

IMPACT OF TILPARA BARRAGE ON ECONOMY OF ITS SURROUNDING AREAS

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ABSTRACT

Multipurpose river valley projects have several directions of human welfare throughout the World. In India there are several large multipurpose river valley projects which help in different directions to human civilization e.g. flood control, irrigation, generation of hydel-power, drinking water supply, extension of agriculture etc. This paper aims to analyse the impact of Tilpara Barrage as Multipurpose River Valley project on the economy of its surrounding areas.

STATEMENT OF PROBLEM

Multipurpose river valley projects work simultaneously in several directions to achieve manifold benefits. Besides irrigation, this project also facilitates flood control measures, drinking water supply, power generation, transport, extension of agriculture, fishing and even tourism. The river valley projects generally refer to a water retention system which is used for different purposes. There are some positive and negative impacts which are normally found here. The positive impacts are of providing power, water for human consumption, agriculture, industrial uses, fishery, open new sources to cities and towns nearby, for recreation or tourism. The negative impacts are displacement of human habitat; increase the risk of earthquake, damage river belt fisheries, submerged forest land, displacement and abolition of forest and wild life.

LITERATURE SURVEY

Several studies have been made by different social scientists indicating the impact of multipurpose river valley projects on the society, economy and environment. Some of them are discussed below:

Pradip Kumar (Director, National Water Academy) observed the socio environmental impact of water resources. He found that due to the activities of multipurpose river valley project considerable amount of employment has been generated, outmigration from backward villages to urban areas are reduced, development of infrastructure has taken place and compensation was given to the people who lost their land. Besides, social forestry programme was launched to maintain ecological balance. However, displacement of people, loss of livelihood, biotic submergence of forest land and elimination of flora and fauna has been taken place due to constructional activities.

D'suaza et.al (1998) re-evaluated Hirakud, Ukai and IGNP. They observed that several trends like water logging, salinity, sedimentation and health hazards have high possibilities of occurrence. The achievement of flood control measure, irrigation and power are not as effective as envisaged. However, the cropping pattern is largely determined by market and marginally by irrigation.

Rangachari (1973) observed the socio economic and environmental impacts of Bhakra-Nangal project and indicated incidental and indirect consequences of the dam. The studies reveal increased food production, productivity, displacement, rehabilitation of people from the areas.

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Sati (2008) enumerated the environmental and economic implications of Madikheda dam. He observed that a large scale depletion of forest and existence of wild animals are consequences of these activities. Its economic impacts are tremendous. It does not only solve the energy crisis but also generate substantial amount of employment and supplies ample water for irrigation.

An organization – ANSAL BUILDWELL investigated different defects of Narmada main canal project on the society. The Sardar Sarabor Project is expected to provide irrigation benefits over considerable portion of area. It generates 950 mega watts hydropower and act as partial flood control.

Sharma et.al (2002) examined the impact of Hirakud dam on economic development in Orissa. They have observed the intricate functional interlinkage between the activities of Hirakud project and economic development of the region and people.

The project irrigates 1.55 lakh hectares of land during kharif season and 1.8 lakh hectares during Rabi season. Besides, it also produces 331 megawatts electricity in one hand and provides flood protection over 9500 sq.km of delta area. Wikipedia, the Free Encyclopedia analyzed the network of DVC as a part of the total system of water management. It is capable of moderating flood. Considerable amount of water is stored in the reservoir to meet the water demand for industrial, municipal, commercial and domestic requirements of West Bengal and Jharkhand state. Durgapur barrage supplies irrigation water. Large amount of land in the upper valley is irrigated by lift irrigation.

Thus, several social scientists have studied the positive and negative impacts of river valley projects which after summing remains as: They provide employment, power and water for human consumption, help to conserve water, provide water for agriculture, industrial uses, encourage pisciculture, eliminate flooding, change the ecology of the region and open a new area for agricultural operation.

OBJECTIVES OF THE STUDY

- The present study possesses following objectives:
- To find out impact on agriculture.
- To observe the nature of land use.
- To narrate the nature of damage due to flood in surrounding villages.
- To identify the provision of water to other places for fulfilling the demand of water.
- To analyze the supply of water for cultivation as source of minor irrigation through canal.
- To explain the nature of pollution conducted by human being due to different kinds of activities.

DATABASE AND ANALYTICAL PROCEDURE

The data have been collected from two sources:

1. Primary Source:

- Amount of source wise irrigated area.
- Area benefited by canal.
- Particulars about cropping pattern.
- Area affected by flood
- Development of other economic activities, like fishing, tourism etc.

2. Secondary Source:

- Information of the physical condition, about irrigation, about fishing etc.
- After collecting the data they are processed statistically and tables, maps, charts etc have been prepared.

LOCATION OF THE STUDY AREA

Tilpara barrage is located at Tilpara, 32 km downstream near Suri in the district of Birbhum on the river Mayurakshi. The Barrage is 309 meter long, the co-ordinates of

Tilpara barrage is 23⁰58' N and 87⁰32'18" E. The barrage is named 'Tilpara Mihirlal Barrage' after the name of a renowned freedom fighter. The distance of Tilpara barrage from nearby town Suri is 5 km.

SALIENT FEATURES OF TILPARA BARRAGE

Tilpara Barrage is located on the river Mayurakshi. The catchment area is 3208 sq.km and width between the abutments is 308.04 meter. It possesses seven weir bases with width 18.29 meter each and eight under sluices with the width 18.29 meter each. The barrage possesses linear water ways which is 274.89 meter. The design upstream water level is 64.33 meter. The design and canal discharge are 849599.11 cusec. Length of the main left bank canal is 16.62 Km and right main canal is 22.53 Km.

IMPACT ON AGRICULTURE

As monsoonal rainfall is totally unpredictable in India to ensure stability in water availability in drought prone areas, irrigation has become an age-old practice. Nature has bestowed remarkable water cycle on India with monsoon as its core. Still rainfall variability, uncertainty of its occurrence, distributional lacunae, leave no other option to the farmer, but to start more and more on enhanced irrigation from this barrage has ensured irrigation of some 5,60,000 acre of land with an estimated resultant increased field of approximately 4,00,000 tons food annually. The water is supplied for the purpose of irrigation in Birbhum, Murshidabad and parts of Burdwan district.

TABLE 1: DISTRIBUTION OF WATER FOR IRRIGATION

Sl. No.	Region	Area (Acres)	Percentage
1	Birbhum	397542.00	70.98
2	Murshidabad	123000.00	21.97
3	Parts of Burdwan	39458.00	7.05
	Total	560000.00	100

Water is distributed through canal system. It plays a vital role in irrigation. There are two types of canals through which the water is supplied. (i) Inundation canal (ii) Perennial canal. Inundation canals are constructed directly on a river without having any weir, for the control of water flow during flood, excess water from the river, enters into the canal. After the recession of flood water the canals become deficient of the water reserve. As the flow of canal come only in the rainy season, during lean period these canals remain dry. Perennial canals contain water throughout the year. Weir or embankments constructed at their head, controls the discharge of water after careful monitoring of the water reserve and need in agriculture. The area benefited under canal is 5,60,000 acre. The nature of benefit under canal is flow irrigation and nature of damage on croplands is due to flood. There are two main canals emerged from Tilpara whose length and catchment capacity are as follows:

TABLE 2: CATCHMENT CAPACITY OF CANALS

Sl. No.	Name of the canal	Length	Catchment Capacity
1.	Right Bank Main Canal	22-53 Km	783 cusec
2	Left Bank Main canal	16-62 Km	769 cusec

TABLE: 3 POLICE STATION WISE DISTRIBUTION

Sl. No	Districts	No. of P.S
1	Birbhum	12
2	Murshidabad	9
3	Burdwan	1
	Total	22

TABLE 4: CD BLOCK WISE DISTRIBUTION

Sl. No.	Districts	No. of CD Blocks
1	Birbhum	17
2	Murshidabad	9
3	Burdwan	1
	Total	27

The cropping pattern indicates that as high as 64% of the net sown area is confined to double cropped area, where as triple cropped area remains on 8% of net sown areas and the monocropped cultivation is practiced on 28% of net sown area Double and triple cropping pattern are the result of irrigation facilities from this barrage.

TABLE 5 : PARTICULARS OF CROPPING

Sl. No.	Irrigation	Cropping Patten		Source
		Kharif	Rabi	
1	Irrigable area	2,26,629 Ha	20,250 Ha	Canal
2	Maximum-irrigation achieved	2,20,730 Ha	8,150 Ha	Canal

In case of Kharif crops, the irrigable area is 2,26,629 hectares and maximum irrigation has achieved for 2,20,730 hectares. In case of Rabi crops, irrigable area is 20,250 hectares. But maximum irrigation has been achieved for 8,150 hectares. Therefore, maximum irrigation facility has been obtained in case of Kharif crops than in Rabi crops. For Boro Paddy cultivation, maximum irrigation is achieved in 25,400 hectares of land but in the year of 2011-12, the water is not supplied for Boro paddy cultivation due to shortage of water in the barrage. Water is reserved in the barrage for kharif cultivation because of delay and irregularity of monsoon in West Bengal.

TABLE 6 : PARTICULARS OF IRRIGATION PATTERN

Sl. No.	Irrigation System	Percentage of Irrigated Area
1	Canal	83%
2	Pump	17%

TABLE 7 : PRODUCTION OF FISH ANNUALLY (YEAR WISE)

Year	1990	1992	1994	1996	1998	2000	2002
Tilpara Reservoir	5100 Kg	5670 Kg	N.A	5900 Kg	5990 Kg	6370 Kg	7010 Kg

SOURCE OF MINOR IRRIGATION

Water is lifted from Mayurakshi River bed as well as canal system to source of minor irrigation. In upper valley of the area, irrigation is practiced by water through pump from canal. It reveals that large irrigation is mainly done by canal and only 17% of land is irrigated by shallow tube well which is included in minor irrigation project.

IMPACT OF TILPARA BARRAGE ON PISCICULTURE

It is a great source of piscicultural activities. With the growing demand for fish, the annual fish production is gradually increasing. On an average 6500 Kg/Year fish is caught. It is observed that, the trend of production of fish is increasing from the year 1990 to 2002. As far department of fisheries is concerned, fish seeds are released under River Ranching Programmes Sanctioned by the Department of Fisheries, Government of WB – since the financial year 2009-2010 Under this said programme, only one time fish seeds are released and harvested once in a year. No partial harvesting takes place. The production was based on release of fish seeds and natural stock. The purpose of fish production in barrage comes under social fisheries activities.

IMPACT OF TILPARA BARRAGE ON FLOOD CONTROL

One of the major purposes for the construction of this barrage was to control havoc of flood in Mayurakshi river, occurs during rainy season. Previous to the construction, almost every year devastating flood occurred in this river. As a result of that huge amount of crops, property as well as human lives was lost. To get relief from this devastating flood, Masanjore dam and Tilpara Barrage were constructed on the Mayurakshi River. The water of Tilpara barrage is used mainly for irrigation and flood control purposes. However, the problem of flood is not solved. During rainy season the water level of water head crosses the danger limit and water has to be released through right and left bank main canal to save the nearest town Suri. As a result, the surrounding villages are inundated. This sudden flood is named as Harpa Flood which washes away properties and crops. In the year of 2000, due to heavy rainfall, the amount of water became excessive than the holding capacity of the barrage. The barrage authority had to discharge the water to protect the bridge. As a result the nearby villages were seriously affected by flood. Affected blocks were Mayuraswar I and II, Rampurhat – I and II, Salar and Bharatpur. In the year of 1978 and 2000 two devastating floods occurred which caused huge loss of human lives and property of surrounding areas. When the water is removed after flood, the inundated portion of land is covered by silt which is very much fertile for agricultural production.

IMPACT OF TILPARA BARRAGE ON TOURISM AND ENTERTAINMENT ACTIVITIES

Sand stretching from shore to shore for a mile and half is recognized as attractive tourist spots. Deposition of sand takes place in dry season. Therefore, the tourists visit this place mostly during winter season. The natural beauty of surrounding areas of this barrage is very much attractive. In winter season, many migratory birds come in this place from northern part of India to save themselves from severe cold. They stay here from December to February. These are of great attraction to the tourist as they make the place more beautiful. Large numbers of people visit this place during winter months for enjoying in picnic. This area is largely polluted by different activities of human being. Different types of pollutants like plastic, packet of snacks, foods, water bottle etc used by the tourists. These create heap of garbage which degrade the environmental quality of this place. After picnic, the tourists leave residuals of food and garbage there. The Mayurakshi River is also polluted by them.

IMPACT OF TILPARA BARRAGE ON TRANSPORT AND COMMUNICATION

Another major aspect of this project is construction of roadways situated over the bridge. This road is connecting way from Suri to Sainthia, Suri to Berhampur, Suri to Malda, Suri to Balurghat etc (all via Md. Bazar). This is a National High way which connects entire North Bengal and North East India to parts of south Bengal and Orissa. This NH-60

connects Balasore., Orissa with Moregram, Murshidabad etc areas. Before the construction of this bridge over the barrage, there was a 'Ghat' and the vehicles had to pay huge amount of tax to cross the river. Afterwards the social worker fought against it which caused decreased rates of tax and improved the communication and transport systems. In this connection, this road was constructed over the bridge (NH-60 according to Central Govt.)

IMPACT OF TILPARA BARRAGE ON WELFARE ACTIVITIES – PROVISION OF WATER TO THER PLACES

Water from Tilpara Barrage is supplied to Md. Bazar for the provision of drinking water. Water is also supplied for cattle feeding during the month of April and May. In this time of the year, Ponds become totally dried. Bakreswar Thermal Power Station is situated in Birbhum district. To produce electricity, it needs huge amount of water. There is a reservoir near the plant to supply the water. But this reservoir can't fulfill the demand of water to the plant. To fulfill the demand of water of this power plant, water from Tilpara barrage is supplied every day, which amount to 70 cusec / day. It is supplied through pipe line. Pipe lines are found above the surface from Kachojore to the reservoir where the water is stored temporarily and cooled. Water from this barrage is also supplied to Suri Municipality to serve the municipal area of Suri town.

BENEFICIAL AND ADVERSE EFFECTS OF TILPARA BARRAGE

Beneficial Effects

- Tilpara Barrage has great contribution to increase the agricultural production and productivity especially for Kharif crops.
- The roadway, National Highway- 60 has great importance as it connects the parts of South Bengal to the entire North Bengal as well as North East India.
- It has great contribution to continue the generation of electricity in Brakreswar Thermal Power Plant as it supplies water to the plant.
- The stored water of the barrage is also supplied to other places for different purposes.
- Social forestry can be found in both sides of the river bank. Different types of deciduous tree species are planted.
- It is a good centre for fish production.
- Another major aspect of this barrage is that it has great impact on entertainment of general people for its natural beauty, especially for the people of Suri town.

Adverse Effects

- For the construction of Tilpara Barrage many Santal villages were displaced. The total inhabitation was not provided to this tribal people. In initial stage they protested against this project. After the construction of the barrage the opening of the barrage was done by tribal women. For this, that tribal woman was banished by their society for supporting this project.
- The catchment area of the river is decreasing day by day due to siltation of river bed. As a result, the capacity of the barrage to store water is decreasing. Besides, the river bank is overflowed during the last phase of rainy season.
- The catchment area of the canal is also decreasing due to siltation and lack of proper maintenance. As a result, water for irrigation purpose is not utilized properly.
- Though the fish production is increasing year after year, yet the targeted production is not getting reached.
- In last two years water is not supplied for Boro paddy cultivation during summer for shortage of water. For this problem the production of crop has decreased.
- As the water is not supplied from Tilpara Barrage for Boro cultivation, the farmers, who can afford the cost, irrigate their land by shallow tube well after obtaining ground water. Thus the ground water table has gone down which is the major source for drinking water.

- Due to different activities of human being like performing picnic, the entire environment has been degraded and polluted.
- Security problem is another great problem of this place. No security guard is found in proper place.
- The surrounding area of Tilpara Barrage is recognized as a famous tourist spot as it is very pleasant place, and specially in winter, many migratory birds come to this place. Some of them come even from Tibet but due to negligence of the Government, the place has become unknown to the people of other districts. There is no arrangement for the accommodation for the tourists. This reduces the amount of revenue of the Govt.

CONCLUSION

The above discussion leads to conclude that due to the necessity of the region and the people, the construction of Tilpara Barrage has become an important aspect of agricultural planning. As a result of this, the region experienced higher degree of agricultural development. There were drastic favorable changes in respect of land utilization. The cropping pattern becomes diversified, remunerative, commercialized and market oriented. Multiple cropping is practiced on large part of the area. The production and productivity of crops have shown sharp increase. Higher degree of mechanization over large chunk of area has indicated increase of employment not only in agriculture but also in overall economy. The entire region has thus obtained direct and indirect primary and secondary benefits in the regional economy.

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