CHAPTER 6

CAPTURING PEOPLE'S DECISION THROUGH GIS

6.1 People's decision

When people first settled in Lokampur village they have cleared the forests and converted them into agricultural lands for the purpose of growing crops for their survival. Thus, they have paved their way of livelihoods accordingly. But as time passed and human settlements increased, their food requirements does not become sufficient to feed them, so they had to clear more forests for to produce more crops. Thus they have altered their surrounding environment and consequently, the problem deforestation has popped up creating imbalances in the natural ecosystem. On the other hand, the use of forests resources as firewood for their domestic use has also accelerated the problem of deforestation.

The agricultural fields as they depend on rain water for irrigation so the people in Lokampur have decided to dug ponds to harvest rain water and use its water during various stages of cropping period. Similarly their source of drinking water has also changed from ponds and river to hand pumps, ring wells and electric motor pumps. They have made easy access to water for drinking and other purposes like bathing, washing clothes and utensils, etc.

As the people of this village cannot meet their food requirements, they farmers have started to take the land of the people in other villages on lease to practice agriculture and solve the problem of food deficiency in Lokampur village.

Production of crops in both the villages increased with passing of years, but in numbers of farmers decreased. It is because many of the families shifted their occupation from farm to service.

Table 6.1: Change in Farmers Quantity

Village/ Year	1980	1990	2000	2010	2017
Dolohat	144	136	97	76	44
Dolicoto	46	41	35	29	24

Source: Field survey, 2017-18

Table 6.2: Population and Production growth in Lokampur Village

Items/ Years	1980	1990	2000	2010	2017
Rice Production (in quintal)	481	774	985	1114	1584
Population	366	571	807	1251	1655

Source: Field Survey, 2017-18

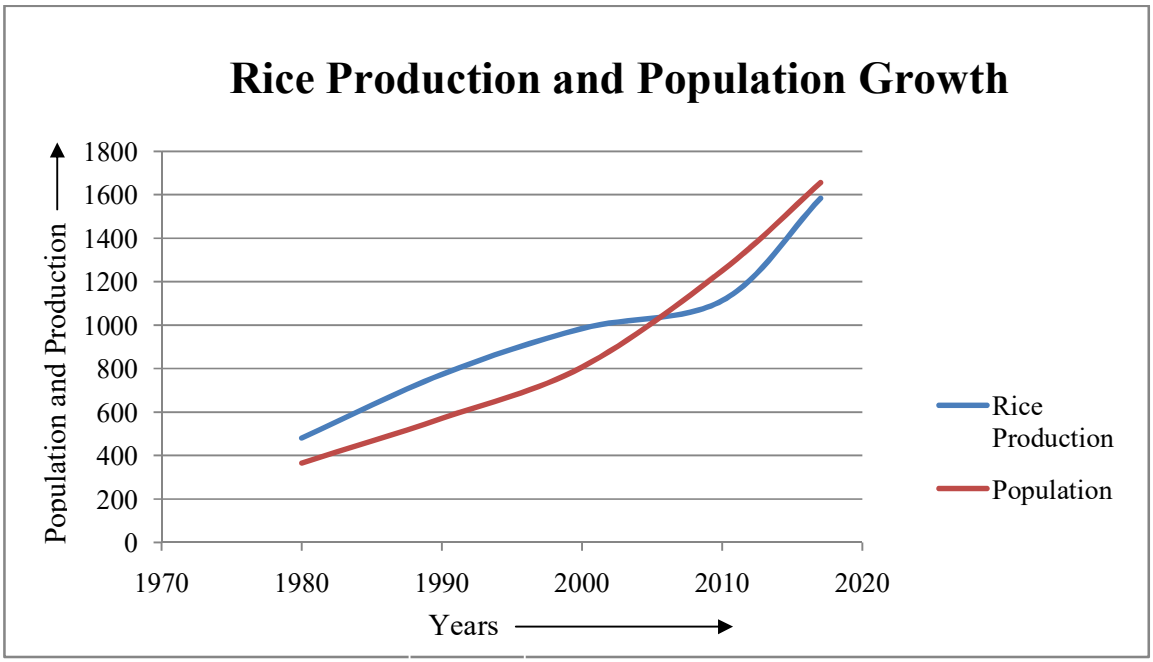

Fig 6.1: Population and Production growth of Lokampur Village

The population growth and production growth shown in the above figure can be explain as that the production is higher in the year 1980, 1990 and 2000. But in the year 2010 the population growth crossed the production and continuing in 2017. The major caused can be stated that the shifting of occupation from farmer to service. Many people shifted occupation to service and gave their land in *adhi* system in which agricultural labour do cultivation. Some current fallow land can be seen in the village. Fragmentation is also a problem for less production because some people are not interested in cultivation.

Table 6.3: Population and Production growth in Dolicoto Village

Items/ Years	1980	1990	2000	2010	2017
Maize Production (in quintal)	150	210	390	440	540
Population	50	90	140	180	378

Source: Field Survey, 2017-18

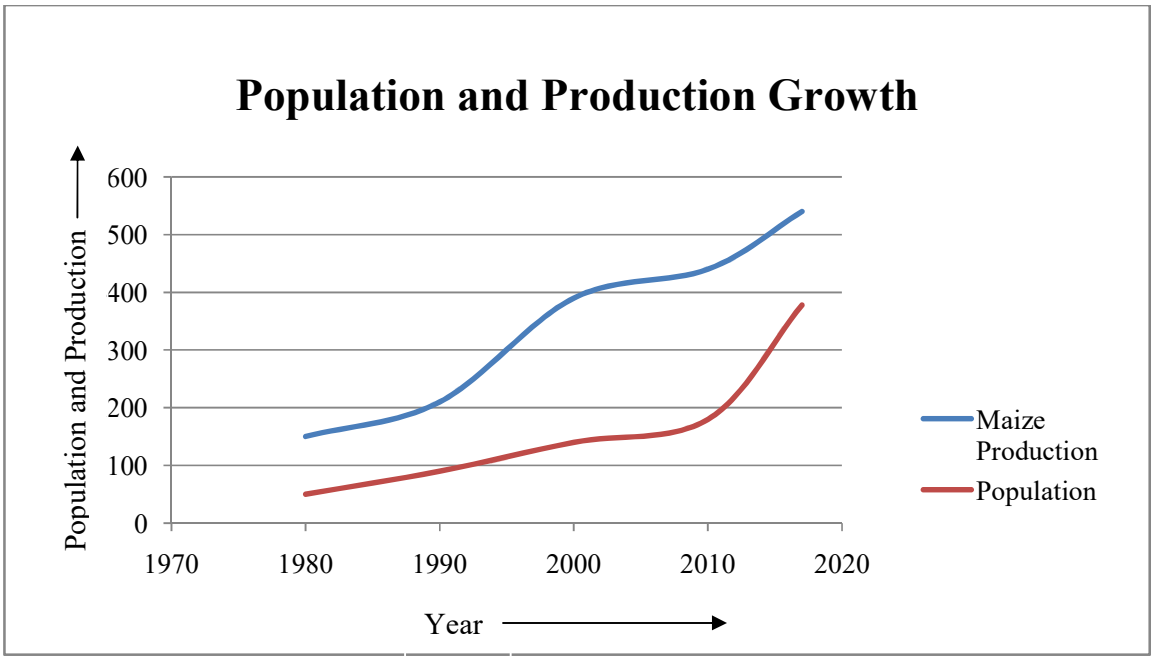

Fig 6.2: Population and Production growth of Dolicoto Village

From the above figure it is clearly that in Dolicoto village the production is higher than the population growth. It is because the population growth in this village is low and the area for jhum cultivation available. Starting from year 1980 till 2017 production is high and population growth is less than population growth. In the village there is no any land fragmentation problem because of jhum cultivation system and farmer also decreasing as the year passing.

The people of *Dolicoto* village being a hilly area, jhumming are practiced there on the hill slopes. However, the areas where they have settled down are relatively lower in heights from MSL. They have settled in the lower areas because if settlements are made at higher altitudes in the hills, there are human-wildlife conflicts, disturbances of mud flows and lack of connectivity. So settling down on the lower altitudes was their apt decision but as cultivation is practiced in the hill slopes, the farmers had to walk long to their fields to practice and maintain jhumming. They have selected only those hill slopes which are properly sun lit and that is the only reason why their jhum fields are sparsely located.

Being settled on the lower areas, the people of Dolicoto sometimes suffer from the mud water flows so they have built houses out of forests resources which are raised from the ground locally called as *chang ghar*. These type of houses save the people and their wealth from being damaged.

Again, those people who earlier used the water of the streams which was muddy during the rainy season have now decided to use water from the tanks and some have installed deep burrowing so that they can get easy access to pure drinking water.

The local people do not know the exact boundary of their village they can simply identify it by the natural symbologies like a big banyan tree or so.

6.2 People's perception and GIS

Resource is very important in human life and it pays a vital role in environment. People explore resource and utilize it for their need. To explore and claim the resources in an area, people must know its boundary. Without a boundary a person cannot justify his/her area of living. People have many perception and opinion about the boundary of their living space.

People perception of their area is different in different people's mind. Sometime people cannot say about their area in detail. Some people can explore the resources found in area but some are not. Say an example, if we asked a farmer about the alluvial soil, he can show us the areas where alluvial soil are found. If we asked a cattleman about the grazing land, then he can explore the area where grass is abundant. In the same ways children, women, Old peoples can explain different view point about a common place. It is their view point from which a map or a model can be prepared.

In this Dissertation work, maps are prepared based on local people's idea through focus group discussion, interviews and through survey with the help of GPS. The maps which are prepared with the help of people's perceptions and knowledge are found to a vast difference. The maps show the real image and peoples mental maps. Sometime in some places the mental maps and real maps coincide with each other. Over the year many changes took place in both the villages but these things are explained by some experienced peoples.

Plate 6.1: Process involved in Community-Generated map

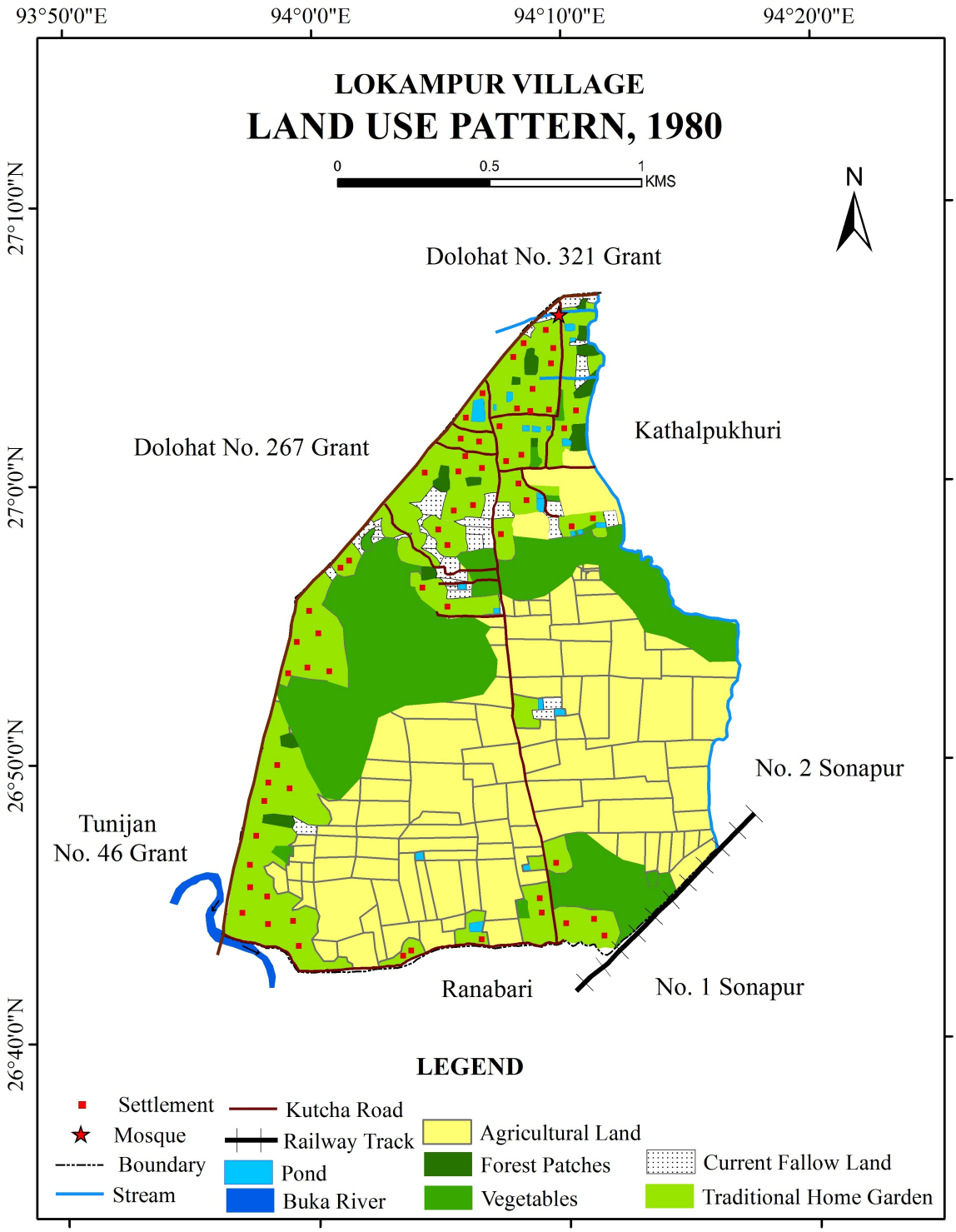

Fig 6.3: Land use classification of Lokampur in 1980

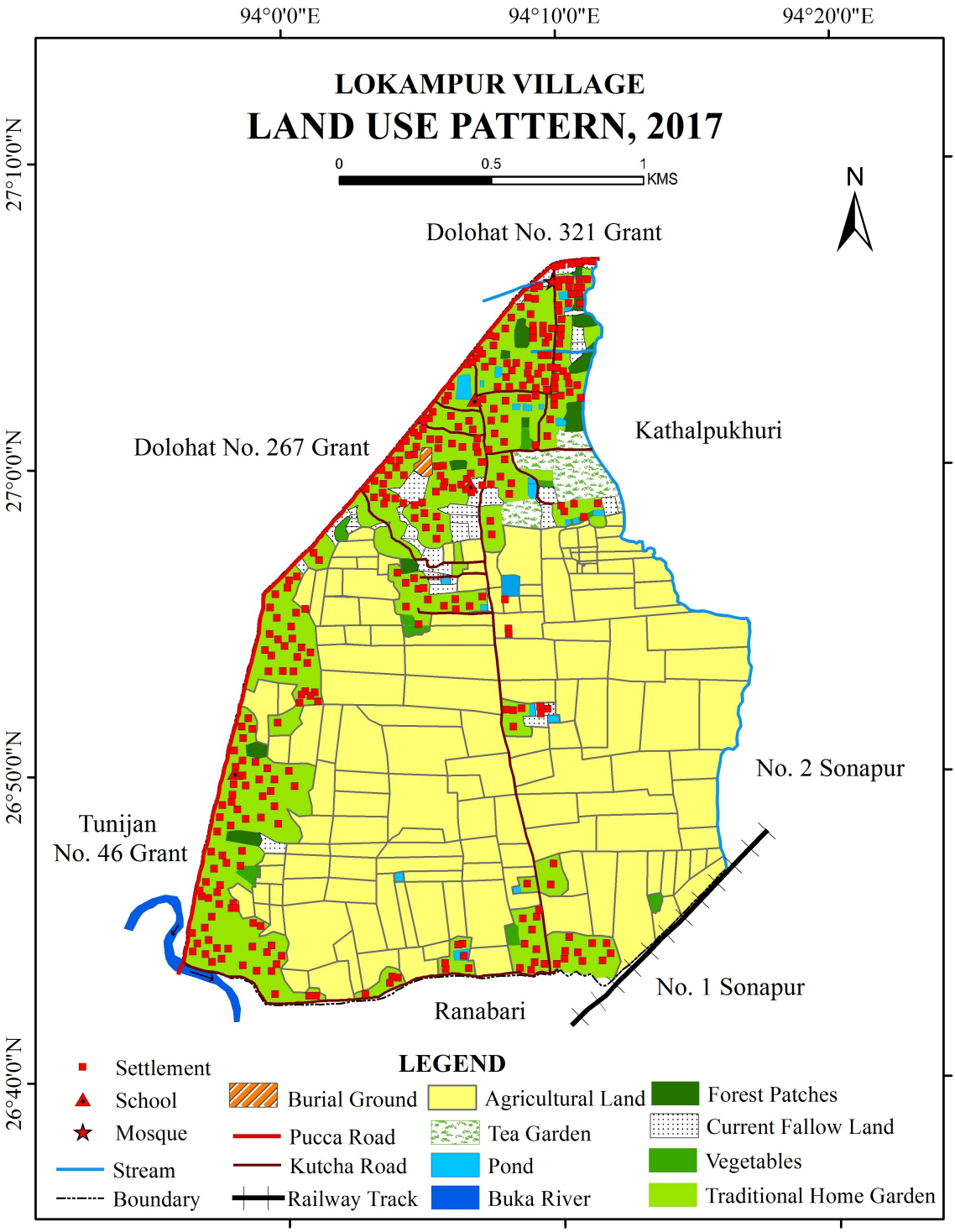

Fig 6.4: Land use classification of Lokampur in 2017

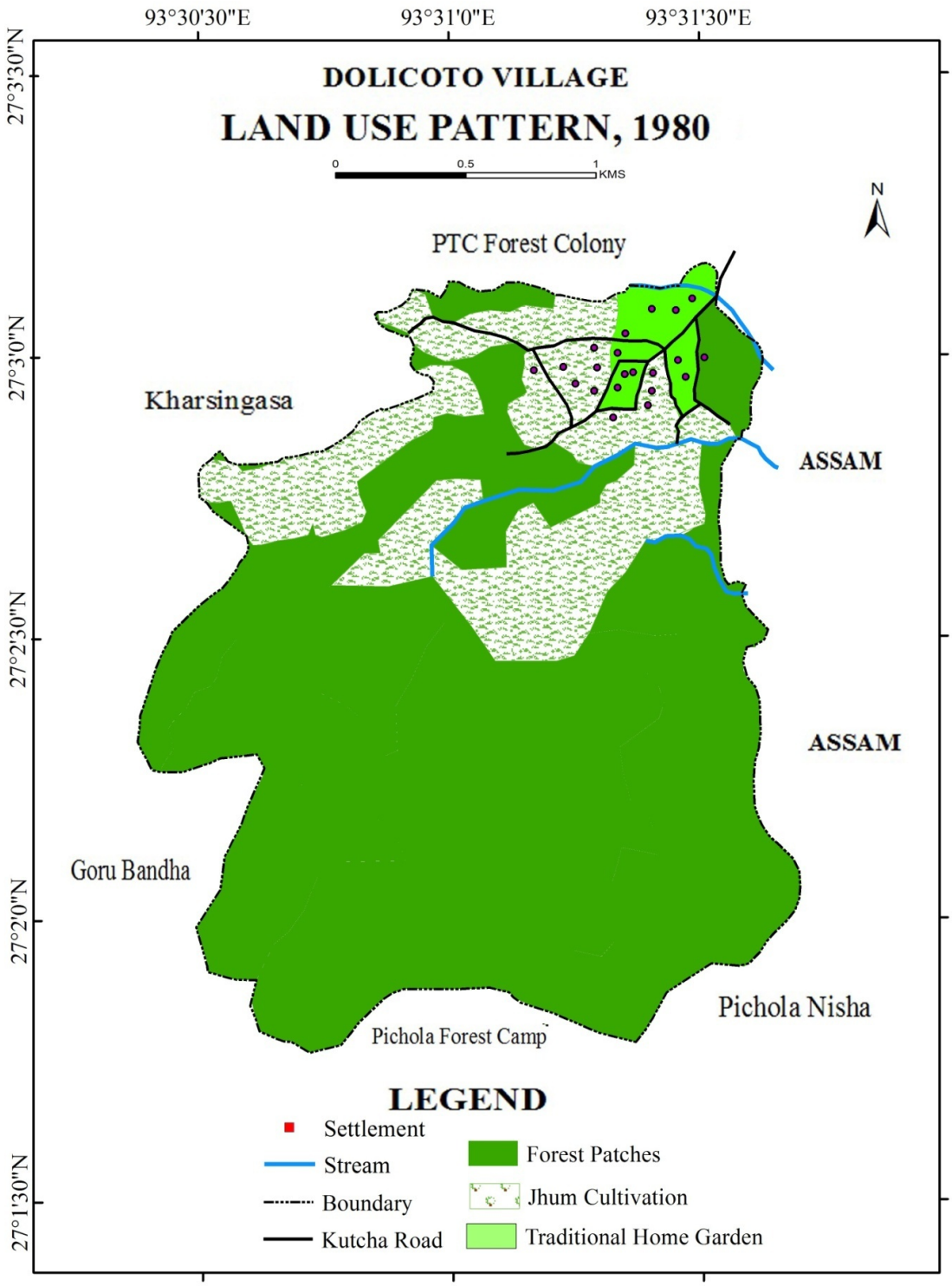

Fig 6.5: Land use classification of Lokampur in 1980

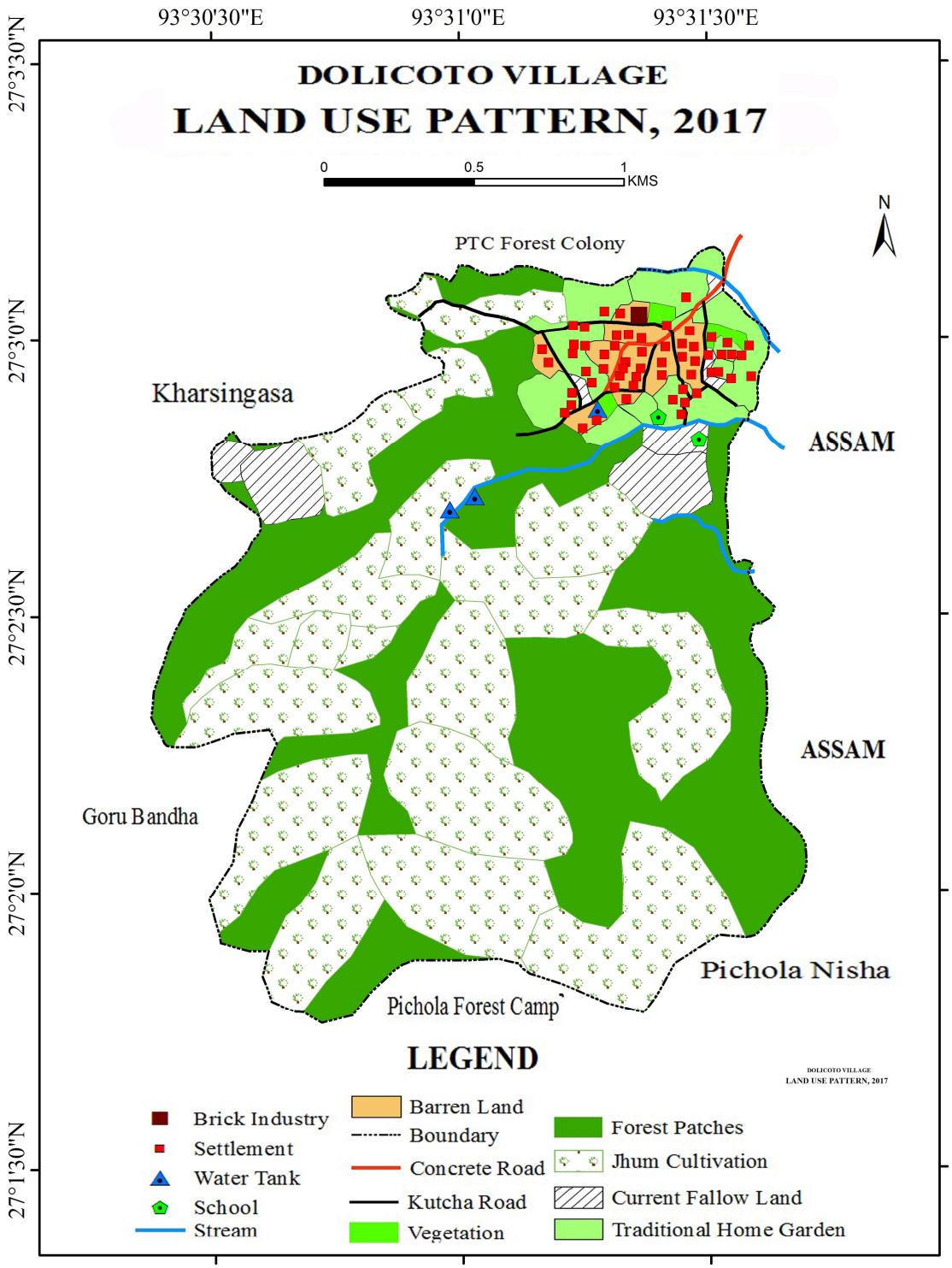

Fig 6.6: Land use classification of Lokampur in 2017

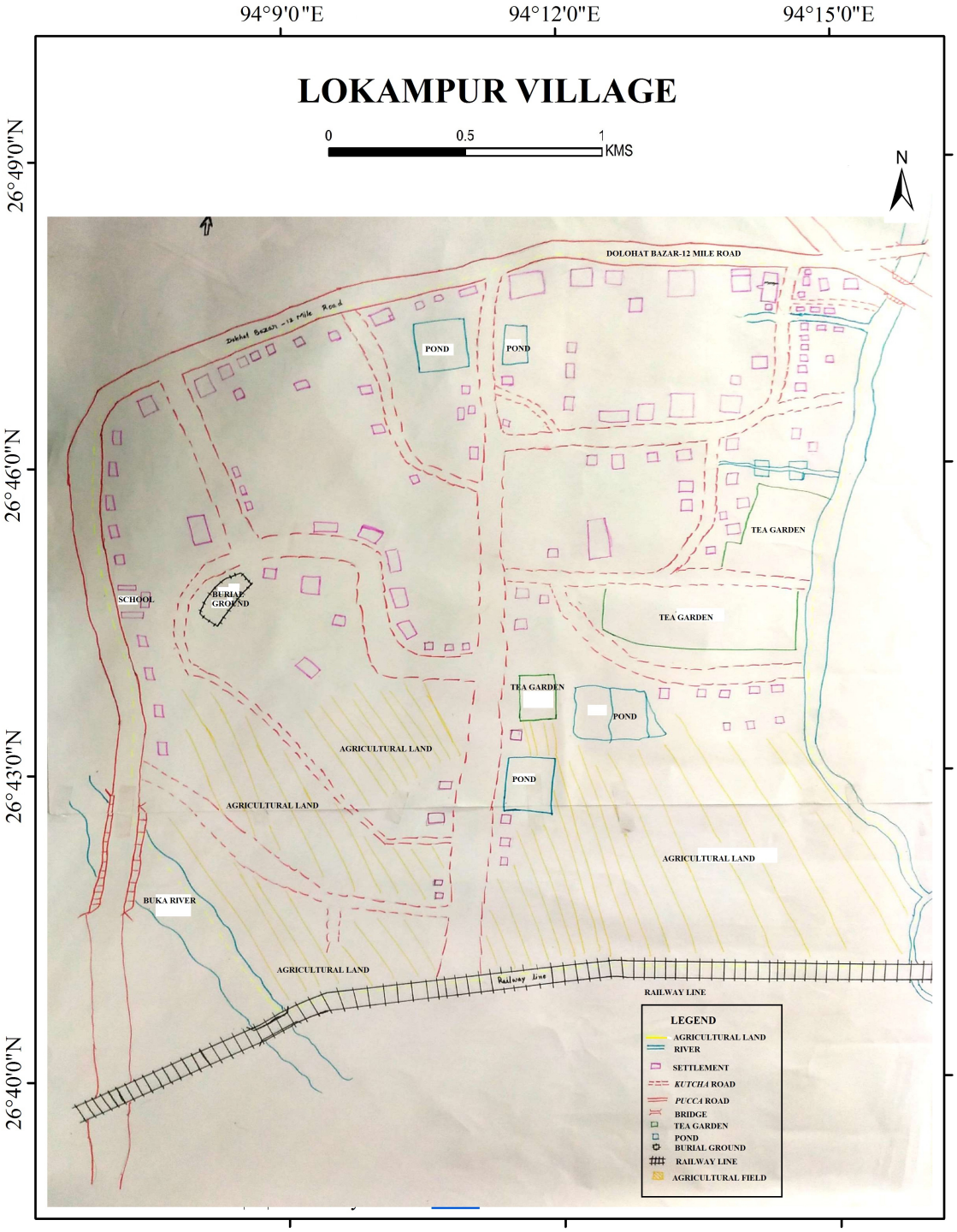

Fig 6.7: Representation of community-generated land use map, Lokampur

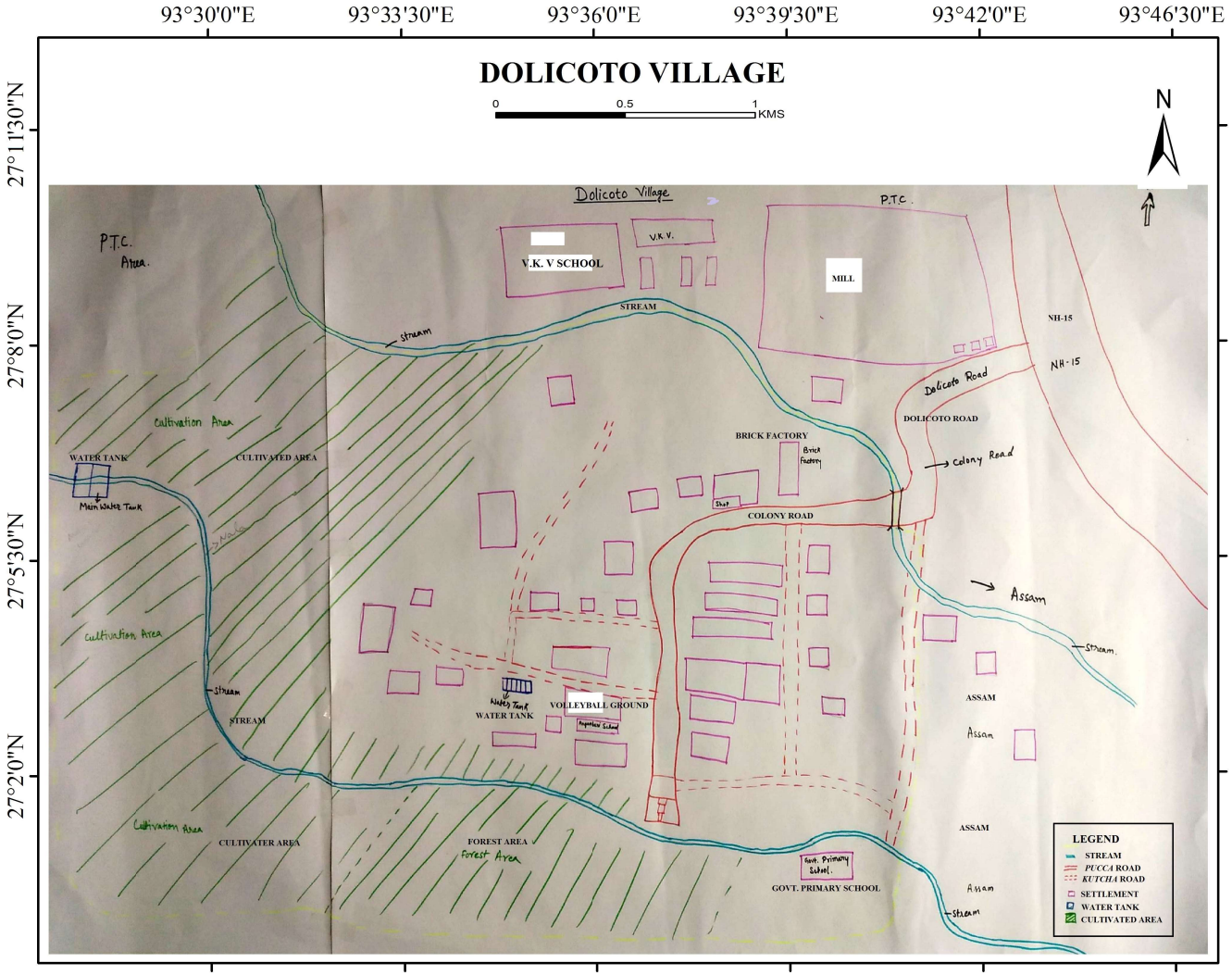

Fig 6.8: Representation of community-generated land use map, Dolicoto

Participatory GIS is a dominating tool used in almost every field for development of new ideas and models. Starting from Land Use map to a simple idea, everywhere it is playing important role. Most important role among all these can be stated that is widely used in resource management. Micro level study and changes through time analysis can be represented very accurately using Participatory-GIS. When rural areas changes into urban areas then decision making tools can be used to challenge the problem and to find solutions. "Apart from visualization, the creations of geo-databases that are updatable and retrievable also solve many bureaucratic requirements of planning. The outputs can respond to local needs, but it can also help the community comply with providing update, reliable data for consolidation in higher level plans. These more technical aspects of GIS-based mapping and planning need not be up to the level of local community. What is important is their use of results of P-GIS, and their relative control over the information generated" (Follosco, 2005).

Management of any programme requires the participation of various stakeholders for its success. Issues related to the concept of environmental resource and its management requires a careful understanding of resources (like renewable and non-renewable resources), its management and steps for its sustainable development. Many local people are directly dependent on site resources or the services it provides, including provisioning, recreational and cultural benefits. They have the most to lose if biodiversity it lost or a site is degraded. They are often highly motivated to help ensure that the site continues to produce a sustainable supply of the benefits that they depend on.

This dissertation explores local spatial knowledge through participatory mapping and a Participatory Geographic Information System to understand and analyze the land use pattern and resource inventory. In both the villages the Participatory-GIS has its important because people still have ideas about how to use resource. In Lokampur village practice agriculture and mostly use water and land resource. In Dolicoto village people practice jhum cultivation using forest resource. Both the villages use resource but in Lokampur village people slowly changing the old traditional method and using modern tools to gain more production. Dolicoto village is sill practicing jhum with old method and tools. They still holding the cultural practice related to jhum. Use of resource should be sustainable so that future generation will not suffer. For that awareness among the peoples of both the villages is very important.