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The Role of 'Jalyukt Shivar Abhiyan' in Inclusive and Sustainable Agricultural Development: A Critical Study of Jalgaon District

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Abstract:

This paper examines the economic role of Jalyukt Shivar Abhiyan in Jalgaon district within the policy period 2014–2024. It uses documentary analysis of government reports, district administrative statements, agricultural credit records and published research. The assessment distinguishes programme expenditure and physical works from changes in farm profitability and benefit distribution. District reporting documents substantial investment, while landholding data reveal the importance of small and marginal farmers. Agricultural credit increased during the available observation period, but this cannot establish programme impact. Groundwater resource classifications further indicate that agricultural expansion must respect local resource constraints. The analysis identifies complementary finance, equitable irrigation access, asset maintenance and water productivity as conditions for converting conservation investment into durable economic benefits. Available evidence supports a role for the programme in agricultural development, but does not establish its causal effects on income, employment or inclusion. Stronger evaluation requires matched village data and consistent farm cost accounts.

Keywords: Jalyukt Shivar Abhiyan, Jalgaon district, Agricultural development, Inclusive growth, Sustainable development, Public investment, Agricultural credit, Water productivity, Farm profitability, Resource economics.

Introduction:

Agricultural transition requires investment that raises productivity while protecting the resources supporting future earnings. In Jalgaon, water conservation therefore presents an economic question: can public investment generate durable farm returns and distribute them across unequal holdings? Jalyukt Shivar Abhiyan began in December 2014, while its second phase commenced in January 2023. The

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programme provides a setting for examining the relationship between rural infrastructure, access to productive assets and sustainable growth. This paper evaluates that relationship through expenditure records, landholding distribution, agricultural finance and groundwater resource classifications. It connects the conference themes of growth, innovation, inclusion and sustainable development through an economic assessment, while distinguishing documented programme activity from attributable changes in farmers' incomes over the stated study period of 2014-2024.

Objectives:

1. To examine documented public investment and implementation under Jalyukt Shivar Abhiyan, distinguishing Jalgaon evidence from statewide programme context.
2. To analyse the economic implications of landholding distribution and access to complementary finance for inclusive agricultural development.
3. To assess how asset maintenance, water productivity and groundwater scarcity affect the sustainability of agricultural returns.
4. To identify the evidence required to evaluate programme effects on farm profitability, employment and the distribution of benefits.

Methodology

Research design and scope. The study is a retrospective, descriptive economic analysis of secondary evidence concerning the 2014-2024 policy period. It is not a household survey or a causal impact evaluation. The quantitative observations cover specific years within that period, they do not form an uninterrupted annual district series. Publications issued after 2024 are used only where the observations explicitly refer to 2024 or earlier.

Sources and selection. Eight sources were selected for direct relevance and identifiable authorship: the CAG audit, two Jalgaon District Information Office statements, NABARD's district credit plan, two Maharashtra Economic Surveys, the CGWB Maharashtra resource assessment, and an original research article. Administrative statements are treated as reported implementation evidence, not independently verified farm outcomes. NABARD credit projections are excluded from the observed credit series. The groundwater assessment describes district conditions, not recharge attributable to the programme.

Calculations and interpretation. The analysis calculates expenditure per reported work, holding and land shares, average holding size, and annual percentage changes in agricultural credit. A percentage share equals the category value divided by the corresponding total, multiplied by 100. Annual credit growth equals the current year's value divided by the previous year's value, less one, multiplied by 100. One crore equals 100 lakh rupees. Financial amounts remain nominal, no real income growth is inferred from them. Missing observations are not interpolated.

Limits of attribution. No matched beneficiary and comparison village panel, programme linked farm budgets, or common annual district expenditure series is available in the assembled evidence. Rainfall, crop prices, input costs, other irrigation programmes and credit policies can influence observed outcomes. Consequently, the paper does not calculate a benefit-cost ratio, estimate an employment multiplier, or

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attribute district credit growth to Jalyukt Shivar. Evidence from audited districts and Pune field sites is used to identify economic risks, their outcomes are not assigned to Jalgaon.

Discussion:

1 Public investment and the meaning of programme delivery:

Public water conservation expenditure creates an asset whose economic value depends on the services it subsequently provides. The relevant distinction is between expenditure, functioning capacity, productive use and additional net returns. A completed structure can contribute to agricultural development, but its construction value is not a measure of the income it generates. Table 1 places the available implementation observations within their original reporting boundaries.

Table 1

Programme investment and implementation with distinct reporting boundaries

Place and reporting date	Status and coverage	Reported works	Amount (Rs. Crore)
Jalgaon 31 Oct 2017	Third-phase plan approved for 206 villages	6,358 planned	135.00 planned
Jalgaon 15 Aug 2019	Reported preceding three years, 660 villages	16,348 undertaken	310.49 spent
Maharashtra FY 2023–24	Jalyukt Shivar 2.0, annual reporting	49,511 completed	947.54 spent
Maharashtra Through Nov 2024	Jalyukt Shivar 2.0, cumulative since inception	70,961 completed	1,138.83 spent

Sources: District Information Office, Jalgaon (2017, 2019), programme statements [2,3], Directorate of Economics and Statistics (2024), p. 118, paragraph 7.31.1 [5], Directorate of Economics and Statistics (2025).[1]

Note. The 2019 statement describes the preceding three years without defining exact financial-year boundaries. Planned, annual and cumulative observations are not additive. State figures are not Jalgaon allocations.

Economic interpretation. Table 1 documents investment activity without measuring its agricultural return. The 2017 approval represents a spending plan, whereas the 2019 statement reports expenditure. Dividing the latter expenditure by its reported works gives about Rs. 1.90 lakh per work, dividing by the reported villages gives Rs. 47.04 lakh per village. These are aggregate accounting ratios, not standard construction costs or benefits per farmer. They ignore differences in structure type, scale and service life. The two Jalyukt Shivar 2.0 observations show statewide implementation through the study endpoint, but their annual and cumulative definitions prevent interpreting their difference as a clean annual growth rate.

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2 Distribution of productive assets and economic inclusion

Inclusive agricultural development concerns who can convert improved water availability into earnings. The distribution of land provides a useful starting point because cultivation scale affects the financing of pumps, conveyance and irrigation equipment. Table 2 uses Agriculture Census 2015-16 figures reproduced in NABARD's Jalgaon plan. These are district holdings, not a register of programme beneficiaries.

Table 2

Distribution of holdings and operated area in Jalgaon in 2015-16

Holding group	Holdings (number)	Share of holdings (%)	Area (ha)	Share of area (%)
Small and marginal	367,275	76.69	380,246	48.66
Other holdings	111,629	23.31	401,142	51.34
Total	478,904	100.00	781,388	100.00

Source: NABARD (2022), Potential Linked Credit Plan 2023–24: Jalgaon, and 6, citing Agriculture Census 2015-16. Other holdings are calculated by subtraction, all percentages are calculated from the reported counts and areas.[2]

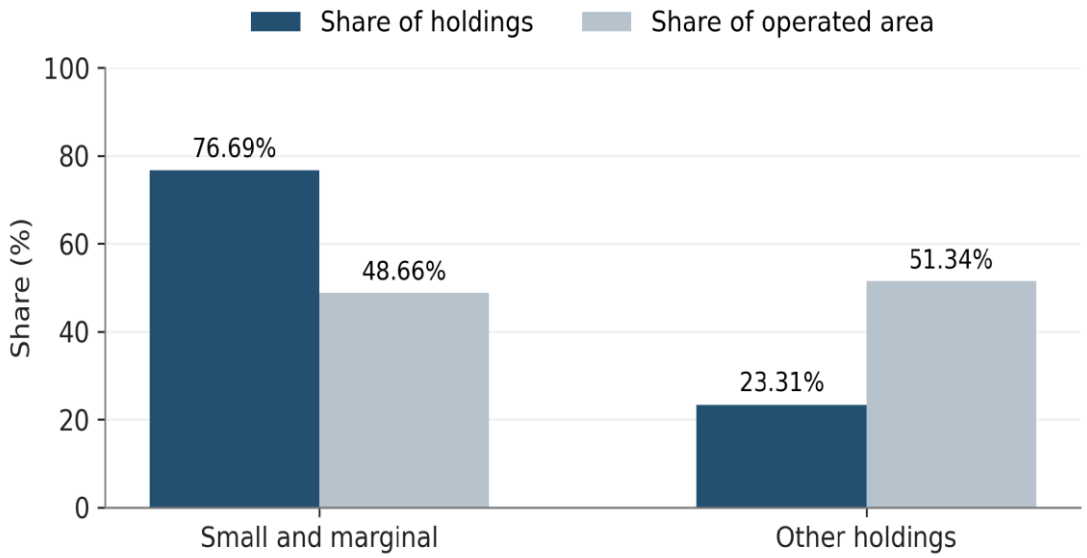
Note. The source narrative prints 48.67% for the small and marginal area share, direct division of its reported area figures gives 48.66% after rounding. The table and figure consistently use the recalculated value.

Economic interpretation. Small and marginal holdings form a large majority of holdings while accounting for slightly less than half of operated area. Their calculated average size is 1.04 hectares, compared with 3.59 hectares for other holdings. This difference matters when the fixed costs of accessing irrigation must be spread across cultivated land. The distribution makes broad access economically important, but does not show which holding groups received programme benefits. Neither eligibility nor land ownership alone establishes effective irrigation access.

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Figure 1

Holding shares and operated area shares in Jalgaon in 2015–16



Source: Author's calculations and chart from NABARD (2022), using the counts and areas in Table 2.[3]

Economic interpretation. The chart shows a 28.03 percentage point gap between the small and marginal share of holdings and their share of area. If access costs exclude smaller operators, improvements in aggregate production could coexist with concentrated income gains. The figure identifies a distributional condition to examine, it does not demonstrate unequal allocation of Jalyukt Shivar benefits.

3. Agricultural finance as a complementary input

Water availability alone does not finance seed, labour, equipment or the interval between cultivation and sale. Agricultural credit is therefore relevant to the conversion of water infrastructure into production. The observed lending series in Table 3 describes Jalgaon's broader financing environment. It is not expenditure under Jalyukt Shivar and contains no identification of scheme beneficiaries.

Table 3

Observed agricultural credit disbursement in Jalgaon

Financial Year	Agricultural Credit (Rs. Crore)	Annual Nominal Change (%)
2019–20	2,373.89	Not calculated
2020–21	3,064.80	29.10
2021–22	3,486.12	13.75

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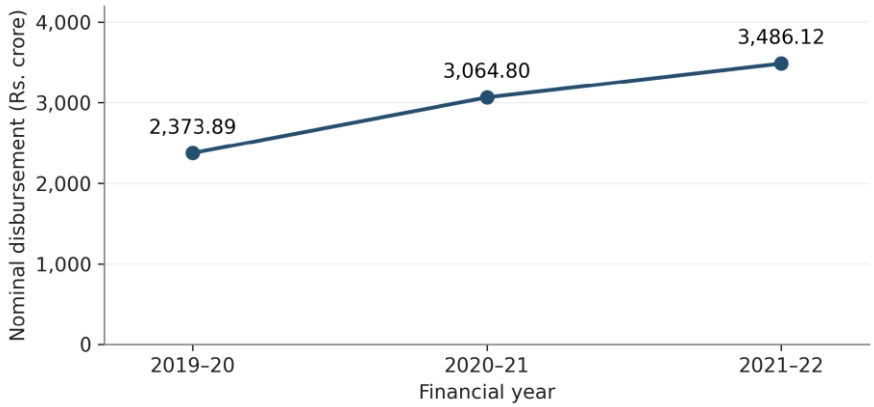
Source: NABARD (2022), Annexure II, row "Total Agricultural Credit", achievement columns. Amounts are converted from lakh to crore rupees, growth rates are author's calculations.[4]

Note. The series consistently uses Annexure II. The executive summary gives Rs. 3,486.13 crore for 2021–22, a difference of Rs. 0.01 crore from the annexure. These are nominal disbursements, not outstanding debt or programme finance.

Economic interpretation. Agricultural credit rose by Rs. 1,112.23 crore, or 46.85%, between 2019-20 and 2021-22. Annual growth slowed in the second interval. Larger disbursements may facilitate working capital and investment, but can also reflect prices, refinancing or changes in lending coverage. Borrower counts, repayment performance and the distribution of credit by holding size are required before interpreting this increase as financial inclusion. Since the records do not identify programme participation, the increase is not an estimate of Jalyukt Shivar's effect.

Figure 2

Agricultural credit disbursement in Jalgaon from 2019–20 to 2021-22



Source: Author's chart from NABARD (2022), Annexure II, Values are the observed achievement figures used in Table 3.[5]

Economic interpretation. The rising line describes the financing environment during three observed financial years. It does not cover the entire 2014–2024 study period and is not extended beyond the reported observations. A stronger evaluation would link credit access to functioning conservation assets and examine whether incremental farm returns covered borrowing and cultivation costs.

4. Groundwater scarcity and the durability of returns

Sustainability has an economic meaning: current agricultural earnings should not depend on resource depletion that raises future production costs or reduces future output. Table 4 therefore examines the distribution of Jalgaon's annual extractable groundwater resource across assessment categories in 2024. It is a resource classification, not a valuation of water or a measurement of programme created storage.7

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Table 4

Jalgaon annual extractable groundwater resource by assessment category in 2024

Category of assessment units	Annual extractable resource (million m³)	Share of district resource (%)
Safe	237.66	17.35
Semi-critical	947.59	69.17
Over-exploited	184.63	13.48
Total	1,369.88	100.00

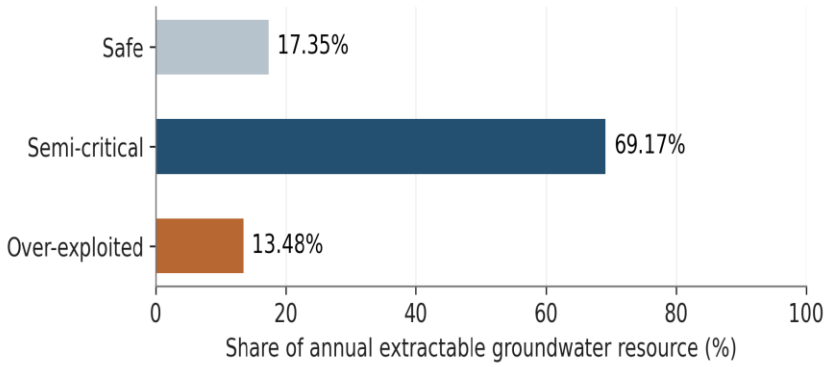
Source: Central Ground Water Board (2025), Report on Dynamic Ground Water Resources of Maharashtra 2024, Annexure III(D), Resource amounts and shares are reported values.[6]

Note. The source records no resource entry under the critical category for Jalgaon. Shares refer to resource volume in assessment units of each category, they are not percentages of farmers, villages, land area or annual extraction.

Economic interpretation. Most of the district's reported extractable resource is located in semi-critical assessment units, with a further 13.48% in over-exploited units. The classification indicates that the location of proposed agricultural investment matters. The district total cannot be treated as freely transferable water available at every farm. From an economic perspective, additional pumping in stressed locations can impose costs on neighbouring users and future production. These data do not identify which assessment units received programme works or establish whether the programme improved or worsened their condition.

Figure 3

Distribution of Jalgaon extractable groundwater resource in 2024



Source: Author's chart from CGWB (2025), Annexure III(D), p. 69 [7], reproducing the resource shares in Table 4.[7]

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Economic interpretation. The chart concentrates attention on where the resource is classified, not how much water the programme created. Combining the semi-critical and over-exploited shares gives 82.65% of the reported district resource. This is a reason to assess expansion decisions locally and compare expected agricultural returns with the cost of maintaining reliable water access. It is not a finding that 82.65% of water has been depleted.

5. Profitability and the economic use of innovation

Farm profitability should be assessed as the value of crop and by-product output less consistently defined cultivation costs. Those costs should include purchased inputs, hired labour, imputed family labour, energy, machinery use, depreciation and relevant financing costs. Comparing gross crop revenue alone can exaggerate benefits when additional irrigation also requires more fertiliser, pumping and labour. A credible assessment must separate yield effects from crop switching and price changes.

Innovation matters when it improves net returns per unit of scarce water or reduces the cost of maintaining assets. Possible investments include irrigation scheduling, metering, suitable micro-irrigation and collective equipment services. Their adoption should be assessed against installation, replacement, energy and training costs. This paper does not assume that these technologies were installed through Jalyukt Shivar or that they produced a quantified gain in Jalgaon.

Crop choice introduces a further trade-off. A crop can earn more per hectare while earning less per unit of water. Economic water productivity should therefore compare net returns with a consistently measured quantity of water used, alongside returns per hectare. Increased irrigation efficiency at the plot level does not necessarily reduce total extraction if cultivated area or irrigation frequency expands. Shah and colleagues' research in three Pune villages identifies unequal access and additional groundwater extraction as relevant programme concerns, these findings inform the questions asked here, not district effect estimates.[8]

6. Maintenance expenditure and the return on public capital:

The CAG audit examined six districts that did not include Jalgaon. Among 120 sampled villages, none had collected the prescribed maintenance cess, the audit also identified inadequate evaluation and deficiencies in the functioning of assets. These findings cannot establish the condition of Jalgaon's structures. They do demonstrate why the economic appraisal of conservation expenditure must include recurrent maintenance and effective asset life.

A lower initial construction cost need not produce a lower lifetime cost if an asset requires repeated repairs or delivers unreliable services. Public appraisal should compare discounted incremental benefits with construction, operation, maintenance and replacement costs over a defensible service life. Benefits must reflect additional output or avoided losses rather than the total production of an already cultivated area. Without these observations, assigning a monetary return to the reported expenditure would be speculative.

Employment also requires separate measurement. Construction person days and subsequent agricultural person days should be recorded independently. Wages are income for workers and a cost in project or farm accounts, they cannot simply be added again as an extra social benefit without specifying labour's opportunity cost. No verified Jalgaon employment effect is estimated here.

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7. Implications for growth inclusion and public policy:

The economic case for the programme is conditional. Growth requires higher real net agricultural returns, innovation requires cost-effective improvement in production or water management, inclusion requires access and gains across farm categories, and sustainability requires protection of future productive capacity. None of these outcomes is established by a work count alone.

For Jalgaon, expenditure monitoring should be linked to asset condition, actual irrigation service and beneficiary farm accounts. Reporting should separate small and marginal farmers, larger farmers, tenants and agricultural labour households. Affordable access to shared irrigation services and complementary credit can be assessed as policy options where individual capital requirements restrict participation. Maintenance responsibilities and funding should be specified before assets deteriorate.

A subsequent impact study should compare treated and suitably comparable untreated villages over several seasons, record intervention timing and intensity, and control for rainfall, prices and other programmes. A difference-in-differences design could be considered only after testing the credibility of its comparison group and pre-intervention trends. Until that evidence exists, the defensible conclusion is that investment and enabling conditions are documented, while the size and distribution of additional farm benefits remain unestablished.

Conclusion:

Jalyukt Shivar Abhiyan provides an investment framework relevant to Jalgaon's agricultural transition, but expenditure and completed works do not establish inclusive prosperity. The reviewed evidence documents programme activity, unequal landholding distribution, expanding nominal agricultural credit and groundwater constraints. These observations identify conditions affecting economic performance rather than prove programme induced income gains. Small and marginal farmers require affordable access to irrigation services and complementary capital if conservation assets are to generate widely shared returns. Sustainable gains also depend on maintenance, suitable crop choices and incentives that account for the scarcity of groundwater. Public evaluation should therefore connect expenditure with functioning assets, actual water services and additional net farm earnings. It should separately assess labour income and benefits across holding groups. For 2014-2024, the defensible conclusion is conditional: the programme can support agricultural development, while its attributable effects on profitability, employment and distribution in Jalgaon remain unestablished by the evidence reviewed.

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