CHAPTER: 3
HISTORICAL PERSPECTIVES OF IRRIGATION
3.1 Historical Perspective

The importance of irrigation in the Indian agriculture can not be over estimated in view of peculiar nature of rainfall in the country. India receives 80% rainfall during south west monsoon from June to October.

Irrigation, therefore, has been in India since time immemorial. Megasthenes, a Greek ambassador at the court of Chandragupta (300 B.C.) wrote “the whole country is under irrigation and very prosperous because of the double harvests which they are able to reap each year because of irrigation.”

Birbhum is not liable, in any marked degree, to famine or flood, and no drought or inundation has occurred during the experience of the present generation on a scale sufficiently large to affect its general prosperity. The immunity from famine is largely due to the fact that the means of transit are sufficient to prevent the danger of isolation in the event of a local failure of the crops, and to avert widespread sufferings by importation from other districts. The old records show, however, that formerly Birbhum frequently suffered from droughts and failure of the harvests. It was devastated by the famine of 1770, more than one-third of the cultivable land being returned as devastated in 1771, while in 1776 four areas lay waste for every seven that remained under cultivation. In 1791, 1796, 1800, 1803 there were drought owing to failure of the crops. 1803 being described as “an extraordinary drought”. Distress also prevailed in 1829 and 1837. The district again suffered from scanty rainfall during years 1865 to 1867.

The famine of 1874 was severely felt in Birbhum. The weather during 1872 was unreasonable. The rainfall during the ploughing season being very scanty. The rainfall in Birbhum in 1873 affords a striking example of how sufficient moisture may be neutralized by unseasonable distribution. In 1885 there were again scarcity necessitating relief measures in some parts of the district, which had suffered from an unfavourable distribution of the rainfall in 1884.
Widespread floods are rare uncommon, but excessive rain sometimes cause serious inundations from the river Ajoy, Hingle, Mor, Basnsloi and Brahmani.

Irrigation is the artificial application of water to the soil usually for assisting in growing crops. It is critical, yet a vital input of agricultural production process and pivotal to agriculture, social and economic growth of nations. Cultivations have been dependent on development of irrigated agriculture to provide agrarian basis of a society and to enhance the security of people.

Historically, civilizations have dependent on development of irrigated agriculture to provide agrarian basis of a society and to enhance the security of people.

Lower, Bengal has three harvests each year, a scanty pulse crop in Spring, a more important rice crop in Autumn and the great rice crop, the harvest of the year in December. In the early part of 1769 high prices, had ruled, owing to the partial failure of the crops in 1768. But the scarcity had not been so severe as materially to affect the government rental. In spite of the complaints of local officers, the authorities of the headquarters reported that the land tax had been rigorously enforced.

From the first appearance of the lower Bengal in history its inhabitants have been reticent, self-contained and distrustful of foreign observation in a degree without parallel among other equally civilized nations.

Studies regarding this has been focussed in “An evaluation of Shallow Tube Wells in West Bengal Sponsored by National Bank for Agriculture and Rural Development, Bombay, and Research Cell for NABARD Studies, Agro Economic Research Centre, VisvaBharati, Santiniketan (1988).

National Bank for Agriculture and Rural Development (NABARD) gives report which evaluates the impact of minor irrigation. According to them adequate control over use of irrigation water coupled with application of modern inputs and technology results in the transformation of agriculture in a spectacular manner. However water available for crop production in eastern India is relatively uncontrolled. It is too much and to uneven during the monsoon and too little during the dry season. The lack of adequate control over water supply
and therefore considered as the most important consistent of crop production in eastern India. Considering the vagaries of rainfall the thrust of agricultural development strategy as suggested by the committee on agricultural productivity in eastern India has been in the domain of irrigation, drainage and water management. The committee also proposes that the large amount of untapped ground water sources of the region, especially in the alluvial plains of Ganga Basin, if tapped intensively, first in a planned manner and second with proper spacing can really spearhead a process of sustained growth in agricultural productivity on both per hectare and per capita basis.

Among various alternative sources of irrigation, it has been found that wells and tube wells generally provide irrigation of a higher quality than other. This is because of its manageable size, locational advantages, operational and managerial efficiency, lower cost of storage of water, less evaporation and seepage of water and easy installation.

In India minor irrigation has made commendable progress over the five year plans. At the end of fourth plan there were thirty thousand private tube wells, 6840 thousand wells, 1750 thousand diesel pump sets and 2440 thousand electric pump sets in the country. In 1980-81 out of a total irrigated area of 38800 thousand hectares, 45.7% was irrigated by wells and 39.5% by canals, while the share of canals in the total area irrigated has remained fairly constant over the years, the contribution of tube wells in the total area irrigated has increased significantly from a bare 0.6% in 1960-61 to 24.6% in 1980-81.

Table: 3  
Area irrigated by sources in India (area in ‘000 hectares)

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<tr>
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<tbody>
<tr>
<td>Government canals</td>
<td>7158(34.3)</td>
<td>9170(37.2)</td>
<td>11972 (38.5)</td>
<td>14456 (37.3)</td>
</tr>
<tr>
<td>Private canals</td>
<td>1132(5.5)</td>
<td>1200(4.9)</td>
<td>866 (2.8)</td>
<td>836 (2.2)</td>
</tr>
<tr>
<td>Tanks</td>
<td>3613(17.3)</td>
<td>4561(18.5)</td>
<td>4112 (13.2)</td>
<td>3198 (8.2)</td>
</tr>
<tr>
<td>tubewells</td>
<td>N.A.</td>
<td>135(0.6)</td>
<td>4416 (14.3)</td>
<td>9527 (24.6)</td>
</tr>
<tr>
<td>Other wells</td>
<td>5978(28.7)</td>
<td>7155(29.0)</td>
<td>7626 (23.9)</td>
<td>8207 (21.1)</td>
</tr>
<tr>
<td>Other sources</td>
<td>2967(14.2)</td>
<td>2440(9.8)</td>
<td>2266 (7.3)</td>
<td>2581 (6.6)</td>
</tr>
<tr>
<td>total</td>
<td>28053(100)</td>
<td>24661 (100)</td>
<td>31103 (100)</td>
<td>38805 (100)</td>
</tr>
</tbody>
</table>

N.B: figures in bracket indicate percentage to total
Source: Indian Agriculture In Brief (1985)

In west Bengal serious attempts of augmenting irrigation facilities started only since last decade. The interesting feature of the progress of irrigation in this state is that there has
been a virtual stagnation in the evapotration of surface water, whereas, groundwater is increasingly being tapped for providing irrigation. The potentiality of minor irrigation created in the state was of the order of about 5.13 lakh hectare during the three decades since independence as compared to 5.31 lakh hectares during 1977-1986. This speeding up has however been possible because of increasing emphasis on installation of shallow tube wells (STWS) for tapped ground water sources. The importance of shallow tube wells for a general policy towards agricultural development has rightly been raised by the expert committee on the agricultural productivity in eastern India. As it can be seen from the table given below the warranted number of shallow tube wells in West Bengal during the seventh plan period would be 2 lakhs while the same for the eighth plan period has been estimated at 4 lakhs.

Table 4 Irrigation structures in West Bengal (in ‘000 units)

<table>
<thead>
<tr>
<th>Types of structure</th>
<th>Seventh plan</th>
<th>Eighth plan</th>
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<tbody>
<tr>
<td></td>
<td>Estimate I</td>
<td>Estimate II</td>
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<tr>
<td>Shallow tube wells (bores)</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>Shallow tube wells with pumps</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Deep Shallow tube wells</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Dug wells</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Pumpsets</td>
<td>165</td>
<td>100</td>
</tr>
</tbody>
</table>

N.B. Estimate I: the committee of agriculture productivity in eastern India considers warranted

In other words there would be an annual addition of 40 thousand and 80 thousand shallow tube wells during the seventh and eighth plan periods respectively. Although the warranted number of shallow tube wells worked out by the expert committee varies from the estimates arrived at on the basis of past performance, what emerges is that there would be considerable increase in the shallow tube wells in the state during the 7th and 8th plan periods.

There are some problems of under utilization of irrigation potentials in river lift irrigation systems. According to a case study of Birbhum District Organization by Agro Economic Research Centre, Visva-Bharati, Santiniketan (1986) under utilization of irrigation potentials may be due to two factors, one is lack of demand for water from the farms and the another maybe due to constraints of supply of water. The supply of water from river lift or
any other projects is not an important factor during kharif season, because monsoon, however, during rabi and boro seasons it becomes a curtail inputs for cultivation. The extent of actual utilization of the command area during kharif season is negligible in comparison to rabi and summer season.

3.2 Policy recommendation for good water management

(1) Formation of effective irrigation committee with specific power.
(2) Establishment of an elaborate organizational network for crop planning.
(3) Main water source to be assured beforehand.
(4) Risk coverage
(5) Repair and maintenance work of the machinery should be given top priority.
(6) The farmers should be given prior assurance regarding supply of water, specially during rabi and summer crops.
(7) It should be the duty of the state government to provide necessary infrastructural facilities for fulfilling the credit needs and providing the requisite types of inputs to the small and marginal framers.
(8) Consolidation of fragmented landholdings should be practised on voluntary basis.
(9) Either operating staff with technical knowledge should be locally recruited or they may be allotted residential facilities nearby.
(10) Official and technical personnel should visit the schemes frequently.

During the pre-independence period the British using systematic western technology built a network of canals in the country. When India entered upon an era of planned development in 1951, it was clearly recognized that the foremost requirement in rebuilding the agriculture technology of the country is large scale development of irrigation and power. The pride of place in the planning era was accordingly given to irrigation and as a result the gross irrigated area in the country increased from 2.26 crore hectare in 1950-51 to 5.85 crore hectare in 1978-78 indicating an increase of 114%.

Some of India’s most magnificent irrigation projects have been completed during this period.
In the study area upto 1940-50 people were dependent completely on rainfall. So due to uncertainty of monsoon crop productivity was very low. After that canal irrigation was introduced. The KopaiMor Project was built to fulfil the crisis of water. Then man invented some traditional devices for irrigation purpose. People started to store water in tanks, wells. River water of Ajoy, Kopai was used for irrigation.

Generally modern machinery like pumps etc. are introduced to use the surface water for irrigation. But in this area underground water is not used significantly. Here underground water is stored in huge quantity which is not properly utilized. Although negligible number of shallow tube wells are installed here. Thus the irrigation comes to the present situation.