



# GOVERNMENT OF SIKKIM

## Water Security & Public Health Engineering Department

No: SCE/CE/WS&PHED

Dated, Gangtok the 29/4/19.....

To

The Member Secretary,  
State Pollution Control Board,  
Government of Sikkim,  
Gangtok.

**Sub: Submission of Action Plan on Water Pollution Control & River Rejuvenation.**

Sir,

I have been directed to forward herewith a rectified copy of Action Plan for Water Pollution Control and River Rejuvenation.

The Water Security & PHE Department had earlier submitted the copy of Action Plan to SPCB and also to CPCB through Speed Post (hard copy) on 24<sup>th</sup> April 2019 and e-mail on 25<sup>th</sup> April 2019 which needed some rectification. Hence, this submission may kindly be considered for your reference, please.

Thanking you.

Yours faithfully,

Sd/-

(S.Karkidholi)

Chief Engineer

Water Security & PHE Department.

CE  
For 890 kind information, pl.  
For info  
29/4

Copy to:

1. ~~Pr.P.S.~~ to the Chief Secretary for kind information of the Chief Secretary, please.
2. Office Copy.

Recd. Today  
As discussed pl. see  
2 carry for HGT hearing on 18 May  
if needed  
As 29/4/19  
Member Secy.  
SPCB

29/4/2019  
Chief Engineer  
Water Security & PHE Department.



**Action Plan for  
Water Pollution Control**

**&**

**River Rejuvenation**

**under**

**W.S. & P.H.E. Department  
Government of Sikkim  
2019**



## Contents

1. Introduction.....	2
1.1 Background.....	2
1.2 Water (Prevention and Control of Pollution) Act, 1974.....	2
1.3 Gap between total Sewerage generation and Sewage Treatment.....	2
2. Overview.....	3
2.1 Sikkim.....	3
2.2 Districts and Sub Divisions.....	3
2.3 Water Resources/Drainage.....	3
2.4 Basin Identification.....	4
2.5 Basin Map.....	4
2.6 Water Shed/Drainage map of Sikkim.....	5
3. Population.....	6
3.1 Population of Sikkim.....	6
3.2 Sikkim Urbanizing at faster pace than India.....	6
4. W.S. & P.H.E. DEPARTMENT-Aims & Objectives.....	7
4.1 The Department.....	7
4.2 Aims & Objectives Of The Department.....	7
4.3 Strategy.....	7
4.4 NRCD priority for pollution Abatement – National Standard v/s Sikkim.....	8
4.5 Sewerage status of Sikkim:.....	9
4.6 Available Treatment Facility:.....	9
4.1 Approximate projected sewage Generation.....	10
4.2 Disposal of Treated Effluent:.....	10
4.3 Challenge of Sewage Disposal Treatment.....	10
5. Action Plan.....	16
5.1 Action Plan for River Rejuvenation ANNEXURE – I.....	16
5.2 Long Term Action Plan for Pollution Abatement.....	17

## LIST OF FIGURES

Figure 1: Brahmaputra Basin Map.....	4
Figure 2: Water Shed/Micro Drainage Map of Sikkim.....	5

## LIST OF TABLES

Table 1: District Wise Population of Sikkim as per 2011 census.....	6
Table 2: District wise Decadal Urban and Rural Population.....	6
Table 3: District wise Decadal Growth and Urban Proportion.....	6
Table 4: Sewerage Treatment Facility in Sikkim.....	9
Table 5: Sewerage Generation (Projection).....	10
Table 6: Details of Bazaars showing covered/ongoing Sewerage System.....	11
Table 7: Action Plan for River rejuvenation.....	16
Table 8: Long Term Action Plan for Pollution Abatement.....	17



## 1. Introduction

### 1.1 Background

"MORE RIVER STRETCHES ARE NOW CRITICALLY POLLUTED " this was the news item published in "The Hindu" Dated: 19.09.2015 authored by Shri. Jacob Koshy. According to the article, the number of polluted stretches of the country's river has increased to 351 from 302 and the number of critically polluted stretches has gone up to 45 from 34 according to the assessment of the Central Pollution Control Board (CPCB). Based on the recommendations by the National Green Tribunal (NGT) the CPCB has appraised the matter to the states of the extent of pollution in their rivers.

The health of the river and the efficacy of the water treatment measures by the states and the municipal bodies are classified depending on the BOD, with a BOD greater than 30 mg/l termed "Priority I" while that between 3.1 -6 mg/l is "Priority V". Based on the findings of the water pollution level in Sikkim four rivers as below have been identified in the Priority-V as under:

Sl. no.	RIVER	STRETCH	BOD (mg/l)
1	Maney Khola	Adampool to Burtuk	3.2 -4.5
2	Rangit	Dam site (NHPC) to Triveni	3.2-3.8
3	Ranichu	Namli to Slingtam	3.8-4
4	Teesta	Melli to Chugthang	4-4.3

Based on the order passed by NGT, Dated : 20/09/2018 Action Plan for River Rejuvenation for bringing all the polluted river stretches to be fit at least for bathing purpose (i.e BOD  $\leq 3$  mg/l and FC  $\leq 500$  MPN/100 ml ) has been directed. However action plan has been prepared and time frame has been proposed with all the aspects in consideration.

On submission of the action plan to the River Rejuvenation Committee and accorded speedy submissions of proposals with specific timelines for execution along with appropriate funding shall be submitted by Water Security & P.H.E.D.

### 1.2 Water (Prevention and Control of Pollution) Act, 1974

The Water (Prevention and Control of Pollution) Act, 1974 defines pollution to mean such contamination of water or such physical, chemical or biological alteration of water by discharge of various kinds of wastes into water (whether directly or indirectly) which is harmful for the health of public, animals, plants and aquatic organism.

CPCB serves as a technical wing of MoEF and Co-ordination with the State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) for implementation of plans and programmes relating to abatement of pollution.

### 1.3 Gap between total Sewerage generation and Sewage Treatment.

According to the "Restoration of Polluted River Stretches- Concept & Plan" published by CPCB in January, 2018, 30,042 million litres per day (MLD) of domestic sewage is generated from urban areas along the polluted river stretches in India. The installed sewage treatment capacity is about 16,846 MLD, leaving a gap of about 13,196 MLD (43.9%). There is a large gap in sewage treatment capacity and generation of sewage in urban areas.



## 2. Overview

### 2.1 Sikkim

Sikkim is a tiny hilly state located between  $27^{\circ} 04' 46''$  and  $28^{\circ} 07' 48''$  North latitude and  $88^{\circ} 00' 58''$  and  $88^{\circ} 55' 25''$  East longitude in the North Eastern Himalayan region covering an area of  $7096 \text{ Km}^2$ . It stretches 112 Kms. from North to South and 64 Kms. from East to West.

It is extended upto Tibet Plateau (China) and the kingdom of Bhutan on the east. On the west lies the kingdom of Nepal and on the south it touches the Darjeeling district in the state of West Bengal. In this manner, three of its districts share their boundaries with the neighbouring countries except the South district.

As per the Surveyor General, India figure, North district is the largest sharing  $4226 \text{ Km}^2$  (59.55%) of the total area of the state. West district has  $1166 \text{ Km}^2$  (16.43%) and is at the 2<sup>nd</sup> position, South district has  $750 \text{ Km}^2$  (10.60%) and the East district claims  $954 \text{ Km}^2$  (13.44%) thus being in the third place in terms of area.

### 2.2 Districts and Sub Divisions

The four Districts are further divided into Sixteen Sub-Divisions for basic administrative/local facilities like :-

- a) At North District: Mangan, Chungthang, Dzongu and Kabi
- b) At East District: Gangtok, Rangpo, Rongli and Pakyong
- c) At South District: Namchi, Rabong, Yangyang and Jorethang
- d) At West District: Geyzing, Dentam, Soreng and Yuksom

### 2.3 Water Resources/Drainage

Teesta and the Rangit are the two important rivers of Sikkim state. River Teesta has its origin at the Zemu Glacier above the Lachen Monastery. It is joined by the Goma Chhu (river) from the North. Lachen chhu rises at Pauhunri and joins the Teesta River at Chungthang. The important tributaries of river Tee Hongbo Chhu, Poke Chhu, Umran Chhu, Dik Chhu, Rangphap Chhu, Rongni Chhu and Rangpo Chhu. River Teesta flows from North to South.

River Rangit originates from Rathong Glacier which also flows North to South and then after West to East direction. Kayam chhu, Rongdung chhu, Relli chhu, Rathang chhu Kalej khola, Rishi khola, Ramam khola are the important tributaries of river Rangit. The river Rangit with its deep green and crystal clear water gushes in and meets the forceful mountain stream Teesta at a point called Triveni between Teesta Bazar and Melli Bazar.

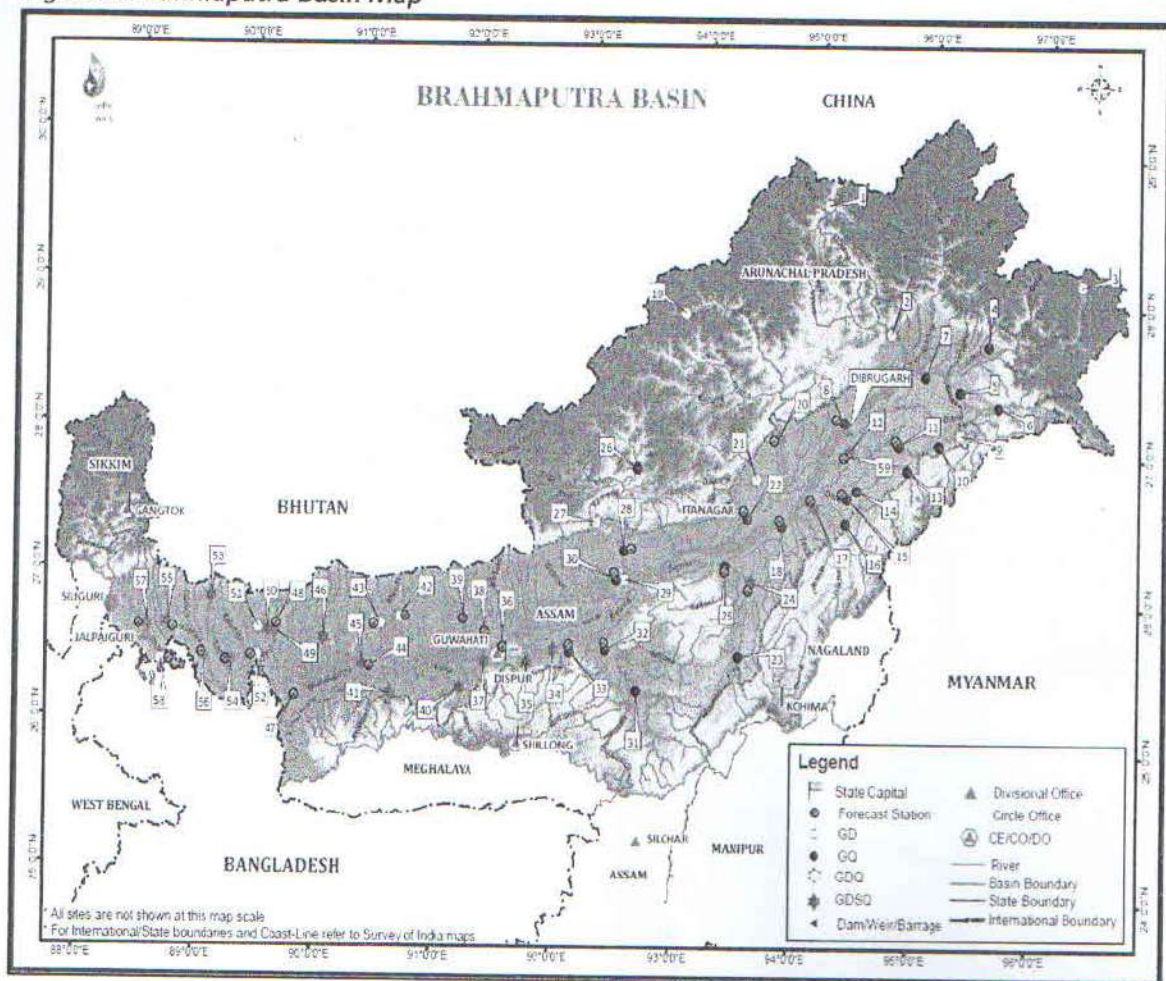


## 2.4 Basin Identification

Teesta and Rangit are the right bank tributary of Brahmaputra River and are lifeline of Sikkim. The landforms in the basin and its drainage patterns are mainly the four tier terraces, canyons or gorge-valleys at different altitudes, asymmetric valleys, U-shaped valleys and steps, lakes, alluvial cones, truncated ridge-spurs, rectangular-barded-parallel-radial-sub-dendritic drainage pattern and meandering braided channels. All wastewater from different towns of Sikkim discharged into River Teesta and River Rangit through different small tributary comes from upper ridges of the above mention main two rivers.

## 2.5 Basin Map

Figure 1: Brahmaputra Basin Map



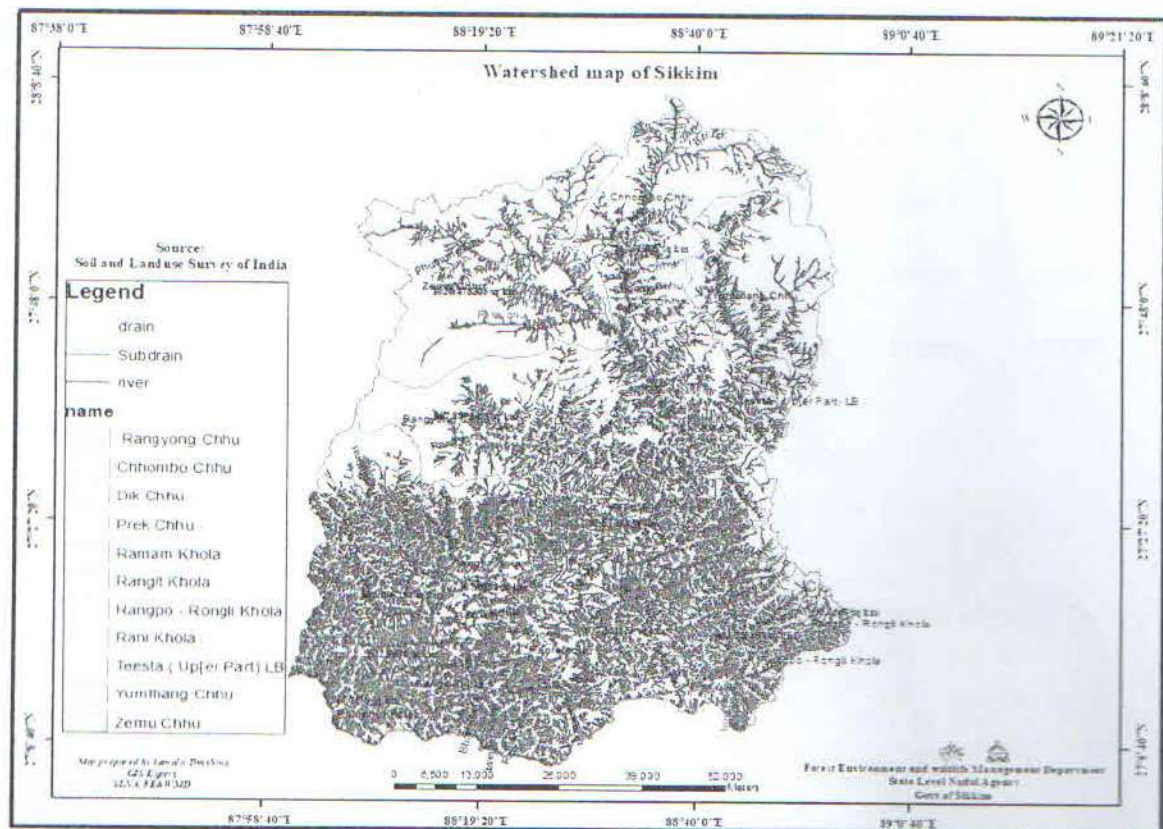
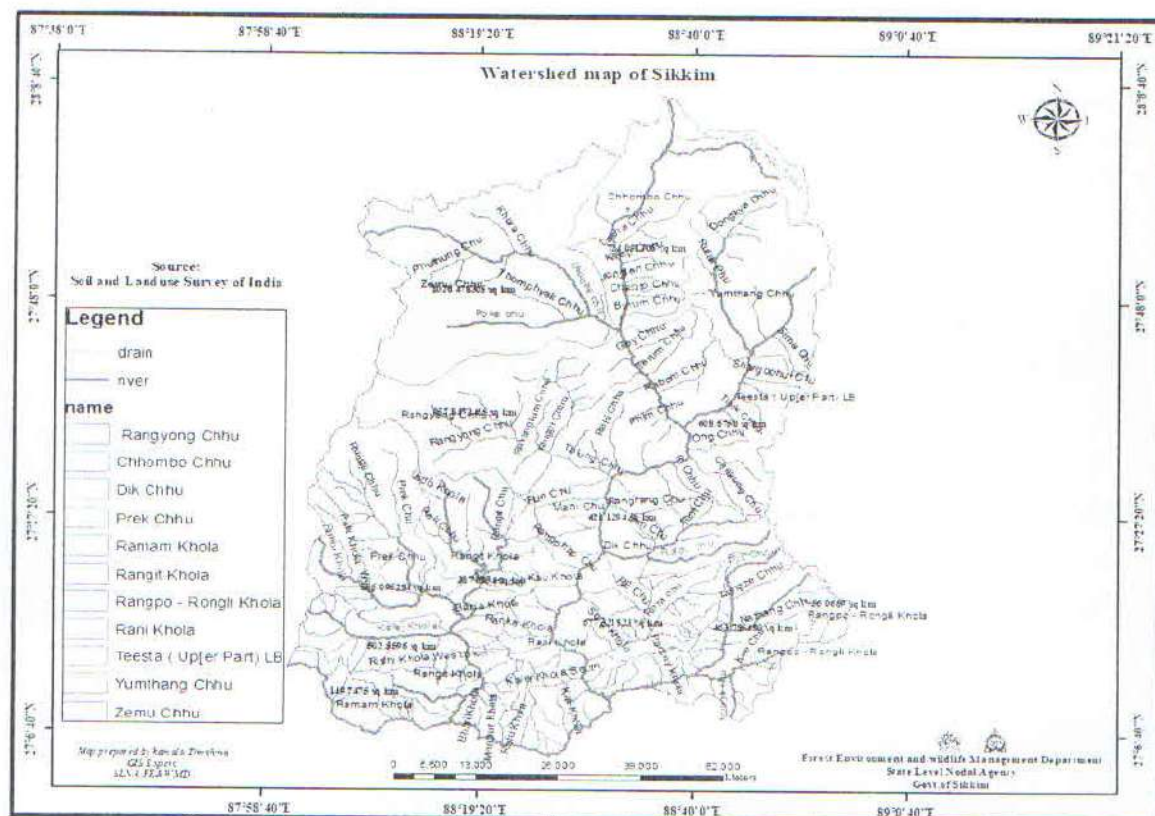
Source: NSCL WATER SUPPLY DPR

Basin Map showing Tributaries of Teesta and Rangit River in Sikkim and Other states joining Brahmaputra River at its downstream. Detailed Water Shed map of Sikkim covering all the small streams showing in the following Micro Drainage map of Sikkim.



## 2.6 Water Shed/Drainage map of Sikkim

Figure 2: Water Shed/Micro Drainage Map of Sikkim



Source : GIS Cell, SLNA, FE& WLMD, Sikkim



### 3. Population

#### 3.1 Population of Sikkim

In the last decade 2001-11, Sikkim has grown at a rate of 12.89% which is less than India's average growth of 17.64%. Sex ratio has increased from 875 in 2001 to 889 in 2011 but it is less than India's average sex ratio. Literacy rate at 82.25% is better than India's literacy rate at 74% in the year 2011. Important features of population of Sikkim and its 4 districts in 2011 are given in table 1:

Table 1: District Wise Population of Sikkim as per 2011 census

Area description	Population	Population Density	Sex ratio	Literacy Rate	Male	Female
North Dist.	43709	10	767	78.01	24730	18979
East Dist.	283583	297	873	83.85	151432	132151
South Dist.	146850	196	915	81.42	76670	70180
West Dist.	136435	117	942	77.39	70238	66197
Sikkim	610577	86	890	81.42	323070	287507

#### 3.2 Sikkim Urbanizing at faster pace than India

In the last decade (2001-11), Sikkim's urban population increased by 156.52%.

Table 2: District wise Decadal Urban and Rural Population

Area description	1991			2001			2011		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Sikkim	406457	369451	37006	540851	480981	59870	610577	456999	153578
North Dist	31240	30437	803	41030	39782	1248	43709	39065	4644
East Dist	178452	146580	31872	245040	192188	52852	283583	161096	122487
South Dist	98604	96035	2569	131525	127579	3946	146850	125651	21199
West Dist	98161	96399	1762	123256	121432	1824	136435	131187	5248

Table 3: District wise Decadal Growth and Urban Proportion

Area description	% Decadal Variation 91-01			% Decadal Variation 01-11		
	Total	Rural	Urban	Total	Rural	Urban
Sikkim	33.06	30.19	61.78	12.89	-4.99	156.52
North Dist	31.34	30.7	55.42	6.53	-1.8	272.12
East Dist	37.31	31.11	65.83	15.73	-	131.75
South Dist	33.39	32.85	53.6	11.65	-1.51	437.23
West Dist	25.57	25.97	3.52	10.69	8.03	187.72

Source: 1100\_Part\_A\_DCHB\_Sikkim



## 4. W.S. & P.H.E. DEPARTMENT-Aims & Objectives

### 4.1 The Department

Next to air, the other important requirement for human life to exist is water. Water is available in various forms such as rivers, lake, streams etc. Safe drinking water and wastewater/sewerage treatment and service are essential to the public health and economic vitality of any society. In Sikkim, drinking water and wastewater utilities, collectively known as WATER SECURITY & PUBLIC HEALTH ENGINEERING services under State Government, is responsible with implementing programs to provide clean and safe water and sewerage facility to the urban communities.

### 4.2 Aims & Objectives Of The Department

Adequacy of safe water supply and provision of sanitation facilities are the two basic essential amenities, which the community needs for healthy living. Improving services in water supply and sanitation are the major concerns of the Department, especially in the context of rapid urbanization and growth. The aim of the Department is to provide quality drinking water and wastewater management in the urban areas of the state of Sikkim.

- ✓ Provide a sustainable supply of required quality of drinking water in adequate quantities
- ✓ Protect the environment by management of household wastewater and treatment of sewerage for prevention of river / ground pollution
- ✓ To provide overall direction and approach for pollution control/Abatement
- ✓ To provide general guidelines for mainstreaming pollution control measures in various sectoral programs and plans; and
- ✓ To serve as a basis for monitoring and review of progress in pollution control to provide advice and suggestions

### 4.3 Strategy

In order to meet the objectives, the strategy of the Department is to equip itself with a motivated and skilled workforce and the essential regulatory frameworks.

**The other focus areas for improving the service delivery are by:**

- Availing latest techniques for treatment of sewage/waste water - by effectively treating the effluents, the water sources are protected against contamination.
- Provide sewerage connections to the public and collection of Revenue.

- Sensitization of the public and regular Awareness Programs for avoidance of wastages, water conservation, environmental pollution by wastewater etc.
- Routine Repair & Maintenance of the Systems and restoration during Calamities.
- Establishment of piped Sewerage System in the admissible Urban Areas as per the Government's priority.
- State should provide adequate infrastructure for assessing base population data, water supply status data, present sanitation status data and other infrastructural development data for assessing the necessity of wastewater generation and need for its treatment facility.

#### **4.4 NRCD priority for pollution Abatement – National Standard v/s Sikkim**

##### **4.4.1 Criteria for Priority 1**

♦ Monitoring locations exceeding BOD 30 mg/l has been considered as it is the standard for discharge of treated sewage from sewage treatment plants and general standard for effluent discharge from effluent treatment plants to rivers/streams it appears without dilution. (River locations having water quality exceeding discharge standards for BOD to fresh water sources)

♦ All monitoring locations exceeding BOD concentration 6 mg/l on all occasions.

♦ Monitoring locations exceeding 3 mg/l BOD are not meeting desired water quality criteria but does not affect to Dissolved Oxygen level in water bodies. If BOD exceeds 6mg/l in water body, the Dissolved Oxygen is reduced below desired levels.

♦ The raw water having BOD levels upto 5 mg/l are does not form complex chemicals on chlorination for municipal water supplies. Hence the water bodies having BOD more than 6 mg/l are considered as polluted and identified for remedial action.

##### **4.4.2 Criteria for Priority 2**

♦ Monitoring locations having BOD between 20-30 mg/l.

♦ All monitoring locations exceeding BOD concentration 6 mg/l on all occasions.

##### **4.4.3 Criteria for Priority 3**

♦ Monitoring locations having BOD between 10-20 mg/l.

♦ All monitoring locations exceeding BOD concentration 6 mg/l on all occasions.

##### **4.4.4 Criteria for Priority 4**

♦ Monitoring locations having BOD between 6-10 mg/l.



#### 4.4.5 Criteria for Priority 5

- ◆ Monitoring locations having BOD between 3-6 mg/l.
- ◆ The locations exceeding desired water quality of 3mg/l BOD.

#### ➤ Sikkim falls in Priority 5

### 4.5 Sewerage status of Sikkim:

The Status of Sewerage Schemes in Sikkim are as follows:

Out of 4 districts the following 2 district has been partially covered so far by piped sewer systems:

- a) East Sikkim – 7 Sewerage Treatment Plant (Commissioned and Ongoing)
- b) South Sikkim – 3 Treatment Plant (Commissioned and Ongoing)

### 4.6 Available Treatment Facility:

The detailed Sewerage treatment facility is summarized below:

**Table 4: Sewerage Treatment Facility in Sikkim**

<u><b>EAST SIKKIM</b></u>	
<b>ZONE – I (ADAMPOOL)</b>	8 MLD + 4.69 MLD (Commissioned)
<b>ZONE – I (RANIPOOL)</b>	1.27 MLD (Commissioned)
<b>ZONE – II (GANGTOK)</b>	1.60 MLD (Commissioned)
<b>ZONE – III (GANGTOK)</b>	3.25 MLD (Under construction)
<b>ZONE – IV (GANGTOK)</b>	3.9 MLD (Commissioned)
<b>SINGTAM</b>	0.66 MLD (Commissioned)
<b>RANGPO</b>	1.40 MLD (Under construction)
<u><b>SOUTH SIKKIM</b></u>	
<b>MELLI</b>	0.50 MLD (Commissioning Stage)
<b>JORETHANG</b>	1.70 MLD (Under construction)
<b>NAMCHI</b>	0.45 MLD (Under construction) + Up-gradation and modernization is being proposed
<u><b>WEST SIKKIM &amp; NORTH SIKKIM</b></u>	
<b>WEST SIKKIM</b>	Scheme has been proposed
<b>NORTH SIKKIM</b>	Scheme has been proposed

Source: W.S. & P.H.E.D., Sewerage Division



#### 4.1 Approximate projected sewage Generation

Table 5: Sewerage Generation (Projection)

Year	Population 2001	Population 2011	Decadal Growth Rate (2001- 2011)	Projected Population 2021	Sewage Demand in MLD @ 80% of 135 Lpcd (2021)	Covered/ Ongoing Treatment Capacity in MLD	In 2021 Gap Between Generation and Treatment Capacity in MLD
<b>URBAN POPULATION</b>	59870	153578	156.52	393958	42.55	24.17	18.38

Source: 1100\_Part\_A\_DCHB\_Sikkim

#### 4.2 Disposal of Treated Effluent:

The effluent coming out from STP's is being disposed-off mainly in Surface water bodies. As Sikkim is rich in availability of Surface/ground water the reuse of treated effluent is not a common practice, moreover the reuse of treated effluent is not found to be cost effective in Sikkim as agricultural lands are situated at very higher altitude and far from the SPT's. It is advisable that the treated effluent needs to be safely disposed-off in the natural drainage/streams which largely contributes the tributaries of River Teesta and River Rangit in Sikkim, which are tributaries of Brahmaputra River Basin. The effluent quality should be as per the latest CPCB/SPCB norms for disposal into the water bodies. Presently there are some shortcomings in the effluent quality, which need to be improved/upgraded to meet the stringent norms of CPCB/SPCB.

#### 4.3 Challenge of Sewage Disposal Treatment

Handling pollution control poses challenges to state like Sikkim with medium and low incomes. If such challenges are not well managed beforehand and afterwards, the risk is very high and, once the risk becomes a reality, it may be a disaster, a situation in which damages and losses may be very high, in terms of human lives and the economy. One of the infrastructures that are critical or crucial for the society is the Sewerage Disposal and Treatment. The importance of wastewater management for pollution control management is justified by the need to ensure wastewater disposal and treatment in the urban town and even in semi urban areas.

The other major challenge is financial crunch of State Government. As the state Govt. has limited fund for developmental schemes, therefore it is advisable to appraise the Funding Agencies like NRCD, JAICA, NEC and other central sponsored schemes.



Table 6: Details of Bazaars showing covered/ongoing Sewerage System

Table 6: Details of Bazaars showing covered/ongoing sewerage system

DETAILED LIST OF BAZAARS SHOWING COVERAGE / ONGOING (WASTE WATER TREATMENT)											
Class I Category Bazaars											
	EAST		NORTH		SOUTH		WEST				
1	Gangtok	<u>Partially Covered</u>	...		...		...				
	TOTAL =	1	0		0		0				
Class II Category Bazaars											
1	Rangpo	<u>Covered</u>	1	Mangan	Not Covered	1	Namchi	<u>Ongoing</u>	1	Gyalshing	Not Covered
2	Ranipool	<u>Covered</u>				2	Jorethang	<u>Ongoing</u>	2	Nayabazaar	Not Covered
3	Pakyong	Not Covered				3	Melli	<u>Covered</u>	3	Soreng	Not Covered
4	Rhenock	Not Covered				4	Ravangla	Not Covered			
5	Singtam	<u>Covered</u>									
6	Rongli	Not Covered									
	TOTAL =	3	0		3		0				

### Class III Category Bazaars

1	Dikchu E	Not Covered	1	Dikchu N	Not Covered	1	Simchuthang	Not Covered	1	Legshep	Not Covered
2	Makha	Not Covered	2	Phensang	Not Covered	2	Majhitar	Not Covered	2	Reshi	Not Covered
3	Sang	Not Covered	3	Phodong	Not Covered	3	Temi	Not Covered	3	Hee	Not Covered
4	Rorathang	Not Covered	4	Chungthang	Not Covered	4	Damthang	Not Covered	4	Sombaria	Not Covered
5	Middle Camp	Not Covered				5	Namthang	Not Covered	5	Daramdin	Not Covered
6	Pelong	Not Covered				6	Kewzing	Not Covered	6	Dentam	Not Covered
7	Lingdok	Not Covered				7	Yangang	Not Covered	7	Rinchenpong	Not Covered
8	Lingtam	Not Covered				8	Ralong	Not Covered	8	Kaluk	Not Covered
9	Sirwani	Not Covered							9	Mangalbaria	Not Covered
									10	Sribadam	Not Covered
									11	Bermiok	Not Covered
									12	Tashiding	Not Covered
									13	Chakung	Not Covered
TOTAL =		0		0			0			0	



### Rural Marketing Centres (RMC)

	EAST		NORTH		SOUTH		WEST				
1	Phadamchen	Not Covered	1	Payong	Not Covered	1	Nandugaon	Not Covered	1	Darap	Not Covered
2	Kupup	Not Covered	2	Kabi	Not Covered	2	Tinzir	Not Covered	2	Rimbi	Not Covered
3	Sherathang	Not Covered	3	Namok	Not Covered	3	Maniram	Not Covered	3	Gerethang	Not Covered
4	Samdong	Not Covered	4	Ramthang	Not Covered	4	Phung	Not Covered	4	Khecheopalri	Not Covered
5	Ranka	Not Covered	5	Singhik	Not Covered	5	Rateypani	Not Covered	5	Mengli	Not Covered
6	Central Pendam	Not Covered	6	Pakshep	Not Covered	6	Tokal Bermiok	Not Covered	6	Sakyong	Not Covered
7	Martam(Shekwa)	Not Covered	7	Manuel	Not Covered	7	Tarku	Not Covered	7	Chongrang	Not Covered
8	Saramsa	Not Covered	8	Naga	Not Covered	8	Ben	Not Covered	8	Lingchom	Not Covered
9	Simik Lingzey	Not Covered	9	Sankalang	Not Covered	9	Sadam	Not Covered	9	Chewbhanjyang	Not Covered
10	Tintek	Not Covered	10	Hee Gyathang	Not Covered	10	Melli Dara	Not Covered	10	Timburbung	Not Covered
11	Chandey	Not Covered	11	Passingdong	Not Covered	11	Payong	Not Covered	11	Dodak	Not Covered
12	Kyonglasa	Not Covered	12	Phidang	Not Covered	12	Sukrabarey	Not Covered	12	Zoom	Not Covered
13	Thegu	Not Covered	13	Tumlong	Not Covered	13	Sumbuk	Not Covered	13	Ribdi	Not Covered
14	Jaluk	Not Covered	14	Phamtam	Not Covered	14	Turuk	Not Covered	14	Okhrey	Not Covered
15	Sisney	Not Covered	15	Bakcha	Not Covered	15	Kitam	Not Covered	15	Bhareng	Not Covered

16	Baropathing	Not Covered	16	Lachen	Not Covered	16	Vok	Not Covered	16	Hilley	Not Covered
17	Mamring	Not Covered	17	Lachung	Not Covered	17	Lingmoo	Not Covered	17	Budang	Not Covered
18	Machong	Not Covered	18	Lingzya	Not Covered	18	Lingi Payong	Not Covered	18	Tharpu	Not Covered
19	Chalisey	Not Covered	19	Tanzya	Not Covered	19	Namphok	Not Covered	19	Pureytaar	Not Covered
20	Reshi	Not Covered	20	Tingbong	Not Covered	20	Manpur	Not Covered	20	Bega	Not Covered
21	East Pendam	Not Covered				21	Gumpa Ghurpisey	Not Covered	21	Thingling	Not Covered
22	Kopchey	Not Covered							22	Rothak	Not Covered
23	Dalapchand	Not Covered							23	Yuksom	Not Covered
24	Aritar	Not Covered							24	Uttarey	Not Covered
25	Chujachen	Not Covered									
26	Rolep	Not Covered									
27	Parakha	Not Covered									
28	Rumtek	Not Covered									
29	Lower Samdong	Not Covered									
30	Duga	Not Covered									
31	Tsomgo	Not Covered									
TOTAL =		0		0			0			0	



# ABSTRACT OF COVERAGE/ONGOING OF BAZAARS (WASTE WATER TREATMENT)

Category	East		North		South		West	
	No of Bazaars	Coverage/ Ongoing	No of Bazaars	Coverage/ Ongoing	No of Bazaars	Coverage/ Ongoing	No of Bazaars	Coverage/ Ongoing
Class-I	1	1	0	0	0	0	0	0
Class-II	5	3	1		4	3	3	
Class-III	9		4		8		13	
RMC	31		20		21		24	
Total	46	4	25		33	3	40	0
Grand Total Urban Areas		=	144					
Covered / Ongoing by Sewerage Scheme		=	7					
Class I covered/Ongoing		=	1					
Class II covered/Ongoing		=	6					
Class III covered/Ongoing		=	0					
RMC's covered/Ongoing		=	0					

## 5. Action Plan

Action Plan for River Rejuvenation

**ANNEXURE - I**

Table 7: Action Plan for River rejuvenation

SL.	Existing Wastewater Facility	STATUS	Action Plan/Proposal	Time Frame (Approximate)	Financial Forecast (Approximate)
1	Gangtok Zone -I (Adampool)	OPERATIONAL	1. Holding Tank 2. Tertiary Treatment	1. Time required for survey and investigation along with study and DPR preparation 24 months 2. Time required to complete the project 24 months after sanction.	Will be submitted along with the DPR
2	Gangtok Zone -II	OPERATIONAL	1. Holding Tank 2. Tertiary Treatment		
3	Gangtok Zone -III	UNDER CONSTRUCTION	1. Ongoing Scheme should support with holding tank		
4	Gangtok Zone -IV	OPERATIONAL	1. Holding Tank		
5	Gangtok Zone -I (Ranipool)	OPERATIONAL	1. Proposal for holding tank, Centrifuge, Sludge drying bed, dedicated DG set.		
6	Singtam Sewerage	OPERATIONAL	1. Proposal for holding tank, Centrifuge, Sludge drying bed, DG set, Cess Pool Vehicles.		
7	Rangpo Sewerage	UNDER CONSTRUCTION	1. Proposal for holding tank, Centrifuge, Sludge drying bed, transformer & DG set, Cess Pool Vehicles.		
8	Melli Sewerage, South Sikkim	UNDER CONSTRUCTION	1. Proposal for holding tank, Centrifuge, Sludge drying bed, transformer & DG set, Cess Pool Vehicles.		
9	Jorethang-South Sikkim	UNDER CONSTRUCTION	1. Ongoing scheme	-	-



### Long Term Action Plan for Pollution Abatement

Table 8: Long Term Action Plan for Pollution Abatement

SL	PARTICULARS	ACTION PLAN	TIME FRAME (APPROXIMATE)	FINANCIAL FORECAST (APPROXIMATE)
1	Enhancement of the Sewerage Act-1987	Government of Sikkim vide extraordinary gazette notification no. 3/LD/1987 dated. 28 <sup>th</sup> March, 1987 has framed 'Sikkim Sewerage and Sewage Disposal Act', which needs to be enhanced.	Time frame will be set up by LAW Department in consultation W.S. & P.H.E.D., UD & HD/ULB and all concerned line departments.	-NA-
2	Overloading of STP's Due to Storm Water, Sullage Water	Stringent action as per enhance act with penalty provision will reduce illegal sewer connection and open defecation. The surface runoff, Sullage water, roof water and drain water should not be connected to sewer network. GMC/UDHD are the controlling bodies for Storm water management.		
3	Land Acquisition for STP's	Compulsory Land Acquisition Act should be applied for acquisition of suitable land for STP's and other allied Components. Provision for service line should be incorporated in the approved blue print according to the town plan.		
4	Legal Clearances for City	While according approval for any construction of buildings, proper disposal for sewage to be made mandatory and NOC from W.S. & OHED to be made mandatory.		

5	Sewage Generated in Catchment area of Polluted River Stretches	The Department has proposed development and up gradation of urban wastewater treatment facilities in the town where there are already having STP's. The existing STP's should reach relevant discharge standards as per CPCB/SPCB norms.	(As per Annexure – I)	(As per Annexure – I)
6	Identification of Polluting River Stretches	<ol style="list-style-type: none"> <li>1. The cluster of villages are contributing to the pollution of rivers due to unavailability of sewerage system facility. This can be solved individually by construction designed septic tanks, or by Government initiatives by providing proper sewerage system.</li> <li>2. Preparation of Detailed Project report for the uncovered areas where no waste water scheme is proposed till date</li> <li>3. Water testing from NABL accredited labs for all the Tributaries, drainage of Polluted River stretches i.e. River Rangit and River Teesta needs to be carried out to prepare the priority</li> </ol>	Detail workout takes 24 Months	Cost estimation will be submitted along with the DPR



Water Pollution Prevention

<u>9</u>	<b>Capacity Building of Plant Operators</b>	Plant operators will be given Industrial/Practical skill development programme to enhance their efficiency	12 Months	Will be submitted in consultation with industries and institutes
<u>10</u>	<b>Public Awareness Programme (Distribution of Pamphlets, Leaflets to Schools, Colleges and all educational institutions)</b>	<p>Wide publicity through print and electronic media to educate the people about importance of water and curtail of pollution can be made.</p> <p>The department may strengthen publicity and education, such as including the knowledge of water resource, water pollution control and water conditions in state education system to make the public better aware of the relationship between socioeconomic development and environment conservation, its 'Better Late than Never'.</p> <p>Awareness of Healthy and Hygienic living by prevention of pollution at bottom of education system will benefit the society as there is saying "Prevention is Better than Cure".</p>	Ongoing	Works Under Progress

(C. K. BASNET)  
 Addl. Chief Engineer  
 W/S and PHED  
 Govt. of Sikkim

CHIEF ENGINEER  
 W.S. & P.H.E. DEPT.  
 GOVT. OF SIKKIM  
 GANGTOK

		<p>list as per the degree of pollution in the tributaries of Polluted Stretches.</p> <p>4. The Department will clarify protection targets for the quality of different water bodies and confirm whether standards have been met in all the water bodies. This will be done by proper water study/testing of all the small streams/ tributary of River Teesta and River Rangit. Line Department SPCB should provide relevant data.</p> <p>5. SPCB has established 14 water testing MINARS out of which 5 in RANGIT river and 9 in TEESTA River, which is insufficient to cater all tributaries which are contributing pollution to the main stream.</p>		
Z	The department has prepared detailed project report and submitted to the government for key	1. Sewerage Scheme for Rabong, South Sikkim	DPR's submitted and looking for appropriate funding agency.	64.70 Crore
		2. Sewerage Scheme for Gyalshing, West Sikkim	DPR's submitted	88.90 Crore



towns, in which there are higher degree/risk of water pollution.	3. Sewerage Scheme for Mangan, North Sikkim	DPR's submitted to Ministry for sanction	96.00 Crore
	4. Sewerage Scheme for Chungthang, North Sikkim	DPR's submitted to Ministry for sanction	27.00 Crore
	5. Rehabilitation of Sewer Lines in Zone-I of Gangtok	DPR's submitted to Ministry for sanction	45.00 Crore
	6. Extension of Sewerage Network of Zone-I of Gangtok	DPR's submitted to Ministry for sanction	45.00 Crore
	7. Up-grading of STP of Gangtok Zone-I	DPR's submitted to Ministry for sanction	5.00 Crore
	8. Extension of Sewerage Network of Zone-IV of Gangtok	DPR's submitted to Ministry for sanction	15.00 Crore
	9. Up-grading of STP of Gangtok Zone - IV	DPR ready	2.00 Crore
	10. Sewerage Scheme for Pelling Town, West Sikkim	Investigation under progress	80.00 Crore (Approx)
	11. Sewerage Scheme for Legship in West Sikkim	Investigation under progress	40.00 Crore (Approx)
	12. Sewerage Scheme for Kaluk-Rinchenpong in West Sikkim	Investigation under progress	85.00 Crore (Approx)
	13. Sewerage Scheme for Soreng in West Sikkim	Investigation under progress	60.00 Crore (Approx)
	14. Sewerage Scheme for Sombaria in West Sikkim	Investigation under progress	50.00 Crore (Approx)
	15. Sewerage Scheme for Daramdin in West Sikkim	Investigation under progress	40.00 Crore (Approx)

	16. Sewerage Scheme for Jorethang in South Sikkim	Investigation under progress	100.00 Crore (Approx)
	17. Sewerage Scheme for Namchi in South Sikkim	DPR's ready	125.00 Crore
	18. Sewerage Scheme for Yangyang in South Sikkim	Investigation under progress	50.00 Crore (Approx)
	19. Sewerage Scheme for Namthang in South Sikkim	Investigation under progress	40.00 Crore (Approx)
	20. Sewerage Scheme for Temi in South Sikkim	Investigation under progress	50.00 Crore (Approx)
8	<b>Effluent Reuse</b>	Feasibility study takes 12 months	Study is under progress
	1. Topographical Constraint does not permit supply of treated waste water to uphill agricultural lands. However, the treated waste water can be used for irrigation purpose as and where feasible.		
	2. STP's are located at the lowest elevation point which already have sufficient water availability.		
	3. The department will encourage the Water based industries to see the feasibility to reuse treated waste water for cooling, chilling, gardening, flushing etc.		