

### EXECUTIVE SUMMARY REPORT GREEN BELT DEVELOPMENT AND PLANTATION

Implementing Partner: PI Industries





SOULACE CONSULTING PVT. LTD.

#### PROJECT BACKGROUND

The CSB Plantation Drive Project by Pl Industries in Panoli. Cujarat, was conceptualised and implemented in response to the pressing need for environmental restoration and pollution control in the highly industrialised Colden Corridor of South Cujarat. The project aimed to restore \$3000 quare meters of follow land through the plantation of 25000 to 30.000 native sapilings using the Miyawaki technique, a method known for promoting rapid afforestation and biodiversity in degraded lands. The initiative witnessed active participation from Pl Industries employees. government officials, and community members. Additionally sapilings were distributed to local residents to promote household level greening.

#### PROJECT DETAILS



Implementation year March 2023 to March 2024

Assessment year

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FY 2024-25 Beneficiaries



5,000 - 7,000



Location Panoli (Gujarat)



Budget Rs. 1.01.50.000/-



Implemented by Pl Industries

#### Alignment with SDGs



#### PROJECT ACTIVITIES



Developing a greenbelt through a plantation of saplings in an area of 58.000 square meters.



Distribution of saplings among local community members for planting in their personal gardens.

# EXECUTIVE SUMMARY

# **KEY** FINDINGS



#### COLLABORATIVE PROJECT DESIGN

The plantation drive was initiated through coordination between the Forest Department, Pl Industries, and the Notified Area Authority (NAA), which allocated 58.000 square meters (5.8 hectares) of fallow land to the project.



#### **REGULATED AND QUALITY-ASSURED IMPLEMENTATION**

A third-party agency was selected by the NAA, following relevant guidelines and norms for the selection. Saplings procured for the project by the agency were quality-checked before planting.



#### LARGE-SCALE PARTICIPATION

Over 25,000-30.000 saplings were planted with the support of 100 Pl Industries employees, local community members, and officials from the Cujarat Pollution Control Board and NAA.



#### USE OF MIYAWAKI PLANTATION TECHNIQUE

This method ensured a dense plantation with a self-sustaining forest ecosystem, ideal for small, degraded spaces.



#### REGULAR MONITORING AND MAINTENANCE

Maintenance is being handled by the third-party agency with regular inspections (2-3 times per month) by the implementation and NAA staff, ensuring plant survival and upkeep.



#### LONG-TERM SUSTAINABILITY

With Miyawaki plantations becoming self-sustaining after 2-3 years, the area is likely to thrive ecologically with minimal ongoing input.



#### LAND RESTORATION

Revived 58,000 sq. m of previously barren land.



#### PLANT SURVIVAL

The survival rate of plants is 95.0%, with the remaining 5.0% replanted, resulting in 100% plant cover. All the plants are growing rapidly.

## **KEY** IMPACTS

#### **ECOLOGICAL & ENVIRONMENTAL IMPACT**

#### FLORA RESTORATION



#### FAUNA ENHANCEMENT

- Increase in bird and butterfly sightings: Significant increase in faunal diversity, especially in bird and butterfly populations, which act as bio-indicators of a healthy ecosystem.
- New nesting sites and feeding grounds: Creation of a new habitat for animals, further enhancing biodiversity in the region.



#### AIR QUALITY IMPROVEMENT

- Local perceptions of cleaner air and reduced dust: Perceived reduction in air pollution in the industrial zone, improving respiratory health and guality of life for local residents.
- Potential pollution absorption by mature trees: Miyawaki forests are contributing to carbon sequestration, potentially absorbing up to 30 tonnes of CO<sub>2</sub> per hectare annually.



#### **MICROCLIMATE & HYDROLOGICAL EFFECTS**

 Community expectations of increased rainfall: Though not yet tracked, stakeholder views and desk research suggest improvements in soil moisture retention and water infiltration, potentially increasing rainfall.

#### SOCIO-ECONOMIC & LIVELIHOOD IMPACT



#### EMPLOYMENT OPPORTUNITIES

 Daily-wage labour engaged in planting and maintenance: Members of the local community are involved in the planting and maintenance activities, which create employment opportunities and foster income generation in the local economy.



#### COMMUNITY COHESION

- Joint village participation in plantation drives: Saplings were planted with the support of local community members, who contributed their labour and expertise to the initiative, demonstrating conscious collaboration for furthering a social cause.
- Strengthened ties between PI Industries, Panchayat, and villagers: Distribution of saplings to local residents fostered household greening and strengthened community involvement.

#### **INSTITUTIONAL & GOVERNANCE IMPACT**



#### INTER-AGENCY COORDINATION

- Roles and processes: A collaborative project design was conceptualised to develop the greenbelt through Public-Private partnership (engagement of the Forest Department, PI Industries, and Notified Area Authority), creating a pathway for strategic future partnerships.
- Funding and land-allotment procedures: The Notified Area Authority (NAA) allocated 58,000 square meters (5.8 hectares) of fallow land to the project.



#### MONITORING & SUSTAINABILITY

- Replacement of damaged saplings and a three-year maintenance commitment: Maintenance is being handled by the third-party agency, ensuring plant survival and upkeep.
- Monthly site visits by PI and Authority staff: Regular inspections (2-3 times per month) are conducted by officials from PI industries and NAA staff to ensure maintenance.



# U. INTRODUCTION

#### NEED OF THE PROGRAM

The rapid industrial growth in Cujarat, especially in the Colden Corridor of South Cujarat, has brought tremendous economic benefits. However, the region, particularly around CIDC Panoli, pays a huge price in the form of searce land and water resource degradation to sustain these benefits. The pollution in the area impacts the health and well-being of lakhs of residents A significant portion of the workforce employed in CIDC Panoli lines in nearby villages like Sanjali, which has seen a major inflow of migratory populations. Recognising the urgent need to mitigate pollution in these densely populated areas, the Cujart Pollution Control Board (CPCB) has strongly recommended the development of green belts to contain air pollution. Creen belts serve as natural pollutant sinks, helping to absorb harmful particulates and gases from the atmosphere.

The greenbelt development and plantation drive project by Pl Industries aims to restore ecological balance by creating a dense vegetation cover of 25.000 to 30.000 tress in CIDC Panol. Therefore, the plantation project is not merely an aesthetic intervention: it is a critical environmental and public health strategy, ensuring a harmony between sustainable development, ecological restoration and industrial growth in the region.

**OBJECTIVES OF THE PROGRAM** 



To develop a green belt and concentrated plantation in the industrial area.

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To protect natural or semi-natural environments and minimise the risk and health hazards.



To improve the air quality of the area.

#### ABOUT PI INDUSTRIES

Founded in 1966, PI Industries Ltd. is a leading name in India's sprochemical sector, known for its commitment to innovation, sustainability, and social responsibility, with the purpose of creating a healthier planet the company has contributed significantly to agricultural advancement through the development of high quality crop protection products. While the company has atrong presence in various indian cities, including the industrial hub of Panoli, Cujarat, the organisation also has a global outreach. PI Industrier influence extends well beyond business operations – it has consistently demonstrated a development project, the company also focuses on empowering communities through educational support, approximation access to clean drinking water, and enhancing livelihoods, particularly among marinalised rouse.

# 02 RESEARCH METHODOLOGY

Pl industries commissioned a study by SoulAce to assess the impact of their Greenbelt Development program. The initiative aimed to assess the impact of the project. This study, conducted by SoulAce, will critically analyse the short-term and long-term effects of the project, using primary data collected from the various takeholders involved in the project.

#### **OBJECTIVES OF THE STUDY**

The primary objectives of the study were:



To evaluate the immediate impacts of the program implemented and assess the enduring impacts of the program.



To measure the extent to which the plantation of saplings has contributed to ecological enhancement.



To provide insights into the strengths and areas for improvement of the program implementation.

#### USE OF QUALITATIVE RESEARCH APPROACH

The research study adopted a qualitative research approach, which allowed for an in-depth exploration of the subjective experiences and viewpoints of key stakeholders. This approach focuses on understanding the human experiences, perceptions, motivations, and contextual factors that shape how beneficiaries and stakeholders interact with CSI initiatives.

#### APPLICATION OF QUALITATIVE TECHNIQUES

Qualitative methods provide insights into the real-life experiences, viewpoints, and stories of community, members, forest department officials and those reponsible for project implementation. Engaging such stakeholders through in-depth interviews and focus group discussions allows for a comprehensive examination of observed changes. These methods facilitate a dealined exploration of the improvements in the environmental conditions brought about by the project. By capturing the lived realities and narratives of those involved availative approaches offer a nanaeed understanding of the project and its inspart.

#### DESK REVIEW

A desk review of available project documents was undertaken to understand the socioeconomic context, policy environment, and community needs driving the project in particular. They provide a cost-effective and time-saving way to gather baseline information, which is essential before conducting fieldwork or engaging stakeholders.

#### ENSURING TRIANGULATION

To bolster the reliability and validity of its conclusions, the study implemented various triangulation strategies. Data triangulation was achieved by gathering information from diverse sources, including interviews with community members, field notes, interactions with other stakeholders and their feedback. This extensive data collection process facilitated a comprehensive evaluation of the program and its impact. Alongside this, aligning insights from such interviews and group discussions with desk review findings strengthens the credibility and depth of analysis. Moreover, it helps in identifying best practices, potential risks, and strategic opportunities for project design and implementation.

#### RESEARCH DESIGN

Name of the project Green Belt Development & Plantation Research design used

Descriptive Research Design



PI Industries



#### **Qualitative Methods used**

Semi-structured interviews and Focus Group Discussions with key stakeholders

#### KEY STAKEHOLDERS



#### STUDY TOOLS

#### Questionnaires for stakeholders -

A semi-structured questionnaire was developed for each type of sample of this group. Stakeholders were identified for the project. Interviews and Focus Croup Discussions using semi-structured questionnaires were conducted with the community members, forest department officials and project implementation team.

Impact Area	Indicators
	Flora and Fauna Diversity
Ecological &	Improvement of air quality
Environmental	Changes in Microclimate and Hydrological Effects
Socio-Economic and Livelihood Impact (analysed through an understanding of the Program Design and Implementation Process)	Employment Opportunities
	Community Engagement
Institutional and Governance Impact	Inter-Agency Coordination
(analysed through an understanding of the Program Design and Implementation Process)	Monitoring and Sustainability

#### ETHICAL CONSIDERATIONS

The impact evaluation was conducted under a strong ethical framework, rigorously upholding participants' rights and well-being. Informed consent was carefully obtained, with clear information provided about the study, ensuring voluntary participation free from any pressure. Confidentiality and privacy were strictly maintained through secure data storage and anonymisation. Throughout, participants were treated with respect and fairness, with their welfare prioritised and support offered as needed.

#### **03. OECD FRAMEWORK**



The program aimed to address real and pressing needs in the context of Cajarats (Panol) Industrial Development area: a region heavily impacted by environmental pollution due to the presence of a large number of factories. Environmental challenges such as air pollution, land degradation, and low biodiversity are evident in the area. Moreover, the project was a response to a direct request from the Forest Department and was aligned with government priorities for green development. Furthermore, the selection of an appropriate plantation technique (Myawaki) and the use of native species demonstrates an understanding of local ecological needs and urban afforestation, making the initiative relevant to its context.



RELEVANCE

The program showed strong alignment with the following Sustainable Development Goals:



The program demonstrated strong alignment with several key national goals and initiatives:

- National Action Plan on Climate Change (NAPCC): The program's afforestation efforts were coherent with the NAPCC's mission to promote ecological sustainability and climate resilience.
- Green India Mission: The focus on reforestation and biodiversity conservation is closely aligned with the objectives of the Green India Mission, which aims to enhance forest cover and restore ecosystems.

The following indicators reflect the effectiveness of the project in enhancing the environmental conservation of the area:

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- Sapling Survival Rate: Over 25,000-30,000 saplings planted with 95% + survival rate, and replantation done to ensure 100% coverage.
- Restoration of Degraded Land: The program successfully restored 5.8 hectares of barren land, turning it into a lush green forest.
- Increase in Biodiversity: The Miyawaki forest now hosts diverse flora and fauna, including bioindicators like butterflies, which further suggests biodiversity enhancement.
- Reduction in pollution: As highlighted by various stakeholders, the project has improved the air quality in the area, making it more breathable for local residents.

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IMPACT

The program's efficiency is evident in its structured approach, which is an marked by strategic stakeholder partnerships in which each stage contributes effectively to the overall impact. Comprehensive land preparation and strategic planting using the Myawaki technique accelerate ecological restoration, which would otherwise take decades to achieve naturally. The involvement of the third-party agency for the maintenance and upkeep of the plantation, monitored through bi-monthly visits of NAA and other officials, ensures that the forests continue to thrive.

#### Short-term impacts:

- The restoration of 58,000 sq m of barren land enhances soil conservation in the area.
- The initial afforestation efforts resulted in quick improvements in plant diversity and early signs of faunal return, such as sightings of birds.
- Improvement in air quality through reduction in air pollution has led to health improvements among residents.
- The distribution of saplings among local communities has increased greenery in their households, improving the micro-climate.

#### Long-term impacts:

- The forests would eventually lead to an enhancement in groundwater retention, followed by a potential increase in rainfall in the area.
- Huge amounts of greenhouse gases (carbon dioxide) would be sequestered through these forests, thereby promoting environmental restoration.

However, it is important to acknowledge that projects such as these have a long gestation period and would take a few years to actually materialise into definitive impacts.

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#### SUSTAINABILITY

The project's sustainability is deep-rooted in its ecologically conscious design of restoring 54 hectares of fallow land by planting various trees, which will continue to benefit the environment long after project closure. Moreover, the choice of Myawaki plantation technique ensures that the forset becomes self-sustaining beyond a 3-4-year time period. Additionally, no dependency on additional water resources for watering of plants makes the project sustainable.

