Commodification of Water during Colonial period

Some reference have been seen to the first instance of privatization, starting in 1740, of peasant rights to farm, graze and hunt on lands owned by nobility in England and Wales. Enclosure of such spaces took place in the global South as well. The British policy of deforestation and the enclosure of the environment were replicated in the colonies of India.\(^{201}\) British colonial rule shared in many respects the ethos of domination over nature that marked the emergence of ‘middle-class’ government in Britain. Shaped by the increasing influence of capitalist modes of thinking, many British leaders saw domination of nature, and its commodification, as both a critical measure of class power and a legitimizer of the British in India as a ruling community.\(^{202}\) Colonization brought about three major influences - A transformation from a resource gathering and food production economy into a commodity-oriented economy; a change in long standing relations and customs as local social relations became less important and social cohesion declined; and the development of the market and the importance given to wealth.\(^{203}\)

In 1865, a law was passed, lifting protection of the forests including the water, land, air, forests and fisheries, paving the way for the commercial exploitation of both land and forests. The ensuing marginalization of peasant communities’ rights over their forests, sacred groves and “wastelands” was the first and prime cause of impoverishment for millions of Indian people.\(^{204}\) Through the introduction of private property laws, the establishment of new tax codes, the fast expropriation of common property resources, and the coordinated implementation of centralized water management systems, the colonial regime affectively stripped civil-society of its power and right to regulate its own resources. Moreover the British regarded the local communities “in a language of ‘naturalism’ that defined them as parts of the ‘natural’

\(^{201}\) M. Barlow, *Our Water Commons: towards a new freshwater narrative*, p.3.
\(^{204}\) M. Barlow, *op.cit.* p.3.
environment to be modeled and controlled." 205 Thus began a long historical process whereby absolute power would become vested not in civil-society but in the state, enabling first the colonial state, then the post-colonial state, to "legally" exploit resources at its will without any accountability to the people.

The proprietorship of the forest land at the time of the British occupation varied in accordance with the political and historical developments of each province in India.206 This principle also applied to water rights in India as it had been closely linked to property rights in land. The control that the state sought to exercise through its officialdom was with the clear intention of maximising revenue. Until 1857 the British did not interfere with local rules and customs unless it interfered with their policies. Some initial attempt to codify water laws in India was seen in the Bengal Regulation VI of 1819 and the Charter Act, 1833. After the 1857 revolution, the British began to consolidate power focusing both on famine relief and the need to maintain the resource base of trade for this; leading to investment and regulation of canals and irrigation facilities.207 Water which was treated as a Common Property Resource (CPR) 208 was converted into state property starting with the Indian Easement Act, 1882; and acts such as the Indian Forest Act, 1894 which gave the State the right to acquire forest lands and along with it the water resources beneath it. This transformed the way water resources were managed and maintained. It ended up becoming a commodity, generating revenue and profits.209

**Irrigation**

The British introduced the concept of government control over surface waters. Expansion of irrigation was driven by the ethos rooted in the transformation of water itself into a commodity.210 After a quantum leap in irrigation was initiated in 1830s by repair of one the greatest irrigation works of pre-colonial times, the Grand Anicut in

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206 B. Ribbentrop, *Forestry in India*, p.97.
Tanjore\textsuperscript{211} and the Jamuna canals\textsuperscript{212} in the Delhi region; other attempts on large-scale irrigation projects in the Deccan region and rehabilitation of other traditional irrigation tanks system proved unsuccessful.\textsuperscript{213} Massive construction of vast network of new canals started in the Upper Ganges Region and this later became the approach of development.

In 1860s and 1870s, British irrigation policy endorsed local initiatives in private or semi private canal buildings,\textsuperscript{214} empowering the state to frame rules of irrigation so as to enable them to control people as canal controlled water.\textsuperscript{215} There emerged a highly centralized arrangement of irrigation with a huge bureaucratic structure extending even to Britain. In the 1880s a series of interlinked irrigation canals brought about 14 million acres of arid land under agricultural colonization and settlement in Punjab named as ‘canal colonies’. Upper River valleys of South India and Deccan were introduced to large and medium canals schemes; in upland areas, small surface systems which included tanks, mechanized tube wells and large-capacity deep tube wells for groundwater development.\textsuperscript{216} The Provincial Agriculture Departments later created, aimed to provide new professional expertise on issues relating to water and agriculture.\textsuperscript{217} Farming through the manipulation of large untapped rivers and reconfiguring the basin hydrology; and centralized structures for constructing and managing large irrigation systems on commercial lines led to an unbalanced irrigation development without regional equity.\textsuperscript{218}

\textit{Colonial control over types of water}

British Colonial water had two main strands. First, control over water and rights to water were regulated through the progressive introduction of common law principles, emphasizing the rights the rights of landowners to access water. The trajectory of

\textsuperscript{211} Grand Anicut on River Cauvery.
\textsuperscript{212} These canals were originally dugout in the regime of Firuz Shah Tughlaq about 600 years ago.
\textsuperscript{217} \textit{Ibid.}
rights and management systems over surface and groundwater, for instance, were very different and it continues to have an impact on current use patterns.

The Northern India Canal and Drainage Act, 1873 for large scale irrigation works recognised the right of the Government to ‘use and control for public purposes the water for all rivers and streams flowing in natural channels, and of all lakes’ (Preamble). This led to the progressive strengthening of state control over surface water and the concomitant weakening of people’s customary rights. 219 The Easement Act (1882)220 recognised water rights for the first time and the absolute rights of the state over rivers, lakes and water bodies.

For ground water, the Indian Eastment Act, 1882 provides a land owner with the right to appropriate water below the land and no action will be taken against the owner even if the owner intercepts and diverts water under the land of another.221 For surface waters, a riparian right allows a landowner the right to take a reasonable portion of the flow of a water course.222 For practical reasons, these were linked to the tenure rights of the landowner by the Transfer of Property Act (1882) and the Land Acquisition Act (1894). These imply that groundwater rights cannot be transferred independently of land tenure. The legislation also provides no limits on the amount of groundwater that can be extracted by a landowner, an issue of significant importance in contemporary water management, as by implication the landless and communities that own land communally are excluded from legal access to groundwater rights.223

Common law principles, enshrined in the Indian Eastments Act, 1882 led to enactment of laws such as Embankment Regulation 1829; Bengal Embankment Act, 1855.224 Other laws regulated canals for navigation purposes levying taxes on users, river conservation, and rules on ferries and fisheries such as Northern India Ferries

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220 The Easement Act 1882 allows private rights to use a resource that is, groundwater, by viewing it as an attachment to the land. It also states that all surface water belongs to the state and is a state property.
223 P. Baumann, R. Ramakrishnan, & Others, loc. Cit.
224 I.A. Siddiqui, loc. Cit.
Act, 1878; Indian Fisheries Act, 1897. Regulations recognizing local practices and rules in villages were also enacted.\textsuperscript{225}

Colonial legislation also introduced the division of responsibilities between the centre and the regions/states with regard to water. The Government of India Act, 1935 gave provinces the powers concerning water supply, irrigation, canals, drainage and embankments, water storage, and hydro power. Conflicts between provinces/princely states were subject to the jurisdiction of the Governor-General, who could appoint a commission to investigate a conflict it was found to be of sufficient importance.\textsuperscript{226}

**Commodification of Water in the Post-Colonial period**

Many of the laws enacted to further colonial interest have simply been continued in the post colonial period. The situation worsened in the post-independent India with the political leadership and the bureaucracy retaining much of the colonial mindset. After Independence, the Constitution retained the basic scheme chosen in 1935 and gave the states a leading role in water regulation. Water was thus included in the state list in recognition of the fact that the water related issues that arise in different parts of the country are different.\textsuperscript{227} Development policy and planning in independent India followed the Nehru-inspired vision of economic centralisation and transformation from above based heavily upon industrial growth. This model set the context for all development activities and centralised control over natural resources was considered an important component of this planned policy, allowing the state to execute programs based on scientific and technological judgments and protect resources from unsystematic exploitation by local people. Hence, though the independent state assumed the role of provider, protector and regulator in fulfilling the nationalist project, as far as natural resource management is concerned, there is considerable continuity in the policies of the colonial and the independent government.\textsuperscript{228}

\begin{itemize}
\item\textsuperscript{225} P. Cullet and J. Gupta, \textit{loc. Cit.} p.164.
\item\textsuperscript{226} Government of India Act, 1935, sections 130 to 134.
\item\textsuperscript{227} Constitution, Schedule 7, List II, reproduced at p.60.
\item\textsuperscript{228} P. Baumann, R. Ramakrishnan, & Others, \textit{loc. Cit.}
\end{itemize}
Irrigation

Since independence, states have enacted irrigation policies and laws that generally follow the pattern of colonial legislation. Surface water irrigation had seen little changes until the 1990’s as it still continues to give ownership rights to the Government as seen by the statutes enacted in different part of India. Post independence, the Government implemented Major\textsuperscript{229} and Medium\textsuperscript{230} Irrigation Projects (together with some minor\textsuperscript{231} irrigation projects) particularly to overcome food grain shortage; to accelerate development and address regional disparity of investment. With the First Five Year plans in 1951, vast new multipurpose irrigation works were taken; such as the Bhakra-Nagal, the Damodar Valley and Hirukad projects besides some other projects but exposure to flaws in the system has led to delay in projection completion due to compounding problems.

In the 1970’s the Government acknowledged the issue of severe water management problems and initiated changes. The Command Area Development Programme (CAPD) for water management 1974-75, in the command areas and several attempts in the 1980s sought to bring about reform in the management practices of Irrigation, through the World Bank supported National Water Management Project (NWMP). But it did not address the issue of the Irrigation Department’s legal powers, lack of accountability in the system management and the monopolistic control of public funds assigned for surface water development. During the early 1990s, several states\textsuperscript{232} in India (as water law reforms are state specific) fostered the participation of farmers in irrigation schemes along the principles of ‘participatory irrigation management’ (PIM). Several states are now implementing ground water legislation.\textsuperscript{233}

Privatisation in water sector\textsuperscript{234} was introduced late in India, and the initial pace was slow. However, already from the 19th century (1820) six private companies in England were in charge of water provision. The concept was officially introduced by

\textsuperscript{229} Major irrigation schemes is the one in which the arable command area is more than 10,000 hectares.
\textsuperscript{230} Medium irrigation schemes is the one in which the arable command area is more than 2000 hectares but less than 10,000 hectares.
\textsuperscript{231} Minor irrigation schemes is the one in which the arable command area is less than 2000 hectares.
\textsuperscript{232} Andhra Pradesh, Rajasthan, Maharashtra, etc.
\textsuperscript{233} P. Cullet and J. Gupta, loc. Cit. p. 171.
\textsuperscript{234} The term “water privatization” officially refers to the process of transferring legal public sector “responsibility” of water resources (provision of water, sanitation) to the private sector which then is in charge of managing, producing, and dispersing the water as an economic good.
Margaret Thatcher in 1989, when public water and sewer companies in England and Wales were privatized.

Privatisation of irrigation is in initial stages and this sector is also being opened up. There have been some preliminary experiments of involving the private sector in canal operations in Gujarat; the World Bank supported privatised irrigation projects in Madhya Pradesh, and Maharashtra. The reasoning behind this step is to promote participatory management, but it may well lead to backdoor entry of privatisation.235

**Ground water Irrigation**

Since the landowners have a virtually unlimited right to access water under their holdings, the Central Government does not have jurisdiction over ground water. Regulation of groundwater is limited to a few states and metropolitan cities. The mechanized lift irrigation from groundwater started in mid 1960s with the advent of new pumping technology, to bore deep wells and extract water in large quantities. The onset of the Green Revolution in North West India led to increasing usage of shallow tube wells and deep borewells. Various public agencies provided credits and subsidies for well installation and supply of electricity however this again benefited the rich farmers.236 Such initiatives helped to augment the already well established canal irrigations by playing a complementary role in disbursement of water. Public237 tube well programs run by Government Corporation initiated with the funding of the World Bank were set up in some states.

In the 1980’s a competitive groundwater market developed. Private markets238 in pump irrigation service emerged and started competing with the public tube wells.239 Improved drilling and lifting technologies, liberal credits provision, among other reasons, aided the private tube well owners to provide superior irrigation services. This led to wide scale commodification of water, whereby farmers and private players

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236 S. Singh, *Taming the Waters: The Political Economy of Large Dams in India*. p.53.
237 When using the term “public sector” one refers to the part of a government, which is in charge of the production, sale, exchange and provision of goods by or for the government or the people.
238 The private sector of a country’s economy is the sector that is composed of and “operated” by private groups or individuals for reasons of profits and cannot be controlled by the state.
constructed deep wells in order to sell water as a commodity and to generate revenue without thinking about the long term consequences of water depletion in their areas. Further, under private property regime, water markets have developed in many parts of India. The rapid depletion of groundwater as a consequence of extraction for irrigation and other uses over the past 50 years has led to policy development in this area. The latest is the Model Bill to Regulate and Control the Development and Management of Groundwater (2005) constitutes an instrument seeking to broaden state control over the use of groundwater by imposing the registration of all ground water infrastructures or denying permits in over exploited areas. It does not, however, propose a clear break from rules of access linked to land ownership.

Recent developments in privatization and commodification
The policy of privatization of water, though presently in its infancy, is not entirely new to the Indian water sector. Some early pilot projects were launched by the Government in the early 1990s in the power sector in an attempt to engage private players in both the rural and urban water sectors. The National Water Policy, 2002, explicitly encouraged private-sector participation in the planning, development and management of water resources, wherever feasible. It envisaged private player involvement to introduce innovative ideas, generate financial resources, introduce corporate management, and improve service efficiency and accountability. Most recently, the Draft National Water Policy 2012 encourages the engagement of private companies as service providers for water distribution.

Hydropower projects
In 1991, the Government of India announced its policy of opening the power sector to private players. Most of the private companies who signed Memorandums of Understanding (MoUs) were foreign multinational corporations offered concessions by the Government for their investments in this sector. This meant that the private companies could come in and build, own, operate dams, establishing control over the

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river waters. Among the private sector hydropower projects are Malana (Himachal Pradesh), Vishnuprayag (Uttaranchal), Baspa (H.P.) and several others. Many of the privatized power projects did not take off as anticipated. Out of those that did, just a handful of projects have been completed, and the rest are languishing or dragging along. The projects that are completed are producing power at a very high cost. Enron (Dabhol) a most well known example was closed down, as the cost of power was very high. In Orissa, the first state to privatise distribution, private companies failed miserably to deliver on the lofty claims, being neither able to increase access, nor cost recovery nor control transmission and distribution losses. Benefits of these privatisation schemes have not been uniform; while the upper crusts of the society afford to make payments, the common citizens simply cannot afford the escalating power tariff. 244

*Industrial water supply*

Privatisation of water supply, especially industrial water supply is very much a reality and several cases are at various stages of development and implementation. 245 Some of the earliest schemes have been for industrial water supply. Sheonath project has already been completed and running, Tirrupur - one of the bigger projects, has recently been inaugurated, work is progressing on the Dewas project. 246 Other private hydropower projects like Maheshwar (M.P), Allain Duhangan (H.P.), Karcham Wangtoo (H.P.) continue to face opposition from affected people.

Sheonath project in Chhattisgarh was one of the earliest privatization projects in the water sector in India. The project is meant for supplying water to the industrial estate of Borai, near Durg city in Chhattisgarh. In 2001, Radius Water Limited, a local private company was given a concession to build a dam across Sheonath River, and full rights to the 23.6 km water reservoir to supply water to the industrial estate. The state owned Chhattisgarh State Industrial Development Corporation (CSIDC) signed a contract, under which full payment for 4 million litres per day was guaranteed to the company even if the off-take of water is below this. The irony is that the availability of water at the Radius anicut has been guaranteed by the state government by way of assured releases from an upstream dam. The money to build the project was also

246 Ibid.
advanced by the CSIDC to Radius. The rationale of privatisation was that the public agency did not have money to build the project. The project continues to supply water – 1 MLD only while receiving payments for 4 MLD. However, due to the protests, a new anicut has been constructed downstream of the company anicut to address the grievances of the people downstream.\(^{247}\) The life of villagers neighbouring the dam especially five neighbouring villages were adversely affected by the dam project. The worst hit was the fishing and sand mining occupations. Irrigation is another issue as the Mohlai village panchayat, says the company doesn’t allow farmers to lift water from the reservoir through pumps during the lean season. This shows that the commodification process has ignored the riparian rights and has simply not taken into account pre-existing rights of users.

**Rerouting and diverting of rivers**

The massive $200 billion River Linking Project, supported in part by the World Bank, is a key to the privatization of water and the enclosure of India’s water commons. The River Linking Project is divided into the Himalayan component and the Peninsular component. The Himalayan part consists of 14 river links and the Peninsular component consists of 16 river links. The cost of this project, according to the government’s economic survey for 2001–2002, is higher than India’s gross domestic savings and more than $12 billion, higher than India’s total outstanding external debt. It also raises questions about how this loan would be repaid and what guarantees will be needed to secure it. External borrowing on this scale would also make future governments more vulnerable to foreign financial pressures. In that scenario the only alternative left would be to hand over the project - along with the country’s entire water resources to multinational corporations.\(^{248}\)

The study by the Research Foundation shows that even after escalating drought in 40 villages affecting 75,000 hectares of land in the district of Banda and flood in 200 villages causes devastation in 400,000 hectares of land in Hamirpur district, the link canal will remain without water for four months during summer. This project proposes five dams’ altogether, which would displace around 18 villages. All five

\(^{247}\)“Controversial plan to sell water from Sheonath river”. Retrieved from http://www.indiaenvironmentportal.org.in/content/39490/controversial-plan-to-sell-water-from-sheonath-river/.

dams are proposed to be built in protected forest area submerging 800 hectares of forest. This interlinking and transfer of water will affect not only these animal and unique fish species but also the vegetation, as hundreds of thousands of trees would be cut and livelihood of thousands of fisher folks destroyed. As a mark of resistance to the river linking project, every village in the Ken basin has passed a resolution to declare that water is a commons and that community rights have to be the basis of any water plan or project.

Ground water depletion

Earlier, private markets were tube-well or tanker water supply based water markets, with limited commercial objectives as operators did not have any control over the whole sector and their clout was limited. Recent developments have seen the entry of the corporations; mainly multi-national, foreign corporations and private bottled water suppliers like Coca-Cola and Pepsi in rural areas like Plachimada, Kerala and Mehdiganj, Uttar Pradesh, pumping out water to produce soft drinks for the markets. These are hugely powerful entities, with enormous financial and political muscle. Moreover, they are being backed by international financial agencies like the World Bank, and global powers like the United States Government who in turn wield enormous influence over Governments and policy, and are using this to promote the interests of the new players in the water sector.  

According to a recent market business survey (2012-2017) India is among the top ten countries in terms of bottled water consumption. Today Bottled Water is one of the India’s fastest growing industrial sectors. Recent estimates show that the industry to grow at a rate of 18% till 2017 and would be soaring to new heights. Indian Bottled Water Industry currently pegged at USD 1454 million in 2011 will jump to reach USD 3925 million by 2017. Parle Bisleri Ltd, PepsiCo and Coca-Cola, respectively are the dominant brands, accounting for a 62% total volume share in 2012.

The Coca-Cola plant in Plachimada commissioned in March 2000 to produce 1,224,000 bottles of Coca-Cola products a day was issued a conditional license to

249 D. Gaurav, Rehmat, and S. Dharmadhikary. loc. cit. p. 11-12.
250 Market research retrieved from: http://www.marketresearch.com/IS-Advisors-v3900/BOTTLED-WATER-INDIA-7429118/
install a motor-driven water pump by the Panchayat; however, the company illegally extracted 1.5 million liters of clean water per day causing the water level to deplete rapidly from 150 to 500 feet below the earth’s surface. This act threatened traditional drinking-water sources, ponds, water tanks, waterways and canals. 260 bore wells provided by public authorities for drinking water and agriculture facilities have become dry as a result. Coca-Cola was also pumping wastewater into dry bore wells within the company premises. The local movement of women initiative in Plachimada and public outcry against marketization, privatization and corporatization252 of water and also through litigation, the Kerala high court in a landmark judgment ordered the plant to stop pirating Plachimada’s water, forcing its closure on February 17, 2004. The judgement triggered recognition of people’s community rights to water in law, also activating movements against the 87 other Coca-Cola and Pepsi plants doing the same. The Plachimada issue is currently in the Indian Supreme Court and the plant remains closed. Following the Plachimada issue several State Governments imposed a ban on Coke and Pepsi following the exposé of high pesticide residues.

The scale of private operations has also undergone an order of magnitude change in the new regimes of privatisation. The operations are now huge and so are the finances associated with them. Privatisation and commercialization has extended to whole sections of rivers or water supplies to whole cities, Multi National Companies are in a position to establish control over whole sections of the sector. In other words, what is happening today should be described not merely as privatisation, but more accurately as corporatization or corporate globalisation.253

Privatisation of public water supply

Water is placed in state list in Schedule VII of the Constitution of India; thereby giving each state government the prerogative to establish its own system of water supply.254 Due to the absence of a common body of governing principles, every state has distinct laws, leading to systems of water supply across states lacking comprehensiveness and compatibility. 255 Water policy is also influenced by the central government through less formal mechanisms, such as formulation of National

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252 As seen in the ‘Plachimada Declaration’ against commodification of water.
Water Policies and ‘Model Laws’. More importantly, the Centre is able to significantly influence water policy in targeted states by ensuring water supply systems envisaged in schemes such as the Jawaharlal Nehru National Urban Renewal Mission (‘JNNURM’) are implemented, by the provision of central funds for the same.256

The 73rd and 74th Constitutional Amendment Acts of the constitution has transferred the ultimate responsibility of water supply to the elected local bodies, in keeping with the trend of decentralization in recent water sector reforms. While the states lay down the legislative framework for water supply, the management of the system is carried out by the municipalities. Since the ultimate management of the system is in the hands of the local bodies, it is at this level that the private players get involved. However, the level and scale of private involvement differs, as ‘privatization’ encompasses a spectrum of contractual arrangements between the government and private sector depending on legal and regulatory frameworks and degrees of control with the state.257

There is a surge in the privatised urban water supply projects. Municipalities of many cities have employed public-private partnerships (PPPs)258, where the private player is in charge of operation, management and distribution improvement. Important projects include the Tirupur project (to build, operate and charge for water supply); the Hubli-Dharwad project that aims at 24x7 water supply for residents; the Khandwa project in Hyderabad and the Delhi Jal Board (‘DJB’) public-private partnership model.

The proposed privatisation in Delhi is currently on hold due to the protests of local people. Design process of privatisation of one of Mumbai’s larger wards (K-East, population one million) is on and this is to be a pilot project with extensions to other wards in mind. The ambitious Bangalore privatization project is being carried out with the help of International Finance Corporation (World Bank). Several other cities have also planned privatisation of water supply and tenders have been floated by

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257 P. Vora, M. Khanna & A. Kurlekar, Anayzing the implications of water privatization : Reorienting the misplaced debate. p.149.
258 When such a partnership is enforced, then the public sector still has ownership of property and financial gain, yet the private company is in charge of certain functions for a very specific time period.
Ludhiana, Aurangabad, and works are on in Gulbarga and other towns in north Karnataka.

There is a push by foreign aid agencies like Department for International Development (DFID), United States Agency for International Development (USAID) for privatization initiatives. The Ministry of Urban Development and Poverty Alleviation (MoUDPA) is also working with National Institute of Urban Affairs (NIUA) and USAID for privatisation of urban services in major cities across the country. Under the centrally sponsored Jawaharlal Nehru National Urban Renewal Mission (JNNURM) municipal corporations have to undertake mandatory urban reforms, including possible privatisation of water, to be eligible for central funds.259

**Commodification of water during Colonial Period- the Naga Hills**

The span of history of statutory water law in India is less than 130 years260 and water legislation was characterised by its unmistakable intent to generate revenue. Colonial law cast social relationships over environment within a framework that institutionalized an imperial interest in environment. The Colonial rule introduced a disjuncture between legal rights of States as set out in treaties, settlements, and other legal instruments and the reality in society as reflected by geographical and historical conditions (as in case of the Naga Hill tribes). Colonial rule introduced conflicting trajectories of economic development, different political structures, and different mixes of traditional and modern technology, and situated those differences within a legal framework that gave the disjuncture its structure.

Colonial policy in the Naga Hills cannot be treated in isolation from, and without reference to, their interest in Assam, Manipur, Burma and mainland China. It appears that it was as a part of their direct interest in this entire region that Naga Hills assumed a strategic importance and it later became a gateway to colonial economic pursuit in this region. Apart from economic interest in the Far East, the natural resources of Assam immensely attracted the British. The commercial prospects in the province to which the Naga Hills was an appendage were promising. The influence of strong colonial economic interests and policy in Assam thus indirectly determined the

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decision of the government to extend regular administration in Naga Hills by 1881. Consequently, the British colonial administration in Naga Hills district for the period 1881-1947 was founded not on a defined territorial boundary once for all, but on a growing process of extension throughout the period.

The East India Company in the early nineteenth century saw innumerable problems of commercialization in timber trade though it was a primary motivating factor. According to the 1835 reports of Captain Jenkins, some trade was carried on in sal wood in the forest of western Assam which after cutting required to being transported through the Brahmaputra River during the rainy seasons. These woods were used in these areas for building boat. To save the high cost of sending the boat to Calcutta, Jenkins suggested the formation of an establishment of building boats in Assam to make it a commercially viable venture. Alternately he also advised that a very large and strong raft might be constructed to float the timbers for a long distance. These rafts were to mainly transport the timbers to sail from Assam to Calcutta, through the many water ways and rivers such as Paddah River. Within a decade, in Cachar the revenue prospect of forest as a commercial commodity attained a practicable phase. In the 1860’s the revenue in Cachar was derived by establishing a custom ghat on the river at all which all rafts being floated down had to pay duty for each piece of timber. Other species of trees were also marked and put in the market. The expense of floating the timbers from the forest to the Bengal market was about Re 1 anna 4 per score. 261 As the timber trade as well as the duty imposed on the waterways generated revenue for the British, other separate forest divisions were soon proposed to be established in Lower Bengal, Cachar, and Chattagong. 262 Thereafter the government began a methodical survey of the forests of Assam province under the Bengal Forest Department to assess the forest resources. Such a survey of the forest resources of Assam in the post-1850 period resulted in the emergence of a map of the forest resources of Assam which helped in the entry of the natural landscape of Assam into the hands of the professional foresters. 263

In 1874, Assam was declared a separate chief commissionership and eventually the Department of Forest became an independent wing. Management of the affairs of the

261 A. Saikia, Forest and Ecological History of Assam, pp-48-50.
263 A. Saikia, loc. Cit. p. 51.
forest and revenue earnings began on a war footing. New additions were made into the reserved Forest areas. Also timber from the region found its way into the larger market. However, the subject of poor communications remained a major concern since the early days of the imperial forestry. Creation of new roads became a priority, with arrangements from the Public Works Department and also the tea garden owners; however, such fragmentary investment could not link the majority of the forested tracts till the twentieth century. Reserved forests remained mainly inaccessible even for private timber traders especially during the rainy season. The timber trade so far had survived through the use of pre-imperial and traditional method of river transportation. Bamboo rafts, known as meleng, were used by timber traders for transportation against powerful river courses in central Assam hill forests and the southern valley. River routes trade also used boats, known as bajras and panshis, owned mostly by people from north India, which were used in the timber trade. Traders wanted to bring their timbers to the market as quickly as possible and therefore often forced boatmen to overload the boats. The overloaded boats, often blocked routes as it could not get pass the difficult river courses. Moreover, timber brought through the river had to halt in Dubri depot for nine months, as the river Brahmaputra was not safe for rafting till end of September. To minimize transport difficulties the traders resorted to cutting long logs into short lengths suited for making boats. These logs were then rolled over long distances of temporary tracts to bring them to the river.

To overcome these hurdles the department gradually adopted a series of river rules known as Assam River Rules effective from 1880. These rules included the levying of fees for the pass at Dhubri. This pass was done away with in 1882, due to the protests of the traders. However, with the introduction of steamers in the Brahmaputra, the traditional boats were rapidly replaced. The Colonial government’s increasing control over waterways in Assam leading to commodification was directly connected to the Assam Forest Regulation, which allowed for the establishment of revenue stations along the riverside to monitor the movement of forest trade and to collect levy from these. In the next few years, river based revenue stations came up in,

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265 Assam Forest Department, Annual Report, 1898-99, para.50.
266 Assam Forest Department, Annual Report, 1881-82, para.51.
initially in Goalpara, and then in Kamrup and Nowgaon, to regulate the traffic in the forest produce.\textsuperscript{267}

The Forest Acts and Regulations adopted and framed during 1865 and 1891, not only defined the rights and privileges of the Forest Department but it also gave it an absolute status in matters of forest resources including water resource. The Government also started several kinds of interventions, including laws for the protection and maintenance of embankments, regulation of ferries, as well as fisheries.\textsuperscript{268}

The Indian Forest India Act 1865 set up a system of forest guards touring tribal areas to register reserved forests and to prevent the unauthorized cutting of trees. Apart from this, tribal’s were discouraged from hunting and their use of other forest products were severely restricted although the peasantry’s customary use of forests was not random but governed and regulated by community sanctions. This took away the liberty of the people who could no longer venture particularly into the Reserved Forests (which had hitherto been freely open for them to use since times immemorial) to fish, hunt or make use of resources they needed for their survival. The Indian Forest India Act, 1878 gave the Government a more effective control over the forests. By now, individual forest officers were authorized to prosecute those who violated the forest rules. The new forest rules defined the parameters of elephant hunting and poisoning of water. As per regulations of The Assam Forest Regulation, 1891 Waterbodies came under renewed pressure.\textsuperscript{269} In fact, the experiment of 1891 proved to be a successful one as the regulation remained in force with little change till the Independence.

The case of Assam shows the indivisible connection constructed by the colonial government between commercial exploitation of forest resources namely timber trade and the need to maintain control over the waterways for its transportation. Revenue was generated from not just from the colossal exploitation of timber but also through use of forest resources. No wide scale regulation over water was seen in the province

\textsuperscript{267} Files Forest -A. (Assam), No.1. Finance, ASP nos 1-6, June, 1908.
\textsuperscript{268} The Indian Fisheries Act 1897 - establishes two sets of penal offences whereby the government can sue any person who uses dynamite or other explosive substance in any way (whether coastal or inland) with intent to catch or destroy any fish or poisonous fish in order to kill.
\textsuperscript{269} See Annexure IX
as those imposed in North West India in the irrigation sector. However, it is very apparent that administrative control over the province and the forests in varying degrees through the above mentioned regulations, by default, led to control over water resources.

As mentioned earlier, the absolute nature of colonial rule affected the Naga Hill tribes, they discovered that application of English principles of prescription and prescriptive rights to an alien social and environmental context did little to their promises of reformatory polity and a cohesive society and resources. Although there was no single cohesive water statute or policy imposed as such on the Naga Hills, the forest policies such as ‘The Government Forests Act, 1865’, ‘The Indian Forest Act of 1878’, The Indian Forest Act of 1927, sought to strengthen the state's control over forest areas and water resources through the regulation and in some cases extinction of customary rights.

Before 1865, forest dwellers were completely free to exploit the forest wealth. Then, on 3 August 1865, the British rulers, on the basis of the report of the then-superintendent of forests in Burma, issued a memorandum providing guidelines restricting the rights of forest dwellers to conserve the forests.270 The reservation of forests was a very, serious blow to the Naga tribesman. At every turn the Forest Laws cut across his life, limiting, frustrating and destroying his self confidence. Such Acts allowed the state to expand the commercial exploitation of the forest resources while putting curbs on local use for subsistence. The official correspondence in following year’s show how maps were drawn to demarcate what should now come as “reserved Forests” within the Naga Hills by Indian Forest Act 1878. Outmost care was taken to leave sufficient forest to supply the requirement of villagers of “wild or uncivilized tribes” which would otherwise give rise to complications. Specifications in the Act included the control over use of streams and canals passing through and coming from government forests, prohibition of poisoning of or otherwise interfering with streams and waters in government forests271: imposition of fines and penalties according to the Colonial Code of Criminal Procedure.

270 The changing life of the tribals vis-à-vis the imposition of forest laws has been mentioned in JoshiGopa, Forest Policy and Tribal Development, CSQ Issue: 13.2 (Summer 1989) India: Cultures in Crisis.

271 Section 25, Clause (1) of the Indian Forest Act, 1879.
The Regulation of 1891 also continued the exploitation of natural resources in previously traditional land holdings, now under Reserved Forest category. All traditional rights to ‘water course or to use water’ was taken as extinguished further with this Act. Settlement of issues by the colonial government overriding traditional laws and practices began to increase in volume and coverage in successive years.

In the Tour Diary of A.W. Davis, Deputy Commissioner Naga Hills, 1891-97, he makes mention of his trips to various parts of the Naga Hills going from village to village over traditional areas of different tribes and settling disputes and imposing penalties where required. His intervention and judgment over even petty disputes is seen in instances like the Chengaki village fishing dispute with Nungtang whereby the two villages claimed the same stretch of the stream for fishing.  

He played a pivotal role in sanctioning of a new water channel in Viswema village which was within traditional boundaries of the village and in the conflict case over usage of water between Jakhama and Viswema village. He awarded the settlement in the case of Viswema new water-channel being damaged by Jakhama villagers. Intervention was seen even in cases such as of Khuzakunomi verses Terhephema village whereby the Khuzakunomi claimed the right to half of the water of a certain channel which was challenged by the Terhephema. On his way, the Emilomi village was fined for creating fences across a road in actuality within their own traditional land, but taken as under reserved land by the British.

Further, intervention is seen during the tours of A.E.Woods, Deputy Commissioner Naga Hills, who met swarms of litigants in Satazuma village area, all over cases of water disputes; which originally had been within purview of their own village administration. Such issues had usually been amicably solved in the past though taking of oaths. Rights were curtailed in the Lotha area with restrictions imposed on their method of damming for fishing, and imposition of duties for fishery rights in

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272 Tour Diary of A.W. Davis, Deputy Commissioner Naga Hills, 1891-97. (Secret Department).
273 Ibid.
274 Ibid.
275 Ibid.
276 Ibid.
277 Tour Diary of A.E.Woods, Deputy Commissioner Naga Hills, 1901. (Secret Department).
278 Tour Diary of A.E.Woods, Deputy Commissioner Naga Hills, 1899. (Secret Department).
the Doyang\textsuperscript{279} and as also were the case in the Dhansiri Rivers. The colonial administration further saw the completion of construction of an iron suspension bridge over the Dikhu,\textsuperscript{280} took assessment of suspension bridge build over Killeki River\textsuperscript{281}; imposed restrictions on Lhosiapu village’s use of fishing nets\textsuperscript{282} and punished Solhupu village for planting \textit{panjies}.\textsuperscript{283}

An escalation of colonial intervention over traditional customs and rights was seen in the example of the prohibition imposed on cultivation of water field on Kamima and kipfoma khels of Kegwema village, with their land dispossessed permanently as mark punishment for rioting against the administration\textsuperscript{284}; this (and in countless other land settlement cases) shows not just interference in the mode of cultivation as practiced by the Angami tribe but also the permanent dispossession of ancestral lands; thereby indicating the complete authority of Colonial Government who had displaced the customary laws of the Naga tribes.

The quote by McCabe that, ‘all disputes regarding rights in land, aqueducts, and all questions of inheritance, I decide as far as the general principles of equity permit in accordance with Naga Laws and customs’\textsuperscript{285} was not the true indication of the ground reality faced by the Naga tribes who were subjected to acceptance of an alien rule often under coercion and intimidation. While the tribes were allowed some sort of liberty to practice their traditions and customs, the claims of the communities were not allowed to override the colonial interests that in no event could the Naga tribes use the forest wealth at the cost of wider colonial interests. The inhabitants of the Naga Hills did not take too kindly to the new impositions of forest laws as the settlement of cases by the imposition of codified law superseding the traditional authority held by the chiefs and elders of the Naga tribes supplanted the traditional practices of the Naga tribes. This denial of village forest rights often provoked

\textsuperscript{279} Judicial Department, Resolution on the Naga Hills General Administrative Report for 1883-84.
\textsuperscript{280} General Administrative Report for 1897-98 (General).
\textsuperscript{281} Tour Diary of A.E.Woods, Deputy Commissioner Naga Hills, 1900. (Secret Department).
\textsuperscript{282} Ibid.
\textsuperscript{283} Ibid.
\textsuperscript{284} Tour Diary of A.E.Woods, Deputy Commissioner Naga Hills, 1901. (Secret Department).
\textsuperscript{285} As seen in a quote by McCabe, the Deputy Commissioner of the Naga Hills District; Judicial Department, Resolution on the Naga Hills General Administrative Report for 1884-85.
rebellions. Even where discontent did not manifest itself in open rebellion, it was expressed through arson, noncompliance, and breaches of the forest law.

**Commodification of water in Post-Colonial Period-Nagaland**

Even in the post colonial era, Nagaland had to undergo drastic changes made a compulsion by decisions taken by a post independence government in India. The true nature of statute laws codified and imposed and prolonged dependency on this capricious state device used right from the colonial era and the progressive empowerment of officialdom, lead to the depletion of rights of an individual making intrusive control by the state of the greatest significance. For a long time, there was a general feeling among the Naga tribes that all the arguments in favor of preservation and development of forests and its resources were intended for exploitation and interference in their traditional practices, rather than to aid them.

The transition from community ownership to private ownership/ privatization became prominent after Nagaland became a State in 1963. After Statehood, Naga villagers started to sell their land. The money economy entrenched itself in Naga society and as the gap between the rich and the poor widened exorbitant prices were offered to communities to sell their lands. Population growth in villages also played a role in the clamour for land or water ownership leading to conflicts at all levels, whether, between villages, clans or individuals. At the departure of the colonial government, some land ownership issues were left unsettled. There were areas of “no man’s land” in the Naga society with both the post colonial government and Naga villagers claiming the land or water source as under their jurisdiction. These contentious issues have yet been left unsettled, with the Naga villagers having the general view that their land or water sources have been ‘occupied’ by an alien government.

From 1961 to 1963, forests of Nagaland were in charge of the Chief Forest Officer. After the formation of the Nagaland State, Nagaland Forest Act, 1968 was passed which entitles the Government to carve out forest reserves on the basis of awarding compensation to the holders or authorities who own the forests, after assessing the existence, nature and extent of any rights claimed by them. The state government is empowered to constitute, reserve, protect, village forests and demarcate them. At present, the reserved forests, protected forests, Wildlife sanctuaries and National parks are under the control and management of the Forest Department. The Village
forests and water resources are under the control and management of the land owners according to 371A of the constitution, which granted a special status to the state of Nagaland enabling the people to be protected and governed by Naga customary law and procedure, in matters relating to religious or social practices of the Nagas, administration of civil and criminal justice involving decisions according to Naga customary law, and ownership and transfer of land and its resources. Forest and water management in Nagaland is therefore a very unique one due to the land ownership pattern. Under the traditional system of land ownership, the land and water resources is owned either by the village community as a whole or by a clan or clans within the village or by individuals.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>OWNERSHIP</th>
<th>FOREST AREA IN HECTARS</th>
<th>% OF TOTAL FOREST AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>State</td>
<td>82,472</td>
<td>28.47</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>2,07,198</td>
<td>71.53</td>
</tr>
<tr>
<td>2001-02</td>
<td>State</td>
<td>1,00,823</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>7,62,107</td>
<td>88.3</td>
</tr>
</tbody>
</table>

The probable reason for the decrease in state government share of the forest reserves within a 30 years’ time span from 28.47% (1971) to 11.7% (2001) are taken to be inaccuracies in survey records of both government and private forests; till today, according to a forest department report there are no clear surveyed records available on private forests of the state. Other reasons for such decline are seen in cases of ‘reclaiming’ of traditional lands from the government, often leading to encroachment in reserved forests.

An example of such was seen in the Morung Express, a leading newspaper in Nagaland, which reported in a news item that, ‘after purging Intanki National Park from encroachments, the Nagaland Forest department is intent on removing another thorn in the flesh - “illegal hutments” mushrooming along boundary walls of Rangapahar Zoological Park. Rangapahar reserved forest originally boasted of 800

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hectares of lush forest and vegetation, an ideal wild life habitat. Rampant encroachment of the forest over the years has reduced the forest (now converted to a zoological park) to its present mere 176 hectares. Despite evictions done in the past, the alleged encroachers have on numerous occasions taken recourse in the lengthy route of legal proceedings to frustrate the government’s eviction drives. The latest legal battle between the State Government as petitioner and Thilixu ‘B’ village as respondents is still pending in the high court.  

The water situation in Nagaland is both unique and complex as though a variety of policies, legislation and institutional initiatives have formulated by the government to better manage its resources, still resource constraints have become increasingly apparent and water management made complex due to existing land ownership rights, directly affecting water resource ownership and management.

Due to the application of Article 371 a unique division of rights exist between the State Government and the people of Nagaland. Water being a state subject, although the states have been empowered to enact laws or frame policies related to water, Nagaland has yet to set up organizations/bodies for planning and allocating water for various purposes or to implement a water policy; moreover, water management in Nagaland is made more difficult because the water resources are often situated within the privately owned land, belonging to villagers either collectively or individually.

In Nagaland State the concept of water privatization was unknown. Water was considered a “public and common” good. Traditional ponds, springs, rivers, had been in use by the various Naga tribes, very often with the involvement of the different khels of the village in management and upkeep of the water sources. The water sources were privately owned by the villages, khels, clans or individuals, and as a precious commodity, all water sources were jealously guarded by the different villages and tribes, however, there was not a single instance where water was sold as commodity for a price. Even in case of water depletion in a traditional spring or pond of a particular khel in a village, members of the said khel were free to fetch water from another khel.

289 The Morung Express, *Forest dept. intent on curbing ‘encroachment’*, 26th April, 2012.
After attainment of statehood in 1963, the Public Works Department (PWD) played a pivotal role implementing water supply schemes in both rural and urban areas in Nagaland. By 1966-67, 18 schemes were completed under PWD, including supply of water through piped lines to nine villages. In the following years Dimapur, Kohima and Mokokchung water supply were completed, besides augmentation of water supply to Tuensang, Mon and Phek towns.²⁹⁰

Unlike other states of India, the cultivation method of Nagaland is not water intensive as the traditional shifting cultivation (jhum cultivation) does not require irrigation canals. This method had been in practice since the pre-colonial era as it was most appropriate according to climatic conditions and physical terrain of the Naga country. Following statehood, records show that the concerted efforts of both the forest as well as the agriculture department could not reduce this mode of cultivation and therefore the only irrigation project was minor projects where a number of pumping sets were supplied to farmers at foothill areas for lift irrigation.²⁹¹

Upto 1966-67, only 7 towns were electrified by the use of diesel generating units; later 24 additional towns were electrified, 11 by diesel generating units and 13 towns by power purchased from the Assam State Electricity Board. Upto the Fourth Plan period, hydro-electric projects were still in the investigative stage.²⁹² In recent years, it is the Central Policy on power sharing, that Nagaland is getting power at cheaper rate from Central projects like Loktak, Kopili, Ranganadi and other hydro and thermal plants in the region since the State has a limited hydro power potential. One such potential, namely the Tizu-Zungki Hydro Electric Project with a capacity of 150 MW which was conceived and initiated for action in early 1980s, still remains cold. The National Economic Policy was declared in 1991 empowering liberalization and private participation in infrastructure development in economic ventures. The Electricity Act was amended in 2003 and in this Act, besides many important reforms²⁹³ has opened up the Power Sector for participation of Private Developers in

²⁹¹ Ibid. p.13.
²⁹² Ibid. p.29.
²⁹³ Such as the creation of Central Electricity Regulatory Commission (CERC) / State Electricity Regulatory Commission (SERC) etc.
hydro power generation and transmission utilities. However, in Nagaland privatisation has not been realized in any hydro power projects as yet. Even the ongoing Dikhu Hydro Project, is reportedly facing a number of roadblocks even before ground breaking on account of some dissensions with a private developer, and also with the landowners.\textsuperscript{294}

In later years like other states, Nagaland government also started to plan, design and execute water supply schemes and continued to operate through their State Public Health Engineering Department (PHED). The latest statistics (as on 1.4.2013) shows that the department is providing water supply facility to a total of 1460 habitations in Nagaland in rural areas.\textsuperscript{295} With supply also in urban areas, the yearly water tax revenue realizations in the year 2012-13 (upto January 2013) stood at 131.54 lakhs.\textsuperscript{296} Although, the PHED has made much progress in providing piped water supply to most parts of Nagaland, because of logistical problems and also affordability factor, many parts are still outside its purview.

Due to an incremental growth of population in Nagaland placed at 1,98,0602 according to the 2011 census, there is water stress in many parts of Nagaland and water supply and increasing recurrent power cuts has become one of the most vital issues that need to be addressed. However, it is clearly seen from this research work undertaken that the government alone is not able to provide necessary expansion of services to a growing population. Whether in the rural or urban set up the governmental agency PHED has not been able to provide or implement uniform service all over Nagaland and target levels of benefits has not been achieved uniformly all over Nagaland. In such a scenario, the Nagaland government still continues to struggle find a common platform with the landowners to obtain sharing rights of water resources.

The term “water privatization” officially refers to the process of transferring legal public sector “responsibility” of water resources (provision of water, sanitation) to the private sector which then is in charge of managing, producing, and dispersing the

\textsuperscript{294} I. Lanu Toy, ‘Power Development in the State’, A paper presented in the Seminar on Power Sector Reform in Nagaland organised by the NERC, Kohima.
\textsuperscript{296} Ibid. p. 15.
water as an economic good. The private sector of a country’s economy is the sector
that is composed of and “operated” by private groups or individuals for reasons of
profits and cannot be controlled by the state. The type of privatization/commodifica-
tion seen in Nagaland is the participation of private operators in an
unorganized market where most of these operators do not own the water source; but
their capital investment though minimal gives high profits. What have transpired in
recent years are also the visible public-private partnerships (PPPs) where the private
player is in charge of operation, management and distribution improvement. One such
case is the Dzükou Bulk Water Supply Scheme for Kohima under the North East
Region Capital Cities Development Investment Program, through a loan acquired by
the Central Government from the Asian Development Bank (ADB). The proposed
funding is in the ratio of 70:30 between ADB and the Government of India as
according to the feasibility report of the scheme, May 2013. The Urban Development
Department (UDD) is the executing Agency (EA); implementing agency is the State
Investment Program Management and Implementation Unit (SIPMIU). However, a
private enterprise M/s CDM Smith Inc. (CDMSI) has been appointed as the design,
Construction supervision & Management Consultant (DSMC) for Kohima. Other
participants in the water sector are basically unregulated private entrepreneurs, either
land owners themselves or those purchasing water from the source directly from the
land owners and selling it at a superior rate to the public.

Owing to water scarcity especially during the peak of the lean season, many existing
consumers of the PHED water supply are withdrawing their connections. Such
customers are shifting to the supply through PVC pipe lines of the private operators
who provide a more reliable supply at regular intervals except during the peak of the
lean season. The PVC pipe lines commonly used by private operators have the
advantage of navigating through the various localities in over head space sometimes
even balanced on telephone line poles, as seen in different localities especially in
Kohima town. The monthly charges levied for each consumer ranges from Rs. 1000
to 1,500. Apart from this, additional investments have to be made by the consumer by
paying 6000-10,000 rupees for installation of PVC or other pipeline connections from
the water source to the consumers’ residences.

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297 Poly vinyl chloride pipes, a cheaper and more convenient option than the DIP: Ductile Iron Pipe.
Another source of commercialization, are the private water vendors who supply water to consumers at a very steep rate. Currently, in Mumbai, a private tanker carrying 10,000 litres of water costs between Rs. 800 and Rs. 1300 and around 2,500 private water tankers with a capacity of 10,000 litres ply in the city. In cities like Pune, the Pune Municipal Corporation took the initiative to regulate prices by fixing prices of water tankers; that the 10,000 litres tanker should provide service at Rs. 600, 15,000 litres at Rs. 700 and 20,000 litre at Rs. 800 per trip. In the case of Bangalore, 500 water tankers in the city are owned by around 200 private water tanker owners. Private operators supply through tankers for Rs 250-300 for a full tanker of water, about 4,000 litres, in 2013; has an increase to Rs. 600 recently. Private suppliers have jacked up rates because the demand is high. An operator has mentioned that "If the destination is close by, we charge Rs. 350-400. As the distance increases, the rate goes up." In comparison, one such water tanker driver in Kohima had mentioned to this researcher through interview that there are two kinds of vehicles that supply water; a pick-up truck fitted with plastic water tanks and water tankers. They pay the water source owners (usually landowners having perennial water source flowing though their land) a nominal sum of Rs. 70 for a pick-up truck carrying upto 2000 litres and Rs. 150 for a tanker with 5000-7000 litres capacity. The water is then sold in Kohima for Rs. 500-Rs. 2000 for 1000 litres. In localities in the northern part of Kohima (Lower Bayavu hill and Kruoliezou area) where private piped water supply is not available due to severe water scarcity in the area, private tankers are doing brisk business charging a rate as high as Rs. 2000 per 1000 litres. Consumers staying in rented houses, residences without PHED pipeline connection, hotels and other business establishments are seen as the main buyers from such operators.

Another segment of this water business is pushcart water vendors commonly known as ‘paniwallas’. In Bangalore city for instance, water tankers or pushcart water vendors would sell a pot of water at the cost of costs Rs. 3-5. In Nagaland ‘paniwallas’ consist mainly of migrant workers from North India, who work as daily

299 The Indian Express, PMC fixes rates for water tankers, Express News Service : Pune, July 07 2009.
301 Ibid.
wage labourers in the day time and sell water in the early mornings and late evenings to augment their income. The rate commonly charged for a bucket of water is Rs. 30 in Kohima town.

There is no mechanism to monitor the quality of the untreated water supplied by these vendors and in addition there is no price regulation by any agency for fixing the rate of water tankers, pipe water suppliers, or the ‘paniwallas’. In fact, most of the operators are individual players in the very lucrative private water business which is flourishing despite the soaring rate of water all over Nagaland. They are not necessarily owners of the water sources; they rather purchase the water according to their own capacity to be sold to the public at an enhanced rate later.

A relatively new entrant to the water commercialization business in Nagaland is the packaged bottled water business. The bottled water industry is estimated to be a whopping Rs 1,000 crore business (Business Today, 2001). It has grown at a rate of 40-50% annually over the past four years or so. Keeping in mind consumer interest and public health, the Union Ministry of Health and Family Welfare issued a notification on September 29, 2000 for all packaged water manufacturers and traders, according to which ISI certification from Bureau of Indian Standards was made mandatory. According to the Bureau of Indian Standards, there are 1,200 bottled water factories all over India (of which 600 are in the state of Tamil Nadu) and over 100 brands are battling over the bottled water market. By the mid-1990s, many more players had entered the market, and competition was stiff: Coca-Cola’s Kinley, Pepsi’s Aquafina, Nestle’s Pure Life and a host of smaller companies. By 2002, Kinley overtook Bisleri, with a market share of 35.1% compared to Bisleri’s 34.4%. As globalisation opens up opportunities for private players, investing in water and/or manipulating water scarcity makes increasingly good business sense for multinational corporations, entrepreneurs, individuals, etc. Most of the brands compete in a very narrow market segment, comprising predominantly the travel, tourism, caterers, restaurants, and hospital segments. Separate standards have been formulated for packaged drinking water (IS14543: 98) and for packaged natural mineral water (IS 13428:98). 302

A number of bottling plants have been set up in Nagaland, in the Dimapur vicinity with brand names such as ‘Viva’, manufactured by Viva Beverages, and another new entrant under the brand name ‘Aiko’, based on Canadian technology, is the bottling plant launched by Inoto Beverages, with 300 ml, 1 litre, 1.5 litre and 5 liters bottles. The plant processes and bottles about 9,000 bottles of drinking water daily, which are then distributed to both Dimapur and the Nagaland capital Kohima, as well as Imphal, Manipur.\textsuperscript{303} Other brands include Zion, Diamond, Delight, Monte, Oasis, Dzukhû, etc.

To show the reach and extent of commercialization of water in Nagaland, four case studies have been taken up for this research work namely covering the Mon District, Kohima District, Mokokchung District and the Wokha District. Data taken from the four districts is pertinent to prove and substantiate to the argument that commodification of water is very prevalent in Nagaland. In such a scenario, although water is a basic right according to the Fundamental Rights of the constitution, the common people are compelled to purchase even drinking water from unregulated private water suppliers at a very high rate, causing them much inconvenience and draining a large share of their income on water. Again due to the traditional land ownership system the Government and the landowners are often at a deadlock situation unable to formulate a plan of how share, or regulate the supply of water. Commodification of water resources in Nagaland are therefore on an all time high, leading to contestation of water between various landowners, whether villages, communities, clans, or individuals. With the landowners, villagers, or \textit{khels} all claiming compensatory benefits for usage of water from their area, the Nagaland State PHED in return issued a notification that there shall be no claim to any appointment to Government Service basing on water source and other land ownership rights.\textsuperscript{304}

\textsuperscript{303} The Nagaland Post, \textit{Aiko mineral water launched}, Dimapur, 16 August 2010.
\textsuperscript{304} Annexure XI
Mon District

The responses from Mon district are shown in *chart 1*; 71% said that they did not purchase water from private water suppliers; 20% replied ‘yes’ and 9% replied ‘sometimes’ indicating purchase of water from private water suppliers. Those that were dependent on private water suppliers, when asked as to what kind or type of suppliers sold water to them, 67% replied ‘private vehicles’ such as pick up vans, jeeps, etc., 20% ‘water tankers; 13% said local ‘paniwalla’ a kind of pushcart water vendor, as seen in *chart 1.1*. Data from Mon district indicates that 71% of respondents were not dependent on private water suppliers and did not purchase water from them. Only 20% purchased from private water suppliers. 67% of private vehicles consisting of smaller pick up vans, jeeps were the choice of the respondents’ when buying water from private suppliers.
47% respondents who purchased water from private water suppliers said that they purchased it from September to February, 33% March-May, 13% ‘all year round’ and 7% June-August as seen in chart 2. Data in chart 3 shows 73% respondents’ who gave the main reason for purchase of water as ‘insufficient supply from public distribution system (e.g. PHED)’; 14% replied ‘insufficient supply from own water source in residence’; and 13% ‘insufficient supply from pond/ water source in locality’. The above responses indicate that water was generally purchased all year round but 47% made purchases during September to February and 33% March-May. The main reason for purchase from private suppliers was indicated by 73% of respondents as ‘insufficient supply from public distribution system (e.g. PHED)’.
The monthly amount spent on purchase of water from private suppliers are seen in chart 4, 47% spent Rs. 100-1000, 40% Rs. 1000-5000, and 13% Rs. 5000-10,000. When the respondents were asked their opinion on the amount of money spent on water, 13% said it was ‘expensive’, and 88% ‘very expensive’ as in chart 5. The above responses show that a majority 47% spent Rs.100-Rs.1000 and 40% spent Rs. 1000-Rs.5,000 on purchase of water from private suppliers. An overwhelming 87% majority respondents’ said the amount of money charged/fixed by the private water suppliers was ‘very expensive’. There was no single respondent from Mon district said that the amount charged by private water suppliers was affordable.
Respondents from Mon district were asked if they were satisfied with the quality of water provided by private water suppliers, and 75% replied ‘no’ and 25% replied ‘yes’ as seen in Chart 6. Responses were given (Chart 7) to the question of satisfaction with service provided by the private suppliers; 65% replied ‘no’ indicating that they were not satisfied by any means and 35% replied ‘yes’ to the same question. The above data gathered from Mon district shows that generally the respondents were not satisfied with both the quality of water and quality of service provided by the private water suppliers; 75% and 65% responses respectively, proves this very fact.
Chart 7.1 shows responses to the question of reasons for dissatisfaction with private water suppliers; 53% stated that they were dissatisfied because it was ‘very expensive’ and 47% said that it was because of ‘erratic supply’ of water; no other reasons were mentioned. In order to assess the reach of the private water suppliers, a question was raised to ask if the residences of the respondents’ were accessible to private water suppliers; chart 8 shows the responses whereby 81% replied ‘yes’ and 19% ‘no’. The above data indicates that cost of water was a factor of dissatisfaction for 53% and erratic supply for 47% of the respondents. Also only small 19 % respondents’ residences were in accessible to private water suppliers due to various reasons stated in the next chart.
The respondents gave various reasons for inaccessibility of residence to private water suppliers, as seen in **chart 8.1**. Out of the total respondents 100% said ‘no motorable road’ and no ‘other reasons’ were offered. The data gathered from the responses in Mon district shows that the main reason for inaccessibility of private water suppliers to the houses of the respondents’ was lack of motorable road.

Several questions were asked in order to assess the extent of commodification (water sold as a commodity) of water, the responses of which are given below. **chart 9** shows responses to the question of whether bottled drinking water was purchased by the respondents in Mon district; 58% replied ‘sometimes’, 27% ‘yes’, and 27% replied ‘no’. **Chart 10** shows responses to the question of whether 20 litres water jar was purchased; 67% replied ‘sometimes’ 17% ‘no’ and 16% ‘yes’. The responses stated above show that only 15% said that they did not make purchase of the item. However, in general bottled drinking water does not seem to have been very commonly used as 58% said they purchased it only sometimes. Also 87% said 20 liters water jar was purchased only sometimes.
Chart 11 shows responses to the question for reasons why bottled drinking water was purchased; 67% replied ‘for convenience’, 25% ‘purity of water’, 5% ‘for health reasons’ and 3% ‘other reasons’, which included ‘for travelling only’, ‘used for special occasions’. Purchases for the above mentioned items were for the sake of convenience for most (67%); although other reasons were also mentioned. The question was raised as when bottled drinking water was purchased as seen in chart 12; 71% replied ‘for parties/weddings/meetings’ 15% ‘while travelling’, 13% ‘during shortage of water at home’ and 1% ‘other reasons’ which included ‘buy for daily usage’.

Chart 11

When asked if bottled drinking water was expensive, 97% replied ‘yes’ and 3% ‘no’ as seen in chart 13. When the respondents were asked if they purchased bottled drinking water for household use on a daily basis, as seen in chart 14, 59% replied ‘no’, 33% ‘sometimes’ and 8% ‘yes’. The above responses show that purchase of bottled drinking water was usually reserved for particular occasions and was not used on a daily basis. The reason for the sporadic purchases may have been the cost factor as 97% considered packaged water as an expensive commodity. It was seen that only 8% of the respondents from Mon district used it on a daily basis.
Kohima District

**Chart 1**

*Water supply by private water distributors*

- Yes: 41%
- No: 32%
- Sometimes: 27%

**Chart 1.1**

*Types of private water suppliers*

- Water tankers: 33%
- Local (deshwalli) paniwalla: 33%
- Private vehicles: 17%
- Other reasons: 17%

*Chart 1* shows the dependency of the respondents from Kohima District on private water entrepreneurs. It shows that 32% of the respondents were dependent on private water suppliers for their needs, 41% said ‘sometimes’ whereas 27% said ‘No’. Those that were dependent on private water suppliers, when asked as to what kind or type of suppliers sold water to them, 17% said local ‘paniwalla’ which is similar to pushcart water vendors, 33% ‘water tankers and 17% ‘private vehicles’ such as pick up vans, jeeps, etc., and 33% private water piped lines carried by gravity from water source as seen in *chart 1.1*. This indicates that, 41% of the respondents did not purchase water from private water suppliers, but the rest were either totally dependent or partially dependent on them. 50% bought water from local deshwali ‘paniwalla’ usually North Indians settled in Kohima district who sell and deliver water to homes, others were dependent on water tankers and private vehicles.
The months of year when water is purchased from private players is indicated by responses seen in chart 2, where 75% respondents said December-February, 21% ‘all year round’ and 4% ‘March-May’. The main reasons for purchase of water from private suppliers is listed in chart 3, ‘insufficient supply from pond/water source in locality’ was 63%, 12% ‘insufficient supply from PHED source’, 12% ‘insufficient supply from own water source in residence’ and 13% ‘others reasons’ for which some responses were, ‘for all of the above reasons’, and for others ‘compelled to purchase for hotel business’. This data shows that a maximum 75% felt the need to purchase water from private suppliers during December-February, a post monsoon season and for 21% ‘all year round’ suggesting that some private parties were supplying water all year round. Reasons for purchase were mostly insufficient supply for respondents in Kohima district whether from local pond/stream, from PHED supply or even insufficient supply at residence.
The monthly amount spent on purchase of water from private suppliers are seen in chart 4, 50% spent Rs. 100-1000, 43% Rs. 1000- 5000, 4% Rs. 5000- 10,000, and 4% Rs. 10,000-20,000. When the respondents were asked their opinion on the amount of money spent on water, 46% said it was ‘expensive’, another 46% ‘affordable’, and 8% ‘very expensive’ as in chart 5. As the respondes indicate, a half of the respondents on an average spent Rs. 100-1000 per month, and 43% Rs. 1,000-5,000, however, from the response of a smaller number of respondents, data shows that households in Kohima district spending a huge amount of upto Rs.20,000 for their various needs. More than half of the respondents said that the amount they spent on purchase from private suppliers in Kohima district, were either ‘expensive’ or ‘very expensive’.
As shown in chart 6, 72% of the respondents from Kohima district said they were satisfied with the quality of water from private suppliers, whereas 28% said ‘No’ indicating that they were not satisfied with it. When asked if satisfied with the service provided by the private water suppliers, 67% said ‘Yes’ and 33% ‘No’ as shown in chart 7. Data figures indicate that 72% of the respondents who purchased water from private suppliers in Kohima district expressed satisfaction for quality of water supplied and 67% expressed satisfaction with the service of the private water suppliers. Therefore, in Kohima district, respondents purchasing water from private source seem to be satisfied with both the quality of water and service provided to them.
When asked for the reasons for their dissatisfaction as seen in chart 7.1, 60% said ‘very expensive’, 24% said ‘erratic supply’ and 16% gave ‘other reasons’. Some of the ‘other reasons’ given includes ‘erratic pricing of water’, ‘difficulty in finding suppliers as they don’t have office but are independent players’, and ‘unable to negotiate price for water’. In chart 8 data shows that 85% of the respondents said their residence is accessible to private water suppliers, 15% said ‘No’. This data shows that the respondents were generally satisfied with the quality of water and service provided by the private water suppliers, but out of those who expressed dissatisfaction, 60% expressed that it was ‘very expensive’, others gave reasons suggesting that the private water supply sector was not regulated through any agency, and therefore with no checks and balances in the system and without uniform pricing. Otherwise, most respondents’ homes were accessible to the private water suppliers.
The respondents gave various reasons for inaccessibility of residence to private water suppliers, as seen in chart 8.1. Out of the total respondents 45% said ‘no motorable road’ and 55% ‘other reasons’. The ‘other reasons’ given included ‘no knowledge of private suppliers phone numbers since it is not listed anywhere’, ‘no supply in our colony since it’s far from main town’, and ‘water suppliers take only large supply in our colony’.

Commercialization of water can be seen not only in bulk supply for household consumption, but also in the packaged bottled water business. In order to assess the extent of penetration of the selling and consumption of packaged drinking water in Kohima district, as seen in chart 9, out of the total respondents, 64% said ‘no’ to the question as to whether they purchased bottled drinking water, 28% ‘sometimes’ and 8% said ‘yes’. When asked whether they purchased bottled 20 litres water jar for household use, 88% said ‘no’, 9% ‘sometimes’ and 3% ‘yes’ as seen in chart 10. The above data indicates that the use of packaged bottled drinking water is still not very widespread, as only 8% said they bought it regularly and only 3% bought the 20 litres’ water-can. Also the respondents who bought packaged bottled drinking water purchased such an item occasionally.
When asked the reasons for purchase of bottled drinking water as in chart 11, 51% said ‘for convenience’ 25% ‘purity of water’ 9% ‘for health reasons’ and 15% stated other reasons, which included ‘for use during travelling’, and ‘for hygienic reasons’. As seen in chart 12 bottled drinking water is purchased by the respondents 52% for ‘parties/weddings/meetings’, 39% ‘while travelling’ 5% ‘during shortage of water at home’, and 4% ‘other reasons’ which included ‘when at outpost during official work’. As seen by the data, bottled drinking water was bought mainly for special occasions and for use during travels etc., this shows that daily utilization and consumption of the item is not common. It was an item bought sporadically for specific occasion or need.

In chart 13, 64% of the respondents said ‘yes’ when asked if bottled drinking water is expensive, 36% ‘no’. When asked if the respondents purchased packaged drinking water for daily household use, 92% said ‘no’, 7% ‘sometimes’, and 1% ‘yes’, as in chart 14. Most of the respondents said that it was an expensive commodity or item and an overwhelming 92% majority said they did not purchase bottled drinking water for daily household use. The pricing factor may have been the reason why domestic bulk consumption is still uncommon in Kohima district.
Chart 1 shows responses to the question of whether the respondents availed the services of the private water suppliers. 36% replied ‘yes’; 57% replied ‘sometimes’ and 7% replied ‘no’. Chart 1.1. shows 56% respondents saying they bought water supplied from private ‘water tankers’, 33% ‘private vehicles’ in use such as mini pick-up trucks, jeeps, etc., 7% replied local ‘paniwallas’ usually meaning migrant workers from outside the state carrying water for a living, and 4% stated ‘other reasons’ which included ‘private PVC pipe lines from water source’. This shows that in Wokha district 36% respondents were dependent on private water supply and 57% were also partially dependent on them. Most of the respondents were using the services of private ‘water tankers’. A point to note here is the 4% respondents who said private pipe lines supplied water to the consumers; this case was similar the example seen in Kohima where parallel private plastic pipe line were fitted next to PHED lines.
The period water was purchased from private suppliers is shown in chart 2; whereby 41% stated December-February, 33% March-May, 22% ‘all year round’ and 4% ‘June-August’. The reasons for purchase of water from private suppliers are listed in chart 3, 22% said ‘insufficient supply from own water source in residence’, 17% ‘insufficient supply from pond/water source in locality’, 11% ‘insufficient supply from public distribution system (e.g. PHED), and 50% quoted ‘other reasons’ which included ‘all of the above reasons’, ‘large volume available at required timing’, etc. This shows that private water suppliers made more supply during the months December-February based on the reply of 41% respondents. Also the main reasons for purchase had basically been insufficient supply from all sources.
Chart 4 shows responses to the question of monthly amount spent on purchase of water from private suppliers; 52% respondents replied saying that they spent ‘Rs.100-Rs.1,000’ and 48% ‘Rs.1,000-Rs.5,000’; no other figure /amount had been mentioned. Opinions were also expressed on the amount spent on purchase of water from private suppliers as seen in chart 5. 52% had the opinion that the cost for private water supply was expensive and 48% replied that it was affordable. The data above shows that respondents were almost even in contrasting opinions; 52% and 48% respectively said that private water supply was ‘expensive’ and ‘affordable’. Another factor seen was that there were no respondents who said that they had spent above Rs. 5,000 and above range, despite 39% coming from a household of 5-10 members and 3% from 10-15 member households.
Responses are seen in chart 6, to the question of whether the respondents from Wokha district were satisfied with the quality of water from private suppliers; 73% responded ‘yes’ and 27% ‘no’. A response to another comparative question is seen in chart 7, whereby the respondents were asked if they were contented with the service provided by the private suppliers; 72% replied ‘yes’ and 28% ‘no’. The above data shows that in Wokha district, a distinct response was visible in the responses to both the questions. 73% expressed satisfaction with the quality of water and another 72% satisfaction with the quality of service provided by the PHED.
Chart 7.1 shows the responses given for dissatisfaction with service provided by the private water suppliers; 52% was quoted as saying the main reason was ‘erratic supply’, 38% ‘very expensive’ and ‘10% quoted ‘other reasons’ such as ‘difficult to contact private suppliers’, ‘our locality is too far for frequent supply’. Chart 8, shows responses to the question of accessibility of private water suppliers to the residences of the respondents; 69% said ‘yes’ and 31% ‘no’. The above data shows that besides other reasons for dissatisfaction, 52% said ‘erratic supply’ of the private suppliers was the main reason. In Wokha district, most of the residences were accessible to private water suppliers; only 31% were quoted as saying that their houses were not accessible to private water suppliers; showing the reach of the private suppliers.
Those who replied that their residences were not accessible to the private water suppliers gave various reasons for this factor. Chart 8.1 shows that the main reason quoted by 87% was ‘no motor-able road’ and 13% quoted ‘other reasons’, which were mainly ‘distance factor’. The above data indicates that private water distributors had a well established line of supply in Wokha district, although some residences were inaccessible due to lack of motor-able road.

Commodification (water sold as commodity item) of water can be seen not only in bulk supply for household consumption, but also in the packaged bottled water business. Chart 9 shows, the extent of penetration of the selling and consumption of bottled drinking water in Wokha district. As seen in chart 10, out of the total respondents, 61% said ‘no’ to the question as to whether they purchased bottled drinking water, 31% ‘sometimes’ and 8% said ‘yes’. When asked whether they purchased bottled 20 litres’ water jar for household use, 83% said ‘no’, 14% ‘sometimes’ and 3% ‘yes’ as seen in chart 40. The above data indicates that the use of packaged bottled drinking water was still not very widespread, as only 8% said they bought it regularly and only 3% bought the 20 litres water jar.
The reasons for purchase of bottled drinking water in Chart 11, shows that 68% said ‘for convenience’, 12% ‘purity of water’, 17% ‘for health reasons’, and 3% stated other reasons, which included ‘for journey’. Chart 12 shows responses to the question of when bottled drinking water was purchased; 65% replied ‘for parties/weddings/meetings’, 28% ‘while travelling’, 7% ‘during shortage of water at home’, and 4% ‘other reasons’ which included ‘when on journey’. The data indicates packaged bottled drinking water was bought mostly for convenience sake (68%), for travel, and not as a regular item; it was bought mainly on special occasions (65%), daily utilization and consumption of the item was not common.

Chart 13, shows responses to the question of whether the cost of bottled drinking water was considered expensive; 69% of the respondents said ‘yes’ and 32% ‘no’. When asked if the respondents purchased bottled drinking water for daily household use, 91% said ‘no’, 7% ‘sometimes’, and 2% ‘yes’, as seen in Chart 14. It was an item bought sporadically and most of the respondents (89%) said that it was an expensive commodity or item and an overwhelming 91% majority said they did not purchase bottled drinking water for daily household use. The pricing factor may have been the reason why domestic bulk consumption was uncommon in Wokha district as was in the other districts (Kohima, Mon, Mokokchung) also taken as a case study.
Mokokchung District

Chart 1

Chart 1.1

Chart 1 shows the responses to the question of whether the respondents availed the services of private water distributors and purchased water from them, 54% said ‘yes’, 27% ‘sometimes’ and 19% ‘no’. To make a classification of the type of private water suppliers, a question was raised as to which type of private water suppliers catered to their needs, 73% said ‘private vehicles’, 22% ‘water tankers’, and 5% local ‘paniwalla’ as seen in chart 1.1. The above data shows that more than half of the respondents in Mokokchung district were dependent on the supply of water from private water distributors, only 19% said they had not made use of such services. 73% said they bought their requirements from ‘private vehicles’ such as jeeps, pick-up mini trucks, and the other 22% were dependent on ‘water tankers’, carrying a larger volume of water to satisfy the needs of bigger households.
For the respondents from Mokokchung district, as seen in chart 2, 81% purchased water from months of December-February, 12% from September-November, 7% ‘all year round’. When asked for the reasons they purchased water from private suppliers (chart 3), 56% replied ‘insufficient supply from public distribution system (e.g. PHED)’, 29% ‘insufficient supply from pond/water source in locality’, 8% ‘insufficient supply from own water source in locality’, 7% gave ‘other reasons’ which were mainly ‘for all of the above reasons’. As 81% respondents from Mokokchung district said they faced water scarcity, during the months December-February, data indicates that this may have been a common experience for the district as a whole. No single supplier/source seems to have sufficed the needs of the respondents, and particularly those who availed the services of the PHED.
Chart 4 shows the amount of money spent monthly on purchase of water from private suppliers, 58% spent Rs.1000-Rs.5000, 37% Rs.100-Rs.1,000, and 5% Rs.5,000-Rs.10,000. For 63% of the respondents the amount spent on purchase of water from private suppliers’ was ‘very expensive’, for 20% ‘affordable’ and 17% replied ‘very expensive’ as seen in chart 5. The above responses shows that the respondents from Mokokchung district spent a fairly high amount of money for purchase of water ranging from Rs.1000-Rs.5000 for 58%, and Rs.5,000-Rs.10,000 for 5% respondents. Reponses also shows that although only 20% found it affordable, the rest either found it ‘expensive’ or ‘very expensive’. Despite the prevalence of the high rate, the respondents seem to have been dependent on the supply of private water distributors.
As seen in chart 6, in responses to the question of whether the respondents were satisfied with the quality of water from private suppliers, 73% said ‘yes’ and 27% said ‘no’. Chart 7 shows the responses to the question of whether the respondents were satisfied with the quality of service provided by the private suppliers; 65% replied ‘yes’ and 35% ‘no’. The data indicates that the respondents from Mokokchung were generally satisfied with both the quality of water as well as the service provided by the private water suppliers. 73% expressed satisfaction with water quality and 65% expressed satisfaction with service quality.
The respondents who expressed dissatisfaction with the private water suppliers as seen in chart 7.1. were asked to give reasons for their dissatisfaction; 58% replied ‘erratic supply’, 42% replied ‘very expensive’ and no other reasons were offered for their dis-satisfaction. Chart 8 shows accessibility of residence to private water suppliers, and 87% respondents replied in the affirmative, only 13% replied ‘no’. This indicate that respondents from Mokokchung felt that erratic supply of water from private water suppliers was the main reason for their dis-satisfaction, followed by the high cost for water. Besides this, a high majority 87% said that in case there was any requirement, their residences were accessible to private water suppliers.
Chart 8.1 shows the reasons given for inaccessibility of residence to private water suppliers. 90% said ‘no motor-able road’ and 10% gave ‘other reasons’ which included ‘no supply in village’, ‘no supply in colony’. The responses show that for those respondents who had no access to private water suppliers, the main reason by 90% was given as ‘no motorable road’.

In order to assess the extent of commodification (water sold as a commodity)/commercialization of water in Mokokchung district, certain questions were asked pertaining to the issue. Chart 9 shows responses to the question of whether the respondents purchased bottled drinking water; 69% said ‘no’, 20% ‘sometimes’ and 11% ‘yes’. Chart 10 shows responses to the question of whether 20 litres water-can were purchased for the household; 81% replied ‘no’ 12% ‘sometimes’, and 7% ‘yes’. The responses from Mokokchung district show that 69% of respondents did not purchase bottled drinking water and an even higher percentage 81 % said that they did not purchase 20 litres water jar for use in their household. Only 11% said that they purchased packaged drinking water; and 7% said that they purchased 20 litres water jar for use in their household.
The question was raised as when bottled drinking water was purchased as seen in chart 11; 43% replied ‘while travelling’, 40% ‘for parties/ weddings/ meetings’, and 17% ‘during shortage of water at home’. The reasons offered for purchase of bottled drinking water as seen in chart 12 were ‘for convenience’ for 68% respondents, 21% replied ‘for health reasons’, 10% ‘purity of water’ and 2% ‘other reasons’ which included ‘used for journey’, ‘used during work in outpost’.

When asked if bottled drinking water was expensive, 65% replied ‘yes’ and 25% ‘no’ as seen in chart 13. When the respondents were asked if they purchased bottled drinking water for household use on a daily basis, as seen in chart 14, 87% replied ‘no’, 8% ‘sometimes’ and 5% ‘yes’. The above responses show that purchase of bottled drinking water was usually reserved for particular occasions and was not used on a daily basis. The reason for the sporadic purchases may have been the cost factor as 65% considered bottled water as an expensive commodity. It was seen that 87% of the respondents from Mokokchung district did not use it on a daily basis.
FINDINGS

A total of random 300 sample size were taken in order to assess the prevailing water situation and to give an accurate representation of daily water consumption, kinds of water usage, reliability of water distribution system through both governmental and private agencies, prevalence of water scarcity and nuances of water conflict and emerging commodification in Mon district, Kohima district, Wokha district and Mokokchung.

COMMODOIFICATION OF WATER RESOURCES

Chart 1: Water supply by private water distributors
1. The statistics show that Mokokchung district had the highest percentage of respondents purchasing water from private water entreprenuers at 54%, followed by Wokha district at 36%, Kohima district 32% and Mon district at 20%.

2. For partial dependence on purchase of water from private operators, respondents from Wokha at 57% topped the list, followed by Mokokchung and Kohima district both at 27% and Mon district 9%.

3. Mon district was least dependent on private water suppliers with 71% of respondents saying they did not purchase water from them. 41% from Kohima 19% in Mokokchung and 7% in Wokha district did not make such purchases.

Chart 2: Type of private water suppliers/operators
1. Most of the respondents from the four district engaged the services of the water tankers and smaller pick –up vehicles for purchase of water.

2. Pushcart water vendors mostly North Indian migrant daily wage workers selling water to augment their income, were seen as playing an increasingly bigger role in the unregulated water market with 17% in Kohima, 13% Mon, 7% Wokha and 5% in Mokokchung district saying that they bought water from such vendors.

3. In Kohima district 33% of private water pipe lines was carried by gravity from the water source. In Wokha district also 4% respondents said private pipe lines supplied water to the consumers. This was similar to Kohima district where parallel private plastic pipe lines were fitted next to PHED lines or overhung from telephone poles.
Chart 3: Months of Year (Purchase from Private Suppliers)
1. Maximum purchases from private operators were made in all districts between the months of December-February; 81% Mokokchung district, 75% Kohima district, 47% Mon district, and 41% Wokha district. This is the lean season without rainfall however lack of rainfall alone cannot be attributed to scarcity as Nagaland has a fairly high annual average rainfall.
2. Some private players were selling water to customers all year round. 22% respondents from Wokha district, 21% Kohima district and 7% Mokokchung and Mon district said they made purchases all though out the year. This shows that water supply from the PHED was either insufficient or the respondents had to make provisions to supplement it. Also those staying in areas out of reach of governmental agencies had to depend on the supply of private operators.

Chart 4: Reasons for Purchase of Water from Private Suppliers
1. The main reason for purchase from private suppliers was indicated by 73% of respondents from Mon as ‘insufficient supply from public distribution system (e.g. PHED)’; also 56% Mokokchung, 12% Kohima, and 11% from Wokha district stated the same.
2. Respondents in the four districts were seen to have been compelled to avail water from any source available and in case of insufficiency; they would purchase water from private suppliers. This is seen from the 63% responses from Kohima and 29% from Mokokchung that insufficient supply from pond/water source in locality compelled them to buy from private operators. Another reason stated was insufficient supply from own water source in residence.
3. The PHED water supply in Nagaland state is not on a daily basis, it can vary from 2-3 days in a week, with 1-3 hours of supply for a day.

Chart 5: Monthly Amount Spent on Purchase of Water from Private Suppliers
1. Private suppliers particularly cater to business establishments like hotels and restaurants as these do not have PHED water supply, the high spending therefore could be indicative of this.
2. A majority of respondents, 52% from Wokha, 50% Kohima, 47% Mon district and 37% from Mokokchung district spent Rs. 100- Rs. 1000 per month on purchase of water.

3. 58% respondents from Mokokchung district spent a fairly high amount of money for purchase of water ranging from Rs.1000-Rs.5000.

4. From the response of a smaller number of respondents, data shows that in Mon district 13% spent Rs. 5000 - 10,000, in Mokokchung district Rs.5, 000-Rs.10, 000 for 5% respondents and 4% in Kohima district. There were no respondents from Wokha district who spent money in this given bracket.

**Chart 6: Amount spent on purchase of water from private supplier**

1. There was no single respondent from Mon district said that the amount charged by private water suppliers was affordable. 87% said the amount of money charged/fixed by the private water suppliers was ‘very expensive’ and 13% stated “expensive”. In Kohima district for 46% it was ‘expensive’ and for 8% ‘very expensive’. Wokha district 52% commented that it was expensive; in Mokokchung district 63% respondents found it ‘expensive’ and 17% ‘very expensive’.

2. 48% from Wokha district and 46% from Kohima district stated that the private water supply rates was ‘affordable’ ; and 20% from Mokokchung said the same. These responses show that some section of the people have well accepted the steep running market rate of water without much reservation.

3. The respondents from the four districts seem to have been heavily dependent on private water distributors selling water as a commodity at a very high unregulated rate and who also functioned exclusive of any regulating agency.

**Chart 7: Satisfaction with quality of water from private suppliers**

1. The above data gathered from Mon district shows that generally that 75% respondents were not satisfied with the quality of water provided by the private water suppliers.

2. However, 73% respondents from both Mokokchung and Wokha district stated that they were satisfied with the water quality; as also 72% from Kohima district.
3. Quality regulation is still an issue left completely to governmental agencies and due to this factor there is no regulatory authority involved in water testing for the private water sector.

**Chart 8: Satisfaction with service provided by private suppliers**

1. The responses from three districts are similar. 72% from Wokha, 67% Kohima, 65% from Mokokchung district stated that they were satisfied with the service provided by the private water suppliers.

2. Only in the case of Mon district, 65% stated that they were not satisfied with the service.

3. The above responses shows that generally the private players are catering to the needs of the people in the above mentioned districts except Mon district, providing a good service despite the dissatisfaction expressed for its costly rate of water.

**Chart 9: Reasons for dissatisfaction with private water suppliers**

1. Responses from the four districts indicates that the high cost for water from private water suppliers was the main reason for their dissatisfaction; 60% in Kohima, 53% in Mon, 42% in Mokokchung and 38% in Wokha district expressed the same.

2. This was followed by erratic supply of water; with 58% from Mokokchung, 52% from Wokha, 47% from Mon and 24% from Kohima district expressing the same.

3. No other reasons were mentioned from Mon district and Mokokchung district. The other reasons mentioned from Kohima district were ‘erratic pricing of water’, ‘difficulty in finding suppliers as they don’t have office but are independent players’, and ‘unable to negotiate price for water’ suggesting that the private water supply sector was not regulated through any agency. For Wokha district responses included ‘difficult to contact private suppliers’, and ‘our locality is too far for frequent supply’.

**Chart 10: Accessibility of residence to private water supply**

1. Despite the topography and difficult hilly terrain most of the four districts have been shown as to be accessible to private water entrepreneurs showing their increasing reach in all districts of Nagaland.
2. In Mokokchung a high 87% had access to private water suppliers, followed by Kohima district with 85%, Mon district with 81%, and 69% in Wokha district.

3. Only a few percentages in all districts mentioned that they could not avail the services of the private water suppliers (due to reasons stated in the next chart finding); for instance, 31% in Wokha district, 19% in Mon district, 15% in Kohima district and 13% in Mokokchung district mentioned the same.

Chart 11: Reasons for inaccessibility

1. Out of the respondents who did not have access to private water suppliers the main reason given for inaccesibility of private water suppliers to the houses of the respondents’ was lack of motorable road; with 100% responses from Mon district, 90% in Mokokchung district, 87% in Wokha district, and 45% in Kohima district.

2. 55% of Kohima district respondents gave other reasons which included, ‘no knowledge of private suppliers phone numbers since it is not listed anywhere’, ‘no supply in our colony since it’s far from main town’, and ‘water suppliers take only large supply in our colony’. 13% from Wokha district stated ‘distance factor’ and 10% from Mokokchung district stated ‘no supply in village’, and ‘no supply in colony’.

3. This again shows that the private water sector is not a well organised sector. There is no central regulating agency therefore, supply is sectoral, haphazard and supply depends on demand. Moreover, when the distance is far from their supply circle then the suppliers would very often refuse to supply water.

Chart 12: Purchase of bottled drinking water

1. Commercialization of water can be seen not only in bulk supply for household consumption, but also in the packaged bottled water business. Several questions were asked in order to assess the extent of commodification (water sold as a commodity) of water, the responses are given below.

2. The responses shows that 69% from Mokokchung district, 64% from Kohima district, 61% from Wokha district and 27% from Mon district stated that they did not purchase bottled packaged drinking water.

3. Packaged drinking water does not seem to have been very commonly used although it had a pervasive presence in the market. 58% in Mon said they
purchased it only sometimes; 31% in Wokha district, 28% in Kohima, and 20% in Mokokchung stated the same.

4. 27% in Mon, 11% Mokokchung, 8% both in Kohima and Wokha district purchased bottled drinking water regularly.

**Chart 13: Purchase of 20litres bottled water for use in household**

1. The above data indicates that the use of bottled drinking water was not very widespread, as only 3% bought the 20 litres’ water containers to be used in their homes in Wokha and Kohima district, 7% in Mokokchung district and 16% in Mon district.

2. 67% in Mon stated that they purchased it sometimes, 14% in Wokha district, 12% in Mokokchung and 9% in Kohima district mentioned the same.

3. In Kohima 88% respondents did not commonly purchase 20 litres bottled drinking water, 83% in Wokha district, 81% in Mokokchung district and 17% in Mon district stated the same.

4. This shows that respondents from the four districts were still not open to the idea of regularly purchasing 20 litres bottled drinking water for their households. One factor could be due to the cost factor. At present in other states of India, 20-litre containers are sold between Rs.22 and Rs.30. Premium brands manufactured by large players come with a price tag ranging between Rs.60 and Rs.95. The price is usually doubled in Nagaland and maximum retail price (MRP) of the item is ignored by the retailers who usually pass the blame of the price hike on illegal taxation by some elements.

**Chart 14: Reasons for purchase of packaged drinking water**

1. The data shows that packaged drinking water was bought mainly for special occasions and for use during travels and for health reasons etc., this shows that daily utilization and consumption of the item was not common. It was an item bought sporadically for specific occasions or need. 68% from Wokha and Mokokchung districts, 67% Mon, and 51% from Kohima district bought it as bottled drinking water was convenient to buy.

2. 25% from Mon and Kohima, 12% from Wokha, and 10% from Mokokchung district said that they bought bottled water as it was pure and clean.
Chart 15: Packaged drinking water is purchased during?

1. The responses from the districts show that packaged drinking water was purchased mostly for special occasions like ‘parties/ weddings/ meetings’. 71% in Mon, 65% in Wokha district, 52% in Kohima district and 43% in Mokokchung district stated the same.

2. Other uses included shortage of drinking water at home for 17% from Mokokchung district, 13% Mon district, 7% Wokha district and 5% from Kohima district. Reasons also included ‘while travelling to outpost’.

3. The usage of packaged drinking water is still not very widespread or frequent in the four districts mentioned above.

Chart 16: Packaged drinking water is expensive

1. The responses show that purchase of packaged drinking water was usually reserved for particular occasions and was not used on a daily basis. The reason for the sporadic purchases may have been the cost factor as 97% in Mon district, 69% Wokha district, 65% Mokokchung district and 64% in Kohima district considered packaged water as an expensive commodity.

2. It was an item bought sporadically and most of the respondents said that it was an expensive commodity or item. The pricing factor may have been the reason why domestic bulk consumption was uncommon in Wokha district as was in the other districts (Kohima, Mon, Mokokchung) taken as case studies.

Chart 17: Purchase of packaged drinking water for daily household use

1. Most of the respondents said that it was an expensive commodity or item and an overwhelming 92% majority in Kohima district, 91% Wokha district, 87% Mokokchung district and 59% in Mon district said they did not purchase packaged drinking water for daily household use. The pricing factor may have been the reason why domestic bulk consumption is still uncommon in the districts mentioned above.

2. It was seen that only 8% of the respondents from Mon district used it on a daily basis, 5% from Mokokchung district, 2% from Wokha district and 1% in Kohima district.