

**Socio-Economic Impact of Hydro-Power Projects: A Study on
Lepcha Community in Dzongu Block in Sikkim, 2001-2015**

A Dissertation Submitted

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Degree of Master of Philosophy

By

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DECLARATION

I, **Bhawana Rai**, do hereby declare that the subject matter of this dissertation is the record of the work done by me, that the contents of this dissertation did not form the basis for the award of any previous degree to me or to the best of my knowledge to anybody else, and the dissertation has not been submitted by me for any research degree in any other university.

The dissertation has been checked using URKUND and found within limits as per plagiarism policy and instructions issued from time to time.

This is being submitted in partial fulfillment of the requirement for the degree of Master of Philosophy in the Department of Political Science, School of Social Sciences, Sikkim University.

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CERTIFICATE

This to certify that the dissertation entitled, “Socio-Economic Impact of Hydro-Power Projects: A Study on Lepcha Community in Dzongu Block in Sikkim, 2001-2015” submitted to Sikkim University in partial fulfillment of the requirements for the degree of Master of Philosophy in Political Science is the result of bonafide research work carried out by Ms. Bhawana Rai under my guidance and supervision. No part of the dissertation has been submitted for any other degree, diploma, associateship and fellowship.

All the assistance and help received during the course of the investigation have been duly acknowledged by her.

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Abstract

There is a high demand for clean and renewable energy for social and economic development which has led to a rampant spread of hydro power generating projects and construction of Dams for the same purpose. Displacement and rehabilitation of people living in the nearby construction areas and landslides, earthquakes, tremors due to tunneling for the projects are some of the major issues associated with the power projects affecting livelihoods of inhabitants. There is also loss of culture and tradition due to these projects, leading to contestations from the effected society in the immediate environment.

The hydropower projects have proliferated to India's Himalayan state of Sikkim with a cascade of projects planned in the Teesta river basin. The present study focuses on the Socio-Economic Impact of Hydro-Power Project, Teesta Valley stage V Hydropower project (510 MW) on Lepcha Community in Dzongu block in Sikkim from 2001-2015 as the construction of the dam began in 2001 and completed in 2008.

Dzongu block is inhabited by Lepchas who refer themselves as 'Mutanchi Rongkup' which means 'children of god' located in North Sikkim. Dzongu block is also a Lepcha reserve zone and was declared as a special protected by the Chogyal (king) of Sikkim through Notification No 3069 in 1958. This prohibits the settlement of Non- Lepcha people in the region. The proclamation regarding the protected area continues even after Sikkim's merger with India and the land rights in Dzongu block are still reserved for Lepchas community only. Despite of these constitutional and legal provisions, the Hydro power project was commissioned in the area, affecting a certain socio-economic conditions of the Lepcha community. Thus it becomes imperative to look into these socio economic and cultural repercussions, which the study tries to attempt. Apart from this, the study also focuses on the constitutional provisions, legal frameworks and policies undertaken for the protection of the Lepcha community in Dzongu block.

For the purpose of the study, five villages, where the Lepcha community inhabits, i.e. Lum, Sangtok, Gor, Tangyek, and Ramthang in Dzongu block were selected. Further, about 177 households which constitutes 30 percent of the total households of the selected villages were taken as sample using simple random sampling, using lottery method were taken. The study also used secondary data from literature survey and gathered information from concerned public, private offices.

The dissertation has been divided into five chapters. Chapter I titled, “Introduction: Conceptual Meaning, Overview of Discourses and Framework of Study” provides the definitions, conceptual discourses and frame work of the study. The framework of the study includes statement of the problem, review of the related literature, scope of the study, objectives, research questions, methodology, and chapterisation. The chapter also discusses definitions of the socio-economic conditions, development related issues, relationship between development and energy, hydro electricity, hydro electric potential, projects in India and Sikkim.

The second chapter titled, “Local Tribes in India and Sikkim: Constitutional Provisions, Legal Framework and Policies” provides conceptual definitions for Tribes, constitutional, legal provisions in India, key institutional structure related to Scheduled Tribes, notifications, Tribes in Sikkim, Lepcha community in Sikkim, centre and state government policies in a nutshell.

The third chapter titled, “Hydropower Projects and Implications on Local Tribes”, discussed the impacts of hydro power projects across the world and India with few case studies. It also discussed the rehabilitation and resettlement policies of Government of India. Further the chapter discussed the issues and implications of dams.

The fourth chapter titled, “Socio-Economic Impact of Hydro Power Projects on Lepcha Community” discussed the hydropower development programmes in Sikkim, projects undertaken, state government policies, specific terms and conditions. It also discussed the study area and methodology, Social and Economic impacts of dam construction. The main focus of the chapter is to discuss the findings of the field work. Before going for the field work a questionnaire was developed to study the various social variables like education, health, drinking water sewerage facilities, social structure, cultural impacts and economic variables like sources of earnings of households, inward and outward migration, remittances employment, infrastructure, physical assets, livestock, compensation, cultivation pattern changes and income status.

Last chapter five titled, “Major findings, suggestions and conclusion” provided a discussion on the observations and findings of the study. It also provides suggestions, recommendations based on the field work findings.

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Bhawana Rai

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Acronyms

| | |
|---------|------------------------------------------------------|
| ACT: | Active Citizen of Teesta |
| BOOT: | Build, Own, and Operate and Transfer. |
| BuRec : | United States Bureau of Reclamation |
| CCD: | Conservation-cum-Development |
| CWRDM: | Center for Water Department and Management |
| CWRDM: | Centre for Water Research Development and Management |
| DPA: | Dzongu Protected Area |
| EIA: | Environment Impact Assessment |
| FGD: | Focus Group Discussion |
| GCD: | Grand Coule Dam |
| GNP: | Gross Net Profit |
| HEP: | Hydro Electric Project |
| HH: | House Hold |
| IMF: | International Monetary Fund |
| IPP: | Independent Power Producer |
| IRN: | International River Network |
| ITDAP: | Integrated Tribal Development Area Programme |
| IUCN: | International Union for Conservation of Nature |
| KFRI: | Kerala Forest Research Institute |
| KWH: | Kilowatt Hour |
| LAMPS: | Large Area Multi purpose |
| LT: | Limboo and Tamang |
| MADA: | Modified Area Development Approach |
| MCM: | Million Cubic Meter |
| MW: | Mega Watt |
| MoU: | Memorandum of Understanding |
| NCST: | National Commission of Scheduled Tribes |
| NCSC: | National Commission of Scheduled Caste |
| NGO: | Non Governmental Organisation |
| NHPC: | National Hydro Power Corporation |

| | |
|---------|---------------------------------------------------------------|
| NRRF: | National Rehabilitation and Resettlement Policy |
| NSTFDC: | National Scheduled Tribes Finance and Development Corporation |
| OBC: | Other Backward Class |
| OTFD: | Other Traditional Forest Dwellers |
| PAFs: | Project Affected Families |
| PESA: | Panchayat (Extension to the Scheduled Areas) |
| PIN: | Personal Identification Number |
| PTGs: | Primitive Tribal Groups |
| PoA: | Prevention of Atrocities (Act) |
| PVTGs: | Particularly Vulnerable Tribal Groups |
| RGVY: | Rajiv Gandhi Grameen Vidyutikaran Yojana |
| R&R: | Rehabilitation and Resettlement |
| SABBCO: | SC, ST, and OBC Development Corporation |
| SEP: | Socio Economic Position |
| SEEDS: | Socio- Economic and Educational Development Society |
| SICON: | Salim Ali Centre for Ornithology and Natural History |
| SC: | Scheduled Caste |
| SPDCL: | Sikkim Power Development and Corporation Limited |
| SSD: | Sardar Sarovar Dam |
| ST: | Scheduled Tribes |
| TAC: | Tribal Advisory Council |
| TVA: | Tennessee Valley Authority |
| TBGRI: | Tropical Botanic Garden and Research Institute |
| TRIFED: | Tribal Cooperative Marketing Development Federation |
| TSP: | Tribal Sub Plan |
| UT: | Union Territory |
| WB: | World Bank |
| WCD: | World Commission on Dams |
| WSSD: | World Summit on Sustainable Development |

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CHAPTER I

Introduction: Conceptual Meaning, Overview of Discourses and Framework of Study

I. 1. Introduction

I. 1. a. Socio-economic conditions: Conceptual overview

A social person is one who conforms to the three criteria of social development (Bharadwaj, 2001). He should behave in approved manner, play the role which society prescribe for him and possess favorable attitudes towards people and social activities(Ibid) and the the social conditions include social structure, occupational prestige, education, health and standing in the community while the economic conditions include livelihood, employment, income, property and financial assets (Toby, 2011) and the word economic is used generally for the motives involving earning a livelihood, the accumulation of wealth and the like (Drever, 1964). Therefore the Socio- economic condition is an aggregate concept that includes both resources based and prestige based measures. Resource based measures refers to material and social resources and assets, including income, wealth, educational credentials; and prestige based measures refers to individual's rank and status in a social hierarchy, typically evaluated with reference to people's access to and consumption of goods, services, and knowledge, as linked to their occupational prestige, income and educational level (Moss et.al, 1997). Socio-economic conditions also denote the position of an individual in a community with respect to the amount of cultural possessions, effective income, material possession, prestige and social participation (Oladipo, et.al 2010).

Mueller and Parcel (1981) defines social and economic conditions as the relative position of family, of individual on a hierarchical social structure, based on their access to, or control over, wealth, prestige and power (Mueller, et.al 1981). More recently, socio-economic conditions has been defined as “a broad concept that refers to the placement of persons, families, households and census tracts or other aggregates with respect to the capacity to create or consumer goods that are valued in our society” (Shavers, 2007). It refers to an individual's place in the social hierarchy built around education, occupation and income (Graham, 2004). Occupation includes employment status (e.g. employed/ unemployed/ retired), specific occupational group, aggregate groups, blue/ white collar workers etc. Education includes years of educational completed (continuous), highest educational level

completed, credential earned (e.g. high school diploma, bachelor's degree, graduate degree) etc. and income includes individual annual income, annual household income and family income (Shavers, 2007). These three components are important because of their determining influence on an individual's life and living standards (Graham, 2004). For instance, individual changes occupation for reasons belonging to economic and non-economic activities. Reasons of non-economic activities include the quest for greater status in the society, job satisfaction or family responsibility. Reasons of economic activities include switching occupation in order to accumulate marketable skills or to increase pay (Ibid: 5). The occupational change is not always of a voluntary nature (Ibid: 9). Family also faces socio-economic changes when there are civil wars, generalised violence and persecution on the ground of nationality, race, religion or social groups. Apart from these, people are displaced as a result of natural disasters (floods, volcano eruption, landslides, earthquakes), environmental changes (deforestation, desertification, land degradation, global warming) and human made disasters (industrial accidents, radio-activity). People are also compelled to move as a result of the government policies and programmes implemented to enhance development for instance, large scale infrastructural projects such as dams, roads, parks, airports, mining and deforestation and introduction of conservation parks and reserve and biosphere projects. Such projects have socio economic impact on the livelihood of the people living under the area. Socio-economic impact implies impact on the social and economic conditions. These impacts are potential changes caused, directly or indirectly, in whole or part, for better or for worse-by developmental activities or simply it is a positive or negative change.

Thus the socio-economic impact can be said to be the impact on the social and economic conditions of people, their families and their communities caused by a proposed development. Evaluation and assessment of this impact can be called as socio-economic impact assessment. Socio-economic impact assessment focuses on evaluating the impacts of development on community, social and economic wellbeing. Development impacts are generally evaluated in terms of changes in community demographics, housing, employment, and income, health, public services and aesthetic qualities of community (Edward, 2000).

Socio-economic conditions and development are also evaluated in terms of Economic Growth. The economic growth of which means increase in education, health, social economic

status of individual and living standards of people, reduction in poverty, improved technology and infrastructure in community (Ibid.).

I. 1. b. Development: Meaning and related discourses

In the 1950s, development meant achieving global stability by creating the material and cultural conditions for steady economic growth. Development policies aimed to modernise infrastructure and minds. But once put in practice, this “idea of development” proved perilous. Far from achieving its goals, it created poverty and exclusion where there had been scarcity. It exacerbated or created conflict where it sought peace (Anderson, 2000). By the mid- 1960s, the definition of development had shifted to included new goals such as the pursuit of improved standard of living(education, health, food) and political democracy. But critics showed the shortcomings of the new policies implemented and their underlying ideas (Faille, 2011). More recently, definition of development have increasingly included non-quantitative or monetary goals such as respect and inclusion of social and economic diversities, enhancement of autonomy and self- determination. Today, development is an amorphous idea that has lost any precise meaning (Black,2002).

The term development is contested one and has no accepted definition is available. Different authors define it in different ways and in various terms like growth, modernisation and socio economic progress are part of this notion of development (Naz, 2006: 65). Development may be identified as a process in which a system or institution is transformed into stronger, more organised, more efficient and more effective form and proves to be more satisfying in terms of human wants and aspirations (Gauba, 2003). J.H Mittleman defines development as the increasing capacity to make rational use of natural and human resources for the social ends (cited in Gauba, 2003).

Liberal approach to development is firmly rooted in the ideas of economic liberalism. Classical liberal economy draws heavily on individualist and rationalist assumption about human nature, placing a strong emphasis on the idea that human being are primarily motivated by the desire for material consumption. From the liberal perspective, the central mechanism for generating wealth is market, which operates according to the decision of free individual. The attraction of the market is that it is self-regulating mechanism, which tends naturally to promote economic prosperity and well-being. However, individual acquisitiveness and market forces are not always powerful to deliver economic development.

According to neo-liberal perspective the state should perform minimum of functions and facilitate entrepreneurial freedom, private ownership, free markets and free trade. From a developmental viewpoint, the purpose of establishing such condition is that they encourage the free operation of global markets, which in turn is seen as an essential tool for development. Ultimately, from the neo-liberal perspective, even the particular characteristics of societies are relatively unimportant in the development process as what is more relevant is that countries operate under market conditions and allow for individual freedom, both of which entail the role of the state being kept to a minimum (Hopper, 2012)

After Second World War, the Bretton woods institutions, i.e. The World Bank Group (WB) and International Monetary Fund (IMF) were created for the reconstruction and development of post war economies. This led to the emergence of new forms of power and control. The subsequent perspective resulted in the evolution of new discourse of development (Escobar, 1999). Discourse of development means a system of relation that exists between the elements like population and resources, monetary and fiscal policies (Naz, 2006) and the institutions and ideas. These system of relation established discursive practices that set the rule of game who can speak, from what point of view, with what authority, to what extent of authority, to what criteria expertise. It determines rules that must be followed for this or that problem, (Hopper, 2012) theory or object to emerge and be named, analysed and eventually transformed into policy or plan (Escobar, 1999). However, the theory advocated that global capitalism has not brought any significant changes in the socio-economic conditions of the people of developing world. A response to the neo-liberals, the Post-development theory emerged in the discourse of development. According to this theory development constitutes in a specific way of thinking about the world and is a particular form of knowledge over the period of time the concept of development has become synonymous to industrialisation and urbanisation which is believed to be the road to modernisation and modernisation equals to development which includes projects like construction of highways, airports, dams, and so on.

In 1990's, economist Amartya Sen proposed Capability approach as another alternative to the neo-liberal development. According to Sen, growth of Gross National Product (GNP), technological progress and industrialisations may be important denominators for realising freedom in a society, but they are not the end of development. The realisation of freedom hinges upon the other determinants such as freedom for participation in public discussion,

political and civil rights, provision for educational and health facilities, elimination of poverty, tyranny, social deprivation, intolerance and unrestrained power of the repressive states. As per the argument, development is not to be measured solely in terms of growth of GNP but must be assessed in the background of human contentment. Enrichment of human life could be possible by realising morality, healthy family values, spiritualism, civil and political freedom, and provision of basic socio-economic opportunities, protection of environment and social security guarantees (Heywood, 2011).

Escobar says that “Development was-and continues to be for the most part a top-down, ethnocentric, and technocratic approach that treats people and the cultures as abstract concepts, statistical figures to be moved up and down in the charts of progress. It comes as a surprise that development became a force so destructive to third world cultures, ironically in the name of people’s interest” (Escobar, 1999:382). These developmental projects have severe impacts on the people especially to the tribal people who are often indigenous communities.

I. 1. c. Development and Energy

Development is associated in the modern times with infrastructure in general and energy in particular. Energy plays the most vital role in the economic growth, progress, and development, as well as poverty eradication and security of any nation. Uninterrupted energy supply is a vital issue for all countries today. Future economic growth crucially depends on the large-term availability of energy from sources that are affordable, accessible, and environmentally friendly. Energy is an important factor in all the sectors of any country’s economy (Oyedepo, 2012) and also for human development. There are multiple source of primary energy ranging from fossil fuels like coal, petroleum and natural gas, hydro, nuclear, solar and renewable energy and also non-commercial energy. There are multiple goals in energy policy, economic efficiency, and access to clean energy to all at affordable price, environmental sustainability and energy security. Electricity is the harbinger of development of an area as it promotes industries which in turns generate employment, raises the income of the people and leads to development and prosperity of the inhabitants (Katoch,et.al 2011)

Hydroelectricity is the electricity generated through the use of gravitational force of falling water. It is a renewable, economic, non-polluting and environmental friendly source of energy (Lata,et.al 2013). It creates employment opportunity, avoid fossils fuels use and cost,

optimises power supply of other generating options (thermal and variables renewable). It enhances accessibility of territory and its resources (access roads, ramps and bridges), production of no atmospheric pollutants. It neither consumes nor pollutes the water it uses for electricity generation purposes (Ibid). Although, hydroelectric projects offers opportunities for infrastructure development and economic growth, but if not well designed, implement and operate, they can affect the health and wellbeing of local as well as downstream communities (Katoch, et.al 2014). Hydropower projects can produce adverse impacts on fish, wildlife and other natural resources (ibid). It also includes resettlement, local land use pattern may be modified, water borne diseases may not be checked, and also has impact on the livelihoods of local people (Lata, et.al, and 2013).

I. 2. Hydropower development in Sikkim

One of the oldest technologies for electricity production is hydro generation. It has many advantages as compared to other technologies, and only 17% of world energy is supplied by hydroelectric plants. India is very rich with hydropower potential and considered as one of the pioneering countries in establishing hydroelectric power plants (Chaurasiya, et.al, 2013). India is blessed with immense amount of hydro-electric potential and ranks 5th in terms of exploitable hydro-power on global scenario(Ibid). India is endowed with hydropower potential to the tune of 42283.42 GW while the North East part covering four percentage of total Indian population which covers 17% of the world population and dramatically India's energy use has increased 16 times and the installed electricity capacity by 84 times (Garg, 2012). In 2008, India's energy use was the fifth highest in the world. In the lieue of Ministry of Environment and Forest, that entire country is facing from the problem of selection of energy source in respect to social, environment and technological benefits secondly cost of producing is more than economic benefits in respect of planning, installed and commissioned (Garg, 2012). The total hydropower of Sikkim as assessed by Central Water Commission, Government of India is around 8000 MW, out of which around 2000 MW are micro, mini, and small hydro categories. Remaining 6000 MW would fall either in the small or mega size hydro schemes (Ibid). Total generating capacity of hydropower projects in the state by the end of 2015 are 5352.7 MW and are in different stages of implementation (Retrieved from <http://www.powerdepartmentsikkim.com>). These hydropower projects are implemented in six different stages and are concentrated on the North district of the state mostly inhabited by one of the indigenous tribe of Sikkim which is Lepcha community.

I. 3. Local Tribes: Lepcha community in Dzongu block in Sikkim

The term 'tribes' has been defined in different ways by different scholars, therefore there is no universally accepted definition on tribes. However; Oxford Dictionary defines tribes as 'a group of people in a primitive or barbarous stage of development acknowledging the authority of a chief and usually regarding themselves as having a common sector.'

According to article 366(25) of the Constitution of India defines Schedule Tribes as 'such tribes or tribal communities or parts of, or group within such tribes, or tribal communities as are deemed Article 342 to be Scheduled Tribes for the purpose of this Constitution.' According to the Clause 1 of Article 342 of the Constitution of India, the Scheduled Tribes are the tribes or tribal communities or part of or group within these tribes and the communities which have been declared as such by the President of India through a public notification. Thus, the President notifies the Scheduled Tribes in relation to a particular State/Union Territories (UT), and not on all India bases, by an Order after consultation with the State Government concerned. These Orders can be modified subsequently, to include or exclude, but only through Act of parliament under Clause 2 of the Article. According to Census of India (Census, 2011), Scheduled Tribes constitute 8.2 percentage of the total population of India. In the state of Sikkim, Scheduled Tribes constitute 33.8 percentage of total population. The Lepchas are of Mongoloid descent and are predominantly Buddhist by religion and also many of them are converted into Christianity. The Lepchas, call themselves as 'Rong', are said to be the oldest inhabitants of Sikkim. According to the tradition prevail among them that the ancestors of the Lepchas worshiper of spirit, of mountains, rivers, trees and so on. The places, where the spirit of these components was worshipped were called by them as 'Lapcho'. From lapcho the people came to be known as Lepchas or the people who worshipped were called by them as 'Lapcho' (Gautam, 2014). The Lepcha, or the Rongpa community, the indigenous tribe of Sikkim is inhabitant in Dzongu block (block is an administrative unit under state government), North Sikkim. Traditionally the Lepchas were the skilled hunters, food gatherers and shifting cultivators but changed to prefer to practice sedentary agriculture and animal husbandry for their livelihood. They mainly grow maize and millets as cereals besides vegetables (Subrata, 2013) their cash crops are cardamom, and ginger along with orchards and oranges are grown (Ibid.). The traditional clothes of Lepchas are hand woven with different colour combinations. The Men's costume is traditionally

called Thokro-Dums and similarly the female costume is called Dumdyam or Dumvum (Bhasin, 2011) and they are skilled bamboo craftsmen having vast knowledge on medicinal plants found in their vicinity (Subrata, 2013). As the Lepchas are animist with some influence of Lamaism and Bhuddhism their traditional religious practices are intricately related to the mountains, streams and vegetation found their place. They perform elaborate rituals in Dzongu villages (Ibid.).

Dzongu block is more or less triangular in shape with river Teesta on the south-east, River Talung on the north-east. Towards the west lies the southern part of the Himadri (greater Himalayan ranges) where Mt. Kanchenjunga is located. Dzongu block covers approximately 78sqkm of geographical area and extend between 27degree 28' - 27degree 38'N latitude and 88 degree 23' - 88degree 38'E longitude, and its altitude ranges from 5000 m to 6000 m above sea level and is spread on a hilly terrain having dense forest (Ibid:20).

I. 4. Socio-economic impact of hydro-electric dams: An overview

The impacts of hydro-electric dams have been widely studied across the world. In Costa Rica hydropower dams have led to transformation of free flowing river, increased competition and conflicts over freshwater resources and also promoted river conservation (Inskeep, 2000). The impacts of hydro dams on habitat deterioration in Turkey to include, impacts on birds, waste generation, illegal hunting, and inadequate rehabilitation and restoration policies. The impacts of hydropower dams on culture have been widely documented in different parts of Africa. For instance, the impact of Pikirayi dam had an adverse impact on ancestral landscape and the concomitant psychological trauma resulting in mental health problem in Zambia (Ibid). About 600 archeological sites were destroyed in Somalia; while several pre historic stones and pottery materials were recovered from dam sites in Ethiopia (Brandt, 2000). More importantly, studies in America confirmed that America has about 75,000 dams, which are already having various impacts, it its more pertinent to note that the age of dam building is over in America as many of the dam are now at least 3 decade old. Hence, such a scenario has made America a good study sites on the effects of dams as all the positive and negative impacts are now presently feasible (Graf, 1999).

I. 5. Statement of the problem

Commissioning of Hydro Power Projects in Sikkim has emerged as a source of revenue (NHPC, 2007) and the state supply power to other states like West Bengal, Orissa, Jharkhand, and Bihar. Hydropower development eventually lead to overall infrastructure development opens up employment opportunities and generates income. But it is also a fact that Hydropower projects needs large areas of land for the construction affecting the livelihoods and social structures of the people living there. Lepcha community is the resident of Dzongu block, which is also a declared Lepcha reserve zone in North Sikkim. Dzongu was declared as a special protected area by the Chogyal (king) of Sikkim through Notification No. 3069 of 1958 which prohibited the settlement of non-Lepcha people in the region. The proclamation regarding the protected area continues even after Sikkim's merger with India and the land rights in Dzongu block are still reserved for Lepcha community. Visiting persons are denied entry in Dzongu block without valid permit. Entry restrictions are strict, even people of Lepcha community from other parts of Sikkim are not allowed to settle in Dzongu, and most outsiders can only gain permits for short visits. People of Lepcha community are the nature worshiper and their religious practices are connected to mountains, streams, vegetations found in Dzongu block. Article 371-F (k) of the Constitution of India gives special protection to the rights of the Lepcha community and upholds the old, pre-accession laws of the state. The said Dzongu Protected Area (DPA) also falls within the restricted area of Kanchenjunga Biosphere Reserve Area. Despite of these constitutional and legal provisions, the Hydro power project was commissioned in the area. The hydropower project in Dzongu block posed to have effects on the social and economic practices of Lepcha community.

I. 6. Review of related literature

In Arora, Vibha (2007), 'Unheard voices of protest in Sikkim', the author has mainly emphasised on the cultures of Lepchas of Dzongu which is affected by the installation of five dams. The author has also shared the sociological and cultural problems of Lepchas and Bhutias caused due to the influx of immigrants, which is more than the actual population of Lepchas. According to the author the developmental activities are acting as a catalyst to their extinctions. However the article did not discussed other implications caused by the projects i.e economic implications (Arora, 2007). In another article 'They are All Set to Dam (n) our

future’: Contested Development through Hydel Power in Democratic Sikkim, by the same author. The author has talked about the development through hydropower project and about the protest demanding the closure of the Hydropower Project in Dzongu by the Lepchas. In the final section of the article the author explains that development has become both the contested discourse and site of identity politics. Since the paper analyses perception of public interest and participatory development in Sikkim, author however fails to show the perception of pro-development actors which can be covered under public interest.

In Bhattarai, B. (2015), ‘Socio-economic impact of hydropower Project in Dzongu region of north Sikkim’, the article focuses on impact of socio-economic changes in the Himalayan region of Sikkim with special reference to Dzongu. The author has mainly focused on the social impacts like demographic changes, migration, and density of population and has related economic changes with demography. The author has not included the cultural aspects of Dzongu people which are one of the integral aspects.

In Biswas, Asit K, et.al. (2001), ‘Development and Large Dams: A Global Perspective’, the author cites the positive impacts of Hydropower Projects. He provides the examples of dams to support his argument like Bhakra and Hirakud in India, Aswan in Egypt and Ataturk in Turkey, which had substantial impacts on developmental process of the regions assisting national economies and improved quality of people of the region. Similarly Chuka I and Chuka II project in Bhutan lifted per capita GDP of the country from being the lowest in South Asia in 1960 to second highest in the region. He then adds the absence of proper impacts analysis of large dams by the professionals. The article lacks the balance arguments since the author does not provide the negative aspect of hydropower projects.

In Duncan, Mc Diue-Ra (2011), ‘the dilemmas of pro-development actors: viewing state ethnic dynamics through contentious development project’ (McDuie-Ra, 2011), the article primary aim is to see how ethnic minorities respond to the state led development. The article concentrates on pro-dam actors from Lepcha community. The article is divided into five sections. The author cites the development of hydropower project namely Panan Hydropower and gives the views of pro-development actors on the upliftment of socio economic conditions of the Lepcha people after the establishment of the project. However the author fails to give his views on the negative side of the impact associated with the project like socio-cultural impacts.

In Escobar, Arturo (1999), 'The Invention of development', the author has given details about how the concept of development came to its existence and how the development turned to become a developmental discourse. The author has discussed the system of relations between socio economic structures, which are the main source to understand the concept development. The author however makes no mention about the impacts caused by the development. The article provides a theoretical framework to understand the concept of development for the proposed study.

In Galobardes, Bruna. et.al. (2006), 'Indicator of socio-economic position (Part I)', the author starts with the theoretical background of Socio Economic Positions (SEP) and also provides the historical background of SEP indicators. Education one of the SEP indicator can be measured as a continuous variable or a categorical variables. The other indicator would be income which can be measured by asking people their absolute income. Most often income of household rather than individual is measured. Occupation is also a indicator which for example can be measured by the occupation of the head of the household. However author stress most on these three indicators ignoring the other indicators like health, livelihood, and so on.

In Kohli, Kanchi (2011), 'Inducing Vulnerabilities in a Fragile Landscape', the article had been divided into four sections i.e run-of-the-river projects, induced vulnerabilities, the study of regulatory collapses and, the people's struggle. The article is basically a report emphasising mostly on the environmental damages caused by the hydropower related activities. It has also provided the report of Ministry of Environment and Forest (MOEF) granting approval to the 510 MW Teesta V Hydropower projects of National Hydro Power Commission (NHPC), and the article concludes with the information on people's struggle. The article has attempted to explain that the developmental projects have affected the people of close vicinity one way or the other. The article has not clearly stated its objectives and mostly has talked about the earthquake of September 2011.

In Lata, Remu. et.al. (2013), 'Socio-economic impact of Soreng hydroelectric power project in District Kinnur, Himachal Pradesh, India', the article focuses on social aspects like households; education and an environmental issues caused by the hydropower projects. The article does not discuss about economic impacts caused by the same project.

In Nayak, Arun Kumar (2010), 'Big Dams and Protest in India: a Study of Hirakud dams', the Author has provided brief account of the history of dams in the world. Starting from second world war and post second world war and an active role played by the transnational NGO's with successful results. It was very enlightened to know the history of dams in the world and India. The author also included various movements, dam protest like 'Silent Valley' movement in Kerala, Sardar Sarovar Project on the river Narmada popularly known as Narmada Bachao Andholan and so on. These movements influenced and led to the withdrawal of the Rathongchu Project in 1997 and the Betchi project in 1998 in Sikkim. But the author has failed to give an account of the socio economic impacts associated with the Hydropower Projects in general and proposed area in particular.

In Nyari, Dickson M (2009), 'Households Data Collection for Socio-Economic Research in Agriculture: Approaches and Challenges in Developing Countries', the author gives a two types of data sources, primary and secondary data and types of socio economic data. To obtain a data for socio economic research, according to author sampling, selection of sampling design, determination of sample size is required. Questionnaire preparation, focus group discussion, field survey, pilot survey and personal interviews are the major tools for collecting socio economic data. Instead of using questionnaire schedule can be more appropriate in rural areas.

In Oomen, T.K. (2004), *Developmental Discourses: Issues and Challenges*, the book under review constitutes the texts of three lectures. Author starts the lectures with three perspectives on development and after explaining them in quite details he illustrates the inadequacy of the development discourses, displacement, distress and discrimination and concludes prescribing the technological pluralism as oppressor and emancipator. The book seems to be biased since it only focuses on the negative aspects of development and does not write about the other side of the story.

In Rai, D.B (2011), 'Hydropower Projects a boon or bane for Sikkim', the author has talked about 510MW Teesta Stage V, power station commissioned by NHPC (Rai, 2011), which was built at a cost of Rs 2619 crore and completed in a span of eight years. Author has highlighted the role of Active Citizen of Teesta the activist against the Hydropower Projects and has mainly focused on impacts on environment and aquatic organism. However the

article has not discussed about the economic implication of the project on the people living in the area.

Sanyal (2004), brings to the light that biggest concerns are the impact on the surrounding environment, the impact of the glacial behavior on the river system and occurrence of floods. It is also worthy to note that physical and financial damages were caused to the Nathpa Jhari, Himachal Pradesh and Rangit (Sikkim) projects by glacial outburst showing the lack of Environmental Impact Assessment report to consider while giving the environmental clearance to the Hydropower Project stage V. The article has mainly focused on the physical impact by ignoring the impact of hydropower Project on socio-economic conditions of Lepcha community.

In Sharma, Haresh Kumar (2014), 'Assessing the Impact of Hydroelectric Project construction on the river of District Chamba of Himachal Pradesh in the Northwest Himalaya, India' (Sharma, 2014), the author has talked about the hydropower projects of Himachal Pradesh particularly on Chamba District. These projects were Chamera I (540MW), Chamera II (300MW) and Chamera III (231MW) which is going to benefit the northern region of India by providing powers at the peak hours. The Article focuses on the impact of Hydropower Projects in Ravi and Chenab basin of District Chamba. The author has discussed only about the environment impacts and does not cover the other impacts like social and economic on the people living in the regions.

In Subrata, Pukayastha (2013), 'Hydro Power Development and the Lepchas: A case study of Dzongu in Sikkim, India', the main objective of the article was to look into the economy and unique cultures of Lepchas who are opposing hydropower projects. The article focused on how cultures and economy of Lepchas hampered by developmental projects in the form of hydropower. The article has not explained properly though culture has been explicitly discussed, the economic aspect of these impacts.

In Vagholikar, Neeraj et.al. (2010), 'Damming Northeast India: Juggernaut of hydropower threatens social and environmental security of region', authors tried to look into the social and environmental impacts caused by construction of dams in the North-East region of India. Authors claims that the Environment Impact Assessment and other assessment reports required for granting clearance are poor and insensitive to wildlife habitat and biodiversity. Another claim they makes is that livelihood and rights of the people are grossly under

estimated by calling the projects begin since displacement was relatively small as compared to the other parts of the country. The author does not talk about the social economic advantages of the projects like employment opportunity, eradication of poverty and so on.

I. 7. Scope of the study

Sikkim is a developing economy and on the path to modernisation through economic development. With its rugged terrain and swift flowing rivers has high potentiality for development of Hydropower Projects. The Government of Sikkim based on various feasibility and availability studies had invited both the public and private sector companies to develop such projects. The State Government under the aegis of Sikkim Power and Development Corporation Limited (SPDCL) sanctioned twenty-seven Hydroelectric Projects on a six cascade developmental stages (stages I-VI) in the state. Accordingly, in the study area, i.e. Dzongu, Teesta Valley Hydropower Project (510MW) was commissioned in 2008. The Project was started in 2001. The purpose of the project is to generate electricity using hydro energy sources. The Hydropower Project has raised concerns among the inhabitants regarding the cumulative impacts of the projects i.e demographic changes, displacement, loss of traditional culture, social status, impact on livelihood and so on. The study undertaken will cover from 2001 since the hydropower project was started in 2001, till 2015 so to understand the post developmental impacts. The study will identify the socio-economic impacts of Hydropower Projects by emphasising on the income, education, occupation, health, and skill adoption, livelihoods and analyses policies of the projects and also people's perception on respective projects.

I. 8. Objectives of the study

1. To understand the socio- economic impacts of Hydro Power Projects on the Lepcha community in Dzongu.
2. To understand the constitutional provisions, legal frameworks and policies undertaken for the protection of the Lepcha community.

I. 9. Research Questions

1. What are the socio-economic impacts of Hydro Power Projects on the lives of Lepcha community in Dzongu?

2. What are the constitutional provisions, legal frameworks and policies of Government of India and Sikkim for protection of indigenous people in general and Lepcha community in particular?

I. 10. Methodology

I. 10. a. Study Area

The study will focus on the Teesta Valley stage V Hydroelectric power project (510MW) located at the lower Dzongu, which is part of the administrative block of Dzongu, under Mangan sub-division. The villages selected for the proposed study are Lum, Sangtok, Gor, Tangyek, and Ramthang which are inhabitations of Lepcha Community. These villages ARE located in the lower Dzongu. Total households belonging to Lepcha community in these villages are 591. Main traditional occupation of the people living in the area is agricultural and animal husbandry. The purpose of the study is to focus on the socio- economic impacts of developmental projects on this community. The study on the social impact will look into the social indicators like education, health conditions, culture and migration. In economic aspects, the study will mainly focus on indicators like employment, livelihood, and Skill adoption.

I. 10. b. Sample Size

The proposed study will take 30 percent of the households as sample from each of the selected villages. The sample size thus would be 177 households.

I. 10. c. Sample Selection

Simple Random Sampling techniques will be used to select the sample. In this sampling, the sample units are selected by means of a number of methods like lottery method, picking blindfold, Tippet's tables, computation method, using personal identification number (PIN) or by first letter method (Ahuja, 2012). Among all these simple random sampling methods, the lottery method will be used as it will be more appropriate to select without biases or sampling errors. The same method will be used to collect the sample from each of the selected villages separately.

I.10. d. Methods of data collection

The study will use both primary and secondary sources for data collection. Primary sources will include information and data collection through questionnaire, interviews, Focus Group Discussions (FGD) and other participatory approaches. To collect the information both Questionnaire method and Interview method will be used. In Interview method, Unstandardised method will be used to provide adequate space to the respondent to answer in more free conditions. Questionnaire method, basically structured type of question and the semi-structured type questionnaire will be chosen for the study. It is designed to elicit spontaneous replies to open ended questions. Primary sources will also include publications from government, ministries, departments and government agencies.

Secondary sources will include other (non governmental) reports, publications, and articles. The study will also use both quantitative and qualitative methods for analysis. Quantitative method employs measurement and use of statistical analysis and Qualitative research describes the experiences by the groups, individuals and so on. The study will use both these techniques as the statistics of households, population, income, occupation, will be measured and the perception of people about Hydropower Project will be analysed.

I. 11. Chapterisation

Chapter I: Introduction: Conceptual Meaning, Overview of Discourses and Framework of the Study

The first chapter deals with the introduction, review of literature, scope, objectives, conceptual meaning of development and tribes and their dimensions. It will also look into the socio-economic indicators and variables associated with them.

Chapter II: Local Tribes in India and Sikkim: Constitutional Provisions, Legal Frameworks and Policies

The second chapter dealt with the legal frameworks and policies undertaken for the protection of local tribes in India in general and of Sikkim in particular.

Chapter III: Hydropower Projects and Implications on Local Tribes

The third chapter provide an overview on the impact of hydropower projects based on various (case) studies already been done.

Chapter IV: Socio-economic Impacts of Hydropower Projects on Lepcha Community

This chapter deals with the discussion on the socio-economic indicators and field survey data and report in the selected region. It will also analyse the data and information collected, related issues associated with it. In the process socio economic impact of hydropower project on Lepcha community in lower Dzongu area will be analysed.

Chapter V- Major Findings, Suggestions and Conclusion

The fifth chapter concludes with a discussion on major findings and recommendations.

CHAPTER II

Local Tribes in India and Sikkim: Constitutional Provisions, Legal Framework and Policies.

II. 1. Introduction

II. 1. a. Tribes in India: Definition and concept

India is a pluralist and multi-cultural country, with rich diversity, reflected in the multitude of culture, religious, languages and racial stocks. The population of the country comprise of different castes, communities, social and ethnic groups. The Drafting Committee of the Constitution took note of the fact that certain communities in the country were suffering from extreme social, educational and economic backwardness arising out of age-old practices, lack of infrastructure facilities and geographical isolation, and who need special consideration for safeguarding their interest and for their accelerated socio-economic development (National Commission for Scheduled Tribes: A Handbook, 2007). These communities were notified as Scheduled Caste and Scheduled Tribes as per provision contained in Clause 1 of Article 341 and 342 of the Constitution respectively (National Commission for Scheduled Tribes: A Handbook, 2007). Since India, second most populous country in the world, has also the largest concentration of tribal population (Chettri, 2013). Therefore it is necessary to examine the early origins of the concept of 'tribe' and its transformation in various historical and political contexts, specifically during the colonial period in the Indian sub-continent.

One of the other, early meanings of tribe was that of a group claiming ancestry (Affairs, 2014). Later, the idea of the tribe as people living in 'primitive' conditions became dominant (Ibid). In India, the local equivalent of the term 'tribe' is often assumed to be '*jana*'¹ or 'communities of people' based on the usage of the term in ancient Buddhist and Puranic² texts (Ibid).

Winick (1956) In the Dictionary of Anthropology has defined it in the words, "a tribe is a social group usually with a definite area, dialect, cultural homogeneity and unifying social organisation."

¹ Jana: Communities of People

² Puranic: Name of an Ancient genre of Hindu or Jain literature

Xaxa (2001) rightly specifies that tribes in India are not a homogenous category. They differ widely among themselves in respect of the region they live in, languages they speak, physical features they display, geographical terrain they inhabit, modes in which they make their living, levels of development at which they are placed and size of community they represent.

The Census of India has played a critical role in shaping the modern understanding of tribe through its effort at enumeration and classification. The proper delineation of tribes began with the colonial census in the late nineteenth century to provide detailed information about the population of the sub-continent. Through these exercise, certain communities were labeled as tribes although the criteria transformed over time. In the 1881 census, the term used was 'forest tribe', a sub-category within the broader group of 'agricultural and pastoral castes' (Affairs, 2014). In the 1901 census, tribes were identified as those who 'practiced animism' thus placing religious practices at the centre. Therefore, those practicing Hinduism were viewed as caste, while those practicing animism were labeled tribes, although this criterion would change in the following decades such that, Scheduled Tribes can practice any religion, including Hinduism and Christianity. In the later census, additional reference to territory were included, producing the label of 'hill and forest tribes' in 1921 and 'primitive tribes' a decade later (Ibid). One of the earliest attempts to create a list of tribes in the sub-continent was during the 1931 census which identified 'primitive tribes'. This was followed by a list of 'backward tribes' for the provinces made under the Government of India Act, 1935. In the 1941 census, tribes were identified not in terms of their religion but according to their 'origin', i.e, tribes were those who have a 'tribal origin'. The 1950 Constitutional Amendment order with the full list of Scheduled Tribes recognised at the time was largely based on the list of 'backward tribes' prepared by the colonial administration in 1936. At the time of the first census of independent India in 1951, there were 212 recognised Scheduled Tribes in the country (Ibid). The term Scheduled Tribe itself is a politico-administrative category that does not capture the enormous social complexity of the various tribes encompassed within its fold. The constitution of India categorized certain sections of the population as Scheduled Tribes to make available special welfare provision to them- even though this category was never properly defined hence the Lobur Committee was set up to look into issue. The Committee recommended five criteria for identification, namely, i) Primitive traits, ii) Distinct culture, iii) Geographical isolation, iv) Shyness of contact with the community at large and v) Backwardness (Affairs, 2014).

Tribals are often referred to as Adivasi, Vanyajati, Pahari, Adimjati and Anusuchit Jan Jati, the latter being the constitutional name (Basu, 2000). Tribe as a category, separate from the mainstream caste society, is an invention of the British administrators (Chettri, 2013). According to Singh (1995), ‘the notion of a tribe was introduced by colonial administrators. It was part of the universal trend to dichotomise the indigenous peoples and coloniser, the savage and the civilised, the tribals and non-tribals’ cited in (Chettri, 2013).

According to Imperial Gazetteer of India(1911) a “tribe is a collection of families bearing a common name, speaking a common dialect, occupying or professing to occupy a common territory and is not usually endogamous, though originally it might have been so”.

D.N. Majumder defines tribes as a social group with territorial, endogamous, with no specification of functions, ruled by tribal officers, hereditary or otherwise, united in language or dialect, recognising social distance with other tribes or caste, without any social obloquy attaching to them, as it does in the caste structure, followed tribal traditions, beliefs and customs, illiberal of maturation of ideas from alien sources, above all conscious of homogeneity of ethnic and territorial integration, cited in (Hasain, 2008).

Article 366(25) of the Constitution of India defines tribes as those communities, who are scheduled in accordance with Article 342 of the Constitution. This article says that only those communities who have been declared as such by the president through an initial public notification or through a subsequent amending Act of Parliament will be considered to be Scheduled Tribes (Ministry of Tribal Affairs).

The Schedule Tribes notified in 30 States/ UTs and the number of individual, ethnic groups was brought under the status. The tribal population of India, as per the 2011 census, is 10.43 crore, constituting 8.6% of the total population. Among them about 89.97% live in rural areas and about 10.03% in urban areas. The decadal population growth of the tribal’s from census2001 to 2011 has been 23.66% against 17.69% of the entire population (Statistical Profile of Scheduled Tribes in India, Tribal Affairs Statistical Division, Government of India, 2013).

II. 2. Constitutional Provisions: Special Safeguards for Scheduled Tribes and Scheduled Areas

The term 'Scheduled Area' had been defined in the Indian Constitution as 'such area as the President may by order declare to be Scheduled Areas' (National Commission for Schedule Tribes, 2012). The Draft Committee discussed in the Constituent Assembly adapted these provisions with regard to the administration of the scheduled tribes and tribal areas (National Commission for Schedule Tribes, 2012). The special safeguards provided for the Tribes living in these Scheduled Areas in relation to governance are as follows:

II. 2. a. The Fifth Schedule

The Fifth Schedule contains provision regarding the administration and control of the Scheduled Areas in nine states having Scheduled Areas, viz., Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Orissa, and Rajasthan (PESA ACT, 2010). The Governors of these States, comprising Scheduled Areas, have special responsibilities and power. These States have Tribal Advisory Councils (TACs). (In addition, Tamil Nadu and West Bengal, which have Scheduled Tribes but do not have any Scheduled Area, also have TACs). Besides the power to exclude or modify application of any Act of Parliament or the State legislature in its application to Scheduled Areas, the Governors of these States have the power to make regulations for the peace and good governance of any Scheduled Area particularly for the following purposes:

- a) In such areas the transfer of land are prohibited or restricted among members of the Scheduled Tribes.
- b) In such areas the allotment of land are regulated to members of the Scheduled Tribes
- c) In such areas, the carrying of business as money lender by person who lends money to members of the Scheduled Tribes is regulated.

II. 2. b. The Sixth Schedule

The Sixth Schedule provides the provisions for the administration of the Tribal Areas in the States of Assam (North Cachar Hills District and Karbi Anglong District), Meghalaya,

Mizoram, and Tripura (Autonomous Hill District). There are Autonomous District Councils and Autonomous Regional Councils in these areas which have a long tradition of self-management systems. These Autonomous Councils not only administer the various Department and development programmes but they also have power to make laws on a variety of subjects, e.g, land forests, shifting cultivation, town administration including village or town, police, health and sanitation, inheritance of property, marriage and divorce and social customs. The Sixth Schedule vests the Governors of the concerned State and the President of India with certain duties and powers in relation to legal enactments in the States (National Commission for Schedule Tribes, 2012).

The Indian Constitution has made provision for the weaker section while various acts and legal provisions were made for protection, development and welfare and weaker section including Scheduled Castes in India (Chettri, 2013). Significantly, the protection of Civil Rights Act,1995 Scheduled Castes and Scheduled Tribes(Prevention of Atrocities) Act,1989, National Commission for Scheduled Caste and Scheduled Tribes, established in 1990 are a few examples of legal measures for the protection of interest of weaker section (Hoshiar, 2014).

With a view to provide safeguards against the exploitation of SCs and STs ant to promote and protect their social, educational, economic and cultural interest, special provision were made in the Constitution. Due to their social disability and economic backwardness, they were grossly handicapped in getting reasonable shares in elected offices, government jobs and educational institutions and therefore, it was considered necessary to follow a policy of reservation in their favour to ensure their equitable participation in governance. In terms of these enabling provisions, various safeguards have been provided for socio-economic and educational development of Scheduled Caste and Scheduled Tribes in the Constitution of India (National Comission for Scheduled Tribes: A Handbook, 2007).

II. 2. c. The constitution (sixty-fifth amendment) Act 1990

Article 338 of the Constitutional Act, 1990 provides for a Special Officer for the Scheduled Castes and Scheduled Tribes to investigate all matters relating to the safeguards provided for the Scheduled Caste and Scheduled Tribes under the Constitution and to report to the President on their working (The Constitution(Sixty-Fifth Amendment) Act, 1990).

The framers of the Constitution of India incorporated several provisions which are meant for the welfare and development of the tribal. Some of the important constitutional provisions for STs are as follows:

Article 15(4): The State is to make special provision for the advancement of any socially and educationally backward classes of citizens or for the Scheduled Castes and the Scheduled Tribes.

It was introduced by the Constitution (First Amendment) Act, 1951, so as to enable Government to provide reserve seats and fee concession for backward classes of citizen in State run institution or institutions receiving aid from the State. It doesn't give the state the right to make reservation in private institutions.

Article 16(4): Provides Equality of Opportunity for all citizens in matters relating to employment or appointment to any office under the State.

The State makes provision for reservation in appointment, posts in favour of any backward class citizens, which in opinion of the state is not adequately represented in services under the State.

Article 16(4A): The State is to make provision in matters of promotion to any class or classes of posts in the services in favour of the Scheduled Castes and the Scheduled Tribes.

Article 16(4A) is couched in almost the same language as Article 16 (4) with one major differences. Article 16(4A) refers to just SC and ST but Article 16(4) deals with backward class of citizens. This means that Other Backward Class is not covered by Article 16(4A).

Article 46: provides the promotion of educational and economic interests of Schedule Castes, Scheduled Tribes and other weaker sections.

The state shall promote with special care the educational and economic interest of the weaker section of the people, and in particular, of the Scheduled Caste and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation.

Article 164(1): the Chief Minister is appointed by the Governor. The other Ministers are appointed by the Governor on the advice of the Chief Minister, and the Minister holds office during the pleasure of the Governor: provided that in the States of Bihar, Madhya Pradesh and Orissa, there shall be a Minister in charge of tribal welfare who may in addition be in charge of the welfare of the Scheduled Castes and Backward Classes or any other work (now applicable to Jharkhand, Chhattisgarh, Madhya Pradesh and Orissa).

Article 243D: Reservation of seats for the Scheduled Castes and the Scheduled Tribes in every Panchayat³ and the number of seats so reserved shall bear, as nearly as may be, the same proportion to the, total number of seats to be filled by direct election in that Panchayat as the population of the Scheduled Caste in that Panchayat area or of the Scheduled Tribes in that Panchayat area bears to the total population of area and such seats may be allotted by rotation to different constituencies in a Panchayat.

Article 243(T): Reservation of seats for the Schedule Castes and Scheduled Tribes in every Municipality and the number of seats so reserved shall bear, as nearly as may be, the same proportion to the, total number of seats to be filled by direct election in that Municipality as the population of the Scheduled Caste in that Municipal area or of the Scheduled Tribes in that Municipal area bears to the total population of area and such seats may be allotted by rotation to different constituencies in a Municipality.

Article 244(1): Provides the provision for the administration and control of Scheduled Area and Tribes in any state other than the States of Assam, Meghalaya, Tripura, and Mizoram (Fifth Schedule).

Article 244(2): Provides the provision for the administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram (Sixth Scheduled).

Article 275(1): Provision for payment of grants-in-aid to enable the States to meet the cost of such schemes of development as may be undertaken by the States with the approval of the Government of India for the purpose of promoting the welfare of the Scheduled Tribes in that

³ Panchayat: a village council or local government

States or raising the level of administration of the Scheduled Areas therein to that of the administration the rest of the areas of that State. This is a Central Sector Schemes and 100% grants are provided to the States. The grants are provided to the States on the basis of ST population percentage in the State to the tribal population of the country. The funds are released to the State Government against specific projects for the welfare of Scheduled Tribes and strengthening of administration of tribal area from the year 2000-2001. The Ministry of Tribal Affairs issued revised guidelines under NO. 14011/9/2001-SG&C dated 2.7.2002 for adoption during 10th Five Year Plan. There was a minor notification in the guidelines in January, 2008.

Article 330: Reservation of seats for the Scheduled Castes and the Scheduled Tribes in the House of the People (Lok Sabha).

The seats shall be reserved in House of the People for Scheduled Caste and Scheduled Tribes except the Scheduled Tribes in the autonomous district of Assam.

Article 332: Reservation of seats for the Scheduled Castes and the Scheduled Tribes in the Legislative Assemblies of the states. The numbers of seats reserved for the Scheduled Castes or the Scheduled Tribes in the Legislative Assembly nearly as may be, the same proportion to the total number of seats in the Assembly as the population of the Scheduled Castes in the state or the Scheduled Tribes in the State or part of the State, as the case may be, in respect of which seats are so reserved bears to the total population of the State.

Article 335: The claims of the members of the Scheduled Castes and the Scheduled Tribes in the appointments to services and posts in connection with the affairs of the Union or of a State to be taken into consideration consistent with the maintenance of efficiency of administration.

The claims of the members of the Scheduled Castes and the Scheduled Tribes shall be taken into consideration, consistently with the maintenance of efficiency of administration, in the making of appointments to services and posts in connection with the affairs of the Union or of State: provided that nothing in this article shall prevent in making of any provision in favour of the members of the Scheduled Castes and the Scheduled Tribes for relaxation in

qualifying marks in any examination or lowering the standards of evaluation, for reservation in matters of promotion to any class or classes of services or posts in connection with the affairs of the Union or of a State.

Article 338A: provides for a National Commission for the Scheduled Tribes to investigate and monitor, and evaluate all matters relating to the Constitutional safeguards provided for the Scheduled Tribes under the Constitution. It also provides Commission to participate and advise on the planning process of socio economic development of the Scheduled Tribes and to evaluate the progress of their development under the Union and any State and to present to the President the annual report upon the working of those safeguards, and to make reports recommending the measures that should be taken by the Union or any State for effective implementation of those safeguards.

Article 339: Provides the provision for the control of the Union over the administration of Scheduled Areas and welfare of the Scheduled Tribes. The President appoint a Commission to report on the administration of the Scheduled Areas and the welfare of this Scheduled Tribes in the States. The order defines the composition, power and procedure of the Commission.

Article 339(1): Provides the provision for the appointment of a Commission to report on the administration of the Scheduled Areas and the welfare of the Scheduled Tribes in the States.

Article 340: Provides the provision where President appoints a Commission to investigate the condition of socially and educationally backward classes within the territory of India and the difficulties under which they labour and make recommendations to remove such difficulties and to improve their conditions.

Article 342: Provides the provision where the President in consultation with the Governor, specify the tribal or tribal communities deemed to be Scheduled Tribes in relation to that State or Union Territory as the case may be (NCST, 2007).

Clause(1) of Article 342 of the Constitution of India, the President, after Consultation with the State Government promulgated 9 orders specifying the Scheduled Tribes in relation to the

state and union territories (Ministry of Tribal Affairs). Out of these, eight are in operation in their original or amended form. One order namely the Constitution (Goa, Daman, and Diu) Scheduled Tribes Order 1968 has become defunct on account of reorganisation of Goa, Daman and Diu in 1987. Under the Goa, Daman and Diu Reorganisation Act 1987 (18 of 1987) the list of Scheduled Tribes of Goa has been transferred to part XIX of the Constitution to the Constitution (Scheduled Tribes) Order, 1950 and that of Daman and Diu II of the Schedule of the Constitution (Scheduled Tribes) (Union Territories) Order, 1951(Ibid).

Table No. II. 1: Orders for Scheduled Tribes

| S. No. | Name of Order | Date of Notification | Name of States/UT(S) for which applicable |
|--------|--------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | The Constitution (Scheduled Tribes) Order, 1950 (C.O.22) | 6.9.1950 | Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Goa, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa, Rajasthan, Tamil Nadu, Tripura and West Bengal. |
| 2. | The Constitution (Scheduled Tribes) Order, 1959 (C.O.33) | 20.9.1951 | Daman and Diu, Lakshadweep |
| 3. | The Constitution (Andaman and Nicobar Islands) Scheduled Tribes Order, 1959 (C.O.58) | 31.3.1959 | Andaman and Nicobar Islands |
| 4. | The Constitution (Dadra and Nagar Haveli) Scheduled Tribes Order, 1962 (C.O.65) | 30.6.1962 | Dadra and Nagar Haveli |
| 5. | The Constitution (Uttar Pradesh) Scheduled Tribes Order, 1967 (C.O.78) | 24.6.1967 | Uttar Pradesh |
| 6. | The Constitution (Nagaland) Scheduled Tribes Order, 1970 (C.O.88) | 23.7.1970 | Nagaland |
| 7. | The Constitution (Sikkim) Scheduled Tribes Order, 1978 (C.O.111) | 22.6.1978 | Sikkim |
| 8. | The Constitution (Jammu and Kashmir) Scheduled Tribes Order, 1989 (C.O.142) | 7.10.1989 | Jammu and Kashmir |

Source: *Statistical Profile of Scheduled Tribes in India*, Tribal Affairs Statistical Division, Government of India, 2013.

Above table explains the following:

1. *The Constitution (Scheduled Tribes)(Union Territories) Order, 1950 C.O 22*

In exercise of the powers conferred by clause (1) of article 342 of the Constitution of India, the President, after consultation with the Governor of the State concerned, made the following Order, namely: i) this order is called the Constitution (Scheduled Tribes) Order, 1950, ii) the tribes or tribal communities specified in 2(Part 1 to 3[XXII] of the Scheduled to this order shall, in relation to the States to which those Parts respectively relate, be deemed to be Scheduled Tribes so far as regards members thereof residents in the localities specified in relation to them respectively in those parts of that Schedule, iii) any reference in this Order to State or to a district or other territorial division thereof shall be construed as a reference to the State, district or other territorial division as constituted on the 1st day of May, 1976 .

2. *The Constitution(Scheduled Tribes)(Union Territories)Order, 1951 (C.O 33)*

In exercise of the powers conferred by clause (1) of article 342 of the Constitution of India, the President, after consultation with the Governor of the State concerned, makes the following Order, namely: i) this order may be called the Constitution (Scheduled Tribes)(Union Territories) Order, 1951, ii) the tribes or tribal communities, or part of, or groups within, tribes or tribal communities, specified in 3(Part I to II[XXII] of the Scheduled to this order shall, in relation to 2 (Union Territories) to which those Parts respectively relate, be deemed to be Scheduled Tribes so far as regards members thereof residents in the localities specified in relation to them respectively in those parts of that Schedule, iii) any reference in this order to a Union Territory as from the 1st day of 1956.

The Schedule: Lakshadweep (inhabitants of the Laccadive, Minicoy and Amindivi Islands) and Daman and Diu (Dhodia, Dubla (Halpati), Naikda (Talavia), Siddi (Nayaka) and Varli.

3. *The Constitution (Andaman and Nicobar Islands) Scheduled Tribes Order, 1959 (C.O.58).*

In exercise of the power conferred by clause (1) of article 342 of the Constitution of India, the President makes the following Order namely: i) this order may be called the

Constitution (Andaman and Nicobar Islands) Scheduled Tribes Order, 1959. ii) The tribal or tribal communities, or part of, or groups within, tribes or tribal communities, specified in the Scheduled to this Order, shall, for purpose of the Constitution, be deemed to be Scheduled Tribes in relation to the Union Territory of the Andaman and Nicobar Islands so far as regards members thereof resident of that Union Territory. iii) The Scheduled 1) Andamanese, a) Chariar, b) Chari, c) Kora, d) Tabo, e) Bo, f) Yere, g) Kede, h) Bea, i) Balawa, j) Bojigiyab, k) Juwai, l) Kol. 2) Jarawas, 3) Nicobarese, 4) Ongese, 5) Setinelese, 6) Shom Pen(The Constitution (Andaman and Nicobar Islands) Scheduled Tribes Order, 1959)

4. *The Constitution (Dadra and Nagar Haveli) Scheduled Tribes Order 1962(C.O.65).*

In exercise of the powers conferred by clause (1) of Article 342 of the Constitution of India, the President made following Order, namely i) this order may be called the Constitution (Dadra and Nagar Haveli) Scheduled Tribes Order, 1962. ii) the tribe or tribal communities,(or parts of, or group within, tribes or tribal communities, specified in the Scheduled to this Order, shall, for the purpose of the Constitution, be deemed to be Scheduled Tribes in relation to the Union territory of Dadra and Nagar Haveli so far as regards members thereof resident in that Union Territory.iii) The Scheduled: 1) Dhodia, 2) Dubla including Halpati, 3) Kathodi, 4) Kokna, 5) Koli Dhor including Kolgha, 6) Naikda or Nayaka, 7) Varli (The Constitution (Dadra and Nagar Haveli) Scheduled Tribe Order, 1962).

5. *The Constitution (Uttar Pradesh) Scheduled Tribes, 1967(C.O.78).*

In exercise of the powers conferred by clause (1) of Article 342 of the Constitution of India, the President, after consultation with the Governor of the State of Uttar Pradesh, made following Order, namely i) this order may be called the Constitution (Scheduled Tribes) (Uttar Pradesh) Order, 1967. ii) the tribe or tribal communities,(or parts of, or group within, tribes or tribal communities, specified in the Scheduled to this Order, shall, for the purpose of the Constitution, be deemed to be Scheduled Tribes in relation to the State of Uttar Pradesh so far as regards members thereof resident in that Union Territory.iii) The Scheduled: 1) Bhotia, 2) Buksa, 3) Jannsari, 4) Raji, 5) Tharu, 6) Gond, Dhuria, Nayak, Ojha, Pathari Raj Gond (in the district of

Mehrajganj, Sidharth Nagar, Basti, Gorakhpur, Deoria, Mau, Azamgarh, Jonpur, Balia, Gazipur, Varanasi, Mirzapur and Sonbhadra), 7) Kharwar, Khairwar (in the district of Deoria, Balia, Ghazipur, Varansai and Sonbhadra), 8) Saharya (in the district of Sonbhadra), 13) Patari (in the district of Sonbhadra), 14) Chereo (in the district of Sonbhadra and Varanasi), 15) Bhuiya, Bhuniya (in district of Sonbhadra) (The constitution (Scheduled Tribes)(Utter Pradesh)Order, 1967).

6. *The Constitution (Nagaland) Schedule Tribes Order, 1970 (C.O.88).*

In exercise of the powers conferred by clause (1) of Article 342 of the Constitution of India, the President, after consultation with the Governor of the State of Nagaland, made following Order, namely i) this order may be called the Constitution (Scheduled Tribes) (Nagaland) Order, 1970. ii) the tribe or tribal communities,(or parts of, or group within, tribes or tribal communities, specified in the Scheduled to this Order, shall, for the purpose of the Constitution, be deemed to be Scheduled Tribes in relation to the State of Nagaland so far as regards members thereof resident in that Union Territory.iii) The Scheduled: 1) Naga, 2) Kuki, 3) Kachari, 4) Mikir, 5) Garo (The Constitution (Nagaland) Scheduled Tribes Order, 1970).

7. *The Constitution (Sikkim) Schedule Tribes Order, 1978 (C.O111).*

In exercise of the powers conferred by clause (1) of Article 342 of the Constitution of India, the President, after consultation with the Governor of the State of Sikkim, made following Order, namely i) this order may be called the Constitution (Scheduled Tribes) (Sikkim) Order, 1978. ii) the tribe or tribal communities,(or parts of, or group within, tribes or tribal communities, specified in the Scheduled to this Order, shall, for the purpose of the Constitution, be deemed to be Scheduled Tribes in relation to the State of Nagaland so far as regards members thereof resident in that Union Territory.iii) The Scheduled: 1) Bhutia (including Chumbipa, Dophapa, Dukpa, Kagatey, Sherpa, Tibetan, Tromopa, Yolmo), 2) Lepchas, 3) Limboo, 4) Tamang (The Constitution (Sikkim) Schedules Tribes Order, 1978).

8. *The Constitution (Jammu and Kashmir) Schedule Tribes Order, 1989 (C.O.142).*

In exercise of the powers conferred by clause (1) of Article 342 of the Constitution of India, the President, after consultation with the Governor of the State of Sikkim, made following Order, namely i) this order may be called the Constitution (Scheduled Tribes) (Jammu and Kashmir) Order, 1978. ii) the tribe or tribal communities,(or parts of, or group within, tribes or tribal communities, specified in the Scheduled to this Order, shall, for the purpose of the Constitution, be deemed to be Scheduled Tribes in relation to the State of Jammu and Kashmir so far as regards members thereof resident in that Union Territory.iii) The Scheduled: 1) Balti, 2) Beda, 3) Bot, Bota, 4) Brokpa, Drokpa, Dard, Shin, 5) Changpa, 6) Garra, 7) Mon, 8) Purigpa, 9) Gujjar, 10) Bakarwal, 11) Gaddi, 12) Sippi (The Constitution (Jammu and Kashmir) Scheduled Tribes Order, 1989).

II. 3. Legislative provisions related to Scheduled Tribes

Particularly Vulnerable Tribal Groups [PVTGs] (earlier known as Primitive Tribal Groups [PTGs]) The Scheduled Castes and Scheduled Tribes Commission (1962), popularly known as the Dhebar Commission, classified the STs in India into four different groups: (i) those that are living in the remotest corners and for that reason are almost in a primitive stage; (ii) those in the Jhuming* (shifting) cultivation stage; (iii) those who have taken to regular agriculture; and (iv) those who have been already assimilated (Dhebar 1962)[16]. All these tribal groups are at different stages of economy starting from the stage of food gatherer to settled agriculture. However some of the tribal groups who are at food gathering, hunting and fishing stages are facing multifarious problems in modern times in their own habitats. These tribes are small in groups and some are on the verge of extinction. Some of these small tribal groups in the country have been categorized as Particularly Vulnerable Tribal Groups (Earlier known as Primitive Tribal Groups) for special development assistance. The Government of India, based on a four-point criteria viz., (i) smallness in size and diminishing in number; (ii) backwardness and isolation; (iii) pre-agricultural technology; and (iv) very low literacy, has identified 75 tribal communities as Primitive Tribal Groups (PTGs). There is a marked difference between the relatively advanced tribal groups and the primitive tribal groups. The latter live in more interior pockets which are generally inaccessible and the declining sources of sustenance have left them more vulnerable to food insecurity, malnutrition and ill-health. The cultural gap between the primitive tribal groups and the nontribal societies is wide. The

socio-economic conditions of PTGs are much worse than other tribal groups. Outstanding examples in this context are the bay-Islanders like the Shompens, Jarawas, and Sentinelese of A & N Islands. Even some of the mainland groups which can be cited in this context include the Bondos of Orissa, Cholanaickans of Kerala, the Abujhmarias of Chattisgarh, and the Birhors of Jharkhand. In Sikkim, the state government has recognised the Lepchas as the primitive tribal group but the Government of India has yet to recognise them as PTG.

Ministry of Tribal Affairs has revised the Central Sector Scheme known as “Development of Particularly Vulnerable Tribal Groups (PVTGs)”, w.e.f. 1st April, 2015, under which the Ministry will provide 100% financial assistance through State Governments for activities including housing, land distribution and land development, agricultural development, animal husbandry, construction of link roads, installation of non-conventional sources of energy or other innovative activity, for the comprehensive socio-economic development of PVTGs, based on Conservation-cum-Development (CCD) Plan prepared by the concerned State Governments on the basis of assessment of their requirements. Under the Scheme, priority is accorded for their protection and improvement in terms of the social indicators like livelihood, health, nutrition and education, so as to decrease their vulnerability.

There are 75 tribal groups identified and categorized as Particularly Vulnerable Tribal Groups (PVTGs), (earlier known as Primitive Tribal Groups) located in the States/UT of AP, Bihar, Jharkhand, Gujarat, Karnataka, Kerala, MP, Chhattisgarh, Maharashtra, Manipur, Odisha, Rajasthan, TN, Tripura, UP, Uttarakhand, West-Bengal and Andaman & Nicobar Islands.

In addition to the above constitutional provision, orders there are number of legal Acts and Laws both Central and States, which provides protects and safeguards for the interest of the Scheduled Tribes. Some of the important Central Acts are as follows:

1. Forests Rights Act 2006

The Ministry of Tribal Affairs is the nodal agency for implementing the provision of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The Act seeks to recognize and vests the forest rights and occupation in forests land in forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing

in such forest for generation but whose rights could not be recorded. The Act was notified for operation with effect from 31.12.2007. The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Rules, 2008 for implementing the provision of the Act were notified on 1.1.2008. as per the provision of the Act and the Rules framed there under, the implementation of the Act lies at the level of the State/UT Government. The Act seeks to recognise and vest certain forests rights in the forest dwelling Scheduled Tribes and other traditional forest dwellers. The Ministry, to ensure that the intended benefits to this welfare legislation flow to the forest dwellers, has also issued comprehensive guidelines to the State/UT government on 12.7.2012 for the better implementation of the Act. Further, to strengthen the Forest Rights Rules, 2008, the Ministry has also notified the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forests Rights) Amendment Rules, 2012 on 6.9.2012 (Ministry of Tribal Affairs, 2012) .

2. Forests Rights Act in Protected Areas

There are about 690 Protected Areas (Pas), i.e., National Parks and Sanctuaries in India. These areas are established under the Wildlife Protection Act, 1972 (as amended in 2006), and recognised under the Forest Rights Act. Approximately, three million people in India, most of whom are tribal, live inside Pas and are dependent on them for forest resources. However, in the decades running into a century, forest dwelling and forest dependent tribal communities were treated as encroachers and forest offenders even when, for instances, they would be found collecting minor forest produce. The FRA recognizes of only the Rights that the tribals and the Other Traditional Forest Dwellers(OTEDs) have in relation to the forests, but it also empowers the holders of any forest rights, Gram Sabha and village level institutions in areas where there are hold era of any Forests Right under this Act to:

- a) Protect the wildlife, forest and biodiversity;
- b) Ensure that adjoining catchments area, water sources and other ecological sensitive areas are adequately protected;
- c) Ensure that the habitat of forest dwelling Scheduled Tribes and other traditional forest dwellers is preserved from any form of destructive practices affecting their cultural and natural heritage;

- d) Ensure that the decision taken in the Gram Sabha to recognize to regulate access to community forests resources and stop any activity which adversely affect the wild animals, forests and the biodiversity are complied with.

3. *Panchayats (Extensions to the Scheduled Areas) Act, 1996 (PESA)*

The provision of the Panchayat (Extensions to the Scheduled Areas) ACT, 1996 (PESA) was enacted, extending Part IX of the Constitution to the Scheduled V areas in order to safeguards the customs, rights, and livelihoods of those living in Scheduled Areas (Affairs, 2014).

Over the years, the tribal's livelihood and economy have undergone substantial changes. Traditionally tribal were dependent on the natural resources but due to industrilisation and urbanisation forced the tribes to search for a different ways of living. Increase in tribal population, shortages of food and alienation from natural habitat alleging them as forest intruder for using a little sum of forest product by environmentalist made the tribals depend upon the urban markets. Many of them migrated to urban areas in quest of income and employment, which resulted in exposer to all kinds of exploitation and marginalisation in an unfamiliar urban space.

This shift in tribal economy and diversification of occupations has been corroborated in the People of India report by the Anthropological Survey of India. The report maintains that '...the number of communities practicing hunting and gathering has declined, as forest have disappeared and wildlife has diminished. Ecological degradation has severely curtailed the related traditional occupations. For instances, trapping of birds and animals, pastoral activities and shifting cultivation. However, there is a raise in horticulture, terrace cultivation, settled cultivation, animal husbandry, sericulture, and bee keeping. Many of the traditional crafts have disappeared and spinning, in particular, has suffered. Related activities such as weaving, dyeing and printing have similarly suffered. Skin and hide works as also stone carving has declined.'

The report further states that, in tribal areas '....business, trade and industry has gone up. Through various Government Schemes and Reservation there is a sharp rise in the number of Scheduled Tribes employed in government sectors, self employment, etc. The number of Scheduled Tribes employed in mining and masonry has gone up steeply which suggests a

new mobility.’ Thus in respect of Scheduled Tribes 2003, the land ownership and the intra-class concentration ratio was not adverse (the share of area being higher than the share of holding) in comparison to all social groups, and their average size of area owned was higher than that of all groups (Singh, 1997). This can be due to the restrictive land transfer regulation legislation, applicable to the Scheduled Areas in different states (Ibid).

II. 4. Key institutional structure related to Scheduled Tribes

Both the Central and the State Government in India have a variety of agencies and governance department intended to address issues relating to STs (Bijoy, 2010).

II. 4. a. Central Government

The Constitution of India has also made definite provision and department/ministry for the welfare and uplift of the tribal people throughout the country. Article 15(4) 46, 244 (1) and 339 of the Indian Constitution speak of special provisions meant for the administration and control of tribes and their areas therein, for their welfare and protection (Padhi, 2005).

Ministry of Tribal Affairs

The Ministry was set up in 1999 after the bifurcation of Ministry of Social Justice and Empowerment with the objective of providing more focused approach on the integrated socio-economic development of the Scheduled Tribes(STs), the most underprivileged of the Indian Society, in a coordinated and supplement, through financial assistance, the efforts primarily of other Central Ministries, the State Governments and partly of voluntary organisations, and to fill critical gaps in institution and programmes taking into account the situation of STs. The primary responsibility for promoting the interests of Scheduled Tribes rests with all the Central Ministries. The Ministry supplements their efforts by way of various developmental interventions in critical sectors through specially tailored schemes. These, comprising schemes for economic, educational and social development and through institution building are administered by the Ministry of Tribal Affairs and implemented mainly through the State Government/ Union Territory Administrations (Ministry of Tribal Affairs, 2012)

National Commission for Scheduled Tribes

The National Commission for Scheduled Tribes (NCST) was established by amending Article 338 and inserting a new Article 338A in the Constitution through the Constitution(89th Amendment, 2003. By this amendment, the erstwhile National Commission for Scheduled Caste and Scheduled Tribes was replaced by two separate Commission namely: i) the National Commission for Scheduled Caste(NCSC), and ii) the National Commission for Scheduled Tribes(NCST) w.e.f 19th February,2004. Article 338A of the Constitution defines the Commission 's function and powers essentially those of ombudsman, with the role of monitoring measures to safeguard ST resource rights, livelihoods and so on (National Commission for Scheduled Tribes, 2016).

Tribal Sub Plan/ Integrated Tribal Development Projects

The Tribal Sub-Plan (TSP) strategy was initiated for the rapid socio-economic development of tribal people in the 5th five year Plan. The strategy for the TSP was prepared for areas of tribal concentration which were designated as Integrated Tribal Development Projects. TSP is a part of overall plan of a State/ UT and has the objective of socio-economic development and Protection of STs against exploitation through legal and administrative support for narrowing the gap between their levels of development to that of the general communities. Over the years, changes have been made in modalities to make the approach more effective and beneficial to the tribals. In the Sixth Plan, Modified Area Development Approach (MADA) was adopted to cover smaller areas of tribal communities having 10,000 populations of which 50% or more were tribals. In the Seventh Five Year Plan clusters having total population of at least 5000 and above with the Scheduled Tribes concentration of 50% or more outside the TSP were included. Later, the development of the Primitive Tribal Group (PTGs) has also been included in the strategy. The benefits to be given to the tribals and tribal areas are of a State/UT from the TSPs and in addition to what benefits from the overall Plan of a State/UT. The important aspect of this strategy is to ensure allocation of funds for TSP areas at least in proportion to the ST population of each of the State/UT. TSP approach applies to 21 States and two Union Territories, where Scheduled Tribes constitute a sizable population but it is not applicable in the tribal majority States/Uts of Arunachal Pradesh, Meghalaya, Nagaland, Dadra& Nagar Haveli and Lakshadweep. The tribal development envisages:

- i) Educational promotion schemes of schools, residential schools, hostels, scholarships, special coaching/training etc.
- ii) Agriculture and allied activities by providing minor and medium irrigation facilities, animal husbandry, dairying, poultry etc.
- iii) Improved credit and marketing facilities for agriculture and minor forest products.
- iv) Special training programmes to tribal framers.
- v) Irrigation and power facilities to promote agricultural production and small scale industry etc. (Socio- Economic and Educational Development Society(SEEDS), 2007).

Commission for Scheduled Tribes and Scheduled Areas

A commission for Scheduled Areas and Scheduled Tribes was constituted under Article 399(1) of the Constitution. The first Scheduled Areas and Scheduled Tribes Commission were set up in 1960(headed by U.N Dhebar). The second Commission was set up in 2002(headed by Dileep Singh Bhuria). The Commission submitted its report to the President of India on July 16, 2004 (Bijoy, 2010).

Committee on Welfare of Scheduled Caste and Scheduled Tribes

The committee on the Welfare of Scheduled Castes and Scheduled Tribes consists of 30 Members – 20 elected by Lok Sabha from amongst its members in accordance with the system of proportional representation by means of single transferable vote and 10 nominated by Rajya Sabha from amongst its Members. The Committee has the power to summon government official and require reports on any matters relating to the welfare and rights of Dalits and Adivasis, either on its own motion or after the matter is referred to it by the speaker of the Lok Sabha (Ministry of Tribal Affairs, 2012).

National Scheduled Tribes Finance and Development Corporation (NSTFDC)

Set up in 2001, the NSTFDC is a Central Government financial body with the mandate of channeling Central funds towards schemes for income generation, training, skill up-gradation and procurement of minor forest produce. It operates through State Tribal Finance and Development Corporation (National Scheduled Tribes Finance and Development Corporation(NSTFDC), 2009).

Tribal Cooperative Marketing Development Federation (TRIFED)

The Tribal Cooperative Marketing Development Federation (TRIFED) came into existence in 1987. It is a national level apex organisation functioning under the administrative control of Ministry of Tribal Affairs, Government of India. State governments in many of the states have created cooperatives of Adhivasis for marketing of products made by them, particularly those based on non-timber forest produce (Tribal Cooperation Marketing Development Federation(TRIFED), 2014).

II. 4. b. State Government level

Department of Tribal Welfare

Most states with significant ST population have separated departments and/or Ministries for tribal welfare. The states with low ST population such as Tamil Nadu, Kerala or West Bengal are under the control of department for the 'backward classes'. In practice these departments tend to have few autonomous powers or functions, being mostly charged with looking after the administration of development schemes and channeling of funds. As with the Central Ministry of Tribal Affairs, the mandate of these departments has recently been expanded by the passage of the STs and other Traditional Forest Dwellers (Recognition of Forest Rights) Act (Bijoy, 2010).

Tribes Advisory Councils (TAC)

As per Para 4(1) of the Fifth Schedule of the Constitution, there shall be TAC in each States having Scheduled Areas therein and if the President should directs, also in any state having Scheduled Tribes but non- Scheduled Areas therein. As per provision of Fifth Schedule, the members of TAC should be not more than 20 of whom as nearly as may be, three fourths shall be representatives of the STs in the Legislative Assembly in the State. TAC advice on matters pertaining to the welfare and advancement of the Scheduled Tribes in the States as may be referred to them by the governor. No regulation shall be made unless the Governors making regulation has, in the case where there is a TAC for the State, consulted such Councils (Ministry of Tribal Affairs, 2012)

Cooperative, Marketing Federation and Finance and Development Corporation

Depending on livelihood activities followed by ST communities in a particular state, many states have set up government organized cooperatives and marketing federation. Thus, in Madhya Pradesh, Chhattisgarh, Odisha and other States, purchase of certain kinds of non-timber forest produce such as tendu leaves, used in *beedi*⁴ making has been nationalised and brought under single government agency which acts as a monopoly purchaser. Following the recommendation of a Central government committee in 1971, many states also created what are known as Large Area Multipurpose Societies (LAMPS), which function as credit and procurement cooperatives. Funds to these various societies and cooperatives are in turn channeled through the ST finance and Development Corporation (Bijoy, 2010).

II. 5. Tribes in Sikkim

The term 'Sikkim' was derived from the word 'Sukim', was corrupted from Limboo language and in the English Version 'Sikkim' which means the 'New House or Palace', the Lepchas called 'NYE-mal-el' meaning 'heaven' and Bhutia people called 'Denzong' which means 'Valley of Rice' (Bhutia, 2014). Sikkim has an interesting history of evolution of the ethnic groups in the state. Lepchas are considered to be original inhabitants of the state (Commission, 2008). In 1642, Sikkim was a small kingdom which was ruled by the 'Chogyal' the word derived from Tibetan language meaning 'Religious King' 'Dharmaraja', the title of the Chogyal was 'Namgyal dynasty'. With the signing of the Anglo-Chinese Convention at Calcutta in March 1890, Sikkim became protectorate of British India (Commission, 2008). British contact brought in a new administration, revenue system, forest conservation rules and development of area by improving the communication network (Ibid). Sikkim became the Associate State of Indian Union with the Constitutional Amendments Act passed on 4th September 1974 by Parliament India. Sikkim, which is one of the youngest and second smallest state next to Goa and it became full-fledged state of Indian Union on 16 May 1975 with the Constitutional Amendments Act 36 and 37 and also became the 22nd Indian State (Bhutia, 2014). In May 1998, Sikkim was made a full-fledged member of the North-Eastern Council (Ibid).

⁴ *Beedi*: A thin, flavored, Indian cigarette made of raw tobacco wrapped in a tendu leaf

Sikkim situated in the eastern part of Himalaya, is the twenty second state of the Indian Union. In terms of longitude, the geographical expansion of Sikkim is 88 degree 58” to 88 degree 55’ 25” east and 27 degree 04’ 46” and 28 degree 07’48” North latitude i.e north of equator. Sikkim is bounded on the north and on the east by Tibet and Bhutan and on the south by Darjeeling district of West Bengal and west by Nepal (Mukherjee, 1995).

Sikkim is a multi-ethnic state comprising of more than 20 different groups, most predominant being the Nepalese, Lepchas and Bhutias (Chettri, 2013). According to state census of 2006, the Rai community with population of 78,671 is the largest one followed by the Bhutia with 76,070 persons. The Scheduled Tribe in Sikkim specified in the Schedule to the Constitution (Sikkim) scheduled Tribes Order, 1978 are Bhutia (including Chumpia, Dophapa, Dukpa, Kagatey, Sherpa, Tibetan, Tromopa and Yolmo) and Lepcha. Limboo and Tamang (LT) have been notified as a Scheduled Tribe (ST) amending the Constitution (Sikkim) STs; order 1978 vide Government of India Gazette Notification No.10 of 2002 in Sikkim and West Bengal. The Scheduled Castes and Scheduled Tribes Order (Amendment) Act, 2002 has included the Limboo and Tamang communities in the list of Scheduled Tribes. Since the Limboo and Tamang communities were included in the list of Scheduled Tribes category only in 2002, they are not enumerated in 2001 Census (edt. Kharel, 2013). In Sikkim Bhutia, have a greater proportion than Lepchas within the tribal community. However in North District, the Lepchas outnumber the Bhutia (Bhutia, 2014).

II. 5.a. Tribal communities in Sikkim

Bhutias: literally the word ‘Bhutia’ has been derived from the Nepalese language ‘Bhotay’ which means the people of the Bhot (Tibet) (Bhutia, 2014). They are the Tibetan origin. They were migrated from southern parts of the Tibet like Chumbi Valley, Kham etc. in the thirteen century (Ibid). In their own language they call themselves as ‘Lhopos’ or ‘Lhorees’ which means the dweller of the southern and one of the earliest inhabitants of ‘the Greater Sikkim’ (Ibid). The principal concentration of Bhutia is found in all four districts of Sikkim. In northern part of Sikkim among the Bhutias, the Lachungpas and Lachengpas had their own traditional legal system called ‘Dzumsa’ (Cheetri, 2013) which means the meeting place of people. The Dzumsa is headed by the village headman known as the ‘Pipon’ and have been

given full protection by the State Government by deeming status of panchayat ward and the pipon, a status of panchayat head (Bhutia, 2014).

Lepchas: The Lepchas are considered the original inhabitants of the state (Basin, 2011). They call themselves 'Rong' which means 'ravine folk' or 'mutanchi' but are referred to by others as the Lepchas (Ibid). The Lepchas constitute about 7% of the total population and their share of total population in the Darjeeling district is marginal (less than 1%) (Census, 2011). Traditionally the Lepchas were skilled hunters, food gatherers and shifting cultivators but they are practicing sedentary agriculture and animal husbandary (Pukayasta, 2013). The Lepchas are of Mongoloid race and their language belongs to the Tibeto Burman group of languages (Arora, 2007). The traditional cloths of the Lepchas are hand woven with exquisite color combination and they are skilled bamboo craftsmen having vast knowledge on medicinal plants found in their vicinity (Pukayasta, 2013). Their society is divided into clans named Putso and each Lepcha Putso claims to have a mystical connection with a particular peak which they worship as their deity (Ibid).

Limbus: The term Limbus means archers, and it was popularly used in Sikkim and the Darjeeling Hills from the 19th century onwards (Arora, 2007). Yakthungba, meaning yak herders, is the ethnonym used by members to refer to them, while the Tibetans call them Monp (also used for Lepchas), the Lepchas and Bhutias term them Tsong, which traces their origin in the Tsang region of Tibet and signals their occupation as cattle-herders and butchers (Risley, 1894) and in the east they are denoted as Subba. The community is subdivided into ten clans and the limbu language belongs to the Kirati branch of the Tibeto Burman language family (Arora, 2007). The Limbu's script shows similarities with the Tibetan and the Lepchas scripts, although it was later influenced more by the Devanagiri script (Ibid). Traditionally, the Limbu were animist like the Lepchas (Subba, 1989). However, in the last century, a large majority of them have become Hindus, and upwardly mobile Limbu families have Sanskritised their lifestyles. Some of them have become Christians in Darjeeling hills (Ibid). They are primarily agriculturalists, pastoralists and labourers, and some are in government employment in Sikkim (Arora, 2007). Today, the single feature that distinguishes Limbu persons of Sikkimese origin from those of Nepali origin is the Sikkim Subject Certificate (Ibid).

Tamangs: are a mongolian or semi- mongolian tribe and have probably descended from a Tibetan stock modified by intermixture with Nepali race (Eleventh Five Year Plan (2007-2012) and Annual Plan (2007-2008), 2007). Tamangs are also called Murmi, speaks a language of the Tibeto-Burman family. They are Bhuddhist in religion (Tamang, 2016). They were declared as Scheduled Tribes by the Government of India in 2002 (Eleventh Five Year Plan (2007-2012) and Annual Plan (2007-2008), 2007). Tamangs have their own languages and script and share several words with the Tibetan languages (Amendment) Act 1995, the Government recognised Tamangs as one of the official languages of Sikkim (Ibid). Tamangs maintains their identity through their faith in Buddhism, speaking their own language Tamang, and practicing their own festivals and rituals (Sikkim Development Report, 2008).

Table No. II.2: District wise Scheduled Tribes Population

| Districts | North | West | South | East |
|------------|-------|-------|-------|-------|
| Percentage | 65.70 | 42.38 | 28.19 | 27.66 |

Source: *District Census Handbook*, Government of Sikkim, Gangtok, 2011

The table no. II.2 describes the district wise Scheduled Tribes Population where the northern district of Sikkim have 65.70 percentage of Scheduled tribes and district of west, south, and East of Sikkim have 42.38 percentage, 28.19 percentage, 27.66 percentage of Scheduled Tribes respectively.

Table No. II.3: District wise Scheduled Tribes Literacy Rate

| | North | | | West | | | South | | | East | | |
|-------------|-------|-------|------|--------|-------|--------|--------|--------|--------|--------|---------|--------|
| | T | M | F | T | M | F | T | M | F | T | M | F |
| Literates | 19465 | 10646 | 8819 | 39343 | 21729 | 17,614 | 29,627 | 16,493 | 13,134 | 58,653 | 31,113s | 27,540 |
| Illiterates | 9250 | 4095 | 5155 | 18,474 | 7756 | 10,718 | 11765 | 5063 | 6702 | 19783 | 8366 | 11,417 |

Source: *District Census Handbook*, Government of Sikkim, Gangtok, 2011

Table no. II.3 describes the district wise Scheduled Tribes Literacy Rate where the Eastern district of Sikkim have the highest literacy rate.

Table No. II. 4: District wise Scheduled Tribes distribution of Main Workers, Marginal Workers and Non-Workers

| | Main Workers | | | Marginal Workers | | | Non- Workers | | |
|-------|--------------|--------|--------|------------------|------|------|--------------|--------|--------|
| | T | M | F | T | M | F | T | M | F |
| North | 9410 | 5980 | 3430 | 4686 | 2310 | 2376 | 14,619 | 6451 | 8168 |
| West | 21,481 | 13,660 | 7821 | 8176 | 3212 | 4964 | 28,160 | 12,613 | 15,547 |
| South | 14,363 | 9711 | 4652 | 7081 | 2916 | 4165 | 19,948 | 8929 | 11,019 |
| East | 29,023 | 18,469 | 10,554 | 8320 | 3726 | 4594 | 41,093 | 17,284 | 23,809 |

Source: *District Census Handbook*, Government of Sikkim, Gangtok, 2011

Table No. II.4 describes the District wise Scheduled Tribes distribution of Main Workers, Marginal Workers and Non-Workers.

II. 6. Constitutional Acts and Provisions for Safeguarding Scheduled Tribes in Sikkim

II. 6. a. The Constitution (Sikkim) Scheduled Tribes Order, 1978 (C.O.111)

In exercise of the powers conferred by Clause (1) of Article 342 of the Constitution of India, the President after consultation with the Governor of the State of Sikkim makes the following Order:

1. This Order may be called the Constitution (Sikkim) Scheduled Tribes Order, 1978.
2. The tribal or tribal communities, or parts of, or groups within, tribes or tribal communities, specified in the Scheduled to this Order, shall, for the purpose of the Constitution, be deemed to be Scheduled Tribes in relation to the State of Sikkim so far as regards members thereof resident in that State.

The Schedule

1. Bhutia (including Chumbipa, Dophapa, Dukpa, Kagatey, Sherpa, Tibetan, Tromopa, Yolmo)
2. Lepcha
3. Limboo
4. Tamang. (The Constitution (Sikkim) Scheduled Tribes Order 1978, 1978).

II. 6. b. Revenue Order no.1

With reference to the order dated the 2nd January, 1897 it was notified to all Kazis, Thikadars and Mandals in Sikkim, that no Bhutia and Lepchas are to be allowed to sell, mortgage or sublet any of their lands to any person other than Bhutias or Lepchas without the express sanction of the Durbar, or officers empowered by the Durbar in this belief, whose order will be obtained by the landlord concerned (Old Laws, Sikkim Government Gazette, 2001).

II. 6. c. Article 371F

Special Provision in respect to the State of Sikkim. Notwithstanding anything in this Constitution

- a) The legislative Assembly of the State of Sikkim shall consist of not less than thirty members;
- b) As from the date of commencement of the Constitution (Thirty-sixth Amendment) Act, 1975 (hereafter in this article referred to as the appointed day)
 - i) The Assembly for Sikkim formed as result of the election held in Sikkim in April, 1975 with thirty two members elected in the said election (herein referred to as the sitting members) shall be deemed to be the Legislative Assembly of the States duly consulted under this Constitution.
 - ii) The sitting members shall be deemed to be the members of the Legislative Assembly of the State of Sikkim duly elected under this Constitution; and
 - iii) The said Legislative Assembly of the State of Sikkim shall exercise the powers and perform the functions of the Legislative Assembly of a State under this Constitution;

- c) In the case of the Assembly deemed to be Legislative Assembly of the State of Sikkim under clause (b), the reference to the period of (five years) in clause(1) of the Article172 shall be constructed as reference to a period of (four years) and said period of (four years) shall be deemed to commence from the appointment day;
- d) Until other provision are made by the Parliament by Law, there shall be allotted to the State of Sikkim one seat in the House of Peoples and the State of Sikkim shall form one Parliamentary Constituency to be called the Parliamentary constituency of Sikkim;
- e) The representative of the State of Sikkim in the House of People in existence on the appointed day shall be elected by the members of the Legislative Assembly of the State of Sikkim;
- f) Parliament may, for the purpose of protecting the rights and interest of different section of the population of Sikkim make provision for the numbers in the Legislative Assembly of the State of Sikkim which may be filled by the candidate belonging to such section and for the delimitation of the Assembly constituencies from which candidates belonging to such sections alone may stand for election to the Legislatives Assembly of the State of Sikkim
- g) The Governor of Sikkim shall have special responsibility for peace and for an equitable arrangement for ensuring the social and economic, advancement of different section of population of Sikkim and in the discharge of his special responsibility under this clause, the Governor of Sikkim shall, subject to such directions as the President may, from time to time, deem fit to issue, act in his direction.
- h) All property and assets (whether within or outside the territories comprised in the State of Sikkim which immediately before the appointed day were vested in the Government of Sikkim or in any other authority or in any person for the purpose of the Government of Sikkim shall, as from the appointed day, vest in the Government of the State of Sikkim.
- i) The High Court functioning as such immediately before the appointed day in the territories comprised in the State of Sikkim shall, on and from the appointed day, be deemed to be the High Court for the State of Sikkim;
- j) All courts of civic, criminal and revenue jurisdiction, all authorities and all officers, judicial, executive and ministerial, throughout the territory of the State of Sikkim

shall continue and from the appointed day to exercise their respective functions subject to the provision of this Constitution;

- k) All laws in force immediately before the appointed day in the territories comprised in the State of Sikkim or any part thereof shall continue to be in force therein until amended by a competent Legislature or other competent authority;
- l) For the purpose of facilitation the application of any such laws is referred to in clause(k) in relation to the administration of the State of Sikkim, and for purpose of bringing the provision of this Constitution, the President may, within two years from the appointed day, by order, make such adaption and modification of the law, whether by way of repeal or amendments, as may be necessary or expedient , and thereupon, every such laws shall have effect subject to the adaptations and modification so made, and any such adaption or modification shall not be questioned in any court of law;
- m) Neither the Supreme Court nor any other court shall have jurisdiction in respect of any disputes or other matter arising out of any treaty, agreement, engagement or other similar instrument relating to Sikkim which was entered into or executed before the appointed day and to which the Government was a party, but nothing in this clause shall be constructed to derogate from the provision of Article143;
- n) The President, may by public notification, extend with such restriction or modification as he thinks fit to the State of Sikkim any enactment which is in force in a States of India at the date of the notification;
- o) If any difficulty arisen in giving effect to any of the foregoing provision of this article , the President may by order do anything(including any adaptation or modification of any other article) which appears to him to be necessary for the purpose of removing that difficulty;
- p) All things done and all action taken in or relation to the State of Sikkim or the territories comprised therein during the period commencing on the appointed day and ending immediately before the date on which the Constitution(Thirty-sixth Amendment)Act,1975, received the assent of the President shall, in so far as they are in conformity with the provision of this Constitution as amended by the Constitution(Thirty-sixth Amendment)Act,1975, be deemed for all purpose to have been validly done or taken under this Constitution as so amended (Constitution Society, 2015).

II. 7. Tribal Development Policies and Programmes

Sikkim has a large proportion of tribal population (20 percent). The state has 89 revenue blocks where STs Population is in majority. Both central and state government has launched several developmental programmes for the welfare and empowerment of the weaker section of society including STs. In Sikkim these comprises schemes for educational development, economic development and social development. The Department of Justice, Empowerment and Welfare is a nodal agency which looks after the affairs of tribal in Sikkim. The department performs following functions:

1. All matters connected with the welfare of STs, economic betterment schemes, educational development schemes, facilities for vocational training and voluntary organization connected with the welfare of STs.
2. Pre-Metric scholarships schemes for ST/SC/OBC.
3. Post-Metric scholarship schemes for ST/SC
4. Up-gradation of Merit Scholarship for SC/ST students
5. ST, SC, OBC Welfare Boards
6. Monitoring and evaluation of schemes for STs

II. 7. a. Integrated tribal Development Area Programme (ITDAP)

This programme is launched by the central government and implemented in all states where the tribal exceeds 50 per cent of the local population. In Sikkim, ITDAP is implemented in 77 blocks of three districts and whole North district. More than 55 per cent of the tribal populations are residing outside the ITDAP areas. With the view to cover more tribal population, the state government proposed to include another 54 revenue blocks in which the tribal constitute more than 30 per cent of the population. The Welfare Officers of each districts acts as the drawing and disbursing office for the implementation of the programme (Chettri, 2013).

II. 7. b. Reservation of Seats

The Government of Sikkim has reserved 12 seats out of 32 tribals in Sikkim legislative Assembly. The provision for reservation is also extended to public employment. The new reservation policy under Notification No. 5/GOS/9(15)/SWD/WD dated 19.8.2013 reserve 33 per cent of seats for STs in all government jobs and in professional sources. Besides, five

years relaxation in age is given to STs Candidate. As a result of this policy and participation of STs in public employment is very high. As against their population percentage of 20.6 percent, the percentage of STs Employees in the State Government service as on December was 33.57 per cent. Even the representation of ST females in the government services is very high (7.20 per cent) which is encouraging sign of women's participation in the administration of the State (Chettri, 2013).

II. 7. c. SC, ST and OBC Development Corporation (SABCCO)

SABCCO was established under the Companies Act Sikkim 1961 in 1996. The corporation is a fully government under Welfare department with a share capital of Rs10 crore. It avails financial assistance by way of loans from apex corporation viz., National Scheduled Tribes Finance and Development Corporation, National Backward Classes Finance and Development Corporation for financing income-generating schemes for target groups. These Corporations identify beneficiaries and the viable schemes as per needs of the beneficiaries, disburse loans, monitor the utilization of loans, and are responsible for the timely recovery of the loans. However statistics are not available on the loan recovery experience of the corporation (Sikkim Development Report, 2008)

II. 7. d. Tribal Sub Plan (TSP)

As discussed earlier the TSP is a strategy for tribal development which was evolved in Fifth Five Year Plan (1974-79) on the recommendation of an expert committee headed by Prof. S.C. Dube. The Committee was constituted by the Ministry of Education and Social Welfare in 1972 (Socio- Economic and Educational Development Society(SEEDS), 2007). In Sikkim, TSP has been in operation since 1979-80. The schemes cover all the tribal dominated villages of four districts and adjoining areas where 50 per cent of the population is tribal. The implementation of all departmental schemes under the state plan is executed through the Project Director and Welfare Officer in the district (Chettri, 2013).

II. 8. Incentives taken by the Government of Sikkim

II. 8. a. The SCs and STs (POA) Act 1989

An Act to prevent the commission of offence of atrocities against the member of the scheduled castes and the scheduled tribes, to provide for special courts for the trial of such offences and for the relief and rehabilitation of the victims of such offences and for connected matters.

Provision of the scheduled caste and scheduled tribes (POA) Act has been translated into the regional languages and widely circulated among panchayats, collectors' offices, NGOs, and members of SC and ST families. In order to improve awareness about this some publicity material has been displayed through hoarding at important public places like courts, police stations where the Act is applicable and the expected remedial action from the government including relief, and compensation (Sikkim Development Report, 2008).

II. 8. b. Reservation Schemes

The scheme of reservation of posts under the Govt. of Sikkim includes 6 percent reservation for SCs, 23 percent reservation for STs and 21 percent reservation for OBCs. Schemes for relaxation of the upper age limit allotted for different communities includes 5 years for SCs, 5 years for STs and 3 years for OBCs.

CHAPTER III

Hydropower Projects and Implications on Local Tribes

III. 1. Introduction

The increasing global demand for energy combined with the ongoing quest for clean, renewable energy has been a topic of perceived interest amongst countries of developed and developing status worldwide (Lata, 2013). Energy is vital for economic development and also for human development (Chand, 2016). During the 20th century large dams emerged as symbols of modernity. Hailed for being an effective way to harness water resources for food production, energy generation, flood control and domestic use, dams became synonymous with progress and economic development (Namy, 2007).

Dams and hydroelectric (hydel) projects taming river waters have been associated with technocratic pursuit of economic growth, technical mastery, and the idea of development (Khagram, 2004). It is relatively low in cost and high in efficiency compared to other modes of electricity generation, both conventional energy (fossil fuels) and alternative energy (renewable) (Bird, 2012). They have become ‘political symbols of conquest of nature, representative of progress, and the development of modern state’ (Klingensmith, 2007). Historical records suggest that dams served only the purpose of irrigation and water supply e.g dams built in Mediterranean region, China and America and the dams built by the romans for drinking water supply and sewer systems for towns still exist today. The first use of dams for hydropower generation was around 1890 (World Commission on Dams, 2000). In 1900, there were approximately 600 big dams in existence, many of the oldest of which were built in Asia and Africa (Khagram, 2004). By 1949 about 5000 large dams had been constructed worldwide, three-quarters of them in industrialised countries. Dam construction reached a peak during the 1970s (Damage: Tribal People and Large Dams, 2010). By the end of 20th century, there were over 45000 large dams in over 140 countries (World Commission on Dams, 2000). Great Britain had more than half of the world’s big dams at the turn of last century (Khagram, 2004). In 1902, British authorities constructed the low Aswan Dam on the Nile River, subsequently raising it twice to over 100 feet in height by 1933 (Waterbury, 1979). The Desprostoi on the Dnieper River in the South Union was built a year earlier, it was the world’s first major and most powerful hydropower at the time (Rassweiler, 1988). By 1930’s the United States Bureau of Reclamation (BuRec) had built over 50 big dams

projects and commenced work on mammoth Hoover Dam (Worster, 1986). Completion of the Tennessee Valley Authority (TVA), which built 38 large dams before 1945, followed by the construction of the even larger Shasta and Grand Coulee projects, heralded big dams era in the United States (Reisner, 1986). Similar efforts were under way in other countries around the world, particularly in the former Soviet Union and in Western Europe (McCully, 1996). The top five dam- building countries account for nearly 80% of all large dams worldwide. China alone has built around 22000 large dams, other countries among the top five dam building nations include the United States with over 6390 large dams, India with over 4000, and Spain and Japan with between 1000 and 1200 large dams each(Ibid). An estimated 1700 large dams have been under construction in other parts of the world in the last few years. Of this total, 40% are reported are built in India (World Commission on Dams, 2000).

The World Commission on Dams (WCD), created by the World Bank and the International Union for Conservation of Nature (IUCN) to investigate the effects of dams, was formed in 1998. The Commission's report, published in 2000, found that, 'large dams have had serious impacts on the lives, livelihoods, cultures and spiritual existence of indigenous and tribal peoples' (Damage: Tribal People and Large Dams, 2010). The World Commission on Dams recommended that, 'where projects affect indigenous and tribal peoples, such processes [should be] guided by their free, prior and informed consent(Ibid). Large dams are invariably constructed in river basins where people have lived for long periods of time, often from the prehistoric past to present. Large dams also impact very large areas that may encompass one or more cultural regions and of tribal or indigenous group (Dams and Cultural Heritage, 2000).

III. 2. Impacts of Hydropower Project

There has been increasing recognition by both dam proponents and dam opponents that the impacts of dams are complex, and can be far-reaching. Impacts can be positive (e.g. improved welfare resulting from new access to irrigation water) or negative (e.g. resettlement, decline of a downstream fishery due to flood control) (Adams, 2010). Hydropower is considered a relatively clean source of renewable energy production. Once built, hydroelectric plants have low operating costs and long service lives. At the World Summit on Sustainable Development (WSSD, Johannesburg, 2002) a commitment was made to increase hydropower production as a means of addressing environmental concerns. President

of the United Nations Climate Change Conference, argued that ‘in our increasingly carbon constrained world, renewable energy forms such as hydropower and wind power have the potential to meet the economic, social and environmental and sustainability criteria demanded of our times’ (Namy, 2007). Dams can control flood patterns, divert rivers, store water for drinking and irrigation and generate power (Workman, 2009). Water and electricity are both necessary resources for economic development, and dams can increase access to both, through irrigation, flood control, water supply, and electricity production (Yuksel, 2016). Flood protection is an important service that allows communities to live comfortably along the river without fear of volatile flood patterns (Ibid). In some scenarios dams provide increased water supply for arid populations and increase livelihood value (Workman, 2009). In many scenarios, a dam used for hydroelectric production supports other uses such as irrigation contributing to occupation in the agricultural industry (Ibid). Dams also have the potential to increase navigability of waterways allowing increased river transportation of goods and services for local people (Yuksel, 2016). In many developing nations, hydroelectric power provides electricity generation where other forms are not possible due to limited infrastructure or limited import of fossil fuels (Evans, 2009). Hydropower avoids price fluctuations, providing a reliable form of electricity, while fossil fuel prices are constantly fluctuating and in general, increasing with time (Ibid).

Embarking on a large hydropower dam project is currently a high contested issue. During a past 20th years, a growing international movement against dams has emerged. The dangers that dams pose to the natural environment have been widely documented. The International Rivers Network (IRN) reports that 60% of the world’s major rivers are dammed and just under one per cent of the world’s land surface has been inundated by reservoirs worldwide, the detriment to rivers, wetlands and forests have been extensive and ‘led to irreversible loss of species and ecosystems’ (Namy, 2007). The World Commission on Dams found that between 40 and 80 million people have been physically displaced by dams worldwide (World Commission on Dams, 2000). Mass – displacement, makes it imperative that the potential impact on livelihood, health, and traditional cultures be carefully monitored and managed. Displaced communities are frequently indigenous people and other ethnic minorities (Ibid).

The indigenous communities and other ethnic minorities faced with dam based development project have experienced dispossession and denial of their basic rights (Namy, 2007). The construction of dams and related infrastructure leads to the loss of considerable areas of

agricultural land, forest, fishing grounds, grazing lands and other resources on which impacted communities rely for their livelihood and cultural practices.

The physical landscape of indigenous communities is often intimately linked to their social, cultural and political way of life. For example, the World Council of Indigenous Peoples in 1985 lamented that:

Next to shooting Indigenous Peoples, the surest way to kill us is to separate us from our part of the Earth. Once separated, we will either perish in body or in minds and spirit will be altered so that we end up mimicking foreign ways, adopt foreign languages and build a foreign prison around our Indigenous spirits, a prison that suffocates rather than nourishes as our traditional territories of the Earth do. Over time, we lose our identity and eventually die, or are crippled as we are stuffed under the name of 'assimilation' into another society (Namy, 2007).

The World Health Organisation(WHO) has also reported that reservoirs created behind dams are often breeding grounds for water-borne illnesses (such as schistosomiasis (caused by digenic blood trematodes (worms feeding on bloods infecting human, animals, birds etc)), malaria, and cholera) and other potentially toxic bacteria. Numerous studies have corroborated these health risk. For example, a study undertaken in the Cote d'Ivoire (South Africa) documented significant increase in schistosomiasis after the construction of two large hydroelectric dams (from 14 to 53 percent around Lake Kossou and from 0 to 73 per cent around Lake Taabo). A study in Sri Lanka revealed that increased outbreaks of malaria 'seem intimately related to hydrological changes brought about by major irrigation and hydroelectric schemes on the Mahaweli river,' exacerbated by the increased migration caused by resettlement. Elevated mercury levels in fish downstream of dam projects have also been documented, posing long term health risks linked to fish consumption. For example a study in Brazil found fish mercury increase in Lago Manso, a hydroelectric reservoir. Finally, the stress of relocation and disruption of social networks is also known to adversely affect health and well beings. World Commission on Dams reports that 'Compulsory resettlement is stressful because of the way in which people are uprooted from homes and occupation and brought to question their own values'.

III. 3. Rehabilitation and Resettlement Policies of India

A National Policy on Resettlement and Rehabilitation for Project Affected Families was formulated in 2003, and it came into force w.e.f. february, 2004 (Power, 2008).

The adverse impact on affected families- economic, environmental, social and cultural needs to be assessed in a participatory and transparent manner. A national policy must apply to all projects where involuntary displacement takes place. Further more such a policy mustspecify clear time frames within which the implementation of the rehabilitation packages as well as utilisation of the land shall be accomplished. Also, it should lay down an effective monitoring and grievances redressal mechanism. This necessitated the framing of National Rehabilitation and Resettlement Policy, 2007 (Power, 2008).

1. The State Government, Public Sector Undertaking or agencies, and other requiring bodies shall be at liberty to put in place greater benefit levels than those prescribed in the NRRF 2007.
2. The policy addresses the need to provide succour to the assetless rural poor, support the rehabilitation efforts of the resources poor section, namely small and marginal farmers, SCs/STs and women have been displaced.
3. It seeks to provide a broad canvas for an effective dialogue between the Project Affected Families and the Administration for Resettlement and Rehabilitation to enable timely completion of project with a sense of definiteness as regards costs and adequate attention to the needs of the displaced persons.

Ojectives of the policy includes:

1. The objective of the Policy are to minimise displacement.
2. To plan the R&R of PAFs including special needs of Tribals and vulnerable sections.
3. To provide better standars of living to PAFs and to facilitate harmonious relationships between the Requiring Body and PAFs through mutual cooperation (Power, 2008).

III. 4. Impacts of Hydro Power Projects on Local Tribes : An Overview of the case studies

III. 4. a. Case Study 1: Grand Coule Dam, USA.

Grand Coule Dam (GCD), a mile wide and 550 ft high, is the largest producer of electricity in the US and the third largest producer of electricity in the world (Ortolano, 2000). Construction of GCD and its associated electrical generating facilities was carried out in two stages, separated by nearly three decades. The first stage which consisted of dam and two power house started in 1933 and was completed in 1951.

The second stage consisting of the third power house began in mid 1960 and was completed in 1978 (Ortolano, 2000). GCD has a total generating of 6809MW and during the 1990's gross generation in some years was greater than 25 billion KWH (ibid).

As a result about 2000 members of the Colville tribe and between 100 and 250 of the Spokane tribe were displaced. Two tribal towns Keller and Inchellium were forced to relocate. Inchellium had no water supply and its new site, and its new resident did not regain telephone services for 30 years (Ortolano, 2000). In addition, the physical barrier posed by the lake Roosevelt, and the increased density of settlement on the Columbian Plateau, cut off access of Colville and Spokane tribal members to food and medicinal plants and to each other's reservation (Ibid). By completely eliminating runs of Salmons above GCD, the project severely disrupted the way of life for the Colville and Spokane tribes, important salmon based cultural and rituals ceremonies were eliminated, parts of languages and crafts associated with fishing disappeared and tribal members diet changed significantly. For the Spokane and some of the tribes of the Colville Confederation, salmon probably accounted for about 40% to 50% of their daily diet before GCD. As a result of moving to food high in fat, sugar and salt rate of heart diseases, diabetes and other related diet illness have increased significantly (Ortolano, 2000).

III. 4. b. Case Study 2: The Three Gorges Dam, China

Within the past decades, many countries have become aware of the harmful effects of the use of fossil fuels. These effects range from pollution in the air and water to adverse health effects in humans. The scientific community has recently come to the conclusion that the use of fossil fuels, which releases the greenhouse gas, carbon dioxide and other harmful gases, has led to the global warming (Buono, 2007). As a result, many countries have been turning to

the development of renewable resources such as windmills, solar power, and hydroelectric power plants. China is one of these countries and within several years they are set to become the world's leading producer of hydroelectric power (Head, 2004). The Three Gorges Dam (TGD) and associated infrastructure is the largest integrated water project built in the history of the world (Gleick, 2008-2009). It has also been one of the most controversial due to its massive environmental, economic and social impacts (Ibid). TGD is located on the Yangtze River between Chongqing and Yichang city, Hubei province in south central China (Ibid). The dam began operating in 2003 and was operating at full capacity by 2012 (Ibid). The reservoir created by the dam flooded 156,000 acres of land, and more than one million residents were forced to relocate and find new homes and jobs (Yardley, 2007). According to Joanna Gail Salazar, author of 'Damming the Child of the Ocean: the three Gorges Dam Project', 2000 "such costs include those for increased relocation, dredging and navigation route, reforestation and erosion control programs, dike and levy improvement, excavation of archeological sites, vector control and related health programs, and waste water infrastructure improvements..." (Salazar, 2000).

III. 4. c. Case Study 3: Tucuruí Dam, Brazil

Tucuruí Dam is the first large scale hydroelectric project in Brazil and was built on the Tocantins Rivers in the state of Para at a propitious site for energy generation in 1984 (Fearnside, 2001). The Tocantins River, located completely within the province of Eastern Amazonia, eventually flows into the Amazon River estuary and has annual volume of 333 kms and a catchment area of 758,000 kms representing 7.5% of the land mass of Brazil (La Rovere, 2000). The population in the lower Tocantins has suffered severe disruption as a result of the Tucuruí Dam (Ibid). Closing the Dam radically altered the aquatic environment both above and below the dam (Fearnside, 2001). Impact on the indigenous peoples is one of the polemic aspects of Tucuruí. It flooded part of three indigenous reserves (Parakana, Pucuruí and Montanha) and its transmission lines cuts through four other (Mae Maria, Trocara, Krilati and Cana Brava) (Fearnside, 2001). In addition, the rerouting of the Transamazon Highway to skirt the western edge of the reservoir cut through the Parakana Reserve, which was truncated to occupy only one side of the Highway (Fearnside, 2001). The land between the highway and the reservoir was used as a resettlement area (the Gleba Parakana), thereby denying the tribes access to the reservoirs (Ibid). In 1982, the Parakana

tribe was transported by helicopter to a new village, Marudjewara (Commission pro indiio de sa sao paulo, 1991). Malaria and other diseases contributed to increase mortality in the tribe following the move (Fearnside, 2001).

III. 5. Impact of Hydropower projects in India: Related case studies

A top-down, state led economic growth focused and technocratic development vision, in which big dam project played a vital role, was adopted by Indian authorities at Independence (Khagram, 2004). Great numbers of big dams were initiated right at the very start of the post-independence era. Public spending in India's First Five Year Plan (1952-57) was dominated by three major river valley projects: Bhakra Nangal, Damodar Valley and Hirakud (Khagram, 2004). The joint decision by the federal Government's Ministry of Irrigation and Power, Ministry of Finance, and Planning Commission to have the Central Water and Power Commission build the Bhakra- Nangal project primarily with Indian Personnel inaugurated this developmentally driven dam building era in India (Khagram, 2004).

III. 5. a. Case 1: Sardar Sarovar Dam, Gujarat

The Sradar Sarovar Project (SSP) is one of the second largest among the 30 large dams built on the Narmada River and its canal network is the largest in the world (Performance and development effectiveness of the sardar sarovar project, 2008). The SSP is a multipurpose dam with the primary rationale of providing irrigation and drinking water. Located in the State of Gujrat, the dam benefits mainly 4 states and they are Gujrat, Madhya Pradesh, Maharastra and Rajasthan with Gujrat deriving maximum of its benefits (Performance and development effectiveness of the sardar sarovar project, 2008).

The SSD is the second largest project in the Narmada Valley I terms of both total area submerged and the numbers of people displaced (Flood, 1997). The SSD submerged approximately 37,000 hectares of land for the reservoirs, and approximately 80,000 hectares for the extensive canal works (Ibid). Additionally, 140,000 farmers have been affected by the canal and irrigation system, and other people have been affected by the disturbance of downstream fisheries (Morse, 1992). SSD is a classic example of a development project which is deemed to be in 'the national interest' (Ibid). It provides drinking water to millions of people living in the drought prone regions of Gujrat (Ibid). As well as it provides irrigation to a vast area within Gujrat and two districts in Rajasthan, increasing their agricultural

production in Rajasthan, increasing their area's agricultural production six fold and provides needed hydroelectric power (Morse, 1992). But this justification is couched in balancing the needs of many against the few and the majority of people who are displaced by the dam are the tribal people(Ibid). In gujurat, Maharastra, as well as in Madhya Pradesh thousands of tribals are submerged(Ibid).

III. 5. b. Case Study 2: Hirakhud Dam, Orissa

Mahanadhi, the largest river in the state of Orissa has been harnessed by building a dam at Hirakhud (1957), intercepting 83000 sq. km of basin (Das , 2000). Hirakhud reservoir is a multipurpose project, created by constructing a dam across the river Mahanadhi in Sambalpur district of Orissa (Raje, 2010). The multipurpose objectives served by the dam are: to moderate large flood inflows of 2 M Cusec to 1M Cusec, the safe carrying capacity of the river at the head of the delta, 300 km downstream from the dam, to generate hydropower with an installed capacity of 270MW(later augmented to 307 MW), and to provide irrigation to 159,000 hacters with an annual cropping intensity of 165 percent (Das , 2000).

The multipurpose Hirakhud Dam across the river Manhanadhi was constructed for flood control, irrigation and hydropower generation and navigation, with a view to raise the standard of living by banishing famine, malnutrition and disease, and to extend their necessities and amenities of modern life (Murty, 1994). Development of farmers of the region has accelerated to a great extent with the opening of irrigation facilities. Industries and mining activitis flourished to a large extent with the supply of hydropower (Ibid). It also has the rare distinction of forming the biggest artifical lake in Asia with reservoir spread of 743 km at full reservior level (Pradhan, 2013).

Although it brought economic progress of the state, however, it is far behind in fulfilling the target as envisged in the original pans (Nayak, 2013). The original plan envisaged a target of 1.524 million units of electricity (Ibid). The construction of the dam greatly affected the native of western part of Odisha (India, 1947). Nearly 15,000 people were affected by the Hirakhud project, affecting 22,000 families were displaced by the dam project (Ibid).

Lack of proper compensation and rehabilitation by the government forced the displaced people to move to different places to settle themselves on their own initiative (Podh, 2015).

It resulted in severe livelihood crises, health hazards and diseases made them victims in their initial period of self settlement (Ibid). Submergence of their lands under the Hirakud reservoirs forced them to reel under various socio-economic crises and marginalised them in various aspects of their life (Ibid).

III. 5. c. Case study 3: Nagarjuna Sagar dam, Andhra Pradesh

Nagarjuna Sagar dam is the world's largest masonry dam at the time of its construction, which is built across Krishna River at Nagarjuna Sagar in Guntur district and Nalgonda district of Andhra Pradesh, India. The construction duration of the dam was between the years of 1955 and 1967. The dam created a water reservoirs whose capacity is 11,472 million cubic meters. The dam is 490 ft (150m) tall and 1.6 km long (Anonymous, 2015). Nagarjuna Sagar was earliest in the series of large infrastructure projects initiated for the Green Revolution in India. It is one of the earliest multi purpose irrigation and hydro electric project in India. The dam provides irrigation water to the Nalgonda District, Prakasam District, Khammam District, Krishna District and Guntur District and electric power to the national grid (Ibid). The project transformed the economy of the above mentioned districts. However the dam submerged 52 villages in water and 24000 people were affected. The relocation of the people was completed by 2007(Ibid).

III. 5. d. Case study 4: Mullaperiyar dam, Kerala

The Periyar Project was one of the inspirational feats of nineteenth century engineering. The project inspired awe and admiration of engineers, geographers and planners across the world. The Mullaperiyar Dam, as it later came to be known, built between 1887 and 1895, was thought to be an engineering marvel (Pushkaran). Periyar Project is one of the earliest trans-basin projects in India which was commissioned by the British in 1895 in the then Travancore Princely State. It is an inter-state inter-basin scheme which diverts water from the upper reaches of the Periyar River in Kerala State into the eastern plains of Vaigai river basin in Tamil Nadu State for irrigation. The dam is located at an elevation of about 850 msl in the upper reaches of Periyar River just after its confluence with Mullayar tributary in the protected forests of Periyar Tiger Reserve in Kerala. The catchment area of the dam is about 648 sq. km with the average rainfall of 2000 mm. Periyar dam is the first surki (brick powder in lime) concrete dam in a 'V' shaped gorges in the Western Ghats over Periyar River

(Thatheyus, 2013). Mullaperiyar dam is located within the Periyar Tiger Reserve. The environmental concern that has received the attention of Kerala so far is with regard to the submergence of the reservoir fringe area that has emerged (11.219 sq.km) after lowering of the water level to 136 ft from 152 ft. A study of the impact of rising of water level in the Mullaperiyar reservoir was carried out in 2001 by a team of scientists from the Kerala Forest Research Institute (KFRI), the Tropical Botanic Garden and Research Institute (TBGRI), Centre for Water Research Development and Management (CWRDM) and the Salim Ali Centre for Ornithology and Natural History (SACON). It reported that vegetation and wildlife habitat in the Periyar Tiger Reserve would be adversely affected if the reservoir level was raised. The report also indicated the adverse impact on the revenue generated from tourism related activities in the area (Madhusoodhanan, 2010). It has already 'lived' as long as 116 years with its fragile lime and mortar structure, on which cracks appeared as early as 1979, due to an earthquake. The dam site lies on the vulnerable seismic zone-II of the country: this means that the occurrence of any earthquake measuring more than five or six on the Richter scale will demolish the dam holding 445 million cubic meters of water, and wreak massive destruction on the live of the downstream population. In this particular case at least, though not in many others, the proclamation of Arundathi Roy might have proven right, as she reminded us that 'big dams are like big bombs'- though there are obvious differences between the two (Chowdhury, 2013).

III. 5. e. Case study 5: The Bodghat project, Madhya Pradesh

The Bodghat Project was to be constructed in the primarily tribal area of Bastar District in the state of Madhya Pradesh as early as 1965 but implementation did not started for ten years (Khagram, 2004). The first action taken by State officials after restarting the project was to sanction the State Forest Department's proposal to cut down forest composed of sal and teak trees that would eventually be destroyed in the submergence area of the project (Raj, 1987). No heed was paid to the enironmental effects that would be caused by the felling of the trees and clear approximately 15,000 tribals to be displaced by the dam investigated (Khagram, 2004). Indeed, the Bodhghat was luckily given a clearence at the federal level in 1979 by then Prime Minister Morarji Desai (Anonymous, 1987). At that point, the application for an environmental clearence was not made mandatory and resettlement policy reforms protecting the rights of the displaced peoples had just begun to get incorporated into norms and

institution in India (Khagram, 2004). But the emergence of grassroots protest, along with increasing institutionalised and strenght of India's environmental bureaucracy and the construction of linkages to transnational nongovernmental organisation, all contribute to demise of the Bhodghat Project (Ibid). The project, effektivly suspended as of 1988, was finally cancelled by the State Government of Madhya Pradesh in 1995 (Anonymous, 1995).

III. 5. f. Case study 6: Chandil dam, Bihar

In March, 1978, an estimated 10,000 people demonstrated against the construction of the Chandil Dam, the first of the two big dams planned for the Subarnarekhs Project, in the State of Bihar (Khagram, 2004). Construction continued on the Chandil Dam, as did repression of the opposition to it. As a result, the tribal people of the Kholan area were to be submerged by the Icha Project, the second big dam in the broder Subarnarekha Project demanded land for land and higher rates of cash compensation (Ibid). Despite the continuing protest by the villagers, the World Bank disbursed funds, and in 1988 the gates of the Chindil Dam had been closed (Ibid). Ten thousand poor tribals were were displaced and another 30,000 were facing the same future as the reservoir filled (Ibid).

III. 6. Issues and Implications of dams

Large dam projects are generally controversial and the issues generated by these project are important and complex. On a social side; they include: the preservation of cultural heritage, the resettlement of large indigenou people, a fair compensation for lost assets, the creation of new communities, the health and well being of affected population both upstream and downstream, the economic survival and development of these population on a long term basis, and monority rights (Senecal, 2003). Large dam projects generally Lack of proper compensation and rehabilitation by the government forced the displaced people to move to different places to settle themselves on their own initiative. It resulted in severe livelihood crises, health hazards and diseases made them victims in their initial period of self-resettlement. The project transformes the economy of the displaced population.

CHAPTER IV

Socio-Economic Impact of Hydro Power Projects on Lepcha Community

IV. 1. Introduction: Hydropower in Sikkim

Strategically wedged between the borders of Nepal, Tibet/China, Bhutan and West Bengal/India, Sikkim was until annexation to the Indian Union in 1975, an independent monarchy. Lying within the biodiversity hotspot of the Kanchenjunga landscape, the entirely hilly/mountainous terrain of the state is crisscrossed by multiple rivers and smaller streams (Das, 2013). The steep elevation gradient (213m to 8598m) endows the region with a hydro-potential of about 8000MW peak with a firm base of 3000MW (Energy and Power Department, Government of Sikkim). Prior to 1975, the power requirement of Gangtok and a few townships along the National Highway were met from Jali Power House commissioned in 1965. By the end of the 1978, the state had a generation capacity of 3MW from three of its small Hydel Power Plants located at Jali Power House, Rambhi Micro Hydel Power Plant and Rothak Micro Hydel Power Plant (Subrata, 2013). Development planners in Sikkim identified Hydro power as a panacea for modernising Sikkim's economy, generating employment for its youth, earning revenue to offset fiscal deficit and servicing its debt, financing human development, and meeting domestic and national energy needs (McDuierra, 2011). Today the total hydropower potential so far is 5352.7 MW and they are in different stages of implementation (Ibid). Out of the total hydropower potential of Sikkim of 8000MW, the total installed capacity as on March 31, 2009 is only 610.7 MW. The State Government has awarded hydropower project at a total estimated installed capacity of around 4,694 MW to various developers out of which 2,081MW is expected to be commissioned within the 11th Plan and remaining within the 12th Plan. All the projects are run of river schemes (Government White Paper on Hydro Power in Sikkim, 2009).

The Government of Sikkim, recognising the fact that the hydropower potential of the State needs to be harnessed to the maximum in the shortest possible time for the economic development of the State and for meeting the energy demand of the country, has accorded top priority to this sector. As a result thereof, a number of Projects in Centre sector, State sector and Private sector are being set up in the State. To attract private investment for the development of such projects government of Sikkim provides the policy mentioned below:

IV. 2. Specific Terms and Conditions of the State Government for Development of Hydro Power under Private Sector for Project above 25MW

1. Projects of capacity 25MW and above are only allotted to Independent Power for development. The projects below 25MW are to be developed by SPDC/Energy and Power Department
2. Royalty at the rate of 12% of net energy would be charged for the first 15 years. Beyond 15 years of operation a royalty of 15% of net energy will be made available to the Government of Sikkim free of charge by the developer. 1% additional free power also has to be provided for local area development.
3. RGGVY Schemes allows the State Government to have financial allocation in the form of 90% grants and 10% loan. The Company shall bear the 10% (ten percent) share of the State Government within the surface distance of 2.0 kilometers from the project site, as per the Hydro Policy 2008 of the Government of India. The expense borne shall form part of the Rehabilitation and Resettlement Policy of the Project.
4. Government shall impose an Environment Cess @ One paisa per unit of electricity sold and shall be collected at source for the amount of electricity generated by the Company and sold to its customers.
5. The projects are allotted on BOOT basis i.e. Build, Own, and Operate and Transfer. The project shall be offered for a period of 35years from the date of their commercial operations at the end of which shall be reverted back to the Government of Sikkim at free of cost in good condition or extend further on mutually agreed terms as per decision of the Government of Sikkim.
6. Sale of Power shall be the responsibility of the IPP.
7. The IPP shall be responsible for laying transmission lines for connectivity to the nearest Grid sub- station of the State Government appropriate voltage. However, if the State Grid System is not adequate to transmit this power outside the state, the IPP has to make its own arrangements to connect to the nearest Grid Station of Power Grid Corporation of India LTD.
8. The SPDC/ Government of Sikkim shall have the option to invest minimum 26% by way of preference share in the total equity in projects above 100 MW 11% in project below 100MW capacities. The IPP shall arrange the funds required by the SPDC/ Government of Sikkim to invest towards their share of equity in the project, which

shall be repaid along with the agreed rate of interest from the sale proceeds of the free power.

9. The IPP shall have to enter into agreement with the State Government, within a period of 180 days from the date of issue of the 'Letter of Intent', if the IPP finds the project viable.
10. The IPP shall deposit non-refundable processing fee @ Rs. 10,000 per MW of the installed capacity by a Demand Draft in favour of the Secretary, Energy and Power Department, Government of Sikkim within a period of thirty days from the date of issue of the 'Letter of Intent'.
11. The IPP have to pay wheeling charges in the event of using infrastructure facilities of the State Government. The wheeling charges shall be as determined by the competent authority.
12. The IPP shall not be permitted to transfer the project or sell the project to others without prior permission of the Government of Sikkim.
13. The IPP shall achieve the financial closure within a period of 12 months from the date of agreement. In event i.e. confirmed as impossible or impractical to achieve Financial closure is not achieved on or before the expiry of twelve (12) months from the effective date for the reason other than those attributable to the Government, the Government reserve the right to terminate the Agreement.
14. The IPP shall commission the project within a period of 48 to 60 (varies according to size of project) month from the date of financial closure. In the event of failure on the prior of IPP to commission the project within the targeted period, the IPP shall be liable to pay a penalty of Rs 10,000,00 (Rupees Ten Thousand) per MW per month to the Government of Sikkim.
15. The IPP may surrender the allotment of the project to the Government of Sikkim if on completion of the DPR within the stipulated time frame; it has grounds to establish that the project is not techno- economically viable. However, on such surrender, the Government of Sikkim shall not compensate towards expenditure incurred by the IPP.
16. In the event of stoppage of construction on the main Project components by the developers, for a period of more the twelve months for reason not covered under Force Majeure and for reasons attributable to the developer and/ or abandonment of the Projects by the developer, the Government shall after giving due opportunity to

the developer to resume the work have the right to terminate the Agreement. In the event of termination of the Agreement under this clause, the Government shall have the option to take over the Project.

17. The jurisdiction of the project shall be the Court of Sikkim.
18. The State Government shall acquire the land required for the project at the cost of the developers and lease out the same to the developer. The IPP are required to pay service charge/facilitation fee to the Government @ 1.5% of the total cost of the compensation.
19. Government shall constitute a multi disciplinary Monitoring Committee to monitor the issues arising during the implementation of the project.
20. Government shall constitute a Project Level Welfare Committee to look after the welfare of the Project Affected People.
21. Government shall provide Police protection to the Company, its assets, its personnel and its representatives and also establish a Police Post maintain law and order in the Project Areas for such period as may be requested by the Company and the Company shall bear the establishment, operation and maintenance on this account.
22. The Company shall carry out the Environmental Impact Assessment (EIA) Studies and prepare Environment Management Plan as required under the Environmental (Protection) Act, 1986, and obtain the consent of State Pollution Control Board as well as Ministry of Environment and Forest, Government of India.
23. The Company shall provide employments to one member each of the displaced families or adversely affected as a result of the acquisition of land for the Project covered in the Rehabilitation Plan.
24. The company shall take appropriate steps, as may be required for the protection of fish culture as per environmental requirements.
25. The Company shall be fully responsible for any damage or loss arising out of the construction, operation or maintenance of the Projects to any property or person.
26. The company shall not name/rename any of the localities in the vicinity of the project area. In case the company desires to name a locality then it shall request the Government, which shall, decide on a name in accordance with the local culture and tradition. The company shall ensure that the building in its project are constructed reflecting the Sikkim's tradition style of building.

27. The company shall provide business and contract opportunities to the local bonafide of Sikkim according to their capability and strength except the major contracts for tunneling, dam, power house, surge shaft, electro-mechanical, hydro-mechanical and supply of construction materials, etc. Place of tendering for works such as approach roads, quarter, colonies, building other than power house shall be the project area and preferences shall be given to the capable local contractors so that the local people get benefits from such works of the projects.
28. In case any existing facilities including, but not limited to, irrigation systems, water supplies, roads, bridges, building. Communication system(s), power systems and water mills are adversely affected because of the implementation of the Project; the Company shall be responsible for taking remedial measures to mitigate such adverse effect. The cost of the above remedial measures shall become a part of the Project Cost. Such facilities shall be mutually identified and agreed upon between the Company and the Government. the Company shall not interfere with any of the existing facilities till an alternate facility, as identified, is created.
29. The Company as well as its contractors shall ensure that all the unskilled/skilled manpower other than executives as may be required for implementation of the project shall be recruited through Employment cell under Department of Personnel, Government of Sikkim, Gangtok, Sikkim.
30. The Company shall ensure that import of labour from outside the State is made in a limited manner. Such labour should be of Indian origin only. Those that are brought is shall be examined medically and registers with the local authorities for a period not beyond 6 months after the commissioning date of the Project. The Company shall furnish list of names of non-sikkimese persons engaged in the project, who will require restricted area permit from Government of Sikkim to work in the Project specifying the nature of works and particulars. Whenever they would leave the project permanently, it shall be obligatory for the Company to intimate of such fact to the State Government along with particulars of replacement, if any.
31. Subject to availability, security, safety, law and order and operational factors being met, the Company shall permit free use by the Government and the general public of all service roads constructed and maintained by it for the Projects after they have been commissioned. Other facilities like hospitals, post office, schools, etc, shall be

extended to the local publics as per the guidelines of the Company in this regard based on the objective of providing such facilities.

32. The Company shall ensure such minimum flow of water immediately downstream of the weir/barrage/dam for downstream requirements as specified in the environmental clearance.
33. Labour cess under the provision of 'Building and Other Construction Workers' Welfare Cess Act, 1996, shall be recoverable from the Company.

Source: Energy and Power Department, Government of Sikkim

IV. 3. Study Area and Methodology

IV. 3. a. Study Area

The study focused on the impacts of hydro-electric power projects on socio-economic changes in the Himalayan region of Sikkim with special reference to Dzongu. Dzongu block lies in the north district, which is Lepcha settlement and number of proposed power development sites are located or in progress adjacent to Dzongu (Bhattarai, 2015).

Teesta Valley stage V Hydro electric power project (HEP) (510MW) has been selected for the study. The Teesta Stage V Hydroelectric project (510MW), a run of river scheme located in Sikkim, is one of the first projects commissioned in the cascade development of Teesta River as an undertaking of the National Hydroelectric Power Corporation (NHPC). The Teesta Stage V HEP project, received Environmental Impact Assessment (EIA) notification (1990), on 19th May 1999, for a project area of 326.662 hectares. The project received forest clearance under Section 2 of the Forest Conservation Act (1980), on 14th May 1999. The total land diverted is 147.430 hectors, which includes 122.173 hectors for surface work and 25.25 hectors for underground work. An agreement (MoU) was signed between NHPC and the Government of Sikkim for Teesta Stage V HEP, on 2nd August 2000 (Affected Citizen of Teesta, ACT, 2007). The Teesta Stage V Hydroelectric project (510MW), aimed at:

- i) Improving the financial requirement of the state as well as ensuring surplus power to power scarce neighboring states.
- ii) It intends to improve the living condition of locals, increase employment opportunities and thereby control the migration of jobless people to other regions of Sikkim.

- iii) Officially, the NHPC has extended rehabilitation and resettlement measures to the displaced persons, which includes compensation for land, house, standing crops and other properties, free education to the children of the displaced locals (Nadikpa, 2014).

IV. 3. b. Methodology

To explore the community perceptions about the impacts of the Teesta Hydro Power Projects Stage V, Quantitative and Qualitative social research methods were used. Field research and interviews were conducted with key persons of affected in Dzongu block from September – November 2016. Simple Random Sampling was used and further lottery method was used to pick 30 percent of the households from the selected villages, as sample households. Questionnaires were both structured and semi- structured and discussions were held with some interviewees on the results of analysis as a means of validation of interpretations. Selected Villages for the study were Lum, Gor, Sangtok, Tangyek, and Ramthang villages in Dzongu block as these villages have been under the Teesta Hydro Power Projects Stage V.

Table No IV.1: Demography of selected villages

| Name of village | Population | M | F | No. of households | Literates | M | F | Illiterates | M | F | Distance From nearest town (in kms) |
|-----------------|------------|------|------|-------------------|-----------|-----|-----|-------------|-----|-----|-------------------------------------|
| Lum | 331 | 167 | 164 | 53 | 208 | 109 | 99 | 123 | 58 | 65 | 6 |
| Sangtok | 639 | 326 | 313 | 128 | 437 | 245 | 192 | 202 | 81 | 121 | 1 |
| Gor | 861 | 450 | 411 | 165 | 555 | 307 | 248 | 306 | 143 | 163 | 10 |
| Tangyek | 686 | 357 | 329 | 146 | 333 | 186 | 147 | 353 | 171 | 182 | 15 |
| Ramthang | 438 | 224 | 214 | 99 | 241 | 122 | 119 | 197 | 76 | 113 | 15 |
| Total | 2955 | 1524 | 1431 | 591 | 1834 | 969 | 805 | 1181 | 529 | 644 | |

Source: *Sikkim Population Census data 2011*, Census of India, Government of India, 2011

Table IV.1 describes the name of the villages and the demography of the villages where Lum has 331 total populations with 53 households, Gor having 639 total populations with 165 household, Sangtok having 861 total populations with 128 households, Tangyek having 686

total populations with 146 households and Ramthang having 438 total populations with 99 households. The table also shows the population of the males and females of the respective villages. All together in these villages the total number of population is 2955 out of which male population is 1524 and female population is 1431. The table also describes the literacy and illiteracy rate which shows that Gor village has the highest literacy numbers among the other four villages where Lum village has the lowest literacy number. The table further describes the distance of the nearest town i.e Dikchu Bazar from the respective villages.

Table No IV.2: Distance from the dam and tunnel

| Name of village | Distance from dam (in kms) | Distance from tunnel (in kms) |
|------------------------|---------------------------------------|------------------------------------------|
| Lum | 2 | 49 |
| Gor | 11 | 16 |
| Santok | 13 | 18 |
| Tangyek | 15 | 1 |
| Ramthang | 16 | 2 |

Table IV.2 describes the distances of the villages from the dam and the tunnel construction areas. The village Lum is only 2 kms away from the dam construction site being the dam site area and Gor and Sangtok villages are about 11 kms and 13 kms respectively being the river belt areas. Tangyek and Ramthang villages are 1 kms and 2 kms far from the tunnel as they are the areas from where the tunnel of the dam is located.

The study has taken 30 percent from each selected village of the households as respondents from the selected villages. The sample size is 177 households. The total population of these sample households stands at 707, which constitutes about 24 percent of total population of the selected villages. Table IV.3 provides the details of the sample size distribution.

Table No IV.3: Sample size distribution

| Name of village | No. of sample households | Male | Percent age | Female | Percent age | Population of sample households | | | |
|-----------------|--------------------------|------|-------------|--------|-------------|---------------------------------|----------------------|-------------|-------|
| | | | | | | Adults | Children below 18yrs | Percent age | Total |
| Lum | 15 | 19 | 35 | 19 | 35 | 38 | 15 | 28 | 53 |
| Gor | 50 | 92 | 42 | 89 | 41 | 181 | 34 | 15 | 215 |
| Santok | 39 | 75 | 44 | 70 | 41 | 145 | 23 | 13 | 168 |
| Tangyek | 43 | 70 | 42 | 72 | 43 | 142 | 23 | 13 | 165 |
| Ramthang | 30 | 60 | 56 | 42 | 39 | 102 | 4 | 3 | 106 |

The table number IV.3 above shows the name of the villages and the sample taken for the study with total adult population of males and females with the population of children below 18 years. The table describes in village Lum out of total surveyed sample size (i.e. 53), 35% are male and female population respectively and 28% are children below 18 years, in Gor village out of total surveyed sample size population (i.e. 215) male population is 42% are male population and 41% are female population and 15% are below 18 years, in Sangtok village out of surveyed sample size population (i.e. 168), 44% are male population and 41% are female population 13% are below 18 years, in Tangyek village out of surveyed sample size population (i.e. 165), 42% are male population and 43% are female population with 13% are below 18 years and in Ramthang village out of surveyed sample size population (i.e. 106), 56% are male population and 39% are female population with 3% below 18 years. In the sample households the total family members are 707 which constitute about 23.86 percent of total population of 2963. It also represents male members are 381 of which constitute 25 percentages of 1524 male population and 326 of female population, which constitutes 22.78 percentage of 1431 female population of all the selected villages.

IV. 4. Social impacts of dam construction

The social impact of dams may be defined as impact on the lives of individual people or groups or categories of people, or forms of social organization (Adams, 2000). Social impact (o community organization kinship or culture or on relationship) are distinct from environmental or economic impact, though all these are closely linked. The assessment of

social impacts is problematic. First, social impact can be both positive (e.g. Improved welfare resulting from new access to irrigation water) or negative (e.g. Resettlement, decline of downstream fisheries due to flood control). Second, social impact can be direct, (e.g. the trauma of involuntary resettlement) or the result of a cascade, where environmental impacts generate economic impacts, and these in turn cause social impacts. Thirdly, the positive and negative impacts of large dams are not evenly spread and there can be significant disparities in impacts, particularly between more and less wealthy groups and individuals; livelihood are central to social impacts (Adams, 2000).

IV. 4. a. Education

Education is one of the most important indicators of sociocultural, economic and human development. Education is essential for enhancing productivity, eradicating poverty, activating demographic transition, and achieving overall human development . on the other hand, lack of education, wisdom and illiteracy leads to low dignity, ignorance and povert, metal isolation and hampers socio economic and political maturity. Moreover, educational influences other important attributes of human development like fertility, mortality, mobility, occupancy. More importantly, it is a critic: instrument for bringing about social, economic and political inclusion and durable integration of people.

Table No IV.4: Educational Details of the Sample Population

| Name of the village | No. of samples | Population of sample households | Illiterate | Percentage | Up to 4th classes | 5-10th class | 11-12th classes | Graduation | Post graduation | Above | Total literates |
|----------------------------|-----------------------|----------------------------------------|-------------------|-------------------|--------------------------|---------------------|------------------------|-------------------|------------------------|--------------|------------------------|
| Lum | 15 | 53 | 14 | 73 | 17 | 18 | 3 | 1 | 0 | 0 | 39 |
| Gor | 50 | 215 | 22 | 89 | 25 | 75 | 43 | 25 | 21 | 4 | 193 |
| Sangtok | 39 | 168 | 25 | 85 | 33 | 53 | 32 | 19 | 4 | 2 | 143 |
| Tangyek | 43 | 165 | 20 | 87 | 25 | 73 | 28 | 13 | 4 | 2 | 145 |
| Ramthang | 30 | 106 | 15 | 85 | 22 | 34 | 25 | 7 | 3 | 0 | 91 |

The table number IV.4 describes the name of the village and population of the sample households taken for the study. The table also describes the literacy population of the

respective villages which shows that in village Lum 73% are literate up to secondary level of education. In village Gor 89% are literate population. In village Sangtok 85% are literate population, in Tangyek 87% and Ramthang village 85% are literate.

Table No IV.5: School Infrastructure in Selected Villages

| Name of village | Primary Schools | Secondary Schools | Higher sec. Schools | Govt. Schools | Year of establishment | Private |
|------------------------|------------------------|--------------------------|----------------------------|----------------------|------------------------------|----------------|
| Lum | 2 | - | - | Yes | 1963 | - |
| Gor | - | 1 | - | Yes | 1983 | - |
| Sangtok | 1 | - | - | Yes | 1968 | - |
| Tangyek | 1 | - | - | Yes | 1985 | - |
| Ramthang | 1 | - | - | Yes | 1973 | - |

The table number IV.5 describes the name of the village and the schools in the respective villages. Village Lum has two primary schools owned by government, Gor village has one secondary school also owned by government, Sangtok village has one primary government school, Tangyek has one primary government school and Ramthang has one primary government school. The table also describes the year of establishment of schools which shows that the schools was established prior to the construction of dam which means that hydropower has not contributed to the educational infrastructures.

Table No. IV.6: School Staff members

| Name of village | School | Teaching staff members | Non-teaching Staff members |
|------------------------|---------------|-------------------------------|-----------------------------------|
| Lum | Primary | 5 | 2 |
| Gor | Secondary | 17 | 6 |
| Sangtok | Primary | 7 | 2 |
| Tangyek | Primary | 7 | 2 |
| Ramthang | Primary | 9 | 3 |

Table number IV.6 describes the name of the villages and the level of educational facility provided in the village. In Lum village there are two primary government schools which have 3 and 2 teaching staff respectively and 1 each non-teaching staff. In village Gor there is one secondary school which has 17 teaching staff and 6 non teaching staff. In village Sangtok and

Tangyek there is one primary government school with 7 teaching staff each and 2 non teaching staff each. In Village Ramthang there is one primary government school with 9 teaching staff and 3 non teaching staff.

Table No IV. 7: Educational infrastructure

| Village | Remarks on NHPC contribution |
|----------------|---------------------------------------------------------------------------------------------------------------------------|
| Lum | There are no such educational infrastructural or whatsoever contributed by the NHPC in any of the mentioned five villages |
| Gor | |
| Sangtok | |
| Tangyek | |
| Ramthang | |

Table number IV.7 depicts the name of the villages and the contribution made by the dam authority towards the educational infrastructure. The table above shows that the dam authority has made no such contribution whatsoever concerning the educational facility. Though the residents of Lum has placed the demands of the same which is not sanctioned yet.

IV. 4. b. Health

The endeavor of the Sikkim Government has been to reach the basic health needs at the doorsteps of the rural mass that forms the overwhelming component of the population. From 1975 onwards the emphasis has been on providing preventive and curative services to reduce the infant and maternal mortality in the Sikkim State. As the health facilities were made more and more accessible to the remotest villages of various blocks and revenue blocks and districts health care as a means of social upliftment acquired rapid momentum.

Table No. IV.8: Health issues due to dam construction

| Name of village | No. of samples | Diseases | No. of individuals affected | Disabilities | No. of individuals affected | Is there any illness due to the dam? |
|------------------------|-----------------------|-----------------------|------------------------------------|---------------------|------------------------------------|---------------------------------------------|
| Lum | 15 | - | - | Paralysis | 1 | No |
| Gor | 50 | Heart diseases | 1 | - | - | No |
| Sangtok | 39 | T.B and heart disease | 3 | Deaf | 1 | No |
| Tangyek | 43 | T.B. | 4 | Dumb | 1 | No |
| Ramthang | 30 | - | - | Lame | 1 | No |

Table number IV.8 describes the name of the villages and the samples taken for the study mentioning the health conditions of the respondent in the respective villages. In Lum village 1 person is paralysed, in Gor village one respondent has heart disease, in Sangtok 3 respondent were infected with T.B and heart disease, in Tangyek 4 people has T.B and 1 is deaf and in Ramthang village one person is Lame. The table also shows that in all five villages the respondent are not frequently ill and the dam has no such health impacts.

Table No IV. 9: Health Centers in selected villages

| Name of village | Health centers | No. of staff members | Within 5 kms | Over 5 kms |
|------------------------|---------------------------|-----------------------------|---------------------|-------------------|
| Lum | Primary health sub centre | 2 | Yes | - |
| Gor | Primary health centre | 4 | Yes | - |
| Sangtok | Primary health sub centre | 2 | Yes | - |
| Tangyek | Primary health centre | 3 | Yes | - |
| Ramthang | Primary health sub centre | 2 | Yes | - |

The table number IV.9 describes the name of the villages and the health centers in the respective villages. Lum has one Primary Health Sub Centre with two staffs. In Gor there is one Primary Health Centre with four staffs. In Sangtok village there is Primary Health Sub Centre with two staffs. In Tangyek village there is Primary Health Centre with three staff

members and in Ramthang village there is Primary Health Sub centre with two staff members.

Table No IV.10: NHPC contribution

| Name of the village | Remarks on NHPC contribution |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lum | 1. In Lum village, one time free eye checkup and health awareness programme was held by the NHPC and some blankets, medicines and other related facilities were distributed by NHPC during the natural calamity to the villagers. 2. No health scheme or any kind of facility has been provided by the NHPC in other four villages. |
| Gor | |
| Sangtok | |
| Tangyek | |
| Ramthang | |

Table number IV.10 describes the name of the villages and the contribution made by the NHPC toward the health facilities to these villages. The table also shows the remarks made by the respondent which says that in village Lum the dam authority had held one time free eye checks ups and health awareness programe. The dam authority has also distributed medicines, blanket and related facility to this village at a time of natural calamity. The villagers have placed their demand for the up gradation of health centre but it has not yet been sanctioned. In other four villages i.e. Gor, Sangtok, Ramthang and Tangyek no such health facilities has been provided by the NHPC.

Table No IV.11: Water Sources

| Name of the village | Water source | Public Water source to house holds | Private Water source to house holds |
|----------------------------|---------------------|-------------------------------------------|--------------------------------------------|
| Lum | Spring water | 13 | 2 |
| Gor | Spring water | 30 | 20 |
| Sangtok | Spring water | 2 | 37 |
| Tangyek | Spring water | 1 | 42 |
| Ramthang | Spring water | 2 | 28 |

The table number IV.11 describes that the name of the villages and the source of water in villages. The table shows that in all the five villages the main source of water is spring water. The table also describes that in Lum village 13 households have public water source and 2 households have private source of water. Likewise in Gor village 30 household have public source of water and 20 private source of water. In Sangtok 2 households have public source of water and 37 households have private source of water. In Tangyek village 1 household have public source of water and 42 households have private source of water and in Ramthang village 2 households have public source of water and 28 households have private source of water source. Therefore it is evident that all the five villages mostly have the private source of water supply facility.

Table No IV.12: Impact on Drinking Water

| Name of village | Impacts on water | | Remarks |
|-----------------------------|------------------|-------------|-----------------------------------------------------------------------------------------------------------------|
| | Yes | No | |
| Lum (15 households) | 14 (99%) | 1 (1%) | There is scarcity of water and that can probably be due to the construction of dam |
| Gor (50 households) | 8 (15%) | 42 (85%) | In some areas of Gor, people are facing the problem of water scarcity and in some areas there is no such issues |
| Sangtok (39 households) | 2 (5%) | 37 (95%) | There is no such issues of water scarcity |
| Tangyek (43 households) | 42 (99%) | 1 (1%) | There is scarcity of water and the main cause can be the tunneling in the area |
| Ramthang (30 households) | 29 (97%) | 1 (3%) | There is scarcity of water and the main cause can be tunneling in the area |

The table number IV.12 describes the name of the village and the impacts of dam on drinking water. 99% Respondent in Lum village remarked that there is a scarcity of water which can probably be due to the construction of dam and it can also be due to the construction of diversion tunnel which passes through the Lum village. In Gor Village 15% remarked that there is scarcity of water. Similarly in Tangyek village 99% respondents and in Ramtang village 97% respondents agree that there is scarcity of drinking water and the main cause, the respondent remarked, is the construction of tunnel in the areas.

Table No IV.13: Health Schemes

| Name of village | Health scheme provided by | |
|-----------------|---------------------------|-----------------|
| | Government | Plant authority |
| Lum | Yes | - |
| Gor | Yes | - |
| Sangtok | Yes | - |
| Tangyek | Yes | - |
| Ramthang | Yes | - |

Table number IV.13 describes that in all the five villages the health infrastructure and all the related schemes and facilities are provided by the government. Till now there is no contribution of any kind of health schemes from the hydro power plant authority in these respective villages. It is only the government who is providing the medical facilities and health schemes for the residents of the villages, though the people has placed their demands before the plant authority for the upgradation of those facilities still there is no any positive response from the hydro power plant authority.

Table No IV.14: Sewerage facilities

| Name of village | Sewerage facility | Private facility | Public facility |
|--------------------------|-------------------|------------------|-----------------|
| Lum (15 households) | Yes | 13 (85%) | 2 (15%) |
| Gor (50 households) | Yes | 46 (92%) | 4 (8%) |
| Sangtok (39 households) | Yes | 37 (96%) | 2 (4%) |
| Tangyek (43 households) | Yes | 41 (97%) | 2 (3%) |
| Ramthang (30 households) | Yes | 29 (98%) | 1 (2%) |

Table number IV.14 depicts the name of the villages and the sewerage facilities of the villages. In all the five villages there is a sewerage facility and it is seen from the table that the villagers mostly has the private sewerage facility. In Lum village 85% households, in Gor Village 92% households, in Sangtok village 96% households, in Tanggyek village 97% households and in Ramthang 98% households avail the private sewerage faciity. The government has helped the villagers in providing the funds for the sewerage facilities for

private use through various schemes provided by the central government and yet there is no contribution from the plant authority as such.

IV. 5. Economic Impacts of Dam Construction

According to World Commission of Dam, many people have benefited from the services dam has provided, such as irrigation and electricity generation. Their construction and operation can lead to many positive and negative economic impacts. The actual construction of a dam can provide employment for the local communities and provide incentives for businesses and enterprises setting up shop near dam site area. The dam can also provide the sanatorium, learning infrastructures, in a way the dam can lead to the path of development. But when locals are able to work on the dam, it is only for a limited period of time as when the dam is completed, the use for the labour will no longer be required. If there is no other investment around the construction site, then those employment opportunities will diminish. If dam authority does not fulfill the promise made to the society for providing employment, educational infrastructures the people have to migrate to the other places in search of livelihood.

Table No IV.15: Outward migration

| Name of the village (Population in Sample households) | Population in Sample households Living outside in a household | Percentage | Locations | Type of migration |
|--------------------------------------------------------------|----------------------------------------------------------------------|-------------------|-----------------------------------|--------------------------|
| Lum (53) | 21 | 39 | Gangtok | Seasonal |
| Gor (215) | 57 | 26 | Kolkatta, Siliguri, Gangtok | Seasonal |
| Sangtok (168) | 71 | 42 | Deradhun, Gangtok, Kolkata, Delhi | Seasonal |
| Tangyek (165) | 53 | 32 | Gangtok, Siliguri | Seasonal |
| Ramthang (106) | 38 | 35 | Gangtok, Kolkata | Seasonal |

The table number IV.15 shows the number of migrated people from the respective villages and the location of their migration. In Lum village 39% of population of sampled household is migrated to Gangtok. From Gor village 26% are migrated to the places like Kolkata, Siliguri, and Gangtok. From Sangtok village 42% are migrated to the places like Dehradun, Gangtok, Kolkata, and Delhi. From Tangyek village 32% are migrated to Gangtok and Siliguri and from Ramthang village 35% have been migrated to Gangtok and Kolkata. In all the five villages the migration is seasonal migration which is mostly for pursuing higher education and private jobs. The outward migration in the villages is taking place as there are no higher educational facilities as well as there is no such companies that would provide jobs.

Table No IV.16: Financial Remittances

| Name of village | Financial remittances | Percentage | Usage |
|------------------------|------------------------------|-------------------|-----------------------|
| Lum | No | - | NA |
| Gor | 7 | 12 | For the household use |
| Sangtok | 3 | 4 | For the household use |
| Tangyek | No | - | NA |
| Ramthang | No | - | NA |

The table number IV.16 provides the name of the villages and the number of migrated people who sends financial remittance to their families. In Lum village, Tangyek village and Ramthang village there are no people who have migrated out for works or who sends financial remittance. From Gor village there are 12% of migrated population of sample households who send financial remittance to their families which are used in domestic necessities. Likewise from Sangtok village there is 4% who is migrated out for work and sends the financial remittance. These remittances are largely used for household daily needs including expenditure on education and health requirements and of not much use for other purposes like entertainment and purchase of luxury items.

Table No IV.17: Impact of inward migration

| Name of village | Impact of migrated people | |
|-----------------|---------------------------|-------------|
| | Yes | No |
| Lum | 14 (95%) | 1 (5%) |
| Gor | 7 (15%) | 43 (85%) |
| Sangtok | 10 (26%) | 29 (74%) |
| Tangyek | 40 (95%) | 3 (5%) |
| Ramthang | 29 (98%) | 1 (2%) |

Table number IV.17 describes the name of the villages and their relation with the migrated people discussing their socio, economic and cultural impacts. In Lum village there are 95% impacts of migrated people. In Lum village there are no such migrated people settled but they have a contact and conversations with these migrated dam workers. The respondents remarked that there are no such impacts as such since they are not settled in their villages but selling of fruits and vegetables which contributes to their income and learning their languages like Hindi has become common to the villagers. This foreign language has both negative and positive implications. Positively, the residents are having the exposure to the outer world and they are getting an opportunity to learn and understand the national language. On the other hand there is an apprehension that the coming generation would forget their indigenous language and adopt the foreign language. In Gor 85% of households and in Sangtok villages 74% of households remarked that such impacts are not felt. In Tangyek village, 95% and in Ramthang village, 98% respondents remarked that there are inter marriages and which can become a trend affecting their culture.

Table No IV.18: Impact of Dam

| Name of Village | Impact of Dam | | Remarks |
|-----------------|---------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Negative | Positive | |
| Lum | 4 (25%) | 11 (75%) | Bridge, monastery are built by NHPC and road construction is also done by NHPC but there is scarcity of water which can be due to construction of dam |
| Gor | 30 (60%) | 20 (40%) | There is a submergence of agricultural lands |
| Sangtok | 21 (55%) | 18 (45%) | There is sinking of lands |
| Tangyek | 42 (99%) | 1 (1%) | Due to tunneling of dam frequent tremors are felt and there is landslides, scarcity of water and sinking of lands |
| Ramthang | 29 (98%) | 1 (2%) | Due to tunneling of dam frequent tremors are felt and there is landslides, scarcity of water and sinking of lands |

The table number IV.18 describes the impact of dam on the selected villages. In Lum villages 75% respondents remarked that the NHPC has built monastery, bridges, and road connectivity has also been done by NHPC. Lum village is facing the problem of water scarcity which the respondent remarked could be due to the dam construction. In Gor village, 60% and in Sangtok village, 55% of respondents remarked that there is sinking and submergence of lands which has an impact on the agriculture and transportation. The sinking and submergence of land, which the respondents remarked that it can be due to the construction of dam leading to the high rates of landslides affecting the landscape of the area. In Ramthang village, 99% households and Tangyek village, 98% of households remarked that the frequent tremors are felt and there is landslides and sinking of lands and the two villages are also facing the problem of water scarcity which according to the respondent can be because of the tunnel in the areas.

Table No IV.19: Migration and Relocation

| Name of village | Migration | Relocation |
|------------------------|------------------|-------------------|
| Lum | 0% | 0% |
| Gor | 1% | 0% |
| Sangtok | 0% | 0% |
| Tangyek | 1% | 0% |
| Ramthang | 1% | 0% |

Table number IV.19 describes the migration and relocation in the selected villages. The tables depicts that there is no inward migration and relocation as such. In Ramthang and Tangyek some labour migration are seen but seasonal. Tangyek and Ramthag respondents have also remarked that due to the construction of tunnels there are damages to their social structures and placed demand for the relocations but the demands have not yet sanctioned.

Table No IV.20: Impact of dam construction on physical assets

| Name of village | House | Land | Livestock | Any other |
|------------------------|--------------|-------------|------------------|------------------|
| Lum | - | 3 (20%) | - | - |
| Gor | - | - | - | - |
| Sangtok | 2 (3%) | - | - | - |
| Tangyek | 4 (10 %) | 7 (15%) | - | - |
| Ramthang | 4 (12%) | 5 (14%) | - | - |

Table IV.20 depicts the name of the selected villages. In Lum village three respondent households, which constitutes about 20 % per sample households, had lost their land to the NHPC and other four villages have not lost anything of sort to the Hydro Electric Plant but in Sangtok village 3% households have remarked that there are damages to their house and in Tangyek village 10% of households have witnessed damages to their house and 15% of households respondents remarked that there are cracks in their land. In Ramthang village 12% of households respondents have HEP impact on their houses and 14% of households respondents on their lands.

Table No IV.21: Compensation received

| Name of village | Compensation received | House | Land | Livestock | Any other |
|------------------------|------------------------------|--------------|-------------|------------------|------------------|
| Lum | 3 (20%) | - | - | - | Cash |
| Gor | - | - | - | - | - |
| Sangtok | 2 (3%) | - | - | - | Cash |
| Tangyek | 11 (25%) | - | - | - | Cash |
| Ramthang | 9 (26%) | - | - | - | Cash |

Table number IV.21 depicts the name of the selected villages and the compensation received by the villagers. In Lum village 20% of respondents had lost their land for which they were properly compensated. In Sangtok 3% of respondents, in Tangyek 25% respondents and in Ramthang village 26% respondents were compensated for the damages to their social structure however it was only one time compensation, but the damages continues.

IV. 5. b. Livelihood

People work primarily to achieve a decent standard of living. In market based economics they generally do so through wage or self employment. In more traditional and subsistence economics they sustain their livelihood through specific cycles of activities. Work can also be a major factor in ensuring that economic growth is equitable and poverty reducing (Human Development Report, 2015).

Table No IV.22: Source of Earnings of households

| Name of village (Sample households) | Source of earning | Pre-plant | Other source of earnings | Post-plant | Other source of earnings | Difference in source of earnings in the pre and post plant, farming as main source |
|--------------------------------------------|--------------------------|------------------|---------------------------------|-------------------|---------------------------------|-------------------------------------------------------------------------------------------|
| Lum (15) | Farming | 95% | 5% | 90% | 10% | 5% |
| Gor (50) | Farming | 97% | 3% | 95% | 5% | 2% |
| Sangtok (39) | Farming | 90% | 10% | 85% | 15% | 5% |
| Tangyek (43) | Farming | 97% | 3% | 70% | 30% | 13% |
| Ramthang (30) | Farming | 96% | 4% | 69% | 31% | 27% |

Table number IV.22 describes the name of the villages and their source of earning before the construction of dam and after the construction of dam. In Lum village 95% were involved in farming and 5% were involved in other source of earning before the dam construction. After the dam construction 90% are involved in farming while 10% are involved in other source of earning. In Gor village 97% were involved in farming and 3% were involved in other source of earning before the dam construction. After the dam construction 95% are involved in farming while 5% are involved in other source of earning. In Sangtok village 90% were involved in farming and 10% were involved in other source of earning before the dam construction. After the dam construction 85% are involved in farming while 15% are involved in other source of earning. In Tangyek village 97% were involved in farming and 3% were involved in other source of earning before the dam construction. After the dam construction 70% are involved in farming while 30% are involved in other source of earning and In Ramthang village 96% were involved in farming and 4% were involved in other source of earning before the dam construction. After the dam construction 69% are involved in farming while 31% are involved in other source of earning.

All the five villages main source of earning was and is farming. Before the construction of dam the agricultural production was good as respondents claims because there was no disturbances in lands and underground water but after the construction of dam there is seen a disturbances in agricultural production which is affecting their agricultural production. On the other hand the Project authority has only provided the petty jobs to the villagers which cannot be a long term source of income thereby pushing the villagers to the poverty line. The table also shows that the farming as source of earning has decreased in every village. It is evident from the survey that the physical problems are there but the people as they got jobs in the Power Plant they left the agricultural work and moved towards the easiest way of earning. As a result when the contractual work provided by the power plant expired the people migrated towards cities in search of job leaving their traditional source of income.

Table No IV.23: Income Status

| Name of village (Sample households) | Income status (pre\post HEP) | | |
|----------------------------------------|------------------------------|------|-------|
| | Better | Same | Worse |
| Lum (15) | 2% | 95% | 3% |
| Gor (50) | 1% | 98% | 1% |
| Sangtok (39) | 2% | 96% | 2% |
| Tangyek (43) | 5% | 90% | 5% |
| Ramthang (30) | 5% | 90% | 5% |

Table number IV.23 depicts the name of the village and the income status of the selected villages. In Lum village 95% of respondents remarked that there is no raise in income status even after the construction of dam. Similarly the other four villages respondents like Gor 98% respondents, Sangtok 96% respondents, Tangyek 90% respondents, and Ramthang 90% respondents remarked that there is no raise in income status even after the construction of dam the table shows that the income status has not improved by NHPC. It is same even after the construction of dam, which implies that the power plant has not contributed financially to the households to better their life style, expenditure or brought any positive results to their living standards.

IV. 5. c. Employment

If development means income growth with equity, generation of employment generation opportunities remains a formidable challenge for the state and arguably the main objectives of development. It is only through employment generation that economic wellbeing of the people would be ensured and poverty reduced on a sustained basis.

Table No IV.24: Employment in HEP

| Name of village (Family members of sample households) | Members employed in HEP | Percentage |
|-------------------------------------------------------------|-------------------------|------------|
| Lum (53) | None | - |
| Gor (215) | 5 | 2 |
| Sangtok (168) | None | - |
| Tangyek (165) | 3 | 1 |
| Ramthang (106) | 9 | 8 |

Table number IV.24 depicts the name of the villages and the employment facilities provided by the plant authority. In Lum village and Sangtok there are no village members who are

employed in Hydroelectric Plant. In Gor village 2% population of sample household are employed in hydroelectric plant, Tangyek village 1% are employed in hydroelectric plant likewise in Ramthang village 8% of the total populations are employed in the plant. Therefore the Plant authority has provided employment facilities in the village which is an important socio-economic benefit, but most of the jobs that local people worked on pertained to the construction phase of the project and thus were short term. The NHPC also provides the petty jobs to the unemployed youth like constructing the drains, carriages etc.

Table No IV.25: Impact on Social Structure

| Name of village | Social structure affected by HEP | | |
|-----------------|----------------------------------|------|-------|
| | Better | Same | Worse |
| Lum | 3% | 95% | 2% |
| Gor | 1% | 98% | 1% |
| Sangtok | 1% | 97% | 2% |
| Tangyek | 2% | 85% | 13% |
| Ramthang | 2% | 85% | 13% |

Social structure is the distinctive, stable system of social relations that exists in any human society. It is not concerned with people as individuals, in groups, or in organisation forming the society, nor the ultimate goal of their relationships. Rather, social structure deals with the organisation of their relationships, how they are arranged into patterns. Thus the concept of social structure assumes that human social relationships are not arbitrary or confidential, but rather they follow certain patterns that can be identified (newworldencyclopedia, 2008)

Table number IV.25 describes the name of the selected villages and the impacts of dam on the social structure. There are ignorable impacts as of now in five villages in the social structures of sample households.

Table No IV.26: Impact of Dam

| Name of village | Positive impact | Negative impact |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Lum | Plant authority have constructed bridge, monastery, roads and one time free eye check up and health awareness program was held by the plant authority | There is Frequent landslides, sinking of lands, and scarcity of water |
| Gor | Qualified residents of Gor are employed in power project | Submergence of lands |
| Sangtok | No | Submergence of lands |
| Tangyek | Qualified residents are employed in power project | Due to tunnel in the area tremors are felt, land is sinking, roads are cracked and there is scarcity of water |
| Ramthang | Qualified residents are employed in power project | Due to tunnel in the area tremors are felt, land is sinking, roads are cracked and there is scarcity of water |

Table number IV.26 depicts the name of villages and the positive and negative impacts of dam on the selected villages. In Lum village the respondent remarked that the Plant Authority constructed bridges and roads and monastery is built. One time eye checkups were done and health awareness campaigns were held. The respondents' further said that the NHPC also helped them during natural calamity by distributing blanket, medicines and necessary things. But the residents of Lum village are faced with the problem in check post when new officials are in charge. There is scarcity of water, lands are sinking and frequent landslides are witnessed by the respondents. In Gor village the people are given employment and helping the unemployed youths by giving small contractual works but the negative side to it is the lands of village is sinking which can be due to dam. In Sangtok village no positive impacts is seen but the villagers are facing the problem like sinking of lands, loosening up of soils etc. In Tangyek and Ramthang, NHPC has provided the employment to the qualified youths but due to the tunneling in the area the livelihood of people are disturbed. The houses are cracked, tremors are felt frequently, roads are sinking and there is scarcity of water.

Table IV.27: Impacts on Cultivation

| Name of village | Main cultivation | Remarks |
|------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lum | Oranges, bananas, Buck wheat, potatoes, ginger etc | There is untimely dropping of oranges, plants and crops are destroyed by insects and soil is also loosening up. |
| Gor | Maize, ginger, pulse, banana, oranges, tomatoes, Garlic, Cauliflower, squash, Red chilly, Pumpkin etc | There is less productivity, yellowing of plants, decrease in sizes of fruits and tasteless. |
| Sangtok | Millets, Cardamom plantation, oranges, tomatoes, Garlic, corindor, Red chilly, cucumbers, pumpkin etc | For the cardamom nursery the survival of new varieties is hard and there is drying of plants, infected with diseases, and less productivity. |
| Tangyek | Cardamom, rice, maize, millets, ginger, buck wheat, oranges, etc | There is drying of cardamom plants, all plants are infected by the diseases, the paddy fields production has decreased due to the over construction and scarcity of water, sinking of land and untimely dropping of fruits |
| Ramthang | Cardamom, rice, maize, millets, ginger, buck wheat, oranges, etc | There is drying of cardamom plants, all plants are infected by the diseases, the paddy fields production has decreased due to the over construction and scarcity of water, sinking of land and untimely dropping of fruits |

Table number IV.27 describes the name of villages and their main cultivation and impacts of dam in cultivation. The respondents of selected villages have remarked that there is an untimely dropping of fruits like oranges, crops are destroyed by insects. The respondents have further remarked that new varieties of cardamom are hard to survive and plants are drying up which could also be due to climate change. There are varieties of crops cultivation like millets, oranges, cardamom, red chilly, Buck wheat, vegetables etc whose production is decreasing and the yellowing of plant is also seen.

Table No IV.28: Livestock of sample households

| Name of village (Sample households) | Dairy | Poultry | Goatry | Piggery | Duck | Impact on livestock |
|------------------------------------------------|--------------|----------------|---------------|----------------|-------------|------------------------------------|
| Lum (15) | 1 | 4 | 1 | - | - | No |
| Gor (50) | 1 | 3 | 2 | 4 | 1 | No |
| Sangtok (39) | 1 | 1 | 1 | 1 | 2 | No |
| Tangek (43) | 2 | 5 | 1 | - | - | No |
| Ramthang (30) | 1 | 5 | 1 | 1 | - | No |

In table number IV.28 livestock in selected villages has been described. In Lum village one household had dairy, four households has poultry and one household has goatry. In Gor village one household have dairy, three household has poultry, two households has goatry, four households has piggery and one household had duck. In Sangtok village one household has dairy, one household have poultry, one household goatry, one household piggery and two household duck. In Tangyek village two household has dairy, five households has poultry and one household goatry. In Ramthang village one household had dairy, five households poultry, one household goatry and one household piggery. None of the sample households of the selected villages have claimed any kind of impact on the livestock. Availability of fodder to the cows is as usual and any scarcity is not recorded.

Table No IV.29: Cultural Impacts

| Name of village (Selected households) | Cultural impacts | | Remarks |
|---------------------------------------|------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| | Yes | No | |
| Lum (15) | 2 (10%) | 13 (90%) | The residents of Lum learned the new languages like Hindi. |
| Gor (50) | - | - | - |
| Sangtok (39) | 6 (15%) | 33 (85%) | Inter marriages are done; Earlier cremation of dead bodies used to be done in river belts which is prohibited by plant authority today. |
| Tangyek (43) | 13 (25%) | 32 (75%) | Frequent landslides are witnessed today which can be disturbance to mother nature by constructing dams |
| Ramthang (30) | 8 (25%) | 22 (75%) | Frequent landslides are witnessed today which can be disturbance to mother nature by constructing dams |

Table number IV.29 describes the cultural impacts of dam on the selected villages. In Lum village 90% of respondents remarked that that they knew only their own language i.e. Lepcha language other than that Nepali language but after the construction of dam they intermixed with the migrated people whose language were different, which made them to learn their language. In Sangtok village 85% of respondents remarked that inter marriages became frequent with the migrated people. Before construction of dam the villagers used the river for various purposes like cremation of dead bodies, collecting of sands and stones, washing clothes etc which is prohibited today. In a way people's daily life has been disturbed. 75% of respondents in Tangyek village and Ramthang village respectively, remarked that they witnessed the massive landslides in upper Dzongu which can be due to disturbing Mother Nature by constructing dams and electric poles.

CHAPTER V

Major findings, Suggestions and Conclusion

After the merger of Sikkim with Indian Union, government of India has provided various safeguards to the citizens of Sikkim. Article 371 (F) of the Constitution is one of the most important Article that provides protection to the people of Sikkim. Likewise the Northern district of Sikkim which is inhabited by aborigines of the state 'Lepchas' is further safeguarded by various other provisions and laws which is discussed in Chapter Two of this dissertation . One of the most prominent is the Notification Number 3069 which talks about the prohibition of settlement of Non- Indigenous people in the area. However in spite of all these provisions and safeguards there is gradual transformation of population, damages to environment, culture, religion and economy which are due to various developmental projects, like hydel power plant, in the name of national interest almost outnumbered the local inhabitants.

It is evident from the survey that the local institutions like Non-Governmental Organisations are not satisfied with the institutional arrangement done by the Plant Authority. According to Active Citizen of Teesta (ACT) an organisation of the indigenous Sikkimese citizens argues that ' if we go on with these power projects, the cradle of lepcha civilization and identity of Sikkim will be diluted and all laws under Article 371 F violated' (ACT 2007-2014).

**Table No. V.1: List of benefits provided by the power plant
(Based on Respondents's Response)**

| Types of Benefits | Location | Implementing Agency | Remarks |
|--------------------------|------------------------------------|----------------------------|--------------------------------|
| Medical Campus | Lum | NHPC | Eye Camps |
| Road Connectivity | Lum | NHPC | General Public benefits |
| Steel Suspension bridge | Lum | NHPC | General Public benefits |
| Monastery | Lum | NHPC | General Public benefits |
| Disaster Relief | Lum | NHPC | General Public benefits |
| Protection Wall | Gor | NHPC | Landslides protection measures |
| Employment | Gor, Ramthang, Tangyek and Sangtok | NHPC | General public benefits |

An interview with the local residents of the hydropower project sites and a careful observation revealed that the local residents are facing the problem of water shortages since the spring water, streams which are the main source of drinking water are rapidly disappearing. The majority of respondents particularly of the Ramthang and Tangyek are facing the major issues of drying up of water resources, landslides and soil erosion, flash floods during monsoon due to the blasting and construction of tunnel. The residents of Ramthang and Tangyek are only not facing the problem of water scarcity but the tremors are also felt as the water are discharged through the tunnel resulting in the cracks in walls, lawns, roads etc making the ground weak and fragile which also results in landslides, sinking of roads, submergence of lands etc. Though the residents of affected villages are faced with such grave issues the power plant authorities are least bothered and it is known from the survey that the affected villagers are given one time compensation which is not sufficient since the damages are frequent. People of Ramthang and Tangyek are staying in such a state that when time comes the whole land can be submerged resulting in grave consequences. The people have also placed the demand for resettlement but the demands are yet to be addressed. The respondent has also grieved over the addition of another tunnel of project named 'Sneha Kyantic Dikchu Dam' making the situation worst and adding more damages. The people's everyday live has been disturbed since the tremors of water discharge are so high that the

villagers has to come out of their house and find some safe place. The positive side of the tunneling is that the unemployment issues of the village have been reduced. The affected households are given employment though it is in contractual basis. Respondent has also revealed that the petty jobs or odd jobs are also offered by the Plant Authority to the villagers adding some income to the family. The surveys also found that the villagers are divided into two sections. The one section is in favor of construction of dam and the other half against it. Those who are in favor argue that the land which was waste land with no customers in market is finally taken by the Power Plant and with the price of the land they can improve their standard of living. The other half argue that they don't want any power project in their area since they are aware that the Plant Authority does not go according to their agreements and more over the Plant Authority damages the social constructions. The villagers who are against the dam construction also argue that it is all against their culture since the construction of dam are intruding into the mountains and rivers which they worship. They further add that the Mother Nature is disturbed by the construction of dams by which they faced a wrath of massive landslide in upper Dzongu. Adding more to this the inter marriages has been frequent in the area which according to the respondent can severely affect the culture of Lepchas. Since the Lepcha are the vanishing tribes the inter marriage can be one of the most important factor which can narrow the Culture of Lepchas. Moreover their traditional source of income i.e. agriculture, farming, cultivations is mostly affected. The villages mostly plant orange nursery, cultivate cardamom, paddy fields etc. which according to the respondents are perilously affected. Among the fruits and the cereals the paddy fields are mostly affected. The respondents are of the view that it can be due to the drying of the underground water or the shift of the underground water channel. Though the villages are affected by the tunnel of the dam the Plant Authority has not contributed to the development of the villages.

While respondents of Lum (dam sites) revealed that sand quarrying business has been hampered. Consequently many families livelihood has been severely affected like wage laborers, truck drivers, etc. The respondents have also griverences over the construction of roads as promised by the Plant Authority but only the Pedestrian or the Kaccha road has been constructed which does not connect the inner village areas though the kaccha road has made Lum village easier to visit market places, hospitals, etc. Respondents and local institutions has also expressed their griverences that they did not participated in decision making process

of NHPC Stage V Hydro Power Project during construction and commissioning phase. The other issues raised during the survey were that the plant authorities have made no contribution to educational infrastructure and health institutions. The plant authorities have conducted one time free eye check up and health awareness program. The residents of Lum village were given employment at a time of construction period. Though the Lum is a Dam site area the development in any form has not come to the village. In the name of development one Kaccha road is constructed, beside the road construction one monastery has been built by the Plant Authority. The respondent has raised the issues of water scarcity and impact on agriculture. The respondent remarked that the sizes of fruits mainly oranges has decreased and there is fruit fly (dropping of fruit) before ripping. The other cultivations are also infected by the alien insects which have never been seen before, and the respondent remarked that it can be due to the pollution caused at a time of blasting of rocks during construction of dam. The Plant Authority has constructed bridge making the villagers to connect to outside world. No villagers are employed in the Plant since the literacy rates are low and there are no skilled workers required in such Plants. The drawback of the Plant seen in the Survey is that the Plant has made no initiatives to provide the vocational training institution through which the villagers can be trained to work in such developmental projects. Moreover the villagers are also harassed by the newly appointed officers at the check post. They are asked frequently for the pass which is required to enter inside the dam area.

The power plant has lacked in providing protection walls in reservoirs areas and along the river belts areas mainly the Lower Gor (Phidang), North Sikkim houses and private property are damaged, though the plant authorities has given the one time compensation but the damages are frequent as the water level raises, people are in constant fear of flash floods and landslides. The respondent has also raised the issues of stoppage of burial or burning of dead bodies near river belts which was rituals of the people. The people's everyday life has been completely disturbed like the river water was used in washing clothes, drinking water, etc. The respondents also remarked that at a time of construction of Dam the residents of affected villages were given the small contractual works but since the villagers were new to such works they were undermined the profit. The bright side today is that now the villagers know the tariff and they cannot be diluted by anyone. The project also made the shy, peace loving Lepcha community more sensible and active.

Respondents of all the surveyed five villages namely, Lum, Gor, Sangtok, Tangyek and Ramthang have raised the issues of decline in agricultural productivity. Majority of respondents have reported that no employment opportunities have been provided to the local people in the power project and the respondent has also said that employment opportunities are mostly short term till the construction phase. After that the opportunities were given in form of paid laborers, small contractures and contractual workers, regular jobs are negligible. Almost all the affected household has said that there is lack of employment opportunities for the local people in hydropower projects. About 90% of respondents have strongly argued that the productivity of their agricultural cereals and pluses have declined over last 10 years. Respondents have also argued that the sizes of the fruit such as oranges and guava have reduced considerably, and has lost its vigor, colour and taste which have affected their income. Respondent argue that they learned the new language like Hindi which helped them in interacting with the outsider for selling the fruits, vegetables etc. The learning of the new language is advantageous for the people but at the same time it can have an impact on their culture.

The Survey conducted has also found that the power plant has not provided or constructed any educational infrastructure or has made any contribution to such infrastructure. The students have to migrate to other places for higher educations. The schools which are established are the schools founded prior to the construction of dam. Likewise the Power Plant has not contributed to any health facility. The health centers or health sub centers are owned by the government.

The brighter side of the story is that the people of North Sikkim affected villages are now aware of the developmental projects and their agreements. They learned the new languages and inter acted with the outsider making them more sensible and active.

Recommendations:

1. There should be more Primary Health Centers
2. There should be renovation of schools and existing health centers.
3. The road connectivity must be done at the earliest.
4. The Power Authority must provide the vocational training centers for the skill development of the villagers so that they can be eligible for the job of such developmental projects.

5. There should be provision of water supply since the shortages of water is the major issues of the villagers.
6. There should be the provision to check the protection walls at regular basis so as to avoid the accidents especially during the rainy season.
7. The people must support such developmental projects for the development of state which led to the development of nation.

BIBLIOGRAPHY

BOOKS

- Ahuja, R. (2012). *Research methods*. New Delhi: Rawat Publications.
- Bharadwaj, R. (2001). *Manual for Socio-Economic Status Scale*. Agra: National Psychological Corporation.
- Bijoy, C.R (2010). *India and the Rights of Indigenous People*. New Delhi: Asia Indigenous People
- Black, M. *The no-nonsense guide to International development*. Toronto: New International Publication.
- Commission, P. (2008). *Sikkim Development Report*. New Delhi: Academic Foundation.
- Drever, J. (1964). *A Dictionary of Psychology* . London: Penguin Book.
- Edward, M. M. (2000). *Community guide to Developmental Impact Analysis*. Madison: University of Wisconsin.
- Ensor, P. G. (2005). *Reinventing Development*. London, New York: Zed Books.
- Gaub, O. (2003). *An Introduction to Political Theory*. New Delhi: Rajiv Beri Publication.
- Graham, H. (2004). *Socio Economic inequalities in health in U.K: Evidence on Pattern and Determinants* . Lancaster: Lancaster University.
- Ghai, K. (2010). *Indian Government and Politics*. New Delhi: Kalyani Publisher.
- Hasain, N. (2008). *Tribe and Caste*. Lucknow : Uttar Pradesh, India.
- Heywood, A. (2011). *Global Politics*. U.K: Palgrav Macmillan Publication.
- Hopper, P. (2012). *Understanding Development*. U.K: Polity Press.
- Khagram, S. (2004). *Dams and Development: Transnational Struggles for Water and Power*. Ithaca: Cornell University Press.
- Kumar, A. S. (2012). *Human Rights in the World*. New Delhi: Sarup Book Publisher.

- Klingensmith, D. (2007). *One Valley and Thousands: Dams, Nationalism and Development*. New Delhi: Oxford University Press.
- McCully, P. (1996). *Silenced Rivers: The Ecology and Politics of Large Dams*. London: Zed Books.
- Madhava, M. N. (1999). State of Socio Economic Rights. In S. K.P, *Human rights: Fifty Years OF India's Independence*. New Delhi: Gyan Publishing House, pp. 145-153.
- Oomen, T. (2004). *Developmental Discourses: Issues and Challenges*. New Delhi: Regency Publications.
- Raj, R. (1987). *Is it Worthwhile to ruin Forest Wealth for Electricity*. Indore, Madhya Pradesh: Free Press.
- Risley, H. (1894). *The gazetteer of Sikkim. Calcutta: Bengal Secretariat Press. 1905 (1969 reprint)*. New Delhi: Oriental Book Reprint Corporation.
- Rassweiler, A. (1988). *The Generation of Power: The History of Dneprostroi*. Oxford: Oxford Unoversity Press.
- Reisner, M. (1986). *Cadillac Desert: The American West and its Disapering Water*. Lodon: Seeker and Warburg.
- Subba, T. (1989). *Dynamics of a hill Society: The Nepalis in Darjeeling and the Sikkim Himalayas*. New Delhi: Mittal Publication.
- Tarkunde, V. (1999). Human Rights: An Overview. In K. Saksena, *Human Rights: Fifty Years of India's Independence*. New Delhi: Gyan Publising House, pp. 131-135.
- Toby, P. T. (2011). *The Impact of Socila Economic Status of the people towards Participation in Developmental Programs*. South Africa: University of Zululand.
- Waterbury, J. (1979). *Hydropolitics of Nile Valley*. Syracuse, New York: Syracuse University Press.
- Workman, J. G. (2009). *Heart of Dryness: how the last Bushman can hep us to endure the coming age of present Drought*. New York: Walker and Company.

World Commission on Dams(2000). London: Earthscan Publication.

Worster, D. (1986). *The Hooverial and Dam: A Study in Domination in the soci Large Damsal and Environmental Effect of*. Wadebridge: Wadebridge Ecological Centre.

Winick, C. (1956). *Dictionary Of Anthropology* . New York: Philosophical library.

Xaxa. (2001). *Impact of tribes in Singharay Debal (edt.), Social Development and Empowerment of Marginalised Groups*. New Delhi: Sage Publication.

CONFERENCE PROCEEDINGS

Das, P. J. (2013). Water Conflict in Northeast India. Pune: Forum for Policy Dialogue on Water Conflicts in India.

Das, B. (2000). Managing a Large Irriga Tion System Under Emergency Conditions: Hirakud Project Case Study, India. *Proceedings 2000 USCID International Conference* (pp. 39-50). <https://dspace.library.colostate.edu>.

Head, C. (2004). A Fresh Start: Prospects for Financing Hydropower in. *UN Symposium of HEP and Sustainable Development* (pp. 1-12). Beijing: United Nations.

ARTICLES

Anbari, F. T. (1991). The Guri Dam, Project. *Management Institute* , 1-13.

Arora, V. (2009). 'They are All Set to Dam(n) Our Future': Contested Development through Hydel Power in Democratic Sikkim, *Sociological Bulletin*, 58 (1): 94-114.

Arora, V. (2007). 'Unheard Voices of Protests in Sikkim'. *Economic and Political Weekly*, 42-(34): 3451-3454.

Arora, V. (2007). 'Society Assertive Identities, Indigeneity, and the Politics of Recognition as a Tribe: The Bhutias, thelepchas and the Limbus of Sikkim'. *Indian Sociological Society* , 56(2): 195-220.

Anderson, R. (2000). How Multilateral development assistance triggered the conflict in Rowanda. *Third World Quartley* , 21(3): 44-56.

- Arora, V. (2009). They are All Set to Dam(n) Our Future: Contested Development through Hydel Power in Democratic Sikkim'. *Sociological Bulletin* , 58(1): 94-114.
- Apoorv, K. (2008). Tribal Law in India: How Decentralisation Administration Is Extengusing Tribal Rights and Why Autonomous Tribal Government Are Better. *Indigenous Law Journal*, 7(1): 89-126.
- Bhasin, V. (2011). Settlement and Land use pattern in the Lepcha Reserve- Dzongu zone in the Sikkim Hmalaya. *India Journal Biodiversity*, 2(1): 41-66.
- Bhattarai, B. (2015). Socio Economic Impact of hydropower and Social Science. *Global Journal of Sociology*, 5(1): 14-27.
- Biswas, A. et.al (2001). Development and Large Dams: A Global Perspective. *International Journal of Water Resources Development*, 17(1): 9-21.
- Basu, S. (2000). 'Dimension of Tribal Health in India', *Health and Population: perspectives and issues*, 23(2): 61-70.
- Bhutia, Z. W. (2014). 'Bhutia Tribe in Sikkim: a Sociological Study', *Intrnational Journal of Innovative Research and Development*, 3(11): 322-326.
- Bird, E. (2012). The Socioeconomic Impact of Hydroelectric Dams on Developing Communities: A Case Study of the Chalillo Dam and the Communities of the Macal River Valley, Cayo District, Belize, Central America. *Environmental Studies Electronic Thesis Collection*, 1-114.
- Buono, K. (2007). The Ethics of Renewable Resources: Case Study: China's Three Gorges Dam. *TIMES*, 1-18.
- Chowdhury, A. R. (2013). Decommissioning dams in India:a comparative assessment of Mullaperiyar and other cases. *Development in Practice*, 292-298.
- Colmenares, E. (2006). Guri Dam. *Ingenuity and Energy*, 33-36.
- Cheetri, D.P. (2013). Preserving cultural identity through tribal self governance:. *American International Journal of Research in Humanities, Arts*, 13(205): 23-28.

- Chettri, D. P. (2013). Tribal Population and Development in the Himalayan state of Sikkim. *International Journal of Humanities and Social Science Intervention*, 2(5): 08-18.
- Chaurasiya, P. k., Prasad, V., & Khare, R. (2013). Scenario and Risk of Hydro Power Project in India. *International Journal of Chem. Tech Research*, 5(2): 1068-1075.
- Escobar, A. (1999). 'The Invention of Development. *Academic Research Library*, 363-382.
- Fearnside, P. M. (2001). Environmental Impacts of Brazil's Tucuruí Dam: Unlearned Lessons for Hydroelectric Development in Amazonia. *Environmental Management*, 27(3): 377-396.
- Faille, D. D. (2011). Discourses analysis in international development studies: mapping some contemporary contributors. *Journal of Multicultural Discourses*, 6(3): 215-235.
- Flood, L. U. (1997). Sardar Sarovar Dam: A Case Study of Development-induced Environmental Displacement. *Reguge*, 16(3): 12-17.
- Gleick, P. H. (2008-2009). Three Gorges Dam Project, Yangtze River, China. *The World's Water*, 139-150
- Galobardes, B. e. (2006). Indicator of socio economic position (part I). *Journal of Epidemiology and Community Health* .
- Garg, P. (2012). Energy Scenario and Vision 2020 in India. *Journal of Sustainable Energy and Environment*, 7-17.
- Graf, W. (1999). Dam nations: a geographic census of American dams and their large scale hydroelectric impacts'. *Water Resources Research*, 35(4): 1305-1311.
- Gautam, K. (2014). Society and Economy of Sikkim Under Namgal Rulers(1640-1890). Gauhati, Assam, India.
- Hoshiar, S. (2014). A Study on Socio-Economic Status of Scheduled Caste of Kangra. *Asian Journal of Muktidisciplinary Studies*, 2(12): 118-132.
- Handique, K (2012). The Hydro Power Scenario of North East. *International Journal of Science and Research*, 602-609.

- Inskeep, R. (2000). Pikiyari Hydroelectric Dams: The Impact of the Construction on Local Communities and Implication for Cultural Heritage. *World Commission on Dams*.
- India, G. o. (1947). “*Mahanadi Valley Development: The Hirakud Dam Project*”. Simla: Central Waterways Irrigation and Navigation Commission, Government of India.
- Kanchi, K. (2011). Inducing Vulnerabilities in a Fragiloe Landscape. *Economic and Political weekely*, XLVI(51): 19-22.
- Lata, R. et.al (2013). Socio-economic impacts of Sorang hydroelectric power project in District Kinnaur, Himachal Pradesh, India. *Journal in Environmental and Earth Science*, 3(3): 54-61.
- La Rovere, E. e. (2000). *Tucuruí Hydropower Complex*. South Africa: World Commission on Dams.
- Madhusoodhanan, C. (2010). The Mullaperiyar Conflict. *National institute of advanced studies*, 1-79.
- Morse, B. e. (1992). *Sardar sarovar: report of the independent review*. Geneva: International Environmental Law Research Centre.
- Murty, G. N. (1994). Performance overview of Hirakud dam project: A case study. *Fifth National Water Convention, organized by National Water Development*. Government of Haryana & Indian Water Resources Society.
- Mueller, C. e. (1981). Measures of socio-economic status: alternative and recommendations. *Child Development*, 13-30.
- N, K., D.R, W., & Moss, N. (1997). Measuring Socila Clas in US Public Health Research: Concepts, Methodologies, and Guidelines. *Annual Reviews Inc.*, 34-78.
- Naz, F. (2006). Arturo Escobar and the Development Discourses: An Overview. *Asian Affairs*, 64-68.
- Namy, S. (2007). Addressing the Social Impacts of Large Hydropower Dams . *The Journal of International Policy Solutions*, 7: 11-17.

- Nayak, A. K. (2013). Development, Displacement and Justice in India: Study of Hirakud Dam. *Social Change*, 14(2): 397–419.
- Nyari, D. M. et.al (2009). Households Data Collection for Socio-Economic Research in Agriculture: Approaches and Challenges in Developing Countries. *Journal of Social Science*, 19(2): 91-99.
- Ortolano, L. et.al (2000). *Grand Coulee Dam and the Columbia Basin Project*. South Africa: World Commission on Dams.
- Oladipo, F. et.al (2010). Empirical Determination of Socio economic Status and its Relationship with Selected Characteristics of Rural Male Farmers in Kwara state, Nigeria. *Research journal of Agriculture and Biological Sciences*, 6(1): 64-76.
- Oyedepo, O. (2012). Energy and Sustainable development in Nigeria: the way forward. *Energy Sustainability and Society*.
- Podh, K. K. (2015). Maladies of Development in India - Protest against Large Scale Dams: A Case of Hirakud Dam. *International Journal of Multicultural and Multireligious Understanding*, 11-23.
- Pradhan, S. (2013). Optimization Of The Operating policy Of The Multipurpose Hirakud Reservoir By Genetic Algorithm. *American Journal of Engineering Research (AJER)*, 2(11): 260-266.
- Pukayasta, S. (2013). Hydro Power Development and the Lepchas: A case study of the Dzongu in Sikkim, India. *International Journal of Social Science*, 2(8): 19-24.
- Raje, D. (2010). Reservoir performance under uncertainty in hydrologic impacts of climate change. *Advances in Water Resources*, 312–326.
- Radhakrishnan, S. (2009). Development of Human Right in an Indian Context. *International Journal of legal information*, 3692): 303-330.
- Rai, D. (2011). Hydropower Projects a boon or bane for Sikkim. *Eastern Panorama*
- Subrata, P. (2013). 'Hydro Power Development and the Lepchas: A case study of the Dzongu in Sikkim, India', *International Research Journal of Social Sciences*, 2(8): 19-24.

Salazar, G. J. (2000). Damming the Child of the Ocean: The Three Gorges Project. *Journal of Environment and Development.*, 160-174

Sharma, H. K. et.al(2014). Assessing the Impact of Hydroelectric Project construction on the river of District Chamba of Himachal Pradesh in the Northwest Himalaya, India. *International Research Journal of Social Science*, 3(2): 21-22.

Shavers, V. L. (2007). Measurement of Socio- Economic Status in Health Disparities Research. *The Journal of the National Medical Association*, 99(9): 1013-1023.

Thatheyus, A. e. (2013). Inter - State Dispute over Water and Safety in India: The Mullaperiyar Dam, a Historical Perspective. *American Journal of Water Resources*, 1(2): 10-19.

Vagholikar, N. et.al (2010). Damming Northeast India: Juggernaut of hydropower threatens social and environmental security of region',. *Kalpavriksh, Aaranyak and Action Aid India*, 1-19.

Yuksel, I. (2016). Hydropower and Future Environmental Policies. *International Journal of Thermal & Environmental Engineering*, 11(2): 99-103.

NEWSPAPER ARTICLES

Government White Paper on Hydro Power in Sikkim. (2009, July 31). *The Sikkim Times* .

Sanyal, P. (2004, June 6). 'Teesting times for the Teesta'. *The Hindu*

Yardely, J. (2007, November 19). 'Chinese Dam Projects Criticized for Their Human Costs'. *New York Times*

INTERNET SOURCES

ARTICLE WITH D.O.I

McDuie-Ra, D. (2011). 'The dilemmas of pro-development actors: viewing state–ethnic minority relations and intra-ethnic dynamics through contentious development projects'. *Asian Ethnicity* , 12(1): 77-100. doi: 10.1080/14631369.2011.538220. Retrived from <https://www.researchgate.net>.

ARTICLES WITHOUT D.O.I

Affected Citizen of Teesta, *ACT* (2007). Retrieved from <http://www.actsikkim.com>.

A.R. (2015). Central Electricity Authority. Retrieved from <http://www.cea.nic.in>.

Annual Report (2015). Central Electricity Authority. Retrieved from <http://www.cea.nic.in>.

Brandt, S. (2000). A tale of Two World Bank Financed Dam Projects in the Horn of Africa. World commission on dams: Dams and Cultural Heritage Management. Retrieved from <http://www.dams.org>.

Constitution Society (2015). 371F Special Provision with respect to State of Sikkim. Retrieved from <http://www.constitution.org>.

Census (2011). Sikkim Population Census data 2011- Census 2011 India. Retrieved from <http://www.census 2011.co.in>.

Encyclopedis Britannica. Tamang. Retrieved from <http://www.Encyclopedia Britannica.com>.

Human Rights: Nature and Constituents. Retrieved from <http://www.archive.mu.ac.in>.

Kakumani, M. What is the difference between Article 15(4) and Article 15(5) in Part III of the Indian Constitution? Retrieved from Indian Kannon: <http://www.indiankanoon.org>.

Ministry of Tribal Affairs (2012). *Ministry of Tribal Affairs*. Retrieved from <http://www.tribal.nic.in>.

Ministry of Tribal Affairs (2016). *Ministry of Tribal Affairs*. Retrieved from <http://www.tribal.nic.in>.

National Commission for Scheduled Tribes (2016). *National Commission for Scheduled Tribes, Government of India*. Retrieved from <http://www.ncst.nic.in>.

National Scheduled Tribes Finance and Development Corporation(NSTFDC) (2009). *National Commission for Scheduled Tribe*. Retrieved from <http://www.nstfdc.nic.in>.

Nadikpa, S. W. (2014). The Demand for Power and the Tussle with Nature – Sikkim's Dilemma. *Refuge Watch Online* . Retrieved from <http://www.refuge watch online.com>.

New World Encyclopedia. (2008). *Social Structure*. Retrived from <http://www.newworldencyclopedia>.

NHPC (2007). Teesta V Hydropower project in Sikkim. Retrieved from <http://www.oversy.org>.

Parasor, A. (2009). *Article 16(4) of Indian Constitution and Holfeldian concepts*. Retrieved from <http://www.lawyersclub.com>.

Power, E. Power Department Sikkim, Retrieved from <http://www.powerdepartmentsikkim.com>.

Power, M. O (2016). Ministry of Development of North Eastern Region. Retrieved from <http://mdoner.gov.in/>.

Power, M. O. (2008). Hydropower Policy. *International environmental law reserach centre*. Retrieved from <http://www.ielrc.org>.

Pushkaran, J. Hydropolitical Vulnerability of The Mullaperiyar Dam: Institutions Involved and Options Explored. *Water conflict forum*. Retrieved from <http://www.water conflict forum.org>.

Research study on livelihood Option Assests Creation out of Special Component Plan(SCP) & Tribal Sub Plan (TSP) Schemes and its impacts among SCs and STs in India (2007). *Socio- Economic and Educational Development Society(SEEDS)*. Retrieved from <http://www.planningcommission.nic.in>.

Scheduled Tribes Finance and Development Corporation(NSTFDC). Retrived from <http://www.nstfdc.nic.in>.

The Constitution (sikkim) Scheduled Tribes Order(1978). *Law Ministry*. Retrieved from <http://www.lawmin.nic.in>.

The Constitution (Andaman and Nicobar islands) Scheduled Tribes Order (1959). *Law ministry* . Retrieved from <http://www.lawmin.nic.in>.

Tribal Cooperation Marketing Development Federation(*TRIFED* (2014). *Tribal Cooperation Marketing Development Federation(**TRIFED**)*.Retrieved from <http://www.trifed.com>.

The Constitution (Dadra and Nagar Haveli) scheduled tribes order (1962). *Law Ministry*. Retrieved from <http://www.lawmin.nic.in>.

The Constitution (Jammu And Kashmir) Scheduled Tribes Order (1989). *Law Ministry*. Retrieved from <http://www.lawmin.nic.in>.

The Constitution (Nagaland) Scheduled Tribes Order (1970). *Law Ministry*. Retrieved from <http://www.lawmin.nic.in>.

The Constitution (Scheduled Castes) Order (1950). *Social Justice*. Retrieved from <http://www.socialjustice.nic.in>.

The Constitution (Scheduled Tribes) (Uttar Pradesh) Order (1967). *Law Ministry*. Retrieved from <http://www.lawmin.nic.in>.

The Constitution (Sikkim) Scheduled Tribes Order (1978). *Ministry of Law, Justice and Company Affairs*. Retrieved from <http://www.lawmin.nic.in>.

The Constitution of India (2015). Retrieved from <http://www.constitutionalonelawstreet.com>

The Constitution(Sixty-Fifth Amendment) Act (1990). *India code*. Retrieved from <http://www.indiacode.nic.in>.

The Universal Declaration of Human Rights. Retrieved from <http://www.un.org>.

REPORTS

Anonymous. (1987, October 26). Central Urged to Clear Bodhgat Project.

Anonymous. (1995). India Province Canals Project. *Hydro Review Worldwide* .

Anonymous. (2015). *Nagarjuna Sagar Dam*. Retrieved July 7, 2016, from World Press.com: <https://youthyodhavivekanada.files.wordpress.com>

Adams, W. (2010). *Downstream Impacts of Dams*. UK: World Commission on Dams.

Damage: Tribal People and Large Dams. (2010). A Survival International report.

Dams and Cultural Heritage. (2000). South Africa: World Commission on Dams.

District Census Handbook. (2011). *Census of India, 2011 Sikkim*. Sikkim: Series 12- Part XII B. pp. 130-132.

Eleventh Five Year Plan. (2007-2012) and Annual Plan (2007-2008). Sikkim: Development Planning, Economic Reforms & North Eastern Council Affairs Department, Government of Sikkim.

Impact of Nathpa Jhakri Hydroelectric Power Project on the Environment and Livelihood in Kinnaur and Shimla Districts of Himachal Pradesh (2014). New Delhi: Indian Council of Social Science Research (ICSSR).

Kharel, S. A. (2013). *Gazetteer of Sikkim*. Gangtok: Home Department, Government of Sikkim.

Mukherjee, B. (1995). *Some Aspects of Bhutia Culture in Sikkim*. Sikkim: Bulletin of Tibetology.

National Commission for Scheduled Tribes: A Handbook. New Delhi: government of India, National

National Commission for Schedule Tribes. New Delhi: National Commission for Schedule Tribes, Government of India.

Nations, U. (2015). *Universal Declaration of Human Rights*. Office of the UN High Commission for Human Right Regional Office for Europe(OHCHR).

Old Laws, Sikkim Government Gazette. Gangtok: Home Department.

Performance and Development Effectiveness of the Sardar Sarovar Project (2008). Mumbai. Tata Institute of Social Sciences.

Report of the High Level Committee on Socio-economic Health and Educational status of Tribal Communities of India. New Delhi: Ministry of Tribal Affairs, Government of India.

Report of the Working Group on Power for twelfth Plan(2012-2017). Government of India, Ministry of Power.

Sikkim Development Report (2008). New Delhi: Planning Commission, Government of India.

Singh, K. (1997). *The Scheduled Tribes* . New Delhi: Anthropological Survey of India.

Statistical Profile of Scheduled Tribes in India, Tribal Affairs Statistical Division, Government of India(2013) . New Delhi: Tribal Affairs Statistical Division, Government of India.

Tungabhadra dam, Annual report(2009-2010). Karnataka: Tungabhadra Board.

Tehri Dam(2002). Uttharanchal. International River Network.

Annexure I

Proposed and Executed Hydel Power Projects in Sikkim

| SL. No. | Name of Project | Developer | Capacity (in MW) | Nature of Allotment | Status of DPR | Latest Status | Free Share of power to Sikkim (%) | Details of Locals employed in the project |
|---------|------------------|----------------------------------|------------------|---------------------|----------------|----------------------------------|---------------------------------------------|-------------------------------------------|
| 2 | Teesta Stage-II | Him Urja Infra Pvt. Ltd | 330 | BOO T | Yet to be done | Yet to start | 12% for 1st 15 years & 15% from 16-35 years | |
| 3 | Teesta Stage-III | Teesta Urja Limited | 1200 | BOO T | Completed | Under construction | 12% for 1st 15 years & 15% from 16-35 years | |
| 4 | Teesta Stage-IV | NHPC Ltd | 520 | BOO | Completed | Major works still not started | 12% only | 77 locals |
| 5 | Teesta-V | NHPC Ltd | 510 | BOO | | Project Commissioned | 12% only | |
| 6 | Teesta Stage-VI | Lanco Energy Pvt Ltd | 500 | BOO T | Completed | Under construction | 12% for 1st 15 years & 15% from 16-35 years | 65 locals |
| 8 | Panan HEP | Himagiri Hydro Energy Pvt Ltd | 300 | BOO T | Completed | Pre-construction works started | 12% for 1st 15 years & 15% from 16-35 years | 70% locals |
| 9 | Rongnichu HEP | Madhya Bharati Power Corporation | 96 | BOO T | Completed | Under construction | 12% for 1st 15 years & 15% from 16-35 years | 59 locals |
| 10 | Sada-Mangder HEP | Gati Infrastructures Ltd | 71 | BOO T | Completed | Contract to be awarded | 12% till 35 years | 5 locals |
| 11 | Chuzachen HEP | Gati Infrastructures Ltd | 99 | BOO T | Completed | Project Commissioned | 12% till 35 years | |
| 12 | Bhasmey HEP | Gati Infrastructures Ltd | 51 | BOO T | Completed | Engineering most items completed | 12% till 35 years | 59 locals |
| 13 | Rangit-II HEP | Sikkim Hydro Ventures Ltd | 66 | BOO T | Completed | Under construction | 12% for 1st 15 years & 15% from 16-35 years | |

| | | | | | | | | |
|----|--------------------|--------------------------------------------------------------|------|-------|-------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------|
| 14 | Rangit-IV HEP | Jal Power Corporation Ltd | 120 | BOO T | Completed | Under construction | 12% for 1st 15 years & 15% from 16-35 years | 99 locals |
| 15 | Dikchu HEP | Sneha Kinetic Power Projects Ltd | 96 | BOO T | Completed | Under construction | 12% for 1st 15 years & 15% from 16-35 years | 290 locals |
| 16 | Jorethang Loop HEP | DANS Energy Pvt Ltd | 96 | BOO T | Completed | 90% completed | 12% for 1st 15 years & 15% from 16-35 years | 64% locals |
| 17 | Lachung HEP | Lachung Hydro Power Pvt. Ltd | 99 | BOO T | Under preparation | Under litigation | 12% for 1st 15 years & 15% from 16-35 years | |
| 18 | Bhimkyong HEP | Teesta Hydro Power Pvt. Ltd | 99 | BOO T | Under preparation | Under litigation | 12% for 1st 15 years & 15% from 16-35 years | |
| 19 | Bop HEP | Chungthang Hydro Power Pvt. Ltd | 99 | BOO T | Under preparation | Under litigation | 12% for 1st 15 years & 15% from 16-35 years | |
| 21 | Tashiding HEP | Shiga Energy Pvt. Ltd | 97 | BOO T | DPR completed | 53% tunnel evacuation completed, 70% Powerhouse surface evacuation completed | 12% for 1st 15 years & 15% from 16-35 years & additional 1% for 35 years | 70-80% locals |
| 23 | Suntaleytar HEP | Moser Baer Electric Power Ltd / Shreya Powertech Pvt Limited | 40 | | | MoU terminated by GoS | MOU not signed | |
| 24 | Kalez Khola-I HEP | Cosmic Infra Powergen Pvt Ltd | 27.5 | BOO T | Under preparation | Survey & Investigation and preparation of DPR being done by CWC | 12% for 1st 15 years & 15% from 16-35 years & additional 1% for 35 years | |
| 25 | Kalez Khola-II HEP | Pentacle Power Pvt Ltd | 52 | BOO T | Under preparation | Yet to start | 12% for 1st 15 years & 15% from 16-35 years | |

| | | | | | | | | |
|----|------------------------------|----------------------------------------|----|-------|-------------------|----------------------|--------------------------------------------------------------------------|--|
| 26 | Rechu HEP | Green Lake Power Development Ltd | 26 | BOO T | Under preparation | Yet to start | 12% for 1st 15 years & 15% from 16-35 years & additional 1% for 35 years | |
| 27 | Rahi Kyoung HEP | Sikkim Engineering Pvt Ltd | 25 | BOO T | Under preparation | Yet to start | 12% for 1st 15 years & 15% from 16-35 years & additional 1% for 35 years | |
| 28 | Rangit-III HEP | NHPC Limited | 60 | BOO | | Project Commissioned | 12% only | |
| 29 | Upper Rolep (Nathangchu) HEP | Cosmic Infrapowergen Pvt Limited | 30 | BOO T | | | 12% for 1st 15 years & 15% from 16-35 years & additional 1% for 35 years | |
| 30 | Upper Rolep (Tshanguchu) HEP | Cosmic Infrapowergen Pvt Limited | 30 | BOO T | | | 12% for 1st 15 years & 15% from 16-35 years & additional 1% for 35 years | |
| 31 | Rolep HEP | Velankani Renewable Energy Pvt Limited | 36 | | | LOI Issued | NA | |
| 32 | Ralong HEP | | 40 | | | LOI Issued | NA | |
| 33 | Chakungchu HEP | | 50 | | | LOI Issued | NA | |
| 36 | Rateychu-Bakcha chu | Sanvijay Rolling & Engineering Ltd | 40 | | | LOI Issued | NA | |

Source: Energy and Power Department, Government of Sikkim, 2016

Annexure II

Questionnaire

House No/ Panchayat Record No:

House hold no:

Section I

General Information

1. Village/ GPU:

2. Name of head of the household:.....

Male [] Female [] Age

Community/ Sub group (within Lepcha).....Religion.....

3. Number of household members: MaleFemaleTotal
.....

4. Age group of Household members:

| Age | Male (nos.) | Female (nos.) |
|----------------------|-------------|---------------|
| (0- below 5 years) | | |
| (5- below 14 years) | | |
| (14- below 18 years) | | |
| (18- below 30 years) | | |
| (30- below 50 years) | | |
| (50- below 65 years) | | |
| (65 and above years) | | |

5. Distance from the nearest town.....km

6. Residing since Year.....

7. Types of household: Kaccha [] Pacca [] Both []

8. Types of ownership. Own [] Tenant []

Section II
Education

8. Educational Qualifications

| Educational qualifications of the family members | No of Adults (above 18 years) | | | No of Children (below 18 years) | | |
|--------------------------------------------------|-------------------------------|--------|-------|---------------------------------|--------|-------|
| | Male | Female | Total | Male | Female | Total |
| No education | | | | | | |
| Primary (upto 4 th class) | | | | | | |
| Secondary (5-10 class) | | | | | | |
| Higher Secondary (11-12 class) | | | | | | |
| Graduation | | | | | | |
| Post Graduation | | | | | | |
| Above | | | | | | |

9. Is there a school/s in your panchayat unit? Yes [] No []

9 (A) (a) If yes...Primary [] Secondary [] Higher Secondary []

(b) What kind of school/s is it? Government [] Private [] Both []

(c).When was the school/s established (Year)?Government.....Private

(d). any of your family members enrolled in the school/s?

Government..... Private

9 (B). If no, why and where does (any of) your family members attend the schooling?

10. Does the/se school/s have adequate teaching and non teaching staff?

Teaching staff [] Non-teaching staff []

12. Where do you/ your family members go for higher studies?

13. Has the hydropower project authority/ builders contributed to the educational infrastructures?

13 (a). If yes, how/ in what way...? (Describe)

Section III

Health

14. Health

| Age group | Male (Describe health condition/ ailments) | Female (Describe health condition/ ailments) | Reason(s) for the health condition |
|----------------------|-----------------------------------------------|-------------------------------------------------|------------------------------------|
| (below 5 years) | | | |
| (5- below 14 years) | | | |
| (14- below 18 years) | | | |
| (18- below 30 years) | | | |
| (30- below 50 years) | | | |
| (50- below 65 years) | | | |
| (65 and above years) | | | |

15. Is there any health centre/ dispensary in the Panchayat unit? Yes [] No []

15 (A) If yes,

(a). When was it established? (Year).....

(b). How many staff members are available in the health centre/ dispensary?

| Before commencement of Hydro power plant | | After commencement of Hydro power plant | |
|------------------------------------------|---------|-----------------------------------------|---------|
| Staff | Numbers | Staff | Numbers |
| | | | |
| | | | |
| | | | |

| | | | | | | | | |
|---|--|--|--|--|--|--|--|--|
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |

25. What type (s) of migration?

Seasonal [] Permanent []

26. Are you receiving any financial remittances from your family members living out side?

Yes [] No []

a) If yes how much do they remit? _____ (monthly approx)

b) In what way do you use the money sent by them?

27. Do you think that your relation with these migrated people has been effected?

Yes [] Describe.....

No [] Depends on circumstances []

28. Is there any inward migration?

a. If yes, what kind of migration is it?

29. Is there any cultural, social, economical impact of this inward migration?

Section V Displacement and Compensation

30. Do you know why the dam is built?

31. Is there any impact of bulding the dams in your life? Yes [] No []

a) If yes than what kind of impact? (Describe)

32. Whether you have to migrate or relocate yourself because of dam construction?

Yes [] No []

a) If yes describe what kind of problems you have to face?

b)

33. Is there any advantages of relocation in your life? Yes [] No []

34. Which are the advantages and disadvantages of the relocation place?

| Advantages | Disadvantages |
|------------|---------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

35. Have you lost anything because of dam construction?

| Item | Yes (approximate value in Rs) | No |
|--------------------------|-------------------------------|----|
| House | | |
| Agricultural farm land | | |
| Agricultural crop output | | |
| Land | | |
| Livelihood (describe) | | |
| Livestock | | |
| Any other | | |

36. What type of compensation have you received?

| Loss | Type (s) of compensation received (describe) (approximate value in Rs) |
|------------------------|------------------------------------------------------------------------|
| House | |
| Agricultural farm land | |

| | |
|-----------------------|--|
| Land | |
| Livelihood (describe) | |
| Livestock | |
| Any other | |

37. If compensation is in cash, how did you utilise the compensation amount? (Describe)

38. Do you think there is a change in your present family occupation?

39. Do you think that compensation is adequate to help to recover the livelihood?

Section VI

Livelihood

40. What was/ is the main source of family earnings?

| Pre construction of plant (Pre 1999) | Approx Total earnings | Post construction of Plant (Post 1999) | Approx Total earnings |
|-----------------------------------------|-----------------------------|-------------------------------------------|-----------------------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

41. How is your income status/ standards of living compared to pre and post Hydro power plant?

Better [] the same [] worse []

a) What is the reason for it?

42. Is there any members from your family employed in Hydropower project?

43. Do you think that income resources/ social structure are/is affected by the project?

Better [] the same [] worse []

a) What is the reason for it?

44. Are you beneficiaries of hydroper project? Yes [] No []

a) if yes please specify the details of benefits received?

45. What do you think the positive effect of the project in your family?

46. What do you think the negative effect of the project in your family?

47. Who will be outmost beneficaries of the hydropower project?

Family [] Village[] Community []

48. Did/Does your family own land?

| Before (Quantity) | After (Quantity) | What is the reason for the change ? |
|-------------------|------------------|-------------------------------------|
| | | |
| | | |
| | | |
| | | |

49. What was/is the main cultivation?

| Before (crops) | Quantity | After (crops) | Quantity | What is the reason for the change ? |
|----------------|----------|---------------|----------|-------------------------------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

50. What was/is the quantity of production (per acre)?

| Before (crops) | Quantity | After (crops) | Quantity | What is the reason for the change ? |
|----------------|----------|---------------|----------|-------------------------------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

51. What were/ are the main source of water supply?

| Before | After | What is the reason for the change ? |
|--------|-------|-------------------------------------|
| | | |
| | | |
| | | |

52. What are the impacts on Agriculture?

Loss of farm land []
 Land slides []
 Pollution []
 Reduction in farm production []
 Any other (specify) []

53. Did/Do you own Livestock?

| Before (type) | Quantity | After (type) | Quantity | What is the reason for the change? |
|---------------|----------|--------------|----------|------------------------------------|
| | | | | |
| | | | | |
| | | | | |

Section VII

Culture/ Religion

54. Do you think Dam has affected the culture(s) of Lepchas? Yes [] No []

a) If Yes, how it has affected?