



Growth and Transformation of Irrigation in Rayalaseema Region in Andhra Pradesh

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ABSTRACT

This paper explores the growth of irrigation in Rayalaseema region during the last six decades. The main focus of the paper is analyzing the changes in irrigation under different sources over a period of time in Rayalaseema. Traditionally, Rayalaseema region is being irrigated through canal, tank, well and other sources. In 1960s, tanks were the dominant sources of irrigation in Rayalaseema region. In recent decades, tube wells irrigation replaced the traditional tank irrigation in all the districts in Rayalaseema. Due to low rainfall continuously in this region in recent decades there seems to be a consistent declining trend in the recorded net irrigated area under tanks during the last few decades. Wherever the net tank irrigated area has decreased, much of that is replaced by tube well irrigation.

Key words: Rayalaseema, Irrigation, Tanks, Canals, Tube wells.

1. Introduction

Irrigation is a main driving force for agricultural development in any country. It is essential to increase yield and productivity, minimize large fluctuations in crop yield or loss, and alleviate crop production. Areas with scarce and uncertain rainfall are in absolute need of artificial irrigation because it is so difficult to cultivate otherwise. Some areas might experience heavy rainfall but only for some months and the rest of the year remains dry. Provision of irrigation facilities in areas as such will help farmers plant crops more than once a year. Therefore, irrigation is an important input to increase both productivity and production in agriculture so as to provide food security for the growing population in our country.



The state of Andhra Pradesh consists of Coastal Andhra and Rayalaseema regions. There are significant variations in terms of physical and natural endowments and climate between the regions. Even soil differences are markedly pronounced in these regions. Rayalaseema is the most economically vulnerable part of Andhra Pradesh and is the poorest region of the state. Rayalaseema is a land-locked region with an area of 67299 square kilometers. The region by its location extends approximately from 12°3'N to 16°15' north latitude and 76°55'E to 79°55' east longitude. Geographically the Rayalaseema region forms the south and south-eastern part of Deccan plateau. It is situated almost in the centre of the southern part of the Indian peninsula. It is bounded on the south by the states of Tamil Nadu and Karnataka, on the west by Karnataka state, on the north by Telangana state and on the east by Coastal region of Andhra Pradesh. The Rayalaseema region has no coast line and is accessible only by land. The climate is dry almost throughout the year. The air of the region is known for low humidity and moisture. The high temperature and low moisture in the air result in heavy rate of evaporation of scarce water available. The Rayalaseema region is historically known as the 'stalking ground of famines'. This region forms major chunk of the chronically famine affected areas of Andhra Pradesh state. Normally on an average drought occurs once in three years in Rayalaseema region.

2. Objectives:

1. To study the growth of irrigation in Rayalaseema Region.
2. To examine the changes in irrigation under different sources in Rayalaseema.

3. Methodology:

This paper is completely based on secondary data. The main data sources are Season and Crop Reports (various years) and Statistical Abstracts (various years), Government of Andhra Pradesh.

4. Growth of Irrigation in Rayalaseema Region:

Irrigation is the most important input for cultivation. Rayalaseema region is not endowed with adequate perennial irrigation sources. The major canal irrigation sources in Rayalaseema region are Kurnool-Kadapa Canal and Tungabhadra High Level Canal. Though some important rivers like Pennar, Chitravathi and Hagari are passing through the region, the irrigation facilities available by them are insignificant. The average flow of water in these rivers is for mere 20 days per year. In the absence of perennial rivers and major irrigation dams, other sources of irrigation play an important role in agricultural development.

The growth of irrigation in Rayalaseema region is presented in Table 1. It is observed from the table that the total net irrigated area in Rayalaseema region was 3,88,269 hectares in 1955-56 and it has increased to 4,71,700 hectares by 1984-85. Further it has increased to 6,48,502 hectares in 2018-19.

Table: 1 Growth of Net Area Irrigated in Rayalaseema Region (Hectares)

Year	Net Area Sown	Net Irrigated Area
1955-56	23,16,829	3,88,269
1984-85	24,95,857	4,71,700
2018-19	23,77,284	6,48,502

Sources: 1. Season and Crop Reports, Government of Andhra Pradesh (various years)

1. Statistical Abstracts, Government of Andhra Pradesh (various years)

The proportion of net irrigated area to net area sown in Rayalaseema region was 16.7 percent in 1955-56 and increased to 18.5 percent by 1980-81. Further it has increased to 27.3 percent by 2018-19 (Table 2).

Table: 2 Percentage of Irrigated Area in Net Area Sown in Rayalaseema Region

Year	% of Irrigated Area to Net Area Sown
1955-56	16.7
1970-71	17.5

1980-81	18.5
1990-91	20.7
2018-19	27.3

Sources: 1. Season and Crop Reports, Government of Andhra Pradesh (various years)
2. Statistical Abstracts, Government of Andhra Pradesh (various years)

Table 3 shows the net area irrigated across districts in Rayalaseema Region. It is seen from the table 3 that the proportion of average total irrigated area to the net sown area was 27.3 percent in Rayalaseema region. But, there are significant variations in proportion of area irrigated among the four districts in Rayalaseema region. YSR kadapa district has the highest irrigated area (47.4 percent) followed by Chittor district with 40.9 percent, Kurnool district with 26.1 percent and the lowest area irrigated was in Ananthapur (16.1 percent).

Table: 3 Net Area Irrigated across Districts in Rayalaseema Region- 2018-19 (Hectares)

District	Net Area Sown	Net Irrigated Area	% of Irrigated Area to Net Area Sown
YSR Kadapa	3,04,107	1,44,298	47.4
Kurnool	8,49,243	2,21,703	26.1
Ananthapur	8,80,329	1,41,991	16.1
Chittor	3,43,605	1,40,510	40.9
Total Rayalaseema	23,77,284	6,48,502	27.3

Sources: 1. Season and Crop Reports, Government of Andhra Pradesh (various years)
2. Statistical Abstracts, Government of Andhra Pradesh (various years)

5. Transformation of Irrigation under Different Sources in Rayalaseema Region

Rayalaseema region consists of four districts viz., YSR Kadapa, Kurnool, Ananthapuram and Chittor districts. The Rayalaseema region gets irrigation facilities through different sources. They are mainly canals, tanks and wells and tube wells. Table 4 shows the changes in the source wise net irrigated area in Rayalaseema region from 1960-61 to 2018-19. Tanks were

the main sources of irrigation in the 1960s in Rayalaseema, contributing to about half of the total net irrigated area. But, groundwater has been dominating irrigation since the recent decades. Tube well irrigation expanded rapidly in recent decades. It is observed from the table 4 that tube well irrigation has increased while those of canal and tanks have decreased. Such a shift necessitates clear understanding of the mode of transformation of different irrigational sources across space and time. The pattern of tank irrigation has shown insignificant in recent years.

Table 4 presents the district-wise irrigated area from different sources in the region. During the 1960-61, tanks (49.7 per cent) are the major source of irrigation in Rayalaseema. Next to wells and tube wells, canals constitute 27.6 per cent and canals 22.7 per cent.

Table: 4 Percentage Distribution of Net Irrigated Area by Sources in Rayalaseema Region (%)

Year	Canals	Tanks	Wells & Tube Wells	All
1960-61	22.7	49.7	27.6	100
1970-71	30.8	34.3	34.9	100
1980-81	32.2	17.0	50.8	100
1990-91	27.4	18.0	54.6	100
2000-01	20.2	9.4	70.4	100
2018-19	19.6	6.0	74.4	100

Sources: 1. Season and Crop Reports, Government of Andhra Pradesh (various years)
2. Statistical Abstracts, Government of Andhra Pradesh (various years)

Over a period of time, the extent of area under different sources of irrigation changed very significantly. The share of Tank irrigation declined to 6 per cent by 2018-19. Similarly, the canal irrigation marginally declined to 19.6 percent by 2018-19. In contrast, tube well irrigation tremendously increased to 74.4 percent during the same period.

The picture in the case of individual districts is no different compared to Rayalaseema region. It is observed from the table 5 that tube wells are the major sources of irrigation in Rayalaseema in 2018-19. Within the region, tube well irrigation is predominant in all the districts except Kurnool district in 2018-19. More than 88 percent of area irrigated through tube wells in Ananthapur and Chittoor districts and more than 86 percent in YSR kadapa district whereas in Kurnool district it is only 45 percent. However, Kurnool district is depending largely on canals (42.7 percent) to total irrigated area. Among the well irrigation, recent growth patterns indicate that groundwater irrigation especially that through deep tube wells has increased substantially.

Table: 5 Area Irrigated by Sources in Rayalaseema Region in 2018-19 (%)

	Tanks	Canals	Wells & Tube Wells	Others	Total
YSR Kadapa	0.4	12.1	86.7	0.8	100 (144298)
Kurnool	3.7	42.7	45.0	8.6	100 (221703)
Ananthapur	1.2	10.1	88.4	-	100 (141991)
Chittoor	5.3	0.4	94.3	-	100 (140510)
Total Rayalaseema	2.8	19.6	74.4	3.2	100 (6,48,502)

Sources: 1. Season and Crop Reports, Government of Andhra Pradesh (various years)
2. Statistical Abstracts, Government of Andhra Pradesh (various years)

Note : Figures in brackets indicate total net area irrigated.

6. Conclusion

Irrigation increased significantly in Rayalaseema region during the last six decades. The net irrigated area in Rayalaseema region increased from 3.88 lakh hectares to 6.48 lakh hectares between 1955-56 and 2018-19. There are significant variations in proportion of area irrigated among the four districts in Rayalaseema region. The proportion of area under tanks and canal irrigation has declined while the importance of tube well irrigation has gone up substantially. The distressing aspect in the irrigation growth is over exploitation of ground water in Rayalaseema region. Tube well irrigation is predominant in all the districts except Kurnool



district in 2018-19. More than 86 percent of area irrigated through tube wells in Ananthapur, Chittoor andYSR kadapa district whereas in Kurnool district it is only 39.5 percent.

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