EVALUATING SOCIO-ECONOMIC IMPACT OF MAJOR IRRIGATION PROJECT IN RURAL TELANGANA

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Abstract:

Major irrigation projects in rural Telangana have significantly impacted the socio economic landscape by boosting agricultural production, increasing farmer income, improving food security, creating employment opportunities, and fostering overall rural development, with notable achievements like a substantial rise in irrigated area and paddy production, particularly due to projects like the Kaleshwaram Lift Irrigation Project; however, challenges remain regarding water management, equitable distribution, and potential environmental concerns. The socio-economic changes were measured in terms of 11 aspects viz., change in self-sufficiency, change in social status, saving in water, saving in fertilizer cost, saving in plant protection cost, saving in weed control expenses, saving in labour utilization, saving in energy cost, increase in crop production, early. Agriculture currently produces only 30% of total income in the Telangana region, but it remains the basis for survival of nearly 78% of the population. During the 53-year period, 1956-2009, Telangana lost 2.92 lakh hectares of tank irrigation. Meanwhile, despite the high cost of irrigation - both in capital and operating costs

over the same period the area irrigated by tube wells has grown up. The latter is entirely dependent on the recharge of groundwater and the availability and cost of power. Whatever the future irrigation policy and its implementation, it will need a close ground level, local district and regional governmental efforts in Telangana. Ground water-based irrigation, which was started in India as early as “Indus Civilizations” got impetus during 3rd five-year plan. In India, at present 78 m ha of irrigation potential is created and 80 percent is utilized. One of the World’s highest users of groundwater is India with 63 percent of its dynamic groundwater resources. Similarly, Telangana State is also utilizing the dynamic groundwater resources up to 65 percent. Groundwater a reliable source of irrigation with high yields and brings equity among its users as 99 % of structures are owned by individuals. Especially from the point of view of agricultural growth corresponding to growth in irrigation. There has been growth in irrigation levels in Telangana, during the past three decades, although the perception that the region suffers from insufficiency of irrigation resources may still be valid.

Keywords: **Social Economic Conditions, Major Irrigation project, Government Efforts and production.**

Introduction:

The new State of Telangana came into existence on 2nd June 2014, Telangana, situated in the central stretch of the Indian Peninsula on the Deccan Plateau, is the 29th state of India and twelfth-largest state in the country with an extent of 114,840 square kilometres and a population of 35,286,757 (2011 census). Telangana is bordered by the states of Andhra Pradesh to the south and east, Maharashtra to the north and north-west, Karnataka to the west and Chhattisgarh to the north-east. Telangana has the advantage of having most of the east flowing rivers in the heart of the state bringing in copious supplies from the Western and Eastern Ghats and the Deccan Plateau up to Bay of Bengal. However, most of the flows occur only in 3 to 4 months of South West monsoon i.e., June to September. The annual rainfall is between 900 to 1500 mm in northern Telangana and 700 to 900 mm. Telangana is a riverine state with major, medium and minor rivers. Of these two are major interstate rivers i.e., 1. Godavari and 2. Krishna.

Godavari and Krishna flow through the heart of the state. Total water allocated to Projects in Telangana in Krishna basin is 299 TMC and Godavari basin is 954.23 TMC. Apart from the 2 major rivers, there are other 9 Nos. of small rivers such as Bhima, Dindi, Kinnerasani, Manjeera, Maniar, Penganga, Pranahita, Peddavagu and Taliperu. Telangana has a heritage of cultivation and irrigation dating back to several centuries. In the past, ancient Kings and rulers-built lakes and reservoirs by constructing bunds and anicuts across rivers for creating irrigation potential as well as drinking water for the people. Big lakes like Ramappa, Pakhal, Laknavaram and many other irrigation works of Kakatiya period have become names to remember and are serving till today. The Mir Alam Tank is the finest example in arched dam constructed across Musi River. The GhanapurAnicut across Manjira with two canals called Fathenahar and Mahabobnahar, Pocharamlake, Osmansagar, Himayatsagar, Nizamsagar Project, Mannar Project, Dindi Project, Palair Project, Wyra Project and Sarlasagar Projects are some of the magnificent contributions of the eminent Engineers of Hyderabad State under Nawab Ali Nawaz Jung Bahadur and other eminent Engineers during the Nizam's kingdom in Telangana. Groundwater based irrigation, which was started in India as early as “Indus Civilizations” got impetus during 3rd five-year plan. In India, at present 78 m ha of irrigation potential is created and 80 percent is utilized. One of the World’s highest users of groundwater is India with 63

percent of its dynamic groundwater resources. Similarly, Telangana State is also utilizing the dynamic groundwater resources up to 65 percent. Groundwater a reliable source of irrigation with high yields and brings equity among its users as 99 % of structures are owned by individuals. In the state, well irrigation increased from 0.46 lakh ha from 1875 to 23.35 lakh ha during 2017–18 and well density increased to 13 wells/km leading to decrease in irrigation potential under each well to < 1 ha. As a result of it many challenges like water logging & salinity in canal command areas, over-exploitation leading to de-saturation of shallow aquifers, underutilization in north eastern part, groundwater pollution (both geogenic and anthropogenic) and sustainability, etc have cropped up. The management steps taken up in water sector like water transfer through KLIP, providing protected water supply through Mission Bhagiratha, de-siltation through Mission Kakatiya, forest rejuvenation through Haritha Haram, construction of various ARS, modernization of canals, conjunctive use of surface and groundwater, user centred aquifer level groundwater management, tank management, IEC activities etc brought positive changes in water availability in the state more particularly surface water. In order to sustain these efforts, formation of WUA at watershed/village level for agricultural planning, change in cropping pattern from highly intensive paddy to ID crops more particularly from no command areas, conjunctive use of water, warabandhi (on/off) method of releasing irrigation water, developing intercepting drains, soil treatment, declaring crop holidays, separate electric grids for agriculture and domestic supply, legally separating water and land rights and strict implementation of regulatory measures. The other measures suggested are policy interventions that involve regulatory mechanisms and linking village-based institutions to government departments that manage groundwater etc.

Types of Irrigation in the Agricultural Sector

1. Surface Irrigation

- Relies on gravity to distribute water across the land.
- Can be performed manually without the need for machinery.
- Includes methods such as furrow irrigation and basin irrigation.

2. Sprinkler Irrigation

- Utilizes sprinkler heads, hoses, and pipes to distribute water.

- Suitable for both flat and sloping terrains.
- Water is applied in circular, lateral, or rectangular patterns.

3. Drip Irrigation

- Delivers water through low-pressure sprays, targeting plant roots directly.
- Ideal for regions with limited water resources.
- Reduces soil disturbance and minimizes nutrient loss.

4. Subsurface Irrigation

- Employs underground pipes with small openings to irrigate crops.
- More efficient than sprinkler and drip irrigation, as it minimizes water evaporation.

5. Centre Pivot Irrigation

- Features a central pipe with rotating outlets, supported by mobile towers.
- Functions similarly to sprinkler irrigation but on a larger scale

Objective:

The main objective of this study is to analyse irrigation and agricultural development in Telangana State

Data Methodology:

This study is completely based on the secondary sources of data. The secondary data collected from the publications of various organisations viz. the Department of Agriculture and Irrigation (TS), Directorate of Economics & Statistics, Hyderabad, various Socio-Economic outlooks, Statistical yearbooks, Agriculture census; Ministry of Agriculture, Government of India. Growth rates have been used in the analysis part of the study.

New achievements in agricultural cultivation, production

With its farmer-friendly initiatives, Telangana is setting new benchmarks in terms of Cultivation and agricultural production. The cultivation area has shot up to 2.3 crore acres in 2021-22 against 1.34 crore acres in 2014, while the total paddy production alone escalated from 68 lakh tonnes in 2014-15 to a whopping 2.49 crore tonnes in 2021-22. The total crop production has surpassed 3.5 crore tonnes. Soon after the State formation, Chief Minister K

Chandrashekhar Rao took up agriculture as a priority sector and initiated multiple measures to improve the infrastructure as well as supply of power and irrigation water without any disruption. Further, Rythu Bandhu farm investment supports, Rythu Bima farmer life insurance, supply of fertilisers and seeds, have encouraged more farmers to take up agriculture as a serious and remunerative occupation. In addition to 2.3 crore acres of agricultural cultivation area, the horticultural crops are being cultivated in another 11.5 lakh acres. The cotton cultivation area has increased by 44.7 percent from 41.83 lakh acres in 2014-15 to 60.53 lakh acres in 2021-22, according to an official statement here. male respondents, the use of tube well irrigation (40.8%) and drip irrigation (3.3%) are higher than the female respondents (35.1% and 2.1% responsibility). Therefore, the sources of irrigation vary among the male and female respondents in the study area Crop coverage and production details

Sources of Irrigation Adopted by the Respondents:

Gender-wise Source of Irrigation used by the Respondents

Table-2.1(A) presents the distribution of respondents on the basis of their gender and sources of irrigation. It reveals that among the 400 respondents, 78 (19.5%) use canal irrigation, 152 (38.0%) depend on surface well irrigation, 158 (39.5%) adopt tube well irrigation and 12 respondents (3.0%) make use of drip irrigation.

Table-2.1(A) Gender-wise Source of Irrigation used by the Respondents

Sources	Male	Female	Total
Cannel	63 (80.8)	15 (19.2)	78(100.0)
Surface well	108 (71.1)	44 (28.9)	150(100.0)
Tube well	125 (79)	33 (209)	158(100.0)
Drip Irrigation	10 (83.3	02 (16.7)	12(100.0)
Total	76.5(100)	94(23.5)	400(100.0)

Sources: Secondary Data

Gender-wise, in the case of the 306 male respondents, 63 (20.6%) adopt canal irrigation, 108(35.3%) depend on surface well irrigation, 125 (40.8%) practice tube well irrigation, while 10(3.3%) use drip irrigation; and in the case of the 94 female respondents, 15 (16.0%) use canal irrigation. 44 (46.8%) depend on surface well irrigation and 33 (35.1%) adopt tube well irrigation, while 2 (2.1%) female respondents make use of drip irrigation.

This suggests that along with the female respondents, the use of irrigation sources like surface well (46.8%) is higher than that of male respondents (35.3%). On the other hand, among the male respondents, the use of tube well irrigation (40.8%) and drip irrigation (3.3%) is higher than the female respondents (35.1% and 2.1% responsibility). Therefore, the sources of irrigation vary among the male and female respondents in the study area Crop coverage and production details

Year	**Crop**	**Acres**
Paddy 2013-2014	**1,43,49,186**	**Acres**
Cotton 2013-2014	**49,63,068**	**During the acres**
Red Gram 2013-2014	**65,163**	**During the acres**

Sources: secondary Data.

Subsidy Seed

• During 2013-14: 5.59 Lakh Qtls with a subsidy value of Rs. 76.71 cr.

• During 2021-22: 1.76 lakh Qtls. of Green Manure Seed was distributed with subsidy value of Rs.63.69 Crores benefitting 3,26,927 farmers.

• During 2022-23: Green Manure Seed plan has been prepared to distribute 1.66 lakh qtls for an area of 13.60 lakh acres with subsidy value of Rs. 71.46 Crores benefitting 3.33 lakh farmers.

• For 2023-24, a total quantity of seed available in the state is 22.50 lakh qtls which can cover an area of 182.32 lakh acres.

• In order to improve soil health, it was planned to supply 1.37 Lakh Qtls of Dhaincha, 0.08 Lakh Qtls of Sun hemp and 0.01 Lakh Qtls of Pillipesara green manure seed on Subsidy to cover an area of 12.08 lakh acres for Vanakalam 2023.

The new Industrial Policy brought out by the Government of Telangana promises to revolutionise the way industrial sector has been viewed by successive governments in this country. A day is not far when the new Industrial Policy of Telangana will shine as an exemplar among the best in the world. “Innovate in Telangana, invest in Telangana In corporate in Telangana” will become the motto of industrialization in the new State. It is strongly believed that with the new Industrial Policy in place, a growth rate of 4-5% greater than the national growth rate in the Manufacturing Sector can be achieved.

Conclusion:

The structural changes in sources of irrigation have a significant impact on farm economy. Development of irrigation facilities has the positive impact on the State’s rural economy Particularly farm sector. From the above analysis, it is clear that irrigation has been playing a greater role in the development of the agriculture sector in Telangana state. It is clear that over the period irrigation facilities increased but there is a need to expand more irrigation Facilities in future. The emphasis for the research should be to bring the importance of Irrigation in agricultural development and also need for the development of irrigation in the State.

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