



Dam Across Mahanadi A Dream Project of Dr. A.N. Khosla

Er. Nirakar Mahalik

After assuming charge as Chairman, Central Waterways Irrigation and Navigation Commission (Now Central Water & Power Commission) in February 1945, Dr. A.N. Khosla was commissioned to investigate and recommend measures to deal with the flood and drought problems of Orissa and he conceived the idea of the basinwise development of the Mahanadi valley and its first component unit, the Hirakud Dam Project. Dr. Harekrushna Mahatab as a public leader of Orissa, had a discussion with Dr. Khosla regarding full fledged development of Mahanadi valley. Dr. Mahatab who was responsible for piloting the project through its completion laid the foundation for the agricultural, industrial and economical development of Orissa.

This development began with the inception of the unified basinwise development plan for the Mahanadi river in May 1945 which envisaged construction of multipurpose storage dam at Hirakud, Tikarpara and Naraj and the Machhkund Project on the river Sileru, jointly implemented by the then Madras and Orissa Governments.

A conference was held on 8th November 1945 at Cuttack under the chairmanship of Hon'ble Dr. B.R. Ambedkar, Member for

Labour in the Government of India, and the representatives of States of Orissa and Central Provinces for the unified multi-purpose development of Mahanadi Basin for the national interest. They unanimously agreed upon the potentialities of the Mahanadi river for unified multi-purpose development (i.e.) for flood control, irrigation, navigation and hydro-electric power etc, which should be thoroughly and expeditiously investigated. The surveys and investigations were carried out by Dr. A.N. Khosla, Chairman, Central Water Ways Irrigation and Navigation Commission.

After thorough search Khosla came to the conclusion that there are two major problems of Orissa. They are : flood and drought. During 'Na Anka' i.e. the great Famine of 1865-66, about a million people died in the district of Cuttack alone. Four percent of the population in the district of Puri were wiped out. Then came a big flood and what was left after the famine was carried away by floods.

Dr. Khosla in his Report stated, "Navigation on the Mahanadi which was fairly considerable in the past, has almost disappeared mainly as a result of mistaken railway policy. The manpower of the province which is admittedly intelligent and industrious, is being largely wasted for want of opportunity

and full time employment. The life giving water of its rivers, which could provide irrigation to provide more crops and cheap hydro-power to turn the wheels of industries and thus raise the standard of living of the common man, are at present running to waste, causing untold damage and destruction by floods in their passages to the sea. Less than 5 percent of water is at present being put to beneficial use for purpose of irrigation. The mineral wealth of the area is laying unexploited and unexplored; there are no industries worth the name.

Thus, inspite of the tremendous wealth in land, water, minerals and man power, Orissa continues to be a backward province, suffering from chronic poverty and low income, diseases and hunted by the two spectres of flood and drought."

During the incumbency as the Chairman of Central Water Ways Irrigation and Navigation Commission, Government of India, A.N. Khosla had taken keen interest to prepare one project report for the unified development of the Mahanadi valley, i.e. Hirakud Dam Project in June 1947.

In this report Khosla furnished an exhaustive summary and recommendations regarding the resources of Orissa. He stated, "the province of Orissa comprises an area of 50.34 sq.miles (now 60250 sq. miles), an area as big as that of England. It has a population of nearly 12 millions which is five time that of the Tennessee Valley in U.S.A.

This region contains vast areas of agricultural land and forest. It is traversed by three major rivers, the Mahanadi, the Brahamani and the Baitarani and two minor one, the Burabalong and the Subarnarekha. Mahanadi, the biggest river of Orissa, carries

annually 74 million acre feet (9.13 million hectare-meter) of water which is only slightly less than the volume of water carried by the Indus in the Punjab, but is very much in excess of that carried by the Tennessee river in U.S.A.

Large quantities of minerals like coal, iron, buxite, manganese, graphite, chromite, mica, limestone etc. are deposited in Orissa and its neighbouring areas. Nature has thus endowed this region with enormous resources in land, water, minerals and man power."

With these natural resources of Orissa, Dr. Khosla could state, "if a part of these resources can be exploited through integrated multipurpose development, Orissa will rise to unprecedented heights of prosperity and power." The water of Mahanadi if fully harnessed can beside affording complete flood protection to the delta areas, irrigate over 20 million acres (8.09 m hectre) of land, generate million K.W. of power, provide a navigable water way with a minimum draught of 9 to 10 feet (3.05 meter) extending 380 miles (612 km) from the borders of Central Provinces to the sea, make it possible to develop a deep sea port of Orissa at Chandbali or Dhamra, capable of handling nearly 6 million tons of traffic, (the annual traffic handled by the port of Calcutta in the pre-war period was nearly 10 million tons) create extensive lakes to serve as a sea plane base and afford facilities for fish culture (pisciculture) recreation etc."

Unified Development of the Mahanadi Valley

Dr. A.N. Khosla submitted the scheme for the unified development of the Mahanadi valley to put a stop to colossal waste of the man power and natural resources of Orissa in June 1947. The scheme was designed to control, conserve and utilise the water of Mahanadi river for the purpose of irrigation,

hydro-power generation, navigation, flood control, soil conservation and recreation etc. With a view to raising the standard of living of the common man by banishing famine, malnutrition and disease and extending to him the necessities and amenities of modern life.

The Scheme

"This scheme comprises of three units (1) The Hirakud Dam Project (2) The Tikarpada Dam Project (3) The Naraj Dam Project. Each one has its own canal system and hydro-electric power installation. These three units will be individually capable of independent development, irrespective of whether the other two are constructed or not and of forming an integral part of basin-wise plan.

The best overall results will obviously be obtained if and when all the three projects have been completed. But this over all development will take time before it can be implemented in full. It will involve the submergence of large areas of land and create major problems of resettlement of the displaced people. Fortunately, however each component can independently play the most vital role in the development of the region. As a first step therefore, it is proposed to start with the construction of the Hirakud Dam Project."

Hirakud Dam Project

"Out of the three units of the basin-wise plan, Hirakud Dam Project lies in the upper most part of the Mahanadi river. It is the simplest in respect of physical features, territorial consideration and design and construction requirements. It is also one which yielded the quickest results. It is also financially self supporting.

The three mile Dam (4800 m) with maximum height of 150 feet (45.22m) (from the deepest bed of river) had two 17 miles (27.20 km) long dikes on both sides. Submergence of 1,35,000 acres (54621 ha) of land including 70,000 acres (28322 hactre) of cultivated land will be made due to formation of reservoir up to RL 625 feet having a gross storage capacity of 5.3 million acre feet including 1.2 million acre feet of dead storage. The project will provide irrigation to 10,94,953 acres (443017.98 hactre) of land in Sambalpur and Sonepur. (8,80,000 acres in Sambalpur and 214,953 acres in Sonepur). Besides the above-cited irrigation potential of Hirakud Dam it will also provide a regulated supply of 8800 to 14000 cusecs during the dry months against the present minimum of about 1000 cusecs (28.30 cusecs) at Naraj of the protective irrigation to existing irrigated areas in the delta during critical periods of short supply. This will also enable perennial irrigation to be extended to additional large areas in the delta which can not be brought under irrigation at present due to the likelihood of their getting submerged during floods but which will become available to irrigation as a result of flood protection, which will be afforded by the construction of the Hirakud Dam."

Power

"Power will be generated at Hirakud Dam including a subsidiary dam forming a balancing reservoir at the end of the power channel below Hirakud (at Chiplima) to the tune of 3,50,000 KW. It is proposed to connect the Hirakud power station by means of 132 KV transmission lines to Cuttack and Janshedpur and later on to Machhkund power station. Ultimately the Hirakud power station will be linked up in grid to the proposed power

stations of Tikarpada, Naraj, Kosi, Tista, Damodar, Rihand and Nagpur." Dr. Khosla reported.

"Plans for the industrialisation of under developed countries invariably begin with the electrical power." Khosla had cited one example of Soviet Russia where even as recently as 1935 the total electric energy was only 141 kilowatt hours. Electric Power is the life blood of modern warfare. Take aluminium for example, which is required for the production of the Aircraft. Aluminium is mostly the product of electric power. If cheap power can be made available, there seems to be no limit to the opportunities for the industrial development of Orissa. With the growth of industries the demand for power will not be limited to what generated at Hirakud Dam only, but additional power if required will be met from Tikarpada Dam with its power potential of 2.5 million KW and from Naraj Dam with its power potential of 1million KW." Dr. Khosla further noted.

Flood Control

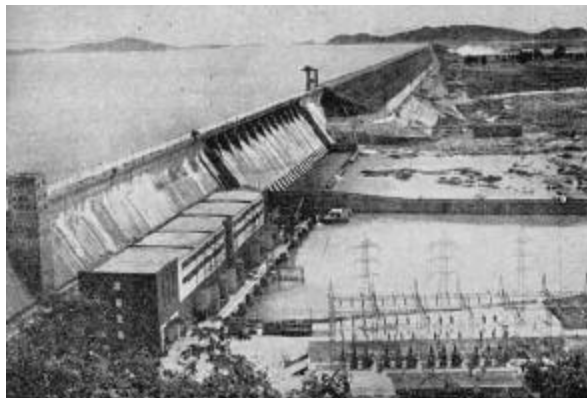
Dr. Khosla was very much worried about the floods of Orissa. He knew that about 3,70,000 acres (1,49,702 ha.) of land in Mahanadi valley and 7,00,000 acres (2,83,220 ha.) land in Brahmani, Baitarani and other minor rivers were destroyed every year due to flood. The total water resources of Orissa is about 121 million acre-feet (14.93 m hectre Meter) out of which 75 million acre feet (9.25

million hectre-meter) in Mahanadi alone. After completion of the Hirakud Dam it will control about 4.5 million acres of (0.555 million hectre meter) of flood water only, he stated.

Dr. Khosla had made some provision in the project report that a part of the capacity of the Hirakud reservoir would be reserved for flood control so that the peak flood supplies can be stored in the reservoir and gradually released later on in such a way that the limiting flood gauge of 90.00 feet at Naraj is never exceeded and the safe flood gauge of 89.00 feet is exceeded only in extraordinary floods and that for a few days only. In this way adequate flood protection will be assured to the Delta area and considerable relief to Sambalpur town and riparian areas in states lower down.

Navigation

Dr. Khosla was convinced that Mahanadi river does not afford much facilities for navigation. Due to high floods in monsoon months and sluggish current with small discharge in rest period of the year and in bad drought years it may be as low as 900 cusecs. Hence Khosla in the project report gave emphasis for the regulated release of water from the reservoir to the river down stream of the dam to the tune of 8800 to 14000 cusecs during dry season so that navigability of the river can be improved thus making it possible for 600 to 800 tons tows to ply from the sea up to Central Provinces. "There are possibilities of developing inland ports at Cuttack, Dasapur,



Sopurothpur, Kantilo, Nuapada, Gania, Tikarpara, Kaintagarh, Boudh, Bausuni, Sonepur and Binka and a major sea port of Chandbali or Dhamra - the full development of these facilities can be possible only after the construction of one of the two lower dams at Tikarapada and Naraj.

The Mahanadi as a navigable water way will open great possibilities for the cheap transport of agricultural and industrial produce of the valley for local distribution and export abroad, he stated."

Taking all these considerations Dr. A.N. Khosla had furnished an estimate cost of 47.81 crores. The allocation of cost for different purpose is as follows (a) flood control-6.11 crores, (b) Irrigation -11.12 crores (c) power -29.58 crores and (d) Navigation -1.00 crores.

The Hirakud Dam Project : The first unit of the Basin wise plan was undertaken for investigation in January 1946 and for construction from 1948. It was completed and switched to operation in 1956 and was formally inaugurated in March 1957. The second part of Hirakud Dam Project : Chiplima Power House was inaugurated in September 1963.

The weir at Munduli near Naraj was for all intents a substitute for the Naraj Dam - the third unit of the plan had been taken up later.

Er. Nirakar Mahalik lives at N-1/82, I.R.C. Village, Nayapalli, Bhubaneswar - 751015. He is a life member of Orissa Engineering Congress and Fellow of Institute of Engineers (India) and a recipient of Best Citizen of India Award-1999.



Sikta Mohapatra
III year (Eco)
Rama Devi Womens College

Spring, O Spring ! my dear Spring
What an exquisite wedding ring
Losing Spring is a melancholy
Lurking, disappearing is its character, visible, swing
Colour, beauty, creativity, laughter-bliss exhibits its team.

Life is not spring, queer mixture of smile and sobbing
Caste, creed, religion, age, sex, barrier mean nothing
Beauty is spring and the vice-versa flutter wing.

Life for spring and only spring
Even during the last bell rings
A beauty eternal in habit of missing
Men love and pine for him.