CHAPTER - I

GENERAL CHARACTERISTICS OF THE STUDY AREA

Located 150 km away (road distance)from Calcutta) the Taraphini River Basin is bounded by latitude $22^{0}34'$ N - $22^{0}51'$ N and longitude $86^{0}41'$ E - $87^{0}2'$ E. Draining a total area of 526 km^{2}, the river Taraphini along a total number of 1187 tributaries and sub-tributaries takes only 36 km run to meet the river Kangsabati, located in the southwestern part of West Bengal.

The river basin contains 432 villages with a total population of 1,13186 enclosing portions of two districts of West Bengal viz. Midnapur and Bankura. Three Police Stations i/z. Raipur and Ranibundh of the Bankura district and Binpur block II of the Midnapur district comprise the river basin.

The river basin is accessible from many corners from Calcutta, of which the nearest route is from Jhargram railway station, 153 km rail route from Calcutta with a further bus route of 45 km. Another route is from Bankura railway station located at a distance of 180 km from Calcutta and approachable from the northern part of the basin i.e. from Raipur and Ranibundh by an road distance of about 50 km The Calcutta State Transport Corporation (C.S.T.C) bus route of Calcutta - Bishnupur (100 km) or Calcutta - Jhargram (90 km) also serve the purpose of communication with this river basin.

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The Taraphini River Basin may be referred to as a 'land of tolerance' since in the configuration of the present landscape and the socio-economic set up, it bears the imprint of age-long history of landscape evolution, cultural revolution and a economic structure, adhered to this particular region. Probing into the history of the present configuration of the area, the location of bedrock terraces, layers of pebbles, mark of old channels etc. also help to correlate the river basin with its neighbouring basins like Subarnarekha, Kumari, and Kangsabati which have undergone a similar transformation through ages. An inquiry into the physiographic evolution of this river basin can be precisely highlighted in this context. The region presents lithologic units starting from the ancient Pre-Cambrian age to the recent alluvium. The rocks in the western half of the river basin which are of Archean age, have experienced repeated cycles of orogenic deformation and the last date of significant orogenic deformation is known to have occurred about 850 m. years ago. At that time the Eastern half roughly from 87°5' E, was covered by the Bay of Bengal. The hills were of higher elevation then and many rivers in consequence to the prevailing slope used to deposit their materials into the adjacent sea. However, it is only during the Himalayan uplift of Tertiary period when the sea began to recede, leaving behind its deposits and vibrating with that great orogenic movement the rivers began to adapt themselves

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to the new environment resulting in incision, rejuvenation and mark of older courses by terrace, Low Lying Land, pebbly bed etc. It may be mentioned here that a group of Neolithic people used to live in the area during the Neolithic period and their tools, weapons, utensils etc. have been discovered by the anthropologists in localised areas in this river basin viz. Silda, Goohdaetc.

The area was almost fully covered by forest. During the 5th/6th century this region was actually impentetrable and the name 'Jungle Mohal' or section of dense forest was inscribed to it. Aboriginal tribes used to dwell in this region, who began to destroy the forest for their agricultural need. But perhaps the height of the dwindling of forest area occurred during the early British regime when the rulers felt the need of exploitation of forest resource for more intensive commercial use. However, the sparsity of fertile agricultural land, abundance of forest and rocky terrain, made the tribals conscious to work in forestry and mineral pursuits. So in the economic structure of this river basin, three belts are found to oporate at the present day, i.e. forestry, mineral and agriculture.

Although agriculture is the main plank of the economy sustaining 60 percent of the total population, forests provide 9 percent of the people while mineral based industry employes villagers of 60 villages.

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Coming to the present environmental make up of this river basin, the relief presents a subdued character with accordant hill tops of average 200 m - 300 m height, boulder strewn hill-flanks and rolling plain ascribing to the differential erosion through ages. A close up look to the relief reveals the reflection of varying lithology on landscape as the Granite, by virtue of its composition by quartz veins, develops highest relief of average 300 m while the softer, older alluvium in the East is confined below the contour line of 100 m. In fact, a change in landscape is apparent from the East to the West, since the East is underlain by older alluvium of recent geologic age while the West is composed of hard archean massif of ancient period.

Climate is extremely seasonal, although the vast expanse of rocky terrain, distance from the Bay of Bengal and nearness to the belt of the 'Tropic of Cancer' help to impart a sort of continentality to the climate. So the temperature gradient in summer and winter is considerable while the rainfall intensity is also quite marked in this region.

The river system mainly coincides with the geologic structure as over the crystalline massif, the drainage intensity and frequency is remarkable due to the abundance of faults, fractures, shear planes etc while in the other area the sparsity of stream is well noted.

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According to the Horton's classification the river Taraphini belongs to the 6th order stream. The gradient of the river is quite steep, about 17 m per km.

The river is markedly distinguished by a rapid of 3.5 m height located about 12 km away from source which helps to identify the upper reaches from the other reaches. The course of the river over the expanse of the old alluvium lithology also suggests the existence of another reach. It is therefore evident that the river has three distinct reaches i.e. upper reach, from source to above the rapid; middle reach, down the rapid to the first encounter with the alluvium and the lower reach prevailing over the old alluvium region.

Although their is a consistency in the river dynamics and behaviour in various reaches, yet the innumerable haphazardly-lain rocky outcrop sometimes imposes on the middle reach the character of the upper reach as evidenced by the pothole grooving near Hijla village, in the fag end of middle reach.

The discharge responds to rain; from almost very laminar flow the mean discharge often rises to 15,000 cusecs (425 cumecs) and a peak rise of 33000 cusecs (935 cumecs) is also recorded in some years.

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Soil is of reddish colour with nodular variety; lateritic 'morrum' underlies the topsoil cover of only 22 cm to 172 cm. Although the intense leaching reduces the fertility yet the loose structure, abundance of pore space in the soil make it partly responsive to fertiliser. Only 58 percent of the total land is under agriculture and the villages having agricultural density of over 50 percent is found to cover only 35 percent of the total area. The soil comparatively encouraging is found to occur in three belts 1) in the forested valley where the washed down soil fills up the valley. 2) Volcanic area where the clay percentage counteracts rapid leaching. 3) Old alluvium especially in the right side of Taraphini where frequent shifting of channels have occured, modifying nodular soil and near the confluence of Kangsabati where the cover of alluvium is of more than 5 metres in thickness.

A remarkable feature of the soil is the hardening of the top soil which leads to the formation of the 'duricrust'. It is the result of continued de-forestation and sun-baking which renders hardening of the iron nodules, derived chiefly from the underlying morrum.

The vegetation is predominated by Sal (Shorea Robusta). Retrograde vegetation or vegetation resulted by the biotic interferences is found to cover significant area. About 60 percent of the total area is under Govt. control which is scheduled for plantation of pulpwood trees, conservation of timber species, high forest and Sal regeneration.

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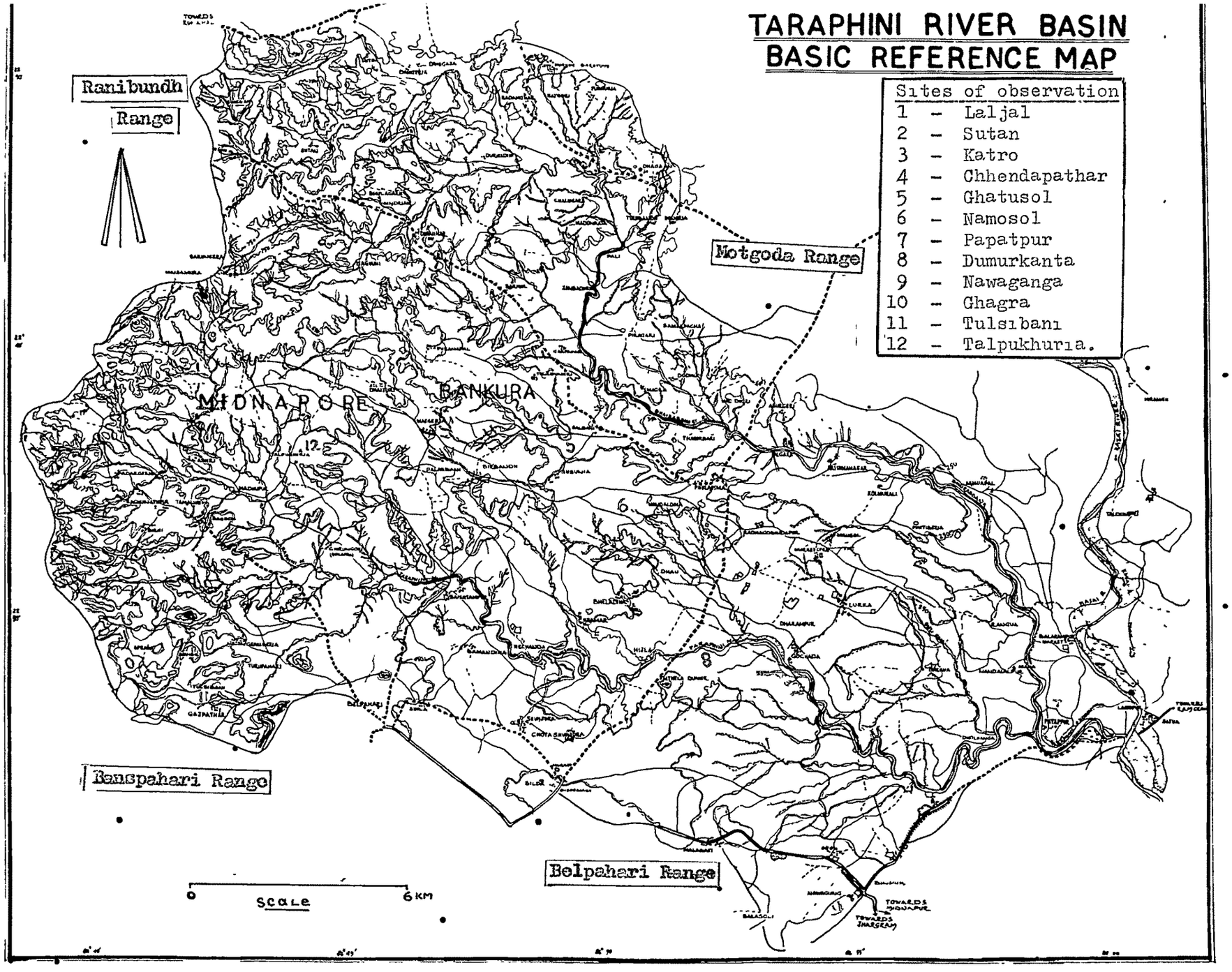
TARAPHINI RIVER BASIN
BASIC REFERENCE MAP



Sites of observation		
1	–	Laljal
2	–	Sutan
3	–	Katro
4	–	Chhendapathar
5	–	Ghatusol
6	–	Namosol
7	–	Papatpur
8	–	Dumurkanta
9	–	Nawaganga
10	–	Ghagra
11	–	Tulsibani
12	–	Talpukhuria.

Map No. 2

The landscape is absolutely rural. Out of the total 432 villages only 6 villages are found having population of more than 1000 people. The average density of population is 215 per km^2 which is found to concentrate in a grddual decreasing number from upper to lower basin area. The upper basin is the home of [illegible] 25 percent of the total population, middle basin providing shelter to 32 percent of total population and lower basin supporting largest number of population.i.e..43 percent. In the upper basin, the settlement pattern is rather nucleated around road junctions or in interfluves, spaced minimum 1 km apart; only in the southwestern part where metavolcanic landform produces better soil, closer water table or richer mineral growth, the population agglomeration is somewhat better. The lower reach presents largest density of agricultural population and the man-land ratio is also high because, flatter land, and scarcity of rocky outcrop facilitate easy communication or work.

Industrial development is not so conspicuous here; although 15 villages with mining population agglomerate around the Tungsten quarry in the middle basin and which is eventually the sole supplier of the Tungsten Ore from West Bengal. Some 30 villagers are employed in pot carving and building,road construction industry.

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Communication is a problem in the area. Out of the total number of 15 roads only 5 are jeepable. It is responsible for the deterrent economic growth of the area.

The Taraphini river basin, was brought into the limelight only from the year of 1976, when two irrigation barrages were constructed on this river and its largest tributary, Bhairabbanki, to regulate and distribute the canal water from the Kangsabati-reservior located about 33 km away from the barrage. But the recent disastrous flood of 1978 has lifted the status of this river basin since it is one of the generator of catastrophic flood in the Kangsabati river. The river, readily responded to the unprecedented rainfall, and gained severe impetus to flow fast with the added momentum by the release of the Kangsabati-reservoir water through Taraphini barrage and Bhairabbanki barrage. In fact, apart from using the canal network the natural drainage system of the Taraphini and Bhairabbanki also acted as a medium of water release; the rock-cut course and the steep slope of the river were able to save the people in its basin but in turn created severe damage to thousands of people in the lower Kangsabati valley. The river basin which was so long neglected in spite of her 4th position among the total 18 tributaries of the Kangsabati river, has drawn recent attention of the irrigation department, Govt. of West Bengal, to assess and survey the dynamics and behaviour of the river. A scheme of setting up of two stream-gaging stations and construction of reservoir is now under plan.

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Moreover, the Tourist Department of West Bengal, in search of a new potential area for tourist development conducted a survey in two successive years during 1977 - 1978 with 50 Tourists each year and obtained a benefit of Rs. 300/- in total.

Their attempt was partly successful as the green forest skirting the village roads, shiny faces of rocky earth, murmuring of river, dry, sal leaves littering the red earth and nature's artistic touch to carve out the earth in variety of way brush up colourful tinge on the face of the bleak terrain of this river basin. But the absence of suffiqient motorable road and market strengthen the nogetive idea of selecting this river basin for the development of tourist potential.

However, the plan taken by the tribal department of the Govt. of West Bengal to metal four rural roads connecting the corners of this river basin, may prove to be a major solution to the problem of inaccessibility by opening up a new lease of life to the people of the present area under study.