HDB STANGES IMPACT ASSESSMENT REPORT LAKE RESTORATION PROJECT IN BHUJ AND COIMBATORE

Implementing Partner: Environmentalist Foundation of India



SOULACE CONSULTING PVT. LTD.

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01. ABBREVIATIONS

COVID	Coronavirus Disease
CSR	Corporate Social Responsibility
EFI	Environmentalist Foundation of India
NMCW	National Mission for Clean Water
UNESCO	United Nations Educational, Scientific and Cultural Organization

02. EXECUTIVE SUMMARY

Project Background

The Lake restoration program initiated by HDB Financial Services Linnike and implemented by the EFI almed to restore and revitalize water bodies in the states of Cujarat and Tamil Nadu(SBI). With a focus on addressing issues such as water pollution, habitat degradation, and community health concerns, the project sought to engage local communities and stakeholders in lake restoration efforts Through a combination of scientific Interventions, community participation, and environmental initiatives the project atimed to improve water quality, enhance biodiversity, and promote sustainable development in the targeted areas.

Project Activities

To scientifically restore two highpriority water bodies, one in Bhuj, Gujarat and the other in Coimbatore, Tamil Nadu, which have been identified by the local government.



To sensitize the local community towards the protection of restored and existing water bodies.



To refurbish crucial ecosystems amidst urban and rural development with an aim to remediate the water crisis.

Project Details



Implementation Year

March 2021 - April 2022



Assessment Year

FY 2023 - 2024



Locations

Bhuj, Gujarat and Coimbatore, Tamil Nadu





Implementing Partner Environmentalist Foundation of India

SDC Coals

- SDG 6: Clean Water and Sanitation
- SDG 11: Sustainable Cities and Communities
- SDG 15: Life on Land

Alignment with National policies and programs

- National Water Policy
- National Mission for Clean Water (NMCW)
- National Mission for Clean and Green India

Research Design Snapshot



Project Name Lake Restoration Project in Bhuj and Coimbatore



Sampling Methodology Purposive and random sampling



Research Design Descriptive research design



Sample Size

Desalsar Lake Restoration, Bhuj, Gujarat

Key Findings



72.7%

of the respondents mentioned issues of stinking in the lake before the intervention.



90.9%

of the respondents reported that cleaned lakes after the intervention. on.



100.0%

of the beneficiaries reported experiencing problems with mosquitoes in their homes before the lake restoration.



All respondents confirmed the presence of water in the lake throughout the year.

Key Impact



<mark>90.9</mark>%

of the beneficiaries reported an increase in water availability for drinking purposes.



All stakeholders stated an increase in groundwater availability after the program intervention.



100%

of respondents mentioned an increase in water levels in the wells from some to large extent owned by them or their neighbours in the locality.



All stakeholders reported a reduction in waterborne diseases in their families.

Kalapatti lake restoration, Coimbatore, Tamil Nadu

Key Findings



100.0%

of respondents reported no dumping of sewage in the lake after the intervention.



75.0%

of respondents mentioned encroachments around the lake before the intervention.



All respondents reported that the lakes looked clean after restoration.



90.0%

of respondents stated problems with mosquitoes at their homes before the restoration of lakes.



75.0%

of respondents reported having water in the lake only when it rains before lake restoration.



All beneficiaries mentioned an ncrease in greenery and new trees rround the lake.

Key Impact



90%

of respondents noted that there is not much growth of water hyacinths in the lake now.





of respondents mentioned a reduction in problems with at home.



All respondents reported having water in the lake throughout the year.



90%

of beneficiaries stated an increase in water availability for drinking purposes after the intervention.



All respondents reported an increase in the water levels owned by them or their neighbours in the locality.



95%

of respondents mentioned that the lake filled with water made the locality beautiful.

CHAPTER 3 INTRODUCTION



Kalapatti Lake, Coimbatore

Background and need of the program

The program supported by HDB Financial Services and implemented by EFI addressed the urgent need for lake restoration in regions with extensive pollution and environmental degradation. Rapid urbanization in the vicinity has led to the extensive pollution of lakes and posed significant threats to both the natural ecosystem and the surrounding communities. Invasive weeds, solid waste, and increasing wastewater discharge severely impacted the water bodies and also impacted the natural population of species and disrupted their interaction with the ecosystem. In addition, seasonal weather fluctuations and groundwater depletion had rendered the area incapable of sustaining plant, aquatic, and terrestrial life.

Excessive sedimentation, encroachments, and undefined boundaries had caused the situation, leading to inundation or flooding in the neighbourhood. Poor maintenance of natural resources has resulted in a decline in the number of migratory birds and had undesirable impacts on biodiversity.

As freshwater ecosystems continued to disappear due to industrialization and urban infrastructure expansion, there was an imperative need to restore teave vital lifelines. The program aimed to restore earl rejuvenate the degraded lakes, enhance their storage capacity, prevent encroachments, and revitalize biodiversity in the targeted areas of intervention. By ensuring the availability of clean water and improving accessibility throughout the year, the program aimed to safeguard the well-being of the community and mitigate the adverse impacts of environmental degradation.

Objectives of the Program

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To sustain a healthy balance of aquatic life and support socioeconomic needs.



To convert the eutrophic state of water bodies into a healthy ecological community in the region.



To replenish groundwater through water holding structures and positively influence water quality.



To reduce the effects of waterborne diseases by maintaining healthy lakes in the vicinity.

About the HDB Financial Services

HDB Financial Services is dedicated to supporting projects that promote community development, especially for underprivileged communities, and reduce adverse environmental effects. The CSR objective of the company is to encourage social and economic growth by integrating actions that benefit economically. socially physically. and disadvantaged populations. The CSR intervention of the include community company aim to development, social responsibility, and environmental responsibility into our operations across all business units, promoting inclusive growth, development, and empowerment.

About the Implementing Partner

EFI is a wildlife conservation and habitat restoration group that works with active projects in Chennal, Hyderabad, Bangalore, Coimbatore, Pondichery, and Trunelvell. The group functions with volunteers and focuses on involving many more citizens through effective public outreach campaigns in the restoration of water bodies across India, EFI, has worked on 150 water bodies across 12 states in the country since its inception in 2007.

EFI has scientifically restored 107 water bodies across India. The community-based scientific lake/pond restoration effort is a nexus between community volunteering and scientific methods of restoring water bodies. EFI at first started with regular peripheral clean-ups around water bodies like lakes, ponds, beaches and rivers. This movement started with a handful of volunteers but today has over 57,000 volunteers across various cities in India. Every weekend, there are dedicated volunteering opportunities to clean up the water bodies in various cities. This movement was further bolstered by scientific collaborations with UNESCO-IHE in the Netherlands which provided the know-how of restoration methods used to revive water bodies globally.

CURRENT SITUATION OF KALAPATTI LAKE COIMBATORE



CHAPTER 4 RESEARCH METHODOLOGY

In the fiscal year 2023-24, HDB Financial Services Limited commissioned SoulAce to conduct an impact assessment study. The purpose of the study was to evaluate the immediate and enduring impacts of the program implemented under the theme of Water Restoration'.

Objectives of the study



To assess and measure the overall effectiveness and impact of the lake restoration program.



To measure the extent of achievement of program objectives, including scientific restoration and community sensitization.



To understand the perspectives of stakeholders involved in the program implementation.



To review the sustainability aspects of the program model and formulate strategic recommendations.

Mixed Methods Approach

The assessment utilized a mixed-methods approach_blending qualitative and quantitative research techniques. Qualitative methods were employed to delve into subjective experiences, offering detailed insights into participant perspectives, while quantitative approaches facilitated the collection and analysis of numerical data, providing statistical insights and identifying trends.

Following a descriptive framework, the research design a imee for a throrough analysis and exploration of various program aspects. Descriptive research, renowned for its ability to offer an overview and detect patterns, played a crucial role in understanding the program's current status. Integrating both qualitative and quantitative research methodologies within this descriptive framework allowed for a comprehensive evaluation of the program. This inclusive approach not only illuminated the program's impact but also highlighted areas for improvement By combining these methods the study achieved a holistic examination of the subject matter, enriching the depth and breadth of findings and enhancing the overall credibility of the study.

Application of Quantitative Techniques

A structured interview schedule was employed as a tool to gather measurable data for assessing the effectiveness of the CSR initiative.

Application of Qualitative Techniques

Interviews were conducted with key project stakeholders to gain a comprehensive understanding of the initiative.

BRANDING AT KALAPATTI LAKE



Project Evaluation Framework

After the collection of relevant information and perceptions through interviews, the OECD framework would be followed/applied. It has six evaluation criteria - relevance, coherence, efficiency, effectiveness, impact, and sustainability for each of the indicators.



Ensuring Triangulation

To ensure the reliability and validity of its findings, the study utilized diverse triangulation techniques. Data triangulation involved gathering information from various sources. including field notes, beneficiary interviews, interactions with community members, and feedback from project volunteers. This comprehensive approach to data collection enabled a thorough assessment of the program's impact. Methodological triangulation was also employed, integrating a variety of research methods such as surveys, interviews, and focus group discussions. This multi-faceted approach facilitated cross-verification of information. reducing the potential for biases. By implementing these triangulation strategies, the study ensured a robust and trustworthy analysis. bolstering the credibility of its findings.

Research Design



Research design used

Descriptive research design



Sampling Technique

Purposive random sampling



Sample Size



Qualitative methods used

Focus group discussions, key informant interviews, and stakeholder engagement.

Sampling framework

Study Tools



Questionnaire for Primary Beneficiaries:

Structured questionnaires were prepared for primary beneficiaries in each focus area, aligning with project specifics and predefined indicators to ensure systematic data collection prior to survey commencement.



Questionnaire for Secondary Beneficiaries and Stakeholders:

Semi-structured questionnaires were prepared for stakeholders, enabling one-on-one discussions to gather testimonials from beneficiaries and stakeholders across all focus areas and ensuring comprehensive insight gathering.

Ensuring Commitment to Research Ethics



Informed Consent

Prior to participation, individuals received detailed information about the study's purpose, procedures, risks, and benefits. They willingly agreed to participate with a clear understanding of the research goals.



Confidentiality and Privacy

We prioritized the confidentiality and privacy of participants' personal information. Data collected was securely stored and accessed only by authorized personnel. External data sharing was done in an aggregated and anonymized manner to protect privacy.

SAMA SIDDIQUE, COUNCILLOR, WARD NO. 3, BHUJ





Ethical Treatment

We ensured the ethical treatment of participants by minimizing potential harm or discomfort. Ethical considerations were embedded in all aspects of the study to protect the well-being and rights of all involved.



Voluntary Participation

Participants engaged in the research voluntarily, without coercion. They had the right to withdraw at any time without repercussions, and their decision was respected.

"

Before the restoration. Desalsar Lake was a sorry sight - overrun with algae, politude with severage and garbage, and emitting a foul stench. The reduced rainwater storage compounded the issue, leaving the surrounding area plagued with mosquitoes and diseases like malaria.

Thanks to the generous support of HOB Financial Services. Dealart lake has undergoine a remarkable transformation. The exclusion of algae, along with the construction of fences and gates, has not only enhanced the aesthetics but also prevented further contamination. The thorough cleaning has significantly reduced the stench, making the water more pleasant. Most importantly, the decrease in mosquito infestation has led to a healthier environment lowering the risk of diseases.

The restoration of Desalar Lake stands as a testament to the power of collaboration and corporate responsibility. HDB Financial Services: contribution has not only revitalized a natural resource but also improved the quality of life for the community. We extend our heartfeft gratitude for their invaluable support.

"



SOULACE TEAM MEMBER INTERACTING WITH STAKEHOLDERS AT BHUJ

CHAPTER 5 KEY STUDY FINDINGS AND IMPACT

Geographical Coverage



Gujarat and Tamil Nadu



Inclusivity

Daily wage labourers and community members



Key Program Inputs and Activities

PROCESS

MILESTONE INDICATORS

R	Permissions and Reporting for the lakes	Submitted Reports (interim and final) and received approval of NOCs from the government. This also included the water body due diligence and restoration planning.
æ	De-weeding and solid removal of waste for both the water bodies	Desalsar lake area 15.05 acre Kalapatti lake area 15 acre Removed weed and solid waste from the lakes.
Ž .	Dredging, de-silting and deepening of two water bodies	Average 3 feet increase in the water holding capacity of the lakes.
×.	Protection of the water bodies	Construction of earthen bunds along with fencing and boards.
<u>\$</u>	Reintroducing native trees	Plantation of native plants was done along the periphery of the water bodies.

દેસલસર તળાવ - Desalsar Lake બહુપરીમાણીય ભાગીદારી સાથે તળાવ સંરક્ષલ પ્રવાસો



આ ઐતિહાસિક જળાશય સ્થાનિક અને યાયાવર પક્ષીઓનું નિવાસસ્યાન છે. ફપા કરીને તળાવની જાળવણી અને સકાઈમાં સહકાર આપો.

તળાવના પરિસરમાં કચરો ફેંકવા અને ખુલ્લામાં શૌચ કરવા પર સખત પ્રતિબંધ છે.

CSR Partner

HDB STRANGLAS

STAKE HOLDERS AND PEOPLE FROM THE NEIGHBOURHOOD OF DESALSAR LAKE, BHUJ

KEY FINDINGS

This section of the assessment study will present the key findings of the project intervention. Below is the compiled list of key findings:



Condition of the lake prior to Desalsar Lake restoration.



The extent to which the dumping of sewage in the Desalsar Lake after the restoration.



The extent of encroachments around the lake- Before & After Restoration in Desalsar Lake.



The extent to which the Desalsar Lake is looking clean after the restoration.



The extent of growth of water hyacinths in the Desalsar Lake now.



Condition of the lake prior to Kalapatti lake restoration.



The extent to which the dumping of sewage in the Kalapatti Lake after the restoration.



The extent of encroachments around the lake- Before & After Restoration in Kalapatti Lake.



The extent to which the Kalapatti Lake is looking clean after the restoration.



The extent of growth of water hyacinths in the Kalapatti Lake now.



Condition of water retention in the Desalsar Lake before restoration



Condition of water retention in the Kalapatti Lake before restoration



The extent to which there was a problem of mosquitoes in the homes around the lake in Coimbatore before the lake restoration.



The extent to which there was a problem of mosquitoes in the homes around the lake in Bhuj before the lake restoration.

CHAPTER 7 KEY PROJECT IMPACT



PRE – INTERVENTION STATUS

CHART 1: CONDITION OF DESALSAR LAKE



CHART 2: CONDITION OF KALAPATTI LAKE



Covered with water hyacinth

BHUJ - DESALSAR LAKE

- The majority of respondents reported stinking due to pollution.
- A number of respondents (27.4%) noted sewage dumping.
- A smaller portion of respondents mentioned algae growth covering the lake.

COIMBATORE - KALAPATTI LAKE

- Majority of the respondents mentioned that the lake was mainly covered with water hyacinth.
- A considerable number of respondents highlighted sewage dumping as an issue.



72.7%

of respondents stated that Desalsar Lake was stinking due to pollution.



60.0%

of respondents reported that Kalapatti Lake was contaminated with sewage prior to the intervention.



SOULACE TEAM MEMBER WITH COMMUNITY STAKEHOLDER, BHUJ

CHART 3: EXTENT TO WHICH DUMPING OF SEWAGE IN DESALSAR LAKE AFTER THE LAKE RESTORATION



To a larger extent, people continue to dump sewage in it To some extent, people are still dumping sewage in it

CHART 4: EXTENT TO WHICH DUMPING OF SEWAGE IN KALAPATTI LAKE AFTER THE LAKE RESTORATION



Not at all

To some extent, people are still dumping sewage in it

BHUJ - DESALSAR LAKE



72.7%

of respondents reported that people are still dumping sewage after the restoration.



100.0%

of the respondents mentioned that there was no dumping after the restoration of Kalapatti Lake.

CHART 5: ENCROACHMENT AROUND DESALSAR LAKE



To a larger extent

CHART 6: ENCROACHMENT AROUND KALAPATTI LAKE



To a larger extent To some extent

BHUJ - DESALSAR LAKE

- Encroachments around the Desalsar Lake decreased significantly after restoration.
- More respondents reported encroachments to some extent after restoration compared to before.

COIMBATORE - KALAPATTI LAKE

A significant portion of respondents reported encroachments to a larger extent around Kalapatti Lake.



40.0% - 4.2%

The findings revealed a significant decrease in encroachments surrounding Kalapatti Lake, as stated by respondents, with the percentage reducing from 40% to 4.2% after restoration.

CHARTY: CLEANLINESS LEVEL IN

CHART 8: CLEANLINESS LEVEL IN KALAPATTI LAKE



Yes. Looks very much clean Yes. To a certain extent it looks clean

BHUJ - DESALSAR LAKE

- The majority of respondents perceived the lake to be very much clean after restoration.
- A significant portion reported that the lake looked clean to a certain extent postrestoration.

CHART 9: WATER HYACINTHS IN DESALSAR LAKE



CHART 10: WATER HYACINTHS IN KALAPATTI LAKE



To some extent

BHUJ - DESALSAR LAKE

- The majority of respondents reported observing some extent of growth of water hyacinths.
- A small portion reported a larger extent of growth of water hyacinths, while another portion stated that there is not much growth of hyacinths now in the lake.

COIMBATORE - KALAPATTI LAKE

- A large majority of respondents indicated that the lake looked very much clean after restoration.
- Some respondents reported that the lake looked clean to a certain extent postrestoration.



80.0%

of the respondents said that the Kalapatti lake looked very clean after the lake restoration intervention.



63.6%%

of the respondents said that the Desalsar lake looked very clean after the lake restoration intervention. Need to add this similar point for desalsar lake.

COIMBATORE - KALAPATTI LAKE

A large majority of the respondents stated that after the restoration intervention, there has not been much growth of water hyacinth in Kalapatti Lake.



90.0%

of the respondents reported that there was not much growth of water hyacinths in Kalapatti Lake.



CHART 11: MOSQUITOES PROBLEM AROUND DESALSAR LAKE



CHART 12: MOSQUITOES PROBLEM AROUND KALAPATTI LAKE



BHUJ - DESALSAR LAKE

- The majority of respondents around the lake reported a very high problem of mosquitoes in their homes before the lake restoration.
- Prior to the restoration intervention, a portion of respondents reported mosquito problems to some extent.

COIMBATORE - KALAPATTI LAKE

A significant portion of respondents reported some extent of mosquitoes' problem in their homes before the lake restoration while a smaller percentage stated a very high problem of mosquitoes at homes around the lake.



100.0%

of the respondents mentioned facing mosquito problems at homes around Desalsar Lake.

CHART 13: WATER RETENTION IN DESALSAR BEFORE



CHART 14: WATER RETENTION IN KALAPATTI LAKE BEFORE

- The lake used to be dry for most months in the year
- The lake used to ave water for most
- months of the year There would be
- water only when it rains



BHUJ - DESALSAR LAKE



45.5%

of the respondents mentioned that the lake used to have water for most months of the year before restoration.

A significant portion reported that there would be water only when it rains before restoration.

COIMBATORE - KALAPATTI LAKE



75.0%

of the respondents stated that there would be water only when it rains before restoration.

A minority of respondents reported that the lake used to be dry for most months in the year before restoration.

KEY IMPACTS

This section of the assessment report presents the key impacts of the project intervention. Below is the list of key impacts:



The condition of water retention in the Desalsar Lake after restoration.



The condition of water retention in the Kalapatti Lake after restoration.



The extent of the increase in water availability for drinking purposes after the Desalsar Lake restoration.



The extent of the increase in water availability for drinking purposes after the Kalapatti Lake restoration.



The extent of the increase in water levels in the wells owned or that of neighbours in the locality of Desalsar Lake.



The extent of the increase in water levels in the wells owned or that of neighbours in the locality of Kalapatti Lake.



The extent of the increase in the number of bird sightings after the Desalsar Lake restoration.



The extent of the increase in the number of bird sightings after the Kalapatti Lake restoration.



CHART 15: WATER RETENTION IN DESALSAR LAKE PRE-INTERVENTION



CHART 16: WATER RETENTION IN KALAPATTI LAKE POST-INTERVENTION



BHUJ - DESALSAR LAKE

The majority of the respondents mentioned that after the lake restoration program intervention, the lake has water even during the summer months.



36.0%

of the respondents indicated that the lake has water during most months of the year after restoration.

COIMBATORE - KALAPATTI LAKE



50.0%

of the respondents stated that the lake has water even during the summer months after restoration.



40.0%

reported that the lake has water during most months of the year after restoration.

64.0%

of respondents reported that Desalsar Lake has water even during summer months after restoration.



VIEW OF KALAPATTI LAKE, COIMBATORE

CHART 17: WATER AVAILABILITY FOR DRINKING PURPOSES AFTER DESALSAR LAKE RESTORATION



Yes. Looks very much clean Yes. To a certain extent it looks clean No. Not much

CHART 18: WATER AVAILABILITY FOR DRINKING PURPOSES AFTER KALAPATTI LAKE RESTORATION



Yes. To some extent Yes. Very much

BHUJ - DESALSAR LAKE



63.6%

of the respondents reported an increase in water availability for drinking purposes to some extent after the lake restoration.



27.3%

of the respondents mentioned a significant increase in water availability for drinking purposes after the intervention.

COIMBATORE - KALAPATTI LAKE



50.0%

reported a very significant increase in water availability for drinking purposes after the lake restoration.



40.0%

stated an increase to some extent in water availability for drinking purposes after restoration.



90.9% & 90.0%

of the respondents stated increased water availability for drinking purposes in Desalsar Lake and Kalapatti Lake, respectively.

BIRDS AT KALAPATTI LAKE COIMBATORE



CHART 19: INCREASE IN WATER LEVELS IN DESALSAR LAKE LOCALITY



CHART 20: INCREASE IN WATER LEVELS IN KALAPATTI LAKE LOCALITY



To some extent 📕 Very much

BHUJ - DESALSAR LAKE

The majority of respondents reported an increase in water levels in the wells owned or that of neighbours in the locality to some extent after the lake restoration, and a notable portion of respondents mentioned a significant increase.

COIMBATORE - KALAPATTI LAKE

More than half of the respondents reported an increase to some extent in water levels in the wells owned or that of neighbours in the locality after the lake restoration, while the significant majority (45.0%) stated a substantial increase in water levels.



100.0%

of the respondents reported increased water levels after the lake restoration intervention in both Desalsar and Kalapatti Lakes.

CHART 21: INCREASE IN THE NUMBER OF BIRD SIGHTINGS AFTER DESALSAR LAKE RESTORATION



CHART 22: INCREASE IN THE NUMBER OF BIRD SIGHTINGS AFTER KALAPATTI LAKE RESTORATION



To a larger extent

BHUJ - DESALSAR LAKE



81.8%

of the respondents reported an increase in the number of bird sightings to some extent after the lake restoration while small portion observed a larger extent of increase in bird sightings.

COIMBATORE - KALAPATTI LAKE



75.0%

of respondents reported a larger extent of increase in the number of bird sightings after the lake restoration.

Overall Impact Created



ENVIRONMENTAL IMPROVEMENT

The interventions led to a significant improvement in environmental conditions with all respondents at both locations reporting reduced instances of dumping of sevage in the lakes after the intervention. Additionally, after the program intervention, lakes were perceived as clean by all respondents which indicated a substantial impact created on the local environment.



REDUCTION IN MOSQUITO PROBLEMS

Before the restoration program, a considerable percentage of respondents in both locations reported issues with mosquitoes in their homes. However, after the intervention, a notable 45% reduction in mosquito problems was observed. This indicates an improvement in public health and quality of life.



WATER AVAILABILITY AND QUALITY

The restoration efforts significantly improved water availability and quality in both locations. Before the program, a majority of respondents reported having water in the lakes only when it rains. After restoration of lakes, respondents mentioned having water in the lakes throughout the year. Furthermore, beneficiaries reported an increase in water availability for drinking purposes and that highlighted the positive impact on water resources.



COMMUNITY WELL-BEING AND ECOLOGICAL RESTORATION

The restoration programs had positive impacts on community well-being and enhanced the beauty of the environment. All beneficiaries reported an increase in greenery and new trees around the lakes, which contributed to the beautification of the localities. Respondents from both locations also reported an increase in bird sightings near the lakes as a result of the lake restoration program. Also, the lakes filled with water were also perceived by beneficiaries as making the local communities beautiful.

KEY STAKEHOLDER SATISFACTION



Social workers (Stakeholder satisfaction: Excellent)



Environmental activist (Stakeholder satisfaction: Very good)



Government officials (Stakeholder satisfaction: Very good)



Volunteers (Stakeholder satisfaction: Excellent)

Key stakeholder satisfaction was evident through the feedback gathered from various stakeholders involved in the program. Community leaders, environmental activits, volunteers, and government officials all expressed satisfaction with the program's outcomes and impact. Stakeholders revealed that the program effectively addressed critical issues such as water pollution, mosquito infestation, and water scarcity, leading to tangible improvements in the local environment and community well-being.

Stakeholders stated that the initiatives of the program, such as de-weeding, solid waste removal, and water body restoration, significantly contributed to the beautification and environmental health of the area. They highlighted the positive impact of the program in restoring the natural habitet and biodiversity of the lakes, emphasizing the importance of such initiatives or sustainable development.

Stakeholders mentioned that the program had a direct positive effect on the community. particularly in reducing waterborne diseases, improving water availability, and enhancing the overall quality of life. They also expressed statisfaction with the program's efficiency and effectiveness in addressing environmental challenges and promoting community engagement in conservation efforts.

KASAM SULEMAN, COUNCELLOR, BHUJ



CHALLENGES AND BARRIERS

Following were the challenges and barriers faced in the program:



The Lake restoration program intervention was conducted during the COVID-19 pandemic, resulting in a lack of community involvement in the lake activities. This led to the re-growth of water hyacinths in the lake.



Water entering from drainage channels into Desalsar lake posed difficulties for community members in accessing clean water from the lake.

IMPACT CREATED ACROSS MULTIPLE LEVELS

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INDIVIDUAL LEVEL

- Improved access to clean water for drinking and daily use, which led to better health and hygiene practices.
- Reduction in mosquito-borne diseases, enhancing individual well-being and quality
 of life.



FAMILY LEVEL

- Decreased incidence of waterborne illnesses and it resulted in improved health outcomes and reduced healthcare expenses.
- Enhanced environmental awareness and sense of pride, which fostered a healthier family environment.



DISTRICT LEVEL

- Increased environmental sustainability and biodiversity, which promoted ecological balance.
- Strengthened community cohesion and resilience through collective participation in restoration efforts.



STATE LEVEL

- Improved public health indicators due to reduced waterborne diseases and improved sanitation.
- Enhanced ecological resilience that led to sustainable water resource management practices at the state level.



NATIONAL LEVEL

- Positive impact on national health indicators and contributed to the overall wellbeing of the population.
- Strengthened environmental conservation efforts by aligning with national goals for sustainable development and conservation of natural resources.

SUSTAINABILITY

The long-term success and effectiveness of the program were ensured through several key strategies:



COMMUNITY ENGAGEMENT AND PARTICIPATION

The program prioritized active involvement and collaboration with the local community throughout its implementation. Regular interactions and consultations were conducted to ensure community members had a voice in decision-making processes, fostering a sense of ownership and commitment to the long-term success of the program.



TAILORED INTERVENTIONS BASED ON NEED ANALYSIS

Before implementing any interventions in this program. a thorough need analysis was conducted to identify the specific challenges and requirements of each water body. following this activities were planned and executed to address these identified needs and ensured that interventions were targeted and effective in addressing the underlying causes of degradation.



EFFECTIVE WASTE MANAGEMENT AND DE-WEEDING

An integral aspect of the program's sustainability efforts involved the removal of weeds and solid waste from the water bodies. By eliminating sources of contamination and obstruction, the program contributed to the long-term health and viability of the water bodies.



ENHANCEMENT OF WATER HOLDING CAPACITY

Dredging, de-silting, and deepening of the water bodies were some of the activities undertaken to increase water holding capacity of lakes. These measures aimed to ensure esilience against fluctuations in water levels and enhanced the ability of the water bodies to upport aquatic life.



IMPLEMENTATION OF PROTECTIVE MEASURES

Protective measures such as the construction of earthen bunds along with fencing and boards were implemented to safeguard the water bodies against encroachments and other unauthorized activities. These measures were crucial in preserving the integrity and sustainability of the restored ecosystems.



PROMOTION OF BIODIVERSITY THROUGH NATIVE TREES

The program included the plantation of native trees along the periphery of the water bodies. This particular initiative aimed to restore and enhance the natural ecosystem which helped in promoting biodiversity and ecological balance in the long term.

11. OECD FRAMEWORK





The relevance of the project was evident in its direct response to pressing environmental challenges particularly focusing on the restoration of degraded water bodies in the targeted regions. By addressing the critical need for clean and accessible water sources. the project aligned closely with the priorities and aspirations of the local communities and ensured its relevance to their immediate needs and long-term environmental goal.





The project demonstrated coherence through its strategic alignment with established environmental conservation objectives and frameworks. The program aligned with Sustainable Development Goals (SDGs) 3, 6, 11, and 15 and

ensured coherence with global objectives for clean water and sanitation, sustainable cities and communities, life on land, and promoting good health and well-being Implementation activities were carefully designed to complement existing initiatives and leverage available resources effectively.

The program is also in alignment with national policies and programs National Water Policy -National Mission for Clean Water (NMCW) National Mission for Clean and Green India This coherence ensured synergy and coordination among stakeholders, maximizing the impact of the project and sustainability.





The project proved highly effective in achieving its intended outcomes, as evidenced by tangible improvements in the condition of the targeted water bodies and surrounding ecosystems. Through systematic planning, robust implementation strategies, and active community engagement, the project successfully restored degraded habitats, enhanced water quality, and fostered ecological resilience, thus fulfilling its overarching objectives.

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The project demonstrated high efficiency in its implementation, characterized by timely completion and effective resource management. Through meticulouse pre-planning and execution, all project activities, including de-weeding, solid waste removal, dredging, desilting, and deepening of water bodies, as well as the reintroduction of native trees, were carried out efficiently. This ensured optimal utilization of resources and adherence to project timelines, which contributed to the overall success and effectiveness of the restoration efforts.

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The restoration programs yielded significant environmental improvements, with respondents reporting no instances of sewage dumping and perceiving the lakes as clean post-intervention. Mosquito problems were notably reduced, enhancing public health, while improved water availability throughout the year positively impacted local water resources. Additionally, the increase in greeney and trees around the lakes made the locality beautiful and contributed to community well-being. These outcomes underscore thepositive impacts of the program on both the environment and community aligning with sustainable development goals.

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The project prioritized sustainability by engaging local stakeholders and fostering community ownership of natural resources. Through effective waste management and protective measures. It ensured the long-term viability of restored ecosystems. Capacitybuilding initiatives and institutional strengthening efforts further supported ongoing environmental stewardship and sustainable development and established a solid foundation for lasting impact beyond the duration of the program.



CHAPTER 12 RECOMMENDATIONS



Continuous maintenance of the lake is essential to ensure its ongoing use and cleanliness. In the particular case of Desalsar Lake in the Bhuj district, the important issue to address is the water entering the lake from drainage channels. Measures need to be undertaken to block this inflow which will help maintain the cleanliness of the water in the lake.



Formulating a lake restoration committee within the local community is necessary. This committee should convene regularly to review and follow up on the restoration work. They can also play a key role in discussing and developing plans for the continuous maintenance of the lake.



In the Bhuj region, it is imperative to raise awareness regarding the avoidance of sewage dumping into the Desalsar lake.



Efforts should be intensified to develop and strengthen community ownership of the lake restoration program. Empowering the local community to take ownership of the program will ensure its sustainability and long-term success.

CHAPTER 13 CONCLUSION

The HDB Financial Services supported lake restoration program stands as a testament to the power of collaborative action in environmental conservation. Through concerted efforts and community engagement, the program successfully addressed critical challenges such as water pollution, habita degradation, and waters sacrity, by restoring and revitalizing water bodies, the program not only improved environmental conditions but also enhanced community well-being and promoted sustainable development.