AN IMPACT ASSESSMENT STUDY OF WATER CONSERVATION PROJECT IN CHALISGAON BLOCK, JALGAON DISTRICT UNDER MISSION 500 CRORE LITRES WATER STORAGE CAMPAIGN

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DECLARATION

We, hereby declare that the report authored by us on behalf of Tata Institute of Social Sciences, Tuljapur Campus, as entitled **'AN IMPACT ASSESSMENT STUDY OF WATER CONSERVATION PROJECT IN CHALISGAON BLOCK, JALGAON DISTRICT UNDER MISSION 500 CRORE LITRES WATER STORAGE CAMPAIGN'** is an outcome of our own labour and original contribution.

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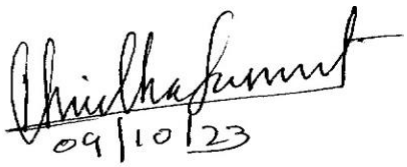
Prof. Ramesh Jare



Dr. Shridhar Samant

ACKNOWLEDGEMENT

This comprehensive study on water conservation initiatives by Mission 500 has been a collective effort marked by collaboration, dedication, and a shared commitment to improving people's lives. We extend our heartfelt gratitude to all those who have contributed to the success of this endeavour.

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PREFACE

In the realm of sustainable development and environmental stewardship, the importance of water conservation cannot be overstated. Water is a finite resource, and its judicious management is a critical imperative for communities across the globe. This preface sets the stage for a comprehensive exploration of water conservation initiatives within a specific community, delving into the challenges faced, the aspirations of the people, and the strategic recommendations for a more sustainable future.

The following pages are the culmination of data analysis, discussions, and insights drawn from the community itself. These insights provide a holistic understanding of the existing dynamics and an opportunity to envision a future where water conservation is not just a practice but one which is ingrained in way of life. As researchers, our aim is not only to reflect upon the data but also to contribute the suggestions that can help transform challenges into opportunities in the future.

This narrative unfolds through the lenses of community engagement, education, innovation, empowerment, and long-term vision. It emphasizes the significance of collaboration and active involvement from diverse stakeholders, recognizing that collective action is the cornerstone of impactful change. The insights offered here are not just a reflection of the community's journey but also an ode to the possibilities that water conservation initiatives hold for a better, more sustainable world.

The preface invites readers on a journey through the heart of a community's efforts to conserve water, acknowledging the challenges and drawing inspiration from the resilience of its people. It is an exploration of a shared commitment to environmental sustainability and the realization that the future of water lies not in its abundance but in our responsible stewardship.

EXECUTIVE SUMMARY

Based on the findings and data analysis, the following points have emerged from the study on Mission 500.

1. As Ralegaon Siddhi and Hivare Bazar models proved, organic leadership is vital to any natural resource conservation movement. A similar leadership model is emerging under Dr. Ujjwalkumar Chavhan (IRS) in Chalisgaon block of Jalgaon district, Maharashtra. The locality model of community organization (Rothman, J.,1968) emphasizes that local leadership, community resources, and people are the crucial elements of community organization. Mission 500 has the main objective of creating water storage; along with it, they are also trying to address the issues related to agriculture, village governance, sanitation, health, and the environment. Hence, we can say that it is a sustainable development approach emerging from the efforts of the Mission 500.

2. A strong team of volunteers, namely “Paach Patil, " evolved during the process of Misson 500. The complete process of planning, implementation, execution and evaluation (feedback) has been taken by the Paach Patil team.

3. Professional training on visioning the program and leadership development of Paach Patil team made a remarkable contribution to community organization and project vision at every stage.

4. The strong leadership, commitment, vision and devotion of Dr. Ujjwalkumar Chavhan (IRS) made the program successful by increasing the water storage by **3,27,53,79,500** litres.

5. The farmers who completed the water conservation activities in these four villages namely Dhamangaon, Ranjangaon, Lonje and Pimpalgaon reported their agricultural production increased double-fold and agriculture working days for employment increased from 3 or 4 months to 9 to 10 months.

6. The watershed development program has positively impacted the availability of fodder which has helped to maintain the animal stocks in the studied villages where many farmers are involved in the animal husbandry for livelihood.

7. Most farmers who are part of Mission 500 as beneficiaries are well aware of the importance of soil and water conservation; however, most people in the villages, including beneficiary farmers, are still not part of the vision and long-term goal of Mission 500.

8. It is observed that farmers from all social categories have participated in the Mission 500. The categories include farmers from General category, Other Backward Class (OBC), Scheduled Caste (SC), Scheduled Tribe (ST) and Vimyukt Jati and Nomadic Tribe (VJNT).

9. The mission has done well on the technical aspects of water conservation and has conserved **3,27,53,79,500** liters of water and **26,87,498** cubic meters of work by creating infrastructure; however, there is considerable scope for improvement on the social factors such as health sanitation, education, social inclusion, participation and strengthening village governance. Mission 500 can better sensitize human resources to the social aspects mentioned above.

10. It is observed that groundwater level has increased in all the studied villages. In recent times, it has been observed that the water availability for the people has increased throughout the year for drinking purposes and growing two crops annually.

11. The data shows that under Mission 500, soil and water conservation treatment has been done on 443.08 acres of land and out of that 359.39 acres of land comes under the irrigation. Though all treated land did not turn into irrigated land due to absence of irrigational source like dug well or borewell among few farmers. Secondly, some farmers already having their total owned land under the irrigation so in that condition irrigated land cannot be possible to expand the irrigated after the implementation of soil and water conservation activities under Mission 500.

12. It is observed that crops diversification has happened in vegetables category where water conservation activities have been implemented. At present, farmers are taking more cash crops like lemon, sweet lemon (mosambi) and banana in these villages.

13. In most of these villages, the out migration of labourers has decreased.

14. It is also observed that wage rates have been increased from rupees 200 to 250 for female and rupees 250 to 300 for the male labourers because of increased demand for labour in the farms.

15. One of the observations of the community is that only some of the farmers participated in the project. Some of the reasons cited are lack of information, lack of money, lack of time and not being convinced about the project.

16. At the village level the project has helped in resolving issues related to sharing of water, issues related to labour wages, issues related to boundary of farmland and farm road which have been solved with community leaders and Paach Patil team.

17. One of the areas where the project can work is to develop a strategy to increase the involvement of small and marginal farmers whose present involvement in the project is less compared to their counterparts.

18. The project can also work on improving women's participation in the project which is presently lacking.

19. The Mission 500 project should have an integrated watershed management strategy, including social, technical and environmental feasibility in planning, execution and evaluation of the project.

20. Mission 500 mainly focuses on water conservation aspects and concentrates less on soil conservation. Also, the mission should look at an integrated approach of watershed management where it focuses on ‘ridge to valley’ approach rather than on the basis of farm road or nala direction instead of slope of watershed. The Mission 500 team is aware of the ridge-to-valley approach for watershed management but could not take it ahead because of the funding challenges and availability of volunteers. Thus, they have been more realistic in their approach and have used the local available knowledge for the execution of the project.

21. The government, NGO and people’s movement have implemented several water and land management projects in the last thirty years; still, many areas faced water scarcity in domestic and agriculture domains. Partly, this is happening because these agencies have concentrated less on development of norms for water usage at the village level which Mission 500 can work on.

22. Water should be treated as a public commodity rather than private property. Each village should do the village micro planning for cropping patterns and use of surface and groundwater to control the overuse of water. At the same time, cropping patterns should be developed according to water availability per person in the vicinity.

23. Whoever creates additional water resources becomes the primary stakeholder of water use. Building a governance system that can tap the potential of gram panchayat, MGNREGA and local communities is imperative to sustain the mission's vision. They can also use the opportunity to expand the financial support base by availing gram-panchayat developmental funds or MGREGA’s fund for water conservation activities.

DR. UJJWALKUMAR CHAVHAN: FACE AND BACKBONE OF MISSON 500 LITRES WATER STORAGE

Dr. Ujjwalkumar Chavhan (IRS) is a man of great character, his journey form medical practitioner to Indian Revenue Service officer is quite an inspiration to young aspirant minds. He his hailing from the Dhamangaon (one of the project villages) village of Jalgaon district, Maharashtra where he conceptualised the Mission 500 while working on the water conservation activities. The experience he and his team gain from the work in Dhamangaon became working model for current functioning of the Mission. It was very emotional decision for Dr. Ujjwalkumar Chavhan to initiate the water conservation movement from his own village. As he felt responsible to give it back something in return to his own birthland after moving to Mumbai as a reputed government officer. Though he faced lots of hurdles in the Dhamangaon even felt to give up on the Mission but the staunch followers of him in the village never let him down the guards. These volunteers became the core team of Mission 500 and later called as Paach Patil.

PAACH PATIL TEAM: MISSION 500 CRORE LITERS WATER STOARGE

Dr. Ujjwalkumar Chavhan (IRS)	Shrikant Paygavhane
Shekhar Nimbalkar	Savita Rajput
Jitendra Pardeshi	Eknath Malatkar
Sandeep Rathod	Sanjay Pate
Prashant Gaikwad	Dinesh Jadhav
M.D. Deshmukh	Sushant Bhilare
Rahul Patil	R. M. Patil
R. D. Patil	Kiran Patil
Abhijit Pawar	Arasta Malatkar
Tushar Nikam	Milind Deokar
Pankaj Pawar	Devendra Singh Patil

ROTARY CLUB OF CHEMBUR

THE PARTNER FOR SOCIAL WELFARE AND DEVELOPEMNT

Rotary Club of Chembur is a Constituent of Rotary International, recognized by United Nations as one of the top Five NGOs of the World in service to Humanity. It is a Global Network of 1.4 million friends, leaders and problem solvers representing 46000+ Rotary Clubs located in about 200 countries of the World. Rotary Club members believes that they have a shared responsibility to take action on our World`s persistent issues. These members, through their Clubs, have been working since last 118 years in the World to (I) Promote Peace, (II) Fight Disease, (III) Provide Clean Water, Sanitation and Hygiene, (IV) Save Mothers and Children, (V) Support Education, (VI) Grow Local Economies and (VII) Protect the Environment.

Rotary Club of Chembur, chartered in 1964, in its 59 glorious years, has been undertaking various Community Development Projects to benefit the community, particularly the underprivileged strata.

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List of Abbreviations

AFRI: Arid Forest Research Institute

bcm: Billion Cubic Meters

BJS: Bhartiya Jain Sanghatana

CMWSSB: Chennai Metro Water Supply and Sewerage Board

CREDAI: The Confederation of Real Estate Developers' Associations of India

CSE: Centre for Science and Environment

CSWCRTI: Central Soil and Water Conservation Research and Training Institute

CWC: Central Water Commission

DORF Ketal: Drilling Oil Refining Fuels and Ketone Aldehydes

FGD: Focus group discussion

GOM: Government of Maharashtra

ICAR: Indian Council of Agricultural Research

IISc: Indian Institute of Science

IIT: Indian Institute of Technology

IRS: Indian Revenue Service

IWMI: International Water Management Institute

JCB: Joseph Cyril Bamford

KISWRMIP: Karnataka Integrated and Sustainable Water Resources Management Investment Program

MGNAREGA: Mahatma Gandhi National Rural Employment Guarantee Act

mm: Millimetre

NBSS&LUP: National Bureau of Soil Survey and Land Use Planning

NGO: Nong Governmental Organisation

NIRDPR: National Institute of Rural Development and Panchayati Raj

NRDWP: National Rural Drinking Water Program

OBC: Other Backward Class

SC: Scheduled Caste

SDG: Sustainable Development Goals

ST: Scheduled Tribe

TISS: Tata Institute of Social Sciences

TNRDP: Tamil Nadu Rainfed Area Development Program

UNEP: United Nations Environment Programme

UNGA: United Nations General Assembly

VJNT: Vimyukt Jati and Nomadic Tribe

WOTR: Watershed Organisation Trust

Introduction

CHAPTER 1: INTRODUCTION

Social movements related to watershed management in India have been instrumental in reshaping the nation's environmental and developmental paradigms. These movements, spanning several decades, have evolved in response to the growing recognition of the importance of sustainable resource management. The origin of India's watershed management initiatives can be traced back to the 1970s and 1980s when the country faced a pressing need for sustainable agricultural practices. During this period, the nation's agricultural sector was grappling with water scarcity and soil erosion issues, necessitating a fundamental shift in resource management.

The Chipko movement holds a significant importance in the natural resource management. It was spearheaded by Sundarlal Bahuguna. This grassroots movement began in the Himalayan region. It was characterized by villagers hugging trees to protect them from loggers. Beyond this symbolic act, the Chipko movement was a poignant reminder of the interdependence between forests and local livelihoods. Notably, it influenced national policy changes, most notably the enactment of the Forest Conservation Act in 1980.

Amidst these movements, Rajendra Singh, the "Waterman of India," emerged as a prominent advocate for watershed management. His efforts in the 1980s and 1990s led to the revitalisation of several rivers in Rajasthan through traditional water harvesting techniques. His work demonstrated the potential of community-driven water management, laying the groundwork for subsequent initiatives.

Following the Chipko movement, the Narmada Andolan, led by Medha Patkar, emerged in the mid-1980s. This movement was a response to the construction of large dams on the Narmada River, highlighting concerns about the displacement of local communities and ecological degradation. It assumed national and international significance by shedding light on the socio-environmental consequences of mega-dam projects. Consequently, it led to re-evaluating some dam projects and a growing consensus on the importance of comprehensive impact assessments.

The 1990s and 2000s witnessed a shift in the narrative of Maharashtra, where a series of grassroots movements showcased the practical potential of watershed management at the village level. Leaders such as Vilasrao Salunke, Anna Hazare, Popatrao Pawar, and Bhaskar Pere Patil played pivotal roles in these initiatives. Their work went beyond water conservation to encompass holistic development, emphasizing sustainable agriculture, organic farming, and self-sufficiency. These local movements led to tangible outcomes, including increased livelihoods and reduced poverty in their regions. Also, in the 1990s, the Indo-German Watershed Project symbolised international collaboration for sustainable development. This project, founded on the principles and lessons learned from previous grassroots movements, prioritized technical support, capacity building, and community engagement. Its contributions included disseminating improved water and soil management

practices, enhancing rural livelihoods, and strengthening bilateral cooperation between India and Germany in sustainable development.

Collectively, these movements form a cohesive narrative, each building upon its predecessors' lessons and successes. They underscore the power of collective action in addressing environmental challenges, raising awareness, influencing policies, empowering local communities, and fostering sustainable development. The Mission 500 initiative in Jalgaon district can be seen with this perspective in Maharashtra.

1.1. Mission 500: A Vision of Water Security

Mission 500's goal is to conserve 500 Crore litres of water in the Khandesh region of Maharashtra, which is among Maharashtra's backward and drought-prone areas. The Khandesh region in Maharashtra has had a long history of drought and water scarcity, which has led to a decline in agricultural productivity, fodder shortage, and migration of people in search of livelihood. The impact of drought extends beyond agriculture and affects people's social and cultural aspects, as debt taken for daughter's marriages and loans for immediate health care exacerbate their vulnerability and poverty. While small and middle peasants can migrate, big farmers cannot afford it, and leaving big farms behind will make them more vulnerable compared to their counterparts. Inadequate water availability and unequal water distribution have resulted in conflicts and quarrels in the study area, particularly in four villages, where only those who own wells and bore wells can survive. Rainfall is also uneven, and average rainfall is not sufficient. Thus, water conservation becomes critical in these areas, and the government and non-government organizations have implemented various water conservation programs in this region.

Mission 500 is working on the above challenges faced by the farmers and are trying to empower them. Dr. Ujjawalkumar Chavhan (IRS) was inspired to start this initiative when he witnessed the death of a large farmholder in his native village of Dhamangaon by suicide due to crop failure. This incident led Dr. Chavhan (IRS) to think that if such a prominent landholder was facing water scarcity issue and taking such drastic measures, what would be the case for small and marginal landholders? Thus, he initiated the program in his native village of Dhamangaon in 2017, since then, the program has grown by leaps and bounds and spread to more than 100 villages in Maharashtra.

1.2. Visionary Leadership and Backbone of the Project

The program's uniqueness is the decentralisation and volunteerism of the Paach Patil group. The "Paach Patil" is a group of people who volunteer for the activities and coordinate activities like coordinating between the funding agencies and the deserving recipients. The word "Paach Patil" has its origins in medieval Maharashtra, where people who planned and were responsible for a village were called Patil; the term "Paach Patil" is used today to denote the person who takes responsibility in five villages and works on the implementation and coordination of the project. The "Paach Patil" initiates the activities only when they see involvement of local people and cooperation of Gram panchayat. One of the main strengths of this initiative is that it is completely volunteer-based and they have a tagline for their group which is "Put the diesel and use the Machine".

Picture 1: Grassroot level awareness generation by Dr. Ujjawalkumar Chavhan (IRS) in Dhamangaon

Picture 2: Village meeting facilitated by Dr. Ujjawalkumar Chavhan (IRS) in Dhamangaon during Covid 2019

1.2 Volunteerism and Community Leadership

The “Paach Patil " team creates awareness among the farmers through WhatsApp groups and word of mouth about the project's objectives. They guide the people on how they can benefit from the program and their role in its success. Once the farmers have become acquainted with the program, they take responsibility for the diesel expenses for the poclain/ JCB machine and food for driver. The machine will be made available by the Paach Patil team, and the machine rent is paid by funding agencies. Paach Patil volunteers are responsible for all the coordination among all involved stakeholders. These machines are then used for various activities like desilting of dams, widening and deepening of rivers, canals, border walls, farm roads, small check dams, soak pits for wastewater from houses and cow sheds, well recharge, common farm ponds, levelling farms and bandh-bandisti (Boundary Embankment & Bunding).

One of the essential elements of this initiative is Jan Bhagidari (Community Participation), where people are not just the beneficiaries but are stakeholders in the action taken and also participate through the investment of time and money. Another element of this mission is commitment to community participation and timely program completion.

The program's primary challenge in the initial stages was trust between farmers and the “Paach Patil” team. The farmers were doubtful about why the Mission 500 team wanted to help them and what is the benefit of “Paach Patil” in taking this initiative. Once they saw the work and spent time discussing with Paach Patil a trust was developed which led them to participate in the program. Today, there is a waiting list of farmers to implement the program in their villages and farms as they have seen the project's benefits. Though there is the issue of time constraints and the availability of funding and machines, Mission 500 is trying hard to mitigate these issues through local support and innovative ideas. The program has a colossal replicability potential in Maharashtra and across India.

1.3. Donor Agency Support

Several NGOs have played a vital role in this activity and have rendered their support to this project. A few NGO’s namely the Rotary Club of Chembur, Rotary Club of Panvel, Sakal Relief Fund, Bhartiya Jain Sanghatana (BJS), DORF Ketal Chemical Foundation, Tarun Bharat Sangh, CREDAI, Pune and NAAM Foundation have played a leading role in this initiative.

The present study area for this research was Jalgaon district of Maharashtra, which geographically falls under the rain shadow region and gets approximately 700 mm of average rainfall annually. Until recently, most streams and dug wells would go dry by January or February; however, in some places where they had implemented the stream widening and deepening activities, they observed an increased water which extended till April/May. This extended water availability helped villagers decrease their dependency on water tankers, enabling farmers to grow extra crops and reducing their vulnerability. Dhamangaon, Pimpalgaon, Lonje and Ranjangaon villages were selected for the study as lot of work was done in this region. Here it was observed that most beneficiaries were satisfied with the

implementation of Mission 500 as they witnessed a positive change in the water levels in their farms which led to various benefits such as increased income and crop production.

Picture 2: Rainwater in stream after desilting, widening and deepening activities

Literature Review

CHAPTER 2: LITERATURE REVIEW

Water is necessary for all living things' development, nutrition, and survival. Its primary need is drinking water, or potable water, to fulfil fundamental living needs. Water is an irreplaceable natural resource (Rajagopalan, 2015). Rivers and streams, wells, including drilled, tube, borewells, handpumps, pipelines, and taps, are all sources of drinking water. Pipelines and taps are almost solely found in metropolitan areas in India, however lakes and rivers are where the water comes from, where it is then transported and stored in reservoirs. Water is essential for plant growth and food production.

Water has two purposes for the development of plants. It aids in the absorption of nutrients and keeps plant temperature within acceptable bounds. Rainfall, rivers, streams, rivulets, canals, lift irrigation systems like check dams, wells—tube wells, dug wells, borewells; tanks, and ponds—all provide water for growing food. There are both conventional and contemporary methods for getting and using water for agriculture, and they frequently work together. There are instances where just one or the other sort of system exists.

The significance of irrigation in agriculture has been highlighted by Shah (2000), who underscores the importance of secure access to irrigation for small landholders. It enables crop diversification, leading to increased income from food and cash crops, while creating year-round employment opportunities. The expansion of irrigation reduces the dependence on land for agrarian wealth creation and strengthens the entitlements of the poor to food and nutrition.

Water harvesting practices refer to collecting and storing rainwater and runoff for later use. These practices have been used for centuries in arid and semi-arid regions worldwide and are particularly important in areas with limited or irregular water resources. Water harvesting practices can range from simple techniques like gutters and storage tanks to more complex systems, such as check dams and recharge wells.

In Maharashtra, water harvesting practices have become increasingly important due to the state's growing population and water scarcity issues. The state has experienced significant droughts and water shortages in the past and is expected to face more severe water stress in the future due to climate change and rapid urbanisation. As a result, the government and local communities have implemented various water harvesting practices to conserve and manage water resources more effectively.

Chalisgaon, located in the Jalgaon district of Maharashtra, is one region where water harvesting practices have been implemented to address water scarcity issues. The region is predominantly rural, with agriculture as the local communities' primary income source. The area has experienced severe droughts in the past, which have significantly impacted agricultural production and the livelihoods of local communities. As a result, the government and local communities have taken steps to promote and implement water harvesting practices to improve water availability and ensure sustainable agriculture.

By studying the socio-economic impact of water harvesting practices in Chalisgaon, Maharashtra, this research aims to contribute to understanding the effectiveness of water harvesting practices in addressing water scarcity issues and improving livelihoods in rural communities.

2.1 Sustainable Development Goals and Water

Water is an invaluable instrument for enhancing sustainability. The UNGA and its members' endorsement of several Sustainable Development Goals (SDGs) in September 2015 heavily relies on the sustainability of water resources (Nayak et al., 2019). Nearly every SDGs have either a close or distant connection to water. Water enables people avoid hunger (SDG 2). and Sanitation and clean water (SDG 6). To satisfy the demand for diverse reasons and uphold a sustainable community system, adequate water availability for agricultural production is unavoidable.

Furthermore, to these two goals, the subsequent SDG are also affected by water availability. SDG1: End poverty in all its manifestations everywhere; SDG 3: Ensure universal access to healthy lifestyles and promote social and economic progress; SDG 11: Ensure inclusive, safe, resilient, and sustainable cities. Sustainable consumption and production patterns (SDG 12), immediate action to combat climate change and its effects (SDG 13), conservation and sustainable use of oceans, seas, and marine resources (SDG 14), sustainably managed forests, halting and reversing desertification, stopping, and reversing land degradation, and halting biodiversity loss (SDG 15) are just a few of the SDGs that need to be addressed (Nayak et al., 2019). Water is the lifeblood of any community. Small-scale water collection and conservation is essential to overcome water scarcity.

2.2. Importance of Water Harvesting

The demand for water has been steadily increasing worldwide, driven by factors such as population growth, socioeconomic development, and changing consumption patterns. As noted by Bansil (2004), the total estimated utilizable freshwater for the entire world is around 9000 bcm, with about 3500 bcm intercepted by dams and reservoirs, resulting in a total of 12500 bcm. The sources of water include mountain water, which provides drinking water, agricultural water, electricity generation, and industrial water for more than half of the world's population.

Moreover, Iyer (2007) highlighted that major water problems such as insufficient irrigation water and poor water quality emerged in the 1980s, when there was an increase in water-intensive crop cultivation during the agricultural revolutions taking place in different parts of the world. Groundwater levels have reached an alarming stage and are being depleted with each passing year.

The aim of rain harvesting in agriculture is to mitigate uncertainty in water scarcity (Pandey et al., 2003). Similarly, Oweis and Hachum (2006) emphasized the importance of water harvesting, especially in arid and semi-arid regions, to overcome the water scarcity and meet the increasing demand for water. They noted that water harvesting could increase the

productivity of rainfed agriculture, provide water for domestic and livestock use, and replenish groundwater resources. Water harvesting techniques, such as rainwater harvesting, surface water harvesting, and groundwater recharge, have been successful in increasing the availability of water in many areas.

Additionally, Gashaw et al. (2016) studied the impact of water harvesting technologies on crop productivity and water use efficiency in Ethiopia. They found that water harvesting technologies, such as tied ridges, stone bunds, and planting pits, increased crop productivity and water use efficiency. The authors also noted that water harvesting technologies can help smallholder farmers cope with climate change and variability by providing a buffer against drought and increasing the reliability of rainfall for crop production.

The availability of groundwater is affected by both natural conditions, such as rainfall and evapotranspiration, and human activities like pumping from the aquifer and improper waste disposal (Groundwater Yearbook, 2013-14). Insufficient water conservation practices exacerbate the problem of drought, as noted by Paranjape (2004).

Furthermore, Shah et al. (2001) highlighted the alarming decline of sustainable groundwater balance in many regions worldwide. Overdraft, inadequate drainage, insufficient conjunctive use, and pollution from agricultural, industrial, and other human activities are three major issues that contribute to groundwater depletion. These issues have serious implications for the sustainability of groundwater resources and the livelihoods of those who rely on them. Therefore, it is important to develop effective water management strategies and conservation practices to ensure the long-term sustainability of this vital resource.

2.3. Indian Water Scenario

Water scarcity is becoming a pressing issue in India, fuelled by changes in cropping patterns, mismanagement of available resources, and inefficient water usage practices. Bansil (2004) emphasized that access to clean and sufficient water is essential for human, animal, and economic activities, yet the current water situation in India is worsening. Groundwater depletion in states like Tamil Nadu, Punjab, and Haryana, where agriculture is a significant contributor to the economy, is alarming (Saranga & Kumar, 2018). The unsustainable use of water resources and inadequate rainfall conservation technology are the primary factors contributing to the water crisis in these regions (Bokil, 2000).

The depletion of groundwater tables in India is primarily due to the mismanagement of water resources and inefficient irrigation practices, according to Saranga & Kumar (2018). Despite having abundant water sources, the rapid population growth in India has led to an increasing demand for water, coupled with its inefficient use in agriculture activities. As a result, Bansil (2004) predicted that water availability per capita is expected to reduce to 662 cubic meters by 2050, creating severe drought situations in metropolitan cities. Bansil also highlighted that rainfall in India is highly uneven, and there is a need for proper infrastructure to conserve water.

It can be seen across wide literature that the mismanagement of water resources, inefficient irrigation practices, and the rising demand for water due to population growth are the major

factors contributing to water scarcity in India. The situation is alarming, particularly in states where agriculture is a significant contributor to the economy, and urgent measures need to be taken to conserve water and manage it efficiently.

2.4. Overview of Water Harvesting Practices in Maharashtra

Maharashtra is one of the most water-stressed states in India, with limited and irregular water resources. According to the Central Water Commission (CWC), the state has a water availability of just 1,460 cubic meters per capita per year, which is much lower than the national average of 1,545 cubic meters per capita per year (CWC, 2018). This has led to water scarcity issues, particularly in rural areas where agriculture is the primary source of livelihood.

Water harvesting practices have become increasingly crucial in Maharashtra to address water scarcity issues and ensure sustainable agriculture. These practices have increased water availability and improved agricultural productivity in water-stressed regions (Sekhar and Somashekar, 2018). Studies have shown that adopting water harvesting practices in Maharashtra has led to a significant increase in water availability for irrigation and domestic use (Patil et al., 2019).

In addition, water harvesting practices can also have positive socio-economic impacts on rural communities. Studies have shown that implementing water harvesting practices can lead to an increase in agricultural productivity and income, as well as the development of new livelihood opportunities (Jain et al., 2016). Water harvesting practices can also contribute to improving rural infrastructure, such as roads and schools, and developing community-based institutions (Jain et al., 2016).

2.5. Water Harvesting in the Study Area

Water harvesting practices have been implemented in Chalisgaon to address the water scarcity issues faced by the region. These practices include the construction of various types of structures, such as check dams, farm ponds, and percolation tanks, to capture and store rainwater (Jain et al., 2016). The adoption of these practices has led to an increase in water availability and agricultural productivity, as well as the development of new livelihood opportunities for local communities.

Check dams are one of the most implemented water harvesting structures in Chalisgaon. These structures are built across seasonal streams and nullahs to capture and store rainwater. Studies have shown that the construction of check dams has led to a significant increase in groundwater recharge and water availability for irrigation and domestic use (Bhattacharjee and Mehta, 2019).

Farm ponds are another commonly implemented water harvesting practice in Chalisgaon. These ponds are constructed on farms to capture and store rainwater for use in irrigation. Studies have shown that the construction of farm ponds has led to an increase in crop yields and agricultural productivity, as well as an increase in income for local farmers (Jain et al., 2016).

Percolation tanks are also commonly used in Chalisgaon to improve groundwater recharge. These structures are built to allow rainwater to percolate into the ground, thus recharging the groundwater table. Studies have shown that the construction of percolation tanks has led to a significant increase in groundwater recharge and water availability for domestic use (Patil et al., 2019).

The implementation of water harvesting practices in Chalisgaon has had significant positive impacts on water availability and agricultural productivity, as well as the socio-economic development of the region. However, challenges such as lack of awareness, funding, and technical expertise have also been identified as barriers to the widespread adoption of water harvesting practices in Chalisgaon (Jain et al., 2016).

2.6. Adaptation and Implementation

2.6.1. National Adaptations and Implementations of Water Harvesting

In India, water harvesting has been promoted as a means of addressing the country's growing water scarcity and improving water security. The Indian government has implemented a range of water harvesting initiatives at the national level to support sustainable water use.

One of the most significant initiatives is the National Rural Drinking Water Program (NRDWP), which was launched in 2009 with the aim of providing safe and adequate drinking water to rural communities. The program includes provisions for rainwater harvesting, groundwater recharge, and watershed development, among other measures, to improve water availability in rural areas (Government of India, 2011).

2.6.2. State-level Adaptations and Implementations of Water Harvesting

Several states in India have implemented their own water harvesting programs to address local water scarcity issues. For example, the state of Maharashtra has implemented the Jalyukt Shivar Abhiyaan, which aims to make the state drought-free through the construction of water conservation and management structures. The program includes the construction of farm ponds, check dams, and contour bunding to conserve rainwater and recharge groundwater (Government of Maharashtra, 2016).

In the state of Karnataka, the government has implemented the Varuna Mitra program, which promotes the installation of rainwater harvesting structures in residential and commercial buildings. The program provides financial incentives and technical assistance to encourage the adoption of rainwater harvesting systems (Government of Karnataka, 2018).

Similarly, the state of Gujarat has launched the Sujalam Sufalam Jal Abhiyaan, which aims to recharge groundwater and increase water availability through the construction of check dams, farm ponds, and other water harvesting structures. The program also includes the removal of silt and debris from existing water bodies to increase their storage capacity (Government of Gujarat, 2019).

In Karnataka, the state government has implemented the Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP) to promote

sustainable water use and management. The program includes provisions for rainwater harvesting, groundwater recharge, and watershed management, among other measures, to address the water scarcity issues in the state. The program also emphasizes the participation of local communities in the planning and implementation of water harvesting structures (World Bank, 2022).

In Maharashtra, the government has implemented several water harvesting initiatives to address the water scarcity issues in the state. The state government launched the Jalyukt Shivar Abhiyan (Water-Rich Farming Scheme) in 2015, with the objective of making Maharashtra a drought-free state by 2019. The scheme focuses on creating rainwater harvesting structures such as farm ponds, percolation tanks, check dams, and contour trenches to recharge groundwater, increase soil moisture and reduce soil erosion.

Under this scheme, the state government has allocated funds to each village to build and maintain water conservation structures. The scheme is implemented through the participation of local communities, with a focus on water conservation, soil and moisture conservation, and sustainable farming practices (Government of Maharashtra, 2022).

The Maharashtra government has also implemented the Mukhyamantri Gramin Peyajal Yojana (Chief Minister's Rural Water Supply Scheme), which provides financial assistance for the construction of rainwater harvesting structures, including farm ponds, check dams, and percolation tanks, in rural areas (Government of Maharashtra, 2018).

Similarly, in Tamil Nadu, the state government has implemented the Tamil Nadu Rainfed Area Development Program (TNRDP) to support rainwater harvesting and improve water availability in rainfed areas of the state. The program includes provisions for the construction of rainwater harvesting structures, such as farm ponds, check dams, and percolation tanks, as well as the promotion of sustainable agriculture practices, such as crop diversification and agroforestry (Department of Agriculture, Government of Tamil Nadu, n.d.).

In addition to state-level initiatives, many local governments in India have also implemented their own water harvesting programs to address local water scarcity issues. For example, the Pune Municipal Corporation has implemented a rainwater harvesting program that encourages residents to install rainwater harvesting systems in their homes to reduce their reliance on municipal water supplies (Pune Municipal Corporation, n.d.).

Similarly, the Brihanmumbai Municipal Corporation in Mumbai has launched the Rain Centre program, which provides technical assistance and financial incentives to residents and businesses for the installation of rainwater harvesting systems (Brihanmumbai Municipal Corporation, 2020).

2.7. Socio-Economic Impact of Water Harvesting Practices

2.7.1. Overview of Socio-Economic Impact of Water Harvesting Practices

1. **Increased Agricultural Productivity:** The impact of water harvesting on agricultural productivity in India cannot be overstated. India is a country with a predominantly

agricultural economy, and its farmers rely heavily on rainfall to irrigate their crops. The implementation of water harvesting techniques such as contour bunding, check dams, and farm ponds has led to an increase in the availability of water for irrigation, which has resulted in a significant increase in crop yield. A study conducted by the Indian Council of Agricultural Research (ICAR) found that the use of water harvesting techniques led to an increase in crop yield by 10-20% in the areas where they were implemented (ICAR, 2015). This increase in crop yield has had a positive impact on the income of farmers, which has led to an improvement in their standard of living. This has also had a ripple effect on the economy, as the increase in income has led to an increase in demand for goods and services.

2. **Improved Livelihoods**: The impact of water harvesting on the livelihoods of rural communities in India has been significant. The implementation of water harvesting techniques has led to an increase in income and employment opportunities for rural communities. A study conducted by the Centre for Science and Environment (CSE) found that the implementation of water harvesting techniques has led to an increase in income for farmers and an increase in employment opportunities for rural communities (CSE, 2012). This has had a positive impact on the standard of living of rural communities, which has led to an improvement in their overall socio-economic conditions. The implementation of water harvesting techniques has also led to an increase in social capital and community participation in rural areas. A study conducted by the National Institute of Rural Development and Panchayati Raj (NIRDPR) found that the implementation of water harvesting techniques has led to an increase in community participation in water management and an increase in social capital in rural areas (NIRDPR, 2015).

3. **Mitigation of Drought:** The impact of water harvesting on the mitigation of drought in India has been significant. Drought is a common occurrence in India, and it has a significant impact on the country's agricultural productivity and economy. The implementation of water harvesting techniques has helped to mitigate the impacts of drought in the areas where they have been implemented. A study conducted by the Indian Council of Agricultural Research (ICAR) found that water harvesting has led to an increase in groundwater recharge, which has helped to mitigate the impacts of drought in the areas where it has been implemented (ICAR, 2015). Similarly, a study conducted by the Indian Institute of Technology (IIT) found that the implementation of rooftop rainwater harvesting has helped to mitigate the impacts of drought in urban areas (IIT, 2012). The implementation of water harvesting techniques has also led to an increase in the availability of water for irrigation, which has helped to mitigate the impacts of drought on agricultural productivity.

4. **Reduction of Soil Erosion:** The impact of water harvesting on the reduction of soil erosion in India has been significant. Soil erosion is a significant problem in India, and it has a significant impact on agricultural productivity and land degradation. The implementation of water harvesting techniques such as contour bunding, check dams, and trenching has led to a significant reduction in soil erosion in the areas where they

have been implemented. A study conducted by the National Bureau of Soil Survey and Land Use Planning (NBSS&LUP) found that the implementation of water harvesting techniques such as contour bunding and check dams has led to a significant reduction in soil erosion in the areas where they have been implemented (NBSS&LUP, 2016). Similarly, a study conducted by the Central Soil and Water Conservation Research and Training Institute (CSWCRTI) found that the implementation of water harvesting techniques such as contour bunding and trenching has led to a significant reduction in soil erosion in the areas where they have been implemented (CSWCRTI, 2014). The reduction in soil erosion has had a positive impact on agricultural productivity, as it has helped to conserve the soil nutrients and moisture, which are essential for crop growth. This has also led to a reduction in land degradation, which has had a positive impact on the environment.

5. **Improvement in Water Quality**: The impact of water harvesting on the improvement of water quality in India has been significant. The implementation of water harvesting techniques such as rooftop rainwater harvesting, and recharge wells has led to an improvement in the quality of water. A study conducted by the Indian Institute of Science (IISc) found that the implementation of rooftop rainwater harvesting has led to an improvement in the quality of drinking water in urban areas (IISc, 2012). Similarly, a study conducted by the Indian Institute of Technology (IIT) found that the implementation of recharge wells has led to an improvement in the quality of groundwater (IIT, 2014). The improvement in water quality has had a positive impact on human health, as it has reduced the incidence of water-borne diseases.

6. **Conservation of Biodiversity:** The impact of water harvesting on the conservation of biodiversity in India has been significant. The implementation of water harvesting techniques such as check dams, farm ponds, and recharge wells has led to an increase in the availability of water for vegetation, which has helped to conserve biodiversity. A study conducted by the Indian Institute of Science (IISc) found that the implementation of water harvesting techniques has led to an increase in the density of plant species in the areas where they have been implemented (IISc, 2014). This has had a positive impact on the environment, as it has helped to conserve the biodiversity of the region. The conservation of biodiversity has also had a positive impact on the economy, as it has led to an increase in ecotourism in the areas where biodiversity has been conserved.

2.7.2. Case Studies of the Impact of Water Harvesting Practices

1. **Rooftop Rainwater Harvesting in Chennai, India**: In Chennai, India, the implementation of rooftop rainwater harvesting has led to a significant increase in the availability of water for domestic use. The Chennai Metro Water Supply and Sewerage Board (CMWSSB) initiated a program to promote rooftop rainwater harvesting in 2003, and by 2011, over 100,000 households had implemented the technique (UNEP, 2012). As a result, the availability of water for domestic use has

increased by up to 50% in some areas (UNEP, 2012). This has had a positive impact on the lives of the residents, as it has reduced their dependence on water from external sources, which can be expensive and unreliable.

2. **Farm Ponds in Maharashtra, India:** In Maharashtra, India, the implementation of farm ponds has led to a significant increase in agricultural productivity and a reduction in the vulnerability of farmers to drought. Farm ponds are small reservoirs constructed on farms to capture and store rainwater. A study conducted by the Watershed Organisation Trust (WOTR) found that the implementation of farm ponds in Maharashtra led to a 40% increase in agricultural productivity and a 25% reduction in the vulnerability of farmers to drought (WOTR, 2011). This has had a positive impact on the livelihoods of the farmers, as it has increased their income and reduced their vulnerability to food insecurity.

3. **Check Dams in Rajasthan, India:** In Rajasthan, India, the implementation of check dams has led to a significant increase in groundwater levels and agricultural productivity. Check dams are small structures constructed across seasonal streams and nullahs to capture and store water. A study conducted by the Arid Forest Research Institute (AFRI) found that the implementation of check dams in the Alwar district of Rajasthan led to a 2–3-meter increase in groundwater levels and a 50% increase in agricultural productivity (AFRI, 2013). This has had a positive impact on the livelihoods of the farmers, as it has increased their income and reduced their vulnerability to food insecurity.

4. **Community-Based Groundwater Management in Bangladesh:** In Bangladesh, the implementation of community-based groundwater management systems has been successful due to strong community participation and cost-sharing. Community-based groundwater management involves the management of groundwater resources by local communities through the formation of water user groups. A study conducted by the International Water Management Institute (IWMI) found that the implementation of community-based groundwater management systems in the Barind Tract region of Bangladesh was successful due to strong community participation and cost-sharing (IWMI, 2010). The community contributed towards the cost of the project and were responsible for the management and maintenance of the groundwater resources. This has had a positive impact on the lives of the community members, as it has improved their access to water and increased their income through the cultivation of high-value crops.

5. **Cost-Sharing for Irrigation Systems in Nepal:** In Nepal, the implementation of irrigation systems has been successful due to cost-sharing between the government and the community. The government provides subsidies for the construction of irrigation systems, and the community contributes towards the cost of the project through labour and materials. A study conducted by the International Water Management Institute (IWMI) found that the implementation of irrigation systems in the Mid-Hills region of Nepal was successful due to cost-sharing between the government and the community (IWMI, 2012). This has had a positive impact on the

lives of the farmers, as it has improved their access to water and increased their income through the cultivation of high-value crops.

6. **Ralegaon Siddhi**: A case study conducted by the Indian Institute of Technology, Bombay, titled "Water Harvesting in Ralegaon Siddhi: A Model for Sustainable Rural Development" (2009), provides an in-depth analysis of the village's water conservation efforts. The study found that the village has been able to recharge its groundwater levels, which had been declining rapidly, by implementing several waters harvesting techniques such as construction of percolation tanks, check dams, and contour trenches. As a result, the village has been able to meet its water needs, and the excess water is now used for irrigation and other purposes.
7. **Hiware Bazar:** The study found that the village has been able to recharge its groundwater levels by constructing a series of check dams and percolation tanks. The villagers have also implemented rainwater harvesting techniques, such as rooftop harvesting, to collect rainwater for domestic use. The study found that the village has been able to increase its agricultural production and improve the livelihoods of its residents because of its water conservation efforts.

2.7.3. Factors Affecting the Socio-Economic Impact of Water Harvesting Practices

Water harvesting practices have been recognized as a promising approach to address the challenges of water scarcity and climate change in many regions of the world. However, the socio-economic impact of water harvesting practices can vary depending on several factors.

1. **Technology**: The technology used for water harvesting practices can affect the socio-economic impact of the project. The effectiveness and efficiency of the technology can impact the amount and quality of water collected, as well as the costs associated with the project. The case study of community-based rainwater harvesting in Kenya showed that the use of low-cost, simple technologies increased the sustainability and impact of the project (Rwehumbiza et al., 2014).
2. **Scale:** The scale of the water harvesting project can also impact its socio-economic impact. Small-scale projects may have limited impact on the community and may not be financially sustainable, while large-scale projects may be too costly and complex to implement. The case study of water harvesting practices in India showed that the scale of the project should be appropriate to the local conditions and resources available (Jain et al., 2013).
3. **Governance:** The governance structure of the water harvesting project can also impact its socio-economic impact. The involvement of the community in the decision-making process can increase their ownership and participation in the project, which can increase its sustainability and impact. The case study of community-based groundwater management in Bangladesh showed that community participation in the governance structure was critical to the success of the project (IWMI, 2012).

4. **Social and Cultural Factors:** Social and cultural factors can also affect the socio-economic impact of water harvesting practices. The case study of water harvesting practices in Rajasthan, India, showed that the project's success was dependent on the willingness of the community to accept and adopt the technology, which was influenced by social and cultural factors (Jain et al., 2013).
5. **Natural Resource Base**: The natural resource base, such as soil and vegetation, can also affect the socio-economic impact of water harvesting practices. The availability and quality of these resources can impact the success of the project, as well as the benefits derived from it. The case study of water harvesting practices in Tanzania showed that the success of the project was dependent on the natural resource base and the ability of the system to improve the soil and vegetation (Aronson et al., 2014).
6. **Economic factors:** Economic factors, such as the cost of implementing the project and the benefits derived from it, can also impact the socio-economic impact of water harvesting practices. The case study of community-based rainwater harvesting in Ethiopia showed that the costs associated with the project should be affordable and manageable for the community to ensure its sustainability and impact (Mekonnen et al., 2018).
7. **Policy and Regulatory Frameworks:** The policy and regulatory frameworks governing water harvesting practices can also impact their socio-economic impact. The existence of supportive policies and regulations can promote the implementation and sustainability of the project, while restrictive policies can hinder it. The case study of water harvesting practices in Kenya showed that the development of supportive policies and regulations was critical to the success of the project (Okotto et al., 2016).
8. **Climate and Environmental Factors:** Climate and environmental factors, such as rainfall patterns, temperature, and land use, can also impact the socio-economic impact of water harvesting practices. The case study of water harvesting practices in Ethiopia showed that the success of the project was dependent on the ability of the system to adapt to changes in the climate and the environment (Mekonnen et al., 2018).
9. **Capacity Building and Education:** Capacity building and education can also impact the socio-economic impact of water harvesting practices. The case study of water harvesting practices in Rajasthan, India, showed that the provision of training and education to the community on the technology and its benefits was critical to the success of the project (Jain et al., 2013).
10. **Gender and Social Equity:** Gender and social equity can also affect the socio-economic impact of water harvesting practices. The case study of water harvesting practices in India showed that gender and social equity considerations should be integrated into the project design and implementation to ensure its sustainability and impact (Jain et al., 2013).

Research Methodology

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Statement of the Problem

In case of Chalisgaon, despite the implementation of water harvesting practices, there is a lack of comprehensive understanding of the socio-economic impact of these practices on local communities and the factors influencing their adoption and implementation.

This problem statement highlights the need to examine the effectiveness of water conservation practices in improving access to water and reducing the impact of future droughts in Chalisgaon, as well as the social and economic factors that affect their adoption and implementation by local communities. The problem statement also implies that the existing literature on water harvesting practices in Maharashtra may be limited in scope and depth and that there is a need for further research to fill this knowledge gap.

By addressing this research problem, the study can contribute to our understanding of the impact of water harvesting practices on sustainable development in Maharashtra and inform policy and procedure for improving access to water in other regions facing similar challenges.

3.2. Scope of Study

- The study will provide a comprehensive understanding of the socio-economic impact of water harvesting practices in Chalisgaon, Maharashtra, and their effectiveness in addressing the water scarcity issues faced by the local communities.
- The study will contribute to the existing literature on water harvesting practices in Maharashtra and fill the gaps in knowledge, thus providing insights for future research on sustainable development in the region.
- The study will provide valuable information for local communities, policymakers, and practitioners, thus promoting sustainable development in Maharashtra and improving the quality of life for local communities.
- The study will focus on the socio-economic impact of water harvesting practices in Chalisgaon, Maharashtra.
- The study will use qualitative and quantitative research methods, including surveys and interviews.
- The study will compare the findings with the existing literature on water harvesting practices in Maharashtra.

3.3. Objectives of the Study

1. To examine the participation of farmers in the campaign, Mission 500
2. To understand the direct /indirect benefits of Mission 500 on farm production.

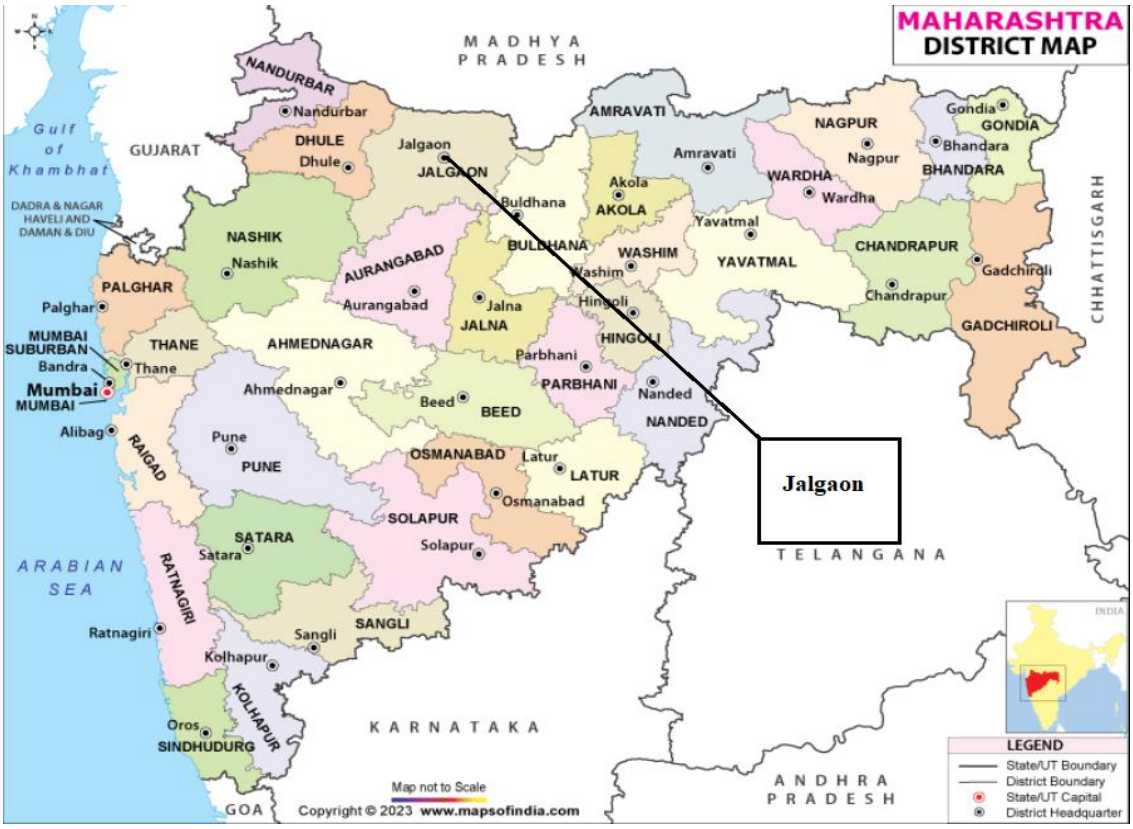
3. To assess the economic impacts on farmers' standard of living and impact on income.
4. To understand beneficiaries' perceptions and participation choices in the Mission 500 campaign.
5. To assess the water level (storage) increased due to watershed activities in the village.

3.4. Area of Study

This chapter provides an overview of the socio-economic and geographical characteristics of the study area based on secondary data. The socio-economic conditions of the site include demographic variables such as population, education, administrative and occupational structure, and other relevant factors. At the same time, geographical context comprises the area's location, climate, and rainfall patterns.

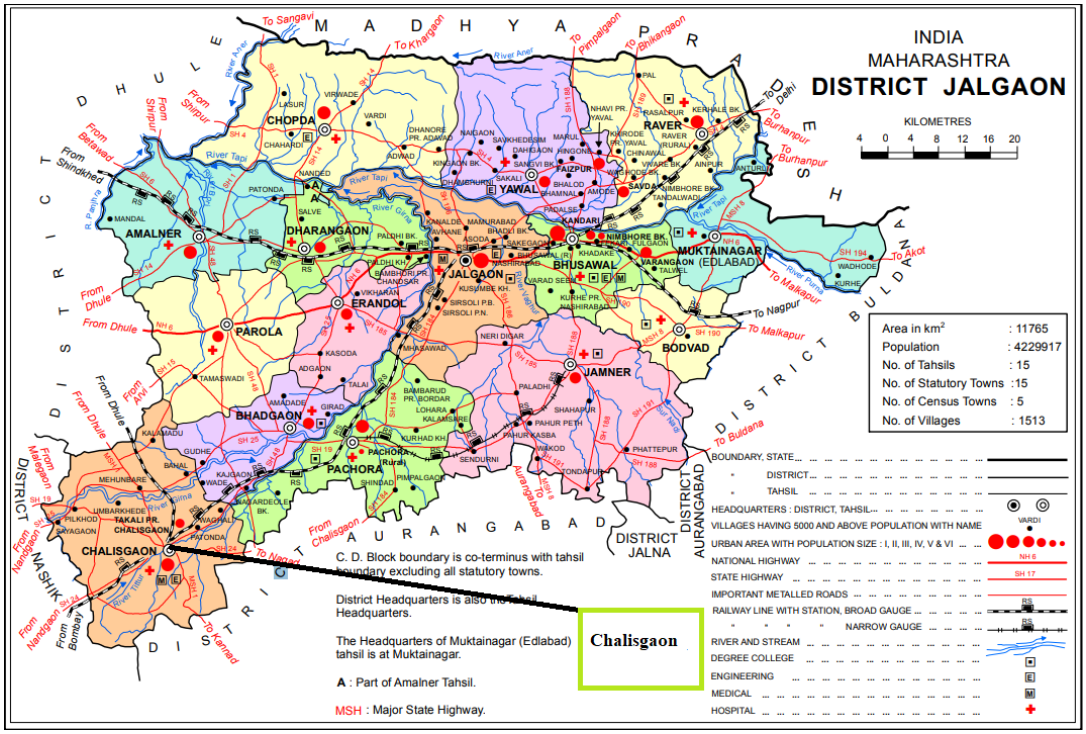
Picture 2: Data collection in Lonje village

Figure 1: Map of Maharashtra



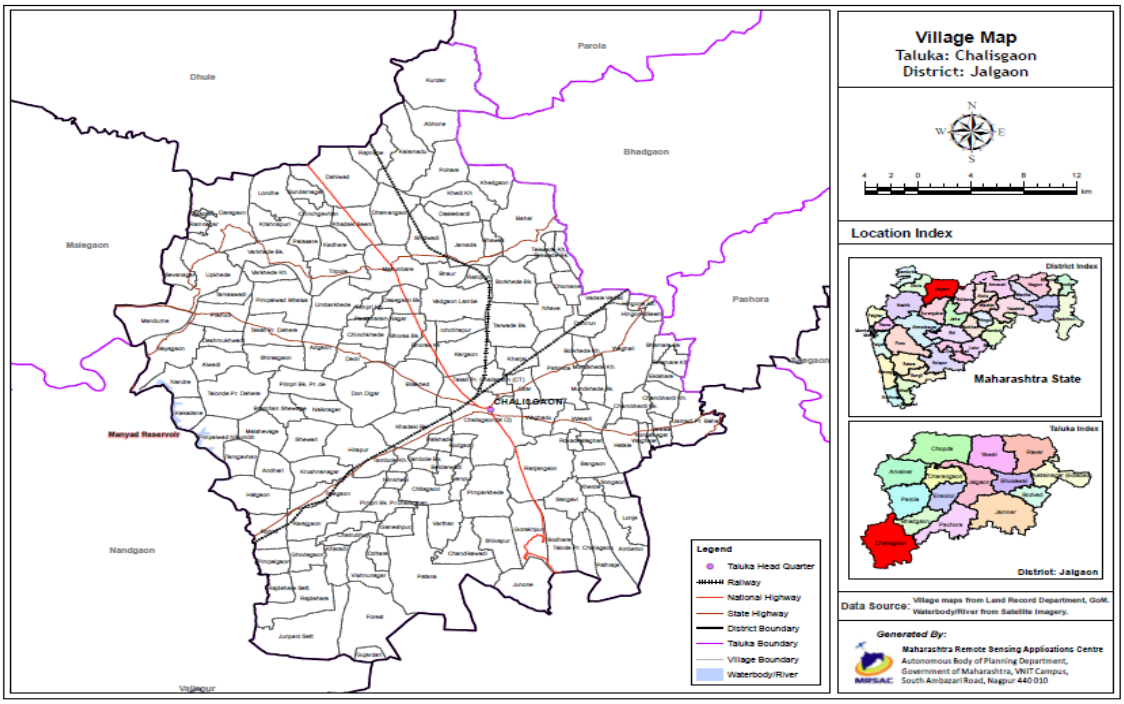
(N.B. Map may not be up to the scale. It is used only for the purpose of reference).

Figure 2: Jalgaon District Map



Source: District Census Handbook (2011), Jalgaon district

Figure 3: Map of Chalisgaon Block



Source: Maharashtra Sensing Application Centre, Nagpur

3.5. Geographical Location of the Study Area

Jalgaon District lies between 20 to 10' and 21 o 28' North Latitudes and 74 o 45' and 76 o 28' East Longitude in the north-central portion of the State. It is surrounded by Dhule and Nashik Districts to the west, Aurangabad and Jalna Districts to the south, Buldana District and Madhya Pradesh State to the east and Madhya Pradesh State again to the north.

3.6. Climate and Rainfall

The district experiences significant temperature fluctuations as it is far from the coast. The skies are generally clear or slightly cloudy, except during the monsoon season when heavy clouds and overcast conditions prevail. The air is usually dry, especially in the afternoons, except during the monsoon season. The year can be divided into four seasons: the cold season from December to February, the hot season from March to May, the monsoon season from June to September, and the post-monsoon season from October to November. December is the coldest month, with occasional cold waves affecting the district and causing the minimum temperature to drop to a few degrees above zero degrees Celsius. From March to May, the temperature rises steadily, reaching a mean daily maximum temperature of 42.5 degrees Celsius in May, the hottest month of the year. The onset of the monsoon season brings a drop in temperature and pleasant weather. By the end of September, with the withdrawal of the monsoon, the day temperature rises slightly before dropping rapidly in November.

The winds in the district are generally light to moderate, except during the monsoon season when they are stronger and blow predominantly from the south-westerly or westerly directions. The district experiences strong winds and widespread rains associated with monsoon depressions and post-monsoon storms. The district receives moderate rainfall, with slightly higher rainfall in the central and eastern portions compared to the western parts of the district. The variation in the annual rainfall in the district is significant, with the average annual rainfall being 763.6 mm. The monsoon season from June to September accounts for about 87% of the total rainfall, with July being the month with the highest rainfall. Winter precipitation is almost negligible in the district.

Long term (1999-2021) Rainfall Analysis, Jalgaon district, Maharashtra

YEAR	AVERAGE	NORMAL	DEPARTURE	CATEGORY
1999	605.8	719.9	-15.8494	Normal
2000	495.1	719.9	-31.2266	Moderate
2001	660.4	719.9	-8.26504	Normal
2002	758.5	719-9	5.361856	Normal
2003	949	719.9	31.82386	Excess
2004	655.8	719.9	-8.90401	Normal
2005	525.1	719-9	-27.0593	Moderate
2006	1261	719-9	75.16322	Excess
2007	642.2	719.9	-10.7932	Normal
2008	343_7	719.9	-24.4756	Normal
2009	724	719.9	0.569524	Normal
2010	858.9	719.9	19.30824	Normal
2011	616.2	719.9	-14.4048	Normal
2012	414.2	71Y9	-42.4642	Moderate
2013	414.2	719.9	-42.4642	Moderate
2014	714.1	719.9	-80567	Normal
2015	532.8	719.9	-25.9897	Moderate
2016	683.7	719.9	-5.0284	Normal
2017	525.5	719.9	-27.0038	Moderate
2018	432.6	719.9	-39.9083	Moderate
2019	996.6	719.9	38.43589	Excess
2020	914.5	719.9	27.03153	Excess
2021	938.6	719.9	30.37922	Excess

Rainfall departure: EXCESS: > +25; NORMAL: +25 TO -25; MODERATE: -25 TO -50; SEVERE: -50 TO -75; ACUTE: <75

(Source-website of Maharashtra Government: mahaagri.gov.in)

Firstly, looking at the average rainfall for the period of 1999-2021, we can see that it varies significantly from year to year, ranging from a low of 343.7 mm in 2008 to a high of 1261

mm in 2006. The average rainfall for the period is 668.56 mm. From this, we can see that the district experiences significant variations in rainfall from year to year.

To better understand the variation in rainfall, we can compare the average rainfall for each year with the normal rainfall for the district, which is 719.9 mm. By doing so, we can see that 9 out of the 23 years had normal rainfall, which accounts for nearly 40% of the total years. Furthermore, 4 years had excess rainfall, which accounts for around 17% of the total years. The remaining 10 years had moderate rainfall, accounting for around 43% of the total years.

Looking at the years with excess rainfall, we can see that they all occurred in the latter half of the period, with 2003, 2006, 2019, 2020, and 2021. These years could be indicative of a changing trend in rainfall patterns for the district, potentially due to climate change taking place in the country.

On the other hand, the years with moderate rainfall are more evenly distributed throughout the period, with some occurring in the first half, such as 2000 and 2005, and some occurring in the latter half, such as 2012 and 2018. When looking at the years with below-normal rainfall, we can see that they all happened in the first half of the period, with 2002 being the only exception.

Overall, the data suggests that the district experiences significant variations in rainfall from year to year, with around 40% of the years experiencing normal rainfall, around 17% experiencing excess rainfall, and around 43% experiencing moderate rainfall. Furthermore, there could be a trend of decreasing rainfall in the first half of the period and increasing rainfall in the latter half, potentially due to climate change.

3.7. Administrative Structure

Table 1: Administrative Structure of Jalgaon district

Serial No.	Tahsil	Number of Villages
1	Chopda	119
2	Yawal	91
3	Raver	117
4	Muktainagar	85
5	Bodwad	53
6	Bhusawal	50
7	Jalgaon	87
8	Erandol	65
9	Dharangaon	89
10	Amalner	154
11	Parola	116
12	Bhadgaon	59
13	**Chalisgaon**	**142**
14	Pachora	127
15	Jamner	159

Source: District Census Handbook (2011), Jalgaon district.

As per the administrative setup Jalgaon district has 20 towns and 1513 villages are spread over 15 tahsils, viz. Chopda (119), Yawal (91), Raver (117), Muktainagar (85), Bodwad (53), Bhusawal (50), Jalgaon (87), Erandol (65), Dharangaon (89), Amalner (154), Parola (116), Bhadgaon (59), Chalisgaon (142), Pachora (127) and Jamner (159).

3.8. Demographic Profile of the Study Area

Jalgaon district has a total population of 4,229,917, with males making up 51.94% (2,197,365) and females comprising 48.05% (2,032,552) of the district's population. The urban population in Jalgaon accounts for 31.74% (1,342,711) of the total population, while the rural population makes up 68.25% (2,887,206).

Regarding the distribution of Scheduled Castes and Scheduled Tribes, the district has a lower proportion of Scheduled Caste population than the state average at 9.20% (389,273) compared to the state's 11.81%. However, the district has a higher percentage of Scheduled Tribe population than the state average, accounting for 14.28% (604,367) of the district's total population compared to the state's 9.35%.

Overall, Jalgaon district has a relatively higher percentage of rural population and a slightly higher proportion of males. Additionally, there is a significant population of Scheduled Tribes in the district compared to the state average, while the Scheduled Caste population is relatively low.

Table 1: Demographic Profile of the district

Serial No.	Population (2011)	Maharashtra State	Jalgaon District
1	Total Population	112374333 (100)	4229917 (100)
2	Males	58243056 (51.82)	2197365 (51.94)
3	Females	54131277 (48.17)	2032552 (48.05)
4	Urban	50818259 (45.22)	1342711 (31.74)
5	Rural	61556074 (54.77)	2887206 (68.25)
6	Schedule Caste	13275898 (11.81)	389273 (9.20)
7	Schedule Tribe	10510213 (9.35)	604367 (14.28)

Source: District Census Handbook (2011), Jalgaon district.

3.9. Village Profiles

3.9.1. Dhamangaon

Dhamngaon is a bigger village with an area of 1249.80 hectares and 541 households. The total population of Dhamngaon is 2388, consisting of 1161 females and 1227 males. In terms of social composition, Dhamngaon has 27 individuals from the Scheduled Caste and 340 individuals from the Scheduled Tribe.

Regarding literacy, 1688 people in Dhamngaon are literate, with 766 females and 922 males able to read and write. In the workforce, Dhamngaon has a total of 1409 individuals, with 686 females and 723 males being part of the working population. Out of these, 443 people are engaged in cultivation, with 78 females and 365 males being cultivators. Additionally, 160 individuals work as agriculture labourers, with 106 females and 54 males in this category.

Mission 500 campaign started in 2017 in Dhamngaon village under the guidance of Dr. Ujjwalkumar Chavhan (IRS). In the year 2016, he organized 14 gram-sabhas to mobilize the community people of the village with the help of experts on watershed management, government employees, youth organizations, women's meeting, street play, Independence Day celebration and Shiv Jayanti celebration.

In the first year of the watershed conservation, the activities were supported by Jalyukt Shivar Abhiyan (Government of Mahrahstra Scheme), Siddhi Vinayak Trust and Sakal Relief Fund. With the help of these donors, they performed activities like nala widening and deepening, cement dams, bunding on 100-hectare land and a few soak-pits. Through these activities, fourteen crore litres of water storage were made available in the village in the first year, six crore litres in the second year and one crore litres in the third year of the campaign implementation, which led to a significant increase in the groundwater table increased water flow in Bharadi River, which used to be dry during the winter, remains water-stocked till March. Besides these environmental benefits, the mission positively impacted the economic and social dimensions of the village.

Picture 3: Bharadi River near Dhamngaon village

3.9.2. Pimpalgaon

Pimpalgaon is a village with an area of 541.47 hectares and 314 households. The total population of Pimpalgaon is 1452, with 687 females and 765 males. It has 139 individuals from the Scheduled Caste and 175 from the Scheduled Tribe. In terms of literacy, 894 people in Pimpalgaon are literate, with 553 females and 341 males being able to read and write.

In the workforce, Pimpalgaon has a total of 812 individuals, with 370 females and 442 males being part of the working population. Out of these, 328 people are engaged in cultivation, with 89 females and 239 males being cultivators. Additionally, 444 individuals work as agriculture labourers, with 256 females and 188 males in this category.

Mr. Vaibhav Deshmukh initiated the work of Mission 500 in Pimpalgaon, inspired by the success of Dhamngaon and Ranjangaon. It started in 2021 with the help of the Sakal Relief Fund and created 1.2 crore litres of water storage in 112 work hours. In 2022, Naam foundation sponsored the JCB machine for water conservation activities where 5.25 crore litres of water storage were created in 701 work hours.

Picture 4: Stream (nala) in Pimpalgaon village after implementation of Mision 500

3.9.3. Ranjangaon

Ranjangaon village administratively comes under the Chalisgaon block of Jalgoan district of Maharashtra. The total area of the village is 708 hectares where 971 household resides. The village's population is 4363, comprising 2242 males and 2121 females. The village's total scheduled caste (SC) population is 669 and the scheduled tribe population is 276. The total literate persons in the village are 2682; among them, 1155 are females and 1527 are males, indicating males are more literate than females.

The total work force in number is 2100 persons comprising 1226 males and 874 females also displays the greater participation of males in the work force. There are 235 persons involved in the agriculture sectors as cultivators, including 194 males and 41 females, pointing towards the skewed land ownership in favour of males in Ranjangaon village. Additionally, 1109 persons are working as agricultural labourers in the village, where 573 are males and 536 are females, slightly behind the male representation in the same occupation.

The project received the green light from Gram Sabha, Sarpanch and Gram Panchayat in 2018. It also got support from the civil society organisations and NGOs active in the villages, like Women and Youth organizations, Paani Foundation, Nimbalkar Foundation, Vasundhara Foundation, and Tanishka Mahila Mandal. Sakal Relief Fund was instrumental in providing funding to obtain poclain machine to undertake water and soil conservation activities and created five crore litres of water storage in the village.

Dr. Ujjwalkumar Chavhan (IRS), in the year 2018, trained 14 Jalmitras for an entire year by meeting them every month, where they learned different aspects of water conservation and personality development. Later, these Jalmitra became Paach Patil, a formidable backbone of the Mission 500 campaign. In 2019-2020, the Rotary Club of Chembur sponsored 255 hours of work and created five crore litres of water storage. In the last three years, 859 work hours of JCB and 831 work hours of Poclain machine have been used to create water infrastructure in Ranjangaon.

Picture 5: Stream in Ranjangaon Village

3.9.4. Lonje

Lonje village administratively comes under the Chalisgaon block of the Jalgoan district of Maharashtra. The village's total area is 2049 hectares, where 146 households reside. The village's population is 709, which consists of 391 males and 318 females. The village's total scheduled caste (SC) population is 108 and the scheduled tribe (ST) population is 293. The total literate person in the village is 384; among them 137 are females and 274 are males, indicating males are more literate than females in the village. The total work force in number is 295 persons comprising 181 males and 114 females also displays the greater participation of males in the work force. There are 25 individuals involved in the agriculture sectors as cultivators, including 23 males and 2 females, pointing towards the skewed land ownership in favour of males in Lonje village compared to Ranjangaon. Additionally, 245 persons work as agricultural labourers in the village, where 140 are males and 105 are females, indicating a proportionally lower representation of females in occupation compared to Ranjangaon village.

Mr Sandeep Rathod is Paach Patil of Lonje village. He is one of the most active Mission 500 Panch Patil team members. He initiated the Mission's work in the village in 2020, with funding from the Sakal Relief Fund, and created 22 crore litres of water storage using 255 hours of JCB machine. In 2021, the Rotary Club of Chembur provided funding for Mission's work, which helped to create 68 crore litres of water storage, while in 2023, the Naam Foundation funded 200 work hours of JCB machine in creating 19 crore litres of water storage in the village.

Picture 6: Stream desilting work in Lonje village

Table 2: Key data on Villages

Villages	**Ranjangaon**	**Lonje**	**Pimpalgaon**	**Dhamngaon**
Area of Village (in hectares)	**2049.00**	**708.00**	**541.47**	**1249.80**
Number of Households	**971**	**146**	**314**	**541**
Total Population	**4363**	**709**	**1452**	**2388**
Female Population	2121	318	687	1161
Male Population	2242	391	765	1227
SC Population	669	108	139	27
ST Population	276	293	175	340
Literate	**2682**	**384**	**894**	**1688**
Female	1155	137	553	766
Male	1527	274	341	922
Total Workers	**2100**	**295**	**812**	**1409**
Female	874	114	370	686
Male	1226	181	442	723
Cultivators	**235**	**25**	**328**	**443**
Female	41	2	89	78
Male	194	23	239	365
Agriculture Labourers	**1109**	**245**	**444**	**160**
Female	536	105	256	106

Male	573	140	188	54
Source: District Census Handbook, 2011.				

3.10. Research Design

This study follows a mixed-method research design that combines both qualitative and quantitative approaches. This dual approach allows for a comprehensive examination of the of water and soil conservation activities undertook by the Mission 500 and its impact on beneficiaries and other stakeholders in the villages. By integrating empirical data with qualitative insights, the study can offer a holistic and nuanced understanding of the subject.

The data on quantitative aspect is collected from personal interview (structured and unstructured) of beneficiary and non-beneficiary farmers, secondary data is collected from the reports, census data, other data from reports, articles, and different literatures on related subject. Whereas qualitative study includes tools such as focused group discussion, village meetings, case studies, meetings with project team, individual interview with experts, and observations in the field. Looking at the nature of the study both the methodologies are used for assessing the impact of Mission 500 in the villages.

3.11. Sampling Strategy

At the time of study, Mission 500 had completed soil and water conservation activities in 125 villages with the help of six notable donors namely Rotary Club of Panvel, Rotary Club of Chembur, Naam Foundation, DORF Ketal Chemicals, Sakal Relief Fund and Bhartiya Jain Sanghatana (BJS).

This study was requested by Rotary Club of Chembur, Mumbai. The villages have been selected where the Rotary club of chembeur has provided support for the water and soil conservation activities. Among the 19 villages, four villages are selected for the study with the consultation of Paach Patil team of Mission 500 namely Ranjangaon, Lonje, Pimpalgaon and Dhamangaon.

The four villages having the total population of 8912 comprising 1972 households. However, all these households are not participated in the project. It was told that less than 200 families had participated in the four villages *(though exact data was not available for the research team).*

On the basis of information provided by the Paach Patil team, 25 percent beneficiaries are randomly selected from each of these villages for the purpose of the study. Apart from beneficiary farmers 34 non-beneficiary farmers are selected to understand their perception of non-participation in the Mission 500. So, the sample includes different stakeholders such as beneficiary farmers, non-beneficiary farmers, Paach Patil team and Gram Panchayat members, etc. Sampling plan for beneficiary shown in the below diagram.

Sampling selection for non-beneficiary farmers

The non-beneficiary farmers selected from the same villages which includes Ranjangaon-9, Lonje-9, Pimplagaon-7 and Dhamngaon-8.

Figure 4: Sampling Plan for Beneficiary Farmers

3.12 Data Collection Tools

The semi-structured interview schedules have been used to collect the data from both beneficiary and non-beneficiary farmers and key stakeholders. Focus group discussions (FGDs) was used to understand the group dynamics and idea exchange. Case studies was also used to get detailed insights into specific instances, while documentation review used to validate and complement the qualitative data. Additionally, visual documentation, such as photographs utilized to visually depict the changes and developments brought about by the schemes and infrastructure.

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Impact of Mission 500

CHAPTER 4: IMPACT OF MISSION 500

4.1. Assessment of impact of Mission 500

Table 4: Beneficiary Distribution by Village

Number	Village	Beneficiaries
1	Dhamangaon	21 (18.42)
2	Lonje	28 (24.56)
3	Pimpalgaon	35 (30.70)
4	Ranjangaon	30 (26.31)
	Total	**114 (100)**

Source: Primary Data (Note: The parentheses figure denotes percentage.)

Table 5 shows the beneficiary distribution by studied villages. Out of 114 beneficiary farmers, 21 are from Dhamangaon, 28 are from Lonje, 35 are from Pimplagaon and 30 beneficiary farmers are from Ranjangaon.

Table 3: Beneficiary Distribution by Gender

Gender	Beneficiary
F	6 (5.26)
M	108 (94.73)
Total	**114 (100)**

Source: Primary Data (Note: The parentheses figure denotes percentage.)

Table 6 shows beneficiary distribution by gender in studied villages where 108 beneficiaries are predominantly male while only six are female. This skewed representation indicates the patriarchal nature of the society in the region where males are considered head of household and primary decision makers. At the same time, females possessed a supportive position, though recently, the Government of Maharashtra (GOM) encouraged female land ownership through various incentives as a step toward gender equality.

Table 4: Beneficiary Distribution by Landholding with Social Category

Land size Category (in acres)	Social category					
	General	OBC	SC	ST	VJNT	Total
Marginal (> 2.47)	13	1	0	0	3	17
Small (2.47 - 4.94)	25	6	0	1	11	43
Semi-medium (4.94 – 9.88)	25	3	2	0	8	38
Medium (9.88 – 24.71)	11	0	0	0	3	14
Large (< 24.71)	0	1	0	0	1	2
Total	74	11	2	1	26	114

Source: Primary Data

Table 7 shows the beneficiary farmers' landholding-wise social category distribution in the studied four villages. A significant number of farmers are from the small category which consists of 43 out of 114 beneficiary farmers, followed by semi-medium (38), marginal (17), medium (14) and large farmers (2), respectively.

Notably, farmers participated in this mission from all the various social and economic categories. The above table shows out of 114 beneficiary farmers, 74 are General, 26 are Vimukt Jati and Nomadic Tribe (VJNT), 11 are Other Backward Class (OBC), 2 are Scheduled Caste (SC), and 1 is from Scheduled Tribe (ST).

Surprisingly, there is no large farmer from General, SC, ST. At the same time, VJNT is visible in the all-landholding categories. General category farmers who are visible in all the landholding categories except the large farmer category. The possible reason for the visibility of VJNTs in all landholding categories is due to the homogenous settlement in the village of Lonje. However, historically, General (mostly Maratha caste) and OBCs are the principal landowners due to their peasantry caste status in the Maharashtra state.

Table 8 shows the occupation of the beneficiary farmers. 91 farmers out of 114, reported agriculture as their main occupation for livelihood. Where remaining farmers involved in other occupation such as private job (4), retired government employee (3) doctor (2), driver (2), flourmill (2), government job (2), dairy 1), merchant navy (1), pharmacy (1) and agriculture service centre (1). Though they involved in agriculture, but it has secondary place compared to their above-mentioned primary occupation.

It is important to note that there is only one marginal farmer is involved in other than agriculture occupation while small and semi medium farmers are spread across the category indicates high level of livelihood diversification among them compared to other category farmers. All two large farmers reported agriculture as their main livelihood source.

Table 7: Beneficiary Distribution by Landholding with Social Category

Number	Landholding Category	Occupation													
		Agriculture	Agriculture and Agriculture Service Centre	Agriculture and Animal Husbandry	agriculture and Dairy	Agriculture and Doctor	Agriculture and Driver	Agriculture and Flourmill	Agriculture and Govt. Job	Agriculture and Merchant Navy	Agriculture and Pharmacy	Agriculture and Private sector job	Agriculture and ret. Govt. Employee	Agriculture and Vegetable merchant	Total
1	Marginal	16	0	0	0	0	0	0	0	0	0	1	0	0	17
2	Small	35	0	1	0	1	1	1	1	1	0	0	1	1	43
3	Semi-medium	27	1	2	0	1	1	1	1	0	1	2	1	0	38
4	Medium	11	0	0	1	0	0	0	0	0	0	1	1	0	14
5	Large	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total		91	1	3	1	2	2	2	2	1	1	4	3	1	114

Table 8: Beneficiary Distribution by Age

Landholding Category	Age of Beneficiary			
	Below 30	30 to 60	Above 60	Total
Marginal	3	12	2	17
Small	4	31	8	43
Semi-medium	10	24	4	38
Medium	2	7	5	14
Large	0	1	1	2
Total	19	75	20	114

Source: Primary Data

Table 9 shows the beneficiary distribution by age, where most farmers are between the age of 30 to 60, which is 75 in number, followed by 20 farmers in the above 60 age range, while the below 30 age group only comprises 19 farmers. Interestingly, the table shows no farmer from large landholding category is involved in farming. In the field, it is observed that the new generation in these households is indifferent towards agriculture and wants to move to urban areas for better living and livelihood opportunities.

Table 9: Beneficiary Distribution by Family Size

Number	Total Family Members	Beneficiary
1	Up to 4	37
2	4 to 6	48
3	6 to 8	8
4	8 and above	21
	Total	114

Source: Primary Data

Table 10 shows the beneficiary distribution by family size. It is visible from the above table that a family size between 4 to 6 members is common among beneficiaries followed by family size members up to 4 (i.e., nuclear family) comprising 37 beneficiary households, 21 beneficiaries having 8 and above family size and only 8 beneficiaries reported that having their family size between 6 to 8 members.

It is important to note that the beneficiary who reported having a large family previously used to look for other livelihood options, such as sugarcane cutting, a prominent reason behind the VJNT communities for out-migration in the region. However, a slight decrease has been seen among the VJNT community due to the mission 500 initiatives, as we can see an increase in the water availability by a few months annually which has helped a few families to take second crop which they could not do due to water scarcity. This practice remains quite popular among VJNTs even after Mission 500's trickling effect on agriculture income, production, and employment opportunities.

Table 10: Beneficiary Distribution by Educational Status

Number	Education Status	Beneficiary
1	Illiterate	6
2	Primary (1-4)	12
3	Secondary (5-8)	13
4	Senior Secondary (9-12)	57
5	Higher Education (Graduation/Post-graduation)	24
6	Diploma	2
	Total	114

Source: Primary Data

Table 11 shows the beneficiary distribution by educational status in the studied villages. The highest number of beneficiary farmers have a senior secondary educational qualification (57),

trailed by higher education (24), secondary (13), primary (12), illiterate (6) and diploma holders (2) respectively.

Table 11: Beneficiary Distribution by Availability of Source of Irrigation

Number	Beneficiary category	Source of irrigation		
		Dug-well	None	Total
1	Marginal	15	2	17
2	Small	38	5	43
3	Semi-medium	38	0	38
4	Medium	13	1	14
5	Large	2	0	2
	Total	106	8	114

Source: Primary Data

Table 12 shows the beneficiary distribution by the availability of a source of irrigation to them on their farm. It displays that out of 114 beneficiaries, 106 beneficiary farmers have dug wells to irrigate the farm. In contrast, only 8 beneficiaries do not have any source for irrigation, are dependent on rainwater and mostly come from the small landholding category. At the same time, all semi-medium and large beneficiary farmers have their source of irrigation. Although it is observed that the farmers who have dug wells also have borewells, but they did not report it while conducting this study.

Table 12: Impact of Mission 500 project on irrigation

Land Category	**Land *(in Acres)***
Total land treated under Mission 500	**443.08**
Total land came under irrigation after the implementation of the project	**359.39**

Source: Primary Data

Table 13 indicates the impact of the Mission 500 project on irrigation. As it suggests, 443.08 acres of land are treated under this mission, and 359.39 acres came under irrigation. Though all treated land did not become irrigated land, because a few of the beneficiaries do not have any source of irrigation in the vicinity of their farm but have indirectly benefitted through this additional irrigation facility.

The possible reason behind it is that one, few farmers' total land already is irrigated land and cannot be increased further. Secondly, 8 farmers (look for table 11) do not have dug wells or borewells and motor pump to irrigate the land may be after immediate completion of the project they may not have enough money to buy the irrigational equipment but in future they may likely become irrigated however at present these farmers are taking at least two crops in an year without any irrigation facility once their source become perennial they will take perennial crops (cash crops like sweet lemon (mosambi), lemon and sugarcane).

Table 13: Contribution arranged for investment in water conservation infrastructure by beneficiary from various sources.

Sources of capital	Beneficiary
Agriculture income	91
Agriculture income and other Job	3
Agriculture income and Wages earned from agriculture labour	6
Agriculture income and Money borrowed from relatives	1
Money borrowed from relative	4
Wages earned from agriculture labour	8
Wages earned from building construction	1
Total	**114**

Source: Primary Data

Table 14 shows the sources of capital arranged by beneficiaries to contribute to filling up the diesel in the JCB or poclain for constructing bunding, farm roads, desilting streams, etc., under mission 500. Beneficiaries contributed a total of rupees 15,83,700.00. Agriculture income is the primary source of capital for 91 beneficiaries and wages earned from agriculture labour is a capital source for 8 beneficiaries. Other minor sources comprising agriculture income and wages earned from agriculture labour for 6 beneficiaries, money borrowed from relatives for 4 beneficiaries, agriculture income and other jobs for 3 beneficiaries, agriculture income and money borrowed from relatives for 1 beneficiary, similarly wages earned from building construction is source reported by only one beneficiary.

This also indicates that farmers who depend more on agriculture for livelihood are more serious towards investment in soil and water conservation activities, derived inspiration from a perceived increase in agriculture production and income. Apart from these farmers, small and marginal farmers contributing to these activities may indicate the perceived different benefits of water and soil conservation and also point towards the desire to eliminate the acute water scarcity problem in the village.

Table 15 shows contributions by beneficiaries other than monetary contributions, such as providing drinking water to the driver, helper, volunteers, guest, gram panchayat members, visitors, and labourers, shramdan in constructing soak pits, cleanliness campaign, tree plantation and investing time for attending meetings, working on the campaign, etc.

Out of 114 beneficiary farmers, 39 reported that they contributed through investing their time in the mission, followed by 20 beneficiaries who contributed through shramdan, 4 beneficiaries provided drinking water to involved members during executing the water conservation activities in their farm, while 51 beneficiaries reported they did not contribute to

above mentioned categories but only in monetary value. It shows that there is a lot of support from the community for the mission 500 campaign.

Table 14: Beneficiary distribution by contribution other than money

Number	Contribution other than money	Beneficiary
1	Time spent on the program (attending meetings, working on campaign mission 500, etc.)	39
2	Shramdan to do the soak pits, cleanliness campaign, tree plantation, etc. and time	20
3	Provide drinking water to the team (driver, helper, volunteers, guest, panchayat members, visitors and labourers)	4
4	None	51
Total		114

Source: Primary Data

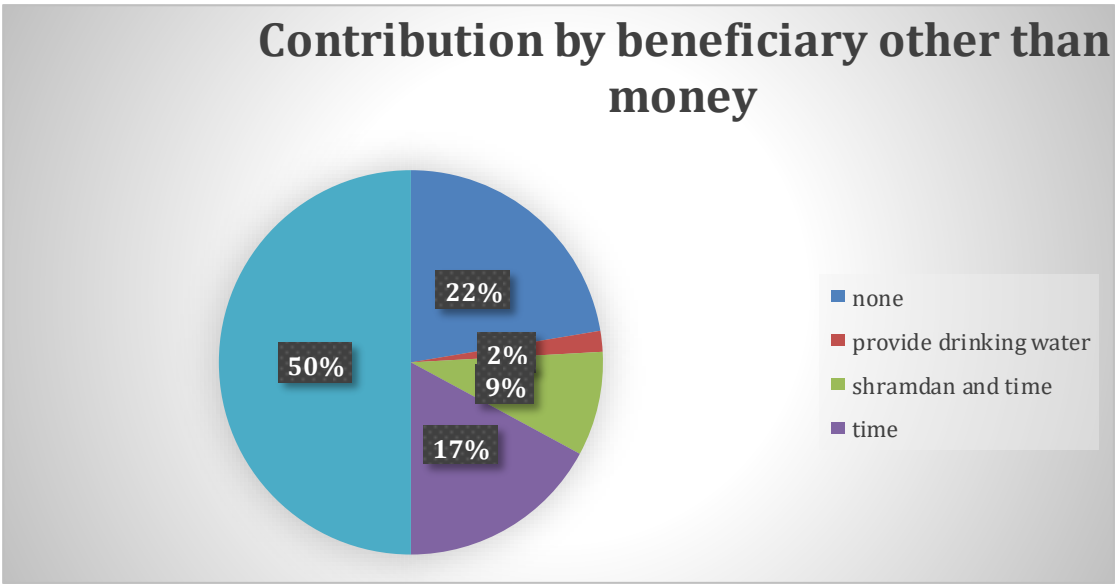

Figure 5: Contribution by beneficiary other than money

Table 15: Perception of Beneficiary on Reasons to not take part in Mission 500 by other Farmers.

Number	Perceived Reasons	Beneficiary
1	Do not know	37
2	Lack of information among other farmers	3
3	Lack of time and money	15
4	Lack of opportunity due to limited excavator	32
5	Migration	1
6	Other farmers were not interested	8
7	Politics and misunderstanding among farmers	2
8	Want to get this work done for free	14
9	Those who do not have irrigated land or are away from Nala did not participate	2
	Total	114

Source: Primary Data

Table 16 shows the perception of beneficiary farmers on farmer who do not joint the mission 500 campaign. Out of 114 beneficiaries, 32 perceived a lack of opportunity due to limited excavators in the village despite the willingness of farmers to participate in the mission. Further, 15 beneficiary farmers reported that due to lack of time and money, other farmers could not participate, followed by 14 farmers who perceived other farmers could not join Mission 500 because they wanted to get this work done free of cost because of their economic condition , 8 farmers perceived other farmers were not interested in joining the Mission, 3 farmers perceived other farmers could not join the Mission because there was a lack of information among them, 2 beneficiary perceived politics and misunderstanding among farmers hurdled other to join the Mission, again 2 farmers perceived the farmers who do not have irrigated land or land away from nala (stream) did not participate in the Mission 500. Only one beneficiary farmer said that other farmers could not join due to outmigration. However, 37 respondents reported that they do not know why other farmers are not taking part in the mission 500.

Table 16: Problems encountered while carrying out the water conservation works in Mission 500

Number	Problem Faced by Beneficiary in Participating Mission 500	Beneficiary
1	Did not face any problem	111
2	No help offered by Mission 500	1
3	We solved ourselves through dialogue	2
	Total	114

Source: Primary Data

Table 17 shows the problems encountered by the beneficiary farmers in carrying out the water conservation activities and any support provided by the Mission 500 team to resolve them. Notably, out of 114 beneficiary farmers, 111 farmers reported that they did not face any problems while carrying out the water conservation activities such as bunding, farm roads, nala desilting, percolation ponds, soak pit, etc. in the village under the Mission 500 campaign. Problems could be about getting timely money, diesel, driver, poclain/ JCB on the work site. However, these problems have been managed by Paach Patil team very well.

Conflict and misunderstanding are usually common issues in community-led natural resource conservation programs. Although 2 farmers reported that they faced a problem, they resolved it through deliberate dialogue among involved farmers. Only one farmer reported that the Mission 500 team did not offer any help for a problem he faced during the implementation of Mission 500. Upon raising this issue with the mission 500 team, they learned that they could not resolve the problem because that farmer was asking for concession for diesel contribution which is against the mission 500's objective.

It is observed with discussion with farmers that if any issues emerged during the execution of the program, the Paach Patil team and other team workers in the village, including Dr. Ujjwalkumar Chavhan immediately reached the village and resolved it.

Table 18 shows an increase in the annual income of beneficiary farmers after implementing the water and soil conservation activities under the Mission 500 campaign. It illustrates out of 114 beneficiary farmers, 55 farmers observed up to 20000 rupees increase in their annual income across the various landholding categories. Secondly, 16 beneficiaries whose income rises between 20000 to 40000 mainly include semi-medium, small and marginal farmers. Further, 9 beneficiaries' income rise between 40000 to 60000, consisting of semi-medium, small, and medium farmers. Only 2 beneficiaries' income rose between 80000 to 100000 rupees, comprised of small and semi-medium farmers and 5 beneficiaries reported the highest rise in their annual income, i.e., more than 100000 including semi-medium and medium farmers, respectively.

Table 17: Increase in Annual Income of Beneficiary Farmers

No.	Beneficiary Category	Income							
		Up to 20000	20000-40000	40000-60000	60000-80000	80000-100000	Above 100000	None	Total
1	Marginal	11	3	0	0	0	0	3	17
2	Small	22	7	3	1	1	0	9	43
3	Semi-medium	17	6	4	1	1	4	5	38
4	Medium	4	0	2	1	0	1	6	14
5	Large	1	0	0	0	0	0	1	2
Total		55	16	9	3	2	5	24	114

Source: Primary Data

However, 24 beneficiaries reported they did not see any rise in their income. The possible reason is that they undertook water and soil conservation activities in the current or previous year, but all their hard work was swept away in heavy deluge in the region last year. Moreover, it is essential to mention that to reap the benefits of water and soil conservation activities in monetary value among the beneficiaries, it takes at least a year after the completion of the project.

Table 18: Increase in Irrigational Land of Beneficiary Farmers

Landholding Category	Increase in irrigational land (in acres)							
	1-2	2-4	4-6	6-8	8-10	< 10	None	Total
Marginal	14	0	0	0	0	0	3	17
Small	6	22	1	0	0	0	14	43
Semi-medium	6	8	14	2	0	0	8	38
Medium	0	2	1	1	3	5	2	14
Large	1	0	0	0	0	0	1	2
Total	27	32	16	3	3	5	28	114

Source: Primary Data

Table 19 shows the increase in the irrigational land of the beneficiary farmers after implementing the water and soil conservation activities under the Mission 500 campaign. It indicates that out of 114 beneficiary farmers, 27 reported their irrigational land increase

between 1 to 2 acres comprising all landholding category farmers except medium farmers. In the 2 to 4 acres category, 32 farmers reported an increase in their land in which mainly small farmers are visible. Further, 16 farmers' irrigational land increased between 4 to 6 acres are coming from semi-medium, medium and small farmers categories. 5 farmers reported their irrigational land increased by more than 10 acres and all are from the medium landholding category, followed by three farmers who reported an increase of irrigational land between 6 to 8 acres and again three farmers reported an increase in irrigational land between 8 to 10 acres, respectively. In contrast, there is no increase in irrigational land of 28 farmers. These farmers are mostly practice rainfed agriculture or they do not have any irrigational source to irrigate their farm while few farmers total farm already comes under irrigation and cannot be further extend.

Table 19: Change in family lifestyle due to increase in Income

	Change in family lifestyle due to increase in income											
Land size category	Purchasing power	Education	Renovate home	Mobile	Bike	Constructed home	Decrease debt	Marriage	Tractor	None	Not sure	Total
Marginal	5	1	0	1	0	0	0	0	0	8	2	17
Small	18	4	2	0	1	0	1	0	0	15	2	43
Semi-medium	12	5	0	3	2	2	0	1	1	9	3	38
Medium	5	0	2	0	0	0	0	0	0	7	0	14
Large	0	0	0	0	0	0	0	0	0	1	1	2
Total	40	10	4	4	3	2	1	1	1	40	8	114

Source: Primary Data

Table 20 displays the change in the lifestyle of beneficiary households after the successful implementation of Mission 500. Interestingly, out of 114 sample beneficiary farmers, 40 reported their purchasing power increased due to an increase in their income after the implementation of the project comprising small, semi-medium, medium and marginal.

It is tailed by the 10 farmers comprising semi-medium, small, and marginal who reported they could spend on education of their children or even send them to a district place for higher education. The other important change in lifestyle of beneficiaries is that they were able renovate their homes (4), bought new mobiles (4) and motorbikes (3), able to construct a home (2), decrease debt (1), able to manage marriage expenditure in their home (1) and bought new tractor (1). In comparison, 40 beneficiary farmers did not observe any change in their lifestyle, while 8 farmers are unsure about the change.

The plausible reason of not observing any change in lifestyle by few farmers is because the soil and water conservation activities completed in their farm is not older than one year and we already know that minimum one year is requisite to observe the benefits of soil and water conservation activities.

Table 20: Cropping Pattern Change among Beneficiary Farmers

Number	Crops	Crops sown before the implementation of Mission 500	Crops sown after the implementation of Mission 500	Change
1	Corn	80	95	+15
	Pearl Millet	27	22	-5
2	Sorghum	22	24	+2
3	Wheat	14	17	+3
Cereals				
4	Bengal Gram	21	19	-3
5	Red Gram	2	3	+1
Pulses				
6	Banana	0	1	+1
7	Papaya	2	1	-1
8	Lemon	6	11	+5
9	Sweet Lemon (Mosambi)	1	7	+6
10	Other Fruits	0	1	+1
Fruits				
11	Lady finger	0	1	+1
12	Red chilli	1	3	+2
13	Ginger	1	1	0
14	Gavar	1	3	+2
15	Onion	19	20	-1
16	Other Vegetables	2	10	+8
Vegetables				
17	Soyabeans	2	5	+3
18	Groundnut	1	1	0
Oil seeds				

19	Cotton	102	110	+8
20	Sugarcane	4	4	0
21	Fodder	1	2	+1
Commercial crop and other				

Source: Primary Data

Table 21 shows the change in the cropping pattern among the beneficiary farmers. One can see a substantial increase in the farmers producing different crops such as corn (15), vegetables (13), cotton (8), sweet lemon (mosambi) (6), lemon (5), and soybean (3) after the completion of the water and soil conservation activities under the Mission 500 program. However, a few farmers are also observed to have a decrease in taking particular crops like pearl millet (5) and Bengal gram (3). This change is due to farmers shifting from subsistence crops to cash crops. Another positive change we can observe is that despite the increase in the groundwater table, farmers were not inclined towards sugarcane crops.

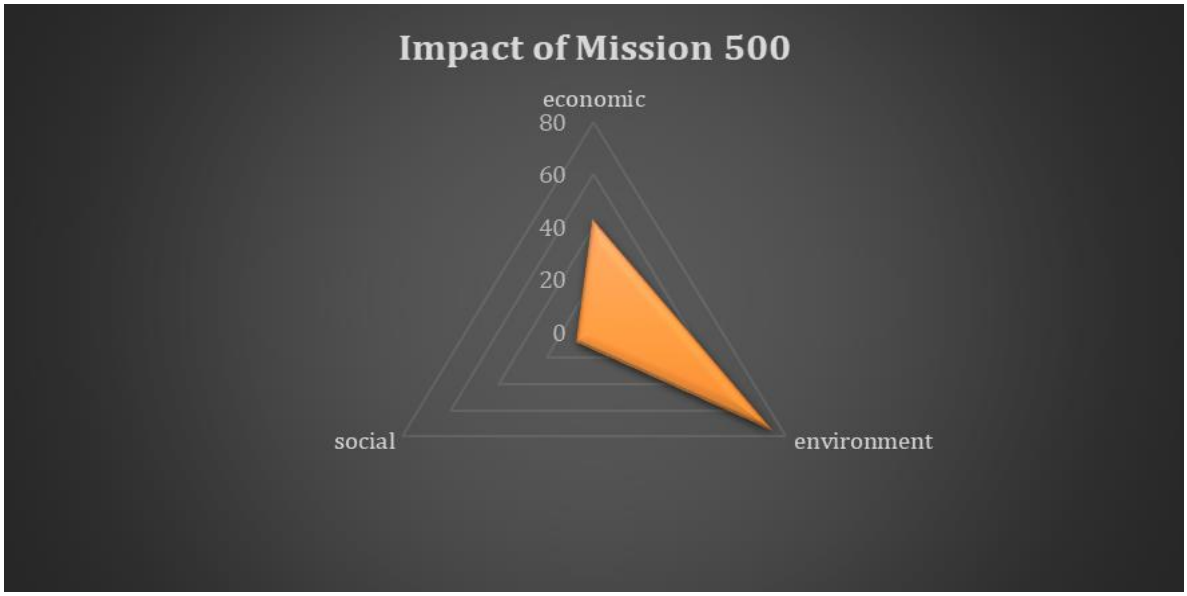

Figure 6: Impact of Mission 500 campaign on environment, economic and social domain

(Source: Primary Data)

Figure 7 explains the overall impact of mission 500 on the environment, economic and social aspects of beneficiary farmers. Notably, environmental benefits are standing tall among others, as 75 out of 114 beneficiary farmers reported that they got environmental benefits from this mission. Later, it is followed by the economic benefits availed by 43 farmers. In comparison, only 7 farmers stated they got social benefits from Mission 500 through reduced conflict between farmers while executing the water and soil conservation activities. Interestingly, other plausible social benefits such as health, sanitation, education, women empowerment could not find the place in all these benefits. (*The variables of economic, environment and social benefits are provided in the table below*).

Additionally, the Mission 500 program's result in the social aspect proved the empirical evidence to Bino Paul's (*lecture given on 5th September 2023 at TISS, Tuljapur*) argument that every major program on natural resource management lacks social sustainability while most of the focus of these programs is on environmental or economic substantiality.

Table 21: Variables contain in Economic, Environment and Social Benefits

Number	Variable contains in Economic Benefits	Variable includes in Environmental Benefits	Variable includes in Social Benefits
1	Increase in income	Improved soil fertility	Reduced conflict between farmers
2	Increase in crop productivity	Improved soil moisture	
3	Increased crop production	Increased water storage	
4	Increased in irrigation land	Increased groundwater level	
5	Increase in wage and days of work	Increased water availability in summer	
6	Reduced crop loss	Conserved soil and water	
7	Farm have been levelled	Increased rainwater percolation	
8	Able to take two crops	Proper drainage in the farm	
9	Treatment of farm done in less investment		
10	Farm transport facility increases		

Table 22: Reason of Non-Beneficiary Famers to not take part in the Mission 500

Number	Reasons	Non-Beneficiary
1	Lack of money	14
2	Lack of information	6
2	Lack of time	5
4	Did not understand the project	4
5	JCB was not available	4
6	Not feasible for small land	1
Total		34

Source: Primary Data

This separate analysis has been done farmers who does not participated in the project we are calling them as non-beneficiary farmers. This is basically done to understand their perception that why they are not participated in the Mission 500.

Table 22 indicates 14 farmers from a total 34 samples reported they lacked the money to participate in the mission, followed by 6 farmers who reported they were not able to participate due to lack of information regarding mission's objective, 5 farmers did not get time to participate as they had crop standing in their farm, 4 each could not participate because they did not understand the project and JCB machine was not available to them while only one farmer stated that he did not feel that this work is feasible for small land portion so could not participate in the Mission 500 campaign.

Table 23: Suggestion by Beneficiary Farmers for Betterment of the Mission 500

Number	Suggestion(s)	Beneficiary
1	Increase participation	22
2	Should increase work hours	17
3	Need to continue this work	14
4	Need more machines	5
5	Tree plantation	3
6	Easy access to information	1
7	Farmers from downstream should contribute more	1
8	Need more soak pit	1
9	Need to increase females' participation	1
10	No suggestion	49
	Total	114

Source: Primary Data

Table 23 illustrates the suggestions given by beneficiary farmers for the betterment of the Mission 500 campaign. From a total of 114 beneficiary farmers, 22 farmers suggest there is need to increase the participation of other farmers so everyone can reap the fruits of this mission. Additionally, 14 farmers suggest this Mission is doing great work and need to continue for upcoming years and 5 farmers felt there should be more machines. Hence, everyone gets an opportunity to participate in the given working window. Tree plantation is suggested by other 3 farmers while one each farmers gave suggestion as follows- need to ease to access to the information regarding the mission 500, farmers from downstream should contribute more as they get more benefits of increase in the groundwater or aquifer level, more soak pit and need to increase female participation in the mission. In comparison, 49

farmers did not provide any suggestions as they feel Mission is doing very well and there is no need to improve it further.

4.2. Case Study

- **Introduction**

  This case study highlights the remarkable story of Vasant Sahebrao Patil and his village, where collective action and community-driven development brought about significant positive changes. The study sheds light on the impact of the project on Vasant's family and the entire community, showcasing how effective resource utilization and cooperation led to enhanced livelihoods and a sense of pride among the villagers.

  Vasant Sahebrao Patil, a 55-year-old farmer from a Lonje village, resides with his wife, Shobha Patil, and three other family members. With minimal education (till 9th standard), Vasant primarily relies on agriculture and goat farming to support his family. His 10-acre land is seasonally irrigated through two wells, making water availability a critical factor for their livelihoods.

- **Village Group and Support:**

  Vasant is a part of a group within the village, bringing together local farmers and community members. They found the opportunity of cheap measures to plain down the undulated land in the village through the resources of the project Mission 500.The group to raise funds collectively to cover the cost of diesel required for making the undulated land plain. To his delight, the entire community supported the cause, and no objections were raised, showcasing the spirit of unity and cooperation among the villagers.

- **Transformation of the Land:**

  Utilizing the resources from the Mission 500 project, Vasant and his village successfully transformed the undulated land into a fertile, plain terrain. This achievement unlocked numerous opportunities for the villagers, such as using the land for army practice preparation, as a venue for community events, and a playground for children.

- **Extra Benefits and Improved Water Retention:**

  The impact of the project extended beyond initial expectations. Vasant noticed that water retention in his wells improved significantly, granting him access to water for an additional month. This improvement proved to be immensely beneficial for his agricultural pursuits, enhancing his overall yield.

- **Empowering Women and Reducing Manual Labor**:

  Shobha Patil, Vasant's wife, and her daughters-in-law experienced a notable change in their daily lives. With the availability of water, they no longer had to undertake arduous journeys to distant places to fetch water. This reduction in manual labour freed up their time, enabling them to engage in additional income-generating activities and enhancing their overall well-being.

- **Sense of Pride and Community Development:**
  No longer burdened by the arduous journeys to distant places to fetch water, Shobha Patil and her daughters-in-law felt a sense of liberation. The removal of this physically demanding task not only lightened their workload but also instilled a sense of self-reliance and agency. They no longer had to depend on others for water access, which filled them with a deep sense of accomplishment and self-sufficiency. This newfound freedom of time presented them with opportunities to engage in additional income-generating activities.
- **Observation:**
  The Mission 500 project, with its goal of uplifting rural communities, proved to be a transformative force in Vasant Sahebrao Patil's village, bringing about far-reaching benefits beyond its initial intent. Through collective action and resourceful utilization, the villagers successfully transformed undulated land into a versatile and productive area, enhancing their livelihoods and fostering community development.

Picture 7: Discussion with villagers

Conclusion

CHAPTER 5: CONCLUSION

In culmination, the data analysis and discussions have unveiled a community deeply committed to the continuation of water conservation endeavours, demonstrating an understanding of the positive outcomes already achieved. Nevertheless, the multifaceted challenges faced, such as financial limitations, inadequate access to machinery, and information gaps, necessitate a multifaceted approach to surmount these barriers and further augment the impact of conservation efforts.

The comprehensive recommendations put forth underscore the significance of fostering collaboration among a diverse array of stakeholders, including governmental bodies, non-governmental organizations, community leaders, and private sector entities. This collaborative approach would harness collective resources and expertise to bolster the sustainability of water conservation projects. Education emerges as a central theme in these recommendations, emphasizing the need for continuous learning and skill development within the community. Establishment of dedicated education and training centres within the locality would serve as knowledge hubs, ensuring that farmers remain well-versed in cutting-edge water-saving technologies and best practices. Furthermore, the introduction of incentive programs, both monetary and non-monetary, could serve as effective motivators for active community participation.

Emphasis on research and innovation underscores the importance of tailoring solutions to the unique context of the surveyed area. This may involve the development of region-specific technologies or conservation methods that are effective in addressing local challenges. Building on the principle of community empowerment, fostering the capacity of local farmers and leaders to become advocates and trainers in water conservation is a transformative approach. Such capacity-building efforts can facilitate the cascading of knowledge and practices across the community.

The comprehensive recommendations below provides a roadmap for the project to overcome existing challenges and seize the full potential of water conservation initiatives. Collaborative efforts, education, innovation, community empowerment, and sustainability stand as the cornerstones of a prosperous future where water conservation not only mitigates challenges but also contributes to the well-being of the community and the environment for generations to come.

RECOMMENDATIONS

- **Proportionate distribution of JCB/Poclain machines:** One of the points of improvement that have been observed is the lack of access to machines in an adequate manner with respect to the serving population. Thus, it can be recommended that there should be proper availability of enough number of machines in proportion to the population in the villages. This is with respect to the assumption that with increasing popularity of the project, the demand for the machines will increase further.

- **Attention to equity:** The farmers who lack the economic capacity are unable to participate in the project. Thus, a certain amount of funds must be allotted for the small and marginal farmers, further enhancing the project's inclusivity. Additionally, special strategy should be given to the women, landless and marginal people in villages to ensure the benefits among all the stakeholders.

  The one strategy can employ to involve the women, marginal and landless people of the community through MGNREGA scheme which is already existing in all the villages of the state. The MGNREGA provides funds for the watershed management activities in the villages. There should be coordination between Mission 500 team and village panchayat to use this fund to enhance the participation and inclusivity of the program.

- **Data maintenance:** Based on our observation, the organization is doing exemplary implementation of work at the ground level, but there are challenges in data collection and maintenance that can affect future projects. So, we recommend that a person be allocated mainly for data gathering and accountability.

- **Lack of information dissemination:** Based on the study, many respondents were not having adequate information regarding the works done by the project. Thus, there should be a proper channel of information dissemination through system democratisation. This can be done through social media, Gram-Sabha, and the efficient use of local leaders.

- **Distribution of social benefits:** Based on the study, we found that most of the positive aspects that people pointed out regarding the project were economic and environmental in nature. Thus, there is a scope for greater improvement in the people's social aspect, like gender inclusivity and social equity among all villagers.

- **Diversification of fund sources:** There can also be diversification of the sources of funds for the project in order to ensure sustainability. The funds that are being utilized for the project mainly comes from donors. The funds can also be brought in from that of social schemes such as MGNREGA and Gram Panchayat funds and the funds available in government schemes for watershed management. This ensures lesser dependency from single source and greater sustainable execution of the project.

- **Capacity Building and Social Learning:** Capacity building and social learning for stakeholders should be priorities in the design, execution, monitoring and evaluation of the program. The previous study on water harvesting practices in Rajasthan showed that providing training and education to the community on the technology and its benefits was critical to the project's success (Jain et al., 2013). It is also imperative to invest in human resources in the program to increase the efficiency and longevity of the Mission 500 movement.

- **Ridge to valley approach in watershed management:** The current practice of implementing the water and soil conservation activities under the Mission 500 is based on farmers readiness and first come first serve principles. The direction of work is followed on the basis of stream or farm road instead of ridge to valley. Mission should accommodate the ridge to valley approach of watershed management which is technically sound and based on the principle of spatial equity. It is also financially viable because it will not require more funding; hence, will not cause financial burden to the Mission as they can manage with available fund. However, we observed that team of professionals will be required to execute the ridge to valley approach (integrated watershed management) The team professional includes, professional social worker or community organiser, civil engineer, accountant, etc.

- The government should prioritize planting trees and ensuring their survival to promote water conservation. Tree planting is crucial as it serves as a catchment to reduce surface flow and increase the water table by allowing water to seep into deeper soil layers. The Jalyukt Shivar Abiyaan initiative does not give sufficient attention to tree plantation, and therefore the government should focus on creating forest land with fruit-bearing trees, particularly drought-tolerant plants like Neem, Ber fruit, tamarind, and custard apple trees. These trees can not only provide livelihood benefits but can also help alleviate the water crisis. Additionally, they can be consumed by people and animals and serve as common property.

- The equitable and sustainable use of groundwater is crucial for ensuring long-term water security in the Khandesh region. It is imperative to shift from the perception of groundwater as private property to a common good. The prevalent mindset of exploiting groundwater without considering its impacts on the entire area needs to be immediately addressed. Over-extraction of groundwater can lead to declining water tables and reduced surface water supplies, among other issues. Therefore, the government should consider banning the installation of any borewell for irrigation or industrial purposes in the Khandesh region. Legal action should be taken against anyone who violates this ban. This will ensure that groundwater resources are used in a sustainable and equitable manner, benefitting the region as a whole.

- Based on the research on water harvesting practices in Maharashtra, it is recommended that the Mission 500 should develop a plan for crop cultivation in the agro-climatic zones of the state suggested by Indian Council of Agriculture Research (ICAR). This plan should prioritize the cultivation of crops that consume less water

and provide higher returns to farmers. The government should identify the suitable agro-climatic zones for each crop and encourage farmers to cultivate crops that are best suited for their region. For example, in drought-prone areas like Khandesh & Marathwada, crops such as bajra, soybean, and gram should be promoted, as they require less water and can provide a good income to farmers.

- The government needs to implement policies that provide a higher minimum support price (MSP) for less water intensive crops. Currently, the government provides a higher MSP for commercial crops like sugarcane and rice, which are water-intensive crops that encourage farmers to cultivate them. By offering a higher MSP for low-water consuming crops, farmers will be incentivized to cultivate them instead of water-intensive crops. This policy change can have a significant impact on reducing water consumption in agriculture.

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Annexures

Annexure 1: Questionnaire

Beneficiary questionnaire (Marathi):

जळगाव जिल्ह्यातील चाळीसगाव गटात पाचशे कोटी लिटर जलसाठा अभियान

(मुलाखतीचे पत्रक: लाभार्थी)

I. स्थान विशेष

जिल्हा: _____ तालुका: _____

गाव: _____ वसाहत: _____

II. मूलभूत तपशील: लाभार्थी

1	नाव			
2	लिंग	पुरुष	स्त्री	
3	वय			
4	कुटुंबातील सदस्यांची एकूण संख्या	पुरुष	स्त्री	
5	सामाजिक श्रेणी			
6	शिक्षण			
7	संपर्क			
8	जमिनीचे तपशील (एकरमध्ये)	एकूण	बागाइती	कोरडवाहू
9	सिंचनाचे स्त्रोत खोदलेली	विहीर	बोअरवेल	इतर
10	व्यवसाय			

11	तुम्हाला मिशन ५०० प्रकल्पाबद्दल माहिती आहे का**?**	होय**,** तर सविस्तर सांगा? नाही
12	मिशन 500 कार्यक्रमाद्वारा कोणत्या प्रकारची कामे केली जातात**?**	

III. लाभार्थीसाठी प्रश्न

13	प्रकल्पांतर्गत किती जमिनीवर उपचार केले**?**
14	तुमच्या गावात मृदा व जल संधारण उपचार करण्यास कोणत्या संस्थानी मदत केली**?** I) सकाळ रिलीफ फंड II) रोटरी क्लब, मुंबई III) भारतीय जन संघटना
15	देणगी दारांनी कोणत्या प्रकारची मदत दिली**?**
16	तुमच्या सहभागाचे स्वरूप काय होते? I) डिझेल खरेदी करणे II) जेसीबी चालकाला वेतन देणे III) जेसीबी चालकासाठी राहण्याची व भोजनाची व्यवस्था
17	तुमच्या जमिनीवर जल संधारणाच्या कामांची एकूण किंमत किती होती**?**
18	एकूण खर्चामध्ये तुमचे योगदान किती होते**?** एवढ्या पैशाची व्यवस्था कुठून केली**?**
19	आर्थिक योगदानाव्यतिरिक्त तुमच्या बाजूने आणखी काही योगदान आहे का**? (**मृदा व जल संधारण उपक्रम राबवताना तुम्ही आणि तुमच्या कुटुंबाने घालवलेला श्रमदान किंवा वेळ**?**

20	तुम्हाला या प्रकल्पाचा फायदा झाला असे वाटते का? जर होय, कोणत्या मार्गाने? (जसे स्थलांतर, शिक्षण, आरोग्य इ.)
21	प्रकल्पाच्या अंमल बजावणीनंतर आणखी किती जमीन सिंचनाखाली आली/येईल?
22	या जमिनीतून तुम्ही कोणती पिके घेत आहात? खरीप : रब्बी : जायद:
23	जल संधारण उपक्रम राबवण्यापूर्वी तुम्ही तुमच्या शेतातून कोणती पिके घेत होता? खरीप : रब्बी : जायद:
24	पीक उत्पादनात काही वाढ झाली आहे का? (प्रति/एकर)
25	जमिनीचे उपचार पूर्ण झाल्यानंतर किती उत्पन्न (वार्षिक) वाढले?
26	उत्पन्न वाढल्यामुळे कौटुंबिक जीवनशैलीत काही बदल झाल्याचे तुम्हाला वाटते का?
27	मिशनच्या प्रगतीसाठी किंवा यशस्वी होण्यासाठी आणखी काही सूचना देऊ इच्छिता?
28	तुमच्या शेजारचे किती शेतकरी या मिशन मध्ये सहभागी झाले आहेत?
29	या मिशन मध्ये इतर शेतकरी का सहभागी होत नाहीत?

30	बाकी शेतकरी सहभागी होण्यासाठी आपण काही प्रयत्न करत आहत का**?** होय**,** कसल्या प्रकारचे**?** नाही
31	तुमच्या शेतात जल संधारणाची कामे होत असताना कोणत्या-कोणत्या अडचणी आल्या होत्या**?**
32	तुमच्या अडचणी सोडव ताना पंच पाटील किंवा मिशन 500 च्या ग्रुप ने काही मदत केली का**?** होय**,** तर सविस्तर सांगा**?** नाही
33	तुम्हाला पैसे मिळाल्यास तुमच्या शेतात जलसंधारणाची आणखी कामे करायला आवडतील का**?** कोणत्या प्रकारचे काम**?**

Beneficiary questionnaire (English):

Mission 500 Crore Litres Water in Chalisgaon Block of Jalgaon District

(Interview Schedule for Beneficiary)

I. LOCATION PARTICULARS

District: _____Block: _____

Village: _____Hamlet: _____

II. BASIC PARTICULARS

1	Name			
2	Gender	Male ☐ Female ☐		
3	Age			
4	Total No. of Family Members	Male:	Female:	
5	Social Category:			
6	Education			
7	Contact Number:			
8	Land Particulars (in Acres)	Total	Irrigated	Rainfed
9	Source of Irrigation	Dug well	Borewell	Other
10	Occupation			
11	Are you aware about Mission 500 project?	Yes, so elaborate?		

		No
12	What kind of works are done through Mission 500 program?	

III. QUESTIONS FOR BENEFICIARY

13	How much land you have treated under the project?
14	Which institution helped in soil and water conservation treatment in your village? I) Sakal Relief Fund II) Rotary Club, Mumbai III) Bhartiya Jain Sanghatana
15	What kind of support was provided by the Donors?
16	What was the nature of your involvement? I) Buying diesel II) Providing salary to JCB driver III) Accommodation and food arrangement for JCB driver
17	What was the total cost of the water conservation works on your land?
18	What was your contribution to the total cost? Where did you get all this money from?
19	Apart from monitory contributions any other contribution from your side? (*Shramdan* or time you and your family spent during the time execution of the Soil and Water Conservation Activities?
20	Do you think you have benefited from this project? If yes, in what way? (Like Migration, Education, Health, etc.)

21	How much more land came under irrigation after implementation of the project/ will come?
22	What kind of crops you are taking from this land? Kharif: Rabi: Jayad:
23	What kind of crops you were taking from your farms before the implementation of water conservation activities? Kharif: Rabi: Jayad:
24	Is there any increase in the crop production? (per/acre)
25	How much income (yearly) increased after Completion of the land treatments?
26	Do you think there is any change in family lifestyle due to increase in Income?
27	Any further suggestion would you like to give for the betterment or success of the Mission?
28	How many farmers in your neighborhood have participated in this mission?
29	Why don't other farmers participate in this mission?
30	Are you making any effort to get other farmers to participate? Yes, what kind of efforts? No
31	Which problems you encountered while carrying out the water conservation works in your farm?

32	Did Paach Patil or Mission 500 group help you in solving your problems? Yes, so elaborate? No
33	Would you like to do more water conservation work on your farm if you get money? What kind of work?

Annexure 2: List of All Funding Agencies and Work Done

ROTARY CLUB OF CHEMBUR												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2020	RAJANGAON	CHALISGAON	JALGAON	255	05/01/2020	255000	204000	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBALKAR	22950	22950000	
2020	BAUR	CHALISGAON	JALGAON	105	05/01/2020	105000	84000	ROTARY CLUB OF CHEMBUR	EKANATH MALATKAR	9450	9450000	
2020	TALONDA	CHALISGAON	JALGAON	43.15	05/01/2020	43150	34520	ROTARY CLUB OF CHEMBUR	KIRAN PATIL	3883.5	3883500	
2020	PALASARE	CHALISGAON	JALGAON	207	05/01/2020	207000	165600	ROTARY CLUB OF CHEMBUR	PANKAJ PAWAR	18630	18630000	
2020	BRAMAHAN SHEVGE	CHALISGAON	JALGAON	316	05/01/2020	316000	252800	ROTARY CLUB OF CHEMBUR	SOMNATH MALI	28440	28440000	
2020	WAGHALI	CHALISGAON	JALGAON	253	05/01/2020	253000	202400	ROTARY CLUB OF CHEMBUR	HEMANT MALPURE	22770	22770000	
2021	HATLE	CHALISGAON	JALGAON	252	05/01/2021	252000	252000	ROTARY CLUB OF CHEMBUR	DINESH JADHAV		17640000	
2021	SAGAVI	CHALISGAON	JALGAON	71	05/01/2021	71000	71000	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBALKAR		7810000	
2021	RAJANGAON	CHALISGAON	JALGAON	70	05/01/2021	70000	70000	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBALKAR		4900000	
2021	LONJE	CHALISGAON	JALGAON	98	05/01/2021	98000	98000	ROTARY CLUB OF CHEMBUR	SANDIP RATHOD		6860000	
2021	SAYGAVHAN	KANNAD	CHH.SAMBHAJI NAGAR	208	05/01/2021	208000	208000	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR		22880000	
2021	VADGAON JADHAV	KANNAD	CHH.SAMBHAJI NAGAR	114	05/01/2021	114000	114000	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR		12540000	
2021	NAGAD	KANNAD	CHH.SAMBHAJI NAGAR	263	05/01/2021	263000	263000	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR		28930000	
2021	GANDHORA	TULJAPUR	USMANABAD	89	05/01/2021	89000	89000	ROTARY CLUB OF CHEMBUR	ADITYA GORE		9790000	
2021	DEOLI	CHALISGAON	JALGAON	149.7	05/01/2021	149700	149700	ROTARY CLUB OF CHEMBUR	R.N. PATIL		16467000	
2021	BORKHEDA	CHALISGAON	JALGAON	180	05/01/2021	180000	180000	ROTARY CLUB OF CHEMBUR	TUSHAR NIKAM		12600000	
2021	RAJDEHARE	CHALISGAON	JALGAON	200	05/01/2021	200000	200000	ROTARY CLUB OF CHEMBUR	PRASHANT GAIKWAD		22000000	
2022	JHADGAON	RALEGAON	YAVATMAT	42	05/26/2022	23100	21000	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	35000	35000000	11
2022				75.7	07/12/2022	41635	37850	ROTARY CLUB	KIRAN PATIL	1280	1208000	6

								OF CHEMBUR				
2022	CHICHKHEDA	CHALISGAON	JALGAON	142	05/06/2022	78100	71000	ROTARY CLUB OF CHEMBUR	R.M. PATIL	9560	9560000	23
2022	NADRA KOLI	BULDHANA	BULDHANA	182.3	04/18/2022	100265	91150	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	14584	14840000	30
2022	SHINDI	CHALISGAON	JALGAON	313.5	06/27/2022	172425	156750	ROTARY CLUB OF CHEMBUR	PRASHANT GAIKWAD	23512	23512000	30
2022	SHIDWADI	CHALISGAON	JALGAON	427.45	03/30/2022	235097.5	213725	ROTARY CLUB OF CHEMBUR	PANKAJ PAWAR	34160	34160000	51
2022	BORVIR	DHULE	DHULE	189.4	03/30/2022	189400	227280	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	37800	37800000	28
2022	BANGAON	CHALISGAON	JALGAON	450	03/28/2022	247500	225000	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBHALKAR	36000	36000000	30
2022	SAGVI	CHALISGAON	JALGAON	349	03/28/2022	191950	174500	ROTARY CLUB OF CHEMBUR	DINESH JADHAV	24430	24430000	35
2022	NAGAN KHURD	JAMNER	JALGAON	243.3	06/22/2022	133815	121650	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBHALKAR	17031	17031000	34
2022				110.29	06/22/2022	110290	132348	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBHALKAR	16400	16400000	4
2022	KANADGAON	KHULTABAD	CHAA.SAMBHAJI NAGAR	406	06/01/2022	223300	203000	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBHALKAR	32480	32480000	34
2022	DOGARGHAR	JAVALI	SATARA	187.1	04/07/2022	187100	224520	ROTARY CLUB OF CHEMBUR	SHEKHAR NIBHALKAR	45936	45396000	20
2022	MHATE	JAVALI	SATARA	120.1	04/08/2022	120100	144120	ROTARY CLUB OF CHEMBUR	SUSHANT BHILARE	16800	1680000	7
2022	SONWADI	KANNAD	CHAA.SAMBHAJI NAGAR	403	04/08/2022	221650	201500	ROTARY CLUB OF CHEMBUR	SUSHANT BHILARE	32440	32440000	21
2022	BODRE	CHALISGAON	JALGAON	497	04/10/2022	497000	596400	ROTARY CLUB OF CHEMBUR	JITENDRA PARDESHI	40400	40400000	45
2022	GORAKHPUR	CHALISGAON	JALGAON	145	04/11/2022	145000	174000	ROTARY CLUB OF CHEMBUR	KIRAN PATIL	21825	21825000	12
2022	BORKHEDA	CHALISGAON	JALGAON	58	06/02/2022	31900	29000	ROTARY CLUB OF CHEMBUR	TUSHAR NIKAM	4060	4060000	9
2022	TADE	ERANDOL	JALGAON	100	06/27/2022	100000	120000	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	15000	15000000	15
2022	UPLKHEDA	SOYGAON	CHAA.SAMBHAJI NAGAR	210	03/30/2022	210000	252000	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	31500	31500000	10
2023	AMBHORA	ASHTI	BEED	200	04/30/2023	200000	200000	ROTARY CLUB OF CHEMBUR	SHRIKANT PAYGAVHANE	16000	16000000	27
2023	SALEVADGAON	ASHTI	BEED	213	05/15/2023	106500	106500	ROTARY CLUB OF CHEMBUR		8100	8100000	
2023				68	05/15/2023	68000	68000	ROTARY CLUB OF CHEMBUR		5440	5440000	58
2023	ASANI	JAVLI	SATARA	250.1	06/11/2023	250100	200080	ROTARY CLUB OF CHEMBUR	SUSHAT BHILARE	20000	27000000	
2023	KEDAMBE	JAVLI	SATARA	250		250000	300000	ROTARY CLUB OF CHEMBUR	SUSHANT BILARE		27500000	
2023	WAGLI	CHALISGAON	JALGAON	200		110000	100000	ROTARY CLUB	SHEKHAR		14000000	

								OF CHEMBUR	NIBALKAR			
2023	NIMGUL	DHULE	DHULE	327.4	06/17/2023	180140	163740	ROTARY CLUB OF CHEMBUR	SAVITA RAJPUT	19644	19644000	50
2023	CHINCHOLI	BHARSHI TAKLI	AKOLA	204.47	05/29/2023	112458	102235	ROTARY CLUB OF CHEMBUR	UJJWAL KUMAR CHAVHAN	12000	12000000	29
2023	SELU	BASMAT	HIGOLI	117.69	06/10/2023	64729	58845	ROTARY CLUB OF CHEMBUR	SHEKHAR NIMBALKAR	7020	7020000	13
2023	KHADKISIM	CHALISGAON	JALGAON	157.6	06/20/2023	86680	78800	ROTARY CLUB OF CHEMBUR	MILIND DEVKAR	9456	9456000	16
2023	KADRE	CHALISGAON	JALGAON	169.3	05/31/2023	93115	84650	ROTARY CLUB OF CHEMBUR	MILIND DEVKAR	10158	10158000	14
2023	PALASARE	CHALISGAON	JALGAON	385.3	06/08/2023	211915	192650	ROTARY CLUB OF CHEMBUR	MILIND DEVKAR	24000	24000000	51
2023	AASANKHEDA	PACHORA	JALGAON	200		200000	240000	ROTARY CLUB OF CHEMBUR	SHEKHAR NIMBALKAR		22000000	
2023	TADE	ERANDOL	JALGAON	175	05/09/2023	245000	175000	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	13200	13200000	15
2023				411	05/08/2023	226050	205500	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	24660	24660000	43
2023	TIRPOLE	CHALISGAON	JALGAON	213.37	05/03/2023	117353	106685	ROTARY CLUB OF CHEMBUR	MILIND DEVKAR	12802	12802000	10
2023	PINJAR	AKOLA	AKOLA	404.5	05/21/2023	222475	202250	ROTARY CLUB OF CHEMBUR	SHEKHAR NIMBALKAR	24240	24240000	42
2023	ZARI	NILANGA	LATUR	33		17325	17325	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	1980	1980000	23
2023				300	05/01/2023	165000	150000	ROTARY CLUB OF CHEMBUR		21000	21000000	
2023	SHINDI	BHADGAON	JALGAON	200	05/16/2023	260000	200000	ROTARY CLUB OF CHEMBUR	SAVITA RAJPUT	18000	22000000	
2023	VIRAMGAON	KHULATABAD	CHHA.SAMBHAJINAGAR	73.7	04/18/2023	110550	73700	ROTARY CLUB OF CHEMBUR	SHEKHAR NIMBALKAR	5896	5896000	42
2023				418	04/08/2023	229900	209000	ROTARY CLUB OF CHEMBUR		25080	25080000	
2023	TEHU	PAROLA	JALAGAON	204.4	03/25/2023	286160	204400	ROTARY CLUB OF CHEMBUR	SHEKHAR NIMBALKAR	16320	16320000	4
2023	PIMPRISIM BHATKHEDA	ERANDOL	JALAGAON	400.7	03/06/2023	220385	200350	ROTARY CLUB OF CHEMBUR	R.N. PATIL	24042	24042000	15
2023	SULTANPUR	KHULATABAD	CHHA.SAMBHAJINAGAR	407	03/26/2023	223850	203500	ROTARY CLUB OF CHEMBUR	SHEKHAR NIMBALKAR	24420	24420000	43
2023	WADGAON TIGJI	SOYEGAON	CHHA.SAMBHAJINAGAR	400	03/29/2023	220000	200000	ROTARY CLUB OF CHEMBUR	RAHUL PATIL	24000	24000000	45
2023	MOHLAI	SOYEGAON	CHHA.SAMBHAJINAGAR	399.9	03/28/2023	220000	200000	ROTARY CLUB OF CHEMBUR	RAHUL PATIL	24000	24000000	20
2023	SAYGAVHAN	KANNAD	CHHA.SAMBHAJINAGAR	414	04/20/2023	227810	207100	ROTARY CLUB OF CHEMBUR	EKNATH MALATKAR	24840	24840000	54
				14722.42		**11058972.5**	**10505123**				**1234060500**	**1069**

ROTARY CLUB OF PANVEL												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2023	NANDRA	JAMANER	JALGAON	79.4	06/06/2023	91000	79400	ROTARY CLUB OF PANVEL	SHEKHAR NIBALKAR	4764	4764000	6
2023	BABRE	DHULE	DHULE	403	06/20/2023	221650	201500	ROTARY CLUB OF PANVEL	SAVITA RAJPUT	24180	24180000	39
2023	CHANDANI KURHE	AMALNER	JALGAON	23.5	05/13/2023	13950	11750	ROTARY CLUB OF PANVEL	SHEKHAR NIMBALKAR	1410	1410000	4
2023	RAHIPURI	CHALISGAON	JALGAON	411.4	06/06/2023	226270	226270	ROTARY CLUB OF PANVEL	EKNATH MALATKAR	24684	24684000	31
				917.3		**552870**					**55038000**	**80**

SAKAL RELIEF FUND												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2018	DHAMANGAON	CHALISGAON	JALGAON	660	06/01/2018	66000	1000000	SAKAL RELIEF FUND			70000000	
2019	DHAMANGAON	CHALISGAON	JALGAON	250	05/01/2019	250000	200000	SAKAL RELIEF FUND	Dr UJJWAL CHAVHAN		22500000	
2019	RAJANGAON	CHALISGAON	JALGAON	250	05/01/2019	250000	200000	SAKAL RELIEF FUND	Dr UJJWAL CHAVHAN		22500000	

2019	SHIDWADI	CHALISGAON	JALGAON	220	05/01/2019	220000	176000	SAKAL RELIEF FUND	Dr UJJWAL CHAVHAN		19800000	
2019	VARKHEDE	CHALISGAON	JALGAON	120	05/01/2019	120000	96000	SAKAL RELIEF FUND	Dr UJJWAL CHAVHAN		10800000	
2019	KUNJAHAR	CHALISGAON	JALGAON	200	05/01/2019	200000	160000	SAKAL RELIEF FUND	Dr UJJWAL CHAVHAN		18000000	
2019	DAHIWAD	CHALISGAON	JALGAON	160	05/01/2019	160000	128000	SAKAL RELIEF FUND	Dr UJJWAL CHAVHAN		8000000	
2020	LONJE	CHALISGAON	JALGAON	255	05/01/2020	255000	204000	SAKAL RELIEF FUND	SHEKHAR NIBALKAR	22950	22950000	
2020	DHAMANGAON	CHALISGAON	JALGAON	200	05/01/2020	200000	160000	SAKAL RELIEF FUND	PANKAJ PAWAR	18000	18000000	
2020	NAIK NAGAR	CHALISGAON	JALGAON	200	05/01/2020	200000	160000	SAKAL RELIEF FUND	SOMNATH MALI	18000	18000000	
2020	TALEGAON	CHALISGAON	JALGAON	200	05/01/2020	200000	160000	SAKAL RELIEF FUND	TUSHAR NIKAM	18000	18000000	
2021	PIPALGAON	CHALISGAON	JALGAON	112	05/01/2021	112000	112000	SAKAL	PRASHANT GAIKWAD		12320000	
2022				239.9	07/03/2022	239900	287880	SAKAL RELIEF FUND	PACH PATIL TEAM	35985	35985000	
2022	PIPRI PACHORA	PACHORA	JALGAON	227	06/01/2022	124850	113500	SAKAL RELIEF FUND	SHEKHAR NIBHALKAR	18216	18216000	28
2022	HATGAON	CHALISGAON	JALGAON	106	04/05/2022	106000	127200	SAKAL RELIEF FUND	PRASHANT GAIKWAD	15900	15900000	3
2022	HATLE	CHALISGAON	JALGAON	497	04/05/2022	251350	228500	SAKAL RELIEF FUND	DINESH JADHAV	39990	40000000	46
2022	RAJDEHARE	CHALISGAON	JALGAON	195.72	04/05/2022	195720	234864	SAKAL RELIEF FUND	PRASHANT GAIKWAD	29358	29358000	16
2022	VADGAON ABHE TANDA	PACHORA	JALGAON	206.2		113410	103100	SAKAL RELIEF FUND	SANDIP RATHOD	14420	14420000	15

2022	VADGAON ABHE	PACHORA	JALGAON	413	04/27/2022	227150	206500	SAKAL RELIEF FUND	SHEKHAR NIBHALKAR	28910	28910000	29
2022	VADGAON JADHAV	PACHORA	JALGAON	200		200000	240000	SAKAL RELIEF FUND	SHEKHAR NIBHALKAR	30000	30000000	34
2022	NAGAD GOPEWADI	KANNAD	CHAA.SAMBHAJI NAGAR	120	01/01/2022	120000	144000	SAKAL RELIEF FUND	EKNATH MALATKAR	18000	18000000	13
2022	NAGAD	KNNAD	CHAA.SAMBHAJI NAGAR	220		121000	110000	SAKAL RELIEF FUND	EKNATH MALATKAR	15400	15400000	24
2023	KOKADI TANDHA	PACHORA	JALGAON	309.6	05/29/2023	169950	154800	SAKAL	SANDIP RATHOD	18576	18576000	15
				5561.42		**4102330**	**4706344**				**525635000**	**223**

BHARATIYA JAIN SANGHATANA												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2020	DADPIPRI	CHALISGAON	JALGAON	200	05/01/2020	200000	PROVIDED MACHINE	BJS	R M PATIL	18000	18000000	
2020	BORKHEDA	CHALISGAON	JALGAON	400	05/01/2020	200000	PROVIDED MACHINE	BJS	TUSHAR NIKAM	20000	20000000	
2020	DASKEBARDI	CHALISGAON	JALGAON	180	05/01/2020	180000	PROVIDED MACHINE	BJS	EKANATH MALATKAR	16200	16200000	
2020	PATONDA	CHALISGAON	JALGAON	230	05/01/2020	230000	PROVIDED MACHINE	BJS	TUSHAR NIKAM	11500	11500000	
2020				250	05/01/2020	250000	PROVIDED MACHINE	BJS		22500	22500000	
2021	HIRAPUR	CHALISGAON	JALGAON	400	05/01/2021	400000	PROVIDED MACHINE	BJS	PRASHANT		36000000	

									GAIKWAD			
2021	DASKEBARDI	CHALISGAON	JALGAON	160	05/01/2021	160000	PROVIDED MACHINE	BJS	EKNATH MALATKAR		17600000	
2021	CHINCHKHEDE	CHALISGAON	JALGAON	200	05/01/2021	200000	PROVIDED MACHINE	BJS	R M PATIL		22000000	
2022	ROHINI	CHALISGAON	JALGAON	50		27500	PROVIDED MACHINE	BJS	PRASHANT GAIKWAD	7500	7500000	3
2022	SHIVTANDA BAHADURPUR	CHALISGAON	JALGAON	450		247500	PROVIDED MACHINE	BJS	KIRAN PATIL	40500	40500000	40
2022	TITUR DONGARI	CHALISGAON	JALGAON	222	06/01/2022	222000	PROVIDED MACHINE	BJS	PACH PATIL TEAM	33300	33300000	
2022	DEOLI	CHALISGAON	JALGAON	90		90000	PROVIDED MACHINE	BJS	KIRAN PATIL	6300	6300000	6
2023	BHADGAON	BHADGAON	JALGAON	57	06/30/2023	79800	PROVIDED MACHINE	BJS	JITENDR PARDESHI	4560	4560000	6
2023	BELDARWADI	CHALISGAON	JALGAON	106.5	06/30/2023	149100	PROVIDED MACHINE	BJS	PRASHANT GAIKWAD	8520	8520000	4
2023	RAJANGAON	CHALISGAON	JALGAON	50	05/30/2023	27500	PROVIDED MACHINE	BJS	SHEKHAR NIBALKAR	3000	3000000	3
2023	PATHARDE	CHALISGAON	JALGAON	200		110000	PROVIDED MACHINE	BJS	SANDIP RATHOD		14000000	
2023	BHAUR	CHALISGAON	JALGAON	29	05/16/2023	40600	PROVIDED MACHINE	BJS	EKNATH MALATKAR	2320	2320000	
2023				150		82500	PROVIDED MACHINE	BJS	RAHUL PATIL	9000	9000000	
2023	AMBEHOL SHIVTANDA/ BAHADARPUR	CHALISGAON	JALGAON	346.8		190740	PROVIDED MACHINE	BJS	SANDIP RATHOD	20808	20808000	
2023	VADGAON MULANE	PACHORA	JALGAON	322	03/15/2023	450800	PROVIDED MACHINE	BJS	R.M. PATIL	25760	25760000	
2023	DIGI	PACHORA	JALGAON	135.3	04/30/2023	189420	PROVIDED MACHINE	BJS	RAHUL PATIL		12177000	29

2023	JAMDA	CHALISGAON	JALGAON	22	06/03/2023	30800	PROVIDED MACHINE	BJS	EKNATH MALATKAR	1760	1760000	91
				4250.6		**3758260**					**353305000**	

NAAM FOUNDATION												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2022	PIPLGAON	CHALISGAON	JALGAON	701.45	05/31/2022	701450	350725	NAM FOUNDATION	PRASHANT GAIKWAD	18250	18250000	4
2022	LONJE	CHALISGAON	JALGAON	887	06/01/2022	487850	443500	NAM FOUNDATION	SANDIP RATHOD	60690	60690000	70
2022	PIPLGAON	CHALISGAON	JALGAON	701.45	02/01/2022	385797.5	350725	NAM FOUNDATION	PRASHANT GAIKWAD	52575	52575000	55
2022	RAJNGAON	CHALISGAON	JALGAON	397	06/01/2022	218350	198500	NAM FOUNDATION	SHEKHAR NIBHALKAR	27790	2779000	33
2022	SAYAGWHAN	KANNAD	CHHA.SAMBHAJI NAGAR	150	02/10/2022	150000	180000	NAM FOUNDATION	EKNATH MALATKAR	22500	2250000	42
2023	HATGAON	CHALISGAON	JALGAON	351	05/08/2023	193050	175500	NAAM FOUNDATION	PRASHANT GAIKWAD	21060	21060000	
2023	BORKHEDA	CHALISGAON	JALGAON	306	05/02/2023	168300	153000	NAAM FOUNDATION	TUSHAR NIKAM	18360	18360000	
2023	BODHARE	CHALISGAON	JALAGAON	543	03/28/2023	298650	271500	NAAM FOUNDATION	JITENDR PARDESHI	32580	32580000	
				4036.9		**2603447.5**	**2123450**				**208544000**	**204**

CREDAI												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2022	JAMDA	CHALISGAON	JALGAON	401.75	44650	220962.5	200875	CREDAI	EKNATH MALATKAR	28101	28101000	47
2022	PATHRAD	BHADGAON	JALGAON	210.8	44718	115940	105400	CREDAI	SAVITA RAJPUT	31620	31620000	29
2022	TIRPOLE	CHALISGAON	JALGAON	81	44698	44550	40500	CREDAI	MILIND DEOKAR	5670	5670000	3
2022	NYADOGRI	CHALISGAON	JALGAON	307	44645	168850	153500	CREDAI	PRASHANT GAIKWAD	21490	21490000	39
2022	CHABHARDI	CHALISGAON	JALGAON	423.95	44696	423950		CREDAI	TUSHAR NIKAM	29610	29610000	32
2022	SHIVAPUR	CHALISGAON	JALGAON	110.5	44687	60775	55250	CREDAI	SANDIP RATHOD	16575	16570000	10
2022				200	44698	200000	240000	CREDAI	EKNATH MALATKAR	30000	30000000	25
2023	KHANDI PIMPALGAON	KHULATABAD	CHHA.SAMBHAJI NAGAR	612	45022	336600	306000	CREDAI PUNE	SHEKHAR NIMBALKAR	36720	36720000	48
2023	VAREGAON	KHULATABAD	CHHA.SAMBHAJI NAGAR	229.5	45028	321300	229500	CREDAI PUNE	SHEKHAR NIMBALKAR	18360	18360000	32

2023	KANADGAON	KHULATABAD	CHHA.SAMBHAJI NAGAR	513	45038	282150	256500	CREDAI PUNE	SHEKHAR NIMBALKAR	30780	30780000	55
2023	KANAKSHIL	KHULATABAD	CHHA.SAMBHAJ INAGAR	406	45041	223300	203000	CREDAI PUNE	SHEKHAR NIMBALKAR	24360	24360000	34
2023	VADOD	KHULATABAD	CHHA.SAMBHAJI NAGAR	416	45033	228800	208000	CREDAI PUNE	SHEKHAR NIMBALKAR	24960	24960000	37
				3911.5		**2627177.5**	**1498250**				**298241000**	**391**

GUJRAT AMBUJA GROUP												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2022	TITUR - DONGARI	CHALISGAON	JALGAON	500	07/12/2022	700000	500000	GUJRAT AMBUJA	PACH PATIL TEAM	55000	55000000	
2023	TITUR - DONGARI	CHALISGAON	JALGAON	416	05/05/2023	582400	416000	GUJRAT AMBUJA	PACH PATIL	45760	45760000	
				916		**1282400**	**916000**				**100760000**	

MANAV LOK												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2023	NAGAD	KANNAD	CHHA.SAMBHAJI NAGAR	800		440000	400000	MANAV LOK	RAHUL PATIL	48000	48000000	
2023	LONJE	CHALISGAON	JALGAON	200		110000	100000	MANAV LOK	SANDIP RATHOD		14000000	
2023	AMBEHOL	CHALISGAON	JALGAON	200		110000	100000	MANAV LOK	SANDIP RATHOD		14000000	
2023	KINHI	SOYEGAON	CHHA.SAMBHAJI NAGAR	260.4	05/11/2023	143920	130200	MANAV LOK	EKNATH MALATKAR	15600	15600000	
2023				434.8	05/01/2023	238700	217000	MANAV LOK		26088	26088000	
2023	HATALE	CHALISGAON	JALGAON	377	05/14/2023	204050	188500	MANAV LOK	DINESH JADHAV	22620	22620000	
2023	HARASWADI	KANNAD	CHHA.SAMBHAJI NAGAR	320.9	04/28/2023	176495	160450	MANAV LOK	EKNATH MALATKAR	19200	19200000	
2023	SHINDOL	SOYEGAON	CHHA.SAMBHAJI NAGAR	158	04/20/2023	86900	79000	MANAV LOK	RAHUL PATIL	9480	9480000	
				2751.1		**1510065**	**1375150**				**168988000**	

DWORF KETAL												
YEAR	VILLAGE	TALUKA	DISTRICT	TOTAL HOURS	END DATE	DIESEL COST(RS) (BORNE BY FARMERS)	MACHINE RENT (RS) (BORNE BY SPONSORER)	ORGANISATION	PACH PATIL	CUBIC METER OF WORK	WATER STORAGE (LITERS)	NO. FARMERS CONTRIBUTED
2023	WAGHALE	CHALISGAON	JALGAON	400		220000	200000	DWORF KETAL	DINESH JADHAV		28000000	
2023	BELKHEDA	KANNAD	CHHA. SAMBHAJI NAGAR	335	45096	184250	167500	DWORF KETAL	EKNATH MALATKAR	20100	20100000	
2023	SHIUR	VAIJAPUR	CHHA. SAMBHAJI NAGAR	304.42	45074	426188	304420	DWORF KETAL	MILIND DEOKAR	24320	24320000	23
2023	KARJGAON	CHALISGAON	JALGAON	168.12	45096	92400	84000	DWORF KETAL	KIRAN PATIL	10087	10087000	16
2023	NAYDONGARI	NADGAON	NASHIK	300	45047	165000	150000	DWORF KETAL	PRASHANT GAIKWAD	21000	21000000	
				1507.54		**1087838**	**905920**				**103507000**	**39**
EWT MSCDA												
2023	NERI	PACHORA	JALGAON	410	45046	225500	205000	EWT MSCDA	EKNATH MALATKAR	24600	24600000	64
2023	YESGAON	KHULATABAD	CHHA.SAMBHAJINAGA	417	45053	229350	208500	EWT MSCDA	SHEKHAR	25020	25020000	54

			R						NIMBALKAR			
2023	AMBHORA	ASHTI	BEED	400	45031	200000	200000	EWT MSCDA	SHRIKANT PAYGAVHANE	24000	24000000	35
2023	SALEVDGAON	ASHTI		147	02-04-023	80850	73500	EWT MSCDA		8820	8820000	
2023	SALEVDGAON	ASHTI	BEED	68.36	45032	95704	68600	EWT MSCDA	SHRIKANT PAYGAVHANE	4101	4101000	17
2023	POKHARI	NANDGAON	NASHIK	197	44997	275800	197000	EWT MSCDA	SHEKHAR NIMBALKAR	15760	15760000	28
				1639.36		**1107204**	**952600**				**102301000**	**198**
AGARWAL PATEL, PUNSHI GROUP, SOCIAL ORGANISATIONS												
2022	TITUR - DONGARI	CHALISGAON	JALGAON	**500**	44713	**800000**	**550000**	AGARWAL, PATEL, PUNSHI GROUP, SOCIAL ORGANISATIONS	PACH PATIL TEAM	**55000**	**55000000**	
JALYUKT SHIVAR												
2018	DHAMANGAON	CHALISGAON	JALGAON	**400**	**43191**	**0**	**8000000**	JALYUKT SHIVAR	AGRICULTURE DEPARTMENT		**50000000**	
SIDDHI VINAYAK TEMPLE TRUST												
2018	DHAMANGAON	CHALISGAON	JALGAON	**200**	**43221**	**0**	**1800000**	SIDDHI VINAYAK TEMPLE TRUST	AGRICULTURE DEPARTMENT		**20000000**	