CHAPTER - I

HISTORICAL BACKGROUND OF THE IRRIGATION SYSTEM
Water is a prime natural resource, a basic human need and a precious national asset. The economic prosperity of a country is based on the development of water resources, particularly the river waters therein. The development of river water resources is primarily meant for the purpose of irrigation. Irrigation is an age old art, as old as civilization.\(^1\) When the cave man preferred to change from raw food to cooked food, he turned to the land to grow his needs and settled on the banks of the flowing rivers and streams, in their valley and in estuaries.\(^2\) Thus the ancient civilization has been river based all over the world. When he could not maintain the crops grown in between the rains brought by nature, he turned on to the water resources available nearby to supplement the rains. As the needs grew, he had to move inland seeking more lands to grow his food materials and he had to use his ingenuity to lead the waters to wet his fields. Thus started the irrigation practice and irrigation structures and systems and there is no historical evidence to decipher, when this could have happened in different parts of the world. Irrigation should have thus evolved more as an art in ancient times than as a science and developed over centuries to meet the challenges of droughts and floods. With the fast growing population and the need to ensure their food security, several technological innovations had to be

2 Estuaries - the wide lower tidal part of a river.
evolved for development of more and more irrigated agriculture. Today, irrigation is governed by science and technology and has to be well managed and is no more a mere art.\(^3\)

Irrigation may be defined as the supply of water by artificial means for the cultivation of crops, and the works required to give effect to such supply are 'irrigation works'.\(^4\) The function of irrigation is to supplement the supplies of water falling in the form of rain on the area to be cultivated at the season and to the extent required for the successful cultivation of crops.

Water is the most important resource for agricultural development. Since agriculture continues to be a gamble on the monsoon, irrigation is required not only in low rainfall areas and during non-rainy seasons, but also during long breaks in rains in good rainfall areas. Both shortage of water and excess of water affect the growth and development of plants directly and consequently result in lesser yield and quality of crops. Hence adequate water supply through irrigation and removal of excess water through drainage become imperative if the crops are to be raised successfully.\(^5\)

**Factors responsible for Irrigation**

The south-west monsoon (June to September) and north-east monsoon (October to December) gives normal rainfall. Sometimes, the rainfall occurs in certain months only.\(^6\) So, it is very essential to develop artificial irrigation facilities. Rainfall is uncertain before and after sowing. There is drought at one time and flood at the other time. So proper adequate facilities of

---


irrigation is needed. An adequate water supply will bring prosperity, create employment potential, increase incomes and enhance capital formation. The waste land can be brought under cultivation, if there is availability of irrigation water.

Floods may occur many times due to lack of control of the river water. This river water can be a good source of electricity and irrigation. It is controlled at proper places and provision is made for extraction of electricity and its flow in canals. The multiple cropping pattern can only be possible if there is sufficient irrigation water. The burden of population on agriculture is very high in India and the double, triple or multiple crops are required to be taken from the available cultivated land. The intensive cultivation for example, sowing at proper time, application of fertilizers and other inputs are not possible without the supply of sufficient irrigation water.

**Irrigation Development by Kings**

Creation of irrigation potential itself had to pass through stages. The Tamil Kings had created several irrigation works. There are records of the earliest irrigation work in Sangam literature. The Chola kingdom was a very ancient one. The Cholas were an ancient ruling family of Tamilaham. The people considered the king as the representatives of God on earth and they respectfully called them Chakravarthies. The kings were concerned about the welfare of their subjects. They did yeoman service to their subjects mainly agriculturists, creating irrigation sources by way of constructing small diversion wiers called anicuts across streams, dug a number of

---

channels,\textsuperscript{10} canals,\textsuperscript{11} tanks and built bunds.\textsuperscript{12} Various efforts were taken by Cholas for irrigation development. The land ruled by Cholas was mostly plains, falling under the '\textit{marutham}' category consisting of fields and cultivable lands. They were called 'Kaduvettis',\textsuperscript{13} indicating that they destroyed forest to develop cultivable lands. Thus waste land was brought under cultivation.

The Chola period was the golden age of \textit{Mahasabha} or \textit{Sabha}.\textsuperscript{14} The members of the \textit{Sabha} were called \textit{Variyapperumakkal} and they looked after various committees or \textit{variyams} namely \textit{Totta variyam} (garden committee), \textit{Panchavara variyam} (famine committee), \textit{Kannakku variyam} (accounts committee), \textit{kalani variyam} (field committee). The most important one is 'Erivariyam' or tank supervision committee which was in-charge of constructing the tanks and removing silt from it. It had full powers to buy land for purposes of irrigation. It levied taxes for the maintenance of irrigation works. This committee managed the irrigation systems also. The distribution of water below the sluice of a tank and the safety of the bank bund was looked after by an employee. These irrigators were normally compensated in kind for the service rendered. Special attention was given by the government and local authorities to irrigation. Water was taken from rivers and big tanks. It was one of the duties of the Sabha to keep the tanks in good condition.\textsuperscript{15}

\textsuperscript{10} Channels - Sunken bed of a stream.
\textsuperscript{11} Canals - Artificial water course.
\textsuperscript{12} Bunds - Embankment.
\textsuperscript{13} P. Gomathinayagam and R. Gopalakrishnan, \textit{Maintenance of Irrigation System} Irrigation Management Training Institute (Hereinafter referred to IMTI), Tiruchirappalli, 1990, p. 3.
\textsuperscript{14} R. Kalidos, \textit{History and Culture of the Tamils}, Dindigul, 1946, p. 152.
\textsuperscript{15} \textit{Ibid.}, p. 153.
One of the chief items of public expenditure was irrigation tanks and channels. The Chola kings spent a lot of money on public works. There was an extensive irrigation system. Dams were constructed to divert the river water into smaller channels. Artificial reservoirs, tanks and wells were used for irrigation purposes. The most important irrigation structure that was built in the second century AD by the king Karikala Chola is the Grand Anicut across river Cauvery 16 km east of the Tiruchirappalli town. The anicut really grand as it has been named later, in that it is perhaps the oldest hydraulic structure built on permeable foundation in the world which is still functioning at the head of the Cauvery delta.

The Grand Anicut is a marvelous piece of hydraulic structure built across a mighty river in its sandy bed when the science had not developed enough to build safe structures on permeable foundation and serving to this date excellently well with a few modifications made in the nature of improvements to the structure. Judged from the recorded data, floods to an extent of about 186000 cusecs have been discharged through this anicut with minimum or no damage. It is possible that much higher floods could have flown over in the past, when there were no other structures in this river.

No recorded information is available as to how they founded this structure nor on the manner of its construction. It is believed that large

---

16 Ibid., p. 155.

17 According to Shri V.R.R. Dikshitar, "It was indeed a singular achievement of a monarch who had the long vision of brightening the rural life of his kingdom and consequently increasing the popularity of his state. So the king came to be known as Karikala Peruralathan, meaning king Karikala was a man of genius. Besides constructing embankments of Cauvery, he dug a number of channels, canals, tanks and built bunds."

18 Permeable - Capable of being permeated.
Cyclopean stones\(^\text{19}\) would have been brought and dumped across the stream and continuously replenished as these boulders, sank in the sandy bed, until the structure rose above to raise the water level.\(^\text{20}\) It has not been possible to explore in detail the foundations accurately. Such a course has not been advised either, considering the importance of this structure to the delta irrigation. The anicut as seen consists of a core of rough stones in clay covered with a facing of rough stone in mortar. A portion of the crest was built with a curved top and the vest with a series of steps, the foot of the solid dam being protected by a rough stone apron. The anicut is 392 meter long, 12.20 to 18.30 meters in width and 4.57 to 5.49 meters high. The main function of this anicut was to retain the supply in the Cauvery and its branches and pass on the surplus into the Coleroon through the Vellar river.\(^\text{21}\)

The whole work should have been done employing native labour with a religious zeal utilizing whatever experience they had at that time in tackling river problems. It is on record that thousands of slave labourers brought from Ceylon after the Chola's conquest of Ceylon were employed on this work.\(^\text{22}\) The sheer necessity to save crops in the delta and provide water for irrigation against all odds should have driven the ruler to embark on such a stupendous task with confidence and hope and they should have persisted until they succeeded. The plan of the anicut shows as to how they could have struggled to keep the alignment in the flowing stream, finally ending up with a structure with a serpentine course to bridge between the two banks.\(^\text{23}\) The

\(^{19}\) Cyclopean stones - cylindrical or round shape huge stones.

\(^{20}\) A. Mohanakrishnan, Selected Papers on Irrigation, IMTI, Madurai, 1990, p. 104.

\(^{21}\) Ibid., p. 104.

\(^{22}\) Ibid., p. 105.

\(^{23}\) Ibid., p. 106.
foundation base, even on delta is so stable and massive that successive generations have only thought of improvements and modifications to the super structure without meddling with the foundation base.

The great British Engineer, Baird Smith, wrote in his book named 'Irrigation in South India' (1853),

"Anicut was one of the greatest hydrological and technological achievement of the Chola's. So it called Grand Anicut."

It is not only grand but also great. Hence Grand Anicut is unique in its construction and is considered to be the most ancient and marvelous structure of the type in the world, still in service. 

Thirteen channels were built by Chola Kings, namely,

1. Rajakomarapalayam Channel
2. Mohanur Channel
3. Kattuputhur Channel
4. Ayyan Channel
5. Peruvalai Channel
6. Srirangam Nattu Voikkal Channel
7. Pugalur Channel
8. Vangal Channel
9. Nerur Channel
10. Krishnarayapuram Channel
11. New Ayyan Channel

\[^{24}\] Ibid., p. 105.
\[^{25}\] Angodu Mohanakrishnan, History of Irrigation Development in Tamil Nadu, Chennai, 2000, p. 81.
12. Ramavathalai Channel
13. Puthuvathalai Channel.

The most notable among these channels in the engineering point of view is the Uyyakondan channel in the Tiruchirappalli district believed to have been excavated between 985 and 1013 AD by Raja Raja Chola-I, while a head sluice for the same was provided between 1070 and 1120 AD by Kulothunga Chola-III.

The Gundar Eri and Nangavaram Tank was built by Adityachozhan. The Uttaramerur inscriptions of Parantaka Chola highlighted about Viranayam tank and an interesting inscription of Uttamachola found at Konerirajapuram details about canal system. It is amazing how the ancestors were able to design and execute various channels, canals, and tanks for irrigation development. It continues to serve till today with probably a little of desilting here and there over the years.

**Irrigation Development in British Rule**

The British had succeeded in acquiring large territories through their military action and various other means of gaining supremacy, they started consolidating their holdings and turned attention on administrative measures to aid civilian rule. The East India Company continued to administer the territories in their command, they realized that the restoration and improvements to the existing irrigation works should get the first priority in the civilian rule to keep the farming community in good humour and assist in maintaining food production, incidentally improving their revenue.

---

The Engineering department of military Board manned by Royal Engineers looked after the garrisons, all fortifications and cantonments. While the Board of Revenue had a department called the 'Maramath Department' to look after the irrigation works, navigation canals, all civil buildings minor roads etc. \(^{29}\) Initially the Collectors in the district assumed charge of the public works, irrigation structures with some professional assistance and this did not function effectively. As early as 1809, engineers under designation of 'Superintendents of Tank Repairs' were appointed and asked to aid the Collectors. This shows that the minor irrigation tanks occupied prime place among the public works at the time. \(^{30}\) By 1825, the post of 'The Inspector General of Civil Estimates' was created to function in the headquarters under the Board of Revenue and supervise the work of the 'Superintendents of tank Repairs' in the districts.

On the recommendations of the Public Works Commission constituted by the Court of Directors of the East India Company in England, approved by the Home Government and the Government of India, the Madras Public Works Department was first formed in 1858 headed by a Chief Engineer. \(^{31}\) A galaxy of British Engineers most of them with the Military Engineering training with the ranking as Royal Engineer occupied the post of the Chief Engineer, the notable among them who contributed immensely for the development of irrigation in the state can be cited as:

- Col. Sir Arthur Cotton 1853-1858
- Lt. Col. J. Penny Cuick 1886-1887
- C. A. Smith 1906-1913

\(^{31}\) Angadu Mohanakrishnan, *op. cit.*, p. 29.
At the beginning of 18th century, the agrarian scenario was satisfactory. The irrigation assets created in the medieval times had badly deteriorated due to long neglect under the later rulers who were more intent on safeguarding their throne from the onslaughts of their enemies than plan for the development and the welfare of their subjects. People were left to the mercies of the rain God and the food production was low and precarious. There were frequent occurrence of droughts and famines. Major famines in the Madras Presidency are reported to have occurred in 1709, 1711, 1728, 1731-1734, 1737, 1782, 1792. The British Engineers had therefore set their first task on repairs and restoration of old indigenous irrigation works already in place for better utilization than think of any new irrigation projects. So they turned their attention to irrigation development. Irrigation development as they could conceive and implement centered on:

1. Repairs and restoration of the minor irrigation tanks, through closing the breaches in the bunds and strengthening, repairing or replacing the sluices and providing adequate spillage structures. These works brought cheer to the farmers who in any case were prepared to take charge of the management of these storages, improve the distribution

32 Ibid., p. 29.
33 Ibid., p. 30.
34 Ibid., p. 30.
channels and use the water following their traditional methods of sharing.

2. Desilting and improving the several channels taking off direct from the river systems in the state, to enable them to draw the waters as and when the river flows during the monsoon and carry the same to either feed the ayacut direct or feed the minor irrigation tanks lying in chain enroute, in whatever way the existing system was designed. Providing control structures was also done wherever feasible and found necessary.

3. Providing weirs or anicuts across the streams and rivers to ensure better withdrawal through the channels taking off, with adequate command to maintain the designed full supply depth in the channels. In most cases temporary bunds and Korumbus\(^{35}\) made and maintained by the local beneficiaries were replaced by masonry structures with the necessary scouring sluices, head sluices and the apron below the overflowing weirs.

4. Improvements were made to the Grand Anicut complex on Cauvery and the development of the Cauvery Delta System feeding the large delta proclaimed as the Granary of the south.

In 1804 Captain Coldwell repaired Grand Anicut and provided dam stones 0.69 m (2.25 ft) high on its crest; and at the same time, he raised the river embankment above ensuring more water to Cauvery.\(^{36}\)

In 1829, Major Sim proposed undersluiices in the Cauvery with outlets into Coleroon to prevent the accumulation of silt in the upper reaches of the

---

\(^{35}\) Korumbus are the temporary dams constructed by Bamboos, wood and other such materials across the river beds. The peasants used these as shutters to divert the water to the canals.

Cauvery. Four sets of these were accordingly proposed; the first containing 10 vents $1.22 \times 0.91$ m in the body wall of the Grand Anicut was built in 1829, the sills being $3.05$ m below the crest. The second at Vadavagudi 26 km below Grand Anicut, consisting of 12 vents $1.22$ m $\times$ $0.91$ m was built in 1831. The effect of these two works were so marked that the bed of Cauvery got lowered by $0.69$ m. The third set was proposed at Perumal Kovil 45 km below Grand Anicut and the fourth set, consisting of 20 vents $3.66 \times 1.52$ m at 3 km below the head of Srirangam island were sanctioned in 1832-33. But the third and the fourth sets were abandoned and instead in 1834, the '150 yards Calingulah' was built at a distance of about 3 km below the head of Srirangam island and a new six vent surplus built at Perumalkoil. The Calingulah consists of a wall of 1.22 m high and 1.67 m broad resting on a Hooring of 0.91 m thick founded on 1.83 m wells. Originally there were rough stone aprons 1.83 m wide in front and 6.70 m in rear. There is a bridge of 19 arches over it. Deducting for the bridge piers, the clear waterway is 118.57 m.

The problem of silting of Cauvery could not overcome by this work completely, Sir Arthur Cotton constructed the Upper Anicut in 1836-38 across the Coleroon arm, at the head of Srirangam island. It was a plain anicut with a body wall and the necessary aprons. Incidentally this was the first large work executed by the British in Tiruchirappalli after they took over the reign from the Nawab rule in 1801.

37 Ibid., p. 105.
38 Ibid., p. 106.
39 Col. Baird Smith wrote of his works during this period as those executed with originality and courage, loyalty and conviction. "The permanent prosperity of Thanjavur is without doubt to be attributed in large measure to that first bold step taken by Sir Arthur Cotton in the construction of the Upper Coleroon dam under the circumstances of great difficulty with restricted means against much opposition and with heavy personal responsibilities."
A few years later the anicut was improved introducing scour vents to pass the silt along with flood flows to reduce the silting effect on the Cauvery. The anicut as improved was by two branches, the north branch having twelve spans varying from 10.21 to 10.74 m and the south branch with fifty seven spans varying from 9.15 to 10.36 m. In the north branch there were eight under sluices each 1.83 m wide and 2.44 m high with screw gearing shutters. There were seventeen under sluices on the south branch of about the same size. The crest of the north branch anicut was 1.58 m above the level of the zero gauge in the Cauvery arm. The construction of Upper Anicut had the effect of diverting into the Cauvery a good deal of flow, which would otherwise have been wasted into Coleroon. But the arrangement did not permit any regulation of water between Coleroon and Cauvery. As the Aganda Cauvery carries large quantities of sand, in high floods, the result or construction of solid anicut across Coleroon was that the Cauvery with is open head took a far larger portion of this heavy sand. To remedy the situation, the anicut was remodeled in 1902 under the proposals of Colonel Smart. The crest was cut down and remade to uniform level of 0.61 m above the zero of the Cauvery arm gauge. The anicut after remodeling consists of 55 bays of 12.2 m span each, the shutters being 1.83 m high. Besides other advantages, the alterations carried out permitted water to flow in the Cauvery arm upto a gauge of 2.44 m before any water is surplussed into the Coleroon. This structure is safe to this day and serving its purpose.

---

41 Ibid., p. 30.
42 Ibid., p. 31.
After the construction of Upper Anicut, it was found that there was a tendency for the Cauvery bed to scour itself with an undue amount of water flowing down during floods. This often resulted in heavy floods being realized at Grand Anicut. To obviate this difficulties in 1845, the Cauvery Dam was built across Cauvery at the head of Srirangam island roughly in line with the Upper Anicut on Coleroon. It consists of flooring of 0.91 m thick, the upper part of which consists of cut stones. The floor rests on a double row of well 1.37 m external diameter and 1.83 deep filled with concrete. The upstream and downstream aprons are of rough stones and 2.74 m and 6.4 m width respectively. This construction was successful in effecting a satisfactory and smooth division of flow.

Sir Arthur Cotton next turned his attention to the Grand Anicut structure itself. The silting upstream was heavy affecting the flow into the Cauvery and Vennar rivers feeding the delta. He decided that a few scouring sluices introduced in the anicut structure would relieve this problem and carry the silt into the Coleroon arm through the Ullar. He launched this work in 1839. It was here that he learnt his first lesson of building structures on sandy beds.

Several improvements were carried out in stages in the Grand Anicut complex which may be recorded here for maintaining continuity of thought and to appreciate how all the time the base structure left by Raja Karikala Chola was kept intact, since no one dared to disturb it in the process of modernizing. When the bridge was constructed in 1839, the effective length of the Anicut got reduced to 224. m. In 1886, automatic falling

---

43 Ibid., p. 32.
shutters 0.86 m high were installed over the crest of the anicut to provide adequate waterway to discharge the floods. Thirteen years later in 1899 these falling shutters were replaced by lift shutters $9.75 \times 1.152$ m size designed by Col. Smart and fabricated in the public works workshop in Madras and they stay on till today. Vennar, the river to the right of the Cauvery, had its open off-take about 5 km upstream of the Grand Anicut location.\textsuperscript{46}

While, the Upper Anicut, the Cauvery dam and the Grand Anicut ensured adequate flows being carried by the Cauvery and the Vennar for the delta irrigation. There was no means of avoiding flood waters rushing into the delta streams in unrestricted large quantities. Thus creating breaches in river and channels and causing heavy flood damages. For a long time this helpless state of affairs continued. The first proposal for the regulations of floods entering into the delta unchecked were made by Captain Mead in 1870.\textsuperscript{47} He suggested regulators being built on the Cauvery and also the Vennar at the head of the delta close to the Grand Anicut.

Major Montgomery who was asked to examine the proposals gave his report in 1881. He made a recommendation which was relevant in the situations then existed and said that the outlets to be built across Cauvery and Vennar should have adequate vent way to pass all the local floods. He rightly felt that each section of the delta should pass its share of the floods minimizing concentration of damages in particular routes. At times of normal flows the regulators would control the distribution of flows between the Cauvery and the Vennar.

\textsuperscript{46} A. Mohanakrishnan, \textit{op. cit.}, p. 32.
\textsuperscript{47} \textit{Ibid.}, p. 32.
Major Montgomery's recommendations were revised by Colonel Mulling and a decision was taken to build the head regulators for both the Cauvery and the Vennar about 61 m downstream of the Grand Anicut and at right angles to the same. The Vennar head thus got shifted downstream with the course above being subsequently abandoned. The plans and estimates were sanctioned for Rs.6.88 lakhs in the proceedings No.7781, dated 21-9-1883 of the Government of Madras.48

The Cauvery at the Grand Anicut subdivides into two main rivers viz., the Cauvery and the Vennar which subdivide further down as they approach the sea into 21 and 15 rivers respectively to feed the delta through a network of main channels and numerous branch channels, minors and subminors.49 This network of channels must have been created over a long period of time by the rulers and the beneficiary to lead the river water to irrigate their lands.

The Grand Anicut would have weathered many flood in the times of unrecorded history known floods of high magnitude have occurred in November 1858, July 1896, Nov 1906, July 1911 and November 1920. The periodical improvements to the Grand Anicut and the several outlets that have been constructed on the Cauvery arm above Grand Anicut have served to safeguard the structure limiting the flood discharges.50 Though at times of heavy floods reaching the anicut, part of the floods were discharged through the Cauvery and the Vennar arms through the regulators. Care was taken to see that the difference between the water levels upstream and downstream of

48 Ibid., p. 33.
49 Taramani, Irrigation Management and Training Institute, Tamil Nadu, Interdisciplinary Diagnostic Analysis of Action Programme area in Cauvery Delta of Tamil Nadu, Madras, January 1987, p. 6.
50 C. G. Barber, History of Cauvery - Mettur Project, Madras, 1940, p. 20.
these regulators never exceeded 2.75 m which, to a certain extent, restricted their usages for flood discharges.

The large flood that has passed through before the construction of Mettur reservoir in 1924\(^5\) was estimated to be 12900 cumecs. Even though a large part of this flood has been carried by the Coleroon from the Upper Anicut itself, still the accumulation of flood above the Grand Anicut was quite heavy. The need for an additional bypass above the anicut was immediately felt on the left bank of the Cauvery at about 2 km upstream of the Grand Anicut bypass of length 1219 m was then created which would accommodate a surplus of 2792 cumecs, into the Coleroon reducing the load on the Grand Anicut to that extent (Photo 1).

Floods of high magnitude received after 1924, were in the years 1961 and 1977 which had caused breaches in the Cauvery bank. The strengthening works were taken up in 1972 at a cost of Rs.121 lakhs. The maximum flood that may be realized at the Grand Anicut was estimated at 1.80 lakhs cusecs and this would raise the front water level to Reservoir Level + 61.567 M.\(^5\)

To withstand this water pressure, the aprons in front and rear were extended and provided with cement concrete cut off at the ends. Energy dissipating devices like the battle walls and stilling basins were created behind the head regulators wherever found necessary.

\(^5\) Ibid., p. 25.
\(^5\) Ibid., p. 83.
Another major improvement made is to energize the shutter separation in all the Head Regulator Complex and the Grand Anicut by providing electric motors. This has eased and quickened the shutters operation remarkably which incidentally ensures uniform opening of the shutters during all the stages of water regulation. The old structure thus continuously updated though its existence of eighteen centuries is now conforming to the latest hydraulic design and equipped with the modern operational facility.

The river is with its largest bed width above the Upper Anicut (Photo 2) and hence is also called the Aganda Cauvery. This gave scope for the use of the river flows for irrigating narrow ribbon-like strips of land on either bank through excavating a number of channels which were at the time with open heads. These river channels brought fertility all along the river wherever the banks were low in the Salem and Tiruchirappalli districts.

The unprecedented floods of 1924 in the Cauvery which remains as the largest flood passed by the river in the recorded history, caused bad scourrs and shoals in the bed, shifted the deep water courses and made formation of the Korumbus any more difficult. A permanent solution was sought for the proper withdrawal of flows through these channels by constructing a masonry bed regulator with necessary scouring and head sluices and thus a scheme called the Kattalai Bed regulator scheme was conceived and executed between 1931 and 1933 across the river Cauvery near Mayanur in Kulitalai taluks of Tiruchirappalli district, it is a weir structure 1293 m long carrying in falling shutters for part of its length with 3

---

53 Ibid., p. 85.
55 Ibid., p. 106.
numbers 6.12 × 2.6 m scouring vents on its right and 1 vent of 5.5 × 1.31 m on its left end for the north bank canal. The weir has been built with adequate cut off in front and rear and elaborate apron features. The weir serves a group of channels now brought into clusters by suitable linkages under the south and north bank canals providing the necessary head.\textsuperscript{56}

A new canal called the Kattalai High level canal\textsuperscript{57} has also been excavated and added on to the group under the south bank canal giving irrigation to about 7695 ha. The total ayacut served by this Kattalai Bed Regulator is 30894 ha and most of these channels also got improved with control structures.

**Irrigation Development in the Plan Periods**

Soon after Independence, the first Prime Minister of India, the great visionary, Shri Pandit Jawaharlal Nehru established the Union Planning Commission in 1950 and launched the five year plans for the overall development of the country with a missionary zeal. In the first two five year plans, irrigation and power were given top priority in the scheme of development.\textsuperscript{58}

The important sources of irrigation in the district are Government canals, tanks and wells. In 1955-56, at the end of the first plan, the area irrigated by government canals was 183378 acres. This had gone upto 197243 acres by the end of the second plan. There were 82 government wells both masonry and non-masonry and 117393 private wells, both masonry and

\begin{footnotesize}
\begin{itemize}
\item[\textsuperscript{57}] *Ibid.*, p. 27.
\end{itemize}
\end{footnotesize}
non-masonry. Thus there was a total of 118215 wells in the district in 1955-56. The district had a total number of 5414 tanks out of which 4690 tanks were having an ayacut of less than 100 acres. The number of government wells was only 557 in 1960-61. Similarly, the number of private wells also came down to 112108. Thus there was a total number of 112665 wells in the district in 1960-61. The total number of tanks in the district in 1960-61 had increased to 6200 out of which 5846 tanks were with an ayacut of less than 100 acres. The acreage under tank irrigation had decreased from 202476 (1955-56) to 161882 (1960-61) similarly the area under well irrigation dwindled to 115259 acres (1960-61) from 118484 acres (1955-56). Tube wells irrigated covered a small area of 100 acres in 1960-61. The area irrigated by other sources like springs, channels etc. increased from 4995 acres at the end of the first plan to 5515 acres at the end of the second plan.\(^\text{59}\) On the whole the total net area irrigated in the district was 509333 acres in 1955-56 which represented 29.2 per cent of the net area sown. In 1960-61, the net area irrigated got reduced to 479999 acres, which represented 27.7 per cent of the net area sown in the district.

The two important irrigation systems, implemented during the Second plan period, were the New Kattalai high level canal scheme, constructed at a cost of Rs.172.3 lakhs and the Pullambadi canal scheme with a constructional cost of Rs.157 lakhs. These two, together irrigated 38255 acres in the district. Details of Irrigation Schemes are given below:

Main source of river irrigation in the Tiruchirappalli district is the Cauvery and its tributaries.\(^{60}\)

<table>
<thead>
<tr>
<th>Source of irrigation</th>
<th>Name of Taluk</th>
<th>Total acreage irrigated (1951)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cauvery canal</td>
<td>Musiri</td>
<td>13,172</td>
</tr>
<tr>
<td>Cauvery</td>
<td>Udaipalayam</td>
<td>4,500</td>
</tr>
<tr>
<td>Nanthiyar</td>
<td>Udaipalayam</td>
<td>5,400</td>
</tr>
<tr>
<td>Cauvery</td>
<td>Lalgudi</td>
<td>37,000</td>
</tr>
<tr>
<td>Nanthiyar</td>
<td>Lalgudi</td>
<td>2,000</td>
</tr>
<tr>
<td>Cauvery and other tributaries</td>
<td>Karur</td>
<td>5,000</td>
</tr>
<tr>
<td>Amaravathi</td>
<td>Karur</td>
<td>1,000</td>
</tr>
<tr>
<td>Noyyil</td>
<td>Karur</td>
<td>100</td>
</tr>
<tr>
<td>Amaravathi</td>
<td>Kulittalai</td>
<td>2,500</td>
</tr>
<tr>
<td>Cauvery</td>
<td>Tiruchirappalli</td>
<td>23,000</td>
</tr>
<tr>
<td>Cauvery</td>
<td>Tiruchirappalli</td>
<td>42,000</td>
</tr>
</tbody>
</table>

Canal irrigation schemes

1. *New Kattalai High level canal*

   - Length of the canal: 86 miles
   - Date of commencement of work on this scheme: August 1957
   - Date of opening of the canal for irrigation: September 1959
   - Acreage irrigated: 16141
   - Cost of construction (lakhs): Rs.172.3

2. *Pullambadi Canal*

   - Length of the canal: 54 miles
   - Date of opening of the canal: September 1959
   - Acreage irrigated: 22114

Additional production achieved (tons) : 9,547
Cost of construction of the canal (lakhs) : Rs.157

**Tank irrigation**

<table>
<thead>
<tr>
<th>Name of Taluk</th>
<th>No. of Tanks</th>
<th>Total Acreage Irrigated (1951)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small</td>
<td>Big</td>
</tr>
<tr>
<td>Musiri</td>
<td>189</td>
<td>35</td>
</tr>
<tr>
<td>Perambalur</td>
<td>130</td>
<td>29</td>
</tr>
<tr>
<td>Udaiyarpalayam</td>
<td>707</td>
<td>7</td>
</tr>
<tr>
<td>Lalgudi</td>
<td>142</td>
<td>1</td>
</tr>
<tr>
<td>Karur</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Kulittalai</td>
<td>265</td>
<td>4</td>
</tr>
<tr>
<td>Tiruchirappalli</td>
<td>338</td>
<td>13</td>
</tr>
<tr>
<td>Pudukottai (portion)</td>
<td>-</td>
<td>89</td>
</tr>
</tbody>
</table>

A large number of tanks were repaired and desilted and put to use.

**Other irrigation schemes**

- Expenditure incurred by the Government for repairing tanks etc. after the storm and floods in 1955-56 (lakhs) : Rs.2.6
- Cost of repair (others) lakhs : Rs.14.2
- No. of tanks repaired : 151
- No. of canals repaired : 33

Schemes undertaken and completed under the food production scheme.  

<table>
<thead>
<tr>
<th>Name of Taluk</th>
<th>No. of works completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kulittalai</td>
<td>67</td>
</tr>
<tr>
<td>Udaiyarpalayam</td>
<td>28</td>
</tr>
<tr>
<td>Perambalur</td>
<td>18</td>
</tr>
<tr>
<td>Musiri</td>
<td>9</td>
</tr>
<tr>
<td>Lalgudi</td>
<td>4</td>
</tr>
<tr>
<td>Tiruchirappalli</td>
<td>23</td>
</tr>
<tr>
<td>Total area benefited (acres)</td>
<td>3187</td>
</tr>
</tbody>
</table>

---

Other particulars:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Production achieved</td>
<td>1760</td>
</tr>
<tr>
<td>Cost of construction of a regular in Jetarpalayam (lakh)</td>
<td>Rs.8.64</td>
</tr>
<tr>
<td>Acreage benefited</td>
<td>300</td>
</tr>
<tr>
<td>Cost of construction of Chinnar Irrigation Scheme (lakh)</td>
<td>Rs.5.88</td>
</tr>
<tr>
<td>Acreage benefited</td>
<td>716</td>
</tr>
<tr>
<td>Additional production achieved (tons)</td>
<td>388</td>
</tr>
<tr>
<td>No. of filter point tube wells constructed during the first two plan periods</td>
<td>736</td>
</tr>
<tr>
<td>Acreage irrigated</td>
<td>5078</td>
</tr>
<tr>
<td>No. of spring wells constructed in 1960-61 under the new spring well scheme</td>
<td>56</td>
</tr>
<tr>
<td>Acreage irrigated</td>
<td>560</td>
</tr>
<tr>
<td>No. of tube wells erected since 1958-59</td>
<td>125</td>
</tr>
<tr>
<td>Area benefited (acres)</td>
<td>1000</td>
</tr>
<tr>
<td>No. of oil engines distributed during the First Plan for lift irrigation</td>
<td>59</td>
</tr>
<tr>
<td>No. distributed in the second plan</td>
<td>67</td>
</tr>
<tr>
<td>No. of electric motors distributed</td>
<td>19</td>
</tr>
<tr>
<td>Area irrigated (acres)</td>
<td>1165</td>
</tr>
</tbody>
</table>
Area of important crops irrigated.\(^{62}\)

<table>
<thead>
<tr>
<th>Crops</th>
<th>At the end of First Plan (1955-56) (in acres)</th>
<th>At the end of Second Plan (1960-61) (in acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
<td>477349</td>
<td>469162</td>
</tr>
<tr>
<td>Cholam</td>
<td>48094</td>
<td>52593</td>
</tr>
<tr>
<td>Cumbu</td>
<td>32715</td>
<td>26591</td>
</tr>
<tr>
<td>Ragi</td>
<td>22197</td>
<td>24264</td>
</tr>
<tr>
<td>Maize</td>
<td>1357</td>
<td>1280</td>
</tr>
<tr>
<td>Varagu</td>
<td>830</td>
<td>895</td>
</tr>
<tr>
<td>Chillies</td>
<td>15367</td>
<td>23824</td>
</tr>
<tr>
<td>Turmeric</td>
<td>3439</td>
<td>1444</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>16374</td>
<td>26140</td>
</tr>
<tr>
<td>Onions</td>
<td>2768</td>
<td>3086</td>
</tr>
<tr>
<td>Total Food crops (including above)</td>
<td><strong>642051</strong></td>
<td><strong>636114</strong></td>
</tr>
<tr>
<td>Gingelly</td>
<td>3029</td>
<td>1620</td>
</tr>
<tr>
<td>Groundnut</td>
<td>13150</td>
<td>15288</td>
</tr>
<tr>
<td>Cotton</td>
<td>10978</td>
<td>10890</td>
</tr>
<tr>
<td>Tobacco</td>
<td>3347</td>
<td>2416</td>
</tr>
<tr>
<td>Coconut</td>
<td>1749</td>
<td>1694</td>
</tr>
<tr>
<td>Other Non-food crops</td>
<td>2950</td>
<td>4855</td>
</tr>
<tr>
<td>Total Non-food crops (including above)</td>
<td><strong>35365</strong></td>
<td><strong>36885</strong></td>
</tr>
<tr>
<td><strong>Total Food and Non-food crops</strong></td>
<td><strong>677416</strong></td>
<td><strong>672999</strong></td>
</tr>
</tbody>
</table>

During the Third Five Year Plan (1961-66), the potential for further developments had tapered off with the utilization having practically reached the level of availability of the surface water resources in the state. During the fourth five year plan (1969-74) there are about 6159 tanks spread over

---

Tiruchirappalli district. A good number of the tanks are fed by the river systems. During 1970-71, an extent of 2.14 lakhs hectares was irrigated by the river system and 1.23 lakhs hectares by tanks. Numerous tanks have become silted and dried up. Silt clearance in these tanks is the problem.

Wells constitute an important source of irrigation. An extent of 1.17 lakh hectares was irrigated by as many as 145344 wells spread over Tiruchirappalli district.

About 65 to 70 per cent of the ground water resources is being exploited. The agricultural refinance schemes, designed to help the farmers in the sinking of wells and erection of pumpsets by providing credit facilities. Remodelling of channels under the Cauvery system of irrigation is under investigation. It will ensure efficient management of water and bring more areas under multiple cropping. Investigation has shown that there are possibilities of utilizing the Noyyal, the Marudayar and the Kodanganar rivers for irrigation. A special division is functioning to investigate how best these river waters may be harvested.

Hence Tiruchirappalli has quite a good record of achievements in irrigation. The Grand Anicut in the Cauvery is a monument to the skill and industry of ancient Chola king. The practice of constructing Korambus for miles in the riverbed to divert water to the open head channels prevails even to this day. Many tanks are also the works of the great ancient rulers. During the British period, the most illustrious irrigation engineer Sir Arthur Cotton constructed the Upper Anicut to prevent too much water flowing down the Coleroon and to pass adequate water into the Cauvery. Several modifications

---

and improvements were made to the Grand Anicut and various efforts were taken by the Britishers for Irrigation development. During the plan period also various efforts were taken by the government for irrigation development. Thus whatever limited resources were available to them they utilized them in the most economical and useful manner to develop the irrigation resources.