

ENVIRONMENTAL CHANGE DUE TO URBANIZATION IN ZIRO VALLEY

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Received: 16 Apr 2019

Accepted: 17 Jun 2019

Published: 26 Jun 2019

ABSTRACT

The paper has tried to focus on the issue arising from the urbanization process which is rapidly taking place in the Ziro Valley of Apatani of Lower Subansiri district, Arunachal Pradesh. there are several areas at the social institution level where urbanization has affected along with environment settings. The induced development is urbanization which is taking a toll on the human and other biotic life in the valley. The study shows that the immediate impact of urbanization in the natural setting and human surrounding in and around the urban and rural areas. The study was analyzed and devised from the field survey by using research technique and tools and focus group method.

KEYWORDS: *Construction, Conservation, Development, Environment, Fauna, Flora, Forest, Hapoli Town, Sustainable, Tradition, Urbanization, Ziro Valley*

INTRODUCTION

Ziro valley is a land of Apatani community, there is no written record when did the settlement begin. It is presumed from the present settlement and its cultural heritage the present location ziro valley was the last stage of their migration point. There is much historical evidence found in different parts of Upper Subansiri and *Pij Cholo* peak and upper *Kamala* valley of *Hure* remains the footprints of Apatani migration and their Neolithic tools and pottery work found of the Apatani community (Haimendorf, 1980;12). It is sung in the folklore and tales of the community that the plum tree (*thakum*) species and pine tree (*pinus excels*) were brought from their original place while migrating. Therefore the bamboo species of the valley are not found in nearby tribes or any part of the districts. In recent time the bamboo is grown in the neighboring tribe by the help from agriculture department and scientific work.

Ziro valley located at an altitude of 1744 meters and old Ziro at and 1572 meters and Ziro (Hapoli) stands at 1564 meters. The valley is surrounded by chain of hills filled with lush evergreen trees and spread of villages and town in the vicinity of the valley. Ziro valley is an Inter-Montane Valley (Kani, 2012). The total area covered under the cultivation area is spread across 32 SqKm (Izzard, 1951). The valley experience moderate rainfall and snowfall throughout the years.

Agriculture is the mainstay for the community people. The people practice wet rice cultivations cum fish cultivation at the same time. The fishing practice has boosted the economy of the farmers and food supply. The introduction of fish into paddy fields was initiated in the early part of the 1960s. It is modern knowledge of way agriculture. Lying adjacent to paddy fields there lays the dry upland, bamboo and pine groves and trees of ritual values. Apatani is known for their practices of conservation and replenishing of new saplings in place of cut down trees, the balance of ecological sustenance is practice by the community.

METHODOLOGY

The study is based on the fieldwork survey with the utilization of various research tools and techniques. The explorative method was adopted to understand and to explore different parts of the Ziro valley that is undergoing physical change due to urbanization process in recent times. Interview schedule consisting of structure and unstructured questions were used and focus group interview was conducted by focusing on farmers, urban dwellers, and administrators for gathering the primary data. The total 520 sample respondents were taken by random sample technique from both urban and rural population which accounts for 2.29% of the total population of 22747 of Ziro valley. The data were quantified and analyzed from the opinion given in the interview schedule by using SPSS and observation from the field.

The Landscape of Ziro Valley

The place is surrounded by hills and forest and river (*Kiile*) passing through the midst of the valley. This *kiile* act as the main source of supplying the water to the agriculture fields of Apatani valley. Once the valley was remained as swampy and there lived a reptile – *Buru* in local it mean for Crocodile while it was described by people to be like a kind of dragon lizard, that have terrorized the inhabitants and ultimately got killed by mighty a disc-shaped plate (*Myimya*) which rolled over the reptile and people started draining the lake and there was the field for cultivation of crops according to local people. One can still find the *Myimya* in villages of the Apatani.

The settlement areas are mostly found in the adjacent part of the valley (Haimendorf, 1980). There are seven main villages and two towns. The distance between town and villages is range from 3-5 km. The village's houses are constructed in a compact manner distance between two houses is less than half meter distance, therefore the fire accident occurred and destroyed the whole village many a time in their history.

The structure of the Ziro valley can be broadly discussed from the given table below:

Table 1: Division of Universe of the Study into Separate Zone wise with a Total Number of Respondents

Sl.No	Zone –I
1.	Market area cum DC office area Club Road, Gurudwara Colony, Engineer Colony, Medical Colony Pari-Ami Colony, Hilltop Colony 128
2.	Zone –II
	Paraline Colony Police Colony Quarry Line Colony Pai Gate colony. 120
3.	Zone III
	Treasury down colony School Gate Colony Industry colony SSB Gate 114
4.	Old Ziro Town

	Lower Old Ziro Old Ziro Town area Upper Old Ziro	90
5.	Seven Main Villages	
	Bulla Hari Hong Bamin-Michi Mudang tage Dutta Hija	70

Source: Field Survey

The Zone I, II and III lies at the southern part of the valley, Old Ziro town is located at the northern part of the Valley, Bulla, Hari, and Hong Villages are located in the eastern part of the valley, and Hija, Dutta, Mudang Tage, and Bamin Michi villages are located at the western part of the valley. The distance between Ziro and Old Ziro market is 7 km and all the main villages are connected by the road from the main district highway road. Several paddy fields were brought under the construction of roads. Today, roadside paddy fields are used for settlement and commercial set up.

Urbanization in Ziro Valley

The process of urbanization in Ziro valley has been taking place since 1952, the establishment of the administrative center at Old Ziro for administering the tribal population of the then Subansiri region. The intensity of development and the migration to Ziro town began much later in the 1980s onwards according to the fieldwork report conducted. The background of the urbanization is because of the induced political development and modern administrative machinery. For the valley and its community infrastructures development is an indicator of urbanization and a sign of modernization. Modernization is taking place because of urbanization in the valley by learning and borrowing the knowledge and material culture by inducing other community groups from different part of the Indian state into the region. Other community groups transmit the modern culture by opening a shop and through government program and policies.

The rapid growth of shops in the urban area led to the mass concentration of population and building construction in the center of the town and its nearby areas. With the increasing urban population and structures which have led to drainage problems and proper garbage disposal system in the market and other sector areas. Urban and Housing department has initiated the remedial steps to solve the problems. Due to the lack of human power, materials, and financial position it could not be implemented properly the urban program and management system. In this regard, Ziro town lacks proper drainage system, dustbin for waste materials for each sector and urban vehicles to carry off the garbage regularly to a disposal site.

Growth of infrastructures led to the attraction of the neighboring villagers and increase of haphazard settlement in the urban area. The haphazard settlement and unplanned manner bring an issue both for the government department and for the public. There is a compact system of housing in different parts of the urban areas with a different style of the house consisting of both modern and traditional houses in each colony. The swampy and marshy land is also brought under the settlement area, the nearby forests are destroyed and agriculture land is used for housing purpose. The small stream of the Treasury Down of Ziro town is completely polluted by nearby garages and human waste. The breadth of the stream and

biotic life in the Ziro valley have greatly affected and reduced. The colony roads are not safe to use during the night time without street light and dilapidated road condition.

The paddy field surrounding the villages and urban area is privately owned. Different type of rice crops is grown according to early and late ripening of the crops. The distances of the paddy field from the village also determine the kind of paddy crops to grow. The agriculture work and crops are cultivated by a group of a young adult this group is called *patang ajng*. *Patang ajng* are agriculture social group belonging from same age group based on same gender and mix. Due to urbanization and education development in the valley, the *patang ajng* numbers have declined very rapidly. Now, the existing paddy fields are managed by village women only. Due to road constructions and felling of trees in the jungle the quantity and quality of water are decreasing. The polluted water enters into rice fields and destroys the crops and fishes. The agriculture fields existing near the construction site are most affected. There is deficient of water in the agriculture field distance away from the river part.

Hapoli town is settled by different population from several Apatani villages permanently and temporarily population from other community groups at different point of work and purposes. Generally, the land cannot be sold out to the nontribal person and to other tribes. But in recent times other tribal people have acquired the land by giving a high amount of money to the landowner. The land spaces are shrinking in size due to increasing population growth in the decades in both external and internal ways of population growth. Besides the town area, there are many nearby natural sites which are being encroached and used for different urban utilities and expansion of the urban areas. The houses are constructed into different types and model in a different location but in an unorganized manner.

The center of the Hapoli town is highly dense with housing structures- shops, banking structure, administrative structure, rent house, and education structure. When enquired about their reason for migration in urban areas it was found out that they have migrated because they get better civic facilities in terms of electricity, large market, banking facility, government department is closer, medical, education institution, recreation and service center for family outing, its dynamic and nearer to their working place which was quite difficult to commute daily from their village, etc were variables that found out to be the sources of urbanization process.

Table 2: Distribution of the Rural and Urban Population of Lower Subansiri District

Census Year	Total population	Urban	Rural	Density
2011	83030	12806	70224	24
2001	55726	12384	43342	16
1991	83167	8862	74305	24
1981	--	--	--	--

Source: Census (1981, 1991, 2001, & 2011), Government of India.

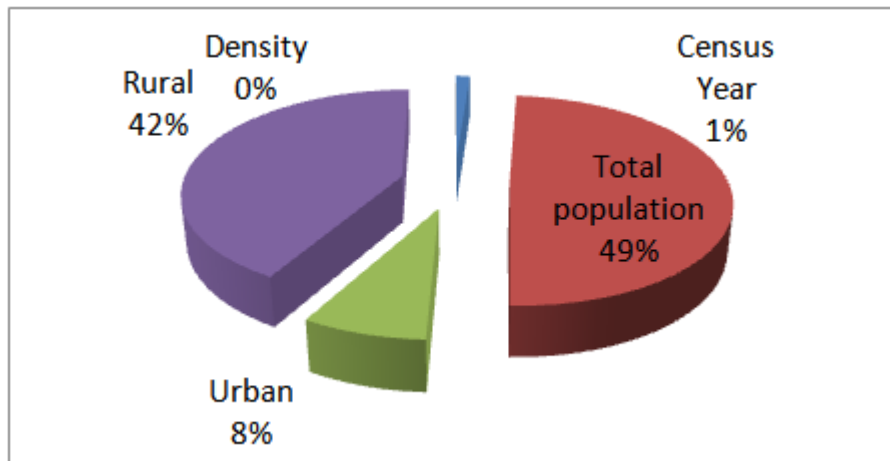


Figure 1: Distribution of the Rural and Urban Population of Lower Subansiri District in Percentage Form

Gradually the growing population along with the urban infrastructures the valley is zoning itself into layers of functional areas. Each zoning areas can also be identified in the name of sectors/ colony wise. Now, Hapoli town is expanding in length and breadth by occupying the nearby isolated dry land, bamboo groves, forest, and agriculture fields. The expansion of the settlement in the periphery of the urban-led to issue in water supply in urban areas. The problem could be somehow managed by having well or rainwater harvest, especially by those urban dwellers. The water treatment plant which is located in SSB gate collect the water from the forest streams and supply to Hapoli town which is not able to produce sufficient water due to the increasing number of population and receding water quantity in the forest.

Table 3: Distribution of Apatani Population in the Ziro Valley

Sl.No.	Name of Circle	Population	Schedule Tribe(ST)	Others
1.	Ziro(Sadar)	22747	17742	5005
	Urban	12806	8537	4265
	Rural	9941	9305	736
2.	Old Ziro	19605	18177	1428

Source: District Statistical Handbook, 2014-15.

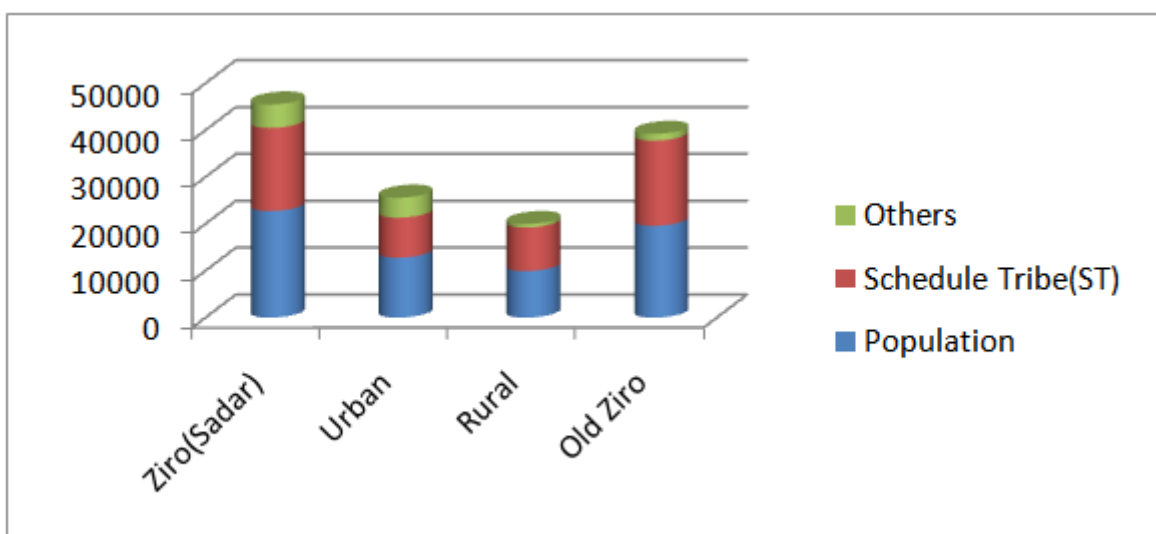


Figure 2: Distribution of Apatani Population in the Ziro Valley

Impact of Urbanization and its Land Use:

Urbanization and development are related concepts in the context of the Apatani valley. We can take into account the development of infrastructure as a part of the urbanization process affecting the physical change in the valley. The first line of change brought by urbanization can be seen from the construction of roads into the rice fields, garden, bamboo groves, and forest. The construction of landing ground for helicopter and small flight carrier in the midst of the valley covered a large area of plain rice fields. The selection of the area for administrative offices changes the landscape and land use of the Bamin Michi Village.

The construction of the buildings for the administrative infrastructure led to deforestation and the shortage of wood at the beginning of the development. The large tracts of agriculture plots were taken away for the construction of airfield and roads. Now, the construction of the eastern ring road in the year 2001-02 about 44 km and western ring road initiated in the year 2007-08 has created environmental damage and ecological imbalance in the valley. A large number of trees were cut down for the ring road development. Besides the development activities, varieties of endangered flora perished without thought of estimating the total species of flora and fauna could be lost and conservation by the developmental bodies. Several varieties of animal species and bird species are displaced from their original inhabitants or killed. There is frequent interaction between nature and mankind that is getting closer because of the ring road; on the other hand side, there is tremendous exploitation of natural resources by cutting down the trees for timber purpose, coal, firewood, deforestation because of planting commercial plant and horticulture purpose. Hunting of animal and bird became frequent sporting events for the people of the valley. Hunting is a cultural practice for Apatani community. They hunt during the time of *Myoko* pertaining to ritual purpose, secondly, they hunt for consumption and medicine and thirdly for commercial purpose which is not a part of the cultural practices.

Recently many clans and the village-based organization took up the initiation against unnecessary hunting in the name of pleasure and sporting events in the forest without any ritual purposes. The imposition of the fine is being regulated against any violators. The forest department coordinated this clan groups to protect and preserve the flora and fauna of the valley.

The Animal Population at the Declining Stage:

The changing demographic profile of the flora and fauna affects the environment at a large extent. Ziro valley is very rich for its animal and bird species. It is home to various deer, tiger, leopard, monkey, Himalayan black bear, boar, squirrel, kingfisher, woodpecker, hornbill, and porcupine. The rising of the population in the urban areas and decreasing trend in rural areas in recent time brings changes in the natural surrounding and local environmental changes. It is been reported from the fieldwork that the population of tadpoles, edible insects found in a paddy field (*tassin*), dragonfly (*Gonchi*), *tabu Ngii* (*sake fish*) have gone down drastically in the valley. *Ngilyang Ngii* (fresh river water fish) a ritualistic fish used during *Myoko* festival usually found in the streams of the Ziro valley is also decreasing rapidly by the use of bleaching powder, electric generator, constructions of roads is also contributing for declining the number of streams and responsible for receding the quantity of water coming from the forest.

The migratory bird like White Crane (*Pakang Paje*), Brahminy Duck, Cargency, etc. visits the valley during the winter season which comes from Siberia. Now, it is seen missing during the winter and beginning of the agriculture session. The local birds like a crow, Myna, Hawk (*muchi*), Eagle (*pamu*) and house sparrow population have declined in

the recent decade. It is found from the field study that Myna and sparrow birds have disappeared due to change in housing structure from Assam type to Reinforced Cement Concrete (RCC) building which is increasing in urban areas. The use of scarecrow installed in the rice fields is not commonly used by the villagers now.

The water quality and quantity of the streams that pass through the urban area is polluted and changed due to mass deposits of household waste, human excretion and automobile waste oil directly go to the stream water causing inhabitable for the aquatic life.

Impact on Health Status:

The changing demographic pattern is seen with new types of diseases being diagnosed and experienced by the people after coming of the outsiders into the valley, migration towards town and change in the surrounding environment. The causes for the increase of diseases have many factors, it is also possible that the same diseases had persisted before but due to the absence of science and technology it was unable to identify. But it is a fact that there are issues relating to health after the urbanization has taken places. The pattern of lifestyle, consumption lifestyle, rise of pollution from the increasing vehicles and construction sites, contamination of water had harmed both human and animal population, haphazard and unplanned housing, lack of proper drainage, physical contact with different people, and changing of environment has a detrimental role for increasing the rate of diseases and sickness in the Apatani society.

CONCLUSIONS

Urbanization is an inevitable process and part of social change. Every process of change and development brings forth its merit and demerit form which is extensively human requirement. Urbanization is a new to Apatani society and the process is undergoing steadily. It required proper regulation and mechanism to avoid natural destruction in the causes of urbanization development. The authority both at the level of village and administrative should work and cooperate to plan out the urban development. The participants of the local in the process of planning and execution should be taken into account. With the declining population of the fauna, it indicates that the biological diversity of the Ziro valley is getting weak. Besides urbanization and development activities in the valley conservation and preservation of the biotic components is essential and necessary to maintain the ecological balance.

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