

Polavaram project**“ATale of Regional Disparity and Political Hurdles”**

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Abstract

The Polavaram project, a multipurpose dam in India, was conceptualized in 1941 and has faced numerous challenges, including political hurdles, environmental issues, interstate river water disputes, and unclear financial arrangements between central and state governments, making it one of India's long-awaited projects and Andhra Pradesh's Dream project. Its multipurpose design With features for industrial and drinking water supplies, hydropower production, navigational aids, and symbolizes a comprehensive approach to regional development. The Polavaram project's initial estimated cost, which was Rs 129 crore in 1946–1947, has significantly increased and is now more than Rs 60,000 crores. The project is still incomplete even after this large financial commitment. The allocation of funds and resources for the Polavaram project has been a point of contention, with concerns about the adequacy of central support. Delays in financial disbursements and budgetary allocations have fueled perceptions of regional disparities. This research delves into the historical context, inception, and socio-economic impact of the project, shedding light on how it has become a symbol of regional imbalances. This study explores the Polavaram project's historical foundations, development trajectory, and implementation dynamics. It examines potential benefits and drawbacks, highlighting regional implications. The research also critically examines major challenges, emphasizing historical factors and political complexities. The study provides insights into the intricate interplay of regional dynamics and political dynamics.

Keywords: Polavaram Project, Reginal Disparity, Political Hurdles, Historical Drawbacks, Multipurpose dam

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I. Introduction

Polavaram project is one such multipurpose dam project of India, which was conceptualized in the year 1941. The Polavaram Project emerges as a nexus of geographical, economic, and political dynamics. This dam project is also like those projects of India which have been waiting for their completion for many decades¹. Sometimes political hurdles, environment-related issues, interstate river water disputes, and sometimes lack of clarity between central and state governments regarding the finances of this project. All these things have always created troubles in the way of this project. The Polavaram project was given national project status by the Central Government, this initiative has significant implications and could have brought many benefits to the agricultural state of Andhra Pradesh, which is also known as the “**Rice Bowl of India.**” Where more than 50.51 percent of income is generated from agriculture.

The Polavaram project is being built at villages of Polavaram mandal in the western Godavari district of Andhra Pradesh. It is construction a multi-purpose irrigation project that is being built across India’s second-largest river Godavari. The dam is fully designed to become most beneficial for the irrigation system. It will develop a gross irrigation potential of 4,36,835 hectares of Andhra Pradesh. Along with this hydroelectricity generation of 960MW is being established with the project. Drinking water was going to be supplied to the village 29 people from more than 600 villages and 80 TMC water was going to be transferred to the basin of Krishna River through this project².

This project was going to build a 2454 meters long earth cum rock-filled concrete dam in 3 gaps, 2.228.8 meters long spillway was being built, which will be capable of discharging around 50 lack cusecs of water. There will be canals on both sides of the dam, the left main canal will be 181.999 km long, from which, 4 lack acres of the cultivation area will get the water for irrigation and the right main canal will be 171.8 km long, from which 3.2 lack acres of the cultivation area will get the water for irrigation and due to this its irrigation intensity will increase by 150 percent. Due to this project, more than 10 lack of acres of Kaveri Delta and 13 lack of Krishna Delta will be stabilized³.

1.2) Research problem

¹ Arvind Balaji, Polavaram project: A study on rehabilitation and resettlement package ... Available at: https://samataindia.org.in/data/Reports/volunteer-report/Polavaram-project_Samata.pdf (Accessed: 25 November 2023).

² Delay in execution of Pip (no date) Press Information Bureau. Available at: <https://pib.gov.in/PressReleasePage.aspx?PRID=1842725> (Accessed: 25 November 2023).

³ Bureau, B.H. (2023) Polavaram project: Works on ECRF Dam Gains Pace, BusinessLine. Available at: <https://www.thehindubusinessline.com/news/polavaram-project-works-on-ecrf-dam-gains-pace/article66985956.ece> (Accessed: 25 November 2023).

The Polavaram project's inception, development, and implementation have been influenced by historical factors and political intricacies, resulting in potential benefits, drawbacks, and significant challenges. How have historical factors and political intricacies contributed to the inception, development, and implementation of the Polavaram project,

1.3) Literature review

1. Devasathu Ramprasad Naik, Polavaram Project - EIA Study. 1st ed. LAP LAMBERT Academic Publishing, (2016).

The Book by Devasathu Ramprasad Naik deals with the Polavaram project in Andhra Pradesh and how an ecological imbalance in the Eastern Ghat environment might result from the multifunctional Polavaram water supply project in Andhra Pradesh, India, which has the potential to submerge 58,658 hectares. The submergence zone was determined by remote sensing research and utilized to evaluate soil, land use, geology, geomorphology, and socioeconomic factors. To capture non-spatial qualities and offer recommendations on ways to improve the situation at the local level, a micro-level database was developed.

2. Chiara Mariotti. (2015). 'Resettlement and risk of adverse incorporation: the case of the Polavaram dam', Development in Practice.

This article makes the case that resettlement schemes should try to reduce the danger that persons who are forcibly relocated by development projects would be negatively incorporated into local development processes. The paper further argues that examining the possibility of unfavorable integration makes it possible to pinpoint context-specific elements and procedures that might influence resettlement results. 200,000 people would be displaced as a result of the Polavaram project in Andhra Pradesh, India, according to the argument.

3. K.P. Kumaran. (2013), 'Socio-Economic Impoverishment Risks in Displacement of Tribes 33 Under Polavaram Irrigation Project', Journal of Rural and Development.

The author of this paper looked at the social and economic risks of impoverishment that tribal families affected by the project would face if they were forced to relocate. They discovered that a large number of respondents were residing in unreachable places that even lacked the most basic amenities and services.

4. Manovikas Doradla. (2020), 'A study on rehabilitation and resettlement package of Polavaram project'. Paripex Indian Journal Of Research.

A case study of the Polavaram dam in Andhra Pradesh, which is expected to cause 200,000 people to be displaced and submerge 177 villages, is used to conduct the inquiry. A study of the Polavaram dam in Andhra Pradesh, which is expected to cause 200,000 people to be displaced and submerge 177 villages, is used to conduct the inquiry. The recognition that resettlement initiatives have failed is where the study comes from.

5. Amarnath C.R , Shashidhar Thatikonda. (2020), ‘ Study on Backwater Effect Due to Polavaram Dam Project under Different Return Periods Water’.

The Authors of this paper deal with a steady and unsteady flow hydraulic model, such as HEC-RAS, the authors of this paper provide a scenario to assess the backwater consequences on the Polavaram dam upstream during floods. The flood discharge values that arise are then translated into water level projections.

1.4) Research Question

1. What historical factors and events have shaped the inception, development, and implementation of the Polavaram project?
2. What are the potential benefits and drawbacks of the Polavaram project?
3. What are the major challenges that have delayed or hindered the Polavaram project's progress?

1.5) Scope and Objectives

- To analyze the significance of the Polavaram Project
- To analyze how the regional disparity on the part of the Polavaram Project
- To critically analyze the drawbacks and advantages of the Polavaram multi-purpose irrigation project.
- To analyze the reasons for the delay of the Polavaram Project from the perspective of judicial delays.
- To analyze whether the Polavaram project’s observable benefits and drawbacks in terms of water resource management, agricultural growth, environmental preservation, and socioeconomic.

1.6) Hypothesis

The major challenges impeding the progress of the Polavaram project are rooted in political hurdles, regional disparities, and historical complexities, contributing to delays and hindrances in its successful completion.

1.7) Research Methodology

Throughout the work, a descriptive and analytical methodology is employed. Both primary and secondary data form the study's foundation. This article refers to Statutes, Cases, and Books as primary sources. For this work, several publications and journals have been cited as secondary sources. Analytical analysis has been performed on all of the collected data to address the research questions. Information on the existing situation of the study problem is gathered using the descriptive research approach. To critically analyze the research topic, analytical research is used in this study. All of the pertinent and essential materials used in the study are gathered from a variety of sources, including publications, journal articles, newspaper pieces, reports, and many types of seminars. Since the current work is mostly theoretical, no field research is done.



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II. Chapter

What historical factors and events have shaped the inception, development, and implementation of the Polavaram project?

History

The Polavaram Irrigation Project was initially conceptualized as the **Ramapada Sagar Project**, is a first of its kind that merges as a transformative endeavor aimed to provide irrigation facilities to the upland regions of Visakhapatnam, East Godavari, West Godavari, and Krishna Districts in Andhra Pradesh. Its multipurpose design With features for industrial and drinking water supplies, hydropower production, navigational aids, and symbolizes a comprehensive approach to regional development.

Transition from Ramapada Sagar to Indira Sagar Project"

The project's origins trace back to the visionary leadership of Sir Sonti Venkata Ramamurthy, who initially envisioned it as the Ramapada Sagar. The project, initiated in July 1941, was conceived by the Madras Presidency's Chief Engineer, Diwan Bahadur L. Venkatakrishna Iyer, who proposed a reservoir at Polavaram, Ramapada Sagar, with the original plan for a 150-foot Full Reservoir Level, storing 150 million cubic feet of water, costing Rs. **6.40 crore**, has undergone numerous modifications since 1942, affecting dam height and storage capacity⁴. The project aimed to cultivate 350,000 acres and integrate a 40 MW hydroelectric plant. Gained prominence during the first general election in 1952, where Sonti Venkata Ramamurthy, ICS, emphasized the project, known then as the Ramapada Sagar project, the estimated cost in 1946–47 was Rs **129 crore**⁵. The nomenclature reflected the cultural significance of the god Ramachandra Murthy of Bhadrachalam. It was later renamed the Indira Sagar by the Congress party when it ruled. Still, the project ran into problems mostly because of concerns about the earth's crust at the chosen location, it was thought not to be strong enough to support a dam of such considerable height⁶.

Godavari Water Disputes Tribunal

⁴ Migrator, Andhra pradesh: 'Indira' long gone from project name; now Polavaram Bridge to be named after YSR, Deccan Herald. Available at: <https://www.deccanherald.com/india/andhra-pradesh-indira-long-gone-from-project-name-now-polavaram-bridge-to-be-named-after-ysr-809091.html> (Accessed: 27 November 2023).

⁵ Pagadala, T. (2023) Polavaram politics: How the project became a key point for, TheBetterAndhra. Available at: <https://thebetterandhra.com/articles/opinion/polavaram-politics-how-the-project-became-a-key-point-for-politricking-in-telugu-states/> (Accessed: 31 October 2023).

⁶ SakethKrishna and Aniketk (2022) Polavaram project was initially envisaged with the name Ramapada Sagar by, Sarthaks eConnect | Largest Online Education Community. Available at: <https://www.sarthaks.com/2668595/polavaram-project-was-initially-envisaged-with-the-name-ramapada-sagar-by> (Accessed: 31 October 2023).

Following the devastating floods in 1953, In 1965, a technical committee recommended constructing a barrage at Dowlaiswaram instead of Polavaram for irrigation. Interest in the project revived after the 1956 state formation due to disputes over river water sharing. The Godavari Water Disputes Tribunal was established in 1969 to resolve these disputes, leading to renewed interest and progress in the Polavaram project⁷.

Proposal to Detailed Specifications

In 1970, the Andhra Pradesh Government proposed the Polavaram barrage scheme, aiming for a Full Reservoir Level of +145 feet and a minimum pond level of +45 feet. The plan included two canals, providing water to the Krishna River and Vizag port city. The project was formalized in 1978 and presented to the Central Water Commission(CWC) for the construction of an earth-cum-rock-filled dam at the current site, Ramayyapata village.

Bhoomi Puja

In 1980, Andhra Pradesh's Chief Minister, Tanguturi Anjaiah, established the Polavaram irrigation project and the revised project report for 1989-90, based on the CWC's comments and suggestions, estimated the cost at Rs. 3,030 crores. As soon as Andhra Pradesh's Congress Party regained control in May 2004, Y. S. Rajasekhara Reddy performed a Bhoomi pooja at an estimated cost of **8,261 crore**, and administrative sanction was granted for the construction of right and left canals at Rs 1,320 crore and Rs 1,353 crore.

Commencement of Construction

The construction of the Polavaram Dam began under N. Chandrababu Naidu's government, despite decades of delay. Following the 2014 elections, Naidu strategically tied the project's completion to the issuance of an ordinance merging seven Khammam district mandals with divided Andhra Pradesh, highlighting the complex relationship between regional politics and project progress⁸. In May 2014, the Union Cabinet formed the Polavaram Project Authority, resolving court petition issues for farmers in West Godavari and Krishna districts. The Naidu government also initiated the Pattiseema Lift Irrigation Project.

⁷ Godavari Water Disputes Tribunal (April, 1969) (no date) GODAVARI WATER DISPUTES TRIBUNAL (APRIL, 1969) | Department of Water Resources, River Development and Ganga Rejuvenation | India. Available at: <https://jalshakti-dowr.gov.in/godavari-water-disputes-tribunal-april-1969/> (Accessed: 01 November 2023).

⁸ Janyala, S. (2018) Polavaram project achieves major milestone, 1400 m long diaphragm wall completed, The Indian Express. Available at: <https://indianexpress.com/article/india/polavaram-project-achieves-major-milestone-1400-m-long-diaphragm-wall-completed-5213336/> (Accessed: 03 November 2023).

State's bifurcation

Amidst the state's bifurcation under the Andhra Pradesh Reorganisation Act in 2018 caused financial difficulties for a project, leading to Transstroy's loan becoming a non-performing asset in 2015. Despite these challenges, the state government signed a new contract with Navayuga Engineering in January 2018 for the spillway, spill channel, and stilling basin concrete work⁹.

An important turning point was the June 11, 2018, completion of the Polavaram diaphragm wall. On January 7, 2019, the project was officially added to the Guinness Book of World Records for pouring 32,100 cubic meters of concrete in a single day.

Chief Minister N. Chandrababu Naidu's opening of the first crest gate on December 24, 2018, demonstrated the project's real progress. The Polavaram Project's headworks status as of May 2019 was 30% complete, signifying a path marked by regional objectives, political difficulties, and the project's commitment in the face of historical obstacles.



⁹ Bifurcation of andhra pradesh: Factors and consequences - pramana research. Available at: <https://www.pramanaresearch.org/gallery/prj-p642.pdf> (Accessed: 03 November 2023).

III. Chapter

What are the potential benefits and drawbacks of the Polavaram project?

In terms of water resource management, agricultural growth, environmental preservation, and socioeconomic results, how do these elements affect the project's overall efficacy and effects on the surrounding area?

The Polavaram project is one of the upcoming biggest multi-purposed irrigation projects on India's second largest river Godavari at Andhra Pradesh. The Polavaram Project is concerned with the numerous advantages and disadvantages. As compared to other multi-purposed irrigation projects in India such as the Kaleshwaram Project, Hirakud project, and many other projects, this Polavaram project is designed to withstand the heavy floods that could occur once in 10 decades¹⁰.

The Polavaram Project contributes the advantages and disadvantages in matters such as water resource management, agriculture development, environmental conservation, and many socio-economic outcomes. This project is not only concerned with the region of Andhra Pradesh but also with the regions of Chhattisgarh, Telangana, and Odisha¹¹.

Advantages of the Polavaram Project

A solution to the water deficits is known as the Polavaram Dam Project to Andhra Pradesh, the primary advantage of this project is that it works as a solution to the problems that arise from the inadequate water supply, it can create a solution by preserving and distributing of water resources across the state of Andhra Pradesh, it not only benefits the coastal region but also benefit the Rayalaseema (Seema Andhra).

The discussion on the advantages of The Polavaram Project is the broad area as India's dedication to addressing its water concerns head-on is demonstrated by the dam's construction, which features creative engineering solutions. The people of Andhra Pradesh and beyond have optimism for a more economic and water-secure future as this enormous project continues to take appearance.

One of the primary advantages of the Polavaram project is to utilize and transfer the surplus water from the Godavari River to the Krishna River basin. The Godavari Water Disputes Tribunal (GWDT)

¹⁰ Polavaram dam project (no date) Navayuga Engineering Company Ltd. | Iconic Projects. Available at: <https://www.necltd.com/projectpolavaram.html#:~:text=Designed%20to%20withstand%20massive%20floods,capacity%20of%2047%20lakh%20cusecs> . (Accessed: 10 October 2023).

¹¹ National Commission for Scheduled Tribes | Government of India. Available at: https://www.ncst.gov.in/sites/default/files/2017/NCST_Booklet_with_cover1.doc (Accessed: 11 October 2023).

award includes, among other things, the transfer of 2265 Mm³ (80 TMC) of water from the Godavari at Polavaram to Krishna above the Prakasam barrage at Vijayawada. This allows the above quantity of water to be used for projects upstream of Nagarjuna Sagar, which in turn shifts the discharges from the Nagarjuna Sagar project for the Krishna delta.

Even though coastal regions like East Godavari have abundant water resources, the irrigation agency only provides water for the first crop season. The farmers are unable to supply their second crops with water. Once the Polavaram Project is finished, farmers will not be worried about running out of water for both crops each year. The farmers would have access to 68 TMCs of water for the second crop.

The water will be stored by the Polavaram project and it will protect many areas from floods it has a lot of significance in protecting and ensuring the high fertile rate in agriculture. The productivity of agriculture may increase if this project gets finished. And there are a lot of advantages to creating flood-free areas. There will be no floods and sea water will not sink the villages. Sterile lands become fertile. Nowhere we see no crop lands in the coastal regions¹².

Hydropower generation is a key to supplying the electricity to power the future. There are advantages to creating a massive amount of hydro power and electricity through the Polavaram Project. The Polavaram project ensures to provide of hydroelectric plants that are generated by the water. The Polavaram Project requires the installation of power 12×80 MV capacity, which implies that electricity may reach almost 3,100 million units yearly in a great number of regions. In contrast, 244 million kilowatt-hours (MKWH) of power may be produced by the Tehri dam. A 960 MW hydropower facility, which can produce 2.29 billion kWh of clean, renewable electricity yearly, is part of the project. In the future, over 1,58,000 MW of high-head pumped-storage hydropower facilities might be installed thanks to the Polavaram reservoir, which will improve the energy sustainability of the area¹³.

Navigation is impossible in the river because there is not enough water (sufficient depth). A shoreline lake is intended to be formed as part of the Polavaram Project, and this dam's left canal is specifically made for navigation. When the Polavaram project is finished, it will be useful for the rapid and inexpensive transportation of goods made from food grains and forests in the market industry, as well

¹² PARIPEX - Indian Journal of Research | Volume - 9 | Issue - 11 ... Available at: https://www.worldwidejournals.com/paripex/recent_issues_pdf/2020/November/polavaram-boon-or-bane_November_2020_3143260495_5807380.pdf (Accessed: 14 October 2023).

¹³ Polavaram Hydro Electric Project, Andhra pradesh (no date) Power Technology. Available at: <https://www.power-technology.com/projects/polavaram-hydro-electric-project-andhra-pradesh/?cf-view> (Accessed: 15 October 2023).

as for the delivery of various ores and coals to the industries. But it is not possible to use the Tehri dam for navigation¹⁴.

A permanent solution for drinking water scarcity, the Polavaram multi-purpose irrigation project plays a significant in providing drinking water to the places in Andhra Pradesh.

It is important to recognize that the Polavaram Project has drawbacks and difficulties in addition to these benefits. Even though the conversation has mostly concentrated on the advantages, further investigation and analysis are required to fully assess the project's social, environmental, and economic ramifications. It will be essential to weigh the advantages against any potential disadvantages if the project is to be long-lasting and have a beneficial effect on the many areas it seeks to reach.

Disadvantages of the Polavaram Project

The main drawback of the Polavaram project is that it alone submergence the 276 villages in Andhra Pradesh. And it would displace people around 1.93 lakhs¹⁵. Not only in Andhra Pradesh but also around 8 villages of Odisha and 4 villages in Chattisgarh. And probably some villages near Badrachalam will also get submerged. It consists of many wildlife sanctuaries, archaeological sites, national parks, and some coal deposits¹⁶.

Apart from this there are 892 acres of agricultural land in Telangana will get submerges due to the Polavaram project¹⁷. In AP alone 44,574 families would get displaced by this project. Research and human rights activists say that there are 50 percent of the Land belongs to the local tribes in the area where this project submerges the Villages in Andhra Pradesh¹⁸.

The main reason for the pending of this Project is the lot of cases against the construction Polavaram Project. Many Human rights Activists filed many cases that caused delays in the construction of the Polavaram Project.

¹⁴ Sahu1, R.T. et al. (2022) IOPscience, IOP Conference Series: Earth and Environmental Science. Available at: <https://iopscience.iop.org/article/10.1088/1755-1315/1032/1/012020/meta> (Accessed: 17 October 2023).

¹⁵ Khan, F. (2023) Polavaram project to displace over 1 lakh people in Andhra Pradesh: East Godavari, Andhra Pradesh, RSS. Available at: <https://www.landconflictwatch.org/conflicts/polavaram-dam-in-andhra-pradesh> (Accessed: 18 October 2023).

¹⁶ Why Polavaram is a pointless project (no date) Down To Earth. Available at: <https://www.downtoearth.org.in/coverage/forests/why-polavaram-is-a-pointless-project-33445> (Accessed: 19 October 2023).

¹⁷ Bureau, T.H. (2022) 892 acres to be submerged in backwater of Polavaram, The Hindu. Available at: <https://www.thehindu.com/news/national/telangana/892-acres-to-be-submerged-in-backwater-of-polavaram/article66145497.ece> (Accessed: 19 October 2023).

¹⁸ Polavaram dam - environicsindia.in. Available at: <https://environicsindia.in/wp-content/uploads/2016/03/Polavaram-DamEcologicalGovernancel.pdf> (Accessed: 20 October 2023).

In response to this, the Government introduced Land acquisition, rehabilitation, and resettlement for the Families affected by the Polavaram project. The Government of Andhra Pradesh (GoAP) is in charge of the land acquisition rehabilitation and resettlement (R&R) operations for the Polavaram Irrigation Project (PIP). The GoAP states that 1,06,006 project-displaced families (PDFs) in the State of Andhra Pradesh have been identified for rehabilitation under PIP¹⁹.

Up until December 2013, the R&R package given to the PIP displaced families complied with the Government of Andhra Pradesh's (GoAP) R&R 2005 policy, which stipulated that each PDF of PIP was entitled to receive Rs 2.83 lakh in addition to the home site. The aforementioned policy also allowed for land-to-land transfers to Scheduled Tribes and Scheduled Castes (SC/ST).

But at the beginning of January 2014, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement (RFCTLARR) Act, 2013 (Act) governs the provision of R&R packages. As per the Act, the R&R package for PIP PDFs belonging to SC/ST categories is Rs. 6.86 lakh, whereas the package for other PIP PDFs is Rs. 6.36 lakh. Furthermore, the home location must be provided for all PIP PDFs.

The Act further stipulates that SC/ST individuals who lose land would get land comparable to the amount of land they acquire—two and a half acres, whichever is less. Furthermore, GoAP has approved an extra R&R package, making each PIP family that has been relocated get a total of Rs. 10 lakhs in R&R, comprising the rights outlined above under this Act²⁰.

And there are some other unsafe embankments by The Polavaram Project that would drown communities in the Konta block in the Dantewada district of Chhattisgarh along the Sabari river. Villages in the Motu block of Odisha near the Sabari and Sileru rivers—tributaries of the Godavari—will be swamped. To prevent submergence, Andhra Pradesh has proposed building protection walls in Odisha that are 30.2 km long and in Chhattisgarh that are 29.12 km long²¹.

Apart from the disadvantages, an important turning point in India's quest for sustainable water management is the Polavaram Dam Project. It claims to reduce water shortages and promote agricultural expansion through the use of excess water resources, the production of renewable energy, and the support of irrigation programs. The dam's construction, which featured creative technical

¹⁹ Relief and rehabilitation package for families affected by Polavaram Irrigation Project (no date) Press Information Bureau. Available at: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1844681> (Accessed: 20 October 2023).

²⁰ Rehabilitation and resettlement of Polavaram Project , Rehabilitation and Resettlement of Polavaram Project. Available at: <https://polavaramrr.ap.gov.in/> (Accessed: 21 October 2023).

²¹ Uppadavinayreddy (2023) Project report on the Polavaram Project (National Project), Medium. Available at: <https://medium.com/@uppadavinayreddy/project-report-on-the-polavaram-project-national-project-7eb8bdb32888> (Accessed: 22 October 2023).

solutions, demonstrates India's will to address its water-related problems head-on. The people of Andhra Pradesh and beyond have optimism for a more economic and water-secure future as this enormous project continues to take form.



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IV. Chapter

What are the major challenges that have delayed or hindered the Polavaram project's progress?

Challenges in Moving from Planning to Implementation

The Polavaram project, conceived in 1941, faced numerous challenges and delays before transitioning from planning to active implementation. Initial conceptualization was hampered by doubts about the geological stratum and the project's ability to support a large dam. Despite its ambitious vision, progress on the project remained stagnant for decades due to the geopolitical landscape, changing government priorities, and environmental and social concerns. Not much progress was made on the Polavaram project until 1980. After years of inactivity, Chief Minister Tanguturi Anjaiah placed the foundation stone, signifying the start of construction.

Policy Changes (1980s-2004)

The Polavaram project faced challenges due to political changes and shifting government priorities. The project fluctuated in attention, funding, and commitment from successive administrations, leading to changes in policies and strategies. The lack of consistent political will and unified policy direction hindered its forward movement. Factors like economic considerations, competing development projects, and evolving regional priorities contributed to its prolonged limbo. In 2004 at that time, the Chief Minister, Y. S. Rajasekhara Reddy, conducted the bhoomi pooja, which marked the formal start of construction²².

Post-2014 Elections and Political Implications (2014-2019)

Following the 2014 elections, Chief Minister-elect N. Chandrababu Naidu emphasized the political dimension of the Polavaram project, linking its completion to the merger of mandals from Khammam district, posing unique challenges and involving intricate political negotiations and discussions on regional interests and demographics²³. The Pattiseema Lift Irrigation Project, initiated to address water needs in the region, faced controversies and delays, complicating the Polavaram initiative's progress. The project's link to political considerations and regional mergers highlighted the intersection of

²² Floods to resistance: The polavaram hurdles (2022) Hindustan Times. Available at: <https://www.hindustantimes.com/india-news/floods-to-resistance-the-polavaram-hurdles-101652035401794.html> (Accessed: 05 November 2023).

²³ Venkateshwarlu, K. (2019) News analysis: Why Chandrababu Naidu lost and how Jagan Mohan Reddy won, The Hindu. Available at: <https://www.thehindu.com/elections/andhra-pradesh-assembly/new-analysis-why-chandrababu-naidu-lost-and-how-jagan-mohan-reddy-won/article27225325.ece> (Accessed: 08 November 2023).

infrastructure development with political agendas, making it a focal point of political discourse and negotiations.

Contractor Issues (2015-2018)

The Andhra Pradesh government, led by Chief Minister YS Jaganmohan Reddy, has terminated the Polavaram irrigation contract awarded to Navayuga Engineering due to irregularities. The termination, amounting to Rs 2,914.66 crore, follows a review of irrigation and capital region contracts. The government plans to reassign the remaining works through a fresh tendering process, potentially introducing further delays to the project schedule. Megha Engineering and Infrastructure Limited (MEIL) has taken over the construction of the Polavaram irrigation project in Andhra Pradesh, replacing Navayuga Engineering Company.

Land Acquisition and Rehabilitation Challenges

Land acquisition has been a persistent challenge since the Polavaram project needs an extensive region to be completed, including displacement of local communities and agricultural land acquisition. Legal issues and humanitarian concerns have further delayed the acquisition process. Resolving court petition issues for affected farmers has been time-consuming, exacerbating delays and causing social unrest. The Polavaram Irrigation Project has led to the submergence of 637 km², affecting 52,623.91 hectares of land. This includes 48,790.520 hectares of non-forest area and 3,833.39 hectares of forest area. The submerged zone comprises farmland, poramboke (common land), and reserved forest lands. The impact extends to 296 villages, with 276 in Andhra Pradesh, 10 in Odisha, and seven in Chhattisgarh. Research studies vary in their figures on land acquisition, highlighting the complex and multifaceted nature of the project's impact on the region²⁴.

Opposition to the Indira Sagar (Polavaram) Project

Several Organizations in Andhra Pradesh and other states are protesting the proposed Indira Sagar project, citing undemocratic and oppressive actions by the national and state governments, and fearing severe consequences. Among these organizations are the Polavaram Project Nirvasitula Parirakshana Samiti, Adivasi Student Federation, Andhra Pradesh Girijana Sangham, Adivasi Kondareddy Sangam, Polavaram Project Nirvasitula Committee, and Polavaram Project Vyathireka Ikya Poratta Vedika.

The Polavaram Irrigation Project has been a source of social unrest, particularly among the Communist Party of India (CPI(M)) and tribal communities. In 2007, the CPI(M) organized a protest demanding

²⁴ Rehabilitation and resettlement of Polavaram Project (no date) Rehabilitation and Resettlement of Polavaram Project. Available at: <https://polavaramrr.ap.gov.in/> (Accessed: 08 November 2023).

a halt to survey works, withdrawal of cases against protesters, and land rights for tribal people. The police responded with severe violence, resulting in injuries. The Konda Reddy tribes, constituting 52% of those affected, formed the Adivasi Konda Reddi Sangham to protect their traditional livelihoods and cultural heritage. Their struggle intensified in 2014, with rallies and dharnas against the project. In 2015, the Central government moved mandals and villages to Andhra Pradesh for the project, which faced opposition from tribal groups.

Environmental Concerns and Clearances

The Polavaram project, situated in sensitive areas, has raised environmental concerns due to potential disruption to ecosystems, biodiversity, and wildlife displacement. Compliance with regulations and clearances has been a lengthy process, as the project balances development with environmental conservation.

There were several obstacles in the way of the Indira Sagar (Polavaram) project's environmental clearance procedure. The site clearance application was received by the Ministry of Environment and Forests (MoEF) in March 2005. In July 2005, a new application was filed after requests for clarification. Site approval was given by the MoEF on September 19, 2005, and environmental permission was obtained on October 25, 2005, despite procedural obstacles and concerns over the usage of forest land from Chhattisgarh and Odisha. Because the state started project construction before receiving approvals, the Andhra Pradesh High Court issued a stay order. The project moved on despite these difficulties, prompting questions about environmental effects and compliance²⁵.

Regional Disparities

The categorization of Polavaram as a National Project by the Central Government of India has led to concerns about the equitable distribution of resources and attention. Critics argue that the project's national importance may overshadow the specific regional needs of Andhra Pradesh, potentially exacerbating existing regional disparities. The allocation of funds and resources for the Polavaram project has been a point of contention, with concerns about the adequacy of central support. Delays in financial disbursements and budgetary allocations have fueled perceptions of regional disparities. The intertwining of political decisions with the project's progress has led to debates about the fairness and impartiality of the decision-making process. Addressing these concerns requires a nuanced and

²⁵ Pavan, P. (2019) Megha engineering firm is New Polavaram contractor, Govt claims it saved Rs 780 crore, Bangalore Mirror. Available at: <https://bangaloremirror.indiatimes.com/news/india/megha-engineering-firm-is-new-polavaram-contractor-govt-claims-it-saved-rs-780-crore/articleshow/71270696.cms> (Accessed: 10 November 2023).

transparent approach to ensure the project's benefits are realized equitably and contribute to the overall development of the region without exacerbating existing disparities.

Present Status

The Polavaram project, has been plagued by numerous challenges and controversies, raising concerns about the structural and operational safety of dams in India. In July 2022, floods in Bhadrachalam, Telangana, led to the state's transport minister blaming the dam's negligence for the floods. However, an IIT-Hyderabad study found minimal impact of the dam on surface water levels. The decision to raise the Polavaram upper cofferdam height for higher flood capacity further exacerbated the project's adaptive challenges. The government's acknowledgment that the Earth cum Rockfill (ECR) dam construction cannot proceed until the damage to the diaphragm wall is assessed raises questions about the project's structural integrity²⁶.

Environmental concerns have been raised, particularly regarding the Catchment Area Treatment Plan (CAT) implementation, which has been audited for significant delays and incomplete execution. The project's implications extend beyond infrastructure, encompassing environmental conservation, public safety, and regional cooperation.

The project, which was originally scheduled to be completed in 2021, is still not finished. Andhra Pradesh Chief Minister YS Jagan Mohan Reddy is now aiming for a 2025 completion date with present-day budget of more than 60,000 crores. The project's finalization is questionable because of many setbacks, cost overruns, and damage from the 2020 flash floods. This has disappointed supporters who have seen decades of delays and governmental changes²⁷.

²⁶ Samdani MN / Sep 23, 2023 (no date) 'Polavaram project to be completed by Dec 2025': Vijayawada News - Times of India, The Times of India. Available at: <https://timesofindia.indiatimes.com/city/vijayawada/polavaram-project-to-be-completed-by-dec-2025/articleshow/103879635.cms> (Accessed: 14 November 2023).

²⁷ Bureau, B.H. (2023a) Polavaram project will be completed by June 2025: AP CM Jagan Reddy, BusinessLine. Available at: <https://www.thehindubusinessline.com/news/polavaram-project-will-be-completed-by-june-2025-ap-cm-jagan-reddy/article67197541.ece#:~:text=The%20Polavaram%20multipurpose%20project%20will%20be%20completed%20by,Pradesh%20Chief%20Minister%20YS%20Jagan%20Mohan%20Reddy%20said> (Accessed: 11 November 2023).

Conclusion

The Polavaram Irrigation Project is a journey with historical, political, environmental, and socioeconomic strands weaved throughout. Since the project's inception as the Ramapada Sagar Project in 1941 till the present, it has faced difficulties, disputes, and changes that highlight the complex character of major infrastructure projects in India. The Polavaram project, initiated in 1969, has faced numerous challenges, including geological issues, shifting priorities, and environmental controversies. Despite its potential benefits, such as water resource management and hydropower generation, it has faced challenges such as displacement of villages, environmental issues, and delays. The project's narrative is complicated by politics, regional disparities, and environmental complexities. Currently, the project faces challenges in construction, environmental compliance, and regional equity, with a delayed completion timeline and structural integrity concerns. The Polavaram project highlights the complex relationship between development aspirations, environmental stewardship, and socio-political dynamics in India.



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