

NORTH EASTERN COUNCIL (NEC)
EVALUATION OF NEC FUNDED PROJECTS IN
SIKKIM



PROVIDING DISTRIBUTION RESERVOIR AND
DISTRIBUTION MAIN TRUNK LINE FOR WATER
SUPPLY SYSTEM TO NAMCHI TOWN IN SOUTH
SIKKIM

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MAY 2010



NORTH EASTERN COUNCIL

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“Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim”

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PHOTOGALLERY (6 photographs)

EXECUTIVE SUMMARY

Water is essential not only for survival of human beings but also for animals, plants and other living beings. Water required for human consumption must not contain unwanted impurities. In order to ensure good quality water, water supply schemes are drawn up.

North Eastern Council (NEC) under the Ministry of Development of North Eastern Region (Ministry of DONER), Govt. of India, has been involved in the process of development of all the eight states of North Eastern Region (NER) and contributing to the socio-economic development of the people of this region by providing financial assistance to the schemes/projects in various sectors.

In order to get a better picture of the proper implementation of the approved projects and effective utilization of fund released by NEC to various implementing agencies, it is necessary to evaluate the success and impact for such project. To achieve this NEC has engaged WAPCOS Limited, a Govt. of India Undertaking under the Ministry of Water Resources to carry out Evaluation and Impact studies of some projects one such being “Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim” vide letter of award No.NEC/EM/58/2009 dated 24th November, 2009.

The project town Namchi which is the headquarter of South Sikkim district lies at a distance of 88 km from the capital city of Gangtok and 100 km from Siliguri. The water supply scheme for the city of Namchi was drawn up, the source of water being Bermaly stream, a perennial source located at a distance of 47 km from Namchi. In order to cater the increasing need of water in the town NEC was approached by the Govt. of Sikkim for funding the project of Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town to facilitate more effective water needs of the overall population of Namchi. The NEC accordingly accorded approval to the project on Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim costing an amount of Rs. 432.76 lakh.

The approach and methodology which were followed for evaluation study of Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim are indicated as:

- i. Discussion with Senior Officers of the department
- ii. Collection of data and information related to the project
- iii. Perusal of project documents like project proposal, sanction letter, progress report etc.
- iv. Interaction with Senior Officers and other Technical Staff and sub-staff of the Water Security and PHE Department, Gangtok as well as Field Officers in Namchi.
- v. Field visit of the project sites
- vi. Interaction with beneficiary/consumers
- vii. Interaction with local people
- viii. Findings

The purpose for which the above project proposal was approved by the NEC has been fully achieved by successful implementation of the item of works Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim under PHED. It was also observed that due to implementation of this component of the project, the public at both macro and micro level are harvesting the benefits in terms of health, hygiene and cleanliness thereby creating a very good social impact.

CHAPTER 1 INTRODUCTION

1.1 NORTH EASTERN COUNCIL (NEC)

The North Eastern Region (NER) of India comprises of eight states namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The NER comprises an area of 2,55,000 sq km representing 7.7% of the country's total geographical and with a population of 38.4 million, sharing 3.75% of the countries population.

With the reorganization of erstwhile Assam into formation of different states and Union Territories since 1971-72, the NEC came into being by an Act of Parliament in 1971. The NEC was empowered to act as a advisory body in respect of socio-economic development of the NER. In 2002 the state of Sikkim was inducted as the 8th member of NEC by an amendment to the NEC Act of 1971.

NEC has been functioning as a Regional Planning Body for the NER by formulating proposals and funding projects and schemes for the reasonable and balanced development of the states of the region.

The NEC is of strategic importance for being close to the India's International borders for 98% with as many as 4 countries – China (1126 km), Myanmar (1643 km), Bhutan (489 km) and Bangladesh (1187 km).

The NEC has made substantial achievements towards socio-economic development of the people of the region in various fields.

1.2 SIKKIM

Sikkim the 22nd state of India has a total area of 7076 sq km and is situated in the north-eastern portion of India. It comprises of four districts, nine Sub-divisions, 100 Zilla Panchayat, 166 Gram Panchayat, 454 Revenue Blocks, 452 Villages and 9 Towns.

The four districts are:

- East Sikkim
- West Sikkim

- North Sikkim
- South Sikkim

The population of Sikkim as per 2001 census is 5,40,851 with sex ratio of 986 females per 1000 males. Bounded to the north and north-east by China, to the west by Nepal, to the south east by Bhutan and to the south by Darjeeling district of the state of West Bengal. Sikkim occupies an important strategic niche along one of the oldest Himalayan trade routes. The entire region is characterized by varying mountainous eco system which is marked by various levels of economic development. As compared to the Western Himalayas, Sikkim is accessible to the rest of the country by rail only through Siliguri in West Bengal which is about 115 km from Gangtok. The only means of communication within Sikkim is by road. Sikkim state is quite famous for tourism. It is well known for natural beauty, perennial snow capped mountain, high green tropics and temperate forests, gurgling streams and rich flora and fauna. Besides these, Sikkimese hospitality, culture architecture, monasteries attract wide range of tourists from India and abroad. The people of Sikkim mainly comprise of three ethnic groups, viz. the Lepchas, Bhutias and Nepalese of these Lepchas are said to be the earliest and original inhabitants of Sikkim. People from various parts of the country make up small population largely restricted to urban Sikkim. Road and building construction and other development activity has lead to the influx of large population of migrant laborers from the plains like plumbers, masons, carpenters and other skilled and unskilled laborers hired by the army to maintain the roads at high altitudes.

1.3 NAMCHI

1.3.1 Geophysical Description

The project town Namchi, headquarter of South Sikkim district is located at 27.17°N and 88.35°E with an average elevation of 1315 metre (4314 ft) and lies at a distance of 88 km from the capital city of Gangtok and 100 km from Siliguri. The town is well connected by State Highways and Major District Roads. Namchi has distinct boundaries as it is surrounded by Rangit river and its tributaries on all sides. Namchi town is connected to Gangtok and other areas between the district by bus service through Sikkim Nationalized Transport (SNT). The town also is linked with Siliguri and Darjeeling by road. Namchi is the origin point for several roads. From Namchi, two state highways, two major district roads and five other district roads originate. On

the hill of Samdruptse, 7km from Namchi stands the famous 135 ft high statue of Guru Padmasambhava the highest of its kind in the world.

1.3.2 Topography

The Topography of the town is hilly and the town is perched on the top of the mountain beside Samdruptse hill and Solophuk hill. To the south below is river Rangit.

1.3.3 Climate

Namchi town has a salubrious climate almost throughout the year with pleasant wind and humid atmosphere. This region receives less rainfall in comparison with other parts of the state. The normal annual rainfall observed is 2197 mm and average number of rainy days is 138 per year. The winter season normally lasts for 4 months (that is from November to February) and the rest period is summer.

1.3.4 Land

The distribution main trunk line as per the plan are mainly dug along the road side as the town is of ribbon development.

1.3.5 Literacy

The percentage of literacy is 56.94% out of which 65.70% is male and 46.76% is female.

1.3.6 Education

The Sikkim government is making effort to achieve cent percent literacy. The state has already achieved the target of providing education facilities in all parts of the state.

Significant importance has been given for providing more educational facilities in Namchi and to develop it as a centre for education in the state.

At present Namchi has one Degree College, one Agricultural Research Centre, number of educational institutions and one B. Ed College.

1.3.7 Economy

In general, it is assumed that more than 45% are very poor, 25% poor, 20% medium income group and 10% population are in high income group.

CHAPTER 2

PRE PROJECT SITUATION

2.1 GENERAL

Initially, the source of water supply for Namchi was Dharay stream and Bhanjang stream. These sources were not perennial, so there used to be water crisis during the lean period. Later in the year 1985 Bermaly stream was identified as source of water supply for Namchi. Bermaly stream is perennial one and is located at a distance of 47 km from Namchi.

2.2 PUBLIC MEETING TO DISCUSS THE SITUATION OF WATER

On 12th October, 2004, a public meeting was held attended by the area MLA, senior citizens, public representatives and the officials of the concerned departments. The meeting mainly focused on the acute shortage of water faced by the community and the need to alleviate this problem. As per the consensus view, it was decided that

- PHE Department would carry out detail survey and find out reasons for water supply problems in the town
- It was apprehended that due to natural and man-made ecological unbalance, the discharge at the source was depleting and hence it was decided to look into the matter and take remedial measures.

2.3 GROWTH OF POPULATION

In the past two decades, the population of Namchi town has increased by 4 times and the town has witnessed increase in the growth rate of population. The population has increased from 7167 in the year 1981 to 9754 by the year 1991 indicating the decadal growth of 36.09%. The present population of the town has reached to 20,000 (approximately) but influx of population towards the urban areas has been on the increase. The population figure has been projected to grow to 30, 000 by the year 2035.

2.4 SALIENT FEATURES

1.	Name of the Project	Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim.
2.	Location	Namchi, South Sikkim i. Ahlay Gumpah Tank near Ahlay Gumpa ii. Gumpa Ghurpisey near Ghurpisey iii. 2 no. of Tank at Namchi Public School
3.	Source	Bermaly stream
4.	Capacity	4.5 lakh litre (4 nos)
5.	Cost of Project	Rs. 432.76 lakh
6.	Area Benefitted	Namchi Town
7.	Key Personnel	
	i. Additional Chief Engineer	Mr. T.B. Gurung, PHE Department.
	ii. Assistant Engineer	Mr. Rajdeep Rai, PHE Department.
	iii. Junior Engineer	Mr. Sunil Rai, PHE Department.

CHAPTER 3 PROJECT EVALUATION

3.1 GENERAL

The project evaluation was carried out in accordance with the following objectives:

- i. Evaluation of Projects/Schemes to assess the impact and desired outcome
- ii. Recommend mid-term correction of the project if any for optimum utilization of fund
- iii. Give a measure of the opportunity cost of the project
- iv. Generate guide points for better planning of future projects.

The analysis of the project parameters were done and the results are reported in this chapter.

3.1 FINANCIAL EVALUATION

The cost of the scheme as proposed by the PHE Department to NEC was Rs. 480.12 lakh. The NEC has accorded approval for Rs. 432.76 lakh. The details are furnished below:

Financial progress achieved is 88.98 %. A balance amount of Rs. 42.92 lakh is to be released by NEC and Rs. 4.77 lakh is to be released by State Government.

Sl. No.	Name of the Scheme	Administrative approval Order/Revised Administrative Approval		Balance amount to be released by NEC Rs. in lakh	Balance amount to be released by State Govt. Rs. in lakh	Remarks
		Number and Date	Amount Rs. in lakh			
1.	Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim.	NEC/IRGN /SKM/2K/1 3/795 Dated: 17/01/2006	432.76	42.92	4.77	Work completed physically but completion held up due to non release of final installment by NEC

3.2 PHYSICAL EVALUATION

The project has been implemented at Namchi by the PHE Department. The physical progress has been discussed in the following sub-headings.

3.2.1 Distribution Reservoir and Distribution Main Trunk lines

Sl. No.	Item of Work	Target	Achieved	% Achievement
1	Excavation of pipes trenches	9732.94 cum	9732.94 cum	100 %
2	Laying, fitting and fixing of pipes including carriage upto trench, placing in alignment, fitting etc. For 100 mm dia DI pipes For 150 mm dia GI pipe	14050.5 m 5912.50 m	14050.5 m 5912.50 m	100 %
3	Providing and laying 1:2:4 mix plum concrete anchor block For 150 mm dia pipe For 100 mm dia pipes	170 nos 560 nos	170 nos 560 nos	100 %
4	Providing and laying 1:4:8 mix coursed rubble stone masonry saddle block For 150 mm dia pipe For 100 mm dia pipes	5 nos 12 nos	5 nos 12 nos	100 %
5	Carriage of Cement	492.50 q	492.50 q	100 %
6	Carriage of sand	66.72 cum	66.72 cum	100 %
7	Carriage of Stone	305.23 cum	305.23 cum	100 %
8	Head load of stock materials	492.50 q	492.50 q	100 %
9	Head load of non stock materials	371.94 cum	371.94 cum	100 %
10	100 mm DI pipes from main reservoir to distribution reservoir	14050.5 m	14050.5 m	100 %

Sl. No.	Item of Work	Target	Achieved	% Achievement
11	150 mm diameter GI pipes	5912.50 m	5912.50 m	100 %

3.2.2 Construction of 4.5 lakh litre reservoir with control room

➤ Site preparation and protective works

Sl. No.	Item of Work	Target	Achieved	% Achievement
1	Hill side cutting and leveling	1019.04 cum	1019.04 cum	100 %
2	Excavation of foundation trenches	86.85 cum	86.85 cum	100 %
3	Providing and Laying 1:4:8 mix course rubble stone masonry	4.36 cum	4.36 cum	100 %
4	Providing and Laying hand packed stone filling	15 cum	15 cum	100 %
5	Carriage of stock materials	66.5 q	66.5 q	100 %
6	Head load of stock materials	66.5 q	66.5 q	100 %
7	Carriage of sand	18.09 cum	18.09 cum	100 %
8	Carriage of stone	169.31 cum	169.31 cum	100 %
9	Head load of non stock material	187.4 cum	187.4 cum	100 %

➤ Reservoir

Sl. No.	Item of Work	Target	Achieved	% Achievement
1	Excavation of foundation trenches	181.25 cum	181.25 cum	100 %
2	Providing and Laying stone soling	30.21 cum	30.21 cum	100 %
3	Providing and Laying 1:3:6 mix concrete	15.10 cum	15.10 cum	100 %

Sl. No.	Item of Work	Target	Achieved	% Achievement
4	Providing and Laying 1:1.5:3 mix reinforced concrete	141.21 cum	141.21 cum	100 %
5	Placing in position of tor steel	18357.3 kg	18357.3 kg	100 %
6	Providing and Laying removing of frame for casting	573.86 sq m	573.86 sq m	100 %
7	Providing and Laying 1:4 mix cement plaster	357.14 sq m	357.14 sq m	100 %
8	Providing and Laying 1:3 mix cement plaster	327.68 sq m	327.68 sq m	100 %
9	Providing and Laying 1:2:4 mix cement concrete flooring	110 sq m	110 sq m	100 %
10	Providing and Laying 45 cm x 30 cm ID box drain	100 m	100 m	100 %
11	Carriage of stock materials	935.82 q	935.82 q	100 %
12	Head load of stock materials	935.82 q	935.82 q	100 %
13	Procurement of cico powder	1475 kg	1475 kg	100 %
14	Carriage of sand	83.69 cum	83.69 cum	100 %
15	Carriage of Stone	214.74 cum	214.74 cum	100 %
16	Head load of non stock material	298.43 cum	298.43 cum	100 %
17	Throwing of spoils	181.25 cum	181.25 cum	100 %

➤ **Control Room**

Sl. No.	Item of Work	Target	Achieved	% Achievement
1	Excavation of foundation trenches	24.34 cum	24.34 cum	100 %
2	Providing and Laying stone soling	4.74 cum	4.74 cum	100 %

Sl. No.	Item of Work	Target	Achieved	% Achievement
3	Providing and Laying 1:3:6 mix concrete	0.9 cum	0.9 cum	100 %
4	Providing and Laying 1:1.5:3 mix reinforced concrete	10.39 cum	10.39 cum	100 %
5	Placing in position of tor steel	1246.8 kg	1246.8 kg	100 %
6	Providing and Laying removing of frame for casting	66.35 sq m	66.35 sq m	100 %
7	Providing and Laying 1:4:8 cement rubble stone masonry	10.19 cum	10.19 cum	100 %
8	Providing and Laying mix filling including watering ramming etc.	10.77 cum	10.77 cum	100 %
9	Providing and Laying ½ brick thick 1 st class brick work	27.43 sq m	27.43 sq m	100 %
10	Providing and Laying angle iron framed MS plate door	89.24 kg	89.24 kg	100 %
11	Providing and Fixing glazed windows	16.96 kg	16.96 kg	100 %
12	Providing and Laying 1:2:4 plum concrete	0.65 cum	0.65 cum	100 %
13	Providing and Laying 12 mm 1:4 cement plaster	131.48 sq m	131.48 sq m	100 %
14	Providing and Laying 1:2:4 mix cement concrete	1.92 cum	1.92 cum	100 %
15	Providing and Laying 40 mm 1:2:4 mix cement concrete flooring finished with floating coat	11.5 sq m	11.5 sq m	100 %
16	Providing and distempering with dry distempers	110.35 sq m	110.35 sq m	100 %
17	Carriage of stock material	70.97 q	70.97 q	100 %
18	Head load of stock materials	70.97 q	70.97 q	100 %

Sl. No.	Item of Work	Target	Achieved	% Achievement
19	Carriage of sand	9.86 cum	9.86 cum	100 %
20	Carriage of Stone	27.47 cum	27.47 cum	100 %
21	Head load of non stock material	37.33 cum	37.33 cum	100 %
22	Throwing of spoils	24.24 cum	24.24 cum	100 %

➤ **Plumbing Works**

Sl. No.	Item of Work	Target	Achieved	% Achievement
1	6 cm dia GI pipe	30-50 m	30-50 m	100 %
2	6 cm dia GI socket	16 nos	16 nos	100 %
3	6 cm dia GI bend	5 nos	5 nos	100 %
4	6 cm dia GI tee	6 nos	6 nos	100 %
5	6 cm dia GI sh. pc	8 nos	8 nos	100 %
6	6 cm dia GI flange	4 sets	4 sets	100 %
7	6 cm dia GI stop valve	4 nos	4 nos	100 %
8	4 cm dia sh. pc	6 nos	6 nos	100 %
9	4 cm dia GI flange	6 sets	6 sets	100 %
10	4 cm dia GI stop valve	6 nos	6 nos	100 %
11	Rubber Gasket	20 kg	20 kg	100 %
12	Hacksaw blade	24 nos	24 nos	100 %
13	Laying fitting and fixing of pipes and accessories	LS	LS	100 %
14	Carriage of material	LS	LS	100 %

3.3 ASSISTANCE PROVIDED BY NEC

The assistance provided by NEC for implementation Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim has helped the Government of Sikkim in meeting the drinking water needs of the population of the area. The inhabitants of the concerned area of the scheme have now got habituated to dependable drinking water system.

3.4 INTERACTION WITH THE LOCAL PUBLIC

Interaction with various cross-sections of the consumers as well as population of the benefitted area and also those of the adjoining areas revealed that the consumers are getting safe drinking water and they are happy with the implementation of the project. There was indication also that more water supply scheme could be drawn up for additional area.

3.5 INTERACTION WITH THE OFFICERS OF THE PHE DEPARTMENT

Discussion with the officers and staff of the PHE Department also indicated that the project has been successful and the consumers at macro and micro level are satisfied.

Interaction with the officers of the PHE Department revealed that whatever fund has been allotted by the NEC has been utilized for the project. The officers also stated that they were waiting for release of balance fund.

3.6 SUCCESS AND IMPACT

The project approved by NEC has met its success as evident after seeing the happiness and satisfaction of the consumers and the population after fulfillment of the requirement of drinking water in the area. It is also a fact that due to implementation of this project the public at both macro and micro level are harvesting the benefits in terms of health, hygiene and cleanliness.

The implementation of the project has created a very good social impact.

3.7 MID-TERM CORRECTIONS

The mid-term corrections are an integral part of project implementation if the corrections are technically sound and financially viable. In case of this project under evaluation there is no scope for mid-term correction since the physical works have been completed at site.

3.8 OPPORTUNITY COST

The project for Providing Distribution Reservoir and Distribution Main Trunk Line for Water Supply System to Namchi town in South Sikkim was approved by the by the NEC for a cost of Rs. 432.76 lakh during the year 2006. The project could be completed without escalation. Since the project was approved when cost price index was at a much lower level, it was beneficial for the NEC as well as the State Government not only from the point of view of early public benefits but also from the consideration of positive financial advantages.

3.9 GUIDE POINTS

The guide points which we would like to mention based on our field experiences during visit to project sites are:

- i. The index map showing the project location should be geo-referred and preferably on Survey of India toposheet showing the roads, rivers, water source, intake location etc.
- ii. There should be a layout plan of the project showing the intake point, WTP, reservoir, distribution system etc.
- iii. Details of drawings of structure and distribution system indicating specification and dimensions etc.
- iv. Number of population benefitted through household connection and also through stand post.
- v. Name of area benefitted by the project.
- vi. Salient features of the project.



Ahlay Tank near Ahlay Gumpa



Sign Board at the location of scheme



Distribution pipe line from the Reservoir



WaterTank



Distribution Pipe Line to Namchi Town



Namchi Town