

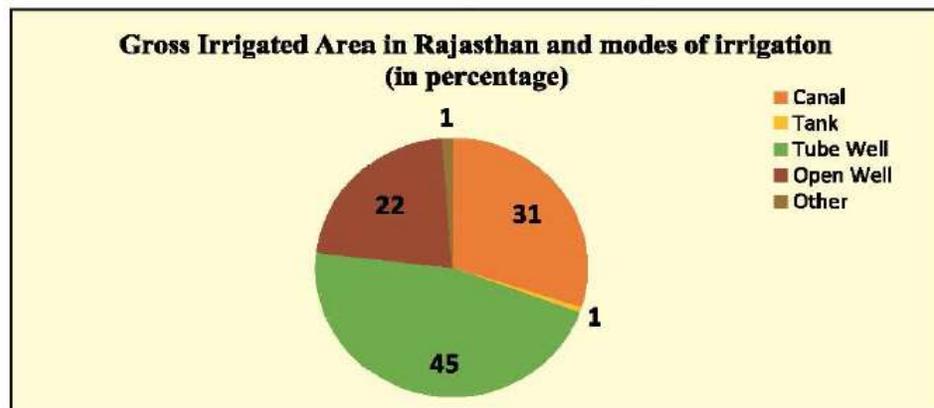
Chapter-I

Introduction

Rajasthan is the largest state of India in terms of area. It has one tenth of land area and five *per cent* of population of the country. However, its share in India's surface water resource is below two *per cent*. The state produces several agriculture products and agriculture remains a major occupation for the population of the state despite being a desert state. The major agriculture products of the state are wheat, soybean, mustard, bajra, maize, gram, groundnut etc. Out of the total area of 342.67 lakh hectare (*ha*) of Rajasthan, 272.11 lakh *ha* is cultivable. The State has Net Cropped Area of 254.37 lakh *ha*, out of which approximately 151.72 lakh *ha* (59.64 *per cent*) is rain fed and only 102.65 lakh *ha* (40.36 *per cent*) is irrigated.

In Rajasthan, primary source of water is scanty and rainfall is uncertain and confined to two months of the year. Nearly two thirds of the State is arid or semi-arid land. The uncertainty of the monsoon affects the agriculture production in the state. Optimum utilisation of the available water through irrigation network, thus plays a vital role in agrarian development of the state. Irrigation is the process of applying controlled amount of water to plants at needed intervals. Irrigation helps to grow agricultural crops and revegetate disturbed soils in dry areas and during periods of less than average rainfall. Irrigation sources are broadly divided into: surface water, ground water, and rainfed or a combination of any of the sources. As depicted in the chart below, in Rajasthan even now 69 *per cent* of irrigated land is irrigated through tube wells and open wells using ground water. This dependence on tube wells and open wells places enormous stress on ground water. In contrast, the share of surface irrigation in total gross irrigated area as per annual progress report of WRD was only 31 *per cent*.

Chart.1- Details¹ of Irrigated Area in Rajasthan



Source: Annual progress report of WRD 2019-20

¹ Canal-31.80 lakh *ha*, Tank-0.69 lakh *ha*, Tube well 49.00 lakh *ha*, open well-23.32 lakh *ha* and other source-1.22 lakh *ha*.

In this context, the development of efficient network of surface irrigation assumes great importance for the State. Surface irrigation involves distribution of water over the soil surface by gravity. Surface water is more reliable and prevails over the remaining two kinds of irrigation sources. Surface irrigation system draws water from natural rivers or tanks as source. The surface irrigation network broadly consists of:

- (i) Reservoirs including balancing reservoirs
- (ii) Main Canals
- (iii) Minors & sub-minors
- (iv) Distributary network

Irrigation projects are designated as major, medium and minor on the basis of command area they serve i.e. larger than 10,000 *ha*, between 2,000 to 10,000 *ha* and less than 2,000 *ha* respectively. At the time of independence there was one major, 43 medium and 2,272 minor irrigation projects and irrigation potential was only four lakh hectare in the State.

The Water Resources Department (WRD) (erstwhile Irrigation Department) was set up in the State with the objective of optimum utilization of surface water and inter-state river basin water for the purpose of agriculture and flood control. The department has created irrigation potential of 38.81 lakh *ha* up to March 2020. The position of surface irrigation projects is given in **Table 1.1**.

Table-1.1: Irrigation projects

S.No.	Category	Completed	Ongoing	Total
1	Major	10	06	16
2	Medium	110	06	116
3	Minor	3,339	45	3,384
	Total	3,459	57	3,516

1.1 Main Outcomes Identified

The following broad outcomes were envisaged as outcome in Detailed Project Reports (DPR) and Administrative Reports for the surface irrigation Projects in the state:

- 1) Increase in crop yield through
 - (i) Creation of enhanced irrigation potential (IP)
 - (ii) Change of cropping pattern
- 2) Improving availability of water for human consumption.
- 3) Ecological and Environmental Preservation.
- 4) Participatory Irrigation Management through Water Users Association (WUA)

1.2 Roles and Responsibilities

The following departments are involved in achieving the intended outcomes:

- (i) **Water Resources Department:** Nodal agency to execute the works related to establishment of suitable irrigation system to facilitate the cultivators and providing drinking water facility to people.
- (ii) **Agriculture Department:** To give inputs regarding estimation of the crop wise benefits and cropping pattern of the projects. As per the Guidelines for preparation of Detailed Project Report (DPR) of irrigation projects, Agriculture Department is consulted for Benefit Cost Ratio (BCR) calculation and deciding the cropping pattern.
- (iii) **Public Health Engineering Department:** Responsible for providing drinking water along with drawing and design for projects, where outcome included provision of drinking water.
- (iv) **Forest Department:** Responsible for sanctions/conversion of forest land to non-forest land and plantation work in the project area, on the basis of request furnished by the WRD.
- (v) **Revenue Department:** Responsible for Girdawari, i.e. documentation to record name of owner, name of cultivator, land/khasra number, area, kind of land, cultivated and non- cultivated area, source of irrigation, name of crop and its conditions, revenue and rate of revenue, to be conducted at least twice in a year. The department is also responsible for revenue collection.

1.3 Previous coverage in Audit Reports

Audit of **Surface Irrigation with outcome focus** has not been conducted earlier. However, one of the major irrigation project viz. Narmada Canal Project was periodically audited as part of Compliance Audit. A Performance Audit on the subject 'Irrigation potential created in Narmada Canal Project' was conducted in the year 2016. Status of Major findings and PAC recommendations thereon is given in **Appendix-I**.