

Historical Development of Dams in India

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I. INTRODUCTION

Dam is defined as a barrier built across a stream, river or estuary to confine and check the flow of water for such uses as human consumption, irrigation, flood control and electric-power generation (Encyclopedia Britannica 1987). The dams in the ancient times were built to control the floods, navigation, drinking and irrigation purposes only. But in the modern times, these are constructed for wider use for development purposes such as to control soil erosion, for generation of electricity, industrial use, aquaculture and tourism and so on.

Objectives: The main objective of the present piece of work is to explain the historical development of dam construction in the world in general and particularly in India after independence.

II. METHODOLOGY

To study the historical development of dams in the world and in India are analyzed on the basis of available literature. The present study is based on the secondary sources of information. The information based on the objectives is collected from various books, newspapers, the government reports and other relevant material and elaborated in detail in the present piece of work.

III. HISTORICAL DEVELOPMENT OF DAMS IN THE WORLD

In the earliest known times, in 4th and 5th millennium BC in Mesopotamia, like the other development – related activities, dams have made an important contribution for supply the water. In the 3rd millennium BC in the Euphrates valley, the extensive irrigation works, controlled through dams, created problem of salinisation so great in Sumerian cities which were left in ruin (Roy, 1989). The earliest recorded dam at Kosheish (49 feet high) built across the Nile River in Egypt around 2900 BC which provided water for the then capital Memphis. At about the same time a dam 8 meter high at Sadd-el-Kaifari, 30 kms from Cairo, failed shortly after completion. The oldest dam still in use was built (at Orentes) around 1300 BC in today's modern Syria (Encyclopedia Britannia, 1987: 862) Dams were built mainly for water supply to urban settlements in West Asia. However, most dams were on minor tributaries and did not hamper major river systems (Roy, 1987). The old civilizations, like Mesopotamia, Sumarian, Chinese, Babilonian, Indus and so on flourished near water sources. From where the water sources from where the water could be stored and utilized. In the ancient times, the politics and dominance was controlled by the availability and utility of water resources. Innumerable ponds and lakes near old cities were operated for harnessing rain water for drinking and irrigation purposes. It is clear from the above that the dams for at least 5000 years have enabled civilizations flourish by assuring a dependable supply of water for domestic and irrigation purpose. Many civilizations have disappeared with the loss of the ability to construct, maintain and repair dams. Till 1980, the international commission on large dams (ICOLD) has counted about 427 dams in the World Register of Dams (ICOLD, 1989). A significant increase in the number of dams took place after the middle of 20th century. In 1950, there were only 5268 dams in the world which has increased upto 36237 in 1986 over 15 meter height. Out of these, 28546 (78.78 percent) were between 15 metres and 30 metres height, 6031 (16.64 percent) have height between 30 metres and 60 metres, 1247 (3.44 percent) are between 60 and 100 metres, 321 (0.89 percent) came under the category of height between 100 and 150 metres, and 64 dams which were more than 200 metres high (ICOLD, 1988; Vetrop, 1993). It is important that the country China has 18820 dams (51.94 percent) i.e. more than half of the rest world. The dams in China, India and Sri Lanka provided irrigation through canals from about 700 BC (Roy, 1989).

IV. DAMS IN INDIA

In India, the weirs and barrages, in the ancient times, had been constructed on the small streams at local level for irrigation and drinking purposes. However, it is a fallacy to think that pre-British India had only village level irrigation, there were also big dams, anicuts, large reservoirs and canals built by ancient Indian Kings as well as tanks and check dams at the village level (Hindustan Times, 1999). Kautilya, in *Arthashastra*, emphasized on the necessity to build dams and reservoirs to store the rain water for the use at the time of scarcity of rain. More emphasis had been given to build the dams on rivers which irrigate a large area through man-made canals (Rangarajan, 1992). However, during the colonial period, the little attention has been paid because the British knew very little about irrigation as compared to the Indian (Cotton, 1874). However, in the first half of 19th century, they started paying attention to develop the irrigation system. The agriculture was the sole mainstay which was mainly depended on the rainfall or irrigation. So, irrigation system, irregular due to vagaries of monsoon, became the sole factor to control over all the economy and could collect a significant amount of revenue from the irrigated land, milling, watering cattle, transporting timber, settling produce that grew in canal sides by improving and providing the water facility (Mankodi, 1985). However, the size of weirs and barrages were small and the main object was to extract and to control the river system. However, it was realized that the making of new projects were not more profitable and a gradual shift took place from irrigation to railways in the later part of the 19th century (Singh 1990).

However, the advent of new technology and inventions reduced substantially the cost of construction of such dams along with the British colonizer was to generate revenue and to control over the cropping patterns in India, so that the efforts had been directed to construct a permanent dam structure to reign over hydro-politics. The development in the hydro-electricity had taken place after the invention of the Francis Wheel i.e. "the inward flow turbine", a dynamo which produces electric current by Michael Faraday in 1831, and discovery to pass the electric current through a copper cable by Schuckert in 1882. Thus, in British India, the first hydro-electricity at small scale which met the town's lightning requirements. After the success of this plant, a series of such plants had been set-up in hill station of Himalayas such as in Srinagar (1908), in Massoorie (1909), in Shimla (1913), and in Nainital (1922). Besides the Himalayan region, a 1000 Kw capacity hydro-electric plant was installed at Karteri Falls in the Nilgiri hills, to supply power to the ordinance department cordite factory at nearby Aruvankadu (Singh 1997). The construction of dams and reservoirs took a boon when the level of industrialization has increased in India after the recovery of First World War. It was also considered that the dams are the necessity of any modern irrigation and irrigation through large dams is synonymous of good irrigation with maximum revenue benefits. Prior to the First World War, in 1905, the British commenced an inquiry into the prospects of hydro-electric development in India. During the first decade of 20th century, the Tennessee Valley Authority (TVA), a multi-purpose project, became popular. A model of TVA was applied for the first time in India, at the Krishnaraja Sagar hydro-electric plant which was completed in 1931. The technology of dam construction has been changed from random rubble masonry with or without coursed rubble masonry on the exposed faces to cement concrete construction during the construction of the Mettur Dam (1927-34) on the Cauvery River (Central Board of Irrigation and Power, 1987).

V. CONCLUSION

The more emphasis have been given to construct big power project under the various five year planning periods right from the first Five year Plan under the government of Jawaharlal Nehru which considered the big dams as the modern temples of India. India is now one of the biggest dam builders in the world. By 1979, it had constructed some 1554 large dams and the number of it went more than 2240 large dams in 1990.

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