Chapter 5

Colonial Water Resource Management in Manipur

This chapter investigates on the history of water resource management in Manipur. It focused on traditional method of water management and its changing forms during the colonial period. It will be seen that water it's indispensable part of the lives of everyone. It was not only use for drinking, washing and cooking purposes but water constituted part of their central social and cultural lives. It's also the sources of many items necessary for their lives such as food, agriculture and so on. Thus, the management of water becomes very crucial to their lives. In the hills water management such as for consumption and ritual and social purposes are fascinating which this chapter deals with. In the valley, water management had been taken as special task of State officers not only for irrigation and drinking purposes but also for the enhancement of power and control. This chapter also covered the impact of water ecology due to all these human intervention.

Water, the indispensable need for meeting domestic, agricultural needs, industrial, and hydropower, besides the most fundamental is the ecological functions. Water form the most important (essential) resource of all things for life on earth. It's being used for various purposes like for drinking, bathing, relax in it, fisheries, recreation, irrigation, produce energy, use it for transportation, etc. Many ancient civilizations have developed in river valleys of the Nile, Indus, Tigris and Euphrates, etc., even now also water resources provide a base for social, cultural and economic development. Here, an attempt is made to look back the history of how the water resource had been being managed in the pre-colonial period and the method of water resource management during the colonial period in Manipur. Water, besides of indispensable needs, it also used for technique of power to control people during the ancient civilization. Around the globe, the scarcity of natural resources caused to compete for land, water, and other important resources certainly triggered to rival and warfare became more frequent in larger scale. Taking the advantage, here the king and the elite class designed and prepared to control the farmers by denying water to those who resisted their authority (for instance the Pharaoh of Egypt). At some point of stage of ancient civilization, the pre-industrial

agricultural society, many of the State actors were in their turn organised the irrigation for his subjects.

When irrigation became more a factor in the larger scale an elaborate irrigation systems required a leadership, to be organised the labour. Therefore, the State actor made water a factor to their subjects, though factor may not be of an ecological concern and population pressure. The Manipur State is abundance of good water resource, network of rivers and many wetlands. In the central valley, it's found a largest freshwater wetland in Northeast India covers an area of 287 km., i.e. the Keibul Lamjao National Park (KLNP) the only floating wildlife sanctuary in the world. These (lakes, wetlands and rivers) contributed a great significance to the socio-economy of the State. The most impacts were on agriculture around the periphery. Certainly, this ecosystem provides a wide range of goods and services for the people around the area and contributes for sustaining their economic condition since of long past. Thus, it forms to be an important part from the point of Socio-cultural economy and scientific view.

Pre-Colonial Water Resource Management

Since 1709 lakes and the ditches (channels of water) were maintained and registered under the department called *Pukhranba* meaning 'one who filled the stomach' and *Lakpas* to make improved the embankment of rivers and to keep good drainage system in Manipur. Traditional water resource management referred the methods adopted found favour for the State, which have been tried and test in the past to meet the requirement for the domestic water and agricultural needs. This chapter divided into two sections and these sections are discussed individually:

i) the valley water resource management system and
ii) the hill water management

The various forms of traditional water resource management system in the valley of Manipur are discussed as under:

Agriculture and Irrigational Method in Manipur

The primitive man used the Neolithic (new Stone Age) tool for farming the agricultural lands. The wandering food gathering man (hunting, fishing and collecting fruits) became a settled farmer by using the hewn stone implement. Development of agriculture by the primitive man was the beginning of human civilization. Every stages of human civilization (every man was a farmer) began with agriculture for their livelihood by producing crops for consumption (food grains for his family) and latter for the exchange of goods. Lands belong to the community or the community's common lands. They begin to plant some crops for exchange with others (beginning of the barter trade). Later, agriculture consists of ownership of lands, laws to regulate the supply and demand of production and technology. New technology, new ideas of property and new laws have brought about great changes in the rural world. The steps to modem agriculture produced influences on the farmers and peasants led the agricultural economy integrated to the world market. The agricultural revolution in England brought a changes (beginning of cash crops) in colonial India and directly reflects the agricultural products in India. The changes brought the emergence of different forms of farming and this resulted to form the first peasant societies. The North Eastern Region of India is endowed with rich natural resources of soil, water, and diverse flora and fauna. The region is charactised by a unique geo-physical, socio-cultural and environmental setting. Though majority of the population is still dependent upon agriculture, livestock and allied land-based activities, the irrigated and diversified agriculture is an exception rather than the norm. Paddy is the main crop of the region. They generally practiced mono-cropping (rice, maize, coarse cereals, local pulses etc) with very low yield levels. Wet agricultural activities and settlements were concentrated in the valley mostly in the valley, also some shifting cultivation practised in hilly areas. The farmers were fully alive the advantages of irri-gation for both the valley rice fields and even for the terrace fields in the hilly region. The Manipur people depended on natural rainfall for their fields, by dredged up the water and channelized the water from the foothill, which again carried the water from stream or

torrent.[1] In the lower part of the valley, channels were often dug and brought water from the river to the land.[2]

The State government had been failed to give more efforts to contribute this locally adopted water channelized system. This resulted to in-sufficient of waters for all the cultivated crops mostly in valley Manipur from time to time.[3] The agricultural system of Imphal valley were subsistence oriented and low consumption of fertilizers. People themselves learnt to adopt the different cropping strategies, to tide over the scarcity situations at the time when canal or well irrigation became shortage to access. They managed by themselves, by applying on sloping lands for a small amount of water that helped the farmer to a great extent and this made them a good line of potential to grow their crops also to increase the crop production with this traditional irrigation system.[4]

The State received an adequate rainfall for agricultural purpose most of year, however, sometime it suffered from temporal variation during the scarcity of rainwater. The farmers face much troubles, because they have no other way (due to lack of canal and well irrigation) to get a water for their crops at this time, the foothill irrigational system of irrigation failed to help the farmer and they were rather not rendering independent, when the rivers are low and the water does not enter the channels.[5] Number of streams which rundown from the hill were non-perennial source, while most of the river in the valley was fluctuating volume of water throughout the year.[6] On the other hand, the measures to controlled floods were neglected by the State in larger scale, though floods were a phenomenon confined to the Imphal valley.[7] The low-lying valley portion regularly experiences floods and inadequate for the upland lying rice fields in the valley. Therefore, it witnessed, the occurrence of flood damaged several time in Imphal valley during the rainy seasons.

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[1] B.C. Allen, *Gazetteer of Naga Hills and Manipur,* Mittal Publications, New Delhi, 1905, p. 129.
[2] B. C. Allen, *Gazetteer of Naga Hills and Manipur,* p. 129.
[3] *Personal Communication*, Dharma, Singh, Age 85 (M), Lamsang Village, Imphal, 04/11/2014.
[4] *Personal Communication*, Dharma Singh, 04/11/2014.
[5] B. C. Allen, *Gazetteer of Naga Hills and Manipur,* p. 129.
[6] *Personal Communication*, Dharma Singh, 04/11/2014.
[7] *Personal Communication*, Dharma Singh, 04/11/2014.

The Pukhris or Ponds/Tanks

The only resource to get water in the central part of Imphal valley during the pre-colonial period was the pond/tank water. The traditional water resources management method in Manipur valley were the adoption, which found favour in the area that had been tried and practiced from the long-ago to meet their requirement for both the domestic and agricultural needs. In Manipur, the traditional way of water resource management is preserving water in pond or tank locally known as *pukhris* (the only way to get water resource, for both drinking and other domestic uses or the most common water harvesting structure that found practiced in Manipur (sometime two or three households shared a pond). It's quite common to have small pond at the lower end of the plot in paddy fields or the cottage garden into which all the drainage of the compound is deliberately carried.[8] Prior to the colonial period there's no account of pipe-water supply in Manipur even the king dug and make use this *pukhri's* water.

The *Ningthem Pukhri* or Rajah's Tank of Wangkhei Bazar a length of 730 feet, 645 breadth feet and 32 feet deep which was originally dug by Maharaja Garibnawaz in 1726 was the pond used by the Manipuri king.[9] This pond was even used by the British colonial after extension. Even in the late of 1892-93, there's no sign of improvement that recorded the availability of supplying a drinking water.[10] In these ways, the people struggled by themselves to sustain their lives over the thousands years, particularly those people around the valley Imphal. The people faced great difficulties, during the time of scarcity of water when the rain holds off too long in the spring, these ponds were almost drying up.[11]

Figure: 8

[8] B. C. Allen, *Gazetteer of Naga Hills and Manipur*, p. 44.
[9] ARM, 1905-06, p. 8.
[10]ARM, 1892-93, p. 22.
[11]ARM, 1905-06, p. 8.

Photo: Ningthem Pukhri also called Raja's Pond (king's pond), dug during king Garibnawaz, 1726, Wangkhei Bazar, Imphal (renovated and enlarge from the original size since colonial period, hitherto it served as good water resource in various way to great extend)

Water: Fort and Games

Since, the 4th BCE fortified of cities were common in India. The ancient Indian forts have crenellations, embrasures and sloping walls. Most of the forts in India are actually castles or fortresses. Generally, three major methods were applied for the construction of ancient Indian forts. The first consisted of 'earthen ramparts, dug out of the ditch surrounding the fort. The second of rubble with on the side which was more sturdy. The third type (last was the strongest) of construction was with stone and masonry work'.[12]

Furthermore, the Arthasastra (Indian treatise on military strategy) describes six major types of forts differentiated by their major mode of defense:[13]

a) Jal durg was a fortress surround by water. There are two subtypes- the island fortress, and the plain fortress.

b) Giri durgs was a hill mountain fortress.

[12] www.//en.wikipedea.org, (Accessed, 26/04/2015)
[13] www.//en.wikipedea.org, (Accessed, 26/04/2015)

c) Vana durg is a fort surrounded on all sides with a dense, impassable forest over a distance off, fens and encircled with thorny woods.

d) Dhanu durg, a fortresses, usually to be in area bare of trees, grass or sources of water over a distance. Airina–durga is built on saline soil of barren tract or on fens impregnate with saline water and protected by the thorny bushes that grown there.

e) Mahi durg in this type of fort is a earthen fortress, protected by the quicksand and are surrounded by walls made of earth and stone or brick.

f) Nar durg or fortress with men, defended by large and loyal army of proven warriors. Each type of fortress had different advantages. Manu (author of the Manusmrti a Vedic text) considered the hill forts offers the best defenses.

The art defending the enemy by water also practiced in Manipur prior to the colonial period. The most important historical place and archeological site in Manipur was the *Kangla* or a palace. This place also the ancient capital and it became the place of *Meitei* glory had established. This *Kangla* were surrounded by the water as defensive fort, which located at the heart of Imphal City on the western bar of the Imphal River with a latitude of nearly 24° N and its longitude is very nearly 94° E. The *Kangla* fort had constructed through several principalities, which engaged in warfare against one another for supremacy. The construction of *Kangla* were given various references by successive kings in the *Cheitharol Kumbaba* (the Royal Chronicles). The major landmarks in the growth of the *Kangla* fort were the construction works taken up by Manipuri King Khagemba (1597-1652 A.D.) and Garibniwaz (1709-1748 A.D.). The *Kangla* fort was fortified with the exaction of the outer Moat and construction of a brick wall around the bank of the moat.

The whole citadel was built with a view to defend or method of resisting the attack by the outsiders (in the time before Burma was annexed, when armies of raiders used to come down upon Manipur with a hostile intent and a place which could easily be held against an attacking force, provided big guns were not brought to bear upon it (1891). Canal has been dug on three sides of the outer wall, very deep and wide and water was always kept weeded and cleaned. Captain E.W. Dun in his book "Gazetteer of Naga Hills and

Manipur" depicted in the following: "It is surrounded by a moat 20 yards broad and 6 feet deep at the deepest part, near the western gate…" It is seen that, (prior to the colonial intervention of Manipur State affairs) whoever (Manipur king) who holds the *Kangla* fort can without difficulty controlled the whole the valley of Manipur.

Figure: 9

Photo: The historical Kangla Fort, all sides were surrounded by water, Imphal

Besides this fort, the Manipuri people were also carry out on water a game on certain occasion of festival. A game of 'boat race' was generally practice as a game of festival since 15th century on the river or moat popularly known as *Hiyang Tanaba* means 'boat race'. 'It is one of the biggest games of festival of Manipuri (Meitei) various measures were taken up for this festival. On both side of the moat *Sang* (temporary hut) were constructed for taking rest of *Tengmaileppa* with his *Hirols* (sailors). Another *Sang* with considerable size and height was served for the king. The Queen and other women occupied the opposite side of the King's Sang another Sang were also erected for the royal dignitaries.'[14]

[14] Dedendra, N. Singh, *The Socio-Cultural History of Manipur*, (Thesis) Manipur University, Canchipur, 1993, p. 127.

Figure: 10

Photo: The Serpent like Boats with the head of Sangai (boat used by kings during Boat Race)

Thus, besides of water for drinking, irrigation, hydroelectric, etc., water played the most important role to safeguard or defensive strategy as well as game of festival for the people of Manipur in particular.

Hill Traditional Water Resource Management

As stated above, Manipur the land is divided into two divisions (i.e. the hills and the valley) it's quite certain to perceived that the hill constituent the tribal and the valley by the Meitei community. Generally, the tribal are hard working people. They live on the high hills mountains parched on the summit of the hill and which were very difficult to approached.[15] The hill tribal methods of water resource management make contributes towards their economic activities in many ways. The following table shows the hill forests belonging to the state of Manipur.

Table: 5

[31] T.C. Hodson, *The Naga Tribes of Manipur*, p. 6.

1. Makru range 2. Nungjaipang 3. Kala Naga or Aikinalong 4. Kumbirong 5. Nungba 6. Khulel (Mongjarong) 7. Kawpum (Khoupum) Range, west of Kawpum Valley 8. Kawpum Range, east of Kawpum Valley 9. Laongol-Kholel Limatol 10. Nugshai 11. Ngarail Limatah 12. Lumbangtong	Elevation Do Do Do Elevation Do Do	1500 feet 3600 3450 3,300 feet 1,500 feet 4,700 feet 5600 feet
Overlooking the Manipur valley North 1.Kowbru 2.Nungphow 3.Myangkhong 4.Sadium 5.Timba Karung	6.Muram Kholel 7. Mao Range 8. Thangal Hills 9. Kutung Liya	10. Phubah 11. Loleah Ching 12. Angamei 13. Kohima

North East 1.Mukok Ching 2.Mapomg Ching 3. Muekng Ching 4. Chuoyai Ching 5. Khamsole Ching 6. Lysul Ching 7. Kajai Ching	8. Ngari Malong 9. Thybong 10. Lyi 11. Prowi 12. Tangkhul 13. Lupah 14.Mupithel	15. Chutong Lumlai 16. Hundung 17. Ok-Khurul 18. Huining 19.Nungbi Nunghar 20. Mukungbang 21. Chatik
West 1.Khonga Khul 2. Langkhong	3.Aung Khul 5. Khebba Chiu	Akhui
South 1.Thangching 2.khong Sungkhul 3. Leihang	4. Chungbeole 5. Tseklapai 6. Hangsi-Patlel	7. Suitole 8. Molbung Chibu
East 1. Hirok 2.Waba Ching 3.Kaiphum Ching	4.Unapokpi 5.Uchalpokpi	6.Hainupokpi 7.Numthou

Sources: Imperial Gazetteer of India, Eastern Bengal and Assam,1909

Hill tribal water management (mostly for the domestic use) was mostly depended upon river and the rain water respectively. The average rainfalls in the hill areas during dry seasons (December-March) were very low and the water source ran dry. During these months, the villagers have to rely on streams water sometime, which flows further down the slope of the village. Collection of water during these dry periods is very difficult since

on an average, the villagers have to travel a distance from the home sometime from the village the uneven terrain to fetch water. Water has been collect either in gourds bottle pitchers or more commonly in bamboo containers for storing water. The tribal make use of a variety of gourds.

Collecting of water is not an easy task, far a distance that also from very steep narrow most of the time.[16] Therefore, such meager supplies can hardly be meeting the needs of a family and there's hardly any water supply for productive purposes or other enterprises. The tribal societies, from their long history and tradition have developed indigenous land and water management systems, which have built-in-eco-friendly like the systems of conservation, preservation, and utilization of natural resources. The tribal systems of forest and water management are mostly community managed and with locally available materials.[17] The lands were mountainous with dense forests and about 90 percent of the land was covered by the forest. The steep and the rocky mountains were found in several parts of the State, which were quite difficulty to accessed the water.

Agricultural Method of Hill Tribal

Besides of domestic water system, the Northeastern region in general and the Manipur State in particular were owned or controlled and managed by the tribe, clan or village communities in the hill portion. With their ingenuity and skill, the hill tribal farmers of Northeastern hill region have developed many efficient water management systems. They know the systems of making judicious use of water at time of scarcity and undulating topographical situations, minimizing soil loss through runoff and maintaining soil health.[18] The rice cropping were furnished by the means of their traditional methods of crop cultivation, which were labour intensive, using small amounts of organic manure and manure hand tools. The productivity is generally low.[19]

[16] *Personal Communication*, Kamei, Kameichei.
[17] *Personal Communication*, Kameichei.
[18] Singh, R.A. & R.C Gupta, "Indigenous Water Management System by the Farmers of Northeastern Hill Region", *Indian Journal of Traditional Knowledge*, vol.1 (1), July, 2002, pp. 32- 39.
[19] Singh, R.A. & R.C Gupta, *Indian Journal of Traditional Knowledge*, vol.1 (1), July, 2002, pp. 32- 39.

Generally, the hill tribal economy was fully depended on agriculture. The wet rice cultivation was one of the most advanced with an exceptionally high energy and economic efficiency in Manipur especially in the valley areas. As mentioned earlier, the ecological wisdom of the hill tribal were solidly based on experience and they depend on their knowledge to fulfill their day-to-day needs. They themselves developed the efficient system of water management like to meet the daily needs, rice cultivation and the fish culture. For the upland fields the streams were averaging out from the surrounding hills were taped, channelised at the beginning of the valley and diverted by a network of primary, secondary and tertiary channels. Water were allowed to flow in the channel, which the stream continues its course. These channels were pitched up with boulders at the entry for checking their erosion due to high flow of water. However, for the most aspect of water management in lowland rice fields were kept water up to the desired level and the farmers drain-off the water whenever required.

Bamboo Drip Irrigational Method

Bamboo drip irrigational methods were mainly followed by the hill tribal in Manipur. They adopted the system which found them very good and suitable in the areas where water was found scanty when the soils have poor water holding capacity the topography is undulating and the water requirement of crops is low). Under this system, the meager qualities of hill stream's water were coming from hilltop and diverted into split bamboo line in such a way that it acts a manufactured open channel. Such pipelines run about 1 to 2 m above the ground surface supported by bamboo or wood stands. The length of the line depends on the distance between water source and the field. Water were brought to the field through these bamboo channels by fravitational flow and then distributed to the fields.

Figure: 11

Photo: A blend of Traditional Crafted Wooden Water Container

Small streams were linked through the bamboo tubes (here the bamboos is cut, divided into half for one side and the other side do the same and connected one after another) to the village for supplying of drinking water and other household utilities. The hill tribal carried water by pitchers in a bamboo basket on her back to the source of water and keeps them at the residence in the basket itself. Generally, in the hill areas, water were partly managed by community and partly by self managed. Since, from the pre-historic period most of the time, they moved back and forth through the length and breadth within their country or free movement as lifestyle of shifting their settlement near the availability of water sources.[20]

Thus, they themselves knew the art managing the water by adopting with due skill and experiences. The availability of water resources were managed by simple method which required not much amount of investment and are most suitable for hilly terrains (a method combining of soil and water conservation techniques, do not involve deforestation, and, therefore, are eco-friendly).

[20] *Personal Communication*, Kamei, Kameichei.

Colonial Water Management

Drinking Water

In an around the world (several part of the valley), water management has been taken as special task of State officers not only for irrigation and drinking purposes but also for the enhancement of political power and control. Water resource form the indispensable needs for meeting daily needs and for the purposes irrigation. Therefore, water became a more factors in the larger scale at some point of stage during ancient civilization. The British Colonial was amazed to see the traditional water resource management systems (i.e. pond water management system). Therefore, water works were given the foremost priorities for the most urgent which were to be improved mostly in the Imphal. It also proposed for immediate pipe water-supply in the valley. In 1898, the first steps were taken up that suggest to be began the systematic method of water management. The only way to obtained this at a reasonable cost appeared to be the excavation of more tanks and by providing all existing tanks with cisterns and pumps to give a pipe supply to adjacent villages.[21] The colonial authority States that, the traditional method of water resources management is not safe for drinking.[22] As a result, the colonial authority began to checked for moving up the value chain and sustainable livelihood by proposed to introduced a 'pipe water' supply scheme, for a limited areas especially. This was the first steps to make improve water management and to alleviate the pure water poverty in the State. Following that, in 1937, the Manipur *Darbar* considers and purposed of issuing notice about installing private tapes for the supplying of pure water to the public.[23] Though, this domestic water scheme of water supply partly met for the population of Manipur it provides great sight of relieve mostly for the Imphal valley population.

No doubt, the colonial authority had taken up a numerous steps for improving the domestic water resource management and changes have been brought in Manipur State during their period.

[21] ARM, 1898 - 99, p. 3.
[22] ARM, 1891- 92, p. 7.
[23] MSD, 1937, p. 3.

Colonial Water Works

Domestic

According to British colonial the traditional method of water resource management (i.e. using of ponds/tanks water) were not safe for drinking purposes and felt wonder to them (traditional method of water management were) described as under: [24]

> Life is possible under the conditions in which these people live of by washing clothes and cooking utensils and bathing all in the same small tank, and then drinking the water, we are taught, is highly injurious; and yet the people are a sturdy and long lined race.

Thus, (under traditional method of water management) the colonial authority express a sigh of wonder and suggested as unsafe for drinking purposes. When the colonial authority stated the flood (first flood) accumulates impurities to these *pukhris*, and contains the germs of cholera which spread throughout the valley'. [25] This unsafe traditional water management were resulted to health menace. Therefore, measures were taken under Colonel Maxwell[26] for supplying sufficient water and healthy livelihood in 1906 (9th April). By the first part of the 20th century the colonial authority make use of the *pukhri's* water by renovation, improvement and enlarged/extension from the existing *phukhris* or ponds.[27]

Since, the beginning of the colonial rule in Manipur, the colonial authorities concerned as their duty to protected from harm of filthy water particularly near the town of Imphal as much as possible. When epidemics occurred it killed a number of people because of the impurities water contained the germs of cholera and a number of victims were reported as follows:[28]

[24] ARM, 1937, p. 3. See also ARM, 1891- 92, p. 9.
[25] B. C. Allen, *Gazetteer of Naga Hills and Manipur,* pp. 129 - 130.
[26] ARM, 1891- 92, p. 280.
[27] ARM, 1892 - 93, p. 22.
[28] ARM, 1891- 92, p. 7.

> As long as the Manipuris continuing drawing their drinking-water from these ponds, sickness must be serious and notice to be issued to the public about installing private tapes in order to prevent, further sickness or diseases.[29]

Therefore, in 1891, as preventive measures, the colonial authority proposed restitution from diseases (mostly in the valley also proposed to install tube-wells at various places at Imphal areas. Besides, the troubles of endemic cholera, an immediate measure were taken up by clearing the unused ponds in the pretext of lessening the endemic diseases in the State. Mr. Mitchell's proposed the water scheme by which pure pipe-water supply will be put across to Imphal from the Maklong and Palok Rivers. [30]

Though, the difficulty to provide funds and the Government has been asked to grant a loan repayable in twenty (20) years. The only practicable method of supplying pure drinking water to Imphal were to be approved by the Mitchell's scheme as stated, "it is to be hope that the financial difficulties will soon be overcome, and that the work tan be taken in hand during the coming year." [31] However these schemes were initially concentrated near the army cantonment and the V. I. P. settlements.[32] In 1936 another hydrants were projected and installed in Imphal valley areas, the Administrative Report recorded as:[33]

> During the year under the report one hydrant for Uripok Achom Leikai was sanctioned at the gate of Churachand High School was installed. Three new tanks were completed in the Palace Compounds at a cost Rs. 1,152.[34]

The impurities of water was the primary cause of the epidemics that claims of life in the State in 1891 therefore the State *Darbar* had resolute to construct three (3) water tanks in the Raja's palace compound (at the cost of Rs. 1,152)[35] at Imphal. To laid a water pipe supply from Raja's tank a pump worked by wind power from England were proposed to

[29] ARM, 1937, p. 3. See also B. C. Allen, *Gazetteer of Naga Hills and Manipur,* pp. 129 - 130.
[30] ARM, 1908- 09, p. 9.
[31] ARM, 1908 - 09, p. 9.
[32] ARM, 1891- 92, p. 7.
[33] ARM, 1937 - 38, p. 18.
[34] ARM, 1908- 09, p. 7.
[35] ARM, 1898 - 99, p. 7.

installed.[36] The *Darbar* resolved to grant in aid ('no definite amount of the money was not fixed, the amount to be decided later on, by the State *Darbar*') by appointing the S. E and the L. R. O to supervised the work of collecting of water tax and carried out according to their instructions for the improvement of the scheme.[37]

Yet, the *Darbar* doubt of whether the result is commensurate with the discomfort and loss caused to the ousted population.[38]Therefore, on the pretext of financial constraint, the *Darbar* resolved to set up in 1894 whether the *Norton's-tube-wells* or also with the wells of the ordinary type after the experiments and investigation.

Moreover, this supervisory was insufficient, because the first flood in the State usually carried down and accumulates impurities that contained germs of cholera, disseminated with surprising rapidity throughout the Imphal valley. Also, still the problems of water were unsolved when the rain holds off too long in the spring, these ponds were dry up, and the people have recourse to the rivers and the high banks covered with every kind of filth."[39] In 1906, a large tank in Cantonments for the use of the troops has been practically completed with the amount of Rs. 8, 904-8-6.[40] In the year 1913, loan facilities were also given by the State Government to finance the project for supplying of pipe water at *Keisamthong Kabui* village as the headwork place.[41]

The demands for pipe water were considerably increased and the present supply of water at Imphal valley became insufficient. Therefore, to provide more pure water-supply to large a population of Imphal different kind schemes were proposed to improve the supply under consideration and thus estimates were procured for the installation of tube wells. As regards future works of water, the colonial authority approves it that: [42]

[36] ARM, 1905- 06, p. 8.
[37] ARM, 1905 - 06, p. 280.
[38] ARM, 1892 - 93, p. 22.
[39] B. C. Allen, *Gazetteer of Naga Hills and Manipur*, pp. 129 &130.
[40] ARM, 1905- 06, p. 8.
[41] ARM, 1913, p. 47.
[42] ARM, 1898 - 99, p. 3.

> .. that which is most urgent is an improvised water-supply for Imphal. The only way to obtain this at a reasonable cost appears to be by the excavation of more tanks and by providing all existing tanks with cisterns and pumps to give a pipe supply to adjacent villages.

In 1891, another projects were put up by the government to supply drinkable water through pipe water from two rivers, "the one rising in the hills below Kunjopkal, 9 miles on the west, and the other with its source near Myangkhang, 33 miles to the northern through Imphal, and before reaching the town pass by numerous villages, and their course in the valley is through clay. In the one case, the water is fouled by the inhabitant on their banks, and in the other it enters the thickly-populated area of the capital in a muddy and discolored condition."[43]

The proposals were to place a tap spring near Kunjopkol has proposed with the estimated cost of five lakhs of Rupees. The water in pipes into the town has given in-charged before Mr. Watts, Superintendent, Nichuguard-Manipur cart road in collaboration with the Local Government. To furnish the said water work, the government of Manipur State *Darbar* offers a loan system to the estimated amount cost from Government on the security of the Manipur State revenue. Besides, of this Kunjopkol's water pipe project, a Jirighat water tank has proposed with the amount of Rs. 139/- in year's budget of 1937-38. In the same year, sanctioned has been made by payment from the Head "Unforeseen" budgets for the tank at Jiribam,[44] and resolved for excavation of tank at Kongba.[45] So also, excavation of various good tank to provides pure water in Imphal valley during their period.[46]

Irrigational System under Colonial

In Manipur, there were two major river basins, viz. the Barak River Basin and the Manipur River Basin. The Barak river originates from northern hills and joined by a number of tributaries such as Irang, Maku, Tuivai, etc. and thereafter enters Cachar District of Assam. The Manipur river basin has eight major rivers such as Imphal, Iril,

[43] ARM, 1891- 92, p. 9.
[44] ARM, 1937, p. 15.
[45] MSD, 1945, p. 280.
[46] MSD, 1945, p. 280.

Nambul, Sekmai, Chakpi, Thoubal and Khuga. All these rivers originate from the surrounding hills. Almost all the rivers in the valley areas are in the mature stage and, therefore, deposit the load in the Loktak Lake.

The rivers drained mostly the hill areas portion due to the hilly terrain through which the river had been flowed. These rivers were found corrosive in nature and assume turbulent form in rainy season. Important rivers draining the western area include Maku, Barak, Jiri, Irang and Leimatak and rivers which drained the eastern part of the State include Chamu, Khunou and other short streams followed.

Under the traditional water resource management system, for instance during the king Garibniwaj (1709-1748) Lakes and the Ditches were maintained and registered under the department called *Pukhranba* (one who filled the stomach) and *lakpas* another department, to improve and embankment of rivers and to keep good drainage system in Manipur. However, the valley (Imphal valley) areas were short of drainage system during the colonial period, it brought great difficulty to the people and frequently flash floods within the urban settlement areas during rainy season during the colonial period. These results of damaging to agriculture, environment, human life and property and thus seriously hamper the economy of the region.[47] The area of rice cultivation severely damaged by the floods was estimated at 107, 393 *bighas* (35,502 acres) in the year 1916-17.[48] All the arable land in the valley, with the exception of a few villages at the foot of the hills, was more less affected.[49]

The Manipur State *Darbar* under 'Drainage and Irrigation Engineer' 1947 welcomed the subject of Man Singh, Director, "Waterways, Central Waterways Irrigation and Navigation Commission's visiting Manipur State in the Second Half of April 1947 for the Manipur State Drainage and Irrigation system". [50]

[47] B.C. Allen, *Gazetteer of Naga Hills and Manipur,* p. 129.
[48] ARM, 1916 - 17, pp. 9-10.
[49] B.C. Allen, *Gazetteer of Naga Hills and Manipur,* p. 129.
[50] MSD, 1947, p. 390.

The *Darbar* even describes to "it will be more useful if he visits the State at the end of the Rains in August as our problems cannot be fully appreciated when the rain water has drained away".[51] There was no record of proper drainage system other than the river embankment near or around the Imphal valley, though Manipur State was in drainage challenged, since many years. The initial *Darbar* activities concentrated just in river embankment, that to keep controlled the issues of river bundh from the flood or public protection rather than saving.

Water Tax and System of Collections

In Manipur State, the colonial authorities was the first to formulate and provides a water pipes (for providing a pure water) in an around the Imphal valley, so also, the first to levy a tax on water. It was taken in 1936 that, "all the inhabitant of a house were jointly and severally liable for the water tax to the house in which they lived".[52] The Manipur State *Darbar* under the Public Works Department maintained and managed by providing water supply to public mostly in the valley of Imphal areas and collections of tax on water were made each year with separate budget of its own. Laws have been also passed to check the corrupted officers and office bearers by imposing a fine, even to the extent of imprisonment. For instance, in the year, 1936 one clerk was found guilty (misused of State fund) and sentenced to rigorous imprisonment for two years.[53]

Further arrangement were made that the staff from the Land Revenue Office has made transferred to the Forest Office and held the responsibility to Forester Mr. Srijit Lairenmayum Ibungohal Singh, B.A., B. L., (also the Additional member of the State *Darbar*) was given the charge to collect the water tax. In 1937, the tax on pipe's water was collected at the rate of Rs. 2/8/- per hearth from the consumers[54] with the result interest of Rs. 3, 200.[55] Besides, it insists to every household (who connect the pipe

[51] MSD, 1947, p. 390.
[52] MSD, 1936, p. 11.
[53] ARM, 1937 - 38, p. 28.
[54] ARM, 1937 - 38, p. 47.
[55] ARM, 1937, p. 48.

water) to pay the water tax, persons failing to pay the collection of water rate were arranged in a condition of arrear payment.[56]

Latter, the amount of water tax amount fell and it was below expectation. The scheme of collections of taxes was made by appointing a number of staffs that consists of;[57]

i) 1 clerk
ii) 4 water rate collectors
iii) 5 peons, and further augmented by the addition of
iv) 3 temporary peons for three months in the year.

Yet, the targeted amount of water tax realised by the colonial State were still found not satisfactory.[58] Therefore in 1936, another step were taken up by the State authority set up to study about the matter. The colonial State appointed Daryahadi or Daryahadi to look upon the matter (felling of water tax) and assigned him to submit the Survey Reports in detailed. The Daryahadi survey reports came out with the following details:[59]

i) some of the houses were cancelled
ii) 161 were discovered and
iii) 119 houses were brought within range of a tap and they were consequently liable to pay the water tax, to the opening of a short cut.

Following that, the colonial authorities made the terms and conditions for selling of private *Ingkhols* (house plots)[60] for the matter of arrear of water tax payment with the following condition:

1) At least 3 weeks before the date fixed for sale he should send notice of the sale to the Land Revenue Office. On the point, the Land Revenue Officer will

[56] *Manipur State Gazette*, Manipur State Archive, Imphal, 1933, p. 3.
[57] ARM, 1937, p. 47.
[58] Further the collection of water rate was also seriously interfered by the Nupi Lan (Women's War),
[59] ARM, 1937, p. 48.
[60] ARM, 1937, p. 1.

have an opportunity for objecting through the president to any sale will adversely affect land revenue collection,

2) It must be carefully explained both in sale notice and at the time of sale that the land sold by the water rate collection staff is sold budget to the following conditions,

3) The buyer will be responsible jointly with the previous occupants and pattadars for revenue due up to the date of sale on the whole patta, even if he only being a part of the patta and

4) Any private person claiming to have an interest in the land, and not being himself a defaulter for water rate, may within one month of the date sale have the sale set aside by the member in charge by paying the fell arrears of water rate for which the sale was made.

Again, in 1938 it further investigate the loopholes of the water tax payer and it was brought into light 139 cases pending of tax paying and 660 more were filed. Of than 805, 739 were disposed of; in 15 others the defaulters were arrested to induce payment and the property of a 7 was attached and sold, at the end of the year 35 cases remained pending.[61] In the beginning, the introductions of tax on water were no objection by the people of Manipur this can be reflected from the Administrative Report of 1937-38 as stated:[62]

> The year was on the whole satisfactory and as in the previous there was no marked the payment of water tax, a type of agitation which had been frequently manifested in the previous years.

The colonial authority however made the condition on water by giving the regulation of exempting the water tax for the houses in which were nearer to the site of water tap as noted: [63]

> The Department continued to exempt those houses situated more than 440 yards from the nearest tap.

[61] MSD, 1939 - 40. p.10.
[62] ARM, 1937 - 38, p. 28.
[63] ARM, 1937 - 38, p. 28.

These exemptions were only of selected areas. Latter in 1942 the public who have paid the water tax to colonial request to exempt the water tax by submitting the petition by R.K Tombisan of Sagolband against the collection of tax on water and filed to abolished this colonial water tax (the petition reminded 'under the traditional water resource management system, no one collect water tax in any form however) however the request was refused by the colonial authority.[64]

In 1946 the colonial State refused grant the application to abolish the water tax, the State *Darbar* taken a few steps (of forest member) to grant remission of water rate upto 50/- in any 1 case.[65] It's seen that the colonial authority was the first who prepared and introduced to supply the pure drinking water at Imphal valley also the first to tax on water.

Colonial Policy towards Dams, Navigation, Irrigations and Hydro-electric Projects

The Government of India under the Colonial authorities have shown more initiative than many others towards the water resource management but it has done little in the British Empire in India in general and Manipur in particular[66] (due to various reasons the water power plan got a very setback in India). In the year 1905, "the colonial authority looks into the water power hydro-electrical projects in India" proposing the policies to raise the State income. In 1919 it again issued to the Provincial Government seeking the information regarding the potentialities on waterpower utilization. However it was failed to because the Provincial Government did not respond. On the point, there was no active demand for industrial power, the "subject dropped" like debate in the House of Lords.[67]

Further, the colonial authorities stated constructions of dams were of great difficulty (Reservoirs of large size) hence, it falls short to encourage the construction of large size

[64] MSD, 1942, p. 261.

[65] MSD, 1946, p. 206.

[66] "The policy of the Government until 1918 was "to leave to private enterprise the "survey and investigation of water "power sites," and development has been slow. The Indian Government can scarcely be blamed for the attitude which they adopted, for it would appear that, except in Canada and South Wales,……"

[67] *The Statement*, Confidential, News Paper Calcutta, 25th October, Kolkata, 1818, p. 6.

Reservoirs for it would require high dams. The reasons for not encouraging of constructing a big water reservoir according to the colonial authority were as followed:[68]

a) …this particular area is subject to severe earthquakes, rendering the gravity type of dam dangerous
b) …another problem has to be faced, that of getting rid of the enormous surplus water during heavy falls, as 35 inches in one day, or nearly 2 million ton per square mile of catchment and
c) …If the dams can be built another disadvantage from which water power in India suffers is the seasonal character of the rainfall, which implies that the rivers have a large flow for a part of the year and a very small flow for the rest.

In Manipur, the colonial authority suggested the State hydro-Electric Scheme to take up the small size dam project and it has invested Rs. 1, 08. A loan of Rs.38, 862 were given to the Manipur provincial government for the interest of 4% under by the Hydro-electric Board in 1929.[69]

The colonial authorities in 1937 put forward for the construction of Constructing of Dam in P.A.'S Memo 2990-M. S/488, from the Secretary to the Government of Assam to consider towards the water resource management and at the same, a resolution was taken regarding the construction of dams in Manipur.[70] Both the State Water-Works and the Hydro-Electric Scheme were run by the military throughout the year. The pipe-line of the former was on one occasion cut by the Japanese the power-house of the latter was abandoned for a short period during the siege of Imphal (but proved easily reparable and resumed as the Japanese retracted).[71]

In 1945, the colonial authorities in Manipur resolved and welcomes the proposal of the government of India, circular letter No. D. W/R/334 forwarded under P. A'S Memo No.

[68] *The Statement*, 1818, p. 6.
[69] ARM, 1937 - 38, p. 18.
[70] MSD, 1937, p. 122.
[71] ARM, 1943- 44, p. 31.

7502-G., A/82 on the subject proposed to established the Central Water Ways under the Irrigation and Navigation commission Department of Labour with headquarter at Delhi.[72]

In the last part of their rule in India (i.e. 31-03-1947), the British India made an efforts to look into the Irrigational and Engineering work in Manipur State. Following that the Director of Waterways, Central Waterways Irrigation and Navigation Commission's proposed to visit Manipur State in the Second Half of April 1947 for the Manipur State Drainage and Irrigational system. As an act of response, the Manipur State *Darbar* considered the proposal and advice "it will be more useful if he visits the State at the end of the Rains in August as our problems cannot be fully appreciated when the rain water has drained away."[73] However, any forms of major and medium irrigation projects of construction of dams were never seen operational in Manipur during the colonial period.

Impact of Colonial Water Resource Management on Environment

Many of the Manipuris particularly the populaces settling at Imphal valley were lacked of safe drinking water be short of an adequate sanitation and used untreated water for drinking, bathing, and washing, resulting in serious human infections and illnesses.[74] The colonial authority claimed the culture of depending only on *pukhri or* pond water the (washing clothes and cooking and bathing all in the same small *pukhri* or tank) and drinking of same water were the most serious and it will be more danger if they continue using it.[75] They remarked, "We are highly injurious; and yet the people sturdy and long lived race. Of course, come and claim a number of victims, and it is our duty to protect as soon as possible."[76] Therefore, the *Darbar* intervened to improve the water value in Manipur under the 'Public Health' for the first time. It makes the first move by taking up steps in Imphal, the cinerator on Colonial Young's model continues for useful services. The *Darbar* proposed and ordered a Norton's tube-wells[77] for the use of the bazaar, "but

[72] MSD, 1945, p. 167.
[73] MSD, 1947, p. 390.
[74] ARM, 1891- 92, p. 9.
[75] ARM, 1891 - 92, p. 9.
[76] ARM, 1891 - 92, p. 9.
[77] The history of this Norton tube wells came into being is shown here: Industrial Britain was blighted for much of the 19th century by water pollution caused by factory emissions. This reached its peak in the 1850s, when London, Glasgow and Manchester were all hit by cholera epidemics. This necessitated a

delays in carriage of some of the parts from Silchar have prevented its being yet made use of."[78]

Under the colonial rule a number of proposals were made to construct and do something to improve the sanitary condition at Imphal River. However, there was little to record in the way of sanitary progress in Manipur[79] except, the rivers banks in an area around the Imphal valley were taken to clear to a depth of 500 yards.

Taking the advantage of the dissertation of the capital on the British troops reaching Manipur, a large area was notified as a British Reserve and denuded of houses. A large open plain round the Imphal areas called *'pat'* (swampy area) instead of crowded and filthy compound, which were the hotbed of disease. The cleaning and leveling of these compounds were a tedious business, owing to each Basti areas were being surrounded by a mud wall and there being two tanks an average to each house.[80]

The British claimed of, as long as the Manipuris continue using the water of these tanks, sickness must be serious.[81] They opined the course epidemics and claim a number of victims "it's our duty to protect the town as much as possible.[82] The floods caused extensive damages to agriculture; environment, human life and property also hamper the economy. Generally, the first flood that brought down and accumulation of impurities contained germs of cholera that disseminated a surprising rapidity throughout the valley.[83] On that, that colonial remarked, "the greatest of a pure water-supply, will be given to the large section of Imphal. Owing to the present impure water-supply during six

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widespread change in municipal waterworks throughout the country, and a gradual move towards piped water in the home. This really only became common in the 1890s, though, and water was still largely collected by hand from public wells for sparing use at home. The wells featured in this leaflet derive are known as Abyssinian wells because their general design was based on wells created by the British armed forces on expeditions in Afghanistan, Egypt and Abyssinia (modern Ethiopia) in the 1860s)

[78] ARM, 1892- 93, p. 39.

[79] ARM, 1892- 93, p. 22.

[80] ARM, 1891- 92, p. 7.

[81] ARM, 1891- 92, p. 9.

[82] ARM, 1891- 92, p. 7.

[83] B.C. Allen, 1905, p. 129.

months of it, severe constitutional disturbances are felt by every resident of Manipur town, much sickness is the result."[84]

The floods in the valley brought great impact to the environment and this resulted to the people of Manipur correspondingly during the colonial period. Floods were caused by a combination of natural and anthropogenic factors. Generally floods were quit frequent within the urban settlement during the rainy seasons. Every year floods occurred in many parts of the valley and it brought. Particularly the portions at Imphal valley witness disorder of annual floods and erosion every year. In 1937, the *Darbar* "proposed for the construction of certain buds in an around the Imphal areas and the Iril rivers to prevent flood circulation."[85] The floods devastated the plains and valley areas brought extreme misery to the inhabitants and shatter the fragile agro-economic base of the region. Water during the rainy season brought a mayhem of devastations almost every year twice and thrice.[86] The ravaging floods, landslides, soil erosion brought miseries infrastructural failures and unrest in large parts in the State.

Most of the water for irrigational purposes were obtained from small rain fed streams and rivulets. This water discharged during rainy season and may have little or no water during pre-monsoon dry season. Many of the farmers during that time often have no access to irrigational channeled water. They were primarily depended upon the rainfall for their Crops. As a result there were no possible to cultivate the crops if not in raining period there were no other water source and it can't be assured of water from other source.

The flood posed great threats to property and safety of human being among all natural calamities. The flood brought the roads, the bridges houses, farm, paddy fields, automobile and movement of human communities. It involved a great economic cost for the people and the most important scene were of the ecology for hazardous and the other particles, which contents of chemicals that ends up in the water. In 1898, serious flood occurred, no less than 39 inches of rain fell in the two months of May and June; the river

[84] ARM, 1891- 92, p. 9.
[85] ARM, 1937, pp. 68 - 97.
[86] MSD, 1946, p. 209.

bunds were breached, and the polo ground went several feet under water. On the other hand, if the rain holds heavy and flooded the valley mostly Southern part of the valley (near Loktak Lake), the weather were too dump and cloudy (mostly Southern part of the valley) the insects came to attacked the plants and sometime it brought most damages to the standing crops.[87]

The crops were partially destroyed by the floods. Therefore the colonial authority immediately intervened to prevent the export of commodities and prevented serious rise in prices and saved the State from having to face a shortage of food grains. It's intended, if no undue rise in prices occurs in the meanwhile, to remove embargo in the course of two or three months, when it's within measurable distance.[88]

In the State there was a continuous downpour of rain in the valley for about a week, which in conjunction with torrential rain in the hill were the caused that the rivers to swell far above the ordinary flood level. Numerous breaches occurred in the river embankments and in many places where the embankments held the rivers overflowed their banks.[89]

The water rushed into Imphal with tremendous force, and the State Engineers's bungalow and office, the Civil hospital, near the bazaar and part of the cantonment were quickly submerged. Considerable damage caused to merchandise in the bazaar, especially food grains and salt, and there was also much damage to property in the Manipuri quarters of Imphal.

Two days after the breaching of the Imphal river bundh hand flooded the western portion of the town, including His Highness the Raja's palace. The main palace building, the temple, *Darbar* Hall, and stables, which were built of bricks, escaped, but many other buildings, including the houses of Ranis and the quarters of many of His Highness's servants, were destroyed. Practically the whole of Imphal were submerged, and until the

[87] B. C. Allen, *Gazetteer of Naga Hills and Manipur,* p. 129.
[88]ARM, 1916-17, pp. 9 - 10.
[89]ARM, 1916-17, pp. 9 - 10.

floods subsided the people lived for several days in temporary shelters erected on the roads, embankments, and any high ground available.

In the south of valley, which naturally low lying and is full of lakes and marshes the damages were greater than in the north and centre. The whole drainage in the valley coverage and passes through a narrow outlet in the hills near Sugnu, with the result the water could not escaped with the sufficient speed and the low-lying portion of the south were water logged for a considerable period. The damage to property here was very considerable. Besides, the Imphal valley it also recorded the troubles faced by the people around the Barak and Jiri in the Cachar borders.

The area of rice cultivation were severely damaged by the floods was estimated at the cost of Rs.107, 393 *bighas* (35,502 acres), but almost all the arable land in the valley, with the exception of a few villages (at the foot of the hill), were more less affected. The cost of repairing the damages of the State buildings, bridges and roads were estimated at over a lakh of rupees. One large bridge and several smaller bridges and culverts in the valleys were completely swept away as were the five large wire suspension bridges in the hills on the Cachar road.

Flood Measures under Colonial Period

The people of Imphal valley population have been suffered much more than the other parts for several years, at the time of floods in Manipur by the annual breaking of the riverbanks. Programmes and measures to remove of soil which accumulated in course of year and with the bunds were all being strengthened and raised.[90]

According to colonial report, from the ancient custom, "the duty of maintaining these bunds and repairing breaches lies on the inhabitants of the neighbourhood."[91]However, the *Darbar* proposed for the construction of certain bunds at Imphal and the Iril Rivers to prevent the flood circulate.[92] The *Darbar* approved of some certain bunds for the

[90] ARM, 1905 - 06, p. 8.
[91] ARM, 1905- 06, p. 8.
[92] MSD, 1937, p. 68.

embankment. Mr. White the Superintending Engineer, had asked to give his beneficial advice for strengthening the bunds were well on its way to completion. Therefore, the widening and repairing works of riverbed were initiated by the State. The State, born the two-thirds of the cost and the villagers put up with the remainder of the cost. In 1903 rupees 3,001-15-5 has been spent on this work and Rs. 4,000 more remains to be spent."[93] In 1904, the people of one section of the town had twice to pay Rs. 900 for the repair of the bund which broke under the heavy floods.[94]

In 1934 the preventive measures were taken up by the State *Darbar* proposed for the flood outlet channel on the east side of the Mahabali however on the contrary the majority of the *Darbar* came out to suggest and proposed instead of giving outlet in the channel on the east side of the Mahabali, they proposed to strengthen the weak places in the bunds and not to the proposed nullah (Mahabali, Imphal).[95]

In 1946 to check the flood damages in Manipur, the *Darbar* asked the P.W.S.D to address the central government and asked for the deputation of a drainage Engineer to advise the *Darbar* to take up a necessary measures to control flood.[96] Due to lack of confidence in the capacity of the central P.W.D (to maintain the bunds of the Imphal River) the said river bunds were burst out twice in the same place thus the Manipur State *Darbar* charged the central P.W.D responsible for not taken to carry out proper repair after the 1st breach.[97] Thereby the money payment of Rs. 46, 000/ for the repair of flood damage caused by the July floods and the bill of P. W. D Rs. 19, 000/- for the Ningamthong breach were accepted under the following heads by the colonial authorities:[98]

a) Press Building

b) D/F OS at Thoubal Mayang Imphal

[93] ARM, 1905- 06, p. 8.
[94] ARM, 1905 - 06, p. 8.
[95] MSD, 1934, p. 2.
[96] MSD, 1946, p. 133.
[97] MSD, 1946, p. 145.
[98] MSD, 1946, p. 153.

c) Shingling of Pukhao Road

Another floods relief measures were carried out in the month of October, the first and second bills were sanctioned under the sub-head of "Shingling Pukhao Road" Mayor Head No. 8 State works as under:[99] the table shows the details of the amount and the work places.

Table: 6

Jail Member- hire of one boat and 4 boats-Rent----------Rs. 15/-
M/S S.L Nimai Singh & N.Kanhai Singh- price of 2nd of Salt----------Rs. 30/-
M/S Saligram Rai Chunhlal Bahabur- price of 66 ties of K.oil---Rs.398/1/-443/1/-
Yengkokpam Rama- a Widow----------Rs. 291/-
Khetrimayum Thabal - a Widow ----------Rs. 300/-
Ningthouyam Tharo-- a Widow----------Rs. 200/
Puthem Thamjit a Widow----------Rs. 200/-991/
Second flood reliefs Cost ---------- Rs. 9629/-
Grant total: Rs. 11, 063/1/-

In 1947 under His Highness proposed (an appointment Board's Resolution) an ordered for the appointment of Sjt. Yambu Tombi Singh as Drainage and Flood Relief officer with effect from 16-07- 47 on the scale of 75-5-100, though inexperienced man to the post of State Engineer.[100] Furthermore a flood light lamps affected lamps were distributes

[99] MSD, 1946, p. 156, See also MSD, 1946, p. 209.

[100] *Manipur State Gazette*, Govt. of Manipur State, Manipur State Archive, Imphal, 1947, p. 4.

by the *Darbar* to the custody of the Hydro electric Board, 5 to the H.E.B, and 2 to the State and 2 to the government of Assam."[101]

Conclusion

However, floods in the Imphal valley were taken a blessings and disguises that water inundated by the seasonal rainfall in the valley's marginal areas, as well as the floodplains within the valley-associated deposition of nutrient-rich sediment have benefited the productive agricultural sector. As stated earlier, the colonial government had taken up a several steps to be improved the water quality especially to provide a pure drinking for the people of valley Imphal. Measures were also taken up to safe from the flood and water diseases. It's seen many a time the colonial distributed floods reliefs to the affected areas. However, the collection of 'tax on water' was in the history of Manipur by the colonial authority. The water resource management in Manipur during the colonial period came to light that the British colonial was the first who introduced the advanced technology to supply the drinkable pipe water to the public. Also they were the first who introduced the tax on water in Manipur history.

[101] ARM, 1937, p. 14.