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Chapter – 2

IRRIGATION DEVELOPMENT IN KOLHAPUR DISTRICT

2.1 Physical Features of Kolhapur District

2.1.1 Topography

Kolhapur is the historical district situated in the extreme southern part of Maharashtra state. It lies between $15^0$43' and $17^0$17' north latitude and $73^0$40' and $74^0$42' east longitude. Administratively, it is bordered by Sangli district and also by river Warana which form the natural boundary to the north' Belgaum district of Karnataka state to the east and south and Ratnagiri and Sindhudurg to the west.

District of Kolhapur covers an area of 7685 sq. kms., which is about 2.5% of the total area of the state. A major part of the district s at 292 to 600 meters in height above sea level.

2.1.2 Climate

The climate of Kolhapur district is generally temperature. On the western part, near the Sahyadries it is always cooler than the eastern part, which is liable to hot windows during the April and May. Generally, the year is divided into three periods, one hot weather from March to May, second monsoon from June to October and winter from November to February. The district gets rain from the south-west and north-east monsoons.

There are variations in rainfall from year to year and from place to place and hence it is difficult to divide the district into distinct rainfall zones. However, the district is divided into three broad divisions namely, the western zone receiving heavy and assured rainfall. the middle zone receiving moderate but fairly regular rainfall, and the eastern zone receiving low, irregular and uncertain rainfall. Usually, the south west monsoon begins from the first week of June and last till about the end of September. With the beginning of the south-west monsoon, there is a rapid fall in the day temperatures. By end of September, the south-west monsoon loses its strength and gives way to the north-east monsoon, which is beneficial for rabbi sowing and sugarcane. In winter, although day temperature remains higher than the monsoon seasons, the mean minimum temperature is the lowest, which ranges from 14^0 C to 16^0C. December and January are the coolest months of the years and the daily range of temperature is rather large. There is a rapid rise in temperature in March, reaching the maximum in April. Daily minimum temperatures exceeding 38^0C are fairly frequent and thunder storms are common in April and May the rainfall in this season accounts for about 10% of the total annual rainfall.

2.1.3 Rivers

Krishna, Warana, Panchaganga, Dudhganga, Vedganga, Hiranyakeshi and Ghatprabha are the main rivers in the district of Kolhapur. Besides these, small rivers, Kumbhi, Kasari, Kadvi, Tamraparni, Tulshi, Dhamni, Bhogawati and Tilari flow in the district.

2.1.4 Cropping Pattern

In the district of Kolhapur, kharif and rabbi are two main cultivating seasons. Kharif crops like paddy, ragi, jowar and nachani and rabbi crops like wheat and jowar are taken. Paddy is the most important cereal crop and sugarcane is the main cash crop. Major part of Kolhapur district comes under high rainfall zone, therefore, paddy crop predominates whereas in the low rainfall zones comprising Karveer, Hatkanangale, Shirol and Kagal talukas, grow jowar, whet, maize and vegetable crops. Perennial sugarcane is taken in all parts wherever adequate irrigation facilities are available.

2.2 Irrigation Scenario in Kolhapur District

2.2.1 Early Period

The question of irrigation is intimately associated with the rainfall, whose chief characteristic in Kolhapur district is its unequal distribution over the area (6,000 mm in the west to 600 mm in the east). Its irregular distribution throughout the seasons and its liability to failure or serious deficiency. Generally, a deficiency of 25% in rainfall in the tracts getting less than 2000 mm would cause serious crop failure and even famine. The rainfall in Kolhapur district, through less subject to great variations from year to year is nevertheless frequently very unevenly distributed during the later months of monsoon (September to October) the critical period for staple food crops of rice and jowar. The main justification for the development of irrigation in the district was therefore to make good the deficiencies in the rainfall so as to ensure good crops in all years.

Although there is a plenty of rainfall in the Western Ghats. The life of the Sahydrian ranges is not suitable for large permanent storage lakes. Because of sudden drops from the ghats, the rivers have naturally dug deep into the soil. Also, the beds of the rivers in the district are deep and soft hence unsuitable for small water weirs of permanent nature. To overcome these problems, the farmers of the zone devised an ingenious type of temporary earthern dams, that later on because famous as 'K. T. type weirs.'

Prior to 1890s, the K. T. weirs were neither know nor needed, as the rivers had plenty of water all the year round. The destruction of forests on the Western Ghats practically removed the green cover on the hills, causing erosion of the hillsides and sitting the rivers. Since about 1886, the water supply in the rivers began falling and most of river had very little water. After April, unless it was stored by means of a KT weirs.

Putting up a KT weirs across a river, while it was flowing immediately after the monsoons were over, required extensive labour and tonnes of earth brushwood and cane trash, and the work had to be completed within about a week. The length of the weir varied from 50 to 150 feet, height from 8 to 12 feet, width at the bottom from 10 to 30 feet and the width at the top from 5 to 15 feet depending on the width of the river and the quantity of the water to be stored. The handiwork used to cost between Rs. 800 to 3000 and was washed away at the first heavy

downpour of the monsoon. Still, while it lasted, it ensured adequate supply of water to the Budkis and Phads using it.

Phads system and KT weirs came into existence out of economic necessity and were used effectively by the farmers before the advent of dams, canals and mechanized lift irrigation came into being.

Radhanagari Dam on the River Bhogawati

The history of the modern day state organised irrigation in Kolhapur district begins in the first decade of the 20th century. The Radhanagari dam is constructed by the Chh. Shahu Maharaja on 3rd February, 1902. The Chh. Shahu's demise in 1922, so construction was delayed further and was finally completed in 1954 at a cost of Rs. 1384 lakh.

Radhanagari dam is 1150 meter long and 42.7 meter high with a reservoir capacity of 236.79 million cubic meters. Its hydroelectric power house generates 6600 kilowatts of electricity and its command area is 59110 hectares. It presently irrigates 26560 hectares out of which, 20900 hectares are under perennial irrigation (sugarcane) and 4100 hectares under seasonal irrigation.

2.2.2 Post Independence Period Development

The First and the Second Five Year Development Plans in the 1950s were devoted entirely to raising the basic industrial infrastructural facilities like large dams, steel mills, cement factories etc. in the country. The Maharashtra State Irrigation Commission was constituted in 1960.

The Commission made extensive recommendations for enhancing the irrigation potential in the state. Accordingly four major irrigation projects and 10 medium irrigation projects and around 200 minor irrigation projects were planed in Kolhapur district. These projects are being briefly described below.

2.2.3 Major Irrigation Projects in Kolhapur District

1. Tulshi Project

The construction of this lift irrigation project on the river Tulshi at Burambali in Radhanagari taluka was begin in 1972 and completed in 1978 at a cost of Rs. 650.36 lakh. The height of the dam is 48.6 meters and its capacity is 98.29 million cubic meters. After the full development of its irrigation potential, the dam will irrigate a total of 5711 hectares of land. It presently provides water to perennially cropped 1870 hectares of lands and seasonally cropped 345 hectares of lands.

2. Tillari Hydroelectric Project

Tillari is an ambitious hydroelectric-cum-canal irrigation project on the river Tillari in Chandgad taluka and is a joint venture of Maharashtra and Goa states. The project was completed in December 1986 at a cost of Rs. 4345 lakh. The height of the dam is 38 meters and its capacity is 464.19 million cubic meters. The total command area of the project is 8005 has most of which lies in Goa state. Maharashtra State Electricity Board has already started buying electricity from this project.

3. Kalammawadi Project

Kalammawadi is a prestigious canal irrigation project on the river Dudhganga at Asangaon in Radhanagari taluka and is a joint venture of Maharashtra and Karnataka states. The height of the dam is 7308 meters and its reservoir capacity is 719.12 million cubic meters. The total command area of the project is 93209 hectares (73340 hectares in Maharashtra and 29869 hectares in Karnataka). Presently it irrigates 16806 hectares perennially cropped and 9935 hectares seasonally cropped lands.

4. Warana Project

Warana is a large canal irrigation project on the river Warana at Amboli in Shahuwadi taluka of Kolhapur district. The project is completed in May 2004 at a cost of Rs. 1117.86 crores. The height of the dam is 77 meters and its reservoir capacity is 974.20 million cubic meters. The total command area of the project is 146871 hectares. Presently it irrigates 11250 hectares perennially cropped lands and 1700 hectares seasonally cropped lands.

2.2.4 Medium Irrigation Project

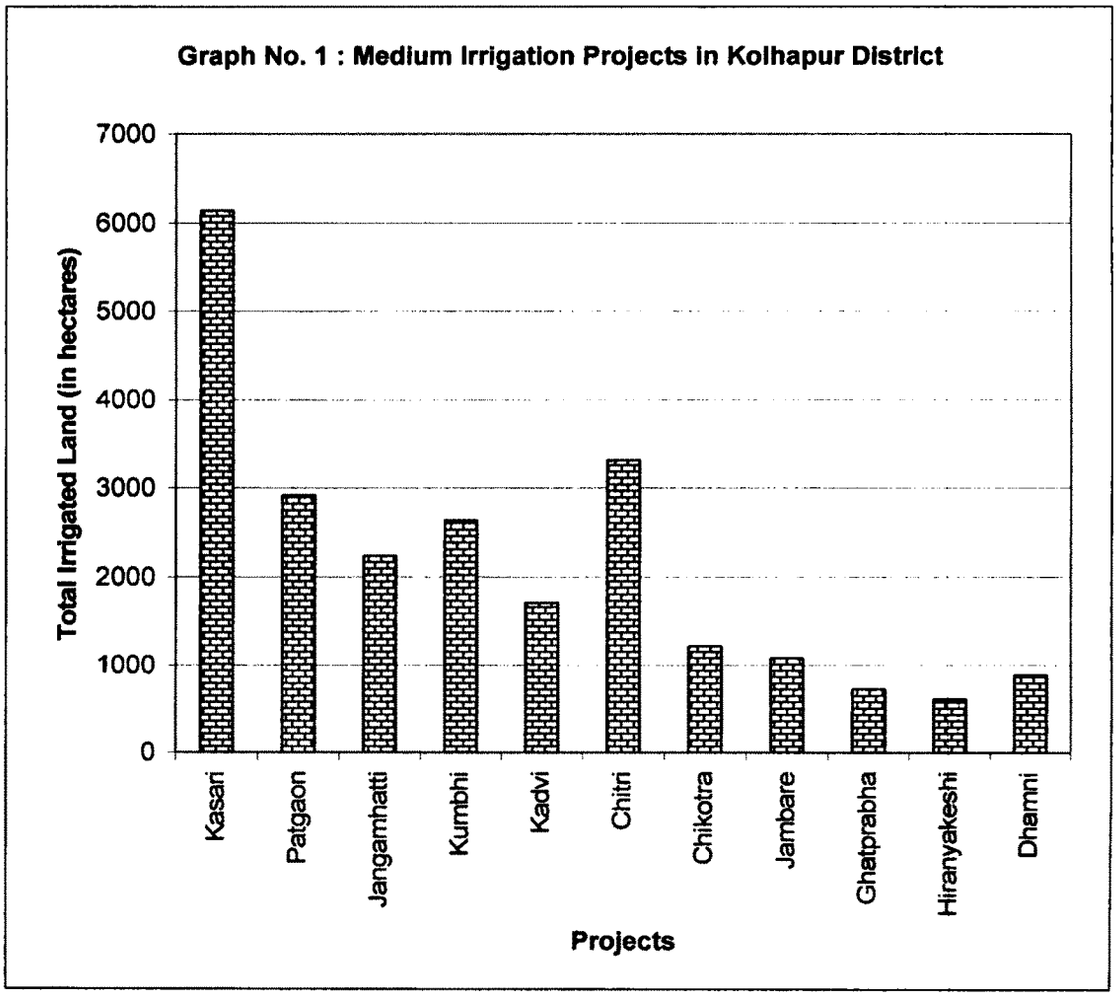
There are eleven medium irrigation projects in Kolhapur district namely Kasari, Patgaon, Jangamhatti, Kumbi, Kadvi, Chitri, Chikotra, Jambare, Ghatprabha, Hiranyakeshi and Dhamni. These projects are being briefly explained below.

Table No. 2.1

Medium Irrigation Projects in Kolhapur District

Sr. No.	Project	Rivers	Taluka benefited	Area irrigable in hectares (perennial)	Area irrigated in hectares (seasonal)	Total irrigated land (in hectares)
1	Kasari	Kasari	Shahuwadi	5260	410	6136
2	Patgaon	Vedganga	Bhudargad	2250	110	2914
3	Jangamhatti	Tamraparni	Chandgad	1608	127	2239
4	Kumbhi	Kumbhi	Gaganbawada	2235	77	2632
5	Kadvi	Kadvi	Shahuwadi	1100	110	1710
6	Chitri	Chitri	Ajara	2221	689	3310
7	Chikotra	Chikotra	Kagal	895	-	1216
8	Jambare		Chandgad	841	120	1081
9	Ghatprabha	Ghatprabha	Chandgad	566	97	723
10	Hiranyakeshi	Sarfnala	Gadhinglaj	445	104	609
11	Dhamni	Dhamni	Radhanagari	824	14	888
	Total			18245	1858	23458

Source: Report of Kolhapur Irrigation Circle



1. Kasari Project

Kasari project is situated at Yelavade village in Shahuwadi taluka on the river Kasari. This project had completed in June 2001 at a cost of Rs. 2895 lakh. The height of the dam is 44.25 meters and its reservoir capacity is 78.56 million cubic meters. The total command area of the project is 12141 hectares. Presently in the year of 2005-06, the project irrigates 5260 hectares perennially and 410 hectares seasonally cropped lands means the total irrigated land under this project is 6136 hectares.

2. Patgaon Project

Patgaon project is situated at Patgaon village in Bhudargad taluka on the river Vedganga. This project had completed in June 2001 at a cost of Rs. 8220 lakh. The height of the dam is 39.2 meters and its reservoir capacity is 105.25 million cubic meters. The total command area is 10882 hectares. At present, the project irrigates 2250 hectares perennially and 100 hectares seasonally cropped lands.

3. Jangamhatti Project

Jangamhatti project is situated at Jangamhatti village in Chandgad taluka on the river Honhall tributary of the river Tamraparni. This project was started on January 1981. The capacity of dam to store water is 21.40 square km. and requires water level is 34.21 million cubic meters. The length of dam is 960 meters and its height is 31.40-meters. The total command area of the project is 4457 hectares. Presently, it irrigates 1608 hectares perennially and 127 hectares seasonally cropped land.

95% work of this project was completed on November 2006 at a cost of Rs. 1925.60 lakhs.

4. Kumbhi Project

Kumbhi project is situated at Narveli village in Gaganbawada taluka on the river Kumbhi. The required water level is 76.88 million cubic meters and the height of the dam is 42.6 meters. The total command area is 10179 hectares. Presently, the project irrigates 2235 hectares perennially cropped and 77 hectares seasonally cropped lands.

5. Kadvi Project

Kadvi project is situated at Golivade village in Shahuwadi taluka on the river Kadvi. The reservoir capacity of the dam is 71 million cubic meters and its height is 36 meters. The total command area is 12000 hectares. Presently, it irrigates 1100 hectares perennially cropped lands and 110 hectares seasonally cropped lands.

6. Chitri Project

Chitri project is situated at Raywade village in Ajara taluka on the river Chitri. The reservoir capacity of the dam is 53.4 million cubic meters and its height is 55.11 meters. The total command area is 13085 hectares. Presently, it irrigates 2221 hectares perennially cropped lands and 689 hectares seasonally cropped lands.

7. Chikotra Project

Chikotra project is situated at Zulpewadi village in Ajara taluka on the river Chikotra. The reservoir capacity of the dam is 43.11 million

cubic meters and its height is 60.2 meters. The total command area of the project is 7888 hectares. Presently it irrigates 895 hectares perennially cropped and zero hectare seasonally cropped lands.

8. Jambare Project

Jambare project is situated at Jambare village in Chandgad taluka. The reservoir capacity of the dam is 23.23 million cubic meters and its height is 39.16 meters. Its total command area is 6642 hectares. Presently it irrigates 841 hectares perennially cropped lands and 120 hectares seasonally cropped lands. This project was completed in 2001 at a cost of Rs. 6603 lakh.

9. Ghatprabha Project

Ghatprabha project is situated at Phatakawadi village in Chandgad taluka on the river Ghatprabha. The reservoir capacity of the dam is 43.606 million cubic meters and its height is 48.30 meters. The total command area of the project is 7695 hectares. Presently it irrigates 566 hectares perennially cropped lands and 97 hectares seasonally cropped lands. This project was completed in 2001 at a cost of Rs. 3942 lakh.

10. Dhamni Project

Dhamni project is situated at Rai village in Radhanagari taluka on the river Dhamni. The reservoir capacity of the dam is 109 million cubic meters and its height is 78 meters. The total command area of the project is 2500 hectares. Presently it irrigates 824 hectares perennially cropped lands and 14 hectares seasonally cropped lands.

11. Hiranyakeshi Project

Hiranyakeshi project is situated at Gadhinglaj taluka on the river Hiranyakeshi. This project presently irrigates 445 hectares perennially cropped lands and 104 hectares seasonally cropped lands.

2.2.5 Minor Irrigation Projects in Kolhapur District

There are 43 minor irrigation projects have been already completed in Kolhapur district. Their talukawise distribution is 9 in Chandgad taluka, 7 each in Ajara, Gadhinglaj and Kagal talukas, 4 in Karveer, 3 in Radhanagari and Gaganbawada talukas and 2 each in Shahuwadi and Shirol talukas and another 18 minor irrigation projects is in progress. It presently provides water to perennially cropped 3460 hectares and seasonally cropped 245 hectares of the lands.

There are major medium and minor projects are provides aggregate water to perennially cropped 75830 hectares and seasonally cropped 10049 hectares of the lands in the year of 2005-06, means irrigation projects are provide to water for agriculture (include perennially and seasonally) is 10168 hectares.

2.2.6 Kolhapur Type (KT) Weirs

Kolhapur type (KT) weirs are unique to Kolhapur district. KT weirs are in use for more than 65 years in Kolhapur district. They are open type weirs across streams. The area of application is identified as hilly and geographically unsuitable for conventional flow irrigation. Irrigable area is spread in small patches. Kolhapur district is probably the only example

where full irrigation potential has been created through lift irrigation and KT weirs, so far as public scheme are concerned in the district of Kolhapur. There are 205 such weirs on different rivers upto 2006. The collective reserve capacity of these weirs is 3425 million cubic meters, which is used for irrigating 16653 hectares.

2.2.7 Percolation Tanks

In the district of Kolhapur there are 55 percolation tanks constructed by the Kolhapur Zilla Parishad at a cost of Rs. 277.57 lakh, for bringing 4564 hectares lands under irrigation. But actually working the percolation tanks are 43 upto 2005.

2.2.8 Cooperative Lift Irrigation Societies (CLISs) in Kolhapur District

CLISs are a remarkable development in the district. In the former Kolhapur district, no society of this type was organised. The government also provides to CLISs by granting financial and technical aid. In the district of Kolhapur, there are 541 CLISs but actually the working CLISs are 510 upto 2006.