ISSN: 2278-4632 Vol-10 Issue-6 No. 5 June 2020

# AN ANALYSIS OF WATER SUPPLY PROBLEM IN HIMALAYAN TOWN OF KALIMPONG, WEST BENGAL

Dr. Ranjita Roy Sarkar

Assistant Professor & Head Dept. of Geography Kalipada Ghosh Tarai Mahavidyalaya, Bagdogra, W.B Email: <u>ranjitaroysarkar@gmail.com</u>

## Abstract

This study examines the water supply systems, water crisis and the future of water management in Kalimpong Municipality in West Bengal. The research is centred around issues of demand and supply, water crisis, water governance, and the sustainable conservation and management of water resources in Kalimpong. Kalimpong is dependent only on Deolo reservoir facility and suffers from the frequent damage of water supply pipes during the monsoon. Kalimpong faces acute water shortages all year round. The spring sources that supply drinking water to Kalimpong need immediate conservation measures to arrest the declining state of discharge. Micro-planning atthe local level, the adoption of appropriate soil and water conservation practices on a watershed basis and reviving drying springs are all important ways to solve the water crisis.

Keywords: Drying springs; Governance; Water management; Water supply system

## Introduction

Mountains are considered as the water tower house of the world. But due to variability in rainfall patterns, seismicity, early snowmelt due to climate change, water shortages have become increasingly prevalent in cities and towns of the Himalayan region. The present study is on urban water crisis of Kalimpong municipality. This paper is an exploratory study of urban water supply in the Kalimpong town. It aims to expose gaps, identify potential areas of future study for the better management of water supply systems and underlines the need for the conservation of water sources.

## **Study Area**

The Darjeeling Himalaya, a section of the Eastern Himalaya inIndia, consists of the lower portion of the Lower Himalayas and a stretch of the marshy tract known as Terai. The Darjeeling Himalaya falls under the administrative jurisdiction of Kalimpong district & Darjeeling district of West Bengal, India. Kalimpong town is the district head-quarter of the Kalimpong District and falls under the Gorkhaland Territorial Administration(G.T.A).Kalimpong municipality (27°4°25.17°N, 88°28°37.92°E) is located

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between two hills – theDeolo and Durpin. The municipality covers an area of 9.17 sq km, with a population of 49,403 (2011 census) distributed among 23 wards.



## Fig1: Map of Kalimpong

**Methodology**Both primary and secondary data were used. Schedule was prepared. 200 sample household from Kalimpong municipality were chosen based on stratified & purposive sampling technique. The server was carried in 2019. Kalimpong municipality wards are divided into five categories these categories were prepared on the basis of their activities, characteristics & function of the wards. These fiver categories are ->

(1) Commercial & Residential, (2) Ecological, (3) industrial & Commercial (4) Residential,
(5) Slum area.

Secondary data collected from annual reports, books, journal, and draft development project report of Municipality etc. Finally the data is analyzed & represented through cartographic techniques.

# Water supply of Kalimpong Municipality

The source of water for Kalimpong municipality is the Neora forest, which is 86 km away from Kalimpong. Water brought from there is stored in Deolo reservoir and then supplied to the town. The PHED, under the local government (the GTA), and the



#### ISSN: 2278-4632 Vol-10 Issue-6 No. 5 June 2020

Neora Water Supply and Maintenance Division (NWSMD) at the state level takes the responsibility for delivering water from the Deolo reservoir to the households in the 23 wards of Kalimpong Municipality. To facilitate the water distribution the PHED works with the Kalimpongmunicipality. As per the KIIs, from 1991 onwards water was brought to Kalimpong from the Neora River. The Government of West Bengal, with the help of the Indian Army made a large capital investment for this. As a result of this large investment the Neora water was distributed between the Indian Army and the civilian population of Kalimpong.According to the source of NWSMD, the Kalimpong municipality has a water demand of 2.3 mgd. Neora provides 1.6 mgd, of which0.8 million gallons is distributed to the civilian population and 0.7 million to the Indian Army, and the remaining 0.1 million gallons to villages en route to the Deolo reservoir. From Thuckchok Relli the remaining 0.7 mgd used to be drawn. However, according to the NWSMD, 95% respondents reported that from last 5 years the water level has been depleted and the supply has fallen to about 0.4 mgd.From the PHED office in Kalimpong, it was reported that NWSMD supplies no more than 0.35 mgd for a population of over 50,000 or about 31.5 litres per person per day. Due to this a severe water crisis is seen, as the current demand for water is about 1.5 mgd.. During summer, the water received from NeoraKhola is only 0.35 mgd. This created a big problem as PHED could only supply water

Primary sources	Commercial &	Ecological	Industrial &	Slum	Residential
	Residential		Commercial	area	
Municipality	100%	88%	100%	65%	100%
Natural Springs	0%	12%	0%	35%	0%
Total	100%	100%	100%	100%	100%

Table 1: Primary sources of water supply in different areas of Kalimpong Municipality

Source: Household survey,2019

once in 3 days, and during the summer once in over 5 days. As a result residents have to depend on additional sources of water.

## Analysis of household data

**Household water from primary sources**: There are two primary sources of water in Kalimpong municipality from where the residents access water. These are municipality water supply and natural springs streams out of these primary sources, 93 percent of household depends on municipality water supply and only 7 percent depends on springs streams.

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Households in Murgihatta, Naspatidara slums and ward no. 20 get 24 hours from springs streams. 93 percent of the households which depend on municipality water source complain of not getting sufficient water & they have to depend on other alternative sources like private vendors, springs, rivers etc.

TABLE2: HOUSEHOLD WATER SUFFICIENCY FROM PRIMARY							
SOURCE							
ASPECTS	NO. OF H.H	% OF H.H					
SUFFICIENT FOR H.H USE	14	7					
NOT SUFFICIENT FOR H.H USE	186	93					
TOTAL	200	100					

Source: Field Survey,2019

Table3: Source of additional required water of Households						
during lean months						
Source of additional required	No. of H.H	% of H.H				
water of H.H						
River(Khola)	23	12				
Natural springs(Dharas)	21	11				
Curtailed water	5	3				
Private vendors	70	38				
Neighbours	3	2				
Manage with available water	64	34				
Total	186	100				

Source: Field Survey, 2019

Source of additional required water of households during lean months: During lean months the problem of water becomes acute 38 per cent of the household buy water from private vendors. Private vendors are called over phone & said the exact amount,



location of the household. Vendor charges Rs400 per 1500 litres of water. 34 per cent of the households due to low income manage with the available water. 3 per cent households use curtailed water i.e. reserved water fetched from distant springs on neighbours. It is depicted from table 3 that households depending on private vendor for additional water are highest (42 per cent) in high income group, 30 per cent in medium income group 2 lowest (27 per cent) in low income group.

#### **ISSN: 2278-4632** Vol-10 Issue-6 No. 5 June 2020

Household wise distribution of pipe water connection: From the survey it was found that 84 per cent of the households were connected with municipality water supply and 16 per cent

households do not have in-house water connection. Highest percentage (90 per cent) of households with pipe water supply is found in Industrial & commercial area, 88 per cent in ecological area, 81 per cent in commercial & residential area and only 61 per cent in slum area. As the slum areas are congested they depend on tankers and poly



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pipes. It is depicted from table no. 5 that 100 per cent of high income households are connected with pipe water supply, while 89 per cent in middle income group and only 60 per cent in low income group. As for getting pipe water connection the customer has to pay Rs5000 initially to the municipality for water connection which is quite difficult for the lower income group. As a result 40 per cent of the lower income group has no pipe water connection.

#### Table5: Household wise Distribution of pipe water connection in different area of Kalimpong

Characteristic	Categories of Kalimpong Municipality											
s of water	Commercial &	%	Ecological	%	Industrial &	%	Slum	%	Reside	%	Total	%
supply	Residential				Commercial		area		ntial			
H.H with pipe	52	81	23	88	18	90	11	61	64	89	168	84
waterconnect												
ion												
H.H with out	12	19	3	12	2	10	7	39	8	11	32	16
pipe water												
connection												
Total	64	100	26	100	20	10	18	100	72	10	200	10
						0				0		0

Municipality

Source: Field Survey, 2019



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Gender wise management of household water : From the survey it is found that in 49 percent households females take the lead role in managing household water. In these households men are found either engaged in outside jobs or are not much familiar with the household water management. In 43



percent of the households men are found to take lead role in water management. In these households it is found that men power is needed to fetch water.

**Duration of Municipality water supply:**From the survey it is found that 70 percent of the households in commercial & residential area gets water less than 1 hour. 32 percent household in the ecological area gets highest duration of water supply due to its locational

advantage as it is located near the Deolo to reservoir. The slum areas get less duration of water supply as it is away from reservoir. the The duration of water supply is also related with the number of water



connection in the ward. More the number of connections less the duration of water supply & vice versa. There is server water crisis during the dry season as the water received from Neora Khola is only 0.35mgd. In this time PHED could only supply water once in 3 days.



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Duration of water	Categories of Kalimpong Municipality								
supply	Commercial & Ecological Industrial &		Slum	Residential					
	Residential		Commercial	area					
< 1 hours	70%	40%	68%	80%	32%				
1-2 hours	20%	20%	32%	20%	38%				
2-3 hours	10%	0%			18%				
3-4 hours		8%			10%				
> 4 hours		32%			2%				
Total	100%	100%	100%	100%	100%				

Source: Field Survey,2019

# Findings

Respondents at Kalimpong reported that water supply is only around 30–40 litres per person per day, less than the per capita norm of 135 litres per day as set by the municipality. During scarcity of water, households manage to meet their water requirements through water tankers, private spring sources/river water, fetching water physically from distant springs, store water inadvance etc. Water is wasted in leakage of pipe lines. High income group face less problem of water scarcity than the lower income group.

## Conclusion

This study has focused on issues of demand and supply, water scarcity, watergovernance, and the sustainable conservation and management of water resources in Kalimpong. It finds that springsources are drying in Kalimpong for which it faces acute water shortages through the year. The development of water security plans and their strict enforcement throughmultiinstitutional collaboration can contribute for sustainable water resources management. Planning should be contextual, and a system ofmicro-planning is required in Kalimpong and other hill towns throughout the Himalaya to meet the water crisis.

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