WELL IRRIGATION

Well irrigation has been practised in Tamil Nadu from time immemorial. It is one of the cheapest means of irrigation. The scarcity of surface water supplies can be solved by the method of ground water irrigation or well irrigation\(^1\). The Bible refers to wells as a source of life giving water and a symbol of security and wellbeing\(^2\). In the case of Tamil Nadu especially after Independence the planners of the Five Year Plans gave much significance for the progress of well irrigation. The State government with the assistance of the Central government made tremendous contribution for the well irrigation\(^3\). The performance of well irrigation varies from region to region depending upon the availability of ground water.

4.1. Source of Underground water

The subterranean water is regarded as ground water\(^4\). Wells are primarily getting recharged through two ways\(^5\). One is through rainfall

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1 Report of Irrigation in India, Review for the year 1916-1917, p.16.
and the other is through surface sources of irrigation viz., canals and tanks. So development of well irrigation implies development of surface sources of irrigation. Water is also released to the ground via a number of springs that represent ground water due to a large number of structural weaknesses in the rocks.

As the beautiful monsoon kisses the mother earth, with all its titanic fury, part of the turbid rain waters joins the streams and giant rivers while a part of it settles down in the veins of that earth to form precious ground water resources. The water that infiltrates from rainfall, irrigation systems, rivers, streams and drains raises the ground water table. A portion of it is extracted through wells, tube wells etc. for irrigation and other uses. Increasing the utilization of ground water potential is marred not only by temporal variations in the degree of ground water renewability,

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7 K. Sivasubramaniyan, op.cit., p.2854.
8 V. Subramanian, Water Quality-Quality perspective in South India, New Delhi, 2000, p.81.
water quality and depth but also by regional variations both in the supply and demand of ground water\textsuperscript{11}.

4.2. Features of Well Irrigation

Wells have been an integral part of man’s life and activity. They have been supplying water where surface water supplies are inadequate\textsuperscript{12}. Human as well as animal power was used to lift water from wells in the beginning. Later the old method was replaced by modern power driven pumpsets to lift water from wells. Subsequent technological advancement has enormously increased the significance of well irrigation in India, especially in Tamil Nadu\textsuperscript{13}.

Wells have been a highly popular source of irrigation in the State\textsuperscript{14}. The agricultural prosperity of most of the districts in Tamil Nadu is largely based on well irrigation. These wells are being dug by ryots at enormous cost because they do yield an adequate return on the

\begin{flushleft}
\textsuperscript{12} K. Ramakrishna Reddy, \textit{op. cit.}, p.2.
\textsuperscript{13} \textit{Ibid.}, p.3.
\textsuperscript{14} Report of the Committee on Agricultural Production, Madras, April 1966, p.43.
\end{flushleft}
investment\textsuperscript{15}. In the surface water scarce areas ground water plays a vital role\textsuperscript{16}. Wells are the chief source of irrigation in Coimbatore district\textsuperscript{17}.

There is a greater awareness in the delta areas regarding the wells as a means of providing water for nurseries and at the later or final stages of the crop when there is insufficient irrigation from normal sources\textsuperscript{18}. A well provides water beyond the accidents of seasons. Thus for the progress of agriculture, the government provides encouragement for the formation of wells\textsuperscript{19}. Well irrigation is rural based and spreads out widely and offers a scope for people living in the nearby habitation to meet their drinking and irrigation needs\textsuperscript{20}.

Replenishment of the underground water resources by natural process when compared with the other mineral resources is a noteworthy feature\textsuperscript{21}. The abundant water resources lying underground will come to

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\textsuperscript{15} Madras Information, Vol.XV, March 1961, p.5.
\textsuperscript{16} A.K. Barua, \textit{op.cit.}, p.70
\textsuperscript{17} Season and Crop Report of the Madras State, 1953-54, p.4.
\textsuperscript{18} Report of the Committee on Agricultural Production, Madras, 1966, p.43.
\textsuperscript{21} G. Ravindran Nair, \textit{op.cit.}, p.13.
\end{flushleft}
play a singular role in providing protected water supply to the millions in rural areas\textsuperscript{22}.

Ground water can be profitably used at the beginning of the crop season for raising nurseries and towards the end, when only limited areas may require water application\textsuperscript{23}. Wells unusually serve small areas, often belonging to a single farmer. It is easier to regulate water supply according to specific circumstance and needs of the individual farmers. So the quality of irrigation is better in the case of wells\textsuperscript{24}.

Well irrigation has been highly developed in Madras. Wells are mainly constructed by the cultivators with the help of the government loans\textsuperscript{25}. Well irrigation plays a very considerable part in the welfare of our vast rural population\textsuperscript{26}.

Ancient Indian literature refers to wells, which are said to have been maintained effectively with the State taking the responsibility of their maintenance and operation\textsuperscript{27}. After Independence the availability of diesel electric powered pumps made well water more attractive and shifted

\textsuperscript{22} Ibid., p.23.
\textsuperscript{23} A.L. Rao, \textit{India’s Water Wealth}, New Delhi, 1979, p.126.
\textsuperscript{24} K. Siva Subramaniyan, \textit{op.cit.}, p.2854.
\textsuperscript{26} Madras Information, Vol.III, July 1949, p.7.
\textsuperscript{27} \textit{Gazetteer of India}, Vol.III, New Delhi, December, 1990, p.82.
emphasis to the development of wells$^{28}$. The National Government has in all its Five Year Plans set aside large sums to assist private developers of minor works such as wells and tube wells$^{29}$.

Irrigation has also received considerable attention particularly in encouragement of private investment in tube wells and pumpsets$^{30}$. As regards ground water the usable amount depends not only on the quality of water available in an area but also its quantity$^{31}$. Wells irrigate about 24.3% of the total irrigated area in the State$^{32}$. The contribution of well irrigation is substantial for the growth in the irrigated areas of Tamil Nadu$^{33}$. The initiation of Five Year Plans paved the way for the rapid progress in the construction works related to ground water exploitation$^{34}$. With the help of the progress of well irrigation one fourth of the total agricultural area in the State is irrigated by wells$^{35}$.

$^{28}$ Ganesh Pangare and others, *Springs of Life, India's water Resources*, New Delhi, 2006, p.172.


$^{35}$ Report of the Committee on Agricultural Production, Madras, April 1966, p.43.
4.3. Ground Water Survey

The development of ground water resources for irrigation consists of conducting a survey to identify a potential site, hiring of drilling equipment and technically trained personnel for sinking the wells, installation of pumpsets to lift the water and preparation of channels\(^\text{36}\). Ground water resources and its potential were assessed for the first time in Tamil Nadu after the First Irrigation Commission of Tamil Nadu\(^\text{37}\). For the progress of these the government has sanctioned the establishment of a Ground Water Cell in the State in 1965\(^\text{38}\). The Ground Water Cell will be initially undertaking investigations of schemes for provision of water supply for drinking purposes and for industries. The Cell would also attend to the exploration of ground water resources for irrigation purposes and for industries for which a phased programme is to be drawn up and approved by the government\(^\text{39}\).

The Ground Water Cell consists of a Hydrologist, a Geologist and a Mechanical Engineer and should be attached to the Agriculture Department. The Cell was established for conducting ground water survey


\(^{39}\) Ibid.
in the State\textsuperscript{40}. Ground water and its proper use assume greater significance in a country like India. With the introduction of new agricultural strategy in the early 1960s there has been increasing use of tube wells\textsuperscript{41}.

Tamil Nadu has a high level of ground water to be utilized by largest number of pumpsets. Because of an early start in ground water exploitation, some of the hardrock areas found in Coimbatore and Salem are experiencing ground water mining. This has led to rising costs of pumping and consequent adjustment in farming system. In alluvial areas which have recently been subject to water scarcity, tube wells have expanded rapidly providing irrigation and drainage\textsuperscript{42}. Increasing the utilisation of ground water potential is marred not only by temporal variations in the degree of ground water renewability, water quality and depth but also regional variations both in the supply and demand of ground water\textsuperscript{43}.

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\begin{enumerate}
\item Report of the Committee on Agricultural Production, Madras, April 1966, p.67.
\item D.S. Thornton, \textit{op. cit.}, p.6.
\item R. Maria Saleth, \textit{op. cit.}, p.12.
\end{enumerate}
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4.4. Kinds of wells

Wells are categorised in to various kinds based on its utilization. The following are the different kinds of wells.

4.4.1. Open Wells

In Tamil Nadu well irrigation is very popular and people dug wells and utilize the water for irrigation where surface water is limited. These wells mainly provide water for raising of nurseries at the initial stages of cultivation and at later stages of the crop when there is insufficient irrigation from normal sources\textsuperscript{44}. The agricultural prosperity of some districts like Coimbatore district is largely based on well irrigation. The people of this district concentrated more attention for digging such wells\textsuperscript{45}.

Open percolation wells are constructed in Coimbatore district. For percolation wells huge amount was spent by the village people inorder to secure water for irrigation. Villagers have spent Rs.30,000 to Rs.40,000 on a well for constructing open percolation wells to a depth of over hundred feet through rocks. A team or committee on plan projects had the opportunity to see several such wells. In a village situated 3 miles from Coimbatore, an open well was constructed at an estimated cost of

\textsuperscript{44} Report of the Committee on Agricultural Production, Madras, April 1966, p.43.

\textsuperscript{45} Madras Information, Vol. XV, May 1961, p.5.
Rs.1,18,000 involving a lot of cutting and wedging rocks over a period of extending almost three generations. And even then the supply of water was hardly sufficient to feed a 5” pump. In another case a well has been dug at a cost of about Rs.75,000 and water lifted from a depth of 120 ft. and taken through the underground pipes to the farm to avoid any wastage of water\textsuperscript{46}.

Open wells in the state were increased in number due to the following reasons.

i) Even a poor farmer can afford to sink an open well with Government assistance and can utilize it with or without a mechanical pump.

ii) An open well serves for a longer time than other types of wells. As a result more yield can be expected from open wells.

iii) Open wells can be sunk in almost all areas while artesian wells, sub-artesian wells and filter points are restricted only to certain favourable areas; and

iv) An open well will be particularly useful for raising seedling in advance and for the last wettings of crops when tank or channel irrigation is not available and will also help the raising of an additional crop\textsuperscript{47}.

\textsuperscript{46} Report on Minor Irrigation works in Madras State, 1959, p.5.
\textsuperscript{47} Report of the Committee on Agricultural Production, Madras, April 1966, p.46.
4.4.2. Artesian Wells

Artesian wells for the first time came to be implemented in Tamil Nadu in 1948. The scheme was implemented in Chidambaram taluk of South Arcot district and Udayarpalayam taluk of Thiruchirapalli district\(^\text{48}\). Under the scheme artisan wells are sunk by the Agriculture Department and handed over to the Revenue Department for maintenance. These are considered as the government sources of irrigation. The sites for the well and the availability of area are consulted with the Revenue Department by the Agriculture Department. Immediately after implementation twenty wells were sunk in Cuddalore, Vridhachalam taluks in the South Arcot district. Considering the great potentiality of the scheme for augmenting irrigation facilities, it was included in the First Five Year Plan to be continued in the Second and Third Plans\(^\text{49}\).

During the First Plan 101 artesian wells were sunk\(^\text{50}\). During the second plan the government granted permission to sink new wells and deepening of the existing wells\(^\text{51}\). Gradually the number of this type of wells sunk got reduced to 81 during the Second Plan and came down to seven during the Third Plan period. Each well irrigated fifty acres with the

\(^{48}\) Ibid., p.59.

\(^{49}\) Ibid.

\(^{50}\) Ibid.

additional production of half a ton of rice per acre. Water cess (tax) is collected from the beneficiaries at the consolidated rate of Rs.22.50 per acre per annum. This is an economic source of irrigation\textsuperscript{52}. Among kinds of wells, bore-wells are also important.

**4.4.3. Bore-Wells**

Bore-Wells are known as sub-artesian wells. The Bore-Well Scheme was first started in 1959 during the Second Plan period\textsuperscript{53}. This scheme provides for the utilisation of underground water by sinking bore-wells on the lands of the ryots and supply of pumping machinery on hire purchase basis. For this scheme, loan assistance was extended to the extent of Rs.8,000 in all the districts except Coimbatore and South Arcot. In Coimbatore district the loan limit was Rs.10,000 and Rs.20,000 for South Arcot district. This loan was recoverable in ten annual installments\textsuperscript{54}.

The quality of the water provided by the tube well stands good with a continuous supply of 200 gallons per minute\textsuperscript{55}. A borewell irrigates twenty acres and the addition of food production expected is half a

\textsuperscript{52} Report of the Committee on Agricultural Production, Madras, April 1966, p.59.
\textsuperscript{53} Ibid.
\textsuperscript{54} Ibid., p.62.
\textsuperscript{55} Madras Information, Vol.III, January 1949, p.17.
ton of rice per acre\textsuperscript{56}. During the Second Plan period 271 bore-wells were sunk in the State against a target of 500 wells. During the Third Plan Period a target of 2000 wells was fixed. But the scheme became so popular that the target has been exceeded to 3,414 borewells during the Third plan. Bore wells provided the much needed additional irrigation for extension of cultivation in a large scale. The programme came to be intensified particularly in Thanjavur district and Chidambaram taluk of South Arcot district\textsuperscript{57}.

4.4.4. Tube Wells

The Government of India set up the Exploratory Tube Well Organisation (ETO) in 1954 to intensify efforts at deep strata exploration. A substantial part of the central assistance to States was allocated to tube wells\textsuperscript{58}. Rural electrification plays a key role in modernizing agriculture. Electrification provides mechanical power for tube wells\textsuperscript{59}.

The deep tube wells, because of the high cost involved and the skill and equipment required are best undertaken by the State. All

\textsuperscript{56} Report of the Committee of Agricultural Production, Madras, April 1966, p.63.
\textsuperscript{57} Ibid.
\textsuperscript{59} \textit{Ibid.}, p.254.
other ground water development came preferably under the private sector also provide the farmers with flexibility in the use of water\textsuperscript{60}.

The Intensive Agricultural District Programme (IADP) which was launched in 1962 encouraged intensive utilization of ground water resources in the form of tube well irrigation. This paved the way for the increase of irrigated area and for the progress of food production in the State\textsuperscript{61}.

Tube wells can be diesel operated or electrically operated. The electric pumps are cheaper than the diesel operated pumps. The electrically operated tube wells and electric pumps or open wells are more economical than diesel operate ones\textsuperscript{62}. To help the ryots in better farming, increased facilities were provided by the government for installation of oil engines, pump sets and electric motors. The agriculturists availed the large number of facilities provided by the government\textsuperscript{63}.

During the Second Five Year Plan, allocation for tube wells were made under the Community Development Programme (CDP) with a

\begin{itemize}
  \item \textsuperscript{60} Report of the National Commission on Agriculture, 1976, p.33.
  \item \textsuperscript{61} K.P.M. Sundaram, Ruddar Datt, \textit{op.cit.}, p.100.
  \item \textsuperscript{62} \textit{Ibid.}, p.34.
\end{itemize}
view to mobilising public co-operation and involving the Community Development Organization\textsuperscript{64}. There has been a marked development in the exploitation of ground water through tube wells. The number of tube wells also increased from 2,649 in 1956 to 23,900 in 1969. Most of the tube wells are privately owned and farmers can get loans from the government for sinking them\textsuperscript{65}. The encouragement of private investment in tube wells received considerable attention for irrigation\textsuperscript{66}. Thus the enormous contribution made by the tube-wells emerged as a distinct feature of development during the said plan period\textsuperscript{67}. Just like Tube wells Filter point Tube wells also implemented in the State.

4.4.5. Filter Point Tube Wells

The Filter Point Tube Well Scheme was launched in 1951-1952\textsuperscript{68}. The scheme was first introduced in Thanjavur district in 1951 to encourage the ryots to expand paddy cultivation in the Kuruvai season and to enable cultivation of cotton or groundnut in the off season. In the initial

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\item[64] Ibid., p.263.
\end{itemize}
stage 102 wells were sunk in the district. Due to the popularity of the scheme, it was extended to other districts.\textsuperscript{69} Introduction of Filter Point Tube Well Scheme marked a very important step in increasing underground water supply in the State. It is specially suited for the soils with a sandy substratum and helped to raise additional short-crops in summer in such soils.\textsuperscript{70} The various subsidies offered by the government promoted these schemes further.

Filter Point Tube wells are sunk by the Agriculture department in ryots holding up to a depth of 40 feet and fitted with pumping machinery.\textsuperscript{71} In sandy areas on the coast where sea water has no effect and fresh water is available, filter points are installed. This scheme became very popular from its initiation and large numbers of them are being installed every year. The area commanded by a normal filter point is 10 acres. Filter points, a device for pumping out water from sandy substrata for irrigation purposes, are largely found in Thanjavur district, Srirangam area of Thiruchirapalli district and in the Sandy areas in the

\textsuperscript{69} Report of the Committee on Agricultural Production, Madras, April 1966, p.57.
\textsuperscript{70} Report of the Madras State Administration, 1952-1953, p.58.
\textsuperscript{71} Report of the Committee on Agricultural Production, Madras, April 1966, p.57.
districts of North Arcot, South Arcot, Madurai, Ramanathapuram, Chengleput and in a small measure in Salem\textsuperscript{72}.

The scheme helps the ryots to tap sub-soil water from sandy sub-strata through filter points which filter out soil particles and filter in clear water in a tube sunk in the soil. The filter point wells provide an independent source of irrigation\textsuperscript{73}. The filter point tube wells are useful for raising a second crop or a supplementary source for preparation of land for raising nurseries\textsuperscript{74}. These wells are becoming very popular and a large number of them are installed every year and are used to increase income from lands\textsuperscript{75}. The Cauvery Basin is a rich belt for tapping underground water through filter point. Indeed, between 1965-1967 as per official estimates, over 4,200 filter points were sunk\textsuperscript{76}.

The actual cost of the filter point and sinking was recovered from the ryots, so that the whole project became self-supporting\textsuperscript{77}. Loans

\textsuperscript{72} Report of the Minor Irrigation Works in Madras State, November 1959, p.4.
\textsuperscript{73} Report of the Committee on Agricultural Production, Madras, April 1966, p.57.
\textsuperscript{74} Ibid.
\textsuperscript{75} Francine R. Frankel, \textit{India’s Green Revolution Economic gains and Political Costs}, Bombay, 1971, p.94.
\textsuperscript{76} Ibid.
up to Rs.2,500 were granted to each cultivator in the shape of pumping machinery for the filter-points-on hire-purchase basis\textsuperscript{78}.

Sinking filter-point tube well is a cheap method of tapping the underground water supply in tracts where the water table is high and where there is a sandy sub-strata in the soil. The filter point wells for irrigation purposes were first introduced in the Madras State in 1951. Each filter point will irrigate an area of 10 acres\textsuperscript{79}.

Loans are granted to the cultivators in the shape of pumping machinery for the filter points on hire-purchase basis. Loans up to Rs.400 were granted for the actual cost of each installation, including working charges and cost of pipes and filter points \textsuperscript{80}. During the First Five Year Plan 1,671 filter points were installed at a cost of Rs.58 lakhs \textsuperscript{81}. In the Second Plan, 2,763 filter point wells were sunk. In the Third Plan 1994 wells were sunk by the ryots\textsuperscript{82}. These wells helped to raise additional short-crops in summer in the soils with a sandy substratum\textsuperscript{83}.

\begin{flushright}
\begin{tabular}{l}
78 Ibid., p.11.  \\
80 Madras Information, Vol.XV, March 1961, p.11.  \\
81 Ibid.  \\
82 Report of the committee on Agricultural production, Madras, April 1966, p.57.  \\
83 Administration Report, Madras State, 1952-53, p.58.  \\
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The problem of growing a green manure crop suitable for most of the delta area as well as putting the land to its maximum use appeared till recently to rest on the availability of water for irrigation. The solution was found through the installation of filter point tube wells\(^\text{84}\). A vast area of land can be cultivated in summer if only there is supply of water. The filter points provide this supply in many places and it is up to the farmer to put his land to the maximum use\(^\text{85}\). For example in the Cauvery basin a filter point tube well can be used for a third summer crop between February and May to increase income from lands\(^\text{86}\). With the help of water available from the filter point tube well, vast areas of land could be cultivated during the summer season\(^\text{87}\).

4.4.6. Community Wells

The State Co-ordination Committee on agricultural production has favoured the sinking of open wells and bore wells and transferring them to co-operatives or other institutions for being run as community irrigation wells. Beneficiaries are a large number of small farmers who are unable to have their own wells due to the fact that their land is too small in extent or is not being suitable for the location of well or

\(^{85}\) Ibid., p.11.
\(^{86}\) Francine R. Frankel, \textit{op. cit.}, p.94.
The ryots. They are also not in a position to go in for a loan for investment on a well. The scheme offered great scope for development of supplementary sources of irrigation for the poorer sections of the farmers\(^{88}\).

The Director of Agriculture has prepared a pilot scheme for sinking of community wells. The estimated cost of a well and pumpset is Rs.27,000 and each well is expected to irrigate twenty acres. The community wells will remain as government owned irrigation sources and nominal water cess will be collected by the government from the panchayat union or the beneficiaries\(^{89}\). In addition to these, lift irrigation facilities were worked out then and there and these could augment agricultural production considerably.

### 4.5. Lift Irrigation

Lift irrigation was started in Coimbatore district. The cultivators of Coimbatore district have developed lift irrigation from wells at considerable cost\(^{90}\). On account of the heavy cost of cultivation from these deep wells cultivators generally grow cash crops such as bananas, cotton, sugarcane, tobacco and flowers\(^{91}\). Food crops like paddy and ragi

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89 Ibid., p.66.
are grown only to meet the needs of the cultivators\textsuperscript{92}. The extension of rural electrification programme has offered an inspiration to lift irrigation from wells\textsuperscript{93}. In addition to that the introduction of oil engine could enable the farmers to concentrate much upon lifting water at a lesser expense\textsuperscript{94}.

Special attention was paid to the development of lift irrigation from wells both by the use of bullock power and also by the application of mechanical and electrical machinery. Most of the lift irrigation schemes are located in rural areas. Schemes were also set a foot to encourage the sinking of new wells by the grant of subsidies\textsuperscript{95}. Quite different from these the Vilathurai Lift Irrigation Scheme was launched in the Kanyakumari District.

4.5.1. Vilathurai Lift Irrigation Scheme

The Vilathurai lift irrigation scheme provides for lifting water from Kuzhithuraiar or Thamiraparani\textsuperscript{96} river in two stages viz., supplying water to 71 minor irrigation tanks for stabilizing 710 acres of existing

\textsuperscript{92} Ibid.
\textsuperscript{93} Report of the Committee of Agricultural Production, Madras, April 1966, p.44.
\textsuperscript{94} John Harris, \textit{Capitalism and Peasant Farming}, New Delhi, 1982, p.67.
\textsuperscript{95} Madras Information, Vol.III, December 1949, p.10.
\textsuperscript{96} The original name of the river which is flowing in Kanyakumari as per Travancore records is Thamravarni. “Thamram” means “copper”, “Varni” means ‘Colour’. As the water of this river keeps the colour of copper, the river is called Thamravarni. Tambraparani is the name of the river flowing in the Tirunelveli town and the region of the Tirunelveli District.
ayacut and also to supply drinking water to the neighbouring villages. The estimated cost of the scheme is Rs.9,499 lakhs. The scheme was started by the government of Travancore Cochin. With the State Reorganization on November 1, 1956, the region came under Madras administration. Following that the Madras government continued the work of the scheme started by the erstwhile Travancore Cochin State. All the works connected with the scheme had been completed and pumping started to work in the year 1961\(^97\).

The Vilathurai lift irrigation scheme has been executed to benefit Vilavancode taluk of Kanyakumari District. It is a very costly scheme, where water has to be lifted to a level of 200 ft. from the riverbed and then distributed to the paddy fields. This costly scheme has been implemented only to benefit the people of the locality\(^98\). With the launching of the Chittar Pattanamkal scheme this lift irrigation project was abandoned and its ayacut 720 acres has been included under the Pattanamkal ayacut and benefitted by the Pattanamkal scheme\(^99\). A lift irrigation project can cater to the needs of larger areas than a tube well and should be adopted whatever facilities exist. Lift irrigation from major

\(^98\) Madras Information, Vol.XVIII, January 1964, p.36.
rivers and streams play a vital role in development of rural economy and generation of opportunities for gainful employment where canal irrigation facilities are inadequate or absent\textsuperscript{100}.

4.6. River Pumping Scheme

River pumping scheme was started during the year 1950-1951\textsuperscript{101}. The object of the river pumping scheme was to provide irrigation facilities to the peasants in villages through big pumping units. Such scheme was introduced where the gravity of the river flow was slow. The Pinayar and Nelvoy River Pumping Schemes in Chingleput district were continued. Another one was started at Talangeri in Mayavaram taluk for raising early crops\textsuperscript{102}. The scheme has been implemented by the Agriculture Department\textsuperscript{103}. The government ordered to continue the authorized and unauthorized pumpsets installed on the banks of the Cauvery. The Public Works Department should examine the availability of water for expansion of the ayacut. The expanded ayacut with the help of each channel should be reported to the collector. On the basis of the report

\textsuperscript{100} A.L. Rao, \textit{op. cit.}, p.125.
\textsuperscript{102} D. Maheswari, \textit{Agricultural Measures in Tamilnadu (1951-1956)},
\textsuperscript{103} Report of the Committee on Agricultural Production, Madras, April 1966, p.64.
the collector might distribute the pumps for the installation to bring more acres under cultivation\(^\text{104}\).

The government approved the regularization of the pumpsets on the banks of the Komarapalayam Channels and Mohanur Channels in Salem district\(^\text{105}\). During the First Plan period fifteen pumping units were installed\(^\text{106}\). During the Second and Third plan only three and fourteen units were installed respectively\(^\text{107}\).

\section*{4.7. Subsidy Schemes of the Government}

Well irrigation is wide spread in Tamil Nadu. In the latter days the scope of river irrigation had been exhausted in several districts of Tamil Nadu due to vagaries of monsoon. In such places well irrigation appeared possible. Wells are dug by ryots at enormous cost. Many found it very difficult to afford such costs. In order to help the ryots the government sponsored a scheme of assistance for the sinking of new wells. This assistance of the government is termed as Well Subsidy Scheme\(^\text{108}\).

A subsidy well should be capable of irrigating at least one acre of land and the applicant should give an undertaking to grow only

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104 G.O. Ms. No.3300, P.W.D., August 27, 1955. \\
106 Report of the committee of Agricultural production, Madras, April 1966, p.64. \\
107 Ibid., p.65. \\
\end{tabular}
\end{flushright}
food crops for a period of three years in the ayacut of wells\(^{109}\). The well subsidy scheme was started in 1944, with a view to providing an incentive to ryots for sinking wells for irrigation purpose. The amount was advanced in the first instance as a loan which was later converted into a subsidy after the successful completion of the well\(^{110}\).

The well subsidy scheme was very helpful to the ryots. In 1947, the subsidy was fixed at 50 percent of the cost. The maximum limit was raised as Rs.750 in 1948\(^{111}\). The popularity of the scheme among the cultivators during the period from 1949-1950 to 1951-1952 was so stupendous. As a matter of fact over 45,000 wells were subsidized and a total amount of Rs.264 lakhs was disbursed as subsidy during the said period\(^{112}\).

4.7.1. New Well Subsidy Scheme

The New Well Subsidy Scheme was implemented in 1958-1959. The already existing well subsidy scheme was reviewed and renamed as New Well Subsidy Scheme. It was implemented with a loan-cum subsidy of Rs.1000 for each new well and a subsidy of Rs.250. The

\(111\) Report of the Committee on Agricultural Production, Madras, April 1966, p.44.
scheme was restricted to the construction of new wells only. Under the scheme, fifty percent comprising the first installment of the loan was disbursed before the commencement of the work and the second installment is disbursed after satisfactory proof. The well should be completed before the prescribed date, failing which the loan advanced was liable to be recovered similarly with interest\textsuperscript{113}. From 1960-1961, the maximum loan was raised to Rs.2000 per well, with the subsidy amount of Rs.500. From 1965-1966 the maximum amount of loan has been raised to Rs.5000 in all areas and the subsidy amount remained the same Rs.500. However, in the Talavai Firka of Coimbatore district the subsidy was raised to Rs.1500 because of the backwardness of the area\textsuperscript{114}. The New Well Subsidy Scheme helped the ryots for better farming and paved the way for the increase of production\textsuperscript{115}.

The government supported the farmers by giving liberal credit at concessional rates of interest. As a result the importance of ground water as an irrigation source has increased considerably. The quality of irrigation has also improved to some extent mainly because of the effort taken by the government to encourage the ryots through the New

\textsuperscript{113} Report of the Committee of Agricultural Production, Madras, April 1966, p.44.  
\textsuperscript{114} Report of the Madras State Administration, 1965, p.146.  
Well Subsidy Scheme. The success of the New Well Subsidy Scheme depends on the initiative of ryots themselves\textsuperscript{116}.

The New Well Subsidy Scheme was being implemented by two agencies, namely, the Revenue department and the Block department. The loans granted by the Revenue department were met from the plan provision for minor irrigation schemes in the Agricultural sector. The loans granted by Block development were done so from the provision for, “Irrigation and Reclamation” in the Block schematic budget. These two schemes were integrated in 1962-1963 and a single scheme is being implemented through the Block Development Officers and financed from the Agricultural sector of the plan\textsuperscript{117}. Side by side factors affecting the availability of ground water in the places are also viewed.

4.8. Factors Affecting Ground Water

Climate change will affect the depth of ground water tables and the amount of ground water available through changes in recharge rates\textsuperscript{118}. Similarly over exploitation of ground water can also lead to the


\textsuperscript{117} Report of the Committee on Agricultural Production, Madras, April 1966, p.45.

introduction of saline water, making the water unfit for drinking or irrigation\textsuperscript{119}. Matters like pollution of ground water by the effluents of tanneries in Tamil Nadu by textile, printing and dyeing units in Kerala and Gujarat and the like are still to be dealt with in due perspective. While pollution of rivers and lakes is easily detectable, pollution of ground water is rather difficult to detect and rectify\textsuperscript{120}. The construction of a storage dam affects ground water table both upstream and downstream of it\textsuperscript{121}. Yet the extractions of water from different sources go hand in hand.

Well irrigation brought tremendous changes in the welfare and well being of the people. Its benefit to the vast rural population is exactly replenishing. As the majority of the people are rural in nature, irrigational facilities play a vital role in promoting the economy of that vast majority. Altogether the rural development paved the way for the development of the State. Well irrigation provided sufficient water to the field, whenever surface waters failed to provide water to the field. In most of the areas well irrigation made possible the progress of second and third crop. This automatically helped the State to attain self-sufficiency in food production. Planners of the First, Second and Third Five Year Plans gave much priority for well irrigation through various schemes. Well Subsidy

\textsuperscript{119} K.P.M. Sundaram, Ruddar Datt, \textit{op.cit.}, p.101.

\textsuperscript{120} \textit{Ibid.}

\textsuperscript{121} Report of the National Commission on Agriculture, 1976, p.27.
Schemes added strength to the ryots to involve in intensive and extensive cultivations. In short the development of well irrigation remained one of the major factors for the Green Revolution in the State.