burch (1991) defined such community as those who involve in the usage of natural resources of different types including, agriculture, forestry, fisheries, mining, and tourism and recreation. The extent of dependency varies between communities and is understood based on the percentage of income generated and the rate of employment opportunities created from the resource base (Stedman, Parkins and Beckley 2004). The high rate of dependency on natural resources has often created a vulnerability risk among such communities (Flint and Luloff 2005). Risk may emerge from stressors like changes in policy resulting in the reduction of access to resources, change in climatic conditions and also due to variations in the level of control over resources (Marshall and Marshall 2007; Mekbebe, et al. 2009; Randall and Ironside 1996). Considering the instability of resource-dependent communities, Joseph and Krishnaswamy (2010) highlighted the necessity of understanding the factors which enhance the ability of such communities to respond in case of stress.

Community resilience

The concept of resilience has seen a significant development in diverse discipline and research fields and widely used in interdisciplinary programmes dealing with human-environment relations. The resilience concept emerged in the early 1970s and referred to the time taken by an ecological system to return to its equilibrium state after disturbance (Folke 2006). Holling (1973) conceptualized resilience by determining how far a system moves from its equilibrium state and how quickly it returns back to the same state. Within Anthropological research, the concept became relevant in three main usages 1) The concept held promise of bridging ecological and anthropological approaches 2) A handy framework to establish the vulnerability concept 3) A concept to analyse personal development in the face of adverse condition (Bollig 2014). Norris et al. (2008) examined community resilience as "when adverse change occurs, communities must either resist or adapt or otherwise the community will falter". In other words it is the localized capacity to respond to disturbances, stress or adverse situations (Harris et al. 2000). Resilient communities which are able to minimize risk factor and enhance their resilience conditions are better adapted to survive disturbances and also to thrive in and through adversities (Davis, Cook and Cohen 2005). Community members based on their collective

efforts engage the economic, social, human and political resources to respond in the face of any change (Berkes and Seixas 2005). Such efforts of resilience-building develop the community's ability to adapt to dynamic environments, which are prone to unpredictability and surprises (Adger et al. 2005). The community resilience approach has been widely used in the natural disaster context, however recent studies have gradually included other stressors that create vulnerability including, resource crisis following management changes (Sutton and Tobin 2012; Gu, Jiao and Liang 2012; Joseph and Krishnaswamy 2010). The underlying idea highlighted in these case studies is the capacity that helps human groups to overcome any adverse effect created by external stressors on their society.

Framework of the study

In this study, the operational definition provided by W. Adger (2000) has been adopted which states community resilience is “the ability of groups and communities to cope with external stresses and disturbances”. For the purpose of the study, community resilience has been understood as the capacity of a community to maintain its stability in the face of crisis and disorganization. In case of various crises, communities depend on internal ‘assets’ to develop resilience (Cascante and Trejos 2013). According to Magis (2010) the nature of community resilience relies on the individual, collective and institutional abilities. Borrowing from community resilience literature, this study focuses on three broad conditions of resilience that was found to enhance the capacity to cope and adapt in the study group. The first condition relates to economic status of the resource users. Economic diversity and financial resources enhanced the ability to secure income from multiple sectors. From an actor based standpoint, the second factor of resilience relates to perceptions and preferences among the community members. The last factor from a social perspective considers the organizational capacity of the local resident during the period of transition. This framework aims to highlight these three conditions of resilience by identifying the factors that enhance each of them in the context of the vulnerability of the study group.

Methods of the study

The study community was selected after a careful examination of the conditions associated with the forest-dependent tribes in North East India. The Tai Khamti is a Scheduled Tribe of Arunachal Pradesh with a significant population associated with a forest-based income. The tribe inhabits the Namsai district (fig. 1) of Arunachal Pradesh and since their migration in the 18th century, they are involved in collecting non timber forest products and extracting timber (Laine 2012). Agricultural income lasts for five to six months and as such they depend on forest resources for their livelihood activities.

The study is based on both primary and secondary data. Secondary data collection included a literature survey on the resilience approach. The literature survey also helped to understand the history of the tribe, their association with the logging activity, their socio-economic status in various periods and the nature of occupational risks. Primary data was collected through extensive fieldwork during January and March 2018. The study proceeded through a snowball sampling method to identify individuals associated with community activities, cooperative organizations and local political institutions. This approach was helpful for the selection of samples and to construct list of respondents. Interviews were conducted with pre-tested questions among three sets of respondent, 1) active timber traders, 2) retired timber traders and 3) individuals changing from timber to other occupations. People's attitude was measured by the Likert scale. Random sampling was used for the study to administer the semi-

structured questionnaire. The study applied a comparative case study method conducted between the semi-urban and rural residents of the same community. For this, a total of 165 households were selected which represented 238 individuals residing in the semi-urban areas while 257 belonging to rural settlements. Household census was collected to understand the socio-economic status of the sample population. Research tools like observation, key informants interview, group discussions were used to collect relevant data.

Objectives

- To examine the nature of forest dependency among the tribe
- To understand the vulnerability context of Tai Khamti livelihood
- To evaluate the factors associated with successful livelihood transition among the tribe

Results

The climatic condition of Arunachal Pradesh favours the outgrowth of subtropical to tropical evergreen forest and the life of its people is interwoven with forest ecology bearing significant meaning and cultural connotations. Like other tribes of the state, the socio-cultural life of the Tai Khamti is closely associated with their tropical forest landscape. Their indigenous faith and practices, food habits, settlement patterns exhibit the underlying coherence with the physical environment.

The Tai Khamti make an extensive use of forest resources for their domestic use, as food from hunting and fishing, as basic requirements of life cycle rituals and also in assisting recreational activities. The Tai Khamti delicacy known as *Pasa* which is extensively prepared during the winter season makes use of raw *orium* leaves, diced raw fish, *makat* leaves and *tulsi* leaves and is considered to enhance body heat during cold weather. Apart from this, significant other varieties of wild plants like *Po-Kut*, *Pata Fhai*, *Peseng*, *Famun*, *Pakat*, *Meheng sang*, *Phak-Hik*, *Yo*, *Mon-taw* form important part of their daily food habits. They make an extensive use of wood and bamboo as fuel both in households' activities and in agricultural work in their farms. The tribe practices the construction of 3 fire hearths (*Hout Ta Phai*) within the same household. The village elders spend hours beside the fireplace while discussing village issues and consuming opium.

The Khamtis are known for their plant-based medicinal knowledge. The age-old, traditional medicine has been passed from generations by means of their Tai literature. Ailments like jaundice, bone fracture, leprosy, paralysis, anemia, etc are still treated through herbal medicines. The art of medicine practicing is acquired at the monastery (*Choong*), which is an important institution that has been preserving Tai Khamti cultural heritage across generations. The village priest (*Vante*) remains an important figure in practicing healing activities for the villagers but individuals are allowed to acquire such knowledge based on their interests. Medicine practicing is largely associated with magico-religious beliefs and faiths. The Khamti society has been a strong believer in evil spirits (*Phra*) and demons (*Phi*). Any activity in the forest, varying from the collection of forest products to hunting and clearing of forest for cultivation, is usually preceded by the *Pang-Chi-Mung* ceremony. The idea behind this ceremony is to please the supernatural being or the spirit of the Manabhum Hills, which they popularly address as *Dangoria*. According to Khamti belief, any individual who makes use of the physical environment should seek permission from the *Dangoria*, as He is the sole custodian.

The commercial importance of forest resources in the Tai-Khamti territory dates back to the British era when timber was widely exported for the construction of railway sleepers and tea boxes. However, the tribal people involved themselves in the trade in the post-independence period. Factors like low agricultural productivity due to the sandy nature of the soil and lack of modern technology to boost agricultural productivity, lack of infrastructure to generate employment instigated the population to shift to a better cash-oriented source of livelihood. The role of the Tai Khamti elites has been predominant in the expansion of the timber economy. In the post-independence period, members from the Khamti tribe received an influential position in State politics and this provided the tribe with ample opportunity to engage in commercial resource exploitation. Other factors like the possession of elephants, which was essential for timber extraction and the financially stable social structure compared to its neighboring tribes, gave the Tai-Khamtis better privilege to dominate the lucrative business. The Tengapani Reserve Forest, Namsai Reserve Forest, Manabhum Reserve Forest have been the source of highly valued timber species like *Hollock*, *Hollong*, *Nahar*, *Simul*. The growing demand for such species from states like Bihar, Gujrat, Delhi, etc started generating revenue for the State and hence encouraged the expansion of the timber industry in the territory. Logging activities became an easy avenue for the accumulation of wealth for the Khamti elites.

The Tai-Khamti society is largely stratified based on class structure, where royal clans occupy the highest position. Since ages, the higher clan members (*Namchoom*, *Lunkeing*) have been dominating the political and economic sphere and as such financial riches have helped them to exercise powers over the lower section of the society. Considering the strategic importance of economic gains, entrepreneurs having no traditional background started engaging themselves in the timber business to gain financial stability and thus improve their social status. A new generation of Khamti elites soon emerged out of this change in the process of access to resource. The extensive availability of resources and a significant rise in the flow of timber contractors triggered a tremendous growth of timber-based industries between 1980 and 1996. The earliest sawmill came up in the year 1948 located in a place called Sunpura followed by the Arunachal Plywood Industry established at Namsai in 1952. Another sawmill was started at Tezu in 1960 and young entrepreneurs from the community with the help of ex-member of parliament secured loans and expanded industries. By the year 1970, most of the sawmill and plywood industries flourished in the Namsai-Chowkham area, which was a Tai Khamti dominated territory and hence the tribe got easy access to the business. By the year 1975, around 57.14 per cent of the small and medium scale industries of the district came up in the Tai Khamti area. Considering the importance of timber operation towards economic development of the state, the Department of planning of the state government created opportunities for the easy growth of industrial sector. During the plan investment from 1952-1978, highest priority was given to transport and communication with an investment of 39.2 per cent, which enhanced timber export from the state (Laine 2012). The increasing demand for timber eventually gave way to procuring timber through illegal and corrupt practices, which gradually caused a serious threat to the rich biodiversity. Though the Tai-Khamtis traditionally practiced the *Tang-ton-mei* ritual, in which a new sapling has to be planted for every tree cut, yet with the rise in demand for timber such ritual soon lost significance and the spread of deforestation soon led to the complete removal of specific species of trees like *hollock* and *hollong*, which generated better revenue.

Vulnerability context

In the year 1996, the Supreme Court of India passed a judgment following a petition raised by T.N. Godavarman Thirumulpad to protect forest land from deforestation. Though the judgment was then considered as a necessary step towards the conservation of forests, yet it has been criticized

on diverse grounds. It is believed that Godavarman wrote the petition to protect the forest of his home region however the court extended it to the whole country without any prior evaluation of the situation in other parts of the country (Rosencranz, Boenig and Dutta 2002). This resulted in the socio-economic crisis among the forest-dependent communities and more particularly in the North-Eastern part of India since the seven northeastern states host approximately a fourth of the country's total forests and a large amount of the population in these states earn their livelihoods from timber-related work (Ramnath 2002).

A noted impact of the ban was reported from the Namsai district which was developing as a hub for the growing timber industries. Arguing the danger of biodiversity loss occurred in the Changlang and Tirap districts of Arunachal (adjacent to Lohit), the Court directed the immediate closure of all sawmills, plywood mills and veneer mills within a distance of 100 km from the border of Assam (Lian 2002). The Court order resulted in about 84 per cent drop in state revenue (ibid). In addition, in order to stop the trade in timber the court directed that there shall be a ban on the movement of timber from any of the seven states of the region to any other state (Laine 2012). This led to the collapse of the entire timber market in the region since the demand for timber was mainly from outside the region. As stated by Laine (2012) the ban on timber created a socio-economic stagnation among Tai Khamti due to the lack of alternative means of livelihood. However during this fieldwork in 2018, six years after Laine's work, a gradual shift in livelihood activities was noticed among the tribe.

Factors affecting community resilience among Tai Khamti

Though the timber industry did not vanish after the ban, yet the increased regulations, lack of labour resource, decrease in forest stocks has compelled many of the community members to shift to other modes of livelihood. Differences exist in the conditions of resilience among the population residing in rural and semi-urban areas. Such variation is influenced by the factors which have stimulated each group towards diverting their skills and labour to alternative profitable occupations. The diversity in exposure, educational development, flow of information creates differences in the perception of risk among the community members and this generates multiplicity in the resiliency patterns within the tribe. In the following section, the main conditions for a successful livelihood transition among the Tai Khamti have been discussed focussing on the relevant factors associated with each of them.

Factors affecting economic status

Access to natural resources

The first factor that influences resilience among the Tai Khamti relates to their historical accessibility to natural resources. According to the respondents, the traditional clan-based hierarchical system among the tribe gave the higher clan groups a better opportunity to exploit forest resources. The dominance of members from such clans in political spheres helped them to acquire large plots of land in and around the urban centres, which emerged out to be profitable assets in due course and was beneficial for creating livelihood avenues like tea plantation, brick industry, etc in the post-ban period. An equitable distribution of land resources can be noticed within the community, however the higher economic value of the land around the urban and semi-urban centres, provided the owners a better opportunity to invest in multiple income generating sources like, opening shops, leasing out land for workshop, providing accommodation on rent, opening schools and other commercial activities. In the rural areas, land resources lacked multiple usages and hence it was largely used for agricultural

activities to stabilize income when the logging activities subsided. Given the low population density in comparison to the vast land resource, the rural residents have recently multiplied agricultural production through the introduction of mixed cropping and agroforestry. In the case of the rural residents, the process of economic transition was relatively slow considering the sole reliance on agriculture. Despite such variations, the access to land resources has been an important factor which enhanced the capacity of the tribe to minimize the effects of the timber ban on their livelihood.

Financial resources

Another community-level success factor was the availability of financial resources which contributed to resist economic disruption and intensify adaptive activities. The semi-urban residents had the earliest access to banking services which enabled them to accumulate solid stock of financial resources during their involvement in the timber trading. In the post timber ban period, such monetary savings supplemented their capacity to invest the capital as a means to diversify income avenues. In contrast, the rural residents lacked risk perception capacity and hence during their association with timbering, they neglected the banking services which maximized their vulnerability condition following the Supreme Court's ban. This has been a vital factor that restricted rural residents from immediately shifting their income sources. The lack of financial resources restricted the members from taking risk by obtaining credit for their economic interests and minimized their effort to access funding that could have improved their economic stability by investing in enterprises for boosting resilience. Respondents indicated that in the post-ban period, most of the financial credit was acquired by the urban and semi-urban residents who were already wealthy and hence easily approved by the banks. Among the Tai Khamti, it is evidenced that the availability of financial stock and better access to credit enabled the semi-urban residents to achieve a more rapid economic transition in the post-ban period than the rural dwellers.

Economic diversity

The existing economic diversity among the tribe supplemented their adaptive capacity to respond to the changing timber economy. Low-income diversity due to over-dependence on a single income source contributes to the plight of resource-dependent communities (Horne 2004; Markey, et al. 2005). Even though timber business saw a rapid growth in the region since 1948 with a simultaneous shift of individuals from other occupations pouring into the timber trade, yet the tribe has always been associated with practicing wet cultivation. Further activities like fishing, livestock rearing, weaving have supplemented the family income for years. The long dominance of the tribe in State politics enabled them to secure government services efficiently. As such these factors collectively minimized the vulnerability condition of the tribe emerging from the collapse of timber industry. As discussed under the previous sections, access to land and financial resources contributed to creation of economic activities like stone quarry, tea plantation, rubber plantation, and tea industries in the periods following the ban on timber extraction. All these initiatives led to the creation of employment opportunities and helped in stabilizing their livelihood.

Factors affecting perception and preferences

Attitude

According to Joseph and Krishnaswamy (2010) in the case of community transition, it is essential for the members to demonstrate the right attitude when confronting disturbances. In the Tai Khamti society, the semi-urban dwellers reported a more pronounced flexibility in comparison to the rural

residents. This was assisted by the higher percentage of educated members within the households and also due to the attainment of superior financial status. The flexible attitude enhanced their willingness to try new skills and occupation in an effort to adjust to the changing economy. Barnes, Hayter, and Hay (1999) stated that forest-dependent communities maintained an uncompromising attitude towards shifting jobs. However, in this study, it was reflected that the semi-urban members were eager to take up entrepreneurial activities and even salaried jobs. In the post timber ban period, the tribe has successfully harnessed both public and private sector jobs through active association with the local political leaders. In the case of the rural household, engagement in salaried jobs has been limited due to the low academic level. As opposed to the semi-urban dwellers the village residents reported a low attitude of openness which has hampered their association with foreign communities in matters of economic activities. The frequent contact with the neighbouring state of Assam has magnified confidence among the semi-urban members in expanding their income sources by importing commodities from the neighbouring state. The variations in attitude among the community members showed that the rural households were more inclined towards adjusting with the limited resources available at their disposal, while the semi-urban settlers were more desirous of creating opportunities and accessing multiple resources.

Information

The efficient flow of information helps any community to plan and adapt to changing situations. Respondents in the rural settlements reported that the lack of proper connectivity and distant locality from the district headquarters have restricted their awareness regarding government schemes and policy changes. The remote habitation has also influenced their access to technological benefits. For example, during the fieldwork respondents in the Kherem village reported the need for efficient internet connectivity in order to access information regarding new ideas for agricultural innovations. The lack of uninterrupted internet connectivity in the village compelled the residents to depend on semi-urban centres like Chowkham to derive necessary information. In contrast to the village residents, the semi-urban community members with easy access to urban centres like Tinsukia and Namsai have managed to incorporate experiences from outside and thus enriched their capacity to perceive risk associated to change in market values of their cultivated commodities, a better understanding of political fluctuations and its possible impact on their livelihood. The importance of information to minimize risk factors was evidenced when respondents reported that with the access to internet facilities, they were able to understand about various conditions related to crop failure and thus prepare beforehand. Among the Tai Khamti, the capacity of local residents to manage and develop their resources and enterprises after the fall of the timber business was largely dependent on their ability to harness information from diversified sources.

Factors affecting organizational capacity

Social capital

Following the livelihood crisis after the closure of the timber operations, the respondents regarded the importance of the relationship networks towards reinforcing economic productivity through the cooperative mobilization of resources. The respondents agreed to have secured help from clan members in case of financing and accessing technological resources like farming equipment. Network relationships were not limited to the community itself, rather cooperative ventures with other neighbouring communities like the Singhpho and the Mishimi has helped the tribe to construct joint strategies for a successful economic transition through the cultivation of ginger, mustard, wheat,

etc. The constructive relationships within the tribe proved beneficial to achieve community demands at government level and supplemented information flow within the community. The long term association with communities in Assam has led to a gradual flow of investors which have enhanced the productive capacity of the tribe. It is necessary to note that, in the semi-urban households the cooperative ventures have diminished in the course of time with the expansion of their businesses and entrepreneurs reported a desire for individual income. In contrast, rural households still maintain a strong cohesion with regard to socio-economic activities and engage themselves in sharing assets necessary for a productive development. For example, during the harvesting season, villagers still extend help in other farmland or involve themselves in borrowing machinery like threshers from relative for a minimal rent. In contrast, in the semi-urban settlements, respondents narrated how an economic venture adopted by particular members was opposed by other members under the pretext of violating community values. Such instances reflect the diminishing social capital among the semi-urban members which was largely the by-product of growing occupational competition.

Community agency

This resilience building factor has been highlighted in the study by Cascante and Trejos (2013). The aspiration for community improvements is an essential requisite to improve resilience. Among the Tai Khamti, the desire of working together for the development of their community can be observed in the practice of organizing annual community events like the *Poi Pi Mou*¹ and the *Poong*². Such events are aimed at strengthening social cohesion and showcasing the rich heritage of the tribe. The two main community agencies performing towards the betterment of the tribe are the Tai Khamti Singpho Council and the Tai Khamti Development Society. Both these organizations are committed to the betterment of the tribe and take initiative to organize periodic meetings to discuss community issues and make key decisions for the community welfare which are later addressed at the State level through their political representatives. These agencies have been associated with protecting land resources from foreign investors, creating awareness among the community against drug use and directing village council meetings for further development of the community enterprises. For example, the two organizations have been actively protesting against the Arunachal Pradesh government's recent announcement of granting Permanent Residence Certificate to non-tribals residing in the Namsai district. The community platform has been facilitating the members to organize themselves and find solutions to various issues related to community stability. Such initiative has helped the rural residents with low educational level to adopt ideas and incorporate them in their economic affairs. In the course of our fieldwork, it was seen that families have been directed to avoid passing away parental property to daughters if they marry nontribal men. This was a community-level effort to restrict land alienation frequently occurring in recent times. Even after the implementation of Panchayat system, the Tai Khamti still practice their traditional village council (*Mok Chom*) and such an organization is better suited to analyse community-level issues and thereby decide the appropriate solutions. The importance of working together for the benefit of the community has long been realized by the Tai Khamti and this is reflected in their active support to political representatives belonging to their own community. Such collective approaches have improved trust among the members which helps them to seek help in times of crisis.

Discussion

The Tai Khamti society experienced a major change in their local infrastructure and living conditions following the industrial recession due to the Supreme Court's ban on timber extraction and

1 New year celebration

2 Dramatics performances aimed at creating awareness among the community members

transportation. As discussed by Laine (2012) the community was drastically affected after the regulations, since timbering was by then the largest employment generating sector for the tribe. As noted by the respondents, they experienced significant changes in their cultural practices, way of living and in their economic activity following the reduction in the access to forest resources. It is significant to note that within the same community, a distinct line of difference can be drawn in the pattern of response to the timber ban, between residents of the semi-urban area and those living in the rural villages. In the case of semi-urban dwellers, the capacity to positively respond to the economic crisis was significantly more effective than that of the rural households. To a large extent, this capacity was magnified by the historical clan-based dominance in resource exploitation which supplemented the opportunities for financial resource accumulation among the higher clan members. These resources were invested in the post timber ban period to create multiple income opportunities. The entrepreneurial drive among the semi-urban dwellers was more pronounced due to their ownership of land in important centres and easily approachable locations. As a result the semi-urban residents reported more engagements in infrastructure development like the establishment of shops, leasing out commercial spaces and providing accommodation on rent. Due to the better connectivity with the district headquarters, this section of the tribe appeared to be more informed about government schemes and technological innovations. The frequent association with the neighbouring state of Assam broadened their attitude towards cooperative ventures and helped them to expand livelihood opportunities in the course of time. The efficient flow of information and the flexible attitude enhanced their ability to perceive risk associated with political fluctuations, management changes and issues related to agricultural activities.

The rural residents have been slow in responding to economic change. For a long period after the fall of logging activities, they solely relied on the paddy cultivation to meet their livelihood requirements. The low level of risk perception ability in these areas restricted members from accessing the benefits of banking services during the time when the timber trade was flourishing. This affected their ability to seek a new source of livelihood due to the lack of a financial stock for investment in the post-ban period. The slow economic transition is the result of ownership of less valuable land which was mostly useful for wet cultivation rather than any other cash-generating activity, until the very recent introduction of cash cropping, and agro-forestry. The remote location of their villages and lack of proper communication restricted the efficient flow of information and the lack of extra-local association minimized their ability to create new livelihood opportunities for a long time. The low educational level of the rural residents affected their confidence to invest in new skills that would have helped them to achieve swift resilience. The vital factor which has been fostering resilience among rural residents is the strong social capital. The well-established network of relations enhanced cooperative ventures as opposed to the individualistic views reported among semi-urban dwellers. Among the three board conditions of community resilience and their corresponding processes, the community agency factor remains identical among both sections of the tribe and has been a determining factor that supplemented the community's capacity to respond to disruptions in the course of their economic transition. The awareness of the benefits of working together has helped the Tai Khamti to secure government assistance for community development and also influence the political affairs to their advantage. The formation of community organizations like the Tai Khamti Singpho Council and the Tai Khamti Development Society gave way to the establishment of common spaces for sports, socialization and organizing cultural performances to build a strong community feeling. These organizations have been responding to various issues confronting the tribe in the course of its transition.

Conclusion

This study focused on identifying the processes which have contributed to the resiliency conditions of the Tai Khamti society with respect to their livelihood vulnerability. The case study reflected socio-

economic and actor based dimensions to the process of resilience building at both the community and individual levels. It has been established that in the post timber ban period, the families have been shifting to diverse occupations based on the nature of the resources available at their disposal. This has created a multiplicity in their patterns of adjustments to the economic crisis. From an actor-based perspective, the capacity of the community members to maintain their income stability, largely depended on their flexible attitude to cooperate with extra-local members in expanding their productive capacity and also on their attitude of confidence to invest in new skills. At the individual level, the capacity to take advantage of information, related to technology, government schemes, financial assistance created variations in the resilience pattern among the members. Finally, from a social viewpoint, the vital factor that enhanced community resilience relies on the degree to which values are shared, the willingness of community members to cooperate and mobilize resources and also to stabilize their relationship with other communities.

It is necessary to note that, any community resilience study should consider the nature of stressors in the line of analysis. Various resource-dependent communities exhibit their own set of characteristics and hence each of them may respond in different ways based on the nature of stressors. A comprehensive study of community resilience among similar communities bears the potential to contribute towards policy formulation. The present study contributes to the understanding of the possible ways a community can respond when faced with an economic crisis. To minimize the unwanted socio-economic impacts of policy changes on resource-dependent communities it is essential to identify their resilience factors. By means of an effective understanding of community resilience, policy planners can improve the factors enabling a community to adapt to change which can be a successful means to reduce community vulnerability from future management and policy changes.

References

- Adger, N.W, Hughes, T. P., Folk, C., Carpenter, S. R., and Rockstron, J. (2005) "Social-ecological resilience to coastal disasters". *Science*, 309(5737): 1036-1039.
- Adger, W. N. (2000) "Social and ecological resilience: are they related?". *Progress in Human Geography*, 24(3): 347-364.
- Barnes, T. J, Hayter, R., and Hay, E., (1999) "'Too young to retire, too bloody old to work': Forest industry restructuring and community response in Port Alberni, British Columbia". *Forestry Chronicle*, 75(5): 781-787.
- Berkes, E., and Seixas, C. S. (2005) "Building resilience in lagoon social-ecological systems: A local-level perspective". *Ecosystems*, 8: 967-974.
- Bollig, M. (2014) "Resilience- Analytical Tool, Bridging Concept or Development Goal? Anthropological Perspectives on the Use of a Border Object". *Zeitschrift für Ethnologie*, 139(2): 253-279.
- Cascante, D. M, and Trejos, B. (2013) "Community resilience in resource-dependent communities: a comparative case study". *Environment and Planning*, 45: 1387-1402.
- Choudhury, S. D. (1978) *Arunachal Pradesh District Gazetteers: Lohit*. Government of Arunachal Pradesh, Itanagar.
- Cutter, S., Barnes, L., Burton, C., Evans, E., Tate, E., and Webb, J. (2008) "A placed-based model for understanding community resilience to natural disasters". *Global Environmental Change*, 18: 598-606.
- Davis, R., Cook, D., and Cohen, L. (2005) "A community resilience approach to reducing ethnic and racial disparities in health". *Am. J. Public Health*, 95(12): 2168-2173.
- Field, D., and Burch, W. (1991) *Rural Sociology and the Environment*. Middleton: Social Ecology Press.
- Flint, C., and Luloff, A. E. (2005) "Natural Resource-Based Communities, Risk, and Disaster: An Intersection of Theories". *Society and Natural Resources*, 18: 399-412.
- Folke, C. (2006) "Resilience: The Emergence of a Perspective for Social-Ecological Systems Analyses". *Global environment Change- Human and Policy Dimensions*, 16: 253-267.
- Gogoi, L. (1971) *The Tai Khamtis*. Chowkham: Chowkhamoon Gohain (Namsom).
- Gu, Hongyan, Yuanmei Jiao, and Luohui Liang. (2012) "Strengthening the socio-ecological resilience of forest-dependent

- communities: The case of the Hani Rice Terraces in Yunnan, China". *Forest Policy and Economics*, 22: 53-59.
- Guha, Ramachandra. (1983) "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, 18(44): 1882-1896.
- Harris, C., McLaughlin, B., Brown, G., and Becker, D. R. (2000) *Rural communities in the inland northwest: An assessment of small communities in the interior and upper Columbia River basins*. Department of Agriculture, Pacific Northwest Research Station, Portland.
- Holling, C. (1973) "Resilience and Stability of Ecological Systems". *Annual Review of Ecological Systems*, 4: 1-23.
- Horne, G. (2004) *British Columbia's heartland at the dawn of the 21st century: 2001 economic dependencies and impact ratios for 63 local areas*. BC Ministry of Labour and Citizens' Services, Victoria, BC.
- Joseph, C., and Krishnaswamy, A. (2010) "Factors of Resiliency for Forest Communities in Transition in British Columbia". *BC Journal of Ecosystems and Management*, 10(3): 127-144.
- Laine, N. (2012) *Nature, Environment and Society: Conservation, Governance and Transformation in India*. New Delhi: Orient Blackswan.
- Lian, Chawii. (2019) "Logjam." *Down to Earth*. Accessed 15 May. <<http://www.environmentportal.in/node/441>>.
- Magis, K. (2010) "Community resilience: an indicator of social sustainability", *Society and Natural Resources*, 23: 401-416.
- Markey, S., Pierce, J. T. , Vodden, K., and Roseland, M. (2005) *Second growth: Community economic development in rural British Columbia*. Vancouver: University of British Columbia Press.
- Marshall, N. A. and Marshall, P. A. (2007) "Conceptualizing and Operationalizing Social Resilience within Commercial Fisheries in Northern Australia". *Ecology and Society* 12(1).
- Mekbebe, E., Lilieholm, R., Blahna, D. and Kruger, L. (2009) "Resource Use, Dependence and Vulnerability: Community-Resource Linkages on Alaska's Tongas National Forest". *WIT Transactions on Ecology and the Environment*, 122: 263-272.
- Nathan, D. (2000) "Timber in Meghalaya". *Economic and Political Weekly*, 35(4): 182-186.
- Neog, M. (1971) "A Buddhist Tribe of Assam: The Khamti". In *The Tai Khamtis*, edited by L Gogoi, pp. xvii-xxvii. Chowkham: Chowkhamoon Gohain (Namsom).
- Nongbri, T. (2001) "Timber Ban in North-East India: Effects on Livelihood and Gender". *Economic and Political Weekly*, 36(21): 1893-1800.
- Norris, F.H, S.P Stevens, B Pfefferbaum, K.F Wyche, and R.L Pfefferbaum. (2008) "Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness". *American Journal of Community Psychology*, 41(1-2): 127-150.
- Ramnath, M. (2002) "Impact of Ban on Timber Felling". *Economic and Political Weekly*, 37(48): 4774-4776.
- Randall, J, and G Ironside. (1996) "Communities on the Edge: An Economic Geography of Resource Dependent Communities in Canada", *The Canadian Geographer*, 40(1): 17-35.
- Rosencranz, A., Boenig, E. and Dutta, B. (2019) "The Godavarman Case: The Indian Supreme Court's Breach of Constitutional Boundaries in Managing India's Forests". in ELR News & Analysis <elr.info/sites/default/files/articles/37.10032.pdf> Accessed 21 May.
- Saha, Manika, and Sushmita Sengupta. (2014) "Symbiotic Relationship between Forest and Tribe: A Case Study of Santal Tribe of Jaypur Forest, Bankura District, West Bengal, India". *Transactions*, 36(2): 235-246.
- Stedman, R., Parkins, J. and Beckley, T. (2004) "Resource Dependence and Wellbeing in Rural Canada". *Rural Sociology*, 69: 213-234.
- Sutton, St. G, and Tobin, R. C. (2012) "Social Resilience and Commercial Fishers' Responses to Management Changes in the Great Barrier Reef Marine Park". *Ecology and Society*, 17(3).
- Tripathi, Prakash. (2018) "Tribes and Forest: A Critical Appraisal of the Tribal Forest Right in India". <https://www.researchgate.net/publication/308794288_Tribes_and_Forest_A_critical_appraisal_of_the_tribal_forest_right_in_India> Accessed 15 January.

Images



Fig. 1: District map of Arunachal Pradesh locating the study area.