NORTH EASTERNCOUNCIL (NEC) <u>https:/necouncil.gov.in</u> EVALUATION OF NEC FUNDED PROJECTS IN ARUNACHAL PRADESH



ANTL- EROSION WORK OVER DOLLING RIVER AF DOLLUNGMUKH CIRCLE UNDER LOWER SUBANSIRI DISTRICT IN ARUNACHAL PRADESH

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"Anti-erosion work over Dollung river at Dollungmukh circle under lower Subansiri district in Arunachal Pradesh"

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EXECUTIVE SUMMARY

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 "Antierosion work over Dollung river at Dollungmukh circle under lower Subansiri district in Arunachal Pradesh."

The project site is located on the both side of Dollung river bank at Dollungmukh Circle under Lower Subansiri district. The Dollung river passes through the cultivable land about 222 ha situated on the both banks. During monsoon the water level of Dollung river increased resulting in permanent loss of fertile agricultural land due to erosion and damage to the standing paddy crops due to inundation over flows along the river bank. As a result the cultivable land, lives and properties of Dollungmukh area along both side of river bank was under threat from bank erosion. In order to reduce the bank erosion and increase the socio- economic condition of the people the above project was taken up by Water Resources Department of Arunachal Pradesh. The NEC was approached for funding the project. The NEC accordingly accorded approval for an amount of Rs. 344.64 lakh. As a result of the project, there has been reduction in bank erosion, loss of fertile agricultural land due to flood an overall socio-economic and environmental development of the area.

The following approach and methodology were followed for evaluating the performance of Anti-erosion work over Dollung river at Dollungmukh circle under lower Subansiri district in Arunachal Pradesh:

- 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 as well as Field Officers and other Technical Staff and substaff of the Water Resources Department.
- v. Field visit of the project sites
- vi. Interaction with beneficiary/inhabitants
- 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 for Anti-erosion work over Dollung river at Dollungmukh circle under lower Subansiri district in Arunachal Pradesh under Water Resource Department.



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.

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 ARUNACHAL PRADESH

Arunachal Pradesh also known as the land of rising sun is situated on the North Eastern Region of India at 27.06°N latitude and 93.37°E longitude covering an area of 83,743 sq km and having a population of 10,91,120 as per 2001 census. The State has international border in north with China, while Bhutan is on the west and Myanmar on the east. On the south is the state of Assam and Nagaland. Much of Arunachal Pradesh is covered by the Himalayas. Kangto, Nyegi Kangsang, the main Gorichen peak and the Eastern Gorichen peak are some of the highest peaks in this region of the Himalayas.

Arunachal Pradesh receives heavy rainfall of 2,000 to 4,100 mm annually, most of it between May and September. The annual average rainfall in the state is of the order of 3000 mm annually. The economy of the people is based mainly on agriculture. Arunachal Pradesh has close to 61,000 square kilometers of forests, and forest products are the next most significant sector of the economy. Among the crops grown here are rice, maize, millet, wheat, pulses, sugarcane, ginger, and oilseeds. Arunachal is also ideal for horticulture and fruit orchards. Its major industries are rice mills, fruit preservation units, and handloom handicrafts. Rice is grown in about 68% of the cultivated land.

Due to high annual rainfall and geological fragility of the region, every year, the floods hit the State and render many people homeless, devastate agriculture, destroy road communication, towns and other public assets.



There are ten river basins in the state. 1) Tawang 2) Kameng 3) Dikrong 4) Subansiri 5) Siang 6) Sisiri 7) Dibang 8) Lohit 9) Tirap-Dehing 10) Tissa river basins. Numerous rivers originating from these basins ultimately drain to Brahmaputra River. This is a boon for the State for development of agriculture, power and industry sectors but at the same time these rivers have the destructive potentials unless certain preventive and protective measures are taken up in the State.

The Himalayan Rivers carry heavy sediment loads because of steep bed slope, soft and friable Himalayan rock. Rivers of Arunachal Pradesh could be broadly classified into 3 (three) types namely:

- (i) Hilly reach (incised rivers)
- (ii) Foot hill sub-montance reach (boulder rivers) and
- (iii) Flood plain (alluvial rivers).

Flood related problems mostly occur in foothill sub-montance reach and flood plains. Population concentration of the state is also on these reaches. Nevertheless, problem persists in these reaches not because of flood inundation but because of erosion that is equally as destructive as floods. Massive bank erosion takes place in every monsoon destroying crops, livestock, roads and bridges, other public assets and flood problem of Assam could be attributed to soil erosion within Arunachal Pradesh. The heavy silt laden rivers coming down from steep slopes dissipate its energy at the flood plains (mostly foothill area of the State) and deposit silt on its beds due to which river water and excess silt spread overland causing braiding of rivers and submergence of agricultural land, towns and other public assets.

Because of steep slope in mountainous areas combined with human interference in the catchments area, large-scale soil erosion and bank erosion occur in agricultural field and dwelling areas. The massive soil erosion and bank erosion in the river basins of Arunachal Pradesh is also the reason for the flood problems in Assam.

1.3 PROJECT SITE

The Dollung river passed near by the Dollungmukh circle Head Quarter, Paro, Rigio, Kolaptukar, Lumsi and Bomte village as well as through the cultivable land of Dollungmukh area under Lower Subanstri district. The project site is located at an altitude of 800 m above mean sea level and situated at 28°15' North latitude and 93°32' East longitude. The project site is located on the both side of river bank at Dollungmukh Circle under Lower Subansiri district. It is around 197 km away from the district headquarter of Lower Subansiri district, Ziro and about 68 km away from North Lakhimpur (Assam) about 138 km away from the state capital Itanagar.

The average annual rainfall of the catchment area is 1400 mm. The maximum and minimum discharge of the river is 16.20 cumecs and 16.3 cumecs.



CHAPTER 2 PRE PROJECT SITUATION

2.1 PRE PROJECT PROBLEM

The Dollung river passes through the cultivable land about 222 ha situated on the both banks. During monsoon the water level increased in the river resulting in overflow of water through the agricultural land causing damage of the standing crops. Permanent loss of fertile agricultural land due to erosion and damage to the standing paddy crops due to inundation over flows along the river bank was the major problem. The bank erosion was also taking place on both side of the Dollung river bank. As a result the cultivable land, lives and properties of Dollungmukh area along both side of river bank was under threat from bank erosion for a stretch of 7.20 km. Besides bank erosion there was loss of crops every year due to inundation of the area. As a result the agriculture land and standing crops were being damaged every year and the remaining land was under threat due to constant increase in bank erosion and inundation.

2.2 **PROJECT OBJECTIVE**

The aim of the project was to achieve the following objectives:

- i. To prevent bank erosion and to guide the river flow straight towards the down stream
- ii. To restrict the over flow into agricultural land about 150 ha along the river bank
- iii. To save the lives, properties and standing crops from over flooding of river Dollung

2.3 **REMEDIAL MEASURES**

To protect valuable properties and land from permanent loss due to bank erosion and standing crops by over flooding in every year the following measures were suggested:

- ➢ 7200 m long dry course Guide Wall
- > Spur
- Bank Revetment

2.4 SALIENT FEATURES

1.	Name of the Project	Anti-erosion work over Dollung river at Dollungmukh circle under lower Subansiri district in Arunachal Pradesh
2.	Location	Dollungmukh, Under Lower Subansiri district, Arunachal Pradesh.
3.	River	Dollung
4.	Date of Approval of Scheme	4 th December, 2006
5.	Cost of Project	Rs. 344.64 lakh
6.	Area Benefitted	Dollungmukh Circle under Lower Subhansari district



7.	Benefit Cost Ratio	1.02 : 1
8.	Name of Executing Department	Water Resources Division, Ziro
9.	Name of Sub-division	Raga Sub-division
10.	Key Personnel	
	i. Chief Engineer	Sh. L Angu
	ii. Superintending Engineer	Sh. S. Lall
	iii. Executive Engineer	Sh. L. Lego
	iv. Assistant Engineer	Sh. Ramji Prasad
	v. Junior Engineer	Sh. Heri Mania
	vi. Junior Engineer	Sh. H.P. Verma
	vii. Staff	Sh. Kojrichu
	viii.Zilla Parishad Member	Sh. Nidu Torh

During the visit and after interaction with the officers of the Water Resources Department and the beneficiaries and also with the public directly or indirectly connected with the project, it is concluded that the scheme is completed and the target has been achieved.



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 was done and the results are reported in this chapter under the following headings:

- ➢ Financial Evaluation
- Physical Evaluation
- > Assistance provided by NEC
- ➢ Interaction with Local Public
- > Interaction with the Officers of the Water Resources Department
- Success and Impact
- Project Benefit
- Mid-term Correction
- > Opportunity

3.2 FINANCIAL EVALUATION

The cost of the scheme as proposed by the Water Resources Department to NEC was Rs. 344.64 lakh. The NEC has accorded an approval for Rs. 344.64 lakh. The financial achievements upto 26th August, 2009 is given as:

1 st Installment:	Rs. 75 lakh
2 nd Installment:	Rs. 70 lakh
3 rd Installment:	Rs. 57.50 lakh
4 th Installment:	Rs. 60 lakh
5 th Installment:	<u>Rs. 40 lakh</u>
Total amount released by NEC:	Rs. 302.5 lakh

3.3 PHYSICAL EVALUATION

The project has been implemented at Dollungmukh by the Water Resources Department. The physical progress achieved are:

Sl. No.	Items	Remark
1	Survey and investigation	Completed



Sl. No.	Items	Remark
2	Construction of Guide Bund Wall	Completed
3	Construction of Diversion Channel	Completed
4	Construction of Spurs	Completed
5	Bank Revetment	Completed
6	Drinking water supply installation	Completed
7	Fire fighting equipments	Completed
8	Annual Maintenance	Completed

3.4 ASSISTANCE PROVIDED BY NEC

The assistance provided by NEC for implementation of anti-erosion work over Dollung river at Dollungmukh circle under lower Subansiri district has helped the Government of Arunachal Pradesh to protect valuable properties, standing crops like paddy and fertile agricultural land from permanent loss due to bank erosion and by over flooding every year.

3.5 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 happy with the implementation of the project.

Discussion with the officers and staff of the Water Resource Department also indicated that the project has been successful and the inhabitants are satisfied.

3.6 INTERACTION WITH THE OFFICERS

Interaction with the officers of the Water Resource Department revealed that whatever fund has been allotted by the NEC has been utilized for the project.

3.7 SUCCESS AND IMPACT

The project approved by NEC has met its success as evident after seeing the happiness and satisfaction of the inhabitants of Dollungmukh after construction of guide wall. The implementation of the project has created a very good social impact.

3.8 PROJECT BENEFIT

After completion of this project about 200 to 250 ha of agricultural land, buildings, MIP schemes road etc was protected. The project benefits are as follows:

- ➢ Agricultural Land: 2220.00 ha
- ➢ Inhabitated area: 15 ha



Population benefited: 2000 nos

3.9 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.

3.10 OPPORTUNITY COST

The project for anti-erosion work over Dollung river at Dollungmukh circle under lower Subansiri district was approved by the NEC for a cost of Rs. 344.64 lakh. 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 through increased agricultural production of food grains but also from the consideration of positive financial advantages from point of view of avoidance of annual damages and resultant relief and rehabilitation measures under pre-project situation.





1. Protection work for the foot bridge



2. Protection work on left bank of Dollung river



3. Footbridge for crossing over to Paro



4. View of the river bed and protection works



5. Protection work/spur on right bank of Dollung river



6. Protection work on right bank of Dollung river



7. Protection work on left bank of Dollung river



8. Protection work upstream of Kherbari village on right bank



9. Protection work on right bank



10. Bank Protection work on Dollung river



11. Bank Protection work



12. Bank Protection work