Impact Of The Sukla Irrigation Project On Land And People

Hem Chandra Kalita
Associate Professor
Department of geography,
Dudhnoi colledge, Goalpara, Assam.

Abstract:

Water plays a dominant role in the growth of human body and society. Without water nobody can survive even for a day. Water's are in running as well as in static forms. The running water has both the constructional and destructional effects. A certain amount of water is used in agriculture. The irrigation through its water use in the field help in uplifting in economic condition of the society of an area. The irrigational system is not free from demerits. Often, such an artificial supply of water is seen to be associated with destructive effects such as water-logging, occurrence of artificial floods etc. In this paper an attempt is made to examine the role of the Sukla River in Kamrup district which has been able to make the area economically flourishing, socially improved, it has also acted adversely causing some hazards.

Keywords:

Command area, development, irrigation, productivity.

Introduction:

Who would not choose to follow the sound of running water? For a normal man its attraction lies in natural sympathetic sort.

Man is water's child. It is found that about nine –tenth of our body consist of water. Therefore water has much importance in our day – today life; without water no living features survive even for one day . From the above statement we can easily estimate the importance of water in our day to day life. Nowadays running water has been the subject of intensive study and of extensive speculations. The running water has two aspects – one is construction i.e. towards the development of socioeconomic society and other is destructional one which includes causing of floods etc.

The human use of streams and rivers depend on the nature of the river ads well as the needs and customs of the revering societies. The pattern of water use varies from as countries vary. Most modern method of water us from the rivers are merely the technical refinement of usages practiced in some advanced countries – before the beginning of the Christian era. Today the problems of the human's use of rivers fall under nine main inter related facts. Floods control irrigation and drainage water power floatability navigation, water supply fishing and wild life conservation recreation and religion and water pollution.

Hence in this paper an attempt is made to investigate the hydrological problems caused by the dam across the river Sukla and the role of the Sukla Irrigation Project in socio- economic conditions of the people command area. The following is description as regards problems cited above.

The application of water to the soil in order to irrigate land is under taken mainly to grow crops in unreliable rainfall regions marked by dry season. It is also practiced in areas of humid conditions with moderate rainfall. So that higher ills of crops can be obtained so in all the areas except the desert areas, irrigation is either supplementary or complementary to seasonal rainfall.

An irrigation project depends on the following characteristics of the channel sand its catchment areas:

1. The river must not only be perennial but also be with satisfactory water discharge in winter season.
2. Flat and uniformly sloping plain.
3. The rainfall in the catchment area of the rivers must be adequate for water supply.

The Sukla Irrigation Project fulfills all the criteria stated above.

Methodology:

Primary as well as secondary data have been collected to assess the impact of the project on land and people. To collect secondary data offices like Sukla Irrigation Project office, Goreswar, have been visited several times. To collect primary data a survey schedule have been prepared and relevant data been collected from different villages located in the project area to assess the impact of the project on economy and land of the command area.

The Sukla Irrigation Project:

The Sukla Irrigation is the second largest irrigation project in Assam next to the kopili Irrigation project in the Nagaon district. This Sukla project is situated in the north-eastern part of Kamrup and Baksa district having a command area of 55834 acres. The area comprising 86 villages in 5 mouzas such as Pub–Dafali (Bhutan border), Betna, Uttar Betna, Pati, Darrang and Karara was first surveyed by the corps of Engineers Assam in 1965. The construction work of the project was started during 1970-71 and was completed during 1978. The irrigation work started its functioning on June 11th 1978. The amount of total cost incurred by the project was estimated at 298,455 lakhs.

Physiography And Relief Of The Command Area:

The area lies between 91°40'E and 26°40'N. The area being bounded by the Barnadi river in eastern side, the Bhutan Himalaya in northern side and the national highway 36 in southern side comprises alluvial flood-plain of the river, Sukla a northern tributary to the Brahmaputra river. The plain is devoid of hill and hillock. The average slope of the plain is in general from north to south. It is very less and varies from less than 1 degree to about 3 degree.

Geology and Geomorphology:

The area has been formed by alluvium of very recent origin. The soil ranging up to a depth of about one metre is found to be immature. It developed out of the materials transported by the Sukla river and some sub-tributaries of it.

The area is now a flat plain washed by the river Sukla and its sub-tributaries. Frequent floods of low to high intensities also occur in the area. This part along with other parts of the Ganga

Brahmaputra plain consisted of the fore deep region below the Himalayan foot hill. Long continued alleviation on this fore deep has resulted into the thick erosion. The sluggish course of the river has also resulted in the partial abandon of its course. These abandoned portions have turned in due course of time into beels, swamps and marshes. It is also to be noted that the great earthquake of 1897 had caused some local depressions in the plain turning them into beels. During the period of heavy downpour, high floods pass over these beels and swamps and etc. The sand and silt carried by the flood-water's causes to rise the bottom of all these beels and swamps therefore, in due courses of time this beels and swamps have turned into rich agricultural fields

Climate:

The climate of the area is of humid sub tropical nature with high relative humidity during April toSeptember due to heavy rainfall and high temperature. The rainfall is substantially high. In the table below rainfall pattern for some selected stations is shown:

Table – I: Rainfall Pattern

Station	**Daily**	**rainfall**	**(m.m)**
	9thJuly,1952	10th July 1952	11th July 1952
Atherighat	148.3	221.2	76.2
Barnagrijuli	295	124.2	12169
Dimakuchie	33.8	134.11	227.0
Nagrijuli	33.5	147.6	200.0

Source : Sukla Irrigation project office, Goreswar

From the above table it is clear that the catchment acre contributes a lot of water to the river. The rainfall is maximum in July and August. So infiltration capacity of soil is less during these months due to presence of heavy moisture in the soil an therefore run-oft is lays high. Again intensity of rainfall per day during the month, goes sometimes as high as 22.8m.m. (as per table – 1) Ultimately the water being spread over the whole of the catchment area within a short period cause sheet erosion of the layer of the soil.

Hydraulic Condition of The Area:

The Sukla is a perennial river having its source in the Southern slope of the Bhutan Himalaya. The river is a meandering one, in its course the entire project command area upto the point where it joins the Puthimari river near Gandhibari. This point is locally known as 'Dui Sutir Mukh' i.e. meeting point of two tributaries. It has been learnt from the local people that the river before the alignment in the present course used to flow towards east to meet the Barnadi river. However the river had changed its course in due course of time and joined Puthimari river towards west leaving a significantly depressed area called the 'Mutra Beel'.

The slope in the upper part of the river basin is from east to west. The soil is immature in the bank of the river. During the summer season, excessive rainwater collected from its Catchment as well as from the slopes of the Bhutan Himalaya causes rapid and devastating flood flows. These flood flows become so tremendously rapid that the river gets its course changed frequently during this period. The catchment area of the river is about 270 km squared of which about 100 km squared lies in the plain areas of the Brahmaputra valley. Thus, it can be argued that during the rainy season, the river discharges are more and it carries a huge quality of sediment as load.

Flood Situation of the area:

Water discharge along the river is much more during the rainy season (June to September) than that of dry period. This causes frequent over floods in the entire area. The floods take place two or three times in a year. It causes a tremendous harm to the farmers of the area. Table 2 shows discharge condition of river Sukla at the Bridge point within the command area during the rainy period. This will give an idea about the dimension of floods in the command area.

Date			Discharge in cumecs
July	19	1959	4359
"	20	"	4686
"	23	"	7593
"	26	"	9134
"	27	"	4036
September	13	"	10368
"	14	"	10344
"	15	"	10984
"	16	"	7966

Source: Sukla Irrigation Project Office, Goreswar

From the discharge of run-off recorded during 1958 to 1965 it is seen that the maximum of 16.260 cumecs occurred only on August 9, 1962. Flood is almost controlled after the construction of the dam which helps in distributing the excess water almost in equal proportion to the entire agricultural area. During the period of heavy downpour days at a stretch there still occurs flood. When the Sluice gate across the river is closed, then also floods of artificial type occur in catchment area. For example floods during 1985 and 1988 occur due to closing down of the gate. These floods had caused damage to the standing crops in addition to human properties. AS a result of heavy and recurrent floods, hundreds of hectares of fertile agricultural land get turned into infertile ones due to flood load deposition.

Again, sometime the dam itself causes artificial flood. In the same dam there are as many as four valves in the gate. Above the dam water is stored to follow the canals downstream of agricultural lands through gates attached with the dam. The volume of water force to move to the agricultural field from the reservoir can be controlled by the gates. In doing so, there is no major problem during the lean period. But during the rain period where there is maximum water discharge, all the gates of the dam are opened, as a result of which the river channel carries after at its highest level. Water level may frequently be highest above the rainfall stage. So the water velocity as well discharge increases suddenly. Moreover, rainfall also contributes a substantial volume of water to increase the intensity of water discharge. Sometime in monsoons season, rain continues for even 15 days at a stretch. As the soil of the river bank is loose and easily erodible very frequently, the course of the river gets changed and thus new areas are over flooded. Such phenomena had taken place in 1988. In that year there was heavy rainfall in the catchment area along with the slopes of the Bhutan Himalaya. During that time all the gate in the river dam were closed. For this water could not pass through the gate for a day or so. As for water entering and accumulating above the dam, the valves at a time could not tolerate the water pressure. The valves then got collapsed and caused flash floods immediately below the dam site. The important feature of that flash flood was that the river changed its course.

Impact of the project on Agricultural Development of the Area :

More than 90% of the total population of the area depends on agricultural. Among them, some cultivators earn their livelihoods as part time agricultural labourers. The remaining 10% go to service and other occupation.

The area is rich in agriculture, especially in rice of the Ahu and Sali and the Boro varities. Jute is also extensively grown in the area. The main feature of agricultural practice in the area is that after the commission of the project, the mono-agricultural landscape turned into a multi-cropping area. Heavy engagement of the people, high yield of agricultural crop, due to irrigational facilities led the farmers and resulted in socio-cultural upliftment of the area. The impact of the irrigation project on cropping pattern may be observed on the table 3:

Table 3 : Cropping Patterns

Crops	Area under crops (in hectares)	Yield per hectare (in quintals)
Ahu	5360	15
Sali	14560	18
Boro	7600	20
Jute	2400	15
Jute (H.Y.V)	-	24
Mustard seeds	-	6
Pulses	800	6
Wheat	-	16
Potato	-	25
Dhania	-	7

Source: Sukla Irrigation Project Office, Goreswar

The area under the project comprises 17,867 hectares as net cultivated area, while 80% of the area i.e. 14,293 hectares are irrigated for agricultural purposes. Only 5% of the total area is not irrigated as because 15% of the total area go to category of non agricultural land.

Conclusion:

The project has, no doubt, a basis for commissioning. But it is not free from lapses. It has been observed that water-logging condition between two channels or canals has grown up day by day. Perhaps the lack of proper geomorphological survey for aligning the canals has caused such disturbances with the project. The project is not an old one; there is yet time to see the problems, accurately. There is enough time to take necessary step before things go away from human control.

Reference :

1. Chorley, R.J. (ed.) 1969: *Water, earth and man, A Synthesis of Hydrology, Geomorphology and Socio*-economic *geography*, Methuen, London.

2. Chorley R.J. (ed.) 1969b: *Introduction to Fluvial Processes*, Methuen and Co. Ltd., London.

3. Shenoi P.V. 1975: *Agricultural Development in India: A New Strategy in Management*, Vikas, New Delhi.

4. Sukla Irrigation Project Office, Goreswar.