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## An Ecology of Shrinkage of Kaki Reserved Forest and the Socio-Economy of the Forest Villagers

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### **Abstract:**

*There are 16 forest villages in Kaki reserved Forest of Nagaon district of Assam. Majority of the forest villagers are traditional forest dwellers mostly tribal. The cultural ecology of the forest villagers is forest oriented; they are very fond of forest and the values, culture and practices are forest base. They hold forest knowledge; enjoy direct and indirect benefits. But over the years' shrinkage of forest in their vicinity deteriorated the traditional socio-economy and tribal cultural ecology of those forests dwelling of those people. There is lot of social transformation in the forest villages due to the process of deforestation. In an ecological backdrop this study finds the problem of deforestation on the socio-economy of the people surrounding, particularly of the forest villagers to bring the problem in limelight. It provided an introduction to the ecology on shrinkage of Kaki Reserved Forest and the material cultural life of the forest villagers. Further it is a study on physiographic, population migration, habitation, settlements and the environment of the area.*

**Keywords:** Deforestation, reserved, forest, villager, socio-economy

### **1. Introduction**

Reserve Forests in Assam accounts for 20% of the total geographical area of the state wherein a sizeable section of people lives. Their settlements are classified as forest villages which are governed under the rules for establishment of forest villages and overall provision of the Assam Forest Regulation Act-1891. The present status of forest villages in Assam is 499. Out of the villages there are 234 nos. of forest villages inhabited by the tribal people. In Nagaon district there are 3 forest divisions in Nagaon district namely- Nagaon, Nagaon South and Nagaon Wildlife Division wherein 24 forest villages having 56,751 populations as per the Census of India-2011 in the district. Out of them there are 16 forest villages in the Kaki reserved forest with having 36,130 populations as per 2011 census. The villages are: (1) Ram Nagar (Kaki Ram Nagar F.V.) (2) Rampur F.V. (Kaki Rampur F.V.) (3) F.T.V.No.1 (Kakitangia F.V.No.1) (4) F.T.V.No.2 (Kakitangia No.2) (5) Kaki Tapanpur, (6) F.T.V.No.3 (Kaki Tangia No.3) (7) Barmangsu F.V. (8) Paddy Land (F.T.V.) (9) Hemari Camp Area (F.V.) (10) Natun F.V. (11) Ram Nagar (F.V.) (12) Ramnagar F.V. (13) Dimaru Pathar F.V. (14) Lal Mati (15) Ram Nagar Camp Area (16) Kakijan Camp Area.

The Natun F.V. is the new village which does not have record in the census earlier than 2011. Here first 6 villages in the list are recognized villages. The others are encroached villages.

#### *1.1. Objectives*

The basic objectives of the study are:

- a) To provide an introduction to the ecology on shrinkage of forest and the socio-economy of the forest villagers.
- b) To know the reserved forest, its deforestation process, people's involvement and the present status.
- c) To know the villager, socio-economic condition, habitation, settlements and the environment.

### **2. Methods and Materials**

The methods of data collection of the present paper are basically of primarily sources that includes the field observation, interview and experiment. The secondary sources of data are also used for better convenience of conclusion. In analyzing and interpreting of data the methods that is much in historical, analytical and qualitative base. The quantitative data are analyzed qualitatively.

#### *2.1. Ecology of Recent Vegetation*

The forest resources easily accessible in the Kaki Reserved Forest area were different kind of herbs and shrubs, valuable trees, medicinal plants, and other forest produces; besides hard granite or gneiss good for making roads boulders, metals, chips, etc. as well as sands for concrete works extensively. Prior to the massive deforestation of important plant/herb species of found are; by local name- *Sal, Sanaru, Saw, Teak, Dolu, Jati, Kako, Bojal Patidoi, Jatibet, Jengu, Raidongbet, Tokopat*, climbers like *Alu Lata, Bakul-bih, Ban Urohi, Chepatilota, Padalota, Nagolbanga, Laikhadari, Chingulata, Kokualota, etc. Digloti, Ekora, Nal, Khagori, Kher,*

*Uluban, Jamu, Pipali* etc. Some wild animals and birds accessible in the forest were Elephant, Tiger, Leopard Cat, Deer, Bear, Capped-Languor, Gibber, Barking Deer, Squirrels-Fox etc.; birds like Robin thrush, Cuckoo, Shrike, Warbler, Myra, Sparrow, Whistling, Wagtail, Bulbul, Wood-piker, King-fisher, Kites, Parrot, Horn-bill, Koel etc.

The massive deforestation particularly since 1990's deterioration started. Before that period main types of natural vegetation found in the area were dry and mixed type. The places of vegetative cover were like Buthi, Pirlu, Lurulungso, Lalmati areas, which also forms valleys of the two smaller hills in the area along the banks of Dimaru and Kakijan flow. Having acidic soils *Bhelu, Parolee, Sam, Juree, Kaliharee, Silikha, Dima, Ow, Aam* and a host of other trees were there in these areas.

The plains of new alluviums; specially Dimaru pather, Kakijan, Ramnagar, Tongia, Paddyland FTV and Bormanso pather were known for deciduous and mixed-deciduous trees. There appear also grasses and thick thatches locally called *Borota, Ikora, Nal, Khagori* etc. The trees like *Simolu, Koroi, Dimaru, Aamlakhi, Bogori, Gamari Segun Kadam, Sidha* (by local name) etc. also appeared there. The grasslands covered the places near to the village areas and riversides in the forest which were the fodder for domestic cattle and various wild animals. The Kaki reserve forest was habitation for various species of wildlife. But when deforestation process started by encroachment the flora and fauna is faced extinction.

## 2.2. Physiographic Division and Drainage Pattern

On the basis of relief and drainage system of the reserved forest can be divided into two physiographic divisions. These are (a) The east part starting from Karbi hill comprising Klurdung, Lalmati to Simlaipahar foothill area covering an around 3500 hectares of area and (b) Kaki plains (later v shaped surroundings) in the west part of the reserve covering an average area of 7500 hectares. The characteristic feature of the first one is three 'v' shaped valleys. The small hills and the hills are now using by the encroachers for sugarcane and other horticultural crops. The plains provide peoples settlement comparatively large in recent period and the land generally useful for summer cultivation.

There are three streams flowing towards west in the area, all merge with river Jamuna and Kapili in the lower catchments. They are - Kakijan, Dimarujan and Thaisujan streams passing through, originating in Panpiri Kayladung in eastern frontier of the reserved forest it joins Klurdung (another flow) in Klurdung area. All the streams overflow during summer monsoon. The Kakijan forms the boundary line between east Karbi Anglong and Nagaon district. Many other small estuaries flow it in rainy season.

The Dimarujan originate from the springs from the hill and wetlands (Bheroni) in the Dahalapara area of the reserved forest. In the centralpart of the forest other small flows in the rainy season are Bakmara, Pirlu, Buthi etc. joins it. In the North West Kakijan joins Dimaru at Teklajan bordering Karbi Anglong. Both the tributary become larger during monsoon and inundate many places causing flood in the lower area of the Hojai sub-division.

From the south western part of the reserve there originates another flow from the Tilabazar area of the reserve. This stream flows towards the west direction across 2000 Bigha, 3000 Bigha or Thaisupar and joins Khring at 2 no. Kaki, in turn it flows from the Khagarijan of Lanka reserve forest area. The source of origin of the stream is mainly; the wetlands near Tilabazar and 2000 Bigha area. The Khring then joins Dimaru near Jursimalu Torablock of Kandura village area. Now the three Kakijan, Dimarujan and Khring khringjan together known to Dimaru rever in the lower area which cause flood havoc to many people in summer.

A few big ponds/lakes are located in the plains of the reserved forest. Most of these are nothing, but marshy areas or fisheries locally known as *Pukhuri* (pond). Bormangso, Ampukhuri, Jurapukhuri, Padumpukhuri, Borpukhuri, Kachupukhuri, Hatikhola-beel, Thaisupar-beeetc. are to name few. Altogether 16 such ponds/lakes are surveyed in the area. It is believed that these are constructed by the *Rajas* (kings) once who ruled the area. The *Pukhuri*'s seems to have dug by men which bears similar character.

## 2.3. Climate: Rain-shadow Effect

The climate of the forest area in controlled by the same factors that applies to other parts of North East India with slight different due to its topography. The Cherra-Dawki escapement of Meghalaya and the Barail range obstruct to some extent the south west monsoon winds into the heart of the area. This provides a rain-shadow effect to it. Moreover, due to peculiar shape of the area and the alignment of the hills of Karbi Anglong and N.C. Hills the common weather and climatic condition of the Brahmaputra valley are rarely experienced. The rainfall is affected chiefly by the rain-shadow effect and large scale deforestation of recent time. The annual rainfall in the area is lower than the state average. The rain-shadow effect remains chronic to the agricultural production in the area. During summer session the villager experience damp and oppressive weather condition leading to many diseases when the area record as high as 36/37° C temperature that creates rather an unbearable condition. The winter is dry and to some extent comfortable. Being falls into rain-shadow effect area, the area records highest amount of relative humidity both during summer and winter. The area represents a different kind of climatic condition to the state average.

## 2.4. The Settlements (Village & Homesteads)

New settlements have no definite layout nor do they have definite pattern. The villages vary from village to village. Although some commonly distinguishing features noticed between the old villages namely; Ramnagar, Rampur, Hemarigan, Kachargaon, Tongia, Tapanpur village are different from the newly settled villages especially after 1990's. The homesteads of settlement are on both sides of a road for the case of old villages especially for Tapanpur, Ramnagar, Rampur and the Tongia villages. The village Kacharigaon and Hemarigaon is little different in this regard which constitutes sub-roads besides the main road of the village and as being the main road touching only few houses of the village. However, all the villages show the presence of main road. The new villages show no road at all except some constructed by themselves and a few roads constructed by *Panchayats* very recently after the inclusion of the new villages in nearby *Panchayats* system. The new villages' forms the shoe-string roads and the houses of the village are found mostly in

scattered form. The dispersed settlement is found instead of the compact settlement in the new forest villages. Of course, the compact settlement is going to be in the area. The old forest villages like Ramnagar, Kacharigaon, Rampur, Tongia etc. possesses spacious well playground useful for football, cricket etc. matches. But in the new settlement except for Cherhidi and Jamuguri village no playground is found; rather now they have no space for other community base construction.

The homestead in the new settlement areas especially of the tribal is very simple one mostly a typical hut having no fencing to demarcate the compound. Majority of them have only a single structure. Very rarely they have more than two. This characteristic feature even having no cowshed, goat shed or no separate poultry shed or piggery shed and other rearing animals/birds forced them to live in very unhealthy condition.

### 2.5. *The Individual & Family Life*

For some of the permanent forest villagers, especially for the tribal who have followed the other plain people in regard to their lifestyle have even could not abolish the practice. Otherwise, majority of them have practically no difference from common Assamese and other people who lived in modern lifestyle. In some localities it is found, places for worship such as Churches, Temples, *Namghars* etc. In those permanent villages generally they have more than two structures. The number is usually larger in joint families as the married couples, the grown up children, if any; all occupy separate houses for sleeping and other structure includes the kitchen/dining houses/room and other necessary houses/rooms.

All family households in the old forest villages are located in similar spacious form, separated by fencing boundaries and the compounds are used for orchards etc. Some big trees especially Mango, areca nut, battle nut, banana etc. are found besides ponds/fisheries for average 50% household. However, the villages of new form in the area are not defined by such compounds except a very little.

The family size and sex composition is also varying between the old and new forest villages. Generally, for the old villages there are 10-15 family members in each family if the family is joint family. Joint family is dominating the old villages. However, for the new villages it is the nuclear family generally having 4/5 members each. This variation may be because of their new arrival in the area they preferred have come with small family.

### 2.6. *The Settlement Variation*

The size of the settlement pattern between the old and new villages is in terms of their households. Originally when the villages were established by the forest department during just after Indian independence 30 families was for each village; namely- Ramnagar, Tapanpur, Kacharigaon (non-residential) and Hemarigaon (non-residential). For Rampur, it was 62 households when the village was established. Later another 20 households were there established when dependents of some family of the villager were granted another 5 *Bighas* of land. The total number of the household of the village is now increased to 7091. However, it is interesting to know that in the census report of 1991 no household was recorded from the village. A variation regarding the household record by various departments; such as social welfare, forest department and Panchayat are observed in the study. There was originally 10-12 *Bighas* of land for each of the household. However due to the granting/allotment of land in 1972 to the dependents of the household; depending on the number of dependents of each household the land holding pattern varies greatly in latter period. For Tongia village it was 745 families when established in 1974. Now there is increase of more than 50% of families in each village. Comparing the present household pattern there exist vast difference as even 10-15 households in a village in the new settlement. The variation of population settlement is due to migratory nature of the villager. It is the due to migration a lot of omissions were observed in the decadal population census.

### 2.7. *The House Type*

So the house type of the villager seems to have spatial variation marked between the old and new comers. Among the new comers also there exist marked difference sometime due to caste and ethnic cause. For instance, some tribal people want to build the houses similar to their traditional house type. The house type found there can be divided into certain category.

- i. Hut type house influenced by the surrounding environment
- ii. Traditional
- iii. Common rural type
- iv. Modern and Concrete shape.
- v. Bamboo and thatch are common for first two types.

Hut is very common in the newly established village areas mainly because of economic reason. Its construction very easy normally require only the thatch and bamboo which was available once in the area. But when the forest is totally deforested its construction is becoming difficult as a result of which the people are to construct the house normally of asbestos replaces thatches. It is found that day by day the house type changing toward general rural house type in the area. The new generation consider the hut type as outdated not only for modern lifestyle but for the lack of construction materials. The common rural houses were very common and popular for the forest villagers till the massive deforestation.

### 2.8. *Mixed & Cross Caste Settlement*

In some villages of new settlements, the mixing of home-stead one community with the other is there. Such a mixed settlement builds social cohesion from one community to other in respect of their culture, dialect and day to day life. Except for old villages such as the Ramnagar where the people of Tiwa community, the village Kacharigaon where the Mech Kachari, the village Tapanpur where the

koches, the village Rampur where the Biharis are living; the forest village Tongia and most other villages are attaching and forming mixed settlement. The new villagers and all the caste groups are living as their neighbors. The forest villagers are adapting themselves with the changing socio-cultural scenario of the world better accepted the concept of multiculturalism except some form of instigation made by some miscreants/anti- social elements for community tension.

### 2.9. Population Growth & Changing Variation

The forest area shows surprisingly high rate of population growth especially since 1990's. Till 1991 census the growth of population of the forest villages shows steady positive growth in lesser amount which could have been compared with the general growth rate of the state. But in recent years the growth is even higher than any decadal census of past years, chiefly because of the migration of population. In the past decades there was average growth rate which can be compared with others.

The total population of the villages as per census 1991 was 9010 and in 2001 it was 20481 in 2011 it was 36130. So far the matter of sex ratio is concern we find always the ratio of male population has been above the female population. As per the census 1991 only 47.58%, was female, in 2001 it was 47.12% and in 2011 the female population was 17449 as per the census.

The increase in density seems to have been increasing day by day. At the cultivable plain area commonly used for wet cultivation records high density of population. The area Jurapukhuri, Cherhidi, Balipathar, Dimarupathar, Beltola, Centre Bazar, Mangsopathar, Ampukhuri, Kakijan, Ramnagar camp area Hemari camp area, Rampur etc. dense in population than other parts of the forest. On the other hand, the hilly part recorded comparatively lesser scattered population due to non availability of cultivable porous or land for wet cultivation. Even though, people are begun to settle in those areas and practices cultivation like sugarcane and other hilly crops.

But contrary to the trend of population growth the high rate of mortality is there; especially for the tribal forest villager who often suffered from malaria *Kala-azar*, cholera, small pox etc. such diseases occurred even as epidemics in the area where there are no medical facilities of proper treatment.

### 2.10. Census Errors

It is worthwhile to be mentioned in the context of population census in the area that, there is the serious omission of decadal census conducted by the government for the cases of the villages. For example, the population of the Kaki Rampur forest village shows nil in 1991; in spite of the fact that there was the population and the village has been inhabited by the villager since its establishment in 1949-54 especially by the Bihari people. Again there was no general population during the population census in 1991 as such in the village Ramnagar (Kaki Ramnagar) and the village is inhabited by the Tiwa (Lalung) tribe; but no Scheduled tribe population was recorded in the village. The village Tapanpur recorded Scheduled tribe population both in the census 1991 and 2001, actually there is no Scheduled tribe people living. The village is inhabited by Koches which belong to O.B.C. category. Similar was in the case of Paddyland F.T.V. which recorded no Scheduled tribe population in the census 1991. But actually there was the Scheduled tribe population at least 25-30% was the scheduled tribe.

### 2.11. Literacy Rate

The overall literacy rate (male and female) in 1991 was 31.9%, and in 2001 it was 37.57% and in 2011 45.64% which is much below the state as well as national average. The decadal growth from 1991 to 2001 was only about 6% and from 2001 to 2011 it was 7 % only. The female literacy in the year 1991 was 24%, in 2001 it was 28% and in 2011 it was 39.88%. So, for the females only 4% decadal increase was there from 1991 to 2001 and from 2001 to 2011 it was only 11.88. So the literacy growth rate remains still much below the state or national average as per the census record. The reason behind their poor literacy rate is mainly the poor economic condition and the lack of consciousness and lack of infrastructure and development.

## 3. The Socio-Economy

### 3.1. Land Holding

The plain part of the forest reserve is now fully utilized mainly because of population growth. The increased population increased the scarcity of food and other basic amenities; bound them to use forest land. Thus the forest cover has been fast diminishing; the land even the slopes, and rocky soils are used for cultivation by the encroached villager. The new comers distributed generally 6-8 Bighas of land individual family household in contrary to the 10-12 Bighas of official possession of the individual family household of old villages. The villages where the individual household hold 6-8 Bighas of land are mainly Cherhidi, Dimarupathar, Dohalapara, Balipathar, Mangsopathar etc. In addition to the official land possession the old villagers especially the permanent tribal forest villagers possess more land than the official record and it varies from family to family even within the same village. The villagers like Kacharigaon, Rampar, Tongia, Tapanpur holds other forest land than the land officially given to them by the department concerned. Such lands are lying in the imaginary boundary of the forested area. These include generally the land suitable for wet or *rabi* cultivation. So, the land possession varies greatly from village to village.

### 3.2. Agricultural Economy

The state Assam is primarily an agrarian economy with 74% of its population engaged in agriculture and allied activities. The majority of the forest villager engages in agriculture per capita income of whom is much low to the national and regional average. It gives major contribution to family income of both tribal and non-tribal villagers. The production is made mainly for the local consumption. A little amount of surplus enters to the market. It is slightly different for old and new villagers in respect of rice and sugarcane

production. They supply to nearby market such as Lanka, Hojai, Bakalia. Vegetables are common for all forms of villages. The crop varies in respect of hills and plains. The scanty and erratic nature of rainfall affects the growth and harvest. On the other, the practices of primitive cultivation are also observed where the nature determines and controls the cultivation and crop production. The new settlement areas are prone to this case. When one compares the economic standard find that it is better in old villages. However, from both forms of villages the majority remains below the substance level for the greater part of the year. The traditional taboos, beliefs and habits, the lack of amenities and facilities; such as education and training, marketing of agricultural products, high yielding varieties of seeds, pesticides, and chemical fertilizers and so on are the common problems of the villager. Although the *Jhum* or shifting cultivation has a great socio-cultural implication for the tribal people in hilly areas of the north eastern region these has not been practiced as much in the Kaki reserve forest. It is considered unscientific from the environmental point of view. Wet cultivation is carried out in all the suitable places of the forest. The people are however having already been well adapted to wet cultivation. For those permanent settled forest villagers *Sali* (wet summer rice) mostly adapted cultivation. The villagers harvest vast area of land to this kind of rice. The hilly portion of the forest although practices for sugarcane, mustards, vegetables etc. This portion of land shows higher production of this kind of crops. So the method and quality of agriculture is different in regard to hilly and plains and old and new villages. This is basically due to level of development as well as uses the modern aids methods.

### 3.3. Agricultural Irrigation

Majority forest villagers depend on nature as no irrigation facility is available. The south western part of the areas is little more irrigated by the Jamuna Irrigation Project. Around 700 hectares of land in the area are irrigated by the project. Villagers of the villages irrigated are economically much better than other part. It is however worthwhile to mention that some portion of the plain area is irrigated by the streams flowing across the area; such as Buthi, Pirlu and the upper portion of the Ramnagar village area are irrigated by the streams. But these too, greatly depend on natural rainfall in the upside. The villagers in certain area have constructed some embankments at the area as in Dimarupathar, Hatikholajan Joynagar, Dighalimajgaon, Baksamari and Jurapukhuri over some seasonal streams. The irrigation in those areas however is also determined by natural rainfall. The lift and tube well irrigation is not suitable in the hilly slopes/areas, the potentiality of it is there in the plain parts.

### 3.4. Animal Husbandry

The rearing of livestock such as pigs, goats, and poultry either for cultural habit or for income generation or for traditionally plays an important part in tribal society. It does not constitute only the important economic life; but is the easy way for removal of poverty in tribal society. Tribal concept and practice are very much appreciative in this regard. However, the rearing in the traditional tribal society is limited to as daily household activity. They don't show any commercial and business mind, even today though it has been considering one of the very flexible ways in employment and placement of tribal people due to their association to this. The roles of the entrepreneurs are also not encouraged in this regard. Though both male and female engaged in other household activities the females are predominant in poultry and piggery that in addition to their daily household activities use their leisure time. With the help of their traditionally inherited knowledge earns something to run their daily life. The activity not only helps to increase their family income but also helps many of them to come out acute poverty. The woman folk thus so become economically and socially empowered. In other words, it provides us an ample opportunity for the empowerment of tribal people as well as to increase the growth rate of the country.

### 3.5. Fish and Fishery

The villages are seeming less scope particularly in the hilly areas for rearing fish. Apart from the foothill dwellers the old forest villagers have ponds certain extent at least for the reason of domestic uses. But this is not for all. The quantity of which is not sufficient for sale nor also there have sufficient and adequate land nor has the natural condition for individual fishing for the purpose. But they have enough scope for Fish and fishery on community basis in naturally created tanks / ponds.

### 3.6. Small Scale Industries

Among the small scale industries in the area the handloom and textile industry is most common among the tribal in the area. The tribal women particularly the Tiwas, Karbis, Bodos and Mechs in the villages are expert weavers. They are the born expert artistic weaver who can make wonderful designs of clothes and garments for their family. Although they make it for their own and get no market or they don't see any commercial purpose in the area. Besides the above sericulture is another very old indigenous practice; for the tribal as well as other villager in the area. The *Eri / Endi, Muga, Mulberry, and Oak Tassar* are included under the category of sericulture. Their other important allied activities are handloom-textile, manufacture of cane and bamboo articles, and other cottage industries.

## 4. Conclusion

The deforestation problem is found to be the major problem of Kaki Reserved Forest and Forest villager. Even the local poor tribal and non-tribal are involved in shrinking the forest area in search of land for cultivation due to their poor economic condition. Some anti- social elements have contributed in the process. The ecology of the forest tribal relation has deteriorated in the area. There are no congenial atmospheres as damp climate, plenty of open space, natural grasses, herbs and shrubs, flora and fauna, marshy lands, perennial streams regularly flown which featured earlier. Many local people had used the forest resources free of cost. The present agro based economy of the villagers alone no longer provides sufficient to run their family. The villagers are suffering from lot of problems like low production, increased unemployment problems, suffers natural droughts, creates environmental problems while

using pesticides, chemical fertilizers etc. Therefore, rearing piggery, poultry plays an important role in their socio-cultural life as well as generates income. Apart from these, selling of articles made in the household industries, etc. contributes little income. The distributions of income are varied and determined by land holding pattern, domestic rearing, allied activities and employment in the places far away from their residences. The families especially those living in the permanent/old forest villages however living in some better condition.

The way of life, living standard and socio- economic condition of the people of forest villages can't be compared with the other villagers. There remains always a marked difference between the revenue and forest villagers. They are very much poor, illiterate, and their villages are acute of problems of infrastructure development. The degree of development is very slow, low and the much below the national and regional average. The habitation, settlement is everywhere in and around the forest and the environment is not good enough in terms of sustainability. However, there is the social harmony among different groups of people in the area.

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