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SAMIL Impact Assessment of CSR Projects

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Introduction

Samvardhana Motherson International Ltd. (SAMIL) is a diversified global manufacturing specialist and one of the world's leading suppliers to automotive OEMs as well as to customers in a range of other industries. SAMIL has its roots and a large part of it's operations in India.

The Company's vision is to create a more inclusive and sustainable environment. Their commitment to Corporate Social Responsibility (CSR) emanates from the business mission that guides us to set new standards in good corporate citizenship. The CSR programs have been structured to be made sustainable, measurable, replicable and scalable which enables the company to carve out a reputation for being one of the most socially and environmentally responsible companies. Through its CSR, it has implemented initiatives across various thematic areas (Livelihood, Education, Skill Development, Disaster management, and Waste Management to name a few) contributing to national goals as well as international priorities like SDGs. Over the years, the company has continuously worked to expand its CSR projects across geographies, beneficiary groups, and community at large.

CSR Focus Areas of SAMIL

Figure 1: CSR Focus Areas of SAMIL

Impact Assessment Projects

Swarn Lata Motherson Trust (SLMTT) is the CSR arm of Motherson Group which includes SAMIL. SLMTT has taken up the task of implementing the Group's various CSR initiatives either directly or with support from expert NGO partners. While Skill Development and Waste Management are the flagship projects of SAMIL, they have also supported other initiatives such as COVID Relief and the Matrimandir Test Lake Development. A thorough impact assessment study has been conducted for the following eligible projects of SAMIL's CSR Programmes -

- **Skill Development and Vocational Training (SDC):** With support from SAMIL, SLMTT and the Sambhav Foundation are implementing this initiative to enable livelihood through skill development and training at the client facility in Noida. The SDC initiative sought to provide skill training to youth from socially disadvantaged communities or low-income families. The aim was to provide these youth with options for decent work that can help improve their socio-economic conditions. Under two distinct projects, the initiative targeted training 360 and 500 candidates across various trades for 2021-2022 and 2022-2023, respectively.
- **Segregation Of waste for Recycling and Treatment (S.O.R.T):** With support from SAMIL, SLMTT and IPCA are implementing on the ground the Segregation Of waste for Recycling and Treatment (S.O.R.T), formerly Segregation of Organic waste for Recycling and Treatment. This initiative focuses on the proper disposal and treatment of waste, specifically wet waste, to

encourage segregation and source treatment. Consequently, this would result in mitigating air, water, and soil pollution by reducing pressure on landfill sites. **The S.O.R.T Aerobin Project - New Societies (2021-22)** was implemented in Delhi NCR focusing on 20 residential societies. **S.O.R.T - NCR (Phase IV) (2022-23)** was implemented in Delhi NCR and focused on 36 residential societies and 14 educational institutions.

- **Installation of Oxygen Generator Plant project in COVID-19 hospital**: With support from SAMIL, SLMTT implemented the project concerning the "Installation of oxygen generator plant in COVID-19 hospital at Noida, U.P." The project sought to increase the capacity of healthcare infrastructure in the government hospital in U.P. by installing oxygen generators during the COVID-19 pandemic to support the hospital against the shortage of oxygen in 2021-2022.
- **Matrimandir Test Lake Project**: With support from SAMIL, SLMTT and Auroville Foundation have executed this project which focuses on developing the Matrimandir test lake to be scaled in the future into a full-fledged lake circling the Matrimandir premises in Auroville. This project aimed to provide a sustainable solution to the region's water challenges and contribute to the aesthetic beauty of Matrimandir. The project targeted the entire community members of Auroville.

About the Study

SAMIL invited KPMG in India to conduct an Impact Assessment study of eligible CSR programs to evaluate how successful they have been in creating a meaningful impact in the lives of communities. Further, the findings will be used as a roadmap for strengthening existing processes and planning for future interventions.

KPMG

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IMPACT ASSESSMENT

SKILL DEVELOPMENT CENTRE

2021-22

JUNE 2024

List of Abbreviations

Abbreviation	Description
SAMIL	Samvardhana Motherson International Ltd.
SLMTT	Swarn Lata Motherson Trust
SDC	Skill Development Centre
QP	Qualification Pack

CHAPTER 1

Introduction

Background about the project

As per ILO's India Employment Report 2024, India stands at a significant demographic juncture, with approximately 63% of its populace falling within the working-age bracket of 15-59 years. [1] This demographic dividend, a term denoting the economic growth potential that can result from shifts in a population's age structure, is expected to peak around the year 2041 when the working-age population is projected to constitute 59% of the total population.[2] However, to harness this potential for substantial economic progress, it is imperative to ensure a workforce that is not only adequately skilled but also has access to gainful employment opportunities, education, vocational training, and comprehensive healthcare services.

Recent statistics from the Centre for Monitoring Indian Economy (CMIE) indicate a concerning decline in labor force participation among the 15-59 age group, with the rate dropping to 39.5% in 2022-23 from 47% in 2016-17. This translates to more than half of the potential working-age population being actively employed.[3] This scenario underscores the urgent need for the creation of new employment opportunities and the enhancement of skill levels to improve the employability of the youth.

Despite the fact that 42.1% of the youth are engaged in the labor market, there exists a pronounced gender disparity. The labor force participation rate for men stands at 63.1%, in stark contrast to a mere 19.7% for women in urban areas.[4] This disparity is largely attributable to entrenched patriarchal structures and gender inequities, which result in three out of every four Indian women not participating in any recognized economic activities. In such a context, where a significant proportion of the youth is excluded from formal labor participation, the realization of India's demographic potential remains a formidable challenge.

The Government of India has outlined ambitious plans to transform the nation's economic structure from a primarily agriculture-based economy to one that is manufacturing and service-oriented, with the aim of fostering a competitive, high-growth, and highly productive middle-income economy. However, the success of these plans is contingent upon the availability of quality jobs and the overall quality of the labor force. Projections indicate that over the next two decades, more than 12 million young individuals aged 15 to 29 will join the workforce each year. This influx necessitates the development of approximately 109 million skilled workers across various key industry sectors, as per the government's skill gap analysis.[5]

This complex interplay of demographic dynamics, labor force participation, and economic transformation underscores the critical need for strategic planning and policy interventions. Addressing these challenges requires a multifaceted approach,

[1] Only half of India's working-age population works, most still in agriculture, shows ILO report (theprint.in)
[2] Inclusive India 2047: Empowering the Demographic Dividend - BusinessToday
[3] CMIE
[4] Trends in youth employment in India: 2017-18 to 2022-23 – CEDA (ashoka.edu.in)
[5] Skilling India (worldbank.org)

encompassing the creation of job opportunities, enhancement of educational and vocational training programs, and promotion of gender equality in the workforce. Only through such comprehensive measures can India fully leverage its demographic dividend and achieve sustainable economic growth.

Program Introduction – Enabling Livelihood through skill development and training

Rationale/ Rationale

It is essential to give unemployed youth, specifically women, from disadvantaged and lesser privileged backgrounds, the right skills that can provide them with a better means of livelihood and improve their socio-economic status. The pandemic has only aggravated the problems faced by these groups in seeking appropriate employment. And as India gets on its path of post-pandemic economic development, the disadvantaged groups' needs must be put front and center. With an aim of bridging the skill gap and improving employability, SAMIL established a skill development center in Noida, Uttar Pradesh, to empower youth of the communities residing around its areas of operations.

Goals and objective

The project sought to provide skill development training to youth in the seven industrial job roles, to make them more employable and to improve their socio-economic conditions.

Approach for implementation

With support from SLMTT, Sambhav Foundation implemented the training program at the client facility in Noida, Uttar Pradesh. The project targeted training of 360 candidates across various trades for the FY 2021-22. The trades for this year include:

Implementation partners

SLMTT

Swar Lata Motherson Trust (SLMTT) was established by the Motherson Group with the noble objective of advancing the principles of good corporate citizenship, with a specific focus on fostering prosperity and well-being for holistic and sustainable development. It serves as a strategic platform for formal Corporate Social Responsibility (CR) initiatives, allowing for a decentralized and systematic approach to meet the ambitious goals envisioned by the company's leadership.

Sambhav Foundation

Sambhav Foundation is a not-for-profit organizing working for social justice and the empowerment of marginalized communities. It is registered under the Society Registration Act, of 1860, and the Bombay Public Trust Act, of 1950. In the ecosystem of voluntary organizations, Sambhav Foundation was formed in 2006 for the sustenance and advancement of the underprivileged sections of society. Sambhav Foundation was formed to create an ecosystem to support youth, and women from underprivileged sections of society and provide them with better opportunities and realize their potential. Sambhav is committed to the cause of the underprivileged through the three-fold philosophy of Education, Employment, and Entrepreneurship. The integrated approach with multiple partners, government, and corporate organizations has resulted in conscious grass-root interventions with a positive impact on the community.

CHAPTER 2

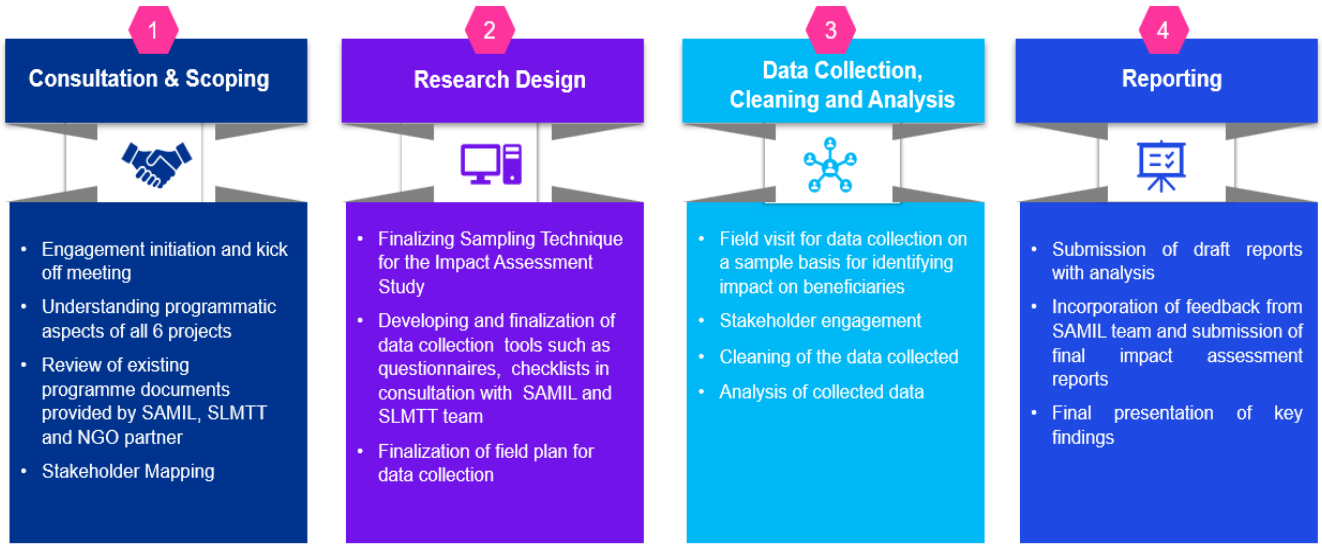
Approach and Methodology for Impact assessment

3. Approach and Methodology for Impact assessment

SAMIL has been implementing successful CSR initiatives based on community needs. A third-party evaluation of the results attained is essential given the dynamic nature of the social development programmes deployed. This impact assessment aims to explain what has been done well and what can be done moving forward. It will not only assist in determining the significance of the project, including the efficiency of project design and interventions, sustainability of results, and impact of the intervention on the target community, but it will also guide for expanding or replicating the successful initiatives while redesigning or ending the projects/initiatives that were unable to have the intended impact.

4. Impact Evaluation – Phase wise Approach and Methodology

A four phased approach was adopted for Impact Assessment of Enabling Livelihood through skill development and training (FY 2021-22).



5. Introduction to Framework – OECD DAC

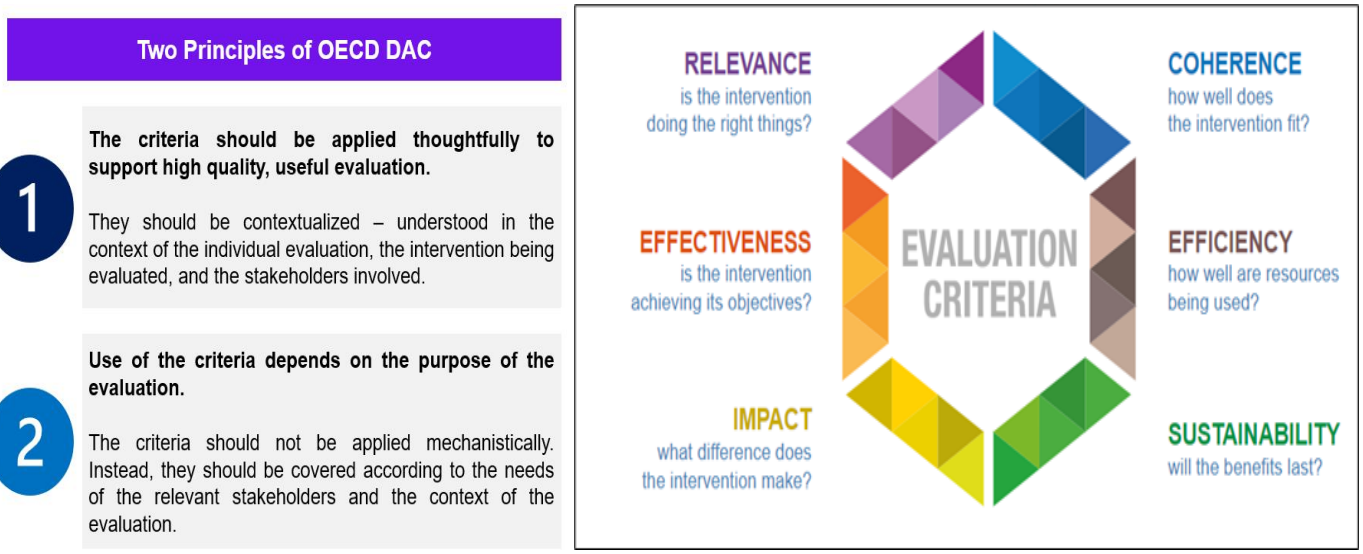
KPMG in India adopted the parameters of the OECD-DAC Framework to evaluate the impact of the SDC project. OECD DAC criteria has been used for impact evaluation. The framework has been described in the below sections.

Impact assessment is a structured process for assessing the effects of an intervention on the intended beneficiaries. Impact evaluation, on the other hand, is a broader term that encompasses a range of issues such as appropriateness of the intervention design, the cost and efficiency of the intervention, its unintended effects and guidance on future course of the intervention in terms of design and implementation (OECD).

Impact assessment has often been described as a theory-based activity since it is designed based on a 'theory of change'. This relates to establishing a chain of causation from intervention to impact and has the advantage of being specific and focused on the identified impacts. The impact assessment may, however, tend to overlook some of the unexpected and undesired results of the intervention.

The OECD DAC Network on Development Evaluation (EvalNet) has defined six evaluation criteria – *relevance, coherence, effectiveness, efficiency, impact and sustainability* – and two principles for their use. These criteria are intended to guide evaluations.

Been in use since 1991 these criteria were refined **in 2019** to improve the quality and usefulness of evaluation and strengthen the contribution of evaluation to sustainable development. A new criterion – ***Coherence*** was added for assessing the compatibility of the intervention with other interventions in a country, sector or institution.



Elaborately, six evaluative criteria by the OECD-DAC evaluation framework are as follows:

- **Relevance**: The extent to which the objectives of an intervention are consistent with recipients' requirements, country needs, global priorities, and partners' policies.
- **Effectiveness**: The extent to which the intervention's objectives were achieved, or are expected to be achieved, considering their relative importance.
- **Efficiency:** A measure of how economic resources/inputs (funds, expertise, time, equipment, etc.) are converted into results.
- **Impact:** Positive and negative primary and secondary long-term effects produced by the intervention, whether directly or indirectly, intended, or unintended.
- **Sustainability:** The continuation of benefits from the intervention after major development assistance has ceased. Interventions must be both environmentally and financially sustainable. Where the emphasis is not on external assistance, sustainability can be defined as the ability of key stakeholders to sustain intervention benefits – after the cessation of donor funding – with efforts that use locally available resources.
- **Coherence (i.e., policy coherence):** The need to ensure consistency across security, development, trade and military policies, and humanitarian policies.

The below table describes how KPIs of the programs were evaluated using OECD-DAC criteria.

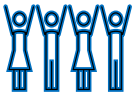
Table 1:OECD-DAC Criteria

Objective	Key Performance Indicators (KPI)	Means of Verification
Evaluation Criteria 1: Relevance		
To what extent is the project aligned with the needs of the target beneficiaries?	• Alignment with needs of the beneficiaries Needs assessment/impact reports	• Direct beneficiary questionnaire • Indirect beneficiary questionnaire • Desk Review
Evaluation Criteria 2: Coherence		
To what extent is the project internally aligned with SAMIL core values	Linkage with the core CSR goals and objectives of SAMIL	• SLMTT team • Document Review
To what extent is the project externally aligned with national/government policies	• Linkage with government policies and strategies Skill Development	• SLMTT team, Industry experts • Document Review
Evaluation Criteria 2: Effectiveness		
Are the objectives of the project being achieved?	Target achievement in comparison with actual achievement	• Direct beneficiary questionnaire • Other stakeholder consultations
Has the project been implemented promptly?	Challenges identified by the implementing team in project implementation	SLMTT team
Evaluation Criteria 3: Efficiency		
Have the human resources been plotted efficiently?	Defined team structure and allocation of project team	• Document Review • Stakeholder consultations
Has the project been implemented in a timely manner?	• Whether timelines are defined or not • Whether there are any extensions given to the project • Resource mobilization	Document Review
Evaluation Criteria 4: Impact		

Has the project achieved its intended/ unintended impact on the beneficiaries?	Impact Indicators: • Increased employability for trainees in targeted trades • Improved overall employability and job readiness of trainee	1. Survey Questionnaire 2. Stakeholder consultation with NGO team, employers
Evaluation Criteria 6: Sustainability		
What sustainability mechanisms are in place?	**Mechanisms include (1) Stakeholder-led governance (2) Local capacity building for operational sustainability and (3) Financial sustainability through user fees, linkages, collaboration, etc.) (4) Exit strategy**	• Progress reports Consultation with SLMTT and its implementation team
What is the perception of beneficiaries towards the continuation of these benefits	Percentage of trainees believing the outcomes to be sustained after the project	• Direct and indirect beneficiary questionnaire

Table 2. Methodology of the study

Desk Review	A comprehensive review of the existing program document was conducted by the KPMG in India team. Apart from the review of the existing document, KPMG in India conducted a thorough literature review of academic articles and government policies to understand the relevance and coherence of the SDC program.
Questionnaire design	A questionnaire for relevant stakeholders was developed based on the program activities to evidence the outcomes and impacts of the program. The questionnaire was designed to elicit both quantitative and qualitative data which was pre-tested before distribution. Basis the findings of the pilot survey, appropriate additions and changes were made to the questionnaire.
Data collection	The collection of data was carried out by KPMG in India resource personnel who physically visited the sample population at SDC Noida center or used telephonic means to gather details

	**Key Informant Interviews**	Structured, semi-structured interviews were conducted with key stakeholders in the field to gain insights.The interviews were further analyzed using thematic analysis.
	**Data analysis**	Quantitative data collected were analyzed using statistical software and involved descriptive statistics. Qualitative data collected through the survey and interviews were analyzed using thematic analysis, to identify patterns and themes in the data.
	**Synthesis**	The data collected through the literature review, survey, and interviews were synthesized to develop a comprehensive understanding of the research topic. This involved identifying key themes and trends, as well as exploring any inconsistencies or gaps in the data.
	**Reporting**	The results of the impact assessment of the SDC program are reported in a comprehensive final report, includes a summary of the findings, as well as recommendations for future research and practice.

6. Stakeholder Mapping

A 'stakeholder' for the studies is defined as an individual or a representative who has an interest and provides a certain influence over the study being undertaken. Such stakeholders play a pivotal role in the implementation of programs, within the communities. For this impact assessment 6 beneficiary group were identified – *Industry experts, Employer Pool, NGO Representatives, SLMTT representatives, Beneficiaries and their family members.*

Stakeholder	Rationale for inclusion	Type of stakeholder
Trainees/ students	They are the target beneficiaries of the project and the project aims to uplift their socio-economic level in society	Primary
Family Members	They are related to beneficiaries are indirect recipients of benefits incurred	Primary
Employer Pool	These are necessary to assess the job readiness and provide employment to the trained beneficiaries	Secondary
NGO Representatives (Sambhav Foundation)	The NGO handles the on-ground end to end operations at all levels of the skill development program	Secondary

SLMTT Project Representative	The project heads from SLMTT are responsible for monitoring the project and ensuring that the program runs efficiently and according to the plan set forth before the start of the project. They are also in charge of assisting during any challenges faced during the program	Secondary
Industry Experts	Industry experts knows the inside out of trends and innovation happening at industry level to understand the alignment of training provided to industry expectations.	Secondary

7. Sampling Strategy

For the purpose of this study, KPMG in India has used the OECD DAC Framework (Relevance, Efficiency, Effectiveness, Impact, Coherence and Sustainability) for developing the research tools (questionnaires for quantitative and qualitative data) and evaluating the impact created on the stakeholders. The method used for engaging with the stakeholders include in-depth interviews (IDIs) and surveys. Additionally, stories of change capturing the impact have been documented as case studies.

- **In-depth interview (IDI)**

An in-depth interview (IDI) is defined as a qualitative research technique to undertake explorative individual interviews. In such an interview, respondent perspective on a program, idea, or subject are explored. IDI were conducted for stakeholders like *Industry experts, Employer Pool, NGO Representatives, SLMTT representatives, and family members of the beneficiaries*.

- **Survey**

Tailor-made questionnaires were drafted for different stakeholders with open ended and close ended questions. This helped understand their present situation and collect data on the identified indicators on conditions of pre and post project intervention.
The KPMG in India team, along with support from SLMTT and Sambhav Foundation covered a sample size of 60 respondents as tabulated below:

Stakeholder group	Targetted Sample	Sample provided	Achieved	Mode
Trainees/ students	50	50	50	Quantitative Questionnaire
Family Members	2	2	2	Qualitative Questionnaire
Employer Pool	3	3	3	Qualitative Questionnaire
NGO Representatives	2	2	2	Qualitative Questionnaire

SLMTT Representatives	1	1	1	Qualitative Questionnaire
Industry Experts	2	2	2	Qualitative Questionnaire
Total	**60**	**60**	**60**	

Purposive Sampling

Purposive sampling **is a technique used in qualitative research to select a specific group of individuals or units for analysis.** Participants are chosen "on purpose," not randomly. It is also known as judgmental sampling or selective sampling.

Convenience Sampling

Convenience sampling is a non-probability sampling method where units are selected for inclusion in the sample because they are the easiest for the researcher to access. This can be due to geographical proximity, availability at a given time, or willingness to participate in the research. Sometimes it is also referred to as accidental sampling. Convenience sampling is also a type of non-random sampling.

Simple Random Sampling (SRS)

Simple random sampling is a widely utilized sampling method in quantitative studies with survey instruments. It is asserted that simple random sampling is favorable in homogeneous and uniformly selected populations. In this selection method, all the individuals have an equal opportunity to participate in the study. It ensures unbiased, representative, and equal probability of the population.

The sampling strategy involved randomized sampling of 50 trainees for telephonic and in-person structured intervention, with provision of replacement by working closely with SLMTT team and Sambhav Foundation

8. Impact Map

The impact Map provides the program-wise output, outcome and intended impact against mapped program inputs/activities in the impact evaluation study.

Input	Activities	Output	Outcome	Impact
CSR funding contribution by SAMIL+C6:G22	Awareness creation about the skilling programme through media, referrals, mobilization, etc.	No of candidates mobilized through mobilized drive, referrals, etc.	Increased awareness on the offerings among the target stakeholders	1. Increased employability for trainees in automotive skill trades 2. Improved overall employability and job readiness of trainee 3. Contribution to the overall national efforts on creating sustainable skill development ecosystems
	Conducting residential skill based trainings across 7 trades	Number of trainees enrolled	Trainees trained in respective trades and gain real life exposure Improved technical skills	
		Total learning and training hours by trainee		
		Number of trainee reporting regular attendence		
		Number of trainees who dropped out		
		No. of OJT activities		
		No. of guest lectures (2 per quarter)		
		No. of internal assessment conducted		
		Number of trainee trained on professional skills (communication, confidence, etc)		
	Certification and facilitating placement for trainees	Number of certificates awarded	Increased awareness of job opportunities	
		Number of career counselling sessions held (1 per batch)		

		Number of trainees receiving counselling and preparation guidance	Higher employability rates among trainees	
		No. of guest lectures (2 per quarter)		
		No. of placement related activities held		
		No. of companies reached out		
		No. of trainees placed		
		No. of trainees receiving post placement follow ups		

CHAPTER 3

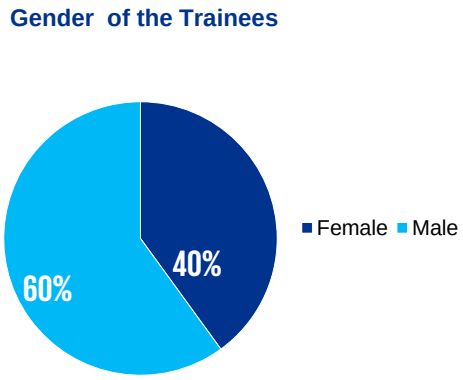
Findings of the Impact Assessment

Findings of the Impact Assessment

The study investigates the sociodemographic characteristics, current job status, age, and other relevant attributes of respondents involved in the Skills Development Centre (SDC) program. By providing a detailed profile of the participants, this assessment aims to understand the broader impact of the SDC initiative. The analysis also examines the implications of the program on the OECD-DAC framework, focusing on its potential to enhance workforce skills and contribute to sustainable economic development. This introductory overview sets the stage for a deeper exploration of the SDC program's effectiveness and its role in achieving global development objectives.

Demographic Profile of the Trainees

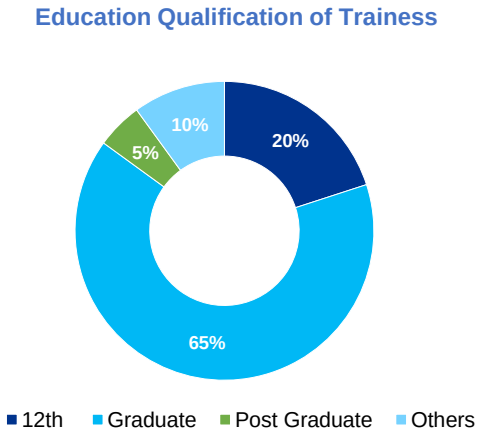
Gender of the Trainees



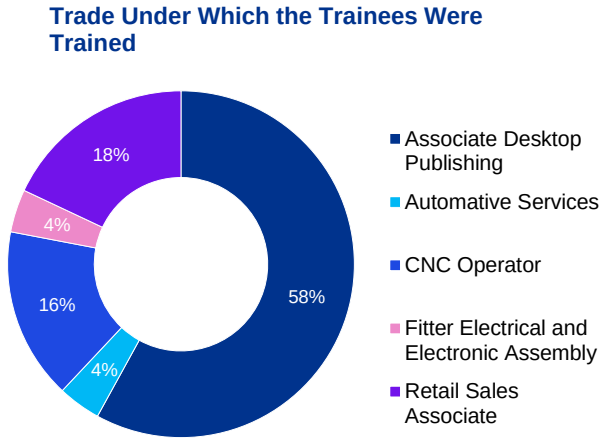
As per the data received from the respondents, 60% of the respondents who underwent the training were male, while 40% of the respondent trainees were female. The average age of the male respondents was 21.7 years, while the average age of the female respondent was 23.15. It can be understood from the analyses that female participants under the SDC program were older than the male participants.

Education Qualification of the Trainees

Based on the data collected from the trainees, the educational background is as follows: 65% of trainees are graduates, 5% are postgraduates, 20% have completed their education up to class 12th, and 10% have pursued other courses such as IT certifications. This indicates that the majority of the trainee population, a significant 70%, holds at least one of the academic certifications.

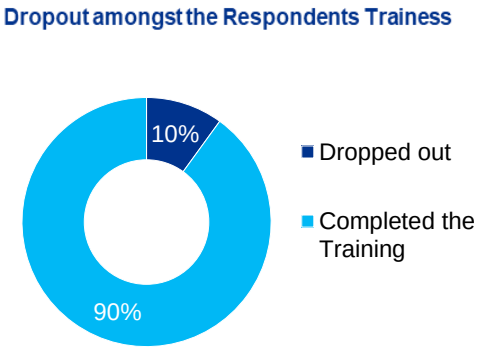


Trades of the Trainees



Based upon the data analysis, it was understood that 58% of the trainees were trained on Associate Desktop Publishing, while 18% of the trainees reported to receive the training for Retail Sales Associate. While only 16% of the trainees were trained as CNC operators and other 4% of the trainees received training for Automotive Services. It can be observed from the data that majority of the

Drop out amongst the trainees.



90% of the trainees interviewed who attended the SDC training program revealed that they completed the duration of the training, while rest dropped out from the training programs due to various reasons. The major reason identified during the interaction for dropped out from the program were health issues, followed by long distance of the training center from their homes. Only one candidate dropped out from the training program as the he was already trained in similar field to the course, he enrolled in.

Assessment of the Impact on OECD-DAC Framework

The following section will evaluate the impact of the program of the OECD-DAC criteria of Relevance, Coherence, Effectiveness, Efficiency, Impact and Sustainability

Relevance

The Indian economy is set to transform from an agricultural-based to a manufacturing and service-based economy. Thus, the Government of India has ambitious plans to transform India into a competitive, high-growth, high productivity middle-income country. In fact, according to the National Skill India Mission "As India moves progressively towards becoming a 'knowledge economy' it becomes increasingly important that the country should focus on advancement of skills and these skills have to be relevant to the emerging economic environment"[6].

[6] https://nationalskillindiamission.in/policy/

More than 12 million youth between 15 and 29 years of age are expected to enter India's working age population every year for the next two decades. The government's recent skill gap analysis concludes in next few years, another 109 million or so skilled workers will be needed in the 24 keys sectors of the economy.[7] It should also be noted that according to the Global Business Coalition for Education (GBC-Education), United Nations Children's Fund (UNICEF) and the Education Commission, more than 50 per cent of the Indian youth is not on track to have the education and skills necessary for employment by 2030[8].

Of all in the labour force, 5 per cent have either received or are undergoing the process of formal vocational training (60 per cent of these are from 5 states viz. Karnataka**, Uttar Pradesh**, West Bengal, Tamil Nadu, and Rajasthan[9]. It must be noted that of those who received training or are currently undergoing training, over 65 per cent are employed (across the Country).

Jobs in India are diminishing as the unemployment rate crept was nearly 7.77 percent in October 2022, according to the Centre for Monitoring Indian Economy (CMIE). This is the highest unemployment rate witnessed in the country over the last three decades.[10] Coupled with this is the low literacy levels and the high rate of dropouts as well as out of school children. Further, it was found that employment for local youth still remains a challenge due to the gap in demand and supply of skill sets required.

SAMIL has been filling the skill gap by providing skill training to the youths and hence establishes its relevance. Moreover, majority of the respondents reported that the skill training that they received was relevant for them and their career prospects. As per NGO stakeholder consulted, the program initially took extensive qualitative research to understand the market needs and requirement. Discussions with ITIs, organizations and students to understand the needs and requirements. The program regularly makes revisions as per the need.

As per an industry stakeholder, the project can achieve better alignment to relevancy of skills needed in the industry by spending more time in industry. Another observation shared was that new joiners (from centre) when they complete the training and join the industry, get directly deployed at the workstation and are doing questions. There is scope for involvement of industry to make course robust on latest technology as well as inclusion of more soft skills in curriculum is necessary.

As per employer, the candidates have been job ready and are well groomed hence requiring minimum training on job. Additional there has also been minimal negative feedback on the performance of these candidates.

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[7] Skilling India (worldbank.org)

[8] https://timesofindia.indiatimes.com/blogs/voices/the-aspiring-youth-and-the-skill-gap/

[9] https://skillsip.nsdcindia.org/sites/default/files/kps-document/Estimating_per cent20the_per cent20Skill_per cent20Stock per cent20in_per cent20India.pdf

[10] Unemployment (cmie.com)

Coherence

SDC program aligns with both national priorities on skilling as well as with the Sustainable Development Goals. The SDGs include Goal 1: End Poverty in all its forms, Goal 4: Quality Education and Goal 8: Decent Work for All. It also aligns with the skilling objectives under National Skill Mission and National Rural Livelihood Mission.

Table 8.1 Alignment of Project with the SDGs

SDG	SDGs target	How is it aligned?
	Goal 1. End poverty in all its forms everywhere Target 1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	Providing access to a decent source of income and necessary skills to keep oneself employed would help individuals sustain themselves, their families and hence contribute to eradicating income poverty.
	Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	The project contributes to ensuring access to relevant and quality skills to get employment
	Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all • Target 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value • Target 8.6 By 2020, substantially reduce the proportion	The project contributes to ensuring access to relevant and quality skills to get employment. Further, placement opportunities are provided to ensure access to jobs as well.

	of youth not in employment, education or training	

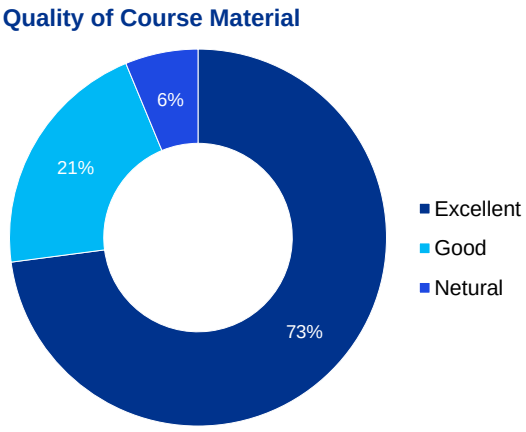
Nearly all stakeholder consulted were of the opinion that the project is in aligned with national goals of India when it comes to skilling. Whereas though aligned the course and training needs to be aligned to innovations and industry trends.

Effectiveness

'Effectiveness' is an assessment of the factors affecting the progress towards outcomes for every stakeholder and validation of robustness of systems and processes by assessing the utilization of the resources. The criterion reviews the implementation strategy and mechanism. The purpose of this is to understand if the intervention has achieved its objective and the extent to which it did.

The project aims to provide the relevant skills and knowledge in various for the underprivileged youth, to help them ensure jobs in formal sector, increase their social and economic security and uplift their standard of living. Nearly 98% of all trainee respondents saw the whole initiative training experience to be a very positive for them.

Overall, there was an extremely positive reception toward the whole training infrastructure – facility, trainer effectiveness, course material provided, assessment and certification processes, etc. 96% of respondents found the trainers to be very effective in delivering the course to them. As per the NGO stakeholder, trainers have industry experience and relevant qualification. In order to supplement the same, the trainers have also gone through multiple Training of Trainers (ToT) modules.



Nearly 94% of the respondents responded positively to the course material, however a few of the were of opinion that course material should be in local languages for supplementing classroom knowledge and self learning. As per industry stakeholder, the course structure needs to have communication and industrial trainings regular revaluation is needed as technology and nature of industry are changing.

Effectiveness of systems and processes adopted for planning and implementation.

This establishes how much of the defined objectives have been achieved and the activities contributing to it. This was done by understanding the targets, achievements and utilization of the resources to successfully address the needs of the beneficiaries.

- **Effectiveness in fulfilling the needs of the local community.**

SLMTT has successfully leveraged the Motherson Group's core competencies in the automobile industry, and its years of experience in automotive practices, business and information technology to help build capacity of the youth beneficiaries by means of its flagship skill development program.There is a large population of unskilled workforce, school/college dropouts and below poverty line (BPL) beneficiaries in the target geography. SLMTT has effectively helped these youth beneficiaries gain relevant training and facilitate placement opportunities for them, so as to uplift their standard of living and have an overall positive impact on society.

- **Financial savings for the candidate**

The program developed by SLMTT has no fee for enrolled candidates. This incentivizes the candidates to enrol for the program as they have no out of pocket expenses. These courses enable them to gain relevant skillsets on automotive trades, as well as opportunities for well-paying job placements. This also helps the candidates to be at par with the rural youth and bridge the employment gap in India.

- **Beneficiaries Experience of the project**

Notably, 80% of beneficiaries sampled had a positive experience with the project and were able to understand everything that their respective skill development trade covered. The beneficiaries felt that the project was relevant to their needs, implemented efficiently, and provided holistic development and solutions. As per SLMTT stakeholder - the training imparted is both practically & theoretically impactful as trainees get lab exposure, industrial exposure & guest lectures from the related field officials thus helping student have a holistic experience.

- **Employer on effectiveness of the training**

As per employers, the training content is good as the trainees were aware of the basic tasks of the job. They also observed that though trainees have been given soft skills training which they are able to apply in their work, the result have been variable. The trainees are able to cope well post a short orientation/training of a week on the processes.

8.1.1. Efficiency

Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed. 'Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed.

- **Operational Efficiency and Utilization of the Facilities Created**

This assesses how well have the created facilities been utilized and their efficiency in serving the purpose of their installation. Based on the feedback received, the center has been running efficiently with the help of the center manager, who is in charge of end-to-end upkeep of the center, and all facilities created are running effectively as pert the project plan. Their roles and responsibilities range from cleanliness of the center, electricity management, trainer management, maintenance of classrooms

and labs, management of all other human resource staff hired, financial management and maintaining all candidate data. The program has been able to meet its timelines, except during a short time in covid.
As per SLMTT stakeholder, the performance graph for the program has an improving trend as the operational process has been established & improved.

- **Fund Utilization**

As per SLMTT stakeholder, there has been underutilization of funds which was utilized for the various activities of trainees.

- **Alignment of skills to industry**

A major component of SAMIL's skill development program has been to align the trainings imparted at the center to align with the industry standards as much as possible. 88% of beneficiary sampled agreed to have been provided enough practice hours to hone their skills. In addition to that the program also had guest lecture as well as various kind of Industry exposure components.

Impact

'Impact' has been measured in terms of the proportion of respondents who reported having a significant change in their lives due to the initiation of the project.

The purpose of measuring the impact is to ascertain the primary or secondary long-term effects produced by the Skill Development project. This could be directly or indirect and intended or unintended. Unintended effects are effects that were not planned as a result of the intervention and can be positive or negative.

- ***Placements through the programme:***
  98% of the trained students interviewed mentioned that the placement services by the initiative were effective for them. The candidates are assisted by placement officers and the Implementation agency, during their placement process, on completion of the program.
  As per the program, students are given a total of two tries to avail job opportunities via the program. Follow-ups with students are also conducted regularly into the job so that their job satisfaction can be recorded. Out of the total 47 candidates that successfully completed the course, 83% of the enrolled candidates were able to get a job placement during or immediately on completion of the course. Below is the split of how long it took the candidates to find the job.

- ***Skill assessment and Job readiness***
  60% of the trained students the skills they gained through the course are still relevant to their current job and nearly 74% of the student still apply the taught. The program also provided the candidates with counselling sessions, group discussions and interview preparation modules to increase their job readiness. As a result of these, 87% of the respondents said they were job ready at the end of the programme.

- ***Bringing the underprivileged youth to mainstream work force***
  The program focuses to bring in the underprivileged youth enrolled in the courses to the mainstream by providing them with relevant opportunities and skillsets which are at par with their counterparts in the urban areas. This intervention by SAMIL allows the student to have fair competition and give them an opportunity to avail jobs right after completion of the courses through the job fairs and placement sessions.

- ***Personal growth and development***
  All courses offered at the skill development center also have a complimentary course- Workplace Skills development training, which is mandatory for all candidates to attend, irrespective of the trade they are enrolled for. It is tailored as per each of the main trades, and trains candidates on skills required in the workplace, appropriate behaviour, and attitude while on the job.

- ***Better quality of life***
  The skill development program has been able to bridge the skilling gap in India, by mobilizing candidates for automotive skill trades and assist them in securing well-paying jobs. By getting placed and having a stable job and income, candidates have been able to become bread earners, not only for themselves, but also for their family. They have been able to increase their standard of living and enjoy a better quality of life.

- ***Impact on family***
  The family members are also positive regarding the future due to the support of the programme that students are now an earning member and have become more confident and responsible. The most significant impact seen by family was on economic front. As per NGO representative, family also witnessed financial independence and enhanced standard of living. As per SLMTT stakeholder, there have been benefits to the family post placement like ESI, Medical, increase in buying capacity due to additional income.

- ***Skill assessment and Job readiness from employer's perspective***
  As per the stakeholder, SAMIL's skill development center provides a ready access to a candidate pool who are able to integrate to a workplace quickly when compared to other candidates. The general perception was that candidates trained at center were disciplined and hard working in their approach to the work.

Sustainability

This criterion assesses the likelihood that project achievements will continue after the project. This includes an examination of the capacities of the systems needed to sustain benefits over time. The criterion analyses the resilience, risks and potential trade-offs. The purpose of this criterion is to look at the longer-term effects of the intervention. The different aspects of sustainability include financial, institutional, technological etc. These different aspects have been assessed when looking at the sustainability of the intervention.

- **Sustainability Plan**
  The project has been designed in collaboration with the local governance, SLMTT key personnel, Motherson group management and the third-party implementation agency hired for execution of the project.

- **Stakeholder Engagement**
  An important aspect of the program has been to make other stakeholders aware about the developments at centre and project level. The stakeholder has participated through guest lectures, facilitating industry visits/ exposure to students as well as being active participant in placement drives/ activities. The program takes support of a localized strategy for mobilization by involving local NGOs/ colleges and local influencers

- **Financial Sustainability**
  The center and the program were set up by SLMTT with a clearly demarcated vision and mission – to train the underserved youth in automotive related skill trades, with an outcome to help them acquire jobs in the future, thereby positively impacting their standard of living.
  The program sustains itself from the funding from CSR of different organizations, hence, economic sustainability remains a challenge. However, when it comes to operational sustainability, the program has systems and procedures ranging from government liaison, and proper human report structure to training and policies to make the schools function properly without much interference from the program management team. The program has an efficient governance sustainability.

CHAPTER 4

Conclusion

Conclusion

Overall assessment of the program's success

It is important to mention that the entire evaluation had certain conerns associated to it. The inclusion of these constraints is important as they help us in strengthening the future course of current projects and planning new projects that would be implemented in Company's operational areas.

Following points describe the constraints that were felt during the evaluation of the projects.

- **Placement alignment**

The aim of a skill development programme is to secure employment. The candidates observed that there was a need for better alignment of skills between the course and workplace to keep pace with changing nature of industry and marketplace

- **Better access to potential employers through job fairs/ placement sessions**

The job fairs and placement sessions offer a common platform for the candidates as well as the potential employers. The candidates are placed in accredited and well-known companies majorly which have tie-ups with the Motherson Group. It would be helpful to incorporate more job fairs on a regular basis, from the start of the program.

- **Guest Lectures and exposure to industry practices**

Guest lectures help candidates gain first-hand knowledge from key players in the industry, while industry visits for the candidates provide opportunity to experience the industry practices and resonate with the skills obtained in the trainings.
Planning the guest lectures and industry visits on a regular basis will benefit candidates and their outlook of working on the job. The guest lecture and industry visit schedule should also be shared with SLMTT beforehand as a best practice so that they are better informed, and the program team can be part of it as well.

- **On the Job Trainings**

A general recommendation from the industry and employers were to integrate more holistic OJT component to the programme. The number of industrial visits and guest lectures can be increased as they provide a better understanding of the course curriculum for the students and provide them with firsthand knowledge.

- **Course structure**

There is also a need to make the course multilingual as felt by some of the candidates who wanted the course material to be in other languages like Hindi. Some students (around 20%) also felt the need to have a longer course duration. There is also a need to expand courses offered as pointed by stakeholders to include more digital skills.

Strategic recommendations for future initiatives

Based on our observation during the field interaction and analysis of the primary and the secondary data collected during the study, the following recommendations have been suggested**.**

- **On job experience:** The programme can increase the number of industrial visits and guest lectures from the current 2 visits and lectures during the course duration as they provide a better understanding of practical components and exposure to the trainees in addition to the course curriculum.
- **Placement Alignment**: To check attrition and gather employer and candidate feedback when it comes to placement. A repository of success stories of successfully placed candidates can be used during the placement exercise to motivate the new candidates and answer queries of those interested in enrolling.
- **Expansion**: An expansion of programme to target new geographies and students/trainees can be taken up. Local partners can be identified for implementation.
- **Course Customization**: The team can also explore remedial classes for students/trainees who find the course duration to be short.
- **Pre-joining Counselling**: The team can also explore inclusion of assessments (like RISEC) at pre joining stage along with orientation and course introduction for better training alignment. The students can then be inducted in their course of choice and aptitude.

Impact Assessment

TO CONTRIBUTE FOR SKILL DEVELOPMENT CENTRE

2022-23

JUNE 2024

List of Abbreviations

Abbreviation	Description
SAMIL	Samvardhana Motherson International Ltd.
SLMTT	Swarn Lata Motherson Trust
SDC	Skill Development Centre
QP	Qualification Pack

CHAPTER 1

Introduction

1. Introduction

1.1. Background of the project

As per ILO's India Employment Report 2024, India stands at a significant demographic juncture, with approximately 63% of its populace falling within the working-age bracket of 15-59 years.[11] This demographic dividend, a term denoting the economic growth potential that can result from shifts in a population's age structure, is expected to peak around the year 2041 when the working-age population is projected to constitute 59% of the total population.[12] However, to harness this potential for substantial economic progress, it is imperative to ensure a workforce that is not only adequately skilled but also has access to gainful employment opportunities, education, vocational training, and comprehensive healthcare services.

Recent statistics from the Centre for Monitoring Indian Economy (CMIE) indicate a concerning decline in labor force participation among the 15-59 age group, with the rate dropping to 39.5% in 2022-23 from 47% in 2016-17. This translates to more than half of the potential working-age population being actively employed.[13] This scenario underscores the urgent need for the creation of new employment opportunities and the enhancement of skill levels to improve the employability of the youth.

Despite the fact that 42.1% of the youth are engaged in the labor market, there exists a pronounced gender disparity. The labor force participation rate for men stands at 63.1%, in stark contrast to a mere 19.7% for women in urban areas.[14] This disparity is largely attributable to entrenched patriarchal structures and gender inequities, which result in three out of every four Indian women not participating in any recognized economic activities. In such a context, where a significant proportion of the youth is excluded from formal labor participation, the realization of India's demographic potential remains a formidable challenge.

The Government of India has outlined ambitious plans to transform the nation's economic structure from a primarily agriculture-based economy to one that is manufacturing and service-oriented, with the aim of fostering a competitive, high-growth, and highly productive middle-income economy. However, the success of these plans is contingent upon the availability of quality jobs and the overall quality of the labor force. Projections indicate that over the next two decades, more than 12 million young individuals aged 15 to 29 will join the workforce each year. This influx necessitates the development of approximately 109 million skilled workers across various key industry sectors, as per the government's skill gap analysis.[15]

This complex interplay of demographic dynamics, labor force participation, and economic transformation underscores the critical need for strategic planning and policy interventions. Addressing these challenges requires a multifaceted approach, encompassing the creation of job opportunities, enhancement of educational and vocational training programs, and

[11] Only half of India's working-age population works, most still in agriculture, shows ILO report (theprint.in)
[12] Inclusive India 2047: Empowering the Demographic Dividend - BusinessToday
[13] CMIE
[14] Trends in youth employment in India: 2017-18 to 2022-23 – CEDA (ashoka.edu.in)
[15] Skilling India (worldbank.org)

promotion of gender equality in the workforce. Only through such comprehensive measures can India fully leverage its demographic dividend and achieve sustainable economic growth.

1.2. Impact Objective of the Evaluation

KPMG has been engaged by SAMIL in June 2023, with the objective of carrying out an impact assessment study of its CSR project - '***Enabling Livelihood through skill development and training'*** or Skill Development Centre (SDC) and effectively capture the impacts created by the project. The findings will be used as a road map for existing and planning new interventions.

The overall objective is to carry out an impact evaluation of the projects funded, overseen, and partly implemented by its CSR arm SLMTT as part of the Motherson group's CSR initiatives across India. The evaluation team has assessed the projects using the OECD DAC framework **(Relevance, Effectiveness, Efficiency, Impact and Sustainability),** details of which are provided later in the chapter. The findings of the evaluation will be used by SAMIL for strengthening their existing processes and planning for future initiatives in the priority areas.

1.3. Program Introduction – Enabling Livelihood through skill development and training

1.3.1. Rationale/ Rationale

It is essential to give unemployed youth, specifically women, from disadvantaged and lesser privileged backgrounds, the right skills that can provide them with a better means of livelihood and improve their socio-economic status. The pandemic has only aggravated the problems faced by these groups in seeking appropriate employment. And as India gets on its path of post-pandemic economic development, the disadvantaged groups' needs must be put front and center. With an aim of bridging the skill gap and improving employability, SAMIL established a skill development center in Noida, Uttar Pradesh, to empower youth of the communities residing around its areas of operations.

1.3.2. Goals and objective

The project sought to provide skill development training to youth in the seven industrial job roles, to make them more employable and to improve their socio-economic conditions.

1.3.3. Approach for implementation

With support from SLMTT, Sambhav Foundation implemented the training program at the client facility in Noida, Uttar Pradesh. The project targeted training of 500 candidates across various trades for the FY 2022-23. The trades for this year include Retail Sales Associate, Fitter – Electrical and Electronics Assembly, Associate Desktop publishing, CNC operator, Automotive Service Technician (2,3,4 wheelers), Auto Sales Consultant and Automotive Assembly Operator.

1.3.4. Implementation Partners

SLMTT

Swar Lata Motherson Trust (SLMTT) was established by the Motherson Group with the noble objective of advancing the principles of good corporate citizenship, with a specific focus on fostering prosperity and well-being for holistic and sustainable development. It serves as a strategic platform for formal Corporate Social Responsibility (CR) initiatives, allowing for a

decentralized and systematic approach to meet the ambitious goals envisioned by the company's leadership.

Sambhav Foundation

Sambhav Foundation is a not-for-profit organizing working for social justice and the empowerment of marginalized communities. It is registered under the Society Registration Act, of 1860, and the Bombay Public Trust Act, of 1950. In the ecosystem of voluntary organizations, Sambhav Foundation was formed in 2006 for the sustenance and advancement of the underprivileged sections of society. Sambhav Foundation was formed to create an ecosystem to support youth, and women from underprivileged sections of society and provide them with better opportunities and realize their potential. Sambhav is committed to the cause of the underprivileged through the three-fold philosophy of Education, Employment, and Entrepreneurship. The integrated approach with multiple partners, government, and corporate organizations has resulted in conscious grass-root interventions with a positive impact on the community.

CHAPTER 2

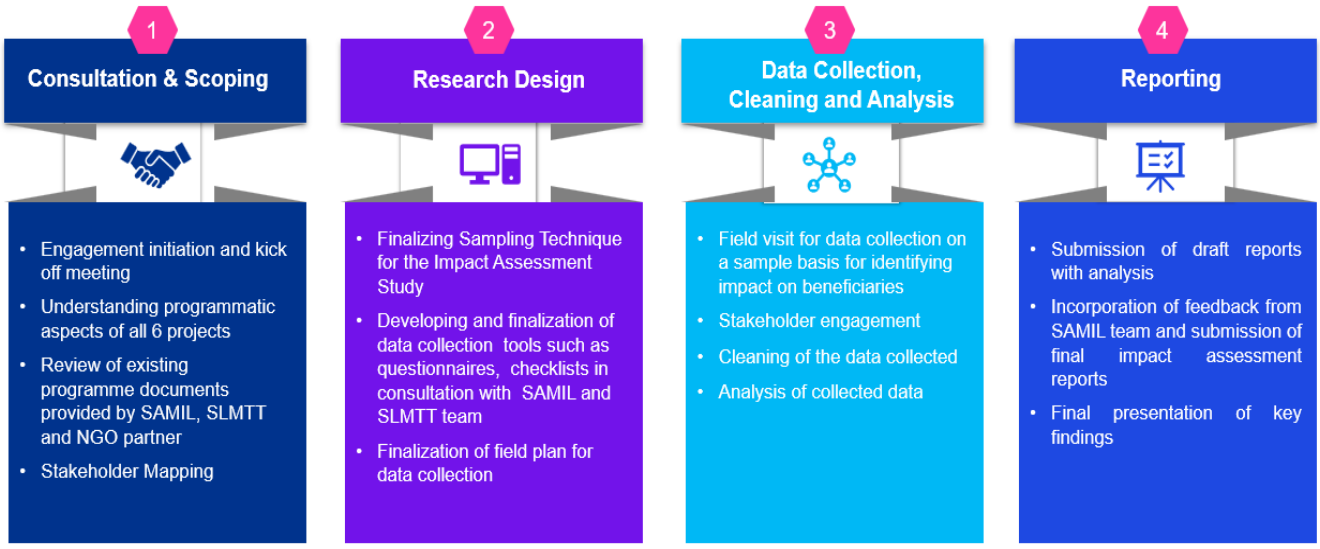
Approach and Methodology for Impact Assessment

2. Approach and Methodology for Impact Assessment

SAMIL has been implementing successful CSR initiatives based on community needs. A third-party evaluation of the results attained is essential given the dynamic nature of the social development programmes deployed. This impact assessment aims to explain what has been done well and what can be done moving forward. It will not only assist in determining the significance of the project, including the efficiency of project design and interventions, sustainability of results, and impact of the intervention on the target community, but it will also guide for expanding or replicating the successful initiatives while redesigning or ending the projects/initiatives that were unable to have the intended impact.

2.1. Impact Evaluation – Phase wise Approach and Methodology

A four phased approach was adopted for Impact Assessment of Enabling Livelihood through skill development and training (FY 2022-23).



2.2. Introduction to Framework – OECD DAC

KPMG in India adopted the parameters of the OECD-DAC Framework to evaluate the impact of the SDC project. OECD DAC criteria has been used for impact evaluation. The framework has been described in the below sections.

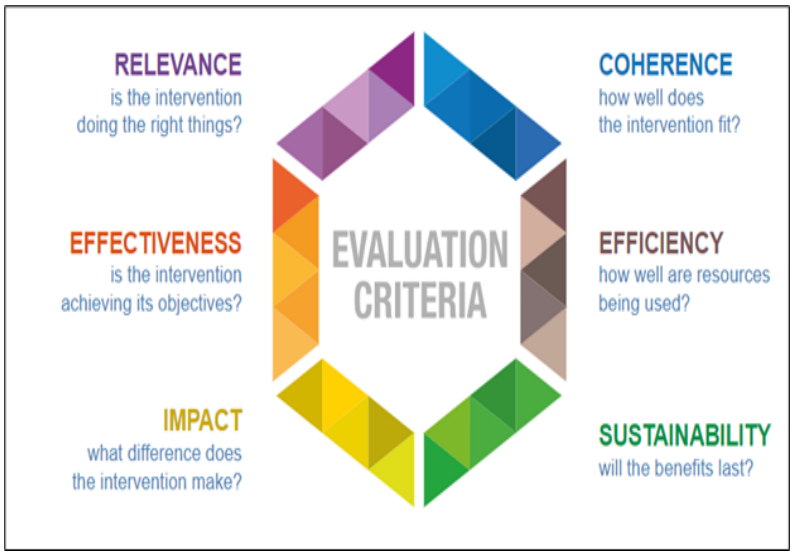
Impact assessment is a structured process for assessing the effects of an intervention on the intended beneficiaries. Impact evaluation, on the other hand, is a broader term that encompasses a range of issues such as appropriateness of the intervention design, the cost and efficiency of the intervention, its unintended effects and guidance on future course of the intervention in terms of design and implementation (OECD).

Impact assessment has often been described as a theory-based activity since it is designed based on a 'theory of change'. This relates to establishing a chain of causation from intervention to impact and has the advantage of being specific and focused on the identified impacts. The impact assessment may, however, tend to overlook some of the unexpected and undesired results of the intervention.

The OECD DAC Network on Development Evaluation (EvalNet) has defined six evaluation criteria – *relevance, coherence, effectiveness, efficiency, impact and sustainability* – and two principles for their use. These criteria are intended to guide evaluations.

Been in use since 1991 these criteria were refined **in 2019** to improve the quality and usefulness of evaluation and strengthen the contribution of evaluation to sustainable development. A new criterion – ***Coherence*** was added for assessing the compatibility of the intervention with other interventions in a country, sector or institution.

Elaborately, six evaluative criteria by the OECD-DAC evaluation framework are as follows:



- **Relevance**: The extent to which the objectives of an intervention are consistent with recipients' requirements, country needs, global priorities, and partners' policies.
- **Effectiveness**: The extent to which the intervention's objectives were achieved, or are expected to be achieved, considering their relative importance.
- **Efficiency:** A measure of how economic resources/inputs (funds, expertise, time, equipment, etc.) are converted into results.
- **Impact:** Positive and negative primary and secondary long-term effects produced by the intervention, whether directly or indirectly, intended, or unintended.
- **Sustainability:** The continuation of benefits from the intervention after major development assistance has ceased. Interventions must be both environmentally and financially sustainable. Where the emphasis is not on external assistance, sustainability can be defined as the ability of key stakeholders to sustain intervention benefits – after the cessation of donor funding – with efforts that use locally available resources.
- **Coherence (i.e., policy coherence):** The need to ensure consistency across security, development, trade and military policies, and humanitarian policies.

The below table describes how KPIs of the programs were evaluated using OECD-DAC criteria.

Table 3:OECD-DAC Criteria

Objective	Key Performance Indicators (KPI)	Means of Verification
Evaluation Criteria 1: Relevance		
To what extent is the project aligned with the	• Alignment with needs of the beneficiaries	• Direct beneficiary questionnaire

needs of the target beneficiaries?	Needs assessment/impact reports	• Indirect beneficiary questionnaire • Desk Review
Evaluation Criteria 2: Coherence		
To what extent is the project internally aligned with SAMIL core values	Linkage with the core CSR goals and objectives of SAMIL	• SLMTT team • Document Review
To what extent is the project externally aligned with national/government policies	• Linkage with government policies and strategies Skill Development	• SLMTT team, Industry experts • Document Review
Evaluation Criteria 2: Effectiveness		
Are the objectives of the project being achieved?	Target achievement in comparison with actual achievement	• Direct beneficiary questionnaire • Other stakeholder consultations
Has the project been implemented promptly?	Challenges identified by the implementing team in project implementation	SLMTT team
Evaluation Criteria 3: Efficiency		
Have the human resources been plotted efficiently?	Defined team structure and allocation of project team	• Document Review • Stakeholder consultations
Has the project been implemented in a timely manner?	• Whether timelines are defined or not • Whether there are any extensions given to the project • Resource mobilization	• Document Review
Evaluation Criteria 4: Impact		
Has the project achieved its intended/ unintended impact on the beneficiaries?	Impact Indicators: • Increased employability for trainees in targeted trades • Improved overall employability and job readiness of trainee	1. Survey Questionnaire 2. Stakeholder consultation with NGO team, employers
Evaluation Criteria 6: Sustainability		

What sustainability mechanisms are in place?	**Mechanisms include (1) Stakeholder-led governance (2) Local capacity building for operational sustainability and (3) Financial sustainability through user fees, linkages, collaboration, etc.) (4) Exit strategy**	• Progress reports • Consultation with SLMTT and its implementation team
What is the perception of beneficiaries towards the continuation of these benefits	Percentage of trainees believing the outcomes to be sustained after the project	• Direct and indirect beneficiary questionnaire

Table 4. Methodology of the study

Desk Review

A comprehensive review of the existing program document was conducted by the KPMG team. Apart from the review of the existing document, KPMG conducted a thorough literature review of academic articles and government policies to understand the relevance and coherence of the SDC program.

Questionnaire design

A questionnaire for relevant stakeholders was developed based on the program activities to evidence the outcomes and impacts of the program. The questionnaire was designed to elicit both quantitative and qualitative data which was pre-tested before distribution. Basis the findings of the pilot survey, appropriate additions and changes were made to the questionnaire.

Data collection

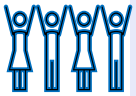
The collection of data was carried out by KPMG resource personnel who physically visited the sample population at SDC Noida center or used telephonic means to gather details

Key Informant Interviews

Structured, semi-structured interviews were conducted with key stakeholders in the field to gain insights. The interviews were further analyzed using thematic analysis.

Data analysis

Quantitative data collected were analyzed using statistical software and involved descriptive statistics. Qualitative data collected through the survey and interviews were analyzed using thematic analysis, to identify patterns and themes in the data.

	**Synthesis**	The data collected through the literature review, survey, and interviews were synthesized to develop a comprehensive understanding of the research topic. This involved identifying key themes and trends, as well as exploring any inconsistencies or gaps in the data.
	Reporting	The results of the impact assessment of the SDC program are reported in a comprehensive final report, includes a summary of the findings, as well as recommendations for future research and practice.

2.3. Stakeholder Mapping

A 'stakeholder' for the studies is defined as an individual or a representative who has an interest and provides a certain influence over the study being undertaken. Such stakeholders play a pivotal role in the implementation of programs, within the communities. For this impact assessment 6 beneficiary group were identified – *Industry experts, Employer Pool, NGO Representatives, SLMTT representatives, Beneficiaries and their family members.*

Stakeholder	Rationale for inclusion	Type of stakeholder
Trainees/ students	They are the target beneficiaries of the project and the project aims to uplift their socio-economic level in society	Primary
Family Members	They are related to beneficiaries are indirect recipients of benefits incurred	Primary
Employer Pool	These are necessary to assess the job readiness and provide employment to the trained beneficiaries	Secondary
NGO Representatives (Sambhav Foundation)	The NGO handles the on-ground end to end operations at all levels of the skill development program	Secondary
SLMTT Project Representative	The project heads from SLMTT are responsible for monitoring the project and ensuring that the program runs efficiently and according to the plan set forth before the start of the project. They are also in charge of assisting during any challenges faced during the program	Secondary
Industry Experts	Industry experts knows the inside out of trends and innovation happening at industry level to understand the alignment of training provided to industry expectations.	Secondary

2.4. Sampling Strategy

For the purpose of this study, KPMG has used the OECD DAC Framework (Relevance, Efficiency, Effectiveness, Impact and Sustainability) for developing the research tools

(questionnaires for quantitative and qualitative data) and evaluating the impact created on the stakeholders. The method used for engaging with the stakeholders include in-depth interviews (IDIs) and surveys. Additionally, stories of change capturing the impact have been documented as case studies.

- **In-depth interview (IDI)**

An in-depth interview (IDI) is defined as a qualitative research technique to undertake explorative individual interviews. In such an interview, respondent perspective on a program, idea, or subject are explored. IDI were conducted for stakeholders like *Industry experts, Employer Pool, NGO Representatives, SLMTT representatives, and family members of the beneficiaries*.

- **Survey**

Tailor-made questionnaires were drafted for different stakeholders with open ended and close ended questions. This helped understand their present situation and collect data on the identified indicators on conditions of pre and post project intervention

The KPMG team, along with support from SLMTT and Sambhav Foundation covered a sample size of 60 respondents as tabulated below:

Stakeholder group	Targetted Sample	Sample provided	Achieved	Mode
Trainees/ students	50	50	50	Quantitative Questionnaire
Family Members	2	2	2	Qualitative Questionnaire
Employer Pool	3	3	3	Qualitative Questionnaire
NGO Representatives	2	2	2	Qualitative Questionnaire
SLMTT Representatives	1	1	1	Qualitative Questionnaire
Industry Experts	2	2	2	Qualitative Questionnaire
Total	**60**	**60**	**60**	

Purposive Sampling

Purposive sampling **is a technique used in qualitative research to select a specific group of individuals or units for analysis.** Participants are chosen "on purpose," not randomly. It is also known as judgmental sampling or selective sampling.

Convenience Sampling

Convenience sampling is a non-probability sampling method where units are selected for inclusion in the sample because they are the easiest for the researcher to access. This can be due to geographical proximity, availability at a given time, or willingness to participate in the research. Sometimes it is also referred to as accidental sampling. Convenience sampling is also a type of non-random sampling.

Simple Random Sampling (SRS)

Simple random sampling is a widely utilized sampling method in quantitative studies with survey instruments. It is asserted that simple random sampling is favorable in homogeneous and uniformly selected populations. In this selection method, all the individuals have an equal opportunity to participate in the study. It ensures unbiased, representative, and equal probability of the population.

The sampling strategy involved randomized sampling of 50 trainees for telephonic and in-person structured intervention, with provision of replacement by working closely with SLMTT team and Sambhav Foundation

2.5. Impact Map

The impact Map provides the program-wise output, outcome and intended impact against mapped program inputs/activities in the impact evaluation study.

<table>
<tr><th>Input</th><th>Activities</th><th>Output</th><th>Outcome</th><th>Impact</th></tr>
<tr><td rowspan="10">CSR funding contribution by SAMIL</td><td>Awareness creation about the skilling programme through media, referrals, mobilization, etc.</td><td>No of candidates mobilized through mobilized drive, referrals, etc.</td><td>Increased awareness on the offerings among the target stakeholders</td><td rowspan="10">1. Increased employability for trainees in automotive skill trades
2. Improved overall employability and job readiness of trainee
3. Contribution to the overall national efforts on creating sustainable skill development ecosystems</td></tr>
<tr><td rowspan="8">Conducting residential skill based trainings across 7 trades</td><td>Number of trainees enrolled</td><td rowspan="8">Trainees trained in respective trades and gain real life exposure

Improved technical skills</td></tr>
<tr><td>Total learning and training hours by trainee</td></tr>
<tr><td>Number of trainee reporting regular attendence</td></tr>
<tr><td>Number of trainees who dropped out</td></tr>
<tr><td>No. of OJT activities</td></tr>
<tr><td>No. of guest lectures (2 per quarter)</td></tr>
<tr><td>No. of internal assessment conducted</td></tr>
<tr><td>Number of trainee trained on professional skills (communication, confidence, etc)</td></tr>
<tr><td rowspan="2">Certification and facilitating placement for trainees</td><td>Number of certificates awarded</td><td rowspan="2">Increased awareness of job</td></tr>
<tr><td>Number of career counselling sessions held (1 per batch)</td></tr>
</table>

		Number of trainees receiving counselling and preparation guidance	opportunities Higher employability rates among trainees	
		No. of guest lectures (2 per quarter)		
		No. of placement related activities held		
		No. of companies reached out		
		No. of trainees placed		
		No. of trainees receiving post placement follow ups		

CHAPTER 3

Findings from the Impact Assessment

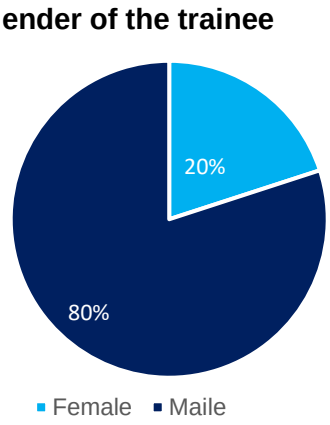
3. Findings from the Impact Assessment

The study investigates the sociodemographic characteristics, current job status, age, and other relevant attributes of respondents involved in the Enabling Livelihood through skill development and training (FY 2022-23). program. By providing a detailed profile of the participants, this assessment aims to understand the broader impact of the SDC initiative. The analysis also examines the implications of the program on the OECD-DAC framework, focusing on its potential to enhance workforce skills and contribute to sustainable economic development. This introductory overview sets the stage for a deeper exploration of the SDC program's effectiveness and its role in achieving global development objectives.

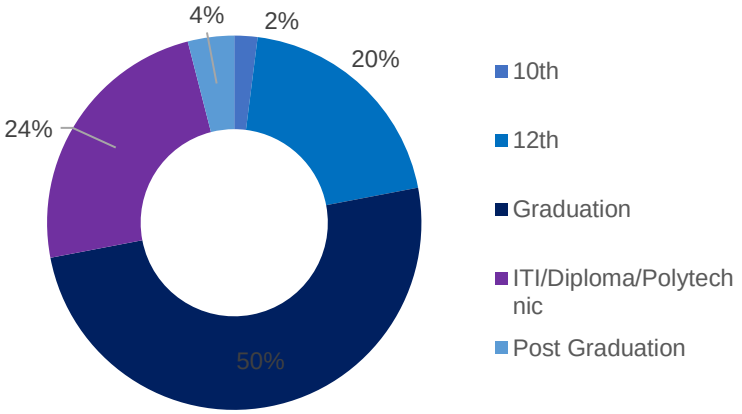
3.1. Demography of beneficiaries (Beneficiary data)

Gender of the trainees

As per the data received from the respondents, 80% of the respondents who underwent the training were male, while 20% of the respondent trainees were female.



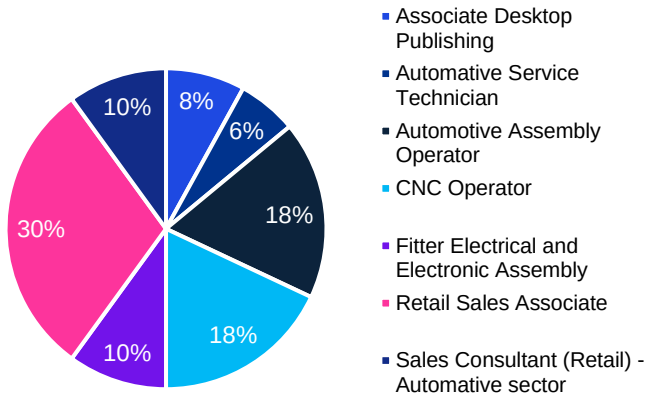
Education Qualification of the candidates



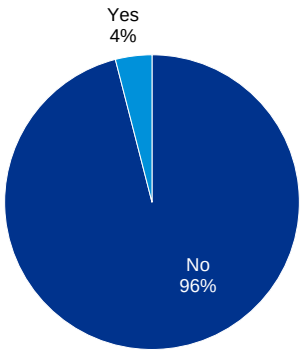
Based on the data collected from the trainees, the educational background is as follows: 50% of trainees are graduates, 4% are postgraduates, 20% have completed their education up to class 12th, and 24% have pursued other courses such as ITI certifications. This indicates that the majority of the trainee population, a significant 78%, holds at least one academic certification.

Trades of the trainees

Based upon the data analysis, there was a presence of diverse trades. It was understood that 30% of the trainees were trained Retail Sales Associate while 18 % each reported to receive training in CNC Operator and Automotive Assembly operator, while 10% each trainees reported to receive the training for Retail Sales consultant and Fitter. While 8% each were trained as ADTP and other 6% of the trainees received training for Automotive Services Technician.



Drop Out rates.



96% of the respondent who attended the training program revealed that they completed the duration of the training, while only 4% respondents dropped out from the training programs due to various reasons. The reason identified during the interaction with the trainees who were dropped out from the program were health/family issues.

3.2. Assessment of Impact on OECD DAC Framework

The following section will evaluate the impact of the program of the OECD-DAC criteria of Relevance, Coherence, Effectiveness, Efficiency, Impact and Sustainability

3.2.1. Relevance

The Indian economy is set to transform from an agricultural-based to a manufacturing and service-based economy. Thus, the Government of India has ambitious plans to transform India into a competitive, high-growth, high productivity middle-income country. In fact, according to the National Skill India Mission *"As India moves progressively towards becoming a 'knowledge economy' it becomes increasingly important that the country should focus on advancement of skills and these skills have to be relevant to the emerging economic environment*".[16]

More than 12 million youth between 15 and 29 years of age are expected to enter India's working age population every year for the next two decades. The government's recent skill gap analysis concludes in next few years, another 109 million or so skilled workers will be

[16] https://nationalskillindiamission.in/policy/

needed in the 24 keys sectors of the economy.[17] It should also be noted that according to the Global Business Coalition for Education (GBC-Education), United Nations Children's Fund (UNICEF) and the Education Commission, more than 50 per cent of the Indian youth is not on track to have the education and skills necessary for employment by 2030[18].

Of all in the labour force, 5 per cent have either received or are undergoing the process of formal vocational training (60 per cent of these are from 5 states viz. Karnataka, Uttar Pradesh, West Bengal, Tamil Nadu, and Rajasthan[19]. It must be noted that of those who received training or are currently undergoing training, over 65 per cent are employed (across the Country).

Jobs in India are diminishing as the unemployment rate crept was nearly 7.77 percent in October 2022, according to the Centre for Monitoring Indian Economy (CMIE). This is the highest unemployment rate witnessed in the country over the last three decades.[20] Coupled with this is the low literacy levels and the high rate of dropouts as well as out of school children. Further, it was found that employment for local youth still remains a challenge due to the gap in demand and supply of skill sets required.

SAMIL has been filling the skill gap by providing skill training to the youths and hence establishes its relevance. Nearly 86% of respondents got training in the trade of their choice/interest. Moreover, 76% of the respondents reported that the skill training that they received was relevant for them.

As per an industry stakeholder, the skillset & course at the centre helps reduce the time spent on the induction & acquiring basic knowledge on the subject at the time of joining. When it comes to alignment to employer needs, stakeholders were of opinion that there needs to be some restructuring and realignment with more practical, hands-on approach/experience to be added to the curriculum.

3.2.2. Coherence

The SAMIL's skill development program aligns with both national priorities on skilling as well as with the Sustainable Development Goals. The SDGs include Goal 1: End Poverty in all its forms, Goal 4: Quality Education and Goal 8: Decent Work for All. It also aligns with the skilling objectives under National Skill Mission and National Rural Livelihood Mission.

Table 8.2 Alignment of Project with the SDGs

SDG	SDGs target	How is it aligned?
	Goal 1. End poverty in all its forms everywhere Target 1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	• Providing access to a decent source of income and necessary skills to keep oneself employed would help individuals sustain themselves, their families and hence contribute to eradicating income poverty.

[17] Skilling India (worldbank.org)

[18] https://timesofindia.indiatimes.com/blogs/voices/the-aspiring-youth-and-the-skill-gap/

[19] https://skillsip.nsdcindia.org/sites/default/files/kps-document/Estimating_per cent20the_per cent20Skill_per cent20Stock_per cent20in_per cent20India.pdf

[20] Unemployment (cmie.com)

	Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	• The project contributes to ensuring access to relevant and quality skills to get employment
	Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all • Target 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value • Target 8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training	• The project contributes to ensuring access to relevant and quality skills to get employment. Further, placement opportunities are provided to ensure access to jobs as well.

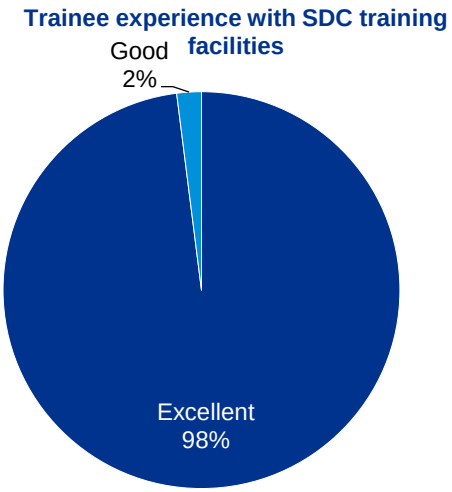
Nearly all stakeholder consulted were of the opinion that the project is in aligned with national goals of India when it comes to skilling. Whereas though aligned the course and training needs to be aligned to innovations and industry trends.

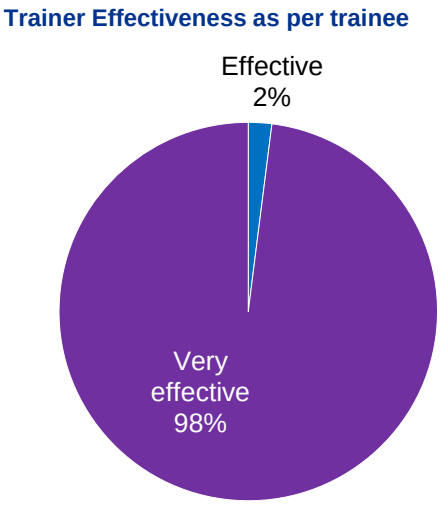
3.2.3. Effectiveness

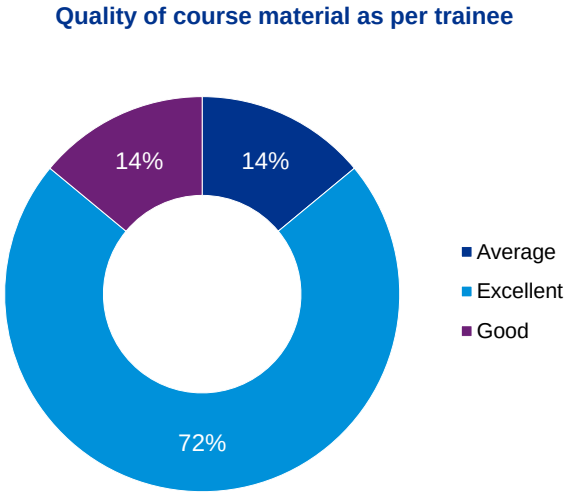
'Effectiveness' is an assessment of the factors affecting the progress towards outcomes for every stakeholder and validation of robustness of systems and processes by assessing the utilization of the resources. The criterion reviews the implementation strategy and mechanism. The purpose of this is to understand if the intervention has achieved its objective and the extent to which it did.

The project aims to provide the relevant skills and knowledge in various for the underprivileged youth, to help them ensure jobs in formal sector, increase their social and economic security and uplift their standard of living. Nearly 96% of all trainee respondents saw the whole initiative training experience to be a very positive for them.

Overall, there was an extremely positive reception toward the whole training infrastructure – facility, trainer effectiveness, course material provided, assessment and certification processes, etc. 96 % of the trainees responded positively to training experience being very satisfactory to them. 98% of respondents found the trainers to be very effective in delivering the course to them. As per the NGO stakeholder, trainers have industry experience and relevant qualification. In order to supplement the same, the trainers have also gone through multiple Training of Trainers (ToT) modules.







Nearly 86% of the respondents responded positively to the course material, however 14% of the were of opinion that course material should be in local language for supplementing classroom knowledge and self-learning or didn't refer to material provided.

Effectiveness of systems and processes adopted for planning and implementation

This establishes how much of the defined objectives have been achieved and the activities contributing to it. This was done by understanding the targets, achievements and utilization of the resources to successfully address the needs of the beneficiaries.

- **Effectiveness in fulfilling the needs of the local community**
  SLMTT has successfully leveraged the Motherson Group's core competencies in the automobile industry, and its years of experience in automotive practices, business and information technology to help build capacity of the youth beneficiaries by means of its flagship skill development program. There is a large population of unskilled workforce, school/college dropouts and below poverty line (BPL) beneficiaries in the target geography. SLMTT has effectively helped these youth beneficiaries gain

relevant training and facilitate placement opportunities for them, so as to uplift their standard of living and have an overall positive impact on society.

- **Financial savings for the candidate**

  The program developed by SLMTT has no fee for enrolled candidates. This incentivizes the candidates to enroll for the program as they have no out of pocket expenses. These courses enable them to gain relevant skillsets on automotive trades, as well as opportunities for well-paying job placements. This also helps the candidates to be at par with the rural youth and bridge the employment gap in India.

- **Beneficiaries Experience of the project**

  Notably, 85% of beneficiaries sampled had a positive experience of the project and were able to understand everything that their respective skill development trade covered where as for remaining candidates this was due to skill mismatch during employment opportunity during placement. The beneficiaries felt that the project was relevant to their needs, implemented efficiently, and provided holistic development and solutions.

- **Employer Feedback**

  As per the stakeholder consultation with Employers associated with skill development center, the candidates from these facilities have low dropout rate once they transition to industry and have demonstrated satisfactory performances. They were of the opinion that though the candidates are adaptable to work requirements, there needs to be upgradation in the course modules.

3.2.4. Efficiency

Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed. 'Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed.

- **Operational Efficiency and Utilization of the Facilities Created**

  This assesses how well have the created facilities been utilized and their efficiency in serving the purpose of their installation. Based on the feedback received, the center has been running efficiently with the help of the center manager, who is in charge of end-to-end upkeep of the center, and all facilities created are running effectively as pert the project plan. Their roles and responsibilities range from cleanliness of the center, electricity management, trainer management, maintenance of classrooms and labs, management of all other human resource staff hired, financial management and maintaining all candidate data.

- **Fund Utilization**

  The program has also witnessed 100% fund and resource mobilization. The funds are being spent efficiently on quality training, quality placement, the result is visible in client retention being high.

- **Alignment of skills to industry**

  A major component of SAMIL's skill development program has been to align the trainings imparted at the center to align with the industry standards as much as possible. 90% of beneficiary sampled agreed to have been provided enough practice hours to hone their skills in their respective trades. In addition to that the program also had guest lecture as well as various kind of Industry exposure components with nearly

62% of respondent saying that the program provided them with ample – industry/ office visit, internship/apprenticeship, lab experience.

- **Employer perspective**
  Though resources and exposure provided to these candidates are good, the practical components need to be enhanced.

3.2.5. Impact

'Impact' has been measured in terms of the proportion of respondents who reported having a significant change in their lives due to the initiation of the project.

The purpose of measuring the impact is to ascertain the primary or secondary long-term effects produced by the Skill Development project. This could be directly or indirect and intended or unintended. Unintended effects are effects that were not planned as a result of the intervention and can be positive or negative.

i. Placements through the programme:

85% of the trained students interviewed mentioned that the placement component by the initiative were effective for them.[21] Rest of the candidates were of opinion that to enhance the overall effectiveness of the programme and opportunities for the student, more placement partners can be added. The candidates are assisted by placement officers and the Implementation agency, during their placement process, on completion of the program.

As per the program, students are given a total of two tries to avail job opportunities via the program. Follow-ups with students are also conducted regularly into the job so that their job satisfaction can be recorded. 100% of the students/trainees reported to receiving followups by the SDC team.

As per SLMTT team representative, the program was able to meet the placement targets, and there is an upward trend as the ecosystem has matured now. Job oriented and workplace-oriented skills have helped candidates secure good placement outcomes.

ii. Skill assessment and Job readiness from candidate's perspective

Near three-fourth or 77% of the trained students the skills they gained through the course are still relevant to their current job and nearly 57% of the student still apply the taught. The program also provided the candidates with counselling sessions, group discussions and interview preparation modules to increase their job readiness. As a result of these, 94% of the respondents said they were job ready at the end of the programme.

iii. Bringing the underserved youth to mainstream work force

The program focuses to bring in the underserved youth enrolled in the courses to the mainstream by providing them with relevant opportunities and skillsets which are at par with their counterparts in the urban areas. This intervention by SAMIL allows the student to have fair competition and give them an opportunity to avail jobs right after completion of the courses through the job fairs and placement sessions.

iv. Personal growth and development

[21] This does not include dropouts

All courses offered at the skill development center also have a complimentary course- Workplace Skills development training, which is mandatory for all candidates to attend, irrespective of the trade they are enrolled for. It is tailored as per each of the main trades, and trains candidates on skills required in the workplace, appropriate behaviour, and attitude while on the job.

v. Better quality of life

The skill development program has been able to bridge the skilling gap in India, by mobilizing candidates for automotive skill trades and assist them in securing well-paying jobs. By getting placed and having a stable job and income, candidates have been able to become bread earners, not only for themselves, but also for their family. They have been able to increase their standard of living and enjoy a better quality of life.

vi. Impact on family

The family members are also positive regarding the future due to the support of the programme that the salary/ compensation of the candidate will increase more in the future and they will be able to support the family more. The most significant impact seen by family was on economic front and in personal demeanour of the student (eg, increase in confidence). They also appreciated the guidance provided by the program to the students.

vii. Skill assessment and Job readiness from employer's perspective

As per the stakeholder, SAMIL's skill development center provides a ready access to a candidate pool who are able to integrate to a workplace quickly when compared to other candidates. The general perception was that candidates trained at center were disciplined and hard working in their approach to the work.

3.2.6. Sustainability

This criterion assesses the likelihood that project achievements will continue after the project. This includes an examination of the capacities of the systems needed to sustain benefits over time. The criterion analyses the resilience, risks and potential trade-offs. The purpose of this criterion is to look at the longer-term effects of the intervention. The different aspects of sustainability include financial, institutional, technological etc. These different aspects have been assessed when looking at the sustainability of the intervention.

i. Sustainability Plan

The project has been designed in collaboration with the local governance, SLMTT key personnel, Motherson group management and the third-party implementation agency hired for execution of the project.

ii. Stakeholder Engagement

An important aspect of the program has been to make other stakeholders aware about the developments at centre and project level. The stakeholder has participated through guest lectures, facilitating industry visits/ exposure to students as well as being active participant in placement drives/ activities. The program takes support of a localized strategy for mobilization by involving local NGOs/ colleges and local influencers

iii. Financial Sustainability

The center and the program were set up by SLMTT with a clearly demarcated vision and mission – to train the underserved youth in automotive related skill trades, with an outcome to help them acquire jobs in the future, thereby positively impacting their standard of living.

The program sustains itself from the funding from CSR of different organizations, hence, economic sustainability remains a challenge. However, when it comes to operational sustainability, the program has systems and procedures ranging from government liaison, and proper human report structure to training and policies to make the schools function properly without much interference from the program management team. The program has an efficient governance sustainability.

CHAPTER 4

Conclusion

4.1. Overall assessment of the program's success

It is important to mention that the entire evaluation had certain concerns associated to it. The inclusion of these constraints is important as they help us in strengthening the future course of current projects and planning new projects that would be implemented in Company's operational areas.

Following points describe the constraints that were felt during the evaluation of the projects.

- **Placement alignment**
  The aim of a skill development programme is to secure employment. The candidates observed that there was a need for better alignment of skills between the course and workplace to keep pace with changing nature of industry and marketplace.

- **Better access to potential employers through job fairs/ placement sessions**
  The job fairs and placement sessions offer a common platform for the candidates as well as the potential employers. The candidates are placed in accredited and well-known companies majorly which have tie-ups with the Motherson Group.

- **Guest Lectures and exposure to industry practices**
  Guest lectures help candidates gain first-hand knowledge from key players in the industry, while industry visits for the candidates provide opportunity to experience the industry practices and resonate with the skills obtained in the trainings.

  Planning the guest lectures and industry visits on a regular basis will benefit candidates and their outlook of working on the job. The guest lecture and industry visit schedule should also be shared with SLMTT beforehand as a best practice so that they are better informed, and the program team can be part of it as well.

- **On the Job Trainings**
  A general recommendation from the industry and employers were to integrate more holistic OJT component to the program. The number of industrial visits and guest lectures can be increased as they provide a better understanding of the course curriculum for the students and provide them with firsthand knowledge.

- **Course structure**
  There is also a need to make the course multilingual as felt by some of the candidates who wanted the course material to be in other local languages. Some students (around 20%) also felt the need to have a longer course duration as they wanted more time to hone their skills before stepping into the industry.

4.2. Strategic recommendations for future initiatives

Based on our observation during the field interaction and analysis of the primary and the secondary data collected during the study, the following recommendations have been suggested.

- **On job experience:** The programme can increase the number of industrial visits and guest lectures from the current 2 visits and lectures during the course duration as they provide a better understanding of practical components and exposure to the trainees in addition to the course curriculum.

- **Placement Alignment:** To check attrition and gather employer and candidate feedback when it comes to placement. A repository of success stories of successfully placed candidates can be used during the placement exercise to motivate the new candidates and answer queries of those interested in enrolling.
- **Expansion:** An expansion of programme to target new geographies and students/trainees can be taken up. Local partners can be identified for implementation.
- **Course Customization:** The team can also explore remedial classes for students/trainees who find the course duration to be short.
- **Pre-joining Counselling:** The team can also explore inclusion of assessments (like RISEC) at pre joining stage along with orientation and course introduction for better training alignment. The students can then be inducted in their course of choice and aptitude.

motherson

IMPACT ASSESSMENT

Project S.O.R.T- Segregation of Organic Waste for Recycling and Treatment

New Societies
2021-22

JUNE 2024

List of Abbreviations

Abbreviation	Expansion
BWG	Bulk Waste Generators
IPCA	Indian Pollution Control Association
KAP	Knowledge, Attitude and Practices
MSW	Municipal Solid Waste
O&M	Operation and Maintenance
RWA	Resident Welfare Associations
SAMIL	Samvardhana Motherson International Limited
SLMTT	Swarn Lata Motherson Trust
SORT	Segregation of Organic Waste for Recycling and Treatment
TPD	Tonnes Per Day
WMC	Waste Management Committee

CHAPTER 1

Introduction

Introduction

Background of the project

Waste management is a critical issue globally, with significant implications for environmental sustainability, public health, and economic development. The management of municipal solid waste, particularly wet waste, is an intricate challenge faced by cities around the world. Wet waste, primarily comprising organic matter such as food scraps, yard trimmings, and other biodegradable materials, constitutes a substantial portion of municipal solid waste. Globally, organic waste makes up about 65% of waste generated, with food and green waste as the largest share.[22] Effective management of this waste stream is essential for reducing greenhouse gas emissions, preventing pollution, and promoting sustainable practices.

India, with its rapidly growing urban population, faces immense challenges in managing its waste. As per the Ministry of Environment & Forests and Climate Change, annually 65 million tonnes of waste are generated in India out of which as high as 62 million tonnes is Municipal Solid Waste (MSW) country[23]. The traditional waste management system in India is largely inefficient, characterized by inadequate waste segregation at the source, unscientific disposal practices, and overburdened landfill sites. These practices lead to severe environmental and health hazards, including groundwater contamination, air pollution, and the proliferation of disease vectors.

The Indian government has taken several initiatives to improve waste management. The Swachh Bharat Mission, launched in 2014, aims to enhance cleanliness and promote scientific waste management practices across the country[24]. Under this mission, efforts are being made to promote the segregation of waste at the source, encourage the use of composting and biogas plants, and improve the infrastructure for waste collection and processing. Additionally, the Solid Waste Management Rules, 2016, mandate the segregation of waste into biodegradable, non-biodegradable, and domestic hazardous waste at the household level . Despite these initiatives, the implementation remains a significant challenge due to the lack of public awareness, inadequate infrastructure, and limited financial resources.

The current waste management system in Delhi NCR is characterized by inadequate infrastructure, informal recycling sectors, and high dependence on landfills. Major landfills in Delhi, such as Ghazipur, Bhalswa, and Okhla, are overburdened, leading to severe environmental and health impacts.

In response to the pressing need for effective waste management, the project "S.O.R.T." (Segregation of Organic Waste for Recycling and Treatment) was initiated in the Delhi/NCR region in the year 2018-19. This initiative aimed to reduce landfill waste through the source segregation and composting of organic materials, promoting a sustainable approach to solid waste management.

The enthusiastic response from Resident Welfare Associations (RWAs) and other stakeholders during Phase I inspired the continuation and expansion of the project. Over six years and through six phases, S.O.R.T. has grown from its initial 9 locations to 301, earning

[22] How our trash contributes to climate change — and what we can do about it

[23] SEVENTH REPORT STANDING COMMITTEE ON URBAN DEVELOPMENT (2020-2021)

[24] Swachh Bharat Mission - Urban 2.0

full recognition from government authorities and driving efforts to scale the project nationwide. With this PAN India vision, the project has been initiated in Mumbai, Pune, Bengaluru, and Chennai as of date. While initially S.O.R.T focused on the collection and treatment of wet waste, S.O.R.T. has now broadened its scope to include the collection and treatment of plastic waste and marine litter as well. To accommodate this expansion in scope, it has been renamed to Segregation Of waste for Recycling and Treatment (S.O.R.T).

Objective of the Impact Assessment

KPMG in India has been engaged by SAMIL, with the objective of carrying out an impact assessment study of its CSR project - ***'S.O.R.T Aerobin Project- New Societies'*** and effectively capture the impacts created by the project. The findings will be used as a road map for existing and planning new interventions.

The overall objective is to carry out an impact evaluation of the projects funded, overseen, and partly implemented by its CSR arm SLMTT as part of the Motherson group's CSR initiatives across India. The evaluation team has assessed the projects using the OECD DAC framework (Relevance, Effectiveness, Efficiency, Impact and Sustainability), details of which are provided later in the chapter. The findings of the evaluation will be used by SAMIL for strengthening their existing processes and planning for future initiatives in the priority areas

Program Introduction – S.O.R.T Aerobin Project- New Societies

S.O.R.T is the flagship CSR project of Motherson Group, first launched in November 2018 by SLMTT, the CSR arm of the Motherson Group, in collaboration with IPCA. The project's primary objective was to foster behavioral change among the residents of Delhi NCR, encouraging waste segregation to enhance recycling rates and manage organic waste locally, thereby reducing the burden on landfills. Additionally, the project aimed to increase the per capita income of waste pickers.

The project has directly benefited over 240,000 citizens and conducted more than 900 workshops for various stakeholders, including waste collectors, maids, residents, and students. Approximately 1307 composters have been successfully installed, operated, and maintained.

Figure 2: Awareness session among society residents conducted by IPCA team as part S.O.R.T Aerobin (New Societies)

This report focuses on the impact of the 'S.O.R.T Aerobin Project- New Societies', officially launched in Delhi NCR focusing on 20 residential societies. The phase aimed to minimize waste through source segregation and composting of organic waste, employing a sustainable approach to solid waste management in residential complexes. It also sought to develop the capacities of waste workers, improve waste recycling, and reduce waste dumping and burning in the city.

Figure 3: Map of Delhi/NCR where S.O.R.T. Aerobin Project (New Societies) has been implemented as received from NGO implementation partner

Implementation partner

SLMTT

Swarn Lata Motherson Trust (SLMTT) was established by the Motherson Group with the noble objective of advancing the principles of good corporate citizenship, with a specific focus on fostering prosperity and well-being for holistic and sustainable development. It serves as a strategic platform for formal Corporate Social Responsibility (CR) initiatives, allowing for a decentralized and systematic approach to meet the ambitious goals envisioned by the company's leadership.

IPCA

The Indian Pollution Control Association (IPCA) was founded in 2001 by a group of environmentally conscious individuals dedicated to promoting sustainable practices at various levels, including individual, community, institutional, and industrial spheres. Registered under the Society Registration Act, XXI of 1860, and both the 80G and 12A acts of the Income Tax, IPCA stands as a trailblazer in formulating and implementing the Extended Producer Responsibility (EPR) Action Plan for Plastic Waste Management (PWM). With over two decades of experience, IPCA has effectively engaged communities and collaborated with diverse stakeholders nationwide, contributing significantly to solid waste management and environmental conservation efforts

Rationale

India's urban population is projected to reach 600 million by 2030 and 814 million by 2050, leading to an expected waste generation of 165 million tonnes by 2030 and 436 million tonnes by 2050.[25] Currently, approximately 75,000 TPD of wet waste is generated, a figure influenced by population growth and evolving lifestyles. Despite efforts under the Swachh Bharat Mission (Urban), about 68% of this waste is processed, leaving a significant gap of 32%.[26] This untreated wet waste is often indiscriminately dumped in landfill sites where its highly biodegradable nature causes immediate decomposition. Improper disposal not only leads to greenhouse gas emissions but also results in the leaching of harmful substances, contributing to air, water, and soil pollution.

The adoption of scientific waste management practices, encompassing segregation, collection, treatment, and environmentally responsible disposal, is crucial to mitigating these environmental impacts. Furthermore, municipal authorities play a pivotal role in developing the necessary infrastructure for managing municipal solid waste (MSW).[27] Innovative approaches are needed to enhance solid waste management efficiency in urban areas. Engaging all stakeholders involved in waste generation, collection, and disposal is essential. Each individual has a role to play in streamlining waste management processes. Therefore, there is an urgent need to raise awareness and educate the public about proper waste management practices and streamline waste management systems in cities.

Goals and objective

The S.O.R.T. project was conceptualized with the aim of utilizing CSR funds to establish a decentralized waste management ecosystem at the source. This initiative focuses on the proper disposal and treatment of wet waste, thereby reducing the amount of waste directed to landfills. Consequently, this would result in mitigating air, water, and soil pollution, reduce pressure on landfill sites, and lower the cost of transportation.

Approach for implementation

With the Support of IPCA, SLMTT implemented project S.O.R.T Aerobin Project- New Societies in 20 residential societies, in Delhi NCR in 2021-22.

The project commenced with a needs assessment, involving a comprehensive survey to evaluate the existing waste collection systems. This survey also identified the availability of space for installing composters, determined the number of composters required based on the volume of waste generated, and gauged the willingness of the Resident Welfare Association (RWA) or Eco Club within the community to participate in the implementation of segregated waste collection. Successful implementation of the project within a society necessitates a range of activities, with the following being key components of the process:

- Understanding the mechanism of waste collection and storage; primary (door-to-door collection from individual households) & secondary (internal transportation & storage within the society and transportation from the society)

[25] Circular Economy in Municipal Solid and Liquid Waste

[26] Circular Economy in Municipal Solid and Liquid Waste

[27] Press Release: Press Information Bureau, Government of India, Ministry of Environment, Forest and Climate Change.

- Consolidating the number of staff and supervisors involved in waste collection and management.
- Understanding what infrastructure/tools are used to store and segregate waste.
- Finalizing time and duration of different activities related to waste management.
- Estimation of the approximate waste quantity generated to plan for the composters' installation.
- Assessment for composting feasibility within the premises of RWA and their willingness.
- Availability of space for the development of a vegetable garden, which will help showcase the effectiveness of produced compost.
- Ensuring required approvals to conduct workshops and training sessions for residents, maids, and housekeeping staff.
- Ensuring that a Waste Management Committee (WMC) is formed in the society that will look at the project inside their society.
- Getting Approvals to install Boards and Banners within the society.

Figure 4: Awareness session among RWA members and Aerobin operators conducted by IPCA team as part S.O.R.T Aerobin New Societies

Under the project S.O.R.T Aerobin Project- New Societies in Delhi-NCR a baseline KAP (Knowledge, Attitude, Practice) survey was also carried out in every project location. The KAP study was conducted during pre-intervention and post-intervention at the start and end of the project respectively. The main aim was to understand the Knowledge, Attitude, and Practice around waste management in societies and also to assess the difference in the knowledge and attitude of the people after the installation of Aerobins.

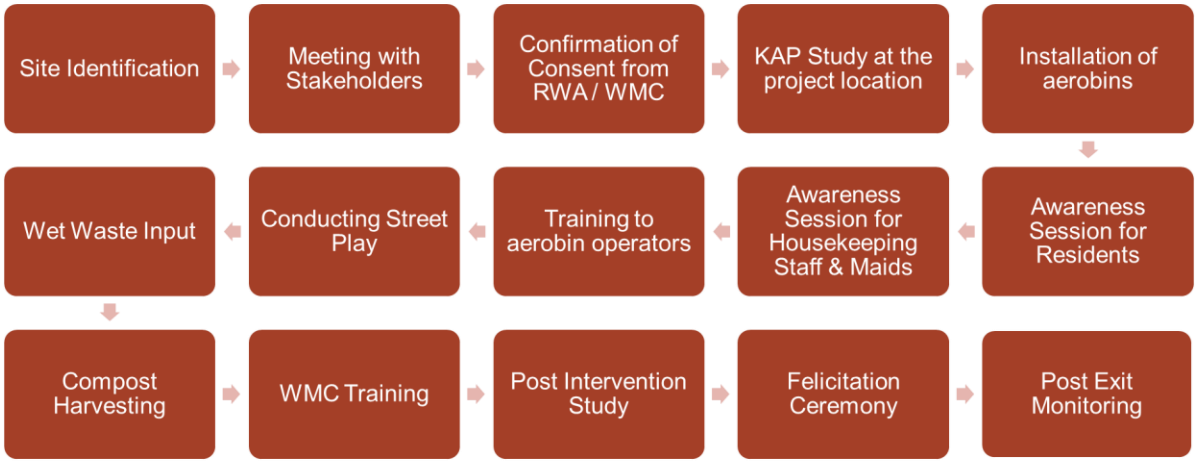


Figure 5: Project implementation methodology

CHAPTER 2

Approach and Methodology for Impact Assessment

Approach and Methodology for Impact Assessment

SAMIL has been implementing successful CSR initiatives based on community needs. A third-party evaluation of the results attained is essential given the dynamic nature of the social development programmes deployed. This impact assessment aims to explain what has been done well and what can be done moving forward. It will not only assist in determining the significance of the project, including the efficiency of project design and interventions, sustainability of results, and impact of the intervention on the target community, but it will also guide for expanding or replicating the successful initiatives while redesigning or ending the projects/initiatives that were unable to have the intended impact.

Impact Evaluation – Phase-wise Approach and Methodology

A four-phased approach was adopted for the Impact Assessment of the S.O.R.T Aerobin Project – New Societies

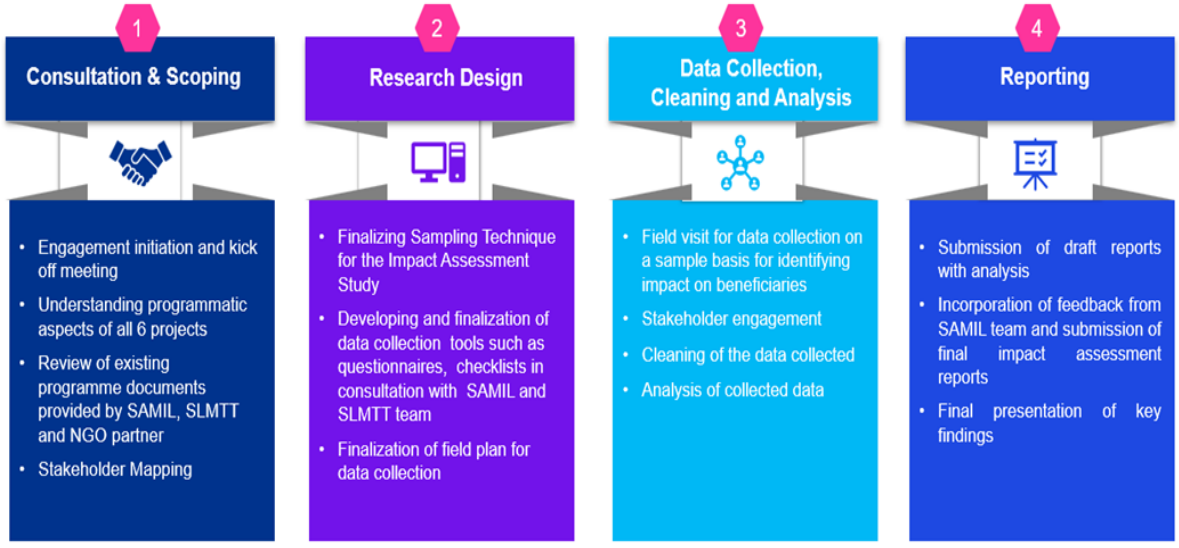


Figure 6: Four phased approach

Introduction to Framework – OECD DAC

KPMG adopted the parameters of the OECD-DAC Framework to evaluate the impact of the SDC project. OECD DAC criteria has been used for impact evaluation. The framework has been described in the below sections.

Impact assessment is a structured process for assessing the effects of an intervention on the intended beneficiaries. Impact evaluation, on the other hand, is a broader term that encompasses a range of issues such as appropriateness of the intervention design, the cost and efficiency of the intervention, its unintended effects and guidance on future course of the intervention in terms of design and implementation (OECD).

Impact assessment has often been described as a theory-based activity since it is designed based on a 'theory of change'. This relates to establishing a chain of causation from intervention to impact and has the advantage of being specific and focused on the identified impacts. The impact assessment may, however, tend to overlook some of the unexpected and undesired results of the intervention.

The OECD DAC Network on Development Evaluation (EvalNet) has defined six evaluation criteria – relevance, coherence, effectiveness, efficiency, impact and sustainability – and two principles for their use. These criteria are intended to guide evaluations.

Been in use since 1991 these criteria were refined in 2019 to improve the quality and usefulness of evaluation and strengthen the contribution of evaluation to sustainable development. A new criterion – Coherence was added for assessing the compatibility of the intervention with other interventions in a country, sector or institution.

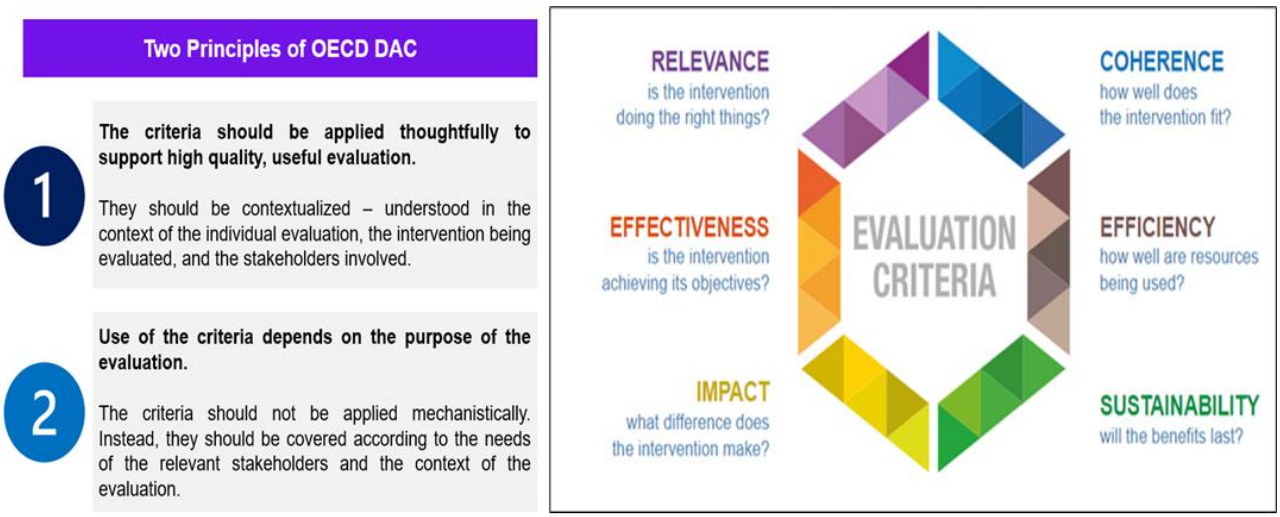


Figure 7: OECD DAC Evaluation Framework

Elaborately, six evaluative criteria by the OECD-DAC evaluation framework are as follows:

- **Relevance**: The extent to which the objectives of an intervention are consistent with recipients' requirements, country needs, global priorities, and partners' policies.
- **Effectiveness**: The extent to which the intervention's objectives were achieved, or are expected to be achieved, considering their relative importance.
- **Efficiency:** A measure of how economic resources/inputs (funds, expertise, time, equipment, etc.) are converted into results.
- **Impact:** Positive and negative primary and secondary long-term effects produced by the intervention, whether directly or indirectly, intended, or unintended.
- **Sustainability:** The continuation of benefits from the intervention after major development assistance has ceased. Interventions must be both environmentally and financially sustainable. Where the emphasis is not on external assistance, sustainability can be defined as the ability of key stakeholders to sustain intervention benefits – after the cessation of donor funding – with efforts that use locally available resources.
- **Coherence (i.e., policy coherence):** The need to ensure consistency across security, development, trade and military policies, and humanitarian policies.

The below table describes how the KPIs of the programs were evaluated using OECD-DAC criteria.

Objective	Key Performance Indicators (KPI)	Means of Verification
Evaluation Criteria 1: Relevance		
To what extent is the project aligned with the target beneficiaries' wet waste management and health needs?	• Alignment with the needs of the beneficiaries • Needs assessment/impact reports	• Direct beneficiary (primary stakeholder) questionnaire • Stakeholder questionnaire- Municipal Corporation representative and Ragpickers • Desk Review
Evaluation Criteria 2: Coherence		
To what extent is the project internally aligned with SAMIL's core values?	Linkage with the core CSR goals and objectives of SAMIL	• Stakeholder questionnaires- SLMTT Project Representative • Document Review
To what extent is the project externally aligned with national/government policies?	Linkage with government policies and strategies on wet waste management	• Stakeholder questionnaires- SLMTT Project Representative, NGO Representatives (IPCA) • Document Review
Evaluation Criteria 2: Effectiveness		
Are the objectives of the project being achieved?	Target achievement in comparison with actual achievement	• Direct beneficiary (primary stakeholder) questionnaire- Residents, Aerobin operators, SLMTT Project Representative, NGO Representatives (IPCA)
Has the project been implemented promptly?	Challenges identified by the SAMIL implementing team in project implementation	• Stakeholder questionnaires- SLMTT Project Representative, NGO Representatives (IPCA)
Evaluation Criteria 3: Efficiency		
Have the human resources been plotted efficiently?	Defined team structure and allocation of project team	• Stakeholder questionnaires- SLMTT Project Representative, NGO Representatives (IPCA)
Has the project been implemented in a timely manner?	• Whether timelines are defined or not	• Stakeholder questionnaires- SLMTT Project Representative, NGO Representatives (IPCA)

	• Whether there are any extensions given to the project • Resource mobilization	• Document Review
Evaluation Criteria 4: Impact		
Has the project achieved its intended/ unintended impact on the beneficiaries?	Impact Indicators: • Increased awareness among residents/students/waste collectors about waste management practices with a focus on source segregation and treatment of wet waste • Creation of system and technology for generating organic compost in-house for utilization at scale	Direct beneficiary (primary stakeholder) questionnaire- Residents, Aerobin operators, SLMTT Project Representative, NGO Representatives (IPCA)
Evaluation Criteria 6: Sustainability		
What sustainability mechanisms are in place?	**Mechanisms include (1) Stakeholder-led governance (2) Local capacity building for operational sustainability and (3) Financial sustainability through user fees, linkages, collaboration, etc.)**	• Progress reports • Consultation with SLMTT and its implementation team
What is the perception of beneficiaries towards the continuation of these benefits	Percentage of beneficiaries believing the outcomes to be sustained after the project closure	• Direct beneficiary (primary stakeholder) questionnaire- Residents, Aerobin operators

Table 5: OECD-DAC Criteria

Desk Review	A comprehensive review of the existing program document was conducted by the KPMG team. Apart from the review of the existing document, KPMG conducted a thorough literature review of academic articles and government policies to understand the relevance and coherence of project S.O.R.T.
Questionnaire design	A questionnaire for relevant stakeholders was developed based on the program activities to evidence the outcomes and impacts of the program. The questionnaire was designed to elicit both quantitative and qualitative data which was pre-tested before distribution. Basis the findings of the pilot survey, appropriate additions and changes were made to the questionnaire.
Data collection	The collection of data was carried out by KPMG resource personnel who physically visited the sample population at multiple locations in Delhi NCR or used telephonic means to gather details
Key Informant and In-Depth Interviews	Structured, in-depth and semi-structured interviews were conducted with beneficiaries and key stakeholders in the field to gain insights. The interviews were further analyzed using thematic analysis.
Data analysis	Quantitative data collected were analyzed using statistical software and involved descriptive statistics. Qualitative data collected through the survey and interviews were analyzed using thematic analysis, to identify patterns and themes in the data.
Synthesis	The data collected through the literature review, survey, and interviews were synthesized to develop a comprehensive understanding of the research topic. This involved identifying key themes and trends, as well as exploring any inconsistencies or gaps in the data.
Reporting	The results of the impact assessment of the project S.O.RT are reported in a comprehensive final report, includes a summary of the findings, as well as recommendations for future research and practice.

Table 6: Methodology of the study

Stakeholder Mapping

A 'stakeholder' for the studies is defined as an individual or a representative who has an interest and provides a certain influence over the study being undertaken. Such stakeholders play a pivotal role in the implementation of programs, within the communities. For this impact

assessment 7 beneficiary groups were identified – *Residents (including RWA members)- Aerobin Operators, Housekeeping staff, Municipal Corporation Representatives, NGO Representatives (IPCA), SLMTT Project Representatives, and Landfill workers/ ragpickers*

Stakeholder group	Rationale for inclusion	Type of Stakeholder
Residents ((including RWA members) and educational institutions' teachers/staff	Residents/teachers/staff of the project locations consisting of residential societies and educational institutions where Aerobins are installed	Primary
Aerobin Operators	Manages the wet waste that goes into the Aerobins daily. They also manage the harvesting and storage of compost	Primary
Housekeeping staff	Works in the residents' households supporting in proper segregation of waste	Secondary
Municipal Corporation Representative	The governing authority under whose jurisdiction waste management of the concerned project location comes under	Secondary
Implementation Partner-NGO Representatives (IPCA)	Implementing the project on the ground end to end to ensure all project activities are conducted timely, stakeholders are trained, and troubleshooting on the ground	Secondary
Implementation Partner-SLMTT Project Representative	Responsible for identifying NGO implementation partner on the ground and ensuring proper project implementation, monitoring, and evaluation	Secondary
Landfill workers/ ragpickers	Impacted due to exposure to untreated and unsegregated waste at landfills	Tertiary

Table 7: Stakeholder Groups

Sampling Strategy

For the purpose of this study, KPMG in India has used the OECD DAC Framework (Relevance, Efficiency, Effectiveness, Impact and Sustainability) for developing the research tools (questionnaires for quantitative and qualitative data) and evaluating the impact created on the stakeholders. The method used for engaging with the stakeholders include in-depth interviews (IDIs) and key informant interviews (KII). Additionally, stories of change capturing the impact have been documented as case studies.

- **In-depth interview (IDI)**

An in-depth interview (IDI) is defined as a qualitative research technique to undertake explorative individual interviews. In such an interview, respondent perspective on a program, idea, or subject are explored. IDI were conducted for stakeholders like Industry experts, Employer Pool, NGO Representatives, SLMTT representatives, and family members of the beneficiaries.

- **Key Informant Interviews (KII)**

A Key Informant Interview (KII) is a qualitative research technique used to conduct detailed, explorative interviews with individuals who have specialized knowledge or insights about a specific program, idea, or subject. KII was conducted for stakeholders like municipal corporation representatives, NGO Representatives (IPCA), SLMTT Project Representatives, and Landfill workers/ ragpickers.

The KPMG team, along with support from SLMTT and IPCA covered a sample size of 48 out of the 67 respondents as tabulated below:

Stakeholder group	Targeted Sample	Sample Provided	Achieved
Residents ((including RWA members) and educational institutions' teachers/staff	50	37	37
Aerobin Operators	5	5	5
Housekeeping staff	5	-	0
Municipal Corporation Representative	2	2	2
Implementation Partner- NGO Representatives (IPCA)	2	2	2
Implementation Partner- SLMTT Project Representative	1	1	1
Landfill workers/ ragpickers	2	1	1
Total	**67**	**48**	**48**

Table 8: Sample details

All residents sampled for S.O.R.T Aerobin Project -New Societies weren't covered due to challenges in reaching some of the residents, either because they were unavailable after

multiple attempts or chose not to participate in the survey. Due to time constraints and overlap in roles and responsibilities of housekeeping staff and operators, we proceeded with interviewing only Aerobin operators. Furthermore, landfill workers/ ragpickers were unwilling to take part in the interview.

The sampling strategy involved selecting 50% of the total project locations through simple random sampling with a proportionate representation of all clusters and types of project locations (educational institutions and residential societies). While efforts were made to select beneficiary respondents from the project locations via simple random sampling as well, due to time and availability constraints of beneficiaries during working hours, we proceeded with convenience sampling.

Convenience sampling was also employed while interviewing ragpickers at landfill sites.

Simple Random Sampling (SRS)

Simple random sampling is a widely utilized sampling method in quantitative studies with survey instruments. It is asserted that simple random sampling is favorable in homogeneous and uniformly selected populations. In this selection method, all the individuals have an equal opportunity to participate in the study. It ensures unbiased, representative, and equal probability of the population.

The sampling strategy involved selecting 50% of the total project locations through simple random sampling with proportionate representation of all clusters. While efforts were made to select beneficiary respondents from the project locations via simple random sampling as well, due to time and availability constraints of beneficiaries during working hours, we proceeded with convenience sampling**.**

Purposive sampling was employed while interviewing other stakeholders consisting of government stakeholders, Aerobin operators, SLMTT and IPCA representatives.

Convenience sampling is a non-probability sampling method where respondents are selected basis ease of access for the researcher owing to availability at a given time and willingness to participate in the research among other reasons. Purposive sampling is another non-probability sampling technique in which researchers employ their judgement to select a specific group of participants that will help the study meet it’s goals.

4.1. Impact Map

The impact Map provides the program-wise output, outcome, and intended impact against mapped program inputs/activities in the impact evaluation study.

<table>
<tr><th colspan="6">Impact Map</th></tr>
<tr><th>Objectives of the Project</th><th>Input</th><th>Activities</th><th>Output</th><th>Outcome</th><th>Impact</th></tr>
<tr><td rowspan="6">1. To bring behavior change among the residents on better waste management practices with a focus on wet waste
2. To segregate and treat wet waste at source in order to reduce the waste burden on landfills
3. To contribute to reducing land degradation, especially at landfills, due to improper decomposition of wet waste
4. To promote local self-responsibility for a clean environment</td><td rowspan="6">Financial and technical support provided by Motherson for operation of SORT project</td><td rowspan="3">Training of targeted stakeholders:
- Residents (WMCs/RWAs) /Bulk Waste Generators
- Waste Collectors
- Housekeeping Staff
- School/College teachers, students, and Staff</td><td>1. No. of workshops/training sessions for residents/ students/ housekeeping staff/maids at the project location</td><td rowspan="3">Increased awareness among residents/students/waste collectors about waste management practices with a focus on source segregation and treatment of wet waste</td><td rowspan="6">1. Reduction in greenhouse gas emissions and air pollution
2. Contributing to a circular economy by closing the organic waste loop and promoting sustainable resource management.
3. Enablement of a healthy working environment for waste workers by reducing exposure to hazardous substances generated from improper treatment of wet waste.</td></tr>
<tr><td>2. No. of demonstrations of proper waste disposal methods for all stakeholders.</td></tr>
<tr><td>3. No. of Training sessions on personal protective equipment (PPE) and safety protocols for Waste Workers</td></tr>
<tr><td rowspan="3">Installation and O&M of Aerobin composters</td><td>1. No of suitable place/ locations identified for installation of composter</td><td>Finalized project locations for installation of Aerobins</td></tr>
<tr><td>2. No. of Composters installed</td><td rowspan="3">1. Decrease in the quantum of domestic waste being deposited at local Dhalaos (dump sites) and landfill sites.
2. Creation of system and technology for generating organic compost in-house for utilization at scale</td></tr>
<tr><td>3. Overall Segregation Rate (%)</td></tr>
<tr><td>5. No. of monitoring and support visits conducted</td></tr>
</table>

			6. Total amount (in KGs) of organic waste treated in Aerobins		
			7. Total amount (in KGs) of compost generated		
			8. GHG offset (CO_2e kg) from Wet Waste		

Table 9:Impact Map

CHAPTER 3

Findings from the Impact Assessment

Findings from the Impact Assessment

The study investigates the impact of the S.O.R.T Aerobin Project- New Societies implemented in 2021-22. By providing a detailed analysis of the waste management scenario at the individual, community, and city levels, this assessment aims to understand the broader impact of the S.O.R.T Aerobin Project- New Societies. The analysis also examines the implications of the program on the OECD-DAC framework, focusing on its potential to enhance workforce skills and contribute to sustainable economic development. This introductory overview sets the stage for a deeper exploration of the S.O.R.T Aerobin Project-New Society's effectiveness and its role in achieving global development objectives.

Assessment of Impact on OECD DAC Framework

Relevance

Waste management is a critical issue globally, with significant implications for environmental sustainability, public health, and economic development. The management of municipal solid waste, particularly wet waste, is an intricate challenge faced by cities around the world. Wet waste, primarily comprising organic matter such as food scraps, yard trimmings, and other biodegradable materials, constitutes a substantial portion of municipal solid waste. Globally, organic waste makes up about 65% of waste generated, with food and green waste as the largest share. Effective management of this waste stream is essential for reducing greenhouse gas emissions, preventing pollution, and promoting sustainable practices.

India, with its rapidly growing urban population, faces immense challenges in managing its waste. As per the Ministry of Environment & Forests and Climate Change, annually 65 million tonnes of waste are generated in India out of which as high as 62 million tonnes is Municipal Solid Waste (MSW) country. The traditional waste management system in India is largely inefficient, characterized by inadequate waste segregation at the source, unscientific disposal practices, and overburdened landfill sites. These practices lead to severe environmental and health hazards, including groundwater contamination, air pollution, and the proliferation of disease vectors.

The current waste management system in Delhi NCR is characterized by inadequate infrastructure, informal recycling sectors, and high dependence on landfills. Major landfills in Delhi, such as Ghazipur, Bhalswa, and Okhla, are overburdened, leading to severe environmental and health impacts.

Coming to the opinions of the residents and teachers/staff interviewed, 59% of the respondents felt that wet waste segregation was a common challenge within the community before installation of the Aerobin. 97% of the beneficiary respondents felt that the waste workers and other sanitation staff require proper PPE while on job but only 49% had witnessed these workers having access to these.

We understood from a ragpicker interviewed at a landfill site that they had been working in this line of work for a long time following their parents' footsteps. However, they are not satisfied with the work. The combination of intense heat and the foul smell from the waste often leads to health issues for them. They frequently feel dehydrated and ill, sometimes even fainting due to the extreme temperatures.

As we understood from the Former Assistant Commissioner , Municipal Corporation of Delhi, (West Zone), the primary challenge in waste management is the public's lack of awareness and understanding of the severity of their impact on the environment. This issue is

compounded by a subpar waste collection, processing, and disposal supply chain. Mandating the collection and treatment of waste at the source, particularly wet waste, could reduce the waste volume by 60%, leaving only 40% for further processing.

Hence, we may conclude that the **project is highly relevant to the needs of the beneficiaries and other stakeholders involved.**

Coherence

The S.O.R.T Aerobin Project- New Societies aligns with SAMIL's internal policy, national priorities on waste management as well as with the Sustainable Development Goals.

SAMIL's vision is to create a more inclusive and sustainable environment. Within the same, waste management and sanitation is a key focus of area of interest aligned to Schedule VII of the Companies Act, 2013 pertaining to Corporate Social Responsibility.

The Indian government has taken several initiatives to improve waste management. The **Swachh Bharat Mission**, launched in 2014, aims to enhance cleanliness and promote scientific waste management practices across the country. Under this mission, efforts are being made to promote the segregation of waste at the source, encourage the use of composting and biogas plants, and improve the infrastructure for waste collection and processing. Additionally, the **Solid Waste Management Rules, 2016**, mandate the segregation of waste into biodegradable, non-biodegradable, and domestic hazardous waste at the household level. Despite these initiatives, the implementation remains a significant challenge due to the lack of public awareness, inadequate infrastructure, and limited financial resources.

The S.O.R.T Aerobin Project- New Societies is also aligned to SDG Goal 11 and Goal 12 as elaborated below.

SDG	SDGs target
	Goal- 11 Make cities and human settlements inclusive, safe, resilient and sustainable Target 11.6- By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

	Goal 12- Ensure sustainable consumption and production patterns Target 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Table 10: Alignment of Project with the SDGs

Basis conversations with respondent beneficiaries we were able to conclude that largely beneficiaries were aligned that the project integrated well with other waste management and environmental initiatives in their locality, at the national level and global goals around the same. We were able to gather more on this from government stakeholders interviewed who saw synergies with the zero waste targets set by Municipal Corporation of Delhi. At the national and global level, they opined that the project aligned well with Swach Bharat Mission (SBM) as well in reducing global warming, reducing carbon footprint, and contributing towards curbing environmental pollution. Project demonstrates potential cost savings in waste management through source treatment, particularly in reducing transportation costs by 25-60% and optimizing dry waste utilization through proper segregation.

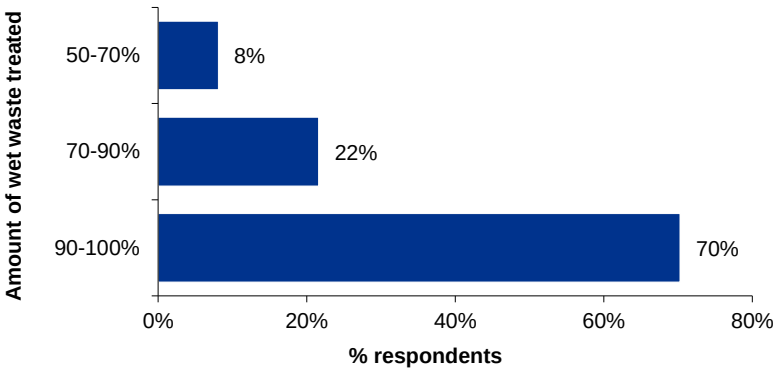
Hence, we may conclude that the **project is highly coherent with the internal policies of the organization and external policies at the national and global level.**

Effectiveness

'Effectiveness' is an assessment of the factors affecting the progress towards outcomes for every stakeholder and validation of robustness of systems and processes by assessing the utilization of the resources. The criterion reviews the implementation strategy and mechanism. The purpose of this is to understand if the intervention has achieved its objective and the extent to which it did.

Our conversations with respondents revealed that 70% felt that their entire wet waste was getting treated by Aerobins.

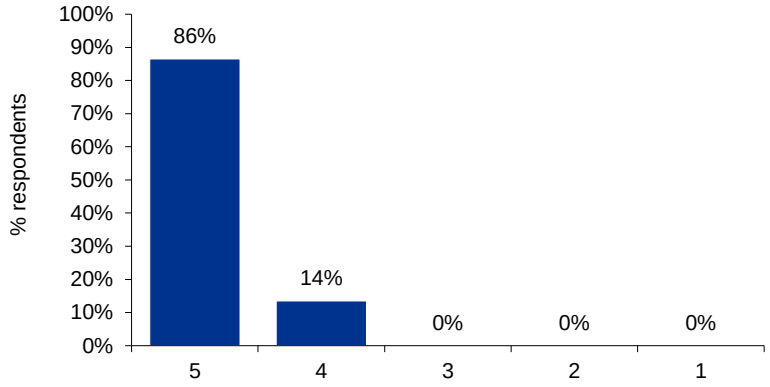
Percentage of the wet waste generated by society/educational institution being treated via Aerobins?



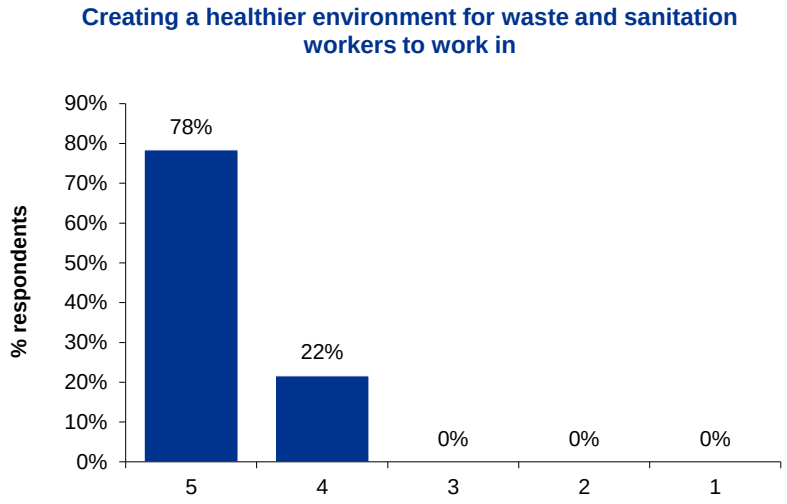
Of the selected Aerobin operators interviewed, all of them were of the opinion that almost all of the wet waste generated was treated via the Aerobin.

The survey also requested the beneficiaries' opinions on the effectiveness of the project on various parameters, rated on a scale of 1-5 where 1 being the lowest and 5 being the highest, as summarized below.

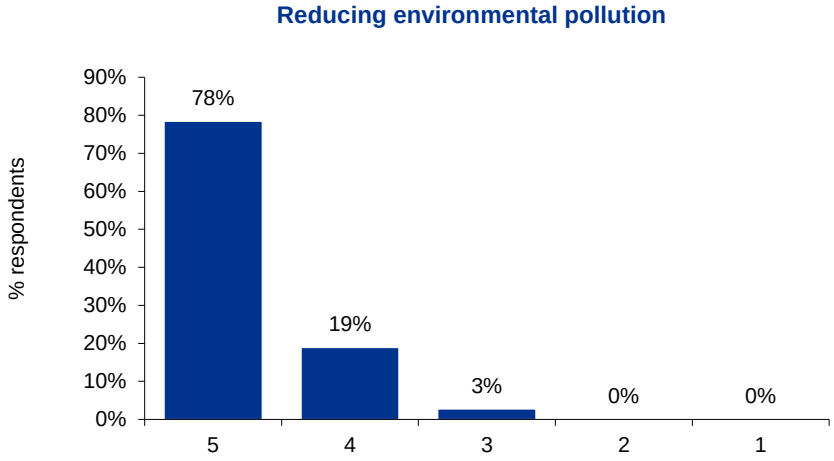
Enabling societies/educational institutions to source treat their wet waste



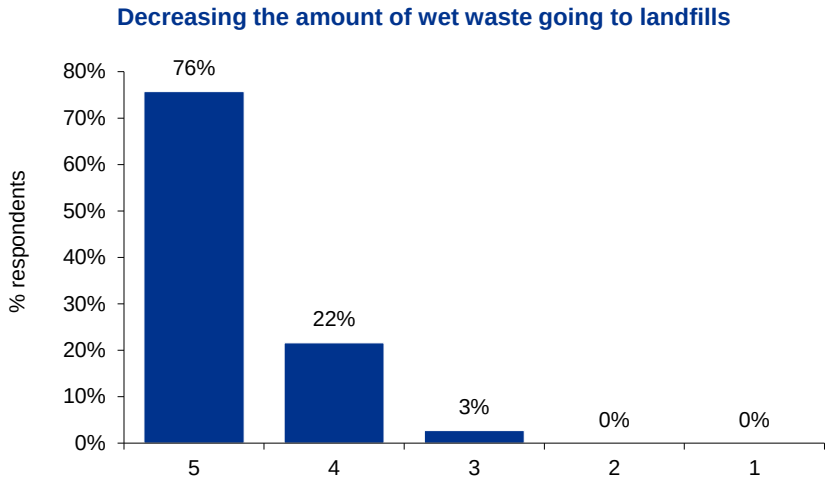
86% of the respondents felt that the project largely enabled the societies and educational institutions to treat their wet waste at source.



100% of the respondents were largely of the opinion that the project had created a healthier work environment for waste and sanitation workers.



97% of the respondents were largely of the opinion that the project is contributing to reducing environmental pollution.



97% of the respondents were largely of the opinion that the is contributing to decreasing the amount of wet waste going to landfills.

All the Aerobin operators interviewed were of the opinion that project contributed to enabling source treatment of wet waste, creating a healthier environment for waste workers, and reducing the environmental pollution.

We understand from government stakeholders interviewed that the Aerobin is definitely a game changer when it comes to wet waste treatment within gated societies and institutions. Its merits include that it is a simple system that does not consume power, it is easy to train people to use it, and it is cost-effective. Aerobin will achieve all its objective of treatment of wet waste at source if it is properly maintained. Furthermore, to achieve the goal of zero wet waste reaching the landfill, it is important to use a combination of different types of wet waste management solutions consisting of centralized and decentralized treatment systems.

Basis the responses received from different stakeholders; we may conclude that the project has been highly effective for its target geographies consisting of large gated BWGs.

Efficiency

'Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed. 'Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed.

We understand that 89% of the beneficiaries felt that there were next to no apprehensions concerning the installation and usage of Aerobins during the project implementation period and activities were conducted as per schedule. 86% of beneficiaries communicated that they were not aware of any other cost-efficient alternatives to treating wet waste as against the installation of an Aerobin for wet waste composting. 86% of the respondent beneficiaries

agreed that installation of Aerobin composters reduced challenges related to waste management.

As per the government stakeholders interviewed, the view remained that the Aerobin is efficient at a small scale. It proves to be more cost-efficient compared to traditional compost pits, which require significant initial investment and large amounts of space that often exceed the capacity needed for typical wet waste treatment. Unlike compost pits, Aerobins do not pose health hazards associated with manual churning and exposure to decomposing waste. They are also less demanding in terms of human resources and space requirements, making them a more time-efficient and practical solution for decentralized waste management. However, security concerns and the potential for improper usage or maintenance remain valid issues that need to be addressed to ensure optimal performance and longevity of the Aerobin systems.

We may conclude that the project was largely efficient.

Impact

The impact of the project was multifold and visible among different stakeholders.

We understand from our conversations with the beneficiaries consisting of residents and teachers/staff from education institutions that the presence of separate bins for different categories of waste and segregation of waste itself significantly increased due to the advent of project S.O.R.T Aerobin Project- New Societies. Before S.O.R.T Aerobin Project- New Societies, only 5% of the respondents had witnessed the presence of separate bins and further, 100% of them responded that the segregation rate was between 0-10% at their respective locations. Post the advent of S.O.R.T Aerobin Project- New Societies 100% of the respondents reported the presence of separate bins whereas 57% reported that the segregation rate was anywhere between 90-100%. 30% of the respondents felt that the segregation rate was between 70-90%. This sentiment was echoed by the selected Aerobin operators interviewed, 80% reported that there was no presence of separate bins for waste collection before the project intervention.

The project helped increase the awareness on the journey and treatment of the wet waste generated among beneficiaries from 70% to 100%. This was done largely through intensive in-person training programmes.

97% of the beneficiary respondents had never attended any training or awareness program on waste management or demonstration of proper waste disposal before the project. Post the project intervention, 78% of the respondents confirmed having attended atleast one such program. Similarly, while none of the Aerobin operators interviewed had attended a training session before S.O.R.T Aerobin Project- New Societies, all of them reported having attended atleast one training session as part of S.O.R.T Aerobin Project- New Societies

86% of the beneficiaries had seen workers having access to proper PPE post implementation of S.O.R.T Aerobin Project- New Societies while this has only been 48% pre-project intervention. The project helped sanitation workers like Aerobin operators themselves increase their awareness on the requirement of proper health and safety equipment.

All the interviewed beneficiaries had either used or witnessed the wet waste generated compost being used around them.

76% of the beneficiaries felt they were able to influence other people in their larger family, peer group, office circle, neighboring societies on adopting sustainable waste management post project intervention.

65% of beneficiaries felt that Motherson group's project was responsible for achieving 80%-100% of the goal of influencing people's behavior with respect to waste management and enabling safe source treatment of wet waste.

All the Municipal Corporation senior government stakeholders interviewed as part of the survey were aware of the Aerobin wet waste treatment solution and encouraged BWGs in their jurisdiction to use it owing to its merits.

We requested the government stakeholders' opinion on the impact the S.O.R.T Aerobin Project- New Societies had across different categories of stakeholders. For residents, they opined that the project has brought complete satisfaction by effectively addressing concerns related to odor, space requirements, cost, and power usage associated with wet waste treatment at the source. With respect to the waste collectors and housekeeping staff, the project helps them access segregated high value waste for income generation easily without prolonged exposure to wet waste which may cause health hazards. For Landfill workers they opined a slight reduction in waste, though not substantial enough to influence operations significantly. Furthermore, the Former assistant commissioner, Municipal Corporation of Delhi, (West Zone) mentioned that the Aerobin's ability to rapidly treat wet waste mitigates environmental degradation, highlighting its potential to alleviate landfill congestion and reduce fuel consumption associated with waste transportation, which is critical for sustainability initiatives moving forward.

Sustainability

This criterion assesses the likelihood that project achievements will continue after the project. This includes an examination of the capacities of the systems needed to sustain benefits over time. The criterion analyses the resilience, risks and potential trade-offs. The purpose of this criterion is to look at the longer-term effects of the intervention. The different aspects of sustainability include financial, institutional, technological etc. These different aspects have been assessed when looking at the sustainability of the intervention.

100% of the respondents felt that they received adequate support in terms of handholding, training and monitoring on part of the on-ground partner team to equip them to operate and sustain the waste management solution post project exit. 95% of respondents reported being aware that post-Motherson group's exit from the project, the sustenance of the project will depend on the society/educational institution. 89% of them reported that the project team/IPCA team still visits to provide guidance on a need basis for smooth operation of the project, In fact, 97% of them also observed regular O&M being undertaken for the Aerobins post project exit by the SLMTT and IPCA teams marking successful sustenance of the project post CSR exit.

The Aerobin operators interviewed unanimously agreed that they got adequate support in terms of handholding, training and monitoring on part of the implementation partner team to equip them to operate and sustain project post CSR exit. They further confirmed that the IPCA team also visited on a fortnightly basis (20% respondents) or monthly basis (80% respondents) to support them.

According to interviews with government stakeholders, there is strong consensus that S.O.R.T represents a sustainable CSR initiative. It has established a replicable model that offers a potential solution for effectively managing wet waste. The next crucial step involves raising awareness through diverse communication channels and advocating for policy adjustments to integrate it as a compulsory solution for wet waste management.

We may conclude that the project is sustainable as per the OECD-DAC criterion.

Case Study- Transforming Waste Management and Lives of Aerobin Operators: Project S.O.R.T

Handling of wet waste poses a common challenge in residential societies. Residents struggled with the segregation of wet and dry waste, posing significant challenges to effective waste management practices. The lack of awareness on treating wet waste at its source compounded these issues.

However, with the introduction of the project S.O.R.T, a paradigm shift occurred. Residents began diligently segregating their waste, which streamlined operations for Aerobin operators. The Aerobin, an innovative composting technology, became instrumental in converting wet waste into nutrient-rich compost used within the society's garden. This not only enhanced environmental sustainability but also generated additional income opportunities for operators.

Figure 8: Aerobin operators seiving dry compost

The role of Aerobin operators expanded beyond waste management; it became a source of livelihood. Operators are compensated for managing Aerobins and harvesting compost, reflecting their integral role in the community's sustainability efforts. To ensure safety and efficiency, operators are equipped with comprehensive safety kits, including gloves and masks, fostering a secure working environment.

Through collaborative efforts and community engagement initiatives under the project S.O.R.T, Aerobin operators exemplify the positive impact of grassroots initiatives in

promoting sustainable practices and economic empowerment. As the project continues to evolve, Aerobin operators remain pivotal in driving environmental stewardship and community cohesion.

CHAPTER 4

Conclusion

Conclusion

Overall assessment of the program's success

Overall, we may conclude that the project has successfully met its predefined goals and objectives. The program has excelled in terms of relevance, coherence, effectiveness, efficiency, impact, and sustainability.

The Aerobin-based technology for wet waste management has fundamentally transformed perceptions among stakeholders. Whether its government officials, residents benefiting from the initiative, or housekeeping personnel, the advantages of this technological solution are unparalleled. The Aerobin is not only aesthetically pleasing but also operates without power consumption, eliminates odors, and closely mimics natural processes to decompose wet waste and facilitate its reintroduction into the environment. It epitomizes circularity in its truest sense. While the technology is unparalleled, we must also acknowledge the effort put in creating the model around positively influencing the behavior of Bulk Waste Generators i.e. residents, educational institutions etc. to take ownership of their waste. The largest challenge in implementing decentralized solutions is inculcating community ownership. The S.O.R.T model has achieved the same.

While the project has achieved everything it has to in its current form, stakeholders are now excited to see the potential it holds to scale outside of the constraints of closed gated spaces in tier-1 cities and achieve the vision of zero wet waste reaching landfills.

Strategic recommendations for future initiatives

Broad recommendations for the future initiatives with respect to the Project S.O.R.T Aerobin-New Societies and similar initiatives are as below:

1. We may explore whether the Aerobin based solution's success is restricted to tier-1 cities and enclosed spaces. This may be done by exploring a **combination of centralized and decentralized models**. Designing new models such as community composting to overcome the issue of treatment of waste in non-gated societies wherein ownership is expanded beyond RWAs or management of educational institutions.
2. For **national expansion**, it is important to introduce the Aerobin based model across different cities and concerned local governance bodies instead of concentrating the efforts in a single city. This will allow exposure to the Aerobin based solution in multiple cities, across diverse administrative stakeholders and increase it's adoption.
3. Our conversation with ragpickers revealed that they were forced into waste collection due to unemployment inspite of the health hazards and low income involved. An aspect of the project that may be deep dived into from a humanitarian and social perspective is investing more in the **well-being of the sanitation workers** involved as part of the project. There may be different components of the project that may be considered in terms of supporting them access social security, regular professional fees, or supporting to integrate them in the formal waste collection and treatment sector through authorized recyclers and vendors.
4. As SAMIL is already investing in behavior change towards waste management as well as inculcating the habit of segregation, the by-product is that apart from wet waste, there are other kinds of waste as well. BWGs are looking for **holistic solutions to waste management**. Approaching waste with a more comprehensive outlook to include other types of waste as well, even via a partnership model with other

corporates, and investing in evolving those models would not only optimize the funds being utilized towards behavior change but also contribute to the environmental goals of SAMIL.

5. The project in its current form is extremely human resource intensive and even monitoring and reporting is done manually. There is a **need to incorporate technology in monitoring** to optimize costs being incurred towards human resources. Moreover, considering the multifaceted nature of the project, using tech support for monitoring will help capture all its impacts and record them in a systematic manner.
6. The project has the potential to scale to a national and even global level. Investing in engaging professionals for **policy advocacy of the Aerobin-based wet waste management solution** in the government space to integrate it into the national policy as a recommended solution to increase uptake would help achieve the goal of zero wet waste reaching the landfills.

motherson

IMPACT ASSESSMENT

Project S.O.R.T- Segregation of Organic Waste for Recycling and Treatment

National Capital Region (Phase IV) 2022-23

JUNE 2024

List of Abbreviations

Abbreviation	Expansion
BWG	Bulk Waste Generators
IPCA	Indian Pollution Control Association
KAP	Knowledge, Attitude and Practices
MSW	Municipal Solid Waste
O&M	Operation and Maintenance
RWA	Resident Welfare Associations
SAMIL	Samvardhana Motherson International Limited
SLMTT	Swarn Lata Motherson Trust
SORT	Segregation of Organic Waste for Recycling and Treatment
TPD	Tonnes Per Day
WMC	Waste Management Committee

CHAPTER 1

Introduction

Introduction

Background of the project

Waste management is a critical issue globally, with significant implications for environmental sustainability, public health, and economic development. The management of municipal solid waste, particularly wet waste, is an intricate challenge faced by cities around the world. Wet waste, primarily comprising organic matter such as food scraps, yard trimmings, and other biodegradable materials, constitutes a substantial portion of municipal solid waste. Globally, organic waste makes up about 65% of waste generated, with food and green waste as the largest share.[28] Effective management of this waste stream is essential for reducing greenhouse gas emissions, preventing pollution, and promoting sustainable practices.

India, with its rapidly growing urban population, faces immense challenges in managing its waste. As per the Ministry of Environment & Forests and Climate Change, annually 65 million tonnes of waste are generated in India out of which as high as 62 million tonnes is Municipal Solid Waste (MSW) country[29]. The traditional waste management system in India is largely inefficient, characterized by inadequate waste segregation at the source, unscientific disposal practices, and overburdened landfill sites. These practices lead to severe environmental and health hazards, including groundwater contamination, air pollution, and the proliferation of disease vectors.

The Indian government has taken several initiatives to improve waste management. The Swachh Bharat Mission, launched in 2014, aims to enhance cleanliness and promote scientific waste management practices across the country[30]. Under this mission, efforts are being made to promote the segregation of waste at the source, encourage the use of composting and biogas plants, and improve the infrastructure for waste collection and processing. Additionally, the Solid Waste Management Rules, 2016, mandate the segregation of waste into biodegradable, non-biodegradable, and domestic hazardous waste at the household level. Despite these initiatives, the implementation remains a significant challenge due to the lack of public awareness, inadequate infrastructure, and limited financial resources.

The current waste management system in Delhi NCR is characterized by inadequate infrastructure, informal recycling sectors, and high dependence on landfills. Major landfills in Delhi, such as Ghazipur, Bhalswa, and Okhla, are overburdened, leading to severe environmental and health impacts.

In response to the pressing need for effective waste management, the project "S.O.R.T." (Segregation of Organic Waste for Recycling and Treatment) was initiated in the Delhi/NCR region in the year 2018-19. This initiative aimed to reduce landfill waste through the source segregation and composting of organic materials, promoting a sustainable approach to solid waste management.

The enthusiastic response from Resident Welfare Associations (RWAs) and other stakeholders during Phase I inspired the continuation and expansion of the project. Over six years and through six phases, S.O.R.T. has grown from its initial 9 locations to 301, earning

[28] How our trash contributes to climate change — and what we can do about it

[29] SEVENTH REPORT STANDING COMMITTEE ON URBAN DEVELOPMENT (2020-2021)

[30] Swachh Bharat Mission - Urban 2.0

full recognition from government authorities and driving efforts to scale the project nationwide. With this PAN India vision, the project has been initiated in Mumbai, Pune, Bengaluru, and Chennai as of date. While initially S.O.R.T focused on the collection and treatment of wet waste, S.O.R.T. has now broadened its scope to include the collection and treatment of plastic waste and marine litter as well. To accommodate this expansion in scope, it has been renamed to Segregation Of waste for Recycling and Treatment (S.O.R.T).

Objective of the Impact Assessment

KPMG in India has been engaged by SAMIL, with the objective of carrying out an impact assessment study of its CSR project ***- ' To contribute for S.O.R.T - NCR (Phase IV)'*** and effectively capture the impacts created by the project. The findings will be used as a road map for existing and planning new interventions.

The overall objective is to carry out an impact evaluation of the projects funded, overseen, and partly implemented by its CSR arm SLMTT as part of the Motherson group's CSR initiatives across India. The evaluation team has assessed the projects using the OECD DAC framework (Relevance, Effectiveness, Efficiency, Impact and Sustainability), details of which are provided later in the report. The findings of the evaluation will be used by SAMIL for strengthening their existing processes and planning for future initiatives in the priority areas.

Program Introduction – To contribute for S.O.R.T - NCR (Phase IV)

S.O.R.T - NCR (Phase IV) is one of the flagship CSR projects of Motherson Group, first launched in November 2018 by SLMTT, the CSR arm of the Motherson Group, in collaboration with IPCA. The project's primary objective was to foster behavioral change among the residents of Delhi NCR, encouraging waste segregation to enhance recycling rates and manage organic waste locally, thereby reducing the burden on landfills. Additionally, the project aimed to increase the per capita income of waste pickers.

Figure 9: Awareness session conducted by IPCA team as part of S.O.R.T NCR Phase IV

The project has directly benefited over 240,000 citizens and conducted more than 900 workshops for various stakeholders, including waste collectors, maids, residents, and

students. Approximately 1,307+ composters have been successfully installed, operated, and maintained.

This report focuses on the impact of Phase IV of Project S.O.R.T., in Delhi NCR focusing on 36 residential societies and 14 educational institutes. The phase aimed to minimize waste through source segregation and composting of organic waste, employing a sustainable approach to solid waste management in residential complexes. It also sought to develop the capacities of waste workers, improve waste recycling, and reduce waste dumping and burning in the city.

Figure 10: Map of Delhi/NCR where S.O.R.T Phase IV has been implemented as received from NGO implementation partner

Implementation partners

SLMTT

Swarn Lata Motherson Trust (SLMTT) was established by the Motherson Group with the noble objective of advancing the principles of good corporate citizenship, with a specific focus on fostering prosperity and well-being for holistic and sustainable development. It serves as a strategic platform for formal Corporate Social Responsibility (CR) initiatives, allowing for a decentralized and systematic approach to meet the ambitious goals envisioned by the company's leadership.

IPCA

The Indian Pollution Control Association (IPCA) was founded in 2001 by a group of environmentally conscious individuals dedicated to promoting sustainable practices at various levels, including individual, community, institutional, and industrial spheres. Registered under the Society Registration Act, XXI of 1860, and both the 80G and 12A acts of the Income Tax, IPCA stands as a trailblazer in formulating and implementing the Extended Producer Responsibility (EPR) Action Plan for Plastic Waste Management (PWM). With over two decades of experience, IPCA has effectively engaged communities and collaborated with diverse stakeholders nationwide, contributing significantly to solid waste management and environmental conservation efforts.

Rationale

India's urban population is projected to reach 600 million by 2030 and 814 million by 2050, leading to an expected waste generation of 165 million tonnes by 2030 and 436 million tonnes by 2050.[31] Currently, approximately 75,000 TPD of wet waste is generated, a figure influenced by population growth and evolving lifestyles. Despite efforts under the Swachh Bharat Mission (Urban), about 68% of this waste is processed, leaving a significant gap of 32%.[32] This untreated wet waste is often indiscriminately dumped in landfill sites where its highly biodegradable nature causes immediate decomposition. Improper disposal not only leads to greenhouse gas emissions but also results in the leaching of harmful substances, contributing to air, water, and soil pollution.

The adoption of scientific waste management practices, encompassing segregation, collection, treatment, and environmentally responsible disposal, is crucial to mitigating these environmental impacts. Furthermore, municipal authorities play a pivotal role in developing the necessary infrastructure for managing municipal solid waste (MSW).[33] Innovative approaches are needed to enhance solid waste management efficiency in urban areas. Engaging all stakeholders involved in waste generation, collection, and disposal is essential. Each individual has a role to play in streamlining waste management processes. Therefore, there is an urgent need to raise awareness and educate the public about proper waste management practices and streamline waste management systems in cities.

Goals and objective

The S.O.R.T. project was conceptualized with the aim of utilizing CSR funds to establish a decentralized waste management ecosystem at the source. This initiative focuses on the proper disposal and treatment of wet waste, thereby reducing the amount of waste directed to landfills. Consequently, this would result in mitigating air, water, and soil pollution, reduce pressure on landfill sites, and lower the cost of transportation.

Approach for implementation

With the Support of IPCA, SLMTT implemented project S.O.R.T NCR (phase IV) in 36 residential societies and 14 educational institutes, in Delhi NCR in 2022-23.

The project commenced with a needs assessment, involving a comprehensive survey to evaluate the existing waste collection systems. This survey also identified the availability of space for installing composters, determined the number of composters required based on the volume of waste generated, and gauged the willingness of the Resident Welfare Association (RWA) or Eco Club within the community to participate in the implementation of segregated waste collection. Successful implementation of the project within a society necessitates a range of activities, with the following being key components of the process:

- Understanding the mechanism of waste collection and storage; primary (door-to-door collection from individual households) & secondary (internal transportation & storage within the society and transportation from the society)
- Consolidating the number of staff and supervisors involved in waste collection and management.

[31] Circular Economy in Municipal Solid and Liquid Waste

[32] Circular Economy in Municipal Solid and Liquid Waste

[33] Press Release: Press Information Bureau, Government of India, Ministry of Environment, Forest and Climate Change.

- Understanding what infrastructure/tools are used to store and segregate waste.
- Finalizing time and duration of different activities related to waste management.
- Estimation of the approximate waste quantity generated to plan for the composters' installation.
- Assessment for composting feasibility within the premises of RWA and their willingness.
- Availability of space for the development of a vegetable garden, which will help showcase the effectiveness of produced compost.
- Ensuring required approvals to conduct workshops and training sessions for residents, maids, and housekeeping staff.
- Ensuring that a Waste Management Committee (WMC) is formed in the society that will look at the project inside their society.
- Getting Approvals to install Boards and Banners within the society.

Figure 11: Aerobin operators harvesting the compost

Under the project S.O.R.T. Phase IV in Delhi-NCR a baseline KAP (Knowledge, Attitude, Practice) survey was also carried out in every project location. The KAP study was conducted during pre-intervention and post-intervention at the start and end of the project respectively. The main aim was to understand the Knowledge, Attitude, and Practice around waste management in societies and also to assess the difference in the knowledge and attitude of the people after the installation of Aerobins.

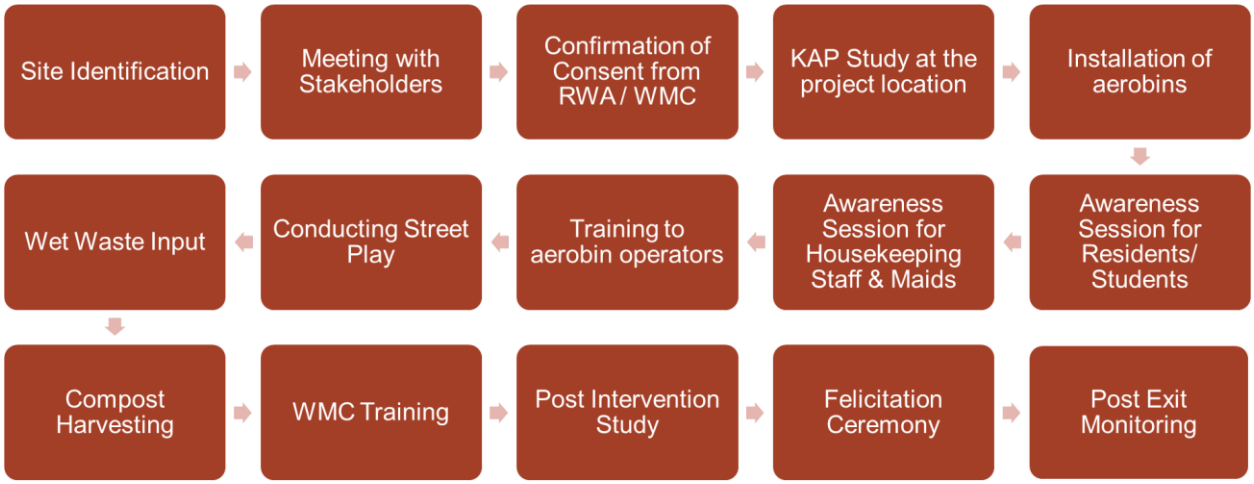


Figure 12: Project implementation methodology

Figure 13: Sieving of dry compost by an Aerobin operator

CHAPTER 2

Approach and Methodology for Impact Assessment

Approach and Methodology for Impact Assessment

SAMIL has been implementing successful CSR initiatives based on community needs. A third-party evaluation of the results attained is essential given the dynamic nature of the social development programmes deployed. This impact assessment aims to explain what has been done well and what can be done moving forward. It will not only assist in determining the significance of the project, including the efficiency of project design and interventions, sustainability of results, and impact of the intervention on the target community, but it will also guide for expanding or replicating the successful initiatives while redesigning or ending the projects/initiatives that were unable to have the intended impact.

Impact Evaluation – Phase-wise Approach and Methodology

A four-phased approach was adopted for the Impact Assessment of the S.O.R.T phase IV.

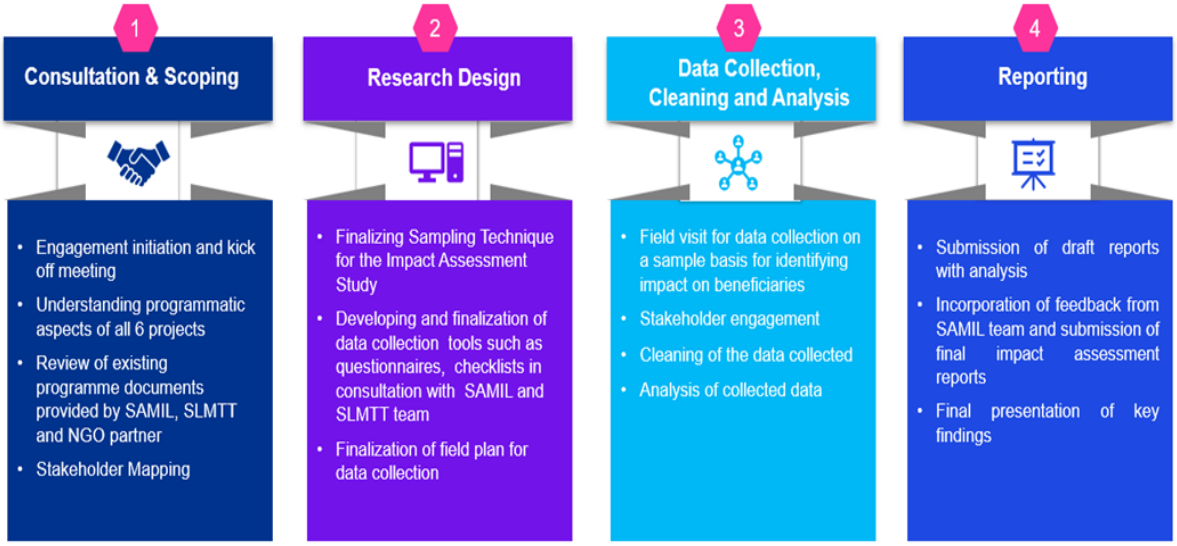


Figure 14: Four phased approach

Introduction to Framework – OECD DAC

KPMG adopted the parameters of the OECD-DAC Framework to evaluate the impact of the SDC project. OECD DAC criteria has been used for impact evaluation. The framework has been described in the below sections.

Impact assessment is a structured process for assessing the effects of an intervention on the intended beneficiaries. Impact evaluation, on the other hand, is a broader term that encompasses a range of issues such as appropriateness of the intervention design, the cost and efficiency of the intervention, its unintended effects and guidance on future course of the intervention in terms of design and implementation (OECD).

Impact assessment has often been described as a theory-based activity since it is designed based on a 'theory of change'. This relates to establishing a chain of causation from intervention to impact and has the advantage of being specific and focused on the identified impacts. The impact assessment may, however, tend to overlook some of the unexpected and undesired results of the intervention.

The OECD DAC Network on Development Evaluation (EvalNet) has defined six evaluation criteria – relevance, coherence, effectiveness, efficiency, impact and sustainability – and two principles for their use. These criteria are intended to guide evaluations.

Been in use since 1991 these criteria were refined in 2019 to improve the quality and usefulness of evaluation and strengthen the contribution of evaluation to sustainable development. A new criterion – Coherence was added for assessing the compatibility of the intervention with other interventions in a country, sector or institution.

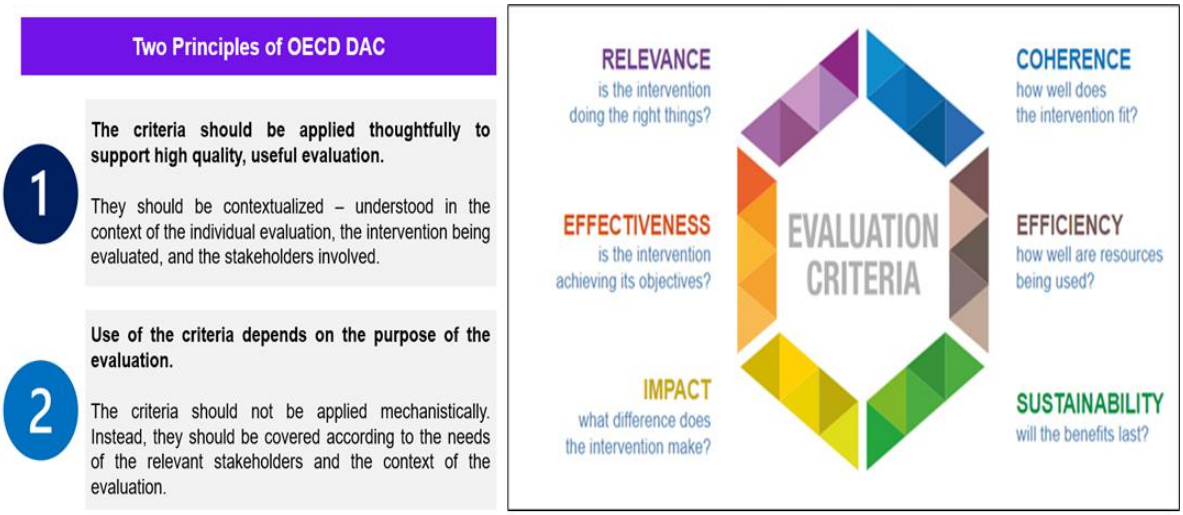


Figure 15: OECD DAC Evaluation Framework

Elaborately, six evaluative criteria by the OECD-DAC evaluation framework are as follows:

- **Relevance**: The extent to which the objectives of an intervention are consistent with recipients' requirements, country needs, global priorities, and partners' policies.
- **Effectiveness**: The extent to which the intervention's objectives were achieved, or are expected to be achieved, considering their relative importance.
- **Efficiency:** A measure of how economic resources/inputs (funds, expertise, time, equipment, etc.) are converted into results.
- **Impact:** Positive and negative primary and secondary long-term effects produced by the intervention, whether directly or indirectly, intended, or unintended.
- **Sustainability:** The continuation of benefits from the intervention after major development assistance has ceased. Interventions must be both environmentally and financially sustainable. Where the emphasis is not on external assistance, sustainability can be defined as the ability of key stakeholders to sustain intervention benefits – after the cessation of donor funding – with efforts that use locally available resources.
- **Coherence (i.e., policy coherence):** The need to ensure consistency across security, development, trade and military policies, and humanitarian policies.

The below table describes how the KPIs of the programs were evaluated using OECD-DAC criteria.

Objective	Key Performance Indicators (KPI)	Means of Verification
Evaluation Criteria 1: Relevance		
To what extent is the project aligned with the target beneficiaries' wet waste management and health needs?	• Alignment with the needs of the beneficiaries Needs assessment/impact reports	• Direct beneficiary (primary stakeholder) questionnaire • Stakeholder questionnaire- Municipal Corporation representative and Ragpickers • Desk Review
Evaluation Criteria 2: Coherence		
To what extent is the project internally aligned with SAMIL's core values?	Linkage with the core CSR goals and objectives of SAMIL	• Stakeholder questionnaires- SLMTT Project Representative • Document Review
To what extent is the project externally aligned with national/government policies?	Linkage with government policies and strategies on wet waste management	• Stakeholder questionnaires- SLMTT Project Representative, NGO Representatives (IPCA) • Document Review
Evaluation Criteria 2: Effectiveness		
Are the objectives of the project being achieved?	Target achievement in comparison with actual achievement	• Direct beneficiary (primary stakeholder) questionnaire- Residents, Aerobin operators, SLMTT Project Representative, NGO Representatives (IPCA)
Has the project been implemented promptly?	Challenges identified by the SAMIL implementing team in project implementation	• Stakeholder questionnaires- SLMTT Project Representative, NGO Representatives (IPCA)
Evaluation Criteria 3: Efficiency		
Have the human resources been plotted efficiently?	Defined team structure and allocation of project team	• Stakeholder questionnaires- SLMTT Project Representative, NGO Representatives (IPCA)
Has the project been implemented in a timely manner?	• Whether timelines are defined or not	• Stakeholder questionnaires- SLMTT Project

	• Whether there are any extensions given to the project • Resource mobilization	Representative, NGO Representatives (IPCA) • Document Review
Evaluation Criteria 4: Impact		
Has the project achieved its intended/ unintended impact on the beneficiaries?	Impact Indicators: • Increased awareness among residents/students/waste collectors about waste management practices with a focus on source segregation and treatment of wet waste • Creation of system and technology for generating organic compost in-house for utilization at scale	Direct beneficiary (primary stakeholder) questionnaire- Residents, Aerobin operators, SLMTT Project Representative, NGO Representatives (IPCA)
Evaluation Criteria 6: Sustainability		
What sustainability mechanisms are in place?	**Mechanisms include (1) Stakeholder-led governance (2) Local capacity building for operational sustainability and (3) Financial sustainability through user fees, linkages, collaboration, etc.)**	• Progress reports • Consultation with SLMTT and its implementation team
What is the perception of beneficiaries towards the continuation of these benefits	Percentage of beneficiaries believing the outcomes to be sustained after the project closure	• Direct beneficiary (primary stakeholder) questionnaire- Residents, Aerobin operators

Table 11: OECD-DAC Criteria

Desk Review	A comprehensive review of the existing program document was conducted by the KPMG team. Apart from the review of the existing document, KPMG conducted a thorough literature review of academic articles and government policies to understand the relevance and coherence of project S.O.R.T.
Questionnaire design	A questionnaire for relevant stakeholders was developed based on the program activities to evidence the outcomes and impacts of the program. The questionnaire was designed to elicit both quantitative and qualitative data which was pre-tested before distribution. Basis the findings of the pilot survey, appropriate additions and changes were made to the questionnaire.
Data collection	The collection of data was carried out by KPMG resource personnel who physically visited the sample population at multiple locations in NCR or used telephonic means to gather details.
Key Informant and In-Depth Interviews	Structured, in-depth and semi-structured interviews were conducted with beneficiaries and key stakeholders in the field to gain insights. The interviews were further analyzed using thematic analysis.
Data analysis	Quantitative data collected were analyzed using statistical software and involved descriptive statistics. Qualitative data collected through the survey and interviews were analyzed using thematic analysis, to identify patterns and themes in the data.
Synthesis	The data collected through the literature review, survey, and interviews were synthesized to develop a comprehensive understanding of the research topic. This involved identifying key themes and trends, as well as exploring any inconsistencies or gaps in the data.
Reporting	The results of the impact assessment of the project S.O.RT are reported in a comprehensive final report, includes a summary of the findings, as well as recommendations for future research and practice.

Table 12: Methodology of the study

Stakeholder Mapping

A ‘stakeholder’ for the studies is defined as an individual or a representative who has an interest and provides a certain influence over the study being undertaken. Such stakeholders play a pivotal role in the implementation of programs, within the communities. For this impact assessment, 7 beneficiary groups were identified – *Residents (including RWA members)/*

educational institutions' teachers/staff, Aerobin Operators, Housekeeping staff, Municipal Corporation Representatives, NGO Representatives (IPCA), SLMTT Project Representatives, and Landfill workers/ ragpickers.

Stakeholder group	Rationale for inclusion	Type of Stakeholder
Residents (including RWA members) and educational institutions' teachers/staff	Residents/teachers/staff of the project locations consisting of residential societies and educational institutions where Aerobins are installed	Primary
Aerobin Operators	Manages the wet waste that goes into the Aerobins daily. They also manage the harvesting and storage of compost	Primary
Housekeeping staff	Works in the project locations to support in proper segregation of waste	Secondary
Municipal Corporation Representative	The governing authority under whose jurisdiction waste management of the concerned project location comes under	Secondary
Implementation Partner-NGO Representatives (IPCA)	Implementing the project on the ground end to end to ensure all project activities are conducted timely, stakeholders are trained, and troubleshooting on the ground	Secondary
Implementation Partner-SLMTT Project Representative	Responsible for identifying NGO implementation partner on the ground and ensuring proper project implementation, monitoring, and evaluation of the project	Secondary
Landfill workers/ ragpickers	Impacted due to exposure to untreated and unsegregated waste at landfills	Tertiary

Table 13: Stakeholder Groups

Sampling Strategy

For the purpose of this study, KPMG has used the OECD-DAC Framework (Relevance, Efficiency, Effectiveness, Impact and Sustainability) for developing the research tools (questionnaires for quantitative and qualitative data) and evaluating the impact created on the stakeholders. The method used for engaging with the stakeholders include in-depth interviews (IDIs) and Key Informant Interviews (KIIs). Additionally, stories of change capturing the impact have been documented as case studies.

- **In-depth interview (IDI)**

An in-depth interview (IDI) is defined as a qualitative research technique to undertake explorative individual interviews. In such an interview, respondent perspectives on a program, idea, or subject are explored. IDI was conducted for stakeholders residents (including RWA members), educational institutions' teachers/staff, Aerobin operators, and housekeeping staff.

- **Key Informant Interviews**

A Key Informant Interview (KII) is a qualitative research technique used to conduct detailed, explorative interviews with individuals who have specialized knowledge or insights about a specific program, idea, or subject. KII was conducted for stakeholders like municipal corporation representatives, NGO Representatives (IPCA), SLMTT Project Representatives, and Landfill workers/ ragpickers.

The KPMG team, along with support from SLMTT and IPCA covered a sample size of 61 out of 67 respondents as tabulated below:

Stakeholder group	Targeted Sample	Sample Provided	Achieved
Residents (including RWA members) and educational institutions' teachers/staff	50	50	50
Aerobin Operators	5	5	5
Housekeeping staff	5	-	0
Municipal Corporation Representative	2	2	2
Implementation Partner- NGO Representatives (IPCA)	2	2	2
Implementation Partner- SLMTT Project Representative	1	1	1
Landfill workers/ ragpickers	2	1	1
Total	**67**	**61**	**61**

Table 14: Sample details

Due to time constraints and overlap in roles and responsibilities of housekeeping staff and operators, we proceeded with interviewing only Aerobin operators. Furthermore, landfill workers/ ragpickers were unwilling to take part in the interview.

The sampling strategy involved selecting 50% of the total project locations through simple random sampling with proportionate representation of all clusters and type of project location (educational institutions and residential societies). While efforts were made to select beneficiary respondents from the project locations via simple random sampling as well, due to time and availability constraints of beneficiaries during working hours, we proceeded with convenience sampling.

Convenience sampling was also employed while interviewing ragpickers at landfill sites.

Purposive sampling was employed while interviewing other stakeholders consisting of government stakeholders, Aerobin operators, SLMTT and IPCA representatives.

Convenience sampling is a non-probability sampling method where respondents are selected basis ease of access for the researcher owing to availability at a given time and willingness to participate in the research among other reasons. Purposive sampling is another non-probability sampling technique in which researchers employ their judgement to select a specific group of participants that will help the study meet it's goals.

Simple Random Sampling (SRS)

Simple random sampling is a widely utilized sampling method in quantitative studies with survey instruments. It is asserted that simple random sampling is favorable in homogeneous and uniformly selected populations. In this selection method, all the individuals have an equal opportunity to participate in the study. It ensures unbiased, representative, and equal probability of the population.

The sampling strategy involved selecting 50% of the total project locations through simple random sampling with proportionate representation of all clusters and type of project location (educational institutions and residential societies). While efforts were made to select beneficiary respondents from the project locations via simple random sampling as well, due to time and availability constraints of beneficiaries during working hours, we proceeded with convenience sampling**.**

Impact Map

The impact Map provides the program-wise output, outcome, and intended impact against mapped program inputs/activities in the impact evaluation study.

<table>
<tr><th colspan="6">Impact Map</th></tr>
<tr><th>Objectives of the Project</th><th>Input</th><th>Activities</th><th>Output</th><th>Outcome</th><th>Impact</th></tr>
<tr><td rowspan="6">1. To bring behavior change among the residents on better waste management practices with a focus on wet waste
2. To segregate and treat wet waste at source in order to reduce the waste burden on landfills
3. To contribute to reducing land degradation, especially at landfills, due to improper decomposition of wet waste
4. To promote local self-responsibility for a clean environment</td><td rowspan="6">Financial and technical support provided by Motherson for operation of S.O.R.T project</td><td rowspan="3">Training of targeted stakeholders:
- Residents (WMCs/RWAs) /Bulk Waste Generators
- Waste Collectors
- Housekeeping Staff
- School/College teachers, students, and Staff</td><td>1. No. of workshops/training sessions for residents/ students/ housekeeping staff/maids at the project location</td><td rowspan="3">Increased awareness among residents/students/waste collectors about waste management practices with a focus on source segregation and treatment of wet waste</td><td rowspan="6">1. Reduction in greenhouse gas emissions and air pollution
2. Contributing to a circular economy by closing the organic waste loop and promoting sustainable resource management.
3. Enablement of a healthy working environment for waste workers by reducing exposure to hazardous substances generated from improper treatment of wet waste.</td></tr>
<tr><td>2. No. of demonstrations of proper waste disposal methods for all stakeholders.</td></tr>
<tr><td>3. No. of Training sessions on personal protective equipment (PPE) and safety protocols for Waste Workers</td></tr>
<tr><td rowspan="3">Installation and O&M of Aerobin composters</td><td>1. No of suitable place/ locations identified for installation of composter</td><td>Finalized project locations for installation of Aerobins</td></tr>
<tr><td>2. No. of Composters installed</td><td rowspan="3">1. Decrease in the quantum of domestic waste being deposited at local Dhalaos (dump sites) and landfill sites.
2. Creation of system and technology for generating organic compost in-house for utilization at scale</td></tr>
<tr><td>3. Overall Segregation Rate (%)</td></tr>
<tr><td>5. No. of monitoring and support visits conducted</td></tr>
</table>

			6. Total amount (in KGs) of organic waste treated in Aerobins		
			7. Total amount (in KGs) of compost generated		
			8. GHG offset (CO_2e kg) from Wet Waste		

Table 15:Impact Map

CHAPTER 3

Findings from the Impact Assessment

Findings from the Impact Assessment

The study investigates the impact of the S.O.R.T- NCR (Phase IV) project implemented in 2022-23. By providing a detailed analysis of the waste management scenario at the individual, community and city level, this assessment aims to understand the broader impact of the S.O.R.T-NCR (Phase IV) project. The analysis also examines the implications of the program on the OECD-DAC framework, focusing on its potential to enhance workforce skills and contribute to sustainable economic development. This introductory overview sets the stage for a deeper exploration of the S.O.R.T- NCR (Phase IV) project's effectiveness and its role in achieving global development objectives.

Assessment of Impact on OECD DAC Framework

Relevance

Waste management is a critical issue globally, with significant implications for environmental sustainability, public health, and economic development. The management of municipal solid waste, particularly wet waste, is an intricate challenge faced by cities around the world. Wet waste, primarily comprising organic matter such as food scraps, yard trimmings, and other biodegradable materials, constitutes a substantial portion of municipal solid waste. Globally, organic waste makes up about 65% of waste generated, with food and green waste as the largest share. Effective management of this waste stream is essential for reducing greenhouse gas emissions, preventing pollution, and promoting sustainable practices.

India, with its rapidly growing urban population, faces immense challenges in managing its waste. As per the Ministry of Environment & Forests and Climate Change, annually 65 million tonnes of waste are generated in India out of which as high as 62 million tonnes is Municipal Solid Waste (MSW) country. The traditional waste management system in India is largely inefficient, characterized by inadequate waste segregation at the source, unscientific disposal practices, and overburdened landfill sites. These practices lead to severe environmental and health hazards, including groundwater contamination, air pollution, and the proliferation of disease vectors.

The current waste management system in Delhi NCR is characterized by inadequate infrastructure, informal recycling sectors, and high dependence on landfills. Major landfills in Delhi, such as Ghazipur, Bhalswa, and Okhla, are overburdened, leading to severe environmental and health impacts.

Coming to the opinions of the residents and teachers/staff interviewed, 58% of the respondents felt that wet waste segregation was a common challenge within the community before installation of the Aerobin. 96% of the beneficiary respondents felt that the waste workers and other sanitation staff require proper PPE while on job but only 38% had witnessed these workers having access to these.

We understood from a ragpicker interviewed at a landfill site that they had been forced in the profession due to unemployment. The heat coupled with the stench generated due to wet waste primarily caused health problems for them. They consistently felt dehydrated and sick due to it.

As we understood from the Deputy Commissioner of South Delhi Zone, lack of segregation of waste also leads to challenges in treatment of recyclables. Exposure to improperly decomposed wet waste or prolonged exposure in general to wet waste aversely impacts the health of the workers. Further, there is a huge gap in terms of capacity to treat wet waste at the Municipality's level, which is why they are working to incentivize Bulk Waste Generators (BWGs) like large RWAs to source treat their wet waste.

Hence, we may conclude that the **project is highly relevant to the needs of the beneficiaries and other stakeholders involved.**

Coherence

The S.O.R.T NCR (phase IV) project aligns with SAMIL's internal policy, national priorities on waste management as well as with the Sustainable Development Goals.

SAMIL's vision is to create a more inclusive and sustainable environment. Within the same, waste management and sanitation is a key focus of area of interest aligned to Schedule VII of the Companies Act, 2013 pertaining to Corporate Social Responsibility.

The Indian government has taken several initiatives to improve waste management. The **Swachh Bharat Mission**, launched in 2014, aims to enhance cleanliness and promote scientific waste management practices across the country. Under this mission, efforts are being made to promote the segregation of waste at the source, encourage the use of composting and biogas plants, and improve the infrastructure for waste collection and processing. Additionally, the **Solid Waste Management Rules, 2016**, mandate the segregation of waste into biodegradable, non-biodegradable, and domestic hazardous waste at the household level. Despite these initiatives, the implementation remains a significant challenge due to the lack of public awareness, inadequate infrastructure, and limited financial resources.

The S.O.R.T NCR (phase IV) project is also aligned to SDG Goal 11 and Goal 12 as elaborated below.

SDG	SDGs target
	Goal- 11 Make cities and human settlements inclusive, safe, resilient and sustainable Target 11.6- By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

	Goal 12- Ensure sustainable consumption and production patterns Target 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Table 16: Alignment of Project with the SDGs

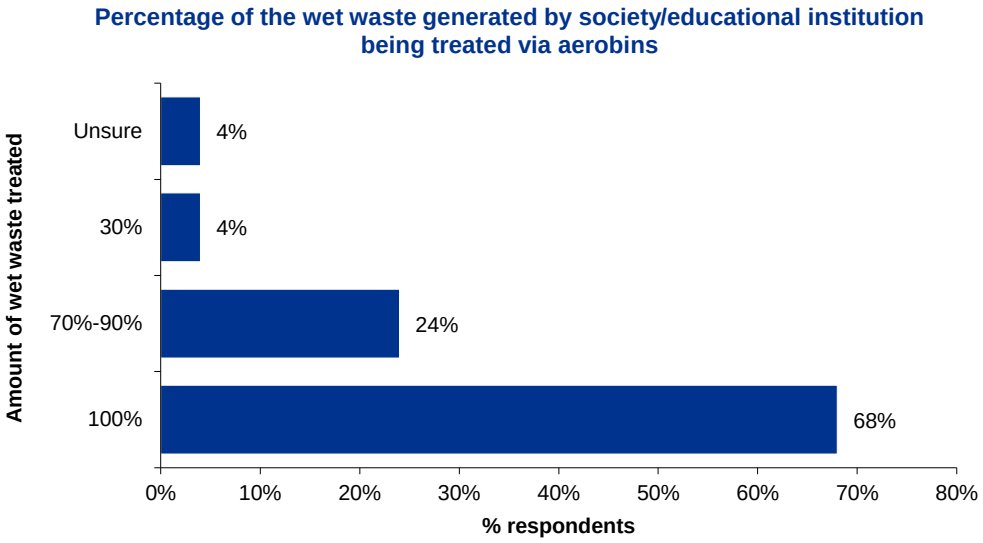
Basis conversations with respondent beneficiaries we were able to conclude that largely beneficiaries were aligned that the project integrated well with other waste management and environmental initiatives in their locality, at the national level and global goals around the same. We were able to gather more on this from government stakeholders interviewed who saw synergies with the Municipal Corporation of Delhi's Sahbhagita Scheme incentivizing BWGs to treat wet waste at source and ensure that dry waste is being handed over to authorized collectors for treatment. At the national and global level, they opined that the project aligned well with Swach Bharat Mission (SBM) as well in reducing global warming, reducing carbon footprint, and contributing towards curbing environmental pollution.

Hence, we may conclude that the **project is highly coherent with the internal policies of the organization and external policies at the national and global level.**

Effectiveness

'Effectiveness' is an assessment of the factors affecting the progress towards outcomes for every stakeholder and validation of robustness of systems and processes by assessing the utilization of the resources. The criterion reviews the implementation strategy and mechanism. The purpose of this is to understand if the intervention has achieved its objective and the extent to which it did.

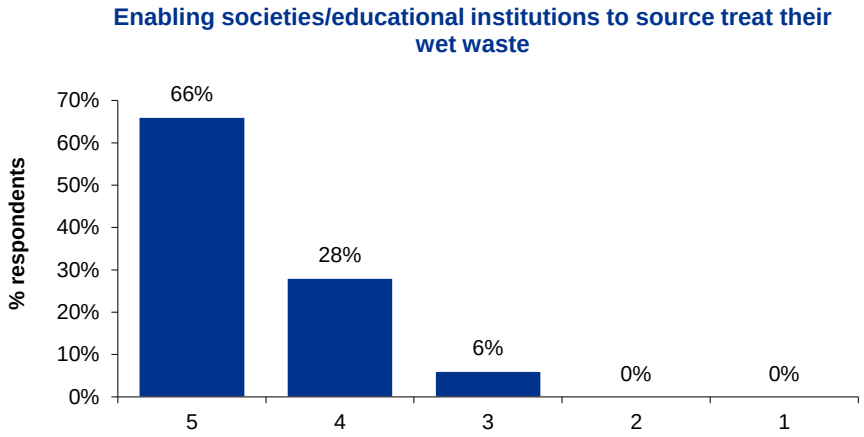
Our conversations with respondents revealed that 68% felt that their entire wet waste was getting treated by Aerobins.



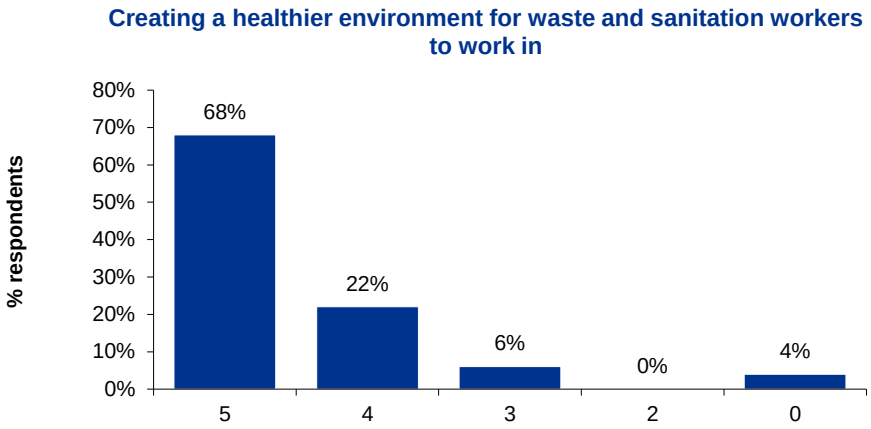
Of the selected Aerobin operators interviewed, all of them were of the opinion that almost all of the wet waste generated was treated via the Aerobin.

The survey also requested the beneficiaries' opinions on the effectiveness of the project on various parameters, rated on a scale of 1-5 where one being the lowest and 5 being the highest, as summarized below.

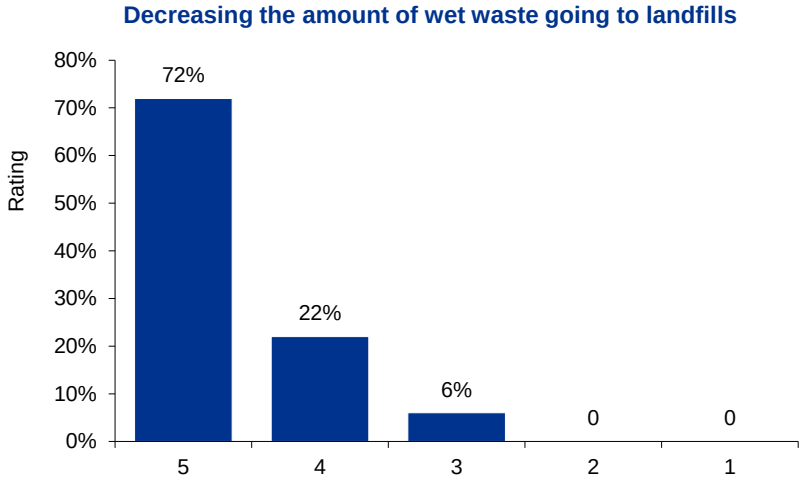
94% of the respondents felt that the project largely enabled the societies and educational institutions to treat their wet waste at source.



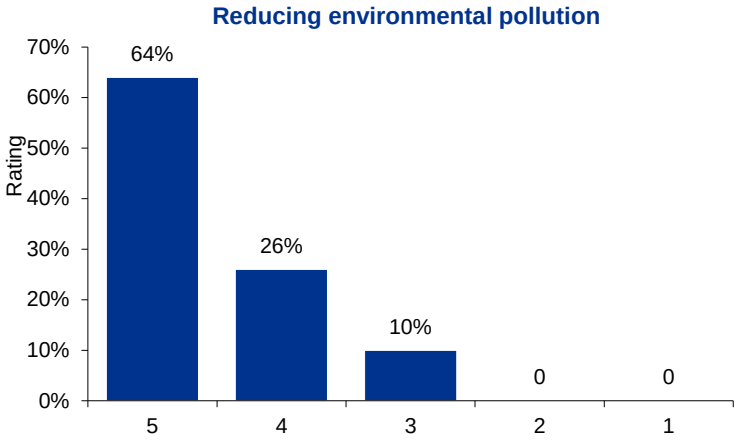
90% of the respondents felt that the project largely created a healthier environment for waste and sanitation workers to work in.



94% of the respondents believed that the project contributed to decreasing the amount of wet waste going to landfills.



90% of the respondents believed that the project contributed to reducing environmental pollution.



All the Aerobin operators interviewed were of the opinion that project contributed to enabling source treatment of wet waste, creating a healthier environment for waste workers, and reducing the environmental pollution.

We understand from government stakeholders interviewed that the Aerobin is definitely a game changer when it comes to wet waste treatment within gated societies and institutions. Its merits include that it is a simple system that does not consume power, it is easy to train people to use it, and it is cost-effective. To achieve the goal of zero wet waste reaching the landfill, it is important to use a combination of different types of wet waste management solutions consisting of centralized and decentralized treatment systems.

Basis the responses received from different stakeholders; we may conclude that the project has been highly effective for its target geographies consisting of large gated BWGs.

Efficiency

Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed. 'Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed.

We understand that 96% of the beneficiaries felt that there were minimal setbacks/apprehensions with respect to installation and usage of Aerobins during the project implementation period and activities were conducted as per schedule. The same proportion of beneficiaries communicated that they were not aware of any other cost-efficient alternatives to treating wet waste as against installation of an Aerobin for wet waste composting. 98% of the respondent beneficiaries agreed that installation of Aerobin composters reduced challenges related to waste management.

As per the government stakeholders interviewed, the view remained that the Aerobin is efficient at a small scale. Alternatives lives bio-incinerators are there that can create compost in 24-48 hours as compared to the Aerobin's operational cycle of 24-48 hours but the quality of compost of Aerobins is far better. Largely, there is a need to increase the scale of waste that can be managed by Aerobins to help achieve the goal of zero wet waste reaching the landfills.

We may conclude that the project is efficient as per the OECD-DAC criterion.

Impact

The impact of the project was multifold and visible among different stakeholders.

We understand from our conversations with the beneficiaries consisting of residents and teachers/staff from education institutions that the presence of separate bins for different categories of waste and segregation of waste itself significantly increased due to the advent of project S.O.R.T NCR (phase IV). Before S.O.R.T NCR (phase IV), only 16% of the respondents had witnessed the presence of separate bins and further, 88% of them responded that the segregation rate was between 0-5% at their respective locations. Post the advent of S.O.R.T NCR (phase IV), 100% of the respondents reported the presence of separate bins whereas 80% reported that the segregation rate was anywhere between 90-100%. 18% of the respondents felt that the segregation rate was between 70-80%. This sentiment was echoed by the selected Aerobin operators interviewed, who unanimously reported that there was no presence of separate bins for waste collection before the project intervention.

The project helped increase the awareness on the journey and treatment of the wet waste generated among beneficiaries from 72% to 98%. This was done largely through intensive in-person training programmes.

92% of the beneficiary respondents had never attended any training or awareness program on waste management or demonstration of proper waste disposal before the project. Post the project intervention, 86% of the respondents confirmed having attended atleast one such program. Similarly, while none of the Aerobin operators interviewed had attended a training session before S.O.R.T NCR (phase IV) , all of them reported having attended atleast one training session as part of S.O.R.T NCR (phase IV)

96% of the beneficiaries had seen workers having access to proper PPE post implementation of project S.O.R.T NCR (phase IV) while this has only been 38% pre-project intervention. The project helped sanitation workers like Aerobin operators themselves increase their awareness on the requirement of proper health and safety equipment.

All the interviewed beneficiaries had either used or witnessed the wet waste generated compost being used around them.

82% of the beneficiaries felt they were able to influence other people in their larger family, peer group, office circle, neighboring societies on adopting sustainable waste management post project intervention.

4 in 5 beneficiaries felt that Motherson group's project was responsible for achieving 90%-100% of the goal of influencing people's behavior with respect to waste management and enabling safe source treatment of wet waste.

All the Municipal Corporation senior government stakeholders interviewed as part of the survey were aware of the Aerobin wet waste treatment solution and encouraged BWGs in their jurisdiction to use it owing to it's merits. The Joint Commissioner, Swach Bharat Mission from Municipal Corporation's Gurgaon office commented that the Aerobin based solution does not require intensive labour as compared to other alternatives for wet waste treatment available at source. Primarily, it does not require churning, mixing, power or intensive maintenance. In fact, a common by product of wet waste treatment which is leachate that usually seeps into the land and hence degrades it can also be captured through the innovative design of the Aerobin.

We requested the government stakeholders' opinion on the impact the S.O.R.T NCR (phase IV) project had across different categories of stakeholders. For residents, they opined that the project had created revolutionary change in terms of inculcating the habit of segregation in the selected societies where it had intervened. The manure helped them feel a sense of pride as well. With respect to the waste collectors and housekeeping staff, the project helps them access segregated high value waste for income generation easily without prolonged exposure to wet waste which may cause health hazards. They were not able to comment on the value created for landfill workers due to lack of visibility on that front as well as the small scale of wet waste being treated under CSR hence making the impact negligible at the landfill. The Deputy Commissioner of Municipal Corporation, South Delhi Zone remarked on how the project helps in reinforcing the concepts of circularity by enabling source treatment of wet waste and mitigating the Greenhouse Gas (GHG) Emissions which would have otherwise emerged from improper treatment as well transportation of the wet waste to other sites.

We may conclude that the project has created considerable impact for the targeted stakeholders.

Sustainability

This criterion assesses the likelihood that project achievements will continue after the project. This includes an examination of the capacities of the systems needed to sustain benefits over time. The criterion analyses the resilience, risks and potential trade-offs. The purpose of this criterion is to look at the longer-term effects of the intervention. The different aspects of sustainability include financial, institutional, technological etc. These different aspects have been assessed when looking at the sustainability of the intervention.

92% of the respondents felt that they received adequate support in terms of handholding, training and monitoring on part of the on-ground partner team to equip them to operate and sustain the waste management solution post project exit. 96% reported being aware that post Motherson group's exit from the project, they were aware that the sustenance of the project will depend on

the society/educational institution. 94% of them reported that the project team/IPCA team still visits to provide guidance on a need basis for smooth operation of the project, In fact, 94% of them also observed regular O&M being undertaken for the Aerobins post project exit by the SLMTT and IPCA teams marking successful sustenance of the project post CSR exit.

The Aerobin operators interviewed unanimously agreed that they got adequate support in terms of handholding, training and monitoring on part of the implementation partner team to equip them to operate and sustain project post CSR exit. They further confirmed that the IPCA team also visited on a weekly (50% respondents) or monthly basis (50% respondents) to support them.

As per the government stakeholders interviewed, they were largely convinced that S.O.R.T NCR (phase IV) is a sustainable CSR initiative. It has helped create a model that may be replicated by people to arrive at the ultimate solution for treatment of wet waste. There is a need to now create awareness through different communication mediums and influence policy to incorporate it as a mandated wet waste management solution.

We may conclude that the project is sustainable as per the OECD-DAC criterion.

Case Study- Turning Waste into Treasure: The S.O.R.T NCR (phase IV) initiative at Delhi Rajdhani Apartment

Figure 16: Composting site at Delhi Rajdhani Apartment

Delhi Rajdhani Apartment, a prominent residential society in East Delhi, embarked on an innovative waste management journey with the initiation of the S.O.R.T NCR (phase IV) project. This project aimed to help the residents in wet waste management by converting it into compost on-site, fostering sustainability and community involvement. The society's enthusiastic

participation and strategic execution led to remarkable outcomes, including the generation of surplus compost and the establishment of a small business within the society.

The S.O.R.T NCR (phase IV) project commenced with a strong emphasis on community involvement and education. Residents were introduced to the concept of composting their wet waste through a series of awareness campaigns and workshops. These sessions highlighted the environmental benefits of waste segregation and the practical utility of the resulting compost for the society's garden and resident’s personal use. Initial participation was modest, with only a limited number of households segregating their waste, resulting in a compost output sufficient merely for the society's garden.

Persistent awareness efforts and community engagement paid off as the society achieved a 100% waste segregation rate. This milestone significantly increased compost production, creating a surplus beyond the garden's requirements. The surplus compost was stored in the society office, prompting the RWA to explore ways to utilize this valuable resource effectively.

Capitalizing on the knowledge gained from awareness sessions and workshops, the RWA members devised a business model to sell the excess compost. The process involved refining the wet compost by drying and sieving it to ensure high quality. The RWA invested in a packaging machine and packaging materials to prepare the compost for sale. Each packet of refined compost was priced at INR 50.

Figure 17: Compost packets

The compost sales initiative began on a small scale in December 2023. The RWA members efficiently managed the sales, ensuring a smooth operation from production to distribution. The response from the community and external buyers was overwhelmingly positive. The initiative not only generated revenue but also reinforced the importance of sustainable practices among the residents. The profits generated from compost sales were reinvested into the society, enhancing

various amenities. This reinvestment fostered a sense of collective achievement and motivated further participation in the S.O.R.T project. The RWA's transparent management and the tangible benefits realized by the residents cemented their commitment to the initiative.

The S.O.R.T NCR (phase IV) project at Delhi Rajdhani Apartment exemplifies how community-driven initiatives can lead to significant environmental and economic benefits. The successful transition from waste segregation to compost production and sales demonstrates the potential of localized waste management systems. This case study highlights the importance of continuous education, community involvement, and strategic planning in achieving a sustainable waste management system.

CHAPTER 4

Conclusion

Conclusion

Overall assessment of the program's success

Overall, we may conclude that the S.O.R.T NCR (phase IV) project is aligned with the goals and objectives it had set for itself. The program fared extremely well on relevance, coherence, effectiveness, efficiency, impact, and sustainability.

The Aerobin based wet waste management technology has revolutionized the space of wet waste treatment as understood by stakeholders from the ground up. Whether it is government stakeholders, resident beneficiaries, or housekeeping staff, the merits of the technical solution are unparalleled. As a technical solution, the Aerobin is aesthetic, consumes no power, is odorless and mimics nature closely to decompose wet waste and help integrate it back to where it come from. It exemplifies circularity in the truest of it's forms. While the technology is unparalleled, we must also acknowledge the effort put in creating the model around positively influencing the behavior of Bulk Waste Generators i.e. residents, educational institutions etc. to take ownership of their waste. The largest challenge in implementing decentralized solutions is inculcating community ownership. The S.O.R.T model has achieved the same.

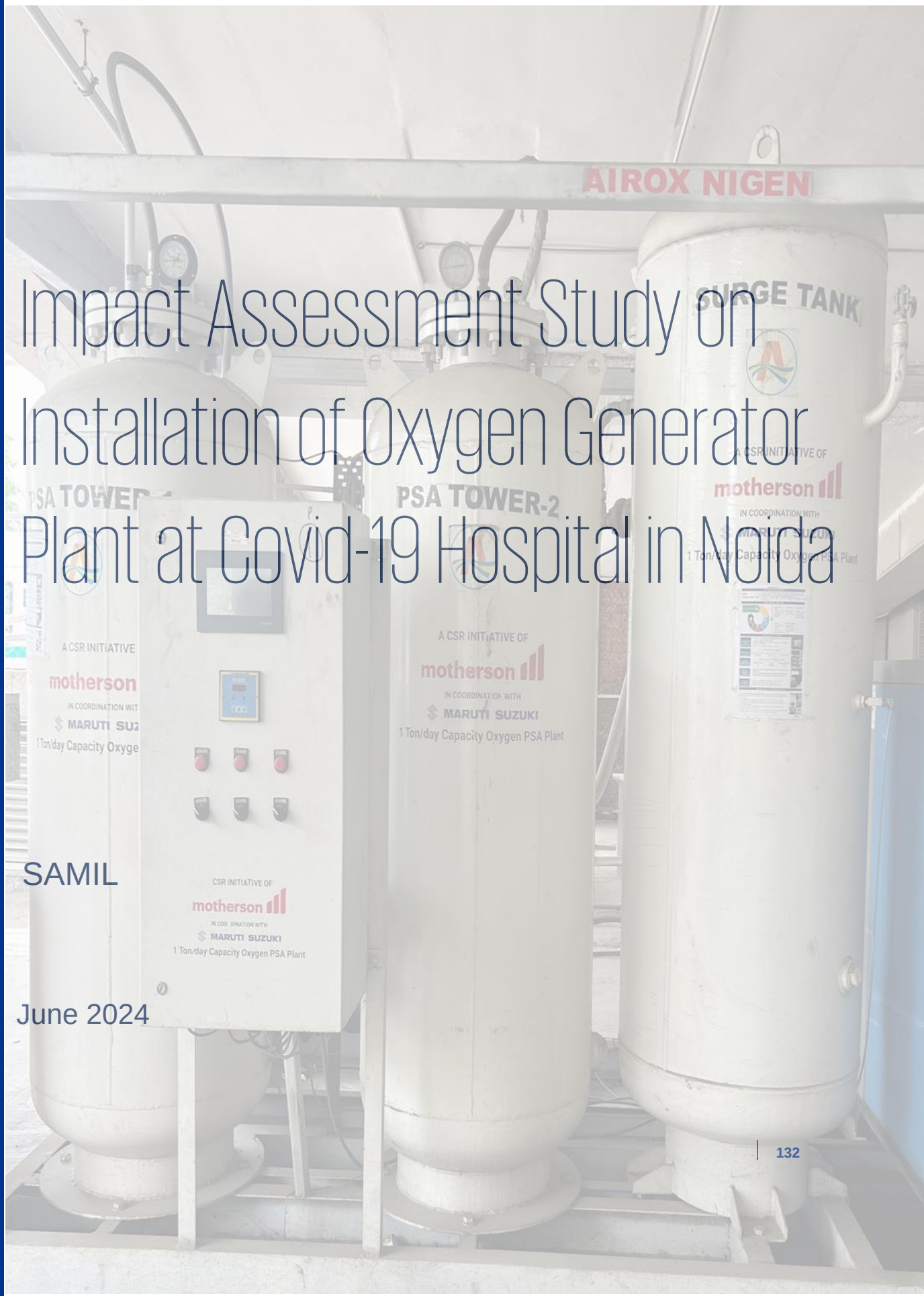
While the project has achieved everything it has to in it's current form, stakeholders are now excited to see the potential it holds to scale outside of the constraints of closed gated spaces in tier-1 cities and achieve the vision of zero wet waste reaching landfills.

Strategic recommendations for future initiatives

Broad recommendations for the future initiatives with respect to the Project S.O.R.T NCR (phase IV) and similar initiatives are as below

7. We may explore whether the Aerobin based solution's success is restricted to tier-1 cities and enclosed spaces. This may be done by exploring a **combination of centralized and decentralized models**. Designing new models such as community composting to overcome the issue of treatment of waste in non-gated societies wherein ownership is expanded beyond RWAs or management of educational institutions.
8. For **national expansion**, it is important to introduce the Aerobin based model across different cities and concerned local governance bodies instead of concentrating the efforts in a single city. This will allow exposure to the Aerobin based solution in multiple cities, across diverse administrative stakeholders and increase it's adoption.
9. Our conversation with ragpickers revealed that they were forced into waste collection due to unemployment inspite of the health hazards and low income involved. An aspect of the project that may be deep dived into from a humanitarian and social perspective is investing more in the **well-being of the sanitation workers** involved as part of the project. There may be different components of the project that may be considered in terms of supporting them access social security, regular professional fees, or supporting to integrate them in the formal waste collection and treatment sector through authorized recyclers and vendors.

10. As SAMIL is already investing in behavior change towards waste management as well as inculcating the habit of segregation, the by-product is that apart from wet waste, there are other kinds of waste as well. BWGs are looking for **holistic solutions to waste management**. Approaching waste with a more comprehensive outlook to include other types of waste as well, even via a partnership model with other corporates, and investing in evolving those models would not only optimize the funds being utilized towards behaviour change but also contribute to the environmental goals of SAMIL.
11. The project in it's current form is extremely human resource intensive and even monitoring and reporting is done manually. There is a **need to incorporate technology in monitoring** to optimize costs being incurred towards human resources. Moreover, considering the multifaceted nature of the project, using tech support for monitoring will help capture all it's impacts and record them in a systematic manner.
12. The project has the potential to scale to a national and even global level. Investing in engaging professionals for **policy advocacy of the Aerobin based wet waste management solution** in the government space to integrate it into the national policy as a recommended solution to increase uptake would help achieve the goal of zero wet waste reaching the landfills.



Impact Assessment Study on Installation of Oxygen Generator Plant at Covid-19 Hospital in Noida

SAMIL

June 2024

List of Abbreviations

Abbreviation	Expansion
AMC	Annual Maintenance Cost
CSR	Corporate Social Responsibility
DAC	Development Assistance Committee
IDIs	In-Depth interviews
MSIL	Maruti Suzuki India Limited
NHM	National Health Mission
OECD	Organization for Economic Cooperation and Development Assistance Committee
RMB	Registered Medical Biller
SAMIL	Samvardhana Motherson International Ltd.
SDG	Sustainable Development Goals
SLMTT	Swarn Lata Motherson Trust
SOP	Standard Operating Procedure
U.P.	Uttar Pradesh

Chapter 1: Introduction

Chapter 1: Introduction

1.1 Background and Context

Covid-19 Pandemic Worldwide:

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, emerged globally in late 2019, causing unprecedented health, economic, and social impacts. By mid-2024, the virus had infected over 750 million people worldwide, necessitating various measures such as lockdowns, travel restrictions, and mass vaccination campaigns to curb its spread[34]. The human toll of the pandemic has been devastating, with over 6.9 million deaths reported globally[35].

The United States, India, and Brazil were among the countries with the highest number of fatalities, each recording over 1 million deaths[36]. Additionally, survivors of the virus have experienced long-term health complications, further straining healthcare resources. However, vaccination efforts have made significant strides, with over 12 billion doses administered worldwide, resulting in a substantial decline in severe cases and mortality rates[37].

Covid-19 Pandemic in India:

In India, the COVID-19 pandemic had a profound impact, with over 44 million confirmed cases reported by mid-2024[38]. The government implemented extensive measures, including nationwide lockdowns, increased testing, and accelerated vaccination campaigns in response to the crisis. Despite these efforts, the death toll due to COVID-19 in India has been significant, with over 1.5 million fatalities reported[39].

The pandemic severely impacted Uttar Pradesh (U.P.), India's most populous state, during the second wave in April-May 2021. The state faced an acute shortage of medical oxygen, critical for treating severe COVID-19 patients[40]. This shortage led to tragic scenes where families of patients were desperately seeking oxygen cylinders and hospital beds,

[34] The coronavirus global pandemic and its impacts on society - PMC (nih.gov)

[35] COVID-19 has caused 6.9 million deaths globally, more than double what official reports show | Institute for Health Metrics and Evaluation (healthdata.org)

[36] google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiArca4ndiGAxW6r1YBHRYEBi8QFnoECCkQAQ&url=https%3A%2F%2Fwww.npr.org%2Fsections%2Fgoatsandsoda%2F2020%2F09%2F28%2F916984072%2Fcovid-19-deaths-top-1-million-how-these-5-countries-are-driving-the-pandemic&usg=AOvVaw2cs6MPEKZSRAkcjUtY5n2v&opi=89978449

[37] Global immunization efforts have saved at least 154 million lives over the past 50 years (who.int)

[38] Prevalence and Determinants of Long COVID Among Patients Attending the Outpatient Department of a Subdistrict Hospital in Haryana - PMC (nih.gov)

[39] https://www.bbc.com/news/world-asia-india-60981318

[40] google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi0jIacntiGAxWMs1YBHU-OBecQFnoECCsQAQ&url=https%3A%2F%2Fwww.bbc.com%2Fnews%2Fworld-asia-india-56799303&usg=AOvVaw2WuW1lDj2ZFNaIRJB0ngZV&opi=89978449

often in vain. The oxygen crisis in Uttar Pradesh resulted in numerous fatalities, highlighting the urgent need for robust healthcare planning and infrastructure development to prevent such tragedies in future public health emergencies.[41]

COVID-19: An Era of Emergency and Scarcity:

Oxygen is the most critical gas utilized in healthcare facilities and hospitals. Procuring pure oxygen within budget and on schedule poses a considerable challenge. Typically, hospitals procure bulk oxygen from gas generator manufacturers in both liquid and gaseous forms, which entails significant expenses leading to escalating costs over time[42]. The COVID-19 crisis underscored the imperative need for enhanced oxygen generation and supply management.

The COVID-19 pandemic had created unprecedented challenges, greatly impacting the nation's socio-economic landscape. It had disrupted the public healthcare system, making it difficult for people to access essential healthcare services, especially for underprivileged populations[43]. Hospitals had been facing difficulties in providing healthcare due to the widespread scarcity of liquid medical oxygen in many regions. This shortage had led to long wait times for oxygen cylinder refills[44]. Additionally, the imbalance in supply and demand had resulted in shortages of vaccines, posing a significant obstacle to efforts to control the virus. At the same time, nationwide lockdowns and increased unemployment had left many people without the means to afford necessities[45].

Role of CSR in India in Combating the Covid-19 Pandemic in India:

During the COVID-19 pandemic, Corporate Social Responsibility (CSR) played a pivotal role in India in addressing the needs of the public. As hospitals grappled with an overwhelming influx of patients, the urgent need for oxygen became apparent, and the private sector stepped in to provide much-needed support. Companies leveraged their resources, expertise, and logistical capabilities to assist in the procurement and

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41 google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiqgOuvntiGAxW9slYBHWgzDFIQFnoECCAQAQ&url=https%3A%2F%2Fncdc.mohfw.gov.in%2Fwp-content%2Fuploads%2F2024%2F05%2F27.SAPCCHH-VERSION-1-UTTAR-PRADESH.pdf&usg=AOvVaw1wz33n3bQCnVJhEaGMAzAh&opi=89978449

42 https://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwidqqjrntiGAxXC1DQHHYXGDHoQFnoECA8QAQ&url=http%3A%2F%2Fwww.medion.co.in%2Fpsa_oxygen_plant.php&usg=AOvVaw2t9tJXPmzsO29TsFsTIB_3&opi=89978449

43 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9409667/

44 Challenges of Hospital Oxygen Management during the COVID-19 Pandemic in Rural Nepal - PMC (nih.gov)

45 https://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjj9tDPn9iGAxWdslYBHbhaA2MQFnoECBUQAQ&url=https%3A%2F%2Fwww.ncbi.nlm.nih.gov%2Fpmc%2Farticles%2FPMC8243816%2F&usg=AOvVaw3p9TQGQ6zFvdiB6K1_q6Pi&opi=89978449

distribution of medical oxygen, significantly aiding the healthcare system in its hour of need[46].

During the pandemic, automotive companies and many other businesses have made significant donations to relief efforts. In less than two weeks since January 23, 2020, more than 120 OEMs, parts suppliers, dealers, charging enterprises, logistics companies, and mobility companies in the auto industry contributed a combined RMB1.2 billion to fight the pandemic. In addition to donations, automotive businesses have also taken CSR actions during the outbreak, shifting from "capital contribution" to "technology output" and "capability output". Many passenger vehicle enterprises quickly organized personnel and purchased raw materials and production equipment to produce masks and other emergency supplies through self-built production lines or outsourcing. These supplies were promptly delivered to frontline pandemic prevention and control.[47].

These CSR efforts were instrumental in ensuring a more reliable and continuous supply of oxygen to healthcare facilities, saving countless lives. The private sector's swift and effective response highlighted the importance of corporate engagement in public health emergencies and underscored the potential for collaboration between businesses and the government in building a more resilient healthcare infrastructure. The contributions of these companies not only addressed immediate needs but also set a precedent for proactive and socially responsible corporate behavior in times of crisis.

SAMIL'S response to the situation:

In response to the urgent challenges posed by the COVID-19 pandemic, SAMIL offered crucial financial support to mitigate its impact. This comprehensive report provides a detailed account of SAMIL's significant contributions to the COVID-19 response fund. It particularly highlights the acquisition and installation of an advanced oxygen generator at a prominent COVID-19 treatment facility located in Noida in 2021-2022, showcasing SAMIL's commitment to providing essential resources for the healthcare sector during this critical time.

1.2 About SLMTT

Swarn Lata Motherson Trust (SLMTT) was established by the Motherson Group with the noble objective of advancing the principles of good corporate citizenship, with a specific focus on fostering prosperity and well-being for holistic and sustainable development. It serves as a strategic platform for formal Corporate Social Responsibility (CSR) initiatives,

46 google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjyh6TaoNiGAxVqrVYBHW6ZABMQFnoECCQQAQ&url=https%3A%2F%2Fnews.un.org%2Fen%2Fstory%2F2022%2F01%2F1110922&usg=AOvVaw3hLk3qPDOdDRq6EvKJGsRC&opi=89978449

47 Accelerated transformation of automotive business CSR (deloitte.com)

Chapter 2: Approach & Methodology

Chapter 2: Approach and Methodology

SAMIL has been implementing successful CSR initiatives based on community needs. A third-party evaluation of the results attained is essential given the dynamic nature of the social development programmes deployed. This impact assessment aims to explain what has been done well and what can be done moving forward. It will not only assist in determining the significance of the project, including the efficiency of project design and interventions, sustainability of results, and impact of the intervention on the target community, but it will also guide for expanding or replicating the successful initiatives while redesigning or ending the projects/initiatives that were unable to have the intended impact.

A four-phased approach was adopted for the Impact Assessment of the Installation of Oxygen generator plant project.

To evaluate the impact of the program, an independent study was undertaken by KPMG India which used the OECD-DAC evaluation framework:

- **OECD-DAC (Organisation for Economic Co-operation and Development - Development Assistance Committee) evaluation criteria:** OECD-DAC is a tool that focuses on evaluating the performance of social development projects on six evaluation criteria. These include - relevance, coherence, effectiveness, efficiency, impact, and sustainability. These criteria are meant to help facilitate evaluations.

Our Approach to Impact Evaluation

OECD-DAC Framework

Given the fundamental approach for conducting an impact study, the OECD-DAC (Development Assistance Committee) Evaluation Network's framework is well regarded for assessing the efficacy of development programs. In response to the need for a method through which bilateral development agencies could monitor the financing supplied to multilateral organizations for various development initiatives, the DAC Evaluation Network developed a set of evaluation criteria for measuring the performance of any development project (UNICEF, 2012).

Figure 18: *Four-phased approach*

The OECD DAC Network has identified six evaluation criteria and two principles for their application: relevance, coherence, effectiveness, efficiency, impact, and sustainability. These criteria are meant to help facilitate evaluations. They were revised in 2019 to improve the accuracy and utility of assessment and to strengthen the evaluation's contribution to sustainable development (OECD, 2020).

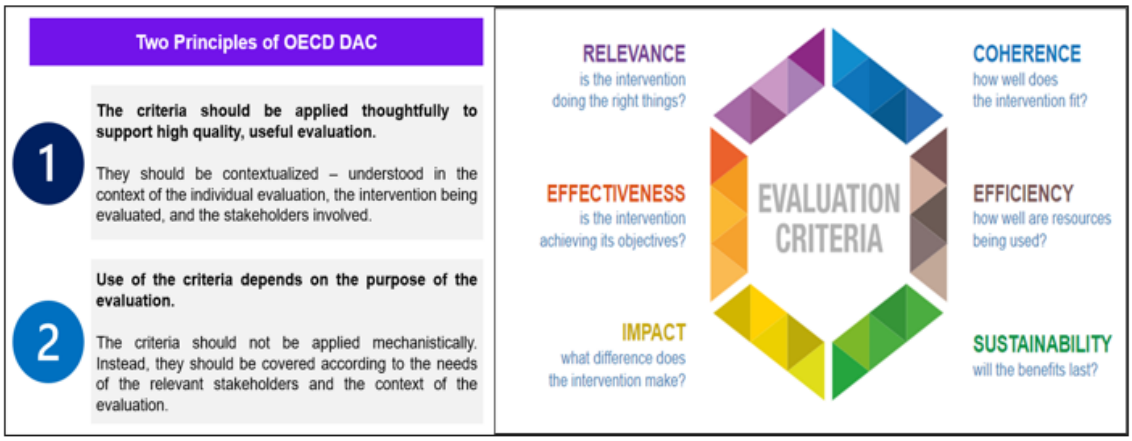


Figure 19: OECD DAC criteria for evaluation

An overview of the above-mentioned six evaluation parameters is provided below:

Evaluation Criteria	Generic Evaluation Questions	Cross-cutting Objectives
Relevance	*A measure of the extent to which the intervention objectives and design respond to beneficiaries, global, country, and partner/institution needs, policies, and priorities, and continue to do so if circumstances change.* ▪ To what extent are the objectives of the project still valid? ▪ Are the activities and outputs of the project consistent with the overall goal? ▪ Are the activities and outputs of the project consistent with the intended impacts and effects?	*Commitments of the stakeholders are integrated into Project design and planning*

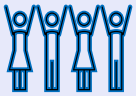
Coherence	*A measure of the extent to which the intervention is compatible with other interventions in a country, sector, or institution.* ▪ Does the project address the synergies and interlinkages between the intervention and other interventions in the same organization and the same sector/policy landscape? ▪ Does it weaken or enhance the impact of any current programs or policies? ▪ Does the program lead to duplication of efforts?	*The extent to which other interventions (particularly policies) support or undermine the intervention and vice versa.*
Effectiveness	*A measure of the extent to which the intervention achieved, or is expected to achieve its objectives, and its results, including any differential results across groups.* ▪ To what extent were the objectives achieved/are likely to be achieved? ▪ What were the major factors influencing the achievement or non-achievement of the objectives?	*Achieved cross-cutting objectives during project implementation*
Efficiency	*A measure of the extent to which the intervention delivers, or is likely to deliver, results in an economic and timely way.* ▪ Were activities cost-efficient? ▪ Were objectives achieved on time? ▪ Was the project implemented most efficiently compared to alternatives?	*Resources are provided and efficiently used for the participation of all stakeholders*
Impact	*A measure of the extent to which the intervention has generated or is expected to generate significant positive or negative, intended, or unintended, higher-level effects.* ▪ What has happened because of the project? ▪ What real difference has the activity made to the beneficiaries? How many people have been affected?	*Achieved real and long-lasting positive changes in the lives of intended beneficiaries*
Sustainability	*A measure of the extent to which the net benefits of the intervention continue or are likely to continue.* ▪ To what extent did the benefits of a project continue after donor funding ceased? ▪ What were the major factors that influenced the achievement or non-achievement of sustainability of the project? ▪ What can be some of the innovative ways to make the project sustainable in the long run?	*The likelihood that project achievements will continue after the project*

Table 17: OECD DAC criteria explanation

2.2 Our Methodology

KPMG adopted a four-phase structured methodology for this engagement. The methodology aided in developing a tailor-made approach, to capture the multiple impacts from the project effectively.

The following section details the methodology:

	**Desk Review**	A comprehensive review of the existing program document was conducted by the KPMG team. Apart from the review of the existing document, KPMG conducted a thorough literature review of academic articles and government policies to understand the relevance and coherence of the oxygen generator project.
	**Questionnaire design**	A questionnaire for relevant stakeholders was developed based on the program activities to evidence the outcomes and impacts of the program. The questionnaire was designed to elicit the qualitative data which was pre-tested before distribution.
	**Data collection**	The collection of data was carried out by KPMG in India resource personnel who physically visited the sample population.
	**Data analysis**	Qualitative data collected through the survey and interviews were analyzed using thematic analysis, to identify patterns and themes in the data.
	**Key Informant Interviews**	Structured, semi-structured interviews were conducted with key stakeholders in the field to gain insights. The interviews were further analyzed using thematic analysis.
	**Synthesis**	The data collected through the literature review, survey, and interviews were synthesized to develop a comprehensive understanding of the research topic. This involved identifying key themes and trends, as well as exploring any inconsistencies or gaps in the data.

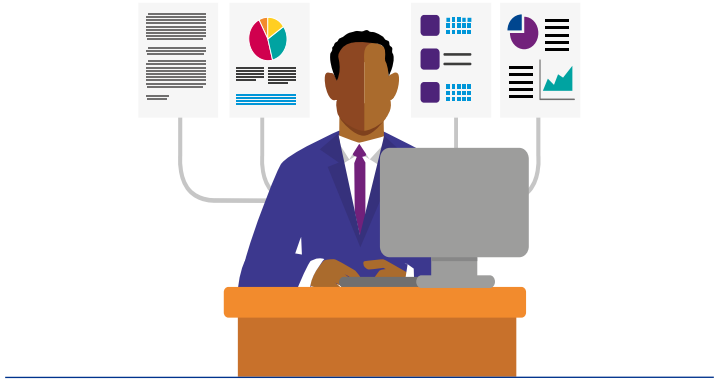
	**Reporting**	The results of the impact assessment of the oxygen project are reported in a comprehensive final report, includes a summary of the findings, as well as recommendations for future research and practice.

Table 18: Detailed Methodology

Phase I: Consulting, scoping and desk review

Activities

- Consultation with SAMIL team to gather information about the project.
- Understand and document SAMIL's expectations.
- Finalize the framework for undertaking the impact assessment, the timeline, key deliverables, and milestones.
- Review of project-related documents and other public data available to build an in-depth contextual understanding of the project goals and activities.
- Project brief documents
- Log Frame Analysis and strategy documents
- Any other progress reports etc.



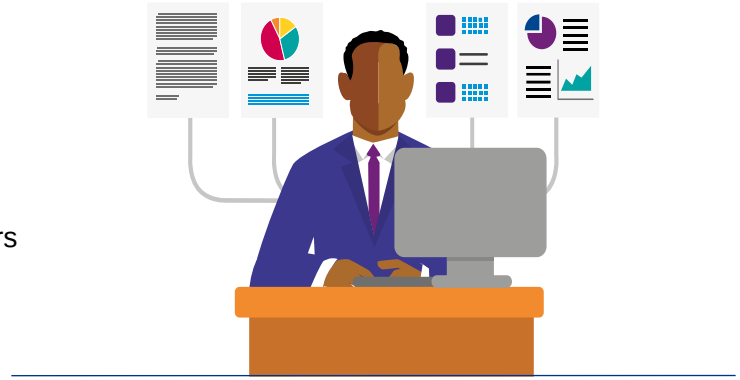
- **Project kick- off meeting**
- **Completion of desk review**

Phase II: Research Design

Activities

- Mapped the impact indicators for the project.
- Developed the stakeholder landscape.
- Finalized the sample size and strategy.
- Preparation of an inception report
- Developed research tools (questionnaires) for beneficiaries and stakeholders for data collection.

This had been finalized in consultation with the SAMIL team.

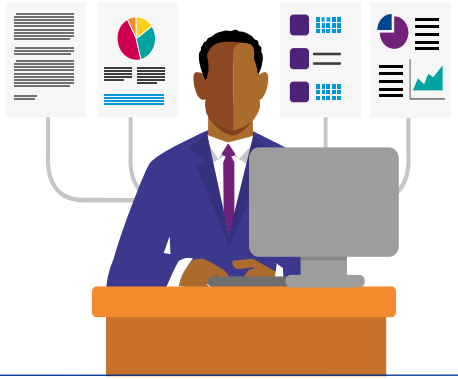


- **Targeted list of stakeholders**
- **Finalized impact map/theory of change.**
- **Inception report**
- **Research tools for data collection**

Phase III: Data Collection

Activities

- Developed a field visit plan for primary data collection.
- Data collected through field visits and telephonic/ virtual calls for beneficiary/ stakeholder interactions.
- In-depth semi-structured interviews with key stakeholders to understand the impact created through the program.



- **Completion of data collection**

Phase IV: Analysis and Reporting

Activities

- Prepared the data collected for analysis.
- Data collected on the field, telephonic/ virtual calls, and through secondary research was analyzed with the help of Excel tools to draw relevant inferences.
- Post the analyses, the team worked on writing the impact assessment report.
- A draft report for the project has been developed based on the analysis of the data collected.
- Comments/ suggestions from the SAMIL team will be incorporated, and the final report will be submitted.

- **Draft Report**
- **Final Report**

Figure 20: Phases of Methodology

2.3 Sampling Strategy

For developing the sampling strategy for the assessment, KPMG used convenience sampling[48] to assess the progress reported on the oxygen generator plant project on targeted stakeholders.

Convenience Sampling

Convenience sampling is a non-probability sampling method where units are selected for inclusion in the sample because they are the easiest for the researcher to access. This can be due to geographical proximity, availability at a given time, or willingness to participate in the research. Sometimes it is also referred to as accidental sampling. Convenience sampling is also a type of non-random sampling.

For developing the sampling strategy for this assessment study, beneficiaries could not be interviewed for this project as it was technically impossible to find out who had received oxygen support from the plant installed at the COVID-19 hospital in Noida. Hence, in discussion with SAMIL's team stakeholders to be interviewed were identified which are mentioned in the table below:

S.No.	Stakeholder	Sample Number to be covered	Sample Provided*[49]	Sample achieved
1	Doctors and hospital admin, oxygen generator operator from Sector 39 Noida Hospital to be interviewed	5	-	3
2	Representatives from Shahjahanpur Hospital to be interviewed (virtually)	5	-	0
3	Representatives from the MSIL team to be interviewed	5	-	0

[48] What Is Convenience Sampling? | Definition & Examples (scribbr.com)

Table 19: Sampling of Stakeholders

Total	15	-	3

The planned sample was not achieved due to the following reasons:

- During a recent visit to the COVID-19 hospital in Noida, it was noted that only a limited number of individuals were available to provide information regarding the oxygen generator plant. These individuals included members of the hospital administration team and attending doctors. They explained that due to possible transfers or personnel changes, there may be limitations on the availability of individuals who can provide information about the oxygen plant installed by SAMIL.
- The SLMTT team attempted to contact the Shahjahanpur hospital but found that the identified contact had retired, and efforts to identify a different point of contact were not successful.
- Additionally, MSIL SPoCs were unavailable as their team was on leave.

2.4 Stakeholder Mapping

Stakeholder mapping is the process of identifying all the stakeholders involved in a project and their roles and responsibilities on one map. The main benefit of a stakeholder map is to get a visual representation of all the people who can influence the project and how they are connected. Stakeholders who experience change, whether positive or negative because of the interventions carried out were considered under the study. Furthermore, their pertinence to the scope of the study and relevance to the overall analysis were assessed.The figure below presents the stakeholders were consulted for the study:

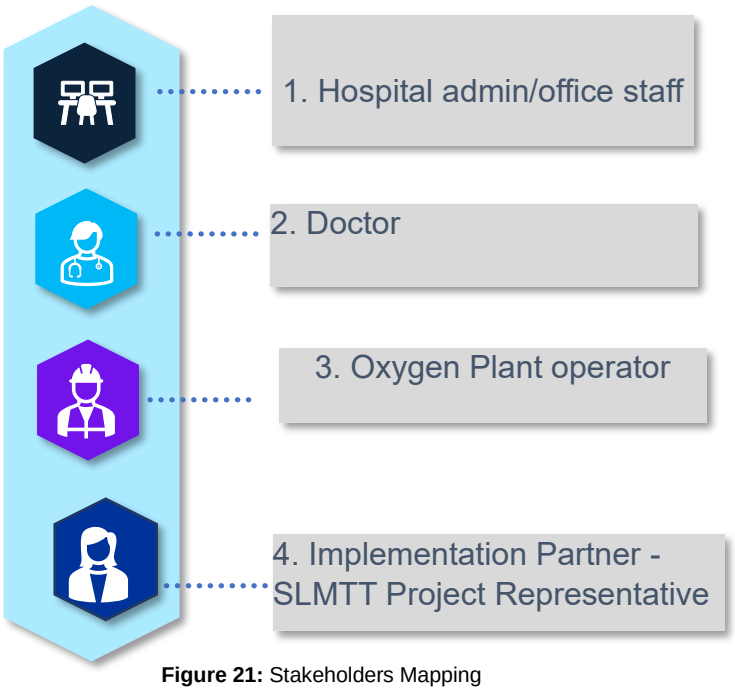


Figure 21: Stakeholders Mapping

Table 20: Stakeholder Mapping and reason for

Stakeholder	Type of Stakeholder	Reason for Inclusion	Data collection tool
Admin/office staff at the hospital	Secondary	The admin department at the hospital is responsible for procuring of necessary equipment for the treatment of patients. Hence, it was necessary to understand their perspective concerning the impact created via the oxygen plant installed at the hospital.	***Structured Questionnaire:*** was developed for hospital staff
Doctor **at the hospital**	Secondary	Doctors are the key stakeholders in the study therefore it is necessary to include them as they are responsible for providing treatment to the patients and for providing treatment during the Covid-19 pandemic to the patients visiting the hospital. The doctor at the ICU facility was interacted with during stakeholder consultation as he was aware of impact numbers related to patients and the support received by the hospital during Covid-19.	***Semi-structured Questionnaire:*** was developed for the doctor
Oxygen **plant operator**	Secondary	An operator is responsible for ensuring operational working of the plant. The operator releases the oxygen into different wards basis instructions received from the doctors. In case the plant is not functioning properly it is his responsibility to report the same issue at the hospital office. It was necessary to get this scenario from the individual.	***In-depth Interview:*** with oxygen plant operator was undertaken
Implementation Partner- SLMTT Project representative	Secondary	The project heads from SLMTT are responsible for monitoring the project and ensuring that the program runs efficiently and according to the plan set forth before the start of the project. They are also in charge of assisting during any challenges faced during the program	***Structured Questionnaire:*** was developed for SLMTT

Impact Map

An *impact map* is defined as a logical chain/ framework giving an overview of how inputs (actions taken, or work performed) result into outputs (changes resulting from the interventions relevant to the outcomes), causing outcomes (likely or achieved short or medium-term effects arising out of the outputs of an intervention) and impact (positive or negative, intended or unintended, directly or indirect effects created by the interventions). The impact map for the program has been illustrated below:

Stakeholder	Inputs	Activities	Outputs	Outcomes	Impact
Hospital admin/office staff, doctor, and oxygen plant operator	Financial support provided by SAMIL in partnership with Maruti Suzuki Limited (MSIL)	Oxygen Support during Covid-19 pandemic: Installation of oxygen generators in government hospital in Uttar Pradesh	No. of healthcare institutions covered	Improved availability/access to oxygen support	1. Positively impacted patients' lives during the second as well as recurring waves of COVID-19 and otherwise. 2. Increased capacity of healthcare infrastructure in the government hospitals in U.P.
			No. of oxygen plants installed		
			No. of the patients treated		
			% difference in the number of patients receiving oxygen support post-installation of oxygen generators Vs patients receiving oxygen support pre-installation of oxygen generator		

Table 21: *Impact Map*

Chapter 3: Analysis & Findings

Chapter 3: Analysis & Findings using OECD Framework

This chapter discusses the findings based on the site visits made to Covid-19 Hospital, Noida where physical verification was undertaken as well as in-depth discussions conducted with the target respondents.

The findings have been discussed as per the OECD-DAC Criteria and a description has been provided by its components as follows:

3.1 Relevance

Relevance is a measure of how much the intervention objectives and design respond to the needs, beliefs, and priorities of the beneficiaries and continue to do so even if circumstances change.

Relevance measures how effectively a program is aligned with the goals and policies of the Government in which it is implemented. It also aims to know if the program is relevant to the needs of the beneficiaries. The program's relevance is understood in this context in terms of community needs.

During the second wave of the COVID-19 pandemic in March 2021, the impact on the country's medical infrastructure was devastating. Across government, private, and non-profit sectors, the surge in COVID-19 cases presented numerous challenges, including a shortage of hospital beds, oxygen cylinders, ventilators, and other medical supplies. This led to significant strain on the healthcare system across the nation.

To address the escalating oxygen crisis, the government of India took proactive measures by setting up oxygen plants in health facilities. Additionally, both Central and State Governments sought partnerships with corporations through CSR initiatives, established public-private partnerships, and received support from the public, charitable trusts, and autonomous bodies such as associations, clubs, and civil societies to ensure the availability of oxygen supply for patients in government hospitals.

In 2021, the COVID-19 hospital in Noida had to request oxygen generators due to the high oxygen demand. At that time, the hospital only had a plant installed in the basement and used cylinder manifolds to fill oxygen. They were refilling approximately 300-400 cylinders each day with 3.5 lakh liters of oxygen, which accounted for 7000 liters of oxygen per cylinder. In response to the urgent need for an oxygen plant at a COVID-19 hospital in Noida, SAMIL in partnership with Maruti Suzuki Ltd. committed to providing essential support basis the need of the hospital by initiating the installation of the required oxygen plant. This exemplified the collaborative efforts taken to address critical healthcare needs during the challenging times of the pandemic.

The location for setting up plants for the COVID-19 hospital at Noida in Uttar Pradesh was done based on the needs and requirements of the hospital as mentioned above. The installation was completed promptly when support was needed, demonstrating the significance of the support grant.

During the stakeholder discussion, the office administrative staff expressed their satisfaction that the hospital is now well-equipped to always provide oxygen supply to the local population and is fully prepared to handle any unforeseen circumstances.

During a meeting with stakeholders, the doctor in the ICU mentioned that the ICU currently needs over 1500 liters per minute (lpm) of oxygen. Two out of the three oxygen generators, including one provided by SAMIL, are constantly operating at the hospital. With 40-50 new patient admissions per day, approximately 25-30 patients need around 600 lpm of oxygen. On average, out of 60-70 individuals admitted in different wards, around 30 require high-flow oxygen, thus highlighting the significance/relevance of this intervention.

Figure 22: Covid-19 hospital at Noida, U.P.

Coherence

Coherence refers to the compatibility of the intervention with other interventions in a country, sector, or institution.

It measures the extent to which other interventions (particularly policies) support or undermine the intervention, and vice versa.

I. Alignment of the program with Sustainable Development Goals (SDGs)

The SDGs, commonly recognized as global goals, were established in 2015 by all United Nations members to eradicate poverty, protect the environment, and ensure that everyone lives in peace and prosperity by 2030. India was a significant contributor to the development of the SDGs and is committed to achieving them by 2030.

SDG Goal	Target	Sub-targets[50]	Coherence
GOAL 3	**Good Health and Well-being**	***3.1*** *By 2030, end the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases.* ***3.8*** *Achieve universal health coverage, including financial risk protection, access to quality essential healthcare services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all.*	In line with the vision, the project aimed to provide COVID-19 relief support to the community members in the project region. SAMIL supported a nearby government hospital with an Oxygen generator plant to facilitate hassle-free and timely relief to the community members and enable existing Govt. established health infrastructure to provide timely and affordable healthcare support.
GOAL 9	**Develop sustainable, resilient and inclusive infrastructures**	***9.1*** *Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support human well-being, with a focus on affordable and equitable access for all*	In line with the vision, the project aimed to provide infrastructure support in terms of setting up a new plant inside hospital premises which made oxygen affordable at nominal rates and at the nearby vicinity thus providing equitable support to all.

Table 22: Alignment with SDG Goals

II. Alignment of the program with National Priorities – Government schemes and programs

The project is further aligned with the national and state government goals, policies, and initiatives, as listed below:

Project	Brief Description	Alignment

[50] https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals

National Health Mission	The National Health Mission (NHM) was launched by the government of India in 2005 subsuming the National Rural Health Mission and National Urban Health Mission. Main program components include Health System Strengthening (RMNCH+A) in rural and urban areas- Reproductive-Maternal-Neonatal-Child and Adolescent Health, and Communicable and Non-Communicable Diseases. National Health Mission envisages the achievement of universal access to equitable, affordable, and quality healthcare services that are accountable and responsive to the needs of the people.	In line with the vision and objectives of the provision, the project activities aimed at the installation of an oxygen generator plant during the COVID-19 pandemic in the project region by supporting the government hospital. HOPE *Foundation* supported the nearest Govt. Hospital by installing an Oxygen-generating Plant.

Table 23: Alignment with government schemes

Effectiveness

Effectiveness is defined as an assessment of the factors influencing progress toward outcomes for each stakeholder as well as validation of the robustness of systems and processes.

It aids in ensuring that the implementation and monitoring processes are sturdy to achieve the greatest possible social impact. The efficacy of the program is established by examining how well the program's activities were carried out as well as the efficiency with which the program's systems and processes were implemented.

The project's goal is to support patients coming from socio-economically weaker sections of society with timely oxygen support at their nearby government hospital at a minimal cost.

Therefore, to successfully attain these outcomes, the project adopted the following measures:

I. **Identification of the problem**: The COVID-19 situation in India has become terrible. In April 2021, there was a significant increase in cases, putting immense strain on the healthcare system. The demand for medical care surpassed the country's capacity, leading to shortages of essential COVID-19 medication, equipment, and ICU beds, as well as a shortage of medical-grade oxygen. This resulted in a distressingly high number of COVID-19-related deaths during the second wave of the pandemic. In response to this crisis, SAMIL, in partnership with MSIL and the Government of Uttar Pradesh, provided CSR support to deliver two oxygen generation plants in the COVID-19 hospital at Noida, and another hospital at Shahjahanpur to address the oxygen shortage in nearby regions.

II. **Qualified implementation team**: The team responsible for the execution, namely SLMTT played a crucial role in providing monetary support for purchase as well as installation of oxygen generator plants for the successful implementation of the project. This significantly contributed to offering

timely support to the intended beneficiaries/patients visiting the government hospitals for oxygen support.

III. **Collaboration**: SAMIL partnered with MSIL with the necessary resources, and team required for carrying out and conducting the requisite activities for the project.

IV. **Targeted beneficiaries**: Through the oxygen plant, SAMIL was able to reach the intended beneficiaries of the project.

Efficiency

The efficiency criterion seeks to determine whether the project was completed in a cost-effective and timely way.

The purpose is to establish whether the inputs—funds, knowledge, time, etc.—were effectively employed to create the intervention outcomes. This evaluation criterion attempts to determine whether the program was completed on schedule and within budget.

I. **Timeliness of delivery and implementation of project interventions:** The support provided by SAMIL at the COVID-19 hospital for this project was executed within the designated timeframe, i.e., within 15 days of receiving the request. This was promptly done by setting up an oxygen generator plant in the target location, considering the urgent need for oxygen at the hospital.

II. **Cost and overall efficiency of project activities:** Discussion with the SLMTT team indicated that there was no budgetary excess. The interventions were implemented in consultation with key stakeholders. The oxygen plants came with a 12-month warranty included in the price. The tentative AMC cost was around 3% of the basic plant cost.

Duplication/overlap of project activities: The project's support involved the installation of an oxygen generator plant on the hospital premises as a one-time measure to address the pandemic situation. As a result, there was no duplication or overlap of project activities.

Impact

The impact has been measured in terms of the futuristic vision to address the issue and the significant changes observed.

The goal of measuring the impact is to determine the project's primary or secondary long-term impacts. This could be direct or indirect, intentional, or unintentional. The unintended consequences of an intervention can be favorable or harmful.

In response to the critical oxygen shortage during the COVID-19 pandemic, SAMIL took decisive action to support the healthcare infrastructure by installing an oxygen generator at a COVID-19 hospital in Noida in 2021. This initiative was part of SAMIL’s broader Corporate Social Responsibility (CSR) efforts aimed at mitigating the effects of the pandemic and saving lives. The installation of the oxygen generator significantly bolstered the hospital's ability to provide continuous and reliable medical oxygen to patients, particularly during the second wave when the demand was at its peak.

I. Immediate Impact on Healthcare Services:

The oxygen generator installation had an immediate and profound impact on the hospital's operations. Before this, the hospital faced severe challenges in securing sufficient oxygen supplies to meet the needs

of critically ill COVID-19 patients. The new oxygen generator provided a stable and continuous source of medical-grade oxygen, allowing the hospital to treat more patients effectively.

II. Enhancing Patient Care and Outcomes:

With the oxygen generator in place, the hospital reported a significant improvement in patient care. The availability of a reliable oxygen supply was crucial in treating severe COVID-19 cases, where patients often required high-flow oxygen therapy or mechanical ventilation. The generator's capacity ensured that even during peak periods when the number of patients surged, the hospital could maintain adequate oxygen levels.

III. Long-Term Benefits:

Beyond the immediate crisis, the oxygen generator installation provided long-term benefits for the hospital. The infrastructure improvement meant that the hospital was better prepared for any future waves of COVID-19 or other emergencies requiring high oxygen usage. The generator's ability to produce oxygen on-site also reduced the hospital's dependence on external suppliers, leading to cost savings and enhanced operational efficiency. SAMIL's initiative thus contributed to building a more resilient healthcare system capable of withstanding future public health challenges.

IV. Community and Stakeholder Response:

The community and various stakeholders responded positively to SAMIL's contribution. The initiative was widely appreciated by healthcare professionals, hospital staff as well as government authorities. It highlighted the critical role that the private sector can play in supporting public health, especially during emergencies. SAMIL's proactive approach not only helped address a dire need but also set an example for other companies to engage in meaningful CSR activities that have a direct and positive impact on society.

The installation of the oxygen generator by SAMIL at the COVID-19 hospital in Noida in 2021 was a timely and impactful intervention that saved lives and strengthened the healthcare infrastructure as mentioned by the doctor at the ICU facility in the Covid-19 hospital in Noida. This effort demonstrated the effectiveness of targeted CSR initiatives in addressing critical needs and showcased SAMIL's commitment to social responsibility. The success of this project highlights the potential for public-private partnerships in enhancing healthcare resilience and underscores the importance of continued support and investment in healthcare infrastructure by the private sector.

Sustainability

Sustainability assesses how well the program secures the long-term viability of its outcomes and influence.

The continuation of a positive effect after development or aid has stopped is referred to as sustainability. This evaluation criterion contains key elements concerning the likelihood of continuous long-term benefits and risk tolerance. To achieve sustainability, a governing framework, financial model, and operating system must be established.

During consultations with hospital stakeholders, it was noted that the program demonstrates the potential for sustainability by offering oxygen support to a substantial number of current patients requiring oxygen supply at the hospital due to various medical conditions. The installation of oxygen generators at hospitals serves individuals from both underprivileged and privileged

backgrounds in need of oxygen support for themselves or their family members. Consequently, the program has effectively provided vital assistance to these individuals.

Following SAMIL's exit from the program, the hospital authorities have assumed responsibility for operating the oxygen plants. Moreover, an Annual Maintenance Contract (AMC) has been established to facilitate cost-effective or complimentary repairs in the event of plant malfunction. The inclusion of a detailed Standard Operating Procedure (SOP) with the oxygen generator has further ensured ease of operation for the hospital staff, enhancing the plant's reliability and functionality. The SOP provides clear guidelines on daily operations, troubleshooting, and routine maintenance, which significantly reduces the risk of operational disruptions.

Overall, SAMIL has been instrumental in supporting the hospitals throughout the pandemic, and the hospitals continue to operate oxygen plants to provide oxygen to various hospital wards. The program's structure, including the AMC and SOP, ensures that the benefits of the oxygen generators will persist, securing the long-term sustainability of this vital healthcare resource.

Chapter 4:

Conclusion

Chapter 4: Conclusion

The recent assessment of the oxygen plants has confirmed the remarkable effectiveness of the COVID-19 project support offered by SAMIL to the government hospital in Noida, Uttar Pradesh, India's most populous state. During the height of the pandemic, the U.P. faced severe challenges, with hospitals overwhelmed and oxygen supplies critically short. SAMIL's support has played a crucial role in ensuring the hospital's readiness for oxygen supply, particularly during critical situations such as the COVID-19 pandemic. Despite already having an underground oxygen plant and other generators in place, SAMIL's assistance has proven to be highly efficient and impactful.

SAMIL's intervention benefited a substantial number of patients during the COVID-19 phase as reported by the doctor placed in the ICU facility in the Covid-19 hospital in Noida, addressing the urgent need for oxygen during the second wave, which saw record numbers of infections and hospitalizations in the U.P. The installation of the oxygen generator plant at the government hospital in Noida has significantly bolstered the hospital's capacity to deliver critical care services. This illustrates that SAMIL's support has not only been instrumental in aiding patients during the peak of the pandemic but has also empowered the government hospital to prepare for future oxygen supply requirements in the region.

Furthermore, the government hospital, which offers medical care to all patients at minimal charges, has greatly benefited from the installation. The oxygen generator plant guarantees a dependable and uninterrupted supply of medical-grade oxygen, effectively catering to the hospital's needs while also diminishing reliance on external suppliers. This has been crucial in a state like the U.P., where the healthcare system was stretched to its limits during the pandemic. Since the installation, there has been a substantial improvement in the availability of oxygen within the hospital, thereby reducing the response time for critical care patients. The plant has consistently delivered performance in line with expected operational standards, showcasing its reliability and efficiency.

The continuous and reliable oxygen supply has enabled the hospital to treat patients more effectively, not only during the COVID-19 crisis but also for other medical conditions requiring oxygen therapy. SAMIL's initiative has demonstrated the critical role of corporate support in enhancing healthcare infrastructure, particularly in times of crisis. The oxygen plant has ensured that the hospital is better equipped to handle future emergencies, providing a lasting impact on the region's healthcare capabilities. This initiative has set a precedent for public-private partnerships in bolstering healthcare resilience and underscores the importance of proactive corporate social responsibility.

motherson

IMPACT ASSESSMENT

MATRIMANDIR LAKE

Contribution towards creation of the Test Lake as part of the Rainwater Harvesting Project at Matrimandir, Auroville

2022-23

June 2024

List of Abbreviations

Abbreviation	Expansion
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
CGWB	Central Ground Water Board
CSR	Corporate Social Responsibility
HDPE	High Density Polyethylene
KPI	Key Performance Indicator
LGA	Landesgewerbeanstalt Bayern
MoU	Memorandum of Understanding
RWH	Rainwater Harvesting
SAMIL	Samvardhana Motherson International Ltd.
SLMTT	Swarn Lata Motherson Trust
SPOC	Single Point of Contact
TWAD	Tamil Nadu Water Supply and Drainage
UNESCO	The United Nations Educational, Scientific and Cultural Organization

CHAPTER 1

Introduction

1. Introduction

1.2. Background about the project

India is experiencing acute water scarcity, exacerbated by factors such as rapid population growth, erratic monsoon patterns and extensive groundwater exploitation. The country's per capita water availability has drastically decreased from 5,200 cubic meters in the 1950s to below 1,500 cubic meters in 2024, classifying it as water-stressed. If current trends continue, this figure could drop below 1,000 cubic meters, marking severe water scarcity. The erratic and reduced rainfall due to climate change has further aggravated the situation, leading to reduced water levels in reservoirs and rivers across the country.[51]

Rainwater harvesting is a viable solution to mitigate water scarcity in India. This technique involves collecting and storing rainwater for future use, which reduces dependence on groundwater and provides an alternative water source during dry periods. The benefits of rainwater harvesting include minimizing the risk of floods by capturing runoff and enhancing water availability for agricultural, domestic, and industrial use. By implementing rainwater harvesting systems, communities can ensure a more sustainable and reliable water supply, particularly in regions where traditional water sources are depleting or unreliable. Additionally, rainwater harvesting can improve water quality and reduce soil erosion, contributing to environmental conservation.[52]

The Indian government has recognized the importance of rainwater harvesting in addressing water scarcity and has launched several initiatives to promote this practice. Nationally, programs like the Jal Shakti Abhiyan focus on water conservation and rainwater harvesting, encouraging communities to adopt these methods to ensure water sustainability. The Atal Bhujal Yojana is another significant initiative aimed at managing groundwater resources through community participation and scientific planning. There are other notable schemes and initiatives such as the Government of India's "Catch the Rain" campaign[53], Atal Mission for Rejuvenation and Urban Transformation (AMRUT)[54] and efforts taken by the Central Ground Water Board as well (CGWB) to solve the problem.[55]

Independent policy think tanks also comment at length about supporting diverse RWH techniques, including rooftop rainwater harvesting, surface runoff collection, and artificial recharge of groundwater. These methods are used to store rainwater for irrigation, potable water supply, and replenishing groundwater levels.[56]

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[51] Water scarcity in India, PIB

[52] Per capita water availability, PIB

[53] Catch the Rain | National Water Mission, Ministry of Jal Shakti, Department of Water Resources, RD & GR, Government of India (nwm.gov.in)

[54] Atal Mission for Rejuvenation and Urban Transformation -AMRUT: Ministry of Housing and Urban Affairs, Government of India (mohua.gov.in)

[55] Rain water Harvesting Techniques To Augment Ground Water

[56] Rainwater Harvesting: Artificial Recharge of Groundwater in India (ceew.in)

Puducherry, with its unique coastal terrain, faces specific challenges in water management. The region experiences a monsoon climate, with heavy rainfall concentrated in a few months, leading to water scarcity during the dry season. Additionally, the high rate of urbanization has increased the pressure on existing water resources.

1.3. Implementation partner

SLMTT

Swarn Lata Motherson Trust (SLMTT) was established by the Motherson Group with the noble objective of advancing the principles of good corporate citizenship, with a specific focus on fostering prosperity and well-being for holistic and sustainable development. It serves as a strategic platform for formal Corporate Social Responsibility (CSR) initiatives, allowing for a decentralized and systematic approach to meet the ambitious goals envisioned by the company's leadership.

Auroville Foundation

The Auroville Foundation, established under the Auroville Foundation Act of 1988, serves as the primary implementation partner for this project. The Act, which received the assent of the President on September 29, 1988, aims to provide for the acquisition and transfer of the undertakings of Auroville and to ensure its management and development in accordance with its original charter and ideals.

Auroville was founded by the ‘Mother’ on February 28, 1968, as an international cultural township aimed at fostering international understanding and promoting peace. Recognizing the challenges faced in managing Auroville, the Auroville Foundation Act vested management responsibilities in the Central Government, with overall guidance from the International Advisory Council.

Over the years, Auroville has developed significantly with the support of both national and international organizations, including substantial grants from the Central and State Governments and UNESCO. The Foundation's efforts focus on sustainable development, cultural growth, and community engagement, aligning with the project's goals of effective water management and environmental conservation.

By partnering with the Auroville Foundation, this project leverages the Foundation's extensive experience in sustainable practices, community mobilization, and innovative solutions to address the critical issue of water scarcity in the region. The Foundation's commitment to fostering human unity and sustainable living makes it an ideal partner for implementing advanced rainwater harvesting initiatives. In order to conserve and preserve water and address water-related issues, SLMTT signed a Memorandum of Understanding (MoU) with the Auroville Foundation to develop a lake using HDPE technology. This initiative aimed to provide a sustainable solution to the region's water challenges.

1.4. Program Introduction

1.4.1. Rationale

In Tamil Nadu, particularly in the Auroville Bioregion, the practice of storing rainwater has always been crucial due to the region's climatic pattern, where 90% of the rainfall occurs within a short period from late October to late December. Historically, villages in this region constructed water bodies to capture and store the rainwater. However, with the rapid increase in population and agricultural activities, daily water extraction from aquifers has significantly increased, leading to a severe decline in groundwater levels. This over-extraction has resulted in groundwater levels dropping below sea level, causing saltwater intrusion and degrading the quality of the available water. The traditional methods of water storage and management are no longer sufficient to meet the growing water demand. Groundwater depletion has created an urgent need for practical and improved rainwater harvesting methods and large-scale storage solutions. For over 50 years, Auroville and the surrounding villages have faced these water management challenges together, highlighting the necessity for innovative approaches to ensure sustainable water resources for the future.

1.4.2. Goals and objective

Implementing rainwater harvesting methods and techniques in the Auroville bioregion aimed to ensure a reliable and sustainable water supply for current and future demands. The approach addressed the region's need for effective water management given the significant but concentrated rainfall periods. By integrating advanced techniques with traditional methods, the initiative aimed to promote environmentally friendly water conservation practices that were both practical and culturally appropriate. These efforts helped manage water resources efficiently, ensuring long-term water security and fostering a sustainable environment. Additionally, the method aimed to mitigate the environmental impact caused by groundwater depletion and saltwater intrusion. Over-extraction had led to declining water levels and saltwater encroachment, threatening the local ecosystem. By increasing rainwater infiltration and improving groundwater discharge, the initiative sought to restore the natural balance. This helped replenish groundwater levels and protect the ecosystem, promoting sustainable water management practices in the Auroville bioregion.

1.4.3. Approach for Implementation

The implementation of the rainwater harvesting technique involved several meticulously planned steps to ensure its success. Initially, it was recognized that traditional methods of water storage using natural sealants like clay and shallow water bodies were inadequate for current needs. Therefore, Auroville developed an artificial open water body, named the Test Lake, which covered 12,000 square meters and was 10 meters deep, sealed with HDPE Foil. This innovative project aimed to determine the cost of storing water in a large, deep storage body fitted with HDPE Foil, validate the construction methods of such a water body with technical solutions like a 30% steepness on sloped shores, and assess the biological water quality in the HDPE Foil clad water body, which could store water for up to 10 months.

Figure 23: Excavation of lake section

To begin, HDPE Foil, known for its long-lasting and high-sealant properties, was procured from Naue in Germany and was installed at the Matrimandir site. The second part of the foil, necessary for the project, was purchased with the financial support of principal donors and coordinated by Auroville International in Germany, a government-recognized charitable trust that supports Auroville. Following the 2021 monsoon, the project focused on completing the excavation for a 1-kilometer long, 7-meter-wide Rainwater Harvesting Channel, which was lined and waterproofed with 2 mm thick HDPE Foil.

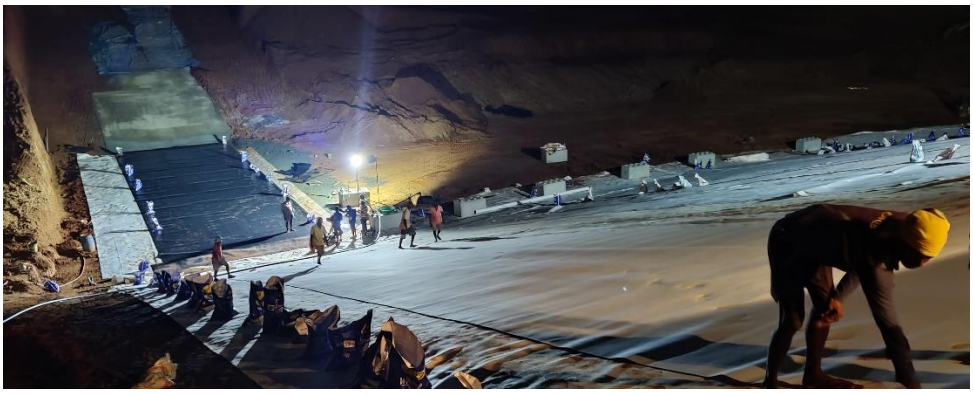


Figure 24: Waterproofing of the Wall Foundation

Subsequently, the construction involved casting concrete blocks for the inner and outer shores of the Test Lake, which were built with a 1:3 slope and vertical retaining end walls. A special steel mold was used to cast 5000 concrete blocks, and the replication and fabrication of these blocks had already commenced. The final grading of the inner and outer shores involved smoothing and compacting the slopes to prepare for the installation of the HDPE waterproofing layer, with fine shaping necessary to protect the earthen walls from rain damage. Finally, after grading the shores, the installation of the HDPE Foil proceeded. This step involved significant material expenses, including large quantities of granite gravel to protect the foil. By following this detailed plan, the project aimed to create a sustainable and effective water storage solution, demonstrating modern techniques and serving as an example of excellent water management in hot and humid conditions.

Figure 25: Water level at 7.5m & Concrete Block Wall at 10m

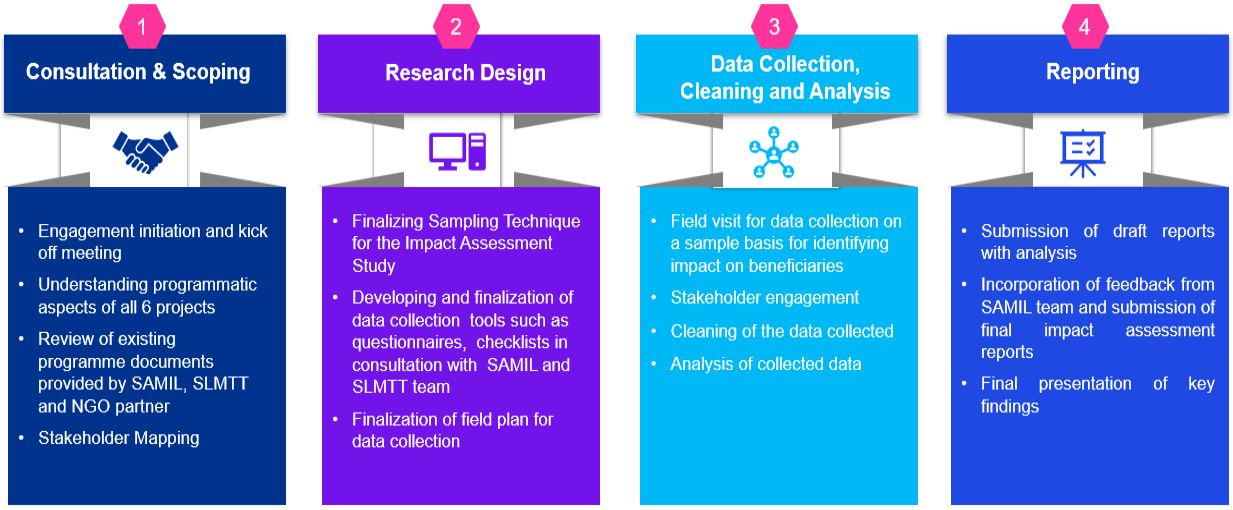
CHAPTER 2

Approach and Methodology for Impact Assessment

2. Approach and Methodology for Impact Assessment

2.1. Impact Evaluation – Phase-wise Approach and Methodology

A four-phased approach was adopted for the Impact Assessment of Test Lake as part of the Rainwater Harvesting Project at Matrimandir, Auroville (FY 2021-22).



2.2. Introduction to Framework – OECD DAC

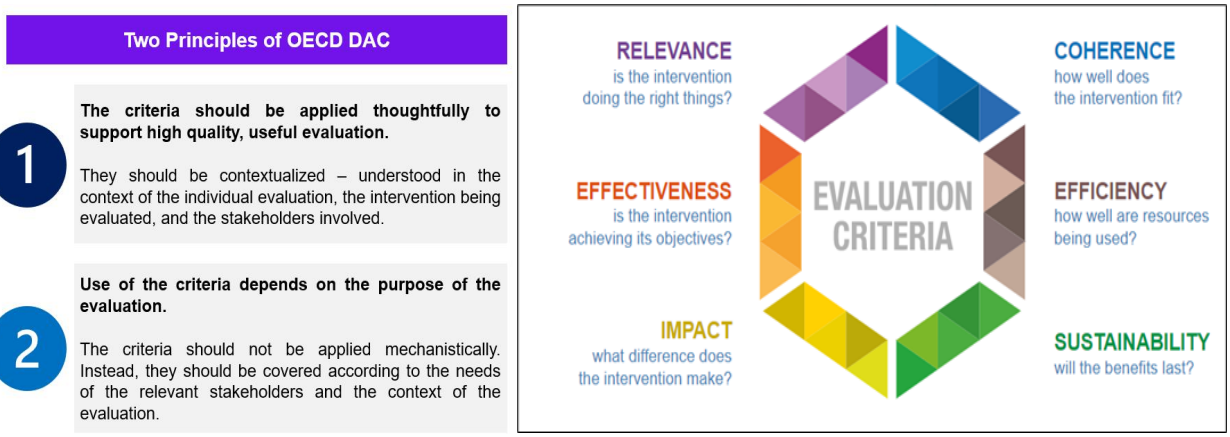
KPMG adopted the parameters of the OECD-DAC Framework to evaluate the impact of the SDC project. OECD DAC criteria have been used for impact evaluation. The framework has been described in the below sections.

Impact assessment is a structured process for assessing the effects of an intervention on the intended beneficiaries. Impact evaluation, on the other hand, is a broader term that encompasses a range of issues such as the appropriateness of the intervention design, the cost and efficiency of the intervention, its unintended effects and guidance on the Dfuture course of the intervention in terms of design and implementation (OECD).

Impact assessment has often been described as a theory-based activity since it is designed based on a 'theory of change'. This relates to establishing a chain of causation from intervention to impact and has the advantage of being specific and focused on the identified impacts. The impact assessment may, however, tend to overlook some of the unexpected and undesired results of the intervention.

The OECD DAC Network on Development Evaluation (EvalNet) has defined six evaluation criteria – *relevance, coherence, effectiveness, efficiency, impact and sustainability* – and two principles for their use. These criteria are intended to guide evaluations.

Been in use since 1991 these criteria were refined **in 2019** to improve the quality and usefulness of evaluation and strengthen the contribution of evaluation to sustainable development. A new criterion – ***Coherence*** was added for assessing the compatibility of the intervention with other



interventions in a country, sector or institution.

Elaborately, six evaluative criteria by the OECD-DAC evaluation framework are as follows:

- **Relevance**: The extent to which the objectives of an intervention are consistent with recipients' requirements, country needs, global priorities, and partners' policies.
- **Effectiveness**: The extent to which the intervention's objectives were achieved, or are expected to be achieved, considering their relative importance.
- **Efficiency:** A measure of how economic resources/inputs (funds, expertise, time, equipment, etc.) are converted into results.
- **Impact:** Positive and negative primary and secondary long-term effects produced by the intervention, whether directly or indirectly, intended, or unintended.
- **Sustainability:** The continuation of benefits from the intervention after major development assistance has ceased. Interventions must be both environmentally and financially sustainable. Where the emphasis is not on external assistance, sustainability can be defined as the ability of key stakeholders to sustain intervention benefits – after the cessation of donor funding – with efforts that use locally available resources.
- **Coherence (i.e., policy coherence):** The need to ensure consistency across security, development, trade and military policies, and humanitarian policies.

The below table describes how the KPIs of the programs were evaluated using OECD-DAC criteria.

Objective	Key Performance Indicators (KPI)	Means of Verification
Evaluation Criteria 1: Relevance		
To what extent is the project aligned with the needs of the target beneficiaries?	• Alignment with the needs of the beneficiaries • Needs assessment/impact reports	• Direct beneficiary questionnaire (Aurovillians / Community Members) • Stakeholder questionnaire Desk Review
Evaluation Criteria 2: Coherence		
To what extent is the project internally aligned with SAMIL's core values	Linkage with the goals and objectives of SAMIL	• SLMTT team • Document Review
To what extent is the project externally aligned with national/government policies	Linkage with government policies and strategies on Rainwater harvesting	• SLMTT team • Document Review
To what extent is the project linked to the Sustainable Development Goals?	No. of SDG goals and targets the project is linked with: 1. SDG Goal 6: Clean Water and Sanitation 2. SDG Goal 12: Responsible Consumption and Production	• Desk Review
Evaluation Criteria 2: Effectiveness		
Are the objectives of the project being achieved?	Target achievement in comparison with actual achievement	• Direct beneficiary questionnaire • Other stakeholder consultations
Has the project been implemented promptly?	Challenges identified by the SLMTT and Auroville Foundation implementing team in project implementation	SLMTT team and Auroville Foundation
Evaluation Criteria 3: Efficiency		
Have the human resources been plotted efficiently?	Defined team structure and allocation of project team	• Document Review • Stakeholder consultations

Has the project been implemented in a timely manner?	• Whether timelines are defined or not • Whether there are any extensions given to the project • Resource mobilization	Document Review
Evaluation Criteria 4: Impact		
Has the project achieved its intended/ unintended impact on the beneficiaries?	Impact Indicators: • Establishment of a prototype for urban artificial quality water storage systems in India • Increased water security for Auroville and nearby community, contributing to regional resilience against water scarcity	• Survey Questionnaire • Stakeholder consultation with NGO team, employers
Evaluation Criteria 6: Sustainability		
What sustainability mechanisms are in place?	Mechanisms include (1) Stakeholder-led governance (2) Local capacity building for operational sustainability and (3) Financial sustainability through user fees, linkages, collaboration, etc.)	• Progress reports • Consultation with SLMTT and its implementation team
What is the perception of beneficiaries towards the continuation of these benefits	Percentage of respondents believing the outcomes to be sustained after the project	• Direct and indirect beneficiary questionnaire

Table 24: OECD-DAC Criteria

2.3. Stakeholder Mapping

A 'stakeholder' for the studies is defined as an individual or a representative who has an interest and provides a certain influence over the study being undertaken. Such stakeholders play a pivotal role in the implementation of programs, within the communities. For this impact assessment, four beneficiary groups were identified – Aurovillians (Beneficiaries); Representatives of the Auroville Foundation; Representatives of research organizations (LGA), lead engineers, town planners, other specialists involved in the project; and Donors.

Stakeholder	Rationale for inclusion	Type of stakeholder
Beneficiaries (Aurovillians)	They are the target beneficiaries of the project and the project aims to increase their accessibility to usable water	Primary

	throughout the year and increase the aesthetic value of the Matrimandir's surroundings.	
Donors	They are donors to the Matrimandir or Auroville Foundation motivated by faith or belief in the objectives of the project to donate.	Secondary
Technical experts- Representatives of research organizations (Landesgewerbeanstalt Bayern/ LGA), lead engineers, town planners, and other specialists involved in the project	They are technical experts of the project who have supported in development of the Test Lake in Matrimandir, developing the technical rigour to make it resilient against different climatic conditions and stand the test of time.	Secondary
Representatives of Implementation Partner NGO - Auroville Foundation	The NGO Partner handles the on-ground end-to-end operations at all levels of the Test Lake project from mobilization of resources to delivering on the promised results.	Secondary
Representatives of Implementation Partner-SLMTT	The project heads from SLMTT are responsible for monitoring the project and ensuring that the program runs efficiently and according to the plan set forth before the start of the project. They are also in charge of assisting during any challenges faced during the program	Secondary

Table 25: Stakeholder Mapping

2.4. Sampling Strategy

As the objective of the study was to let the impact emerge from the stakeholders and beneficiaries in an open-ended way, qualitative data collection tools were adopted. While efforts were made towards initiating a simple random sampling, owing to the nature of the community of intervention and limited time availability, the team proceeded with convenience sampling for community members of Auroville. For other stakeholders, such as representatives from the Auroville Foundation, SLMTT, donors, and technical experts, purposive sampling was employed.

The KPMG team, along with support from SLMTT and Auroville Foundation were able to cover a sample size of 33 respondents out of the 54 initially planned as tabulated below:

Stakeholder group	Targeted Sample	Sample provided	Achieved	Mode

Beneficiaries (Aurovillians)	50	47	27	Qualitative Questionnaire
Donors	0	3	2	Qualitative Questionnaire
Technical experts- Representatives of research organizations (LGA), lead engineers, town planners, and other specialists involved in the project	1	2	2	Qualitative Questionnaire
Representatives of Implementation Partner NGO - Auroville Foundation	2	2	1	Qualitative Questionnaire
Representatives of Implementation Partner-SLMTT	1	1	1	Qualitative Questionnaire
Total	**54**	**55**	**33**	

Table 26:Stakeholder Group and Sampling Strategy

The sampling methodology for this study involved a systematic approach to stakeholder mapping and purposive sampling. Initially, broad categories of stakeholders were identified to ensure a comprehensive representation of the target population. The sampling process combined purposive and convenience sampling techniques.

Stakeholder Mapping and Initial Sampling

To begin, stakeholder mapping was conducted to categorize stakeholders into broad groups. This helped in identifying key individuals and groups relevant to the study. The intention was to collect a diverse range of perspectives by targeting a specific number of samples from each category.

While the study aimed to cover 54 respondents, the actual number achieved was 33. The targeted sample was 50 beneficiaries, 2 representatives of the Auroville Foundation, 1 representative of research organizations (LGA), lead engineers, town or planners, and 1 SLMTT SPOC. A total of 55 stakeholders were contacted: 47 beneficiaries, 3 donors, 2 representatives from the Auroville Foundation, 2 technical engineers, and 1 SLMTT SPOC, based on the samples provided by SLMTT.

Potential participants were reached through various channels, including calls, emails, and messages. However, only 27 out of 47 beneficiaries were available to participate in the study, with others either unreachable or citing reasons such as low visibility of the project. Two out of three donors participated in the study, while the third donor was not available. Out of the two representatives from the Auroville Foundation, only one was available to participate in the study.

In total, the study received 33 responses: 27 from beneficiaries and 2 from donors. Additionally, the study received one response from the SLMTT SPOC, one from the representative of the Auroville Foundation and two from technical engineers.

2.5. Impact Map

The impact Map provides the program-wise output, outcome and intended impact against mapped program inputs/activities in the impact evaluation study.

Impact Map					
Objective	**Input**	**Activities**	**Output**	**Outcome**	**Impact**
To construct a 10-meter-deep lake utilizing an HDPE foil sealant, demonstrating that deep, zero-seepage water bodies can serve as cost-effective storage for large quantities of harvested rainwater.	**Financial Support Development of Matrimandir Test Lake**	Construction of the Matrimandir Lake first section using high technical standards, integrating local and imported materials like HDPE foil and geo-fabric and resources.	Completion of the first section of the lake with a storage capacity of 1 billion litres and a fully sealed water body with minimal seepage	A functional and stable section of the lake demonstrating the feasibility and effectiveness of the design and construction methods significantly reducing water loss and enhancing the efficiency of water storage	Establishment of a prototype for urban artificial quality water storage systems in India Increased water security for Auroville and nearby communities, contributing to regional resilience against water scarcity
		Construction of the Rainwater harvesting channel	1. Completion of the 1-kilometre-long, 7.5-metre-wide rainwater harvesting channel 2. Volume of water that is channeled via the rainwater harvesting channel into the test lake	Harvesting entire runoff from the encircled garden area around the Matrimandir and feeding it to the test lake	
		Implementing careful nutrient management strategies to prevent algae growth and maintaining water quality through conscious plantation and introduction of selected fish species	1. No. of activities and type of activity conducted to maintain water quality 2. No. of activities and type of activity conducted for preventing algae growth 3. No. of plantation activity conducted 4. Type of fish species introduced	Stable water quality with a balanced water ecosystem	

		Ongoing construction and expansion of the remaining sections of the Matrimandir lake	1. No. of new donors attracted 2. Amount of funding attracted basis the success parameters of test lake to fund the ongoing construction and expansion of Matrimandir lake	Increased financial support and stakeholder confidence, enabling the seamless continuation and timely completion of the Matrimandir lake project	

Table 27: Impact Map

CHAPTER 3

Findings from the Impact Assessment

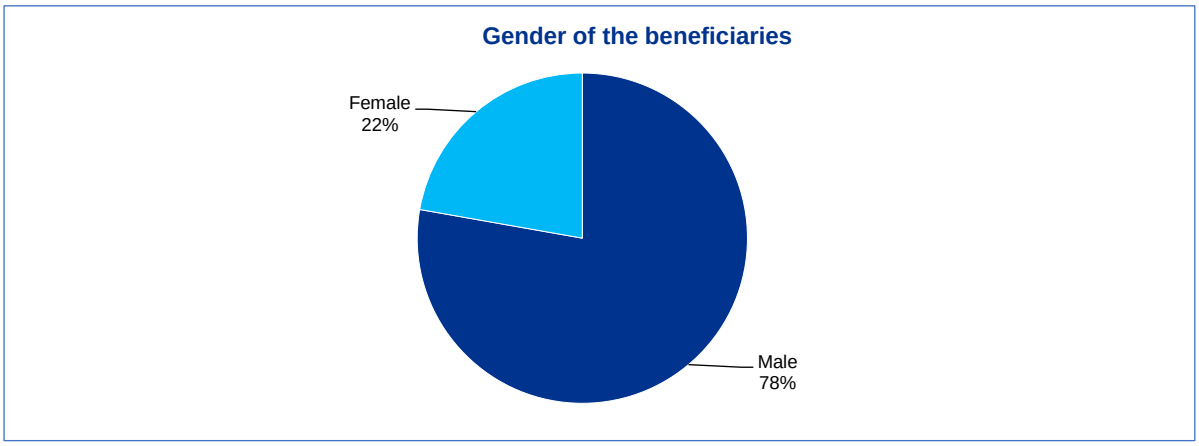
3. Findings from the Impact Assessment

The study evaluates the impact of the contributions made under CSR to the Matrimandir test lake. A primary and secondary assessment is conducted to evaluate the objective of the Matrimandir test lake and its impact on the nearby community and environment. The analysis also examines the implications of the program on the OECD-DAC framework, focusing on its potential to enhance the conservation of rainwater for community usage, aesthetic value as well as environmental value.

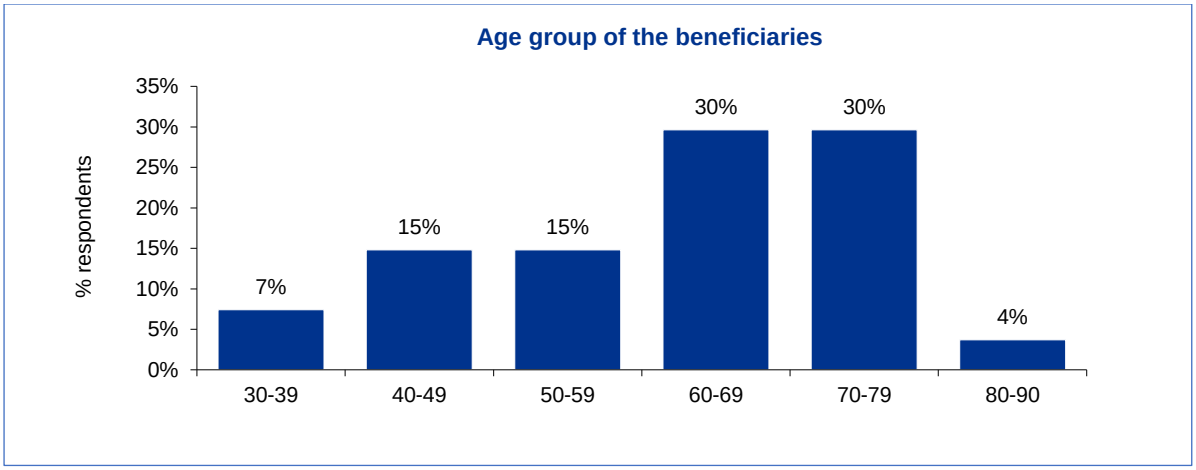
3.1. Demography of beneficiaries

In our recent demographic analysis of the Auroville beneficiaries, a total of 47 Aurovillians were reached out to of which 27 individuals consented to participate and were interviewed as part of this exercise. These beneficiaries, though they belonged to different parts of the world, are all residents of Auroville and have been residing in Auroville for more than 10 years, ensuring that the community's perspectives are wholly considered in evaluating this initiative.

Of the 27 beneficiaries surveyed, 78% were male and 22% female.



With respect to the age group of the beneficiaries, the majority accounting for 60%, fall within the age group of 60 to 79 years. 7% of the beneficiaries were in the age group of 30 to 49 years, 15% of the beneficiaries belonged to the age group of 40 to 59 years, 15% of the beneficiaries belonged to the age group of 50 to 69 years, and 4% of the beneficiaries fall within the age group of 80 to 90 years.



3.2. OECD Performance of the Program

The section below showcases the findings and observations ascertained based on surveys and interviews conducted with beneficiaries and stakeholders using the OECD-DAC framework. The OECD performance of the program has been evaluated on six criterions of (1) Relevance, (2) Coherence, (3) Effectiveness, (4) Efficiency, (5) Impact, and (6) Sustainability.

3.2.1. Relevance

As per the 2024 United Nations World Water Development Report[57], we are currently facing a water crisis. Half of the global population is facing water shortages wherein between 2002 and 2021, droughts have affected more than 1.4 billion people and led to the death of nearly 21,000 individuals. We also understand that almost half of the world's population experiences severe water scarcity for atleast part of the year. In such a scenario it is pertinent to ensure optimum utilization as well as tapping into novel methods of water conservation. Rainwater harvesting is one such method.

Specifically with respect to the geography of intervention i.e. Auroville, as per Auroville Water Group's report[58], the primary source of water available for Auroville, is rain that partly recharges the water tables. Given the erratic nature of rainfall, loss of a major portion to runoff and remaining portion to ground absorption creates barriers to easy access to water.

85% of the Aurovillians interviewed and all the stakeholders consulted confirmed that there were water-related challenges faced by the community. As understood from the Aurovillians, these ranged from issues of unavailability of potable/usable water (59%), loss of rainwater due to runoffs and evaporation (41%), and irregular rainfall (19%) among others[59].

Considering the same, the Auroville Foundation team undertook the initiative of creating a unique lake with the sole objective of devising a method to collect and store rainwater effectively to use throughout the year.

Conversations with other donors revealed that in their opinion, there was intense exploitation of groundwater in industry and agriculture. On top of that, rainwater loss to runoff especially around Matrimandir where there is a lot of flat land and saltwater intrusion were also valid concerns.

The SLMTT team opined that while cities consume a lot of water, the lack of free space restricts creation of large reservoirs. The Matrimandir test lake helped set the foundation to create a technically advanced reservoir that not only had a functional purpose but also an aesthetic and recreational element to it hence optimizing urban spaces. The SLMTT also spoke of the Auroville Center for Scientific Research whose findings served as the required need assessment and setting the foundation for the need of the Matrimandir Lake.

In line with the same, more than 90% of the beneficiary respondents felt that creation of the Matrimandir test lake was working towards addressing the water related issues faced by the community. 74% of the respondents believed that the lake would help in effective water storage in the lake to reduce losses from runoff and evaporation.

[57] The United Nations World Water Development Report, 2024

[58] Report on Water Situation in Auroville and Surrounding Area

[59] As respondents highlighted multiple issues, the sum total of all responses may not be 100%.

Hence, the project may be considered as highly relevant as it is aligned to the needs of the target beneficiaries and geography.

3.2.2. Coherence

SAMIL's contribution to the Matrimandir Test Lake aligns with SAMIL's core values, national priorities on water conservation as well as with the Sustainable Development Goals. We understand from the responses from SLMTT that, for the Motherson Group, it has been decided to focus on implementing water preservation initiatives such as reducing consumption and implementing harvesting solutions wherever feasible across the Groups' current global operations by 2030. Hence such an initiative is completely in strategic alignment with SAMIL's priorities.

As per SAMIL's CSR vision and focus areas, the project strives to create a more sustainable environment.

The SDGs include Goal 6: Ensure availability and sustainable management of water and sanitation for all and Goal 12: Ensure sustainable consumption and production patterns.

SDG	SDGs target	How is it aligned?
	Goal 6. Ensure availability and sustainable management of water and sanitation for all Target 6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.	The project is working to create harvest rainwater to ensure availability for the community's consumption through novel usage of technology. In the process, they are also creating a model that may be replicated by other communities at a national and global level
	Goal 12- Ensure sustainable consumption and production patterns Target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources	Through the project, the community is able to reduce their material footprint and domestic material consumption in terms of groundwater usage as they will be utilizing harvested rainwater.

Table 28: Alignment of Project with the SDGs

Among the notable initiatives at the national level, we firstly have the **"Catch the Rain" campaign launched in 2020 by the Government of India** with the tagline "Catch the rain, where it falls, when it falls," which aims to promote the creation of Rainwater Harvesting Structures (RWHS) across India. This initiative, spearheaded by the National Water Mission, aims to encourage states and local bodies to maximize rainwater harvesting. It focuses on constructing appropriate proper maintenance to enhance groundwater recharge. These

comprehensive efforts aim to enhance water conservation and ensure sustainable water resources across India.[60]

The Tamil Nadu State Ground and Surface Water Resources Data Centre has implemented several initiatives to promote rainwater harvesting (RWH) to combat water scarcity and enhance groundwater levels. These initiatives are tailored to both urban and rural areas, utilizing various techniques to capture and effectively use rainwater.[61] Multiple states have adopted policies to encourage RWH. Initiatives such as the **Atal Mission for Rejuvenation and Urban Transformation (AMRUT), launched in year 2015 and the Jal Shakti Abhiyan started in 2019, promotes RWH systems to mitigate water scarcity**.[62]

The **Central Ground Water Board (CGWB) has released comprehensive guidelines on rainwater harvesting, emphasizing the critical need for sustainable water management**. These guidelines outline the necessity of rainwater harvesting to address water scarcity and sustain groundwater levels. It underscores the importance of rainwater harvesting in regions facing water scarcity due to climatic conditions or high evaporation rates. The CGWB emphasizes that rainwater harvesting is a vital resource management strategy, essential for areas with water-related challenges.[63]

In Puducherry's neighboring state, The Tamil Nadu Water Supply and Drainage (TWAD) Board has played a significant role in promoting RWH. The board supports various methods of RWH, including rooftop and surface runoff collection, aimed at improving groundwater recharge and reducing urban flooding. The collected rainwater is either stored for direct use or used to recharge groundwater, which is crucial for maintaining water availability during dry periods.[64] The state is committed to sustainable water management.[65]

The Union Territory of Puducherry has implemented several significant initiatives to promote rainwater harvesting and address the pressing issue of water scarcity. One of the key measures taken by the government is the mandatory installation of rainwater harvesting systems in all new buildings. This regulation aims to conserve water and recharge groundwater levels, ensuring sustainable water management across the Union Territory. [66]

Recognizing the urgent need for rainwater harvesting, the Union Territory of Puducherry has committed to a measure outlined in the "Water Policy of Puducherry." According to this policy, all efforts are being made to store surplus rainwater in canals, ravines, and rivers by constructing small bed dams or regulators. To increase utilizable water resources, traditional water conservation practices, including rooftop rainwater harvesting, are being mandated through appropriate regulations. Periodic awareness campaigns will be conducted by related departments and statutory bodies to ensure the widespread adoption and practice of these measures. Additionally, the State Ground Water Unit will annually certify and encourage the ten best rainwater harvesting structures. [67]

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[60] Catch the Rain, National Water Mission

[61] State Ground and Surface water resources data centre

[62] Increasing adoption of rainwater harvesting technologies in rural India, India Water Portal

[63] Rainwater Harvesting Techniques to Augment Ground Water, Central Ground Water Board (CGWB)

[64] Rainwater Harvesting, Need and Best Practices (RWH), TWAD

[65] ibid

[66] Puducherry makes rainwater harvesting compulsory -Governance Now

[67] Action Plan on Restoration of Water Bodies in U.T. of Puducherry

The Department of Agriculture & Farmers Welfare in Puducherry has organized training programs on rainwater harvesting. These programs aim to educate government officers, representatives of commune panchayats, farmers, and social welfare organizations about the importance and practical implementation of rainwater harvesting systems. [68] By raising awareness and providing practical knowledge, these initiatives help foster community involvement in water conservation efforts. In addition to these measures, Puducherry is part of various groundwater management projects that incorporate rainwater harvesting as a crucial component. These projects focus on recharging aquifers and sustainably managing groundwater resources to ensure long-term water security for the region.[69]

Among the Aurovillians as well, there was unanimous agreement that the project integrated well with other water management and environmental initiatives in the world. About 65%-70% of the respondents felt that the project integrated well with other water management and environmental initiatives at the Auroville, local and national level as well. Other donors interviewed remarked that the lake resonates well with the sustainable development vision of Auroville where there is minimal or no vehicle movement in some areas, minimal air pollution, usage of windmills for clean energy generation and many other such initiatives.

Hence, we may conclude that the project is Coherent with the internal policies of the organization as well as external national and global policies.

3.2.3. Effectiveness

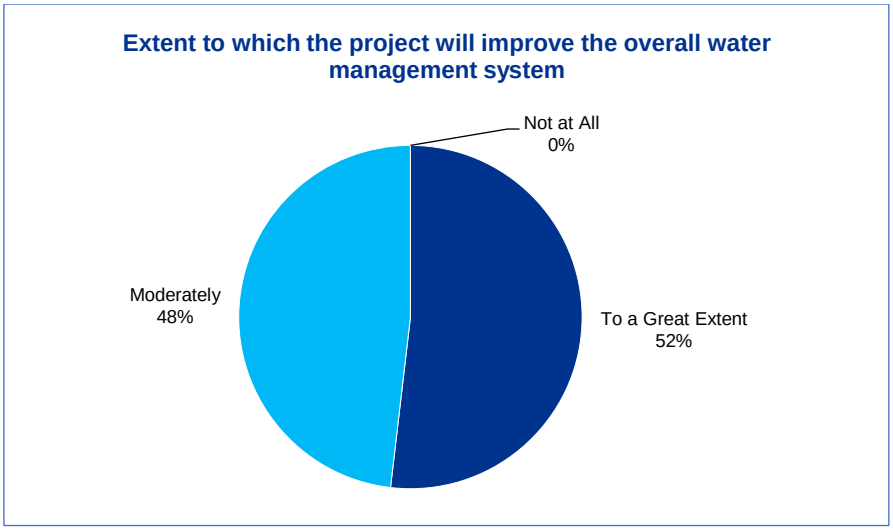
'Effectiveness' is an assessment of the factors affecting the progress towards outcomes for every stakeholder and validation of robustness of systems and processes by assessing the utilization of the resources. The criterion reviews the implementation strategy and mechanism. The purpose of this is to understand if the intervention has achieved its objective and the extent to which it did.

Our interaction with the implementation partner teams revealed that since the initiation of the project, the goals objectives envisioned for the project were very clear in terms of the project serving a dual purpose of improving aesthetics of the location as well as enhancing water availability for the local communities by introducing efficiency and reliability by modern methods. Further, the goals and objectives were defined clearly with a start and end date in the MoU. SAMIL's contribution supported in successfully completing the excavation of Test Lake's Section 1 and the Rainwater Harvesting. The lake was not only completed but also lined with HDPE Foil and granite chips which was an important milestone.

The respondents from Auroville as well as the stakeholders were mostly convinced that the project will help improve the overall water management system for them.

[68] Home | Department of Agriculture & Farmers Welfare, Government of Puducherry (py.gov.in)

[69] Department of Water Resources, RD & GR, Puducherry



While 52% of the respondents from Auroville were convinced of the improvement in the overall water management system would be considerable, 48% were able to foresee moderate improvement. This may also be due to the fact that the actual impact of the lake would be visible after the monsoon of the year of the survey.

The representatives from Auroville Foundation remarked that the machine procured from SAMIL's support to build concrete blocks for the lake is now producing 16 blocks a day, which is quite a feat as the blocks are quite big as well. The machine is being used in full capacity and the production has also picked up pace. With the help of the machine they were able to build a dam of 3 meters height which was 1 meter more than the targeted height of 2 meters.

On interviewing the technical experts, they further commented on the engineering solutions implemented to reduce water loss and enhance storage capacity. As per the technical experts, the engineering solutions, particularly the use of HDPE foil, are very effective with zero leakage and a long lifespan of up to 100 years, ensuring high storage capacity and sustainability. We understood from the donors that the lake was definitely on the path to meeting it's initial objectives in terms of water storage and management wherein with just a few showers it had filled up to a depth of 6-7 meters.

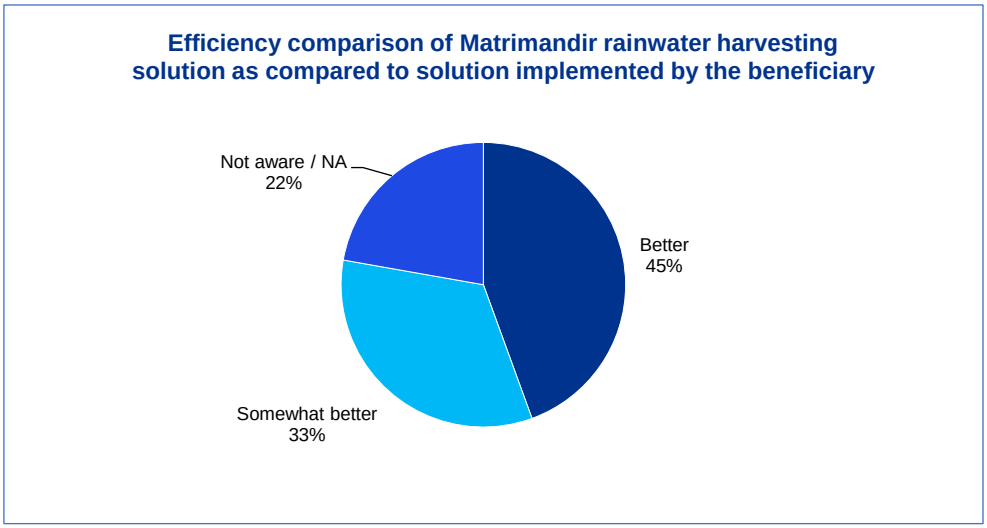
Basis the same we understand that the project's objectives are largely being achieved and the project was also implemented promptly. **Hence, we may conclude that the project is effective to a large extent.**

3.2.4. Efficiency

Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed. 'Efficiency' criterion aims to measure if the project was implemented in a cost-effective and timely manner. The purpose is to understand if the inputs (funds, expertise, time, etc.) were utilized efficiently to achieve the intervention outcomes. Factors such as budget utilization and timelines have been reviewed.

Our surveys with the respondent Aurovillians revealed that 59% of them had implemented some sort of a rainwater harvesting solution at their home or had witnessed someone around them implementing the same. These included pipes that were connected with underground

reservoirs that helped in collection of rainwater, recycling plants used for gardens where sewage water is recycled, and creation of small ponds. Less than 45% of the respondents were complete satisfied with the cost and time efficiency of these solutions. On requesting an efficiency comparison of the Matrimandir rainwater harvesting solution as compared to solution implemented by the beneficiary it was understood that 78% felt that the Matrimandir test lake-based solution is either better or somewhat better in terms of the cost and time investment required.



Our interviews with the technical experts revealed that the though the local clay-based technique is cheaper but as it is not sustainable, the solution may not be deemed efficient. The HDPE foil also allowed the lake to be lined in relevantly a time efficient matter. While there were initial delays in building the concrete blocks required for the lake but once the adequate machinery and skilling support was provided, the work picked up pace.

Donors revealed during the interview that while lining of the pond may be an expensive proposition, it is cost effective as there is elimination of cost being incurred on energy being spent on strong borewells. Donors were not aware of any delays or setbacks.

Conversations with the SLMTT team revealed that while there slight delays in a few interim activities, they were set off while picking up pace in other aspects of the projects as the on-ground teams were extremely motivated. They worked 7 days a week and even multiple shifts. This helped in achieving the overall goals of the project in a timely manner. They further corroborated that the entire budget towards the project was effectively utilized.

Representatives from the Auroville Foundation spoke of other alternatives of rainwater harvesting or water conservation as building small dams, bunding and planting more trees. Bunding may be the cheapest among them but was not economically effective as they were not a sustainable solution. While the Matrimandir HDPE foil lake based solution may have an initial capital cost but it would last atleast a century hence making it economical and cost effective. It was also reported that while there was internal deliberation within the community on the lake initially, it did not lead to any delays.

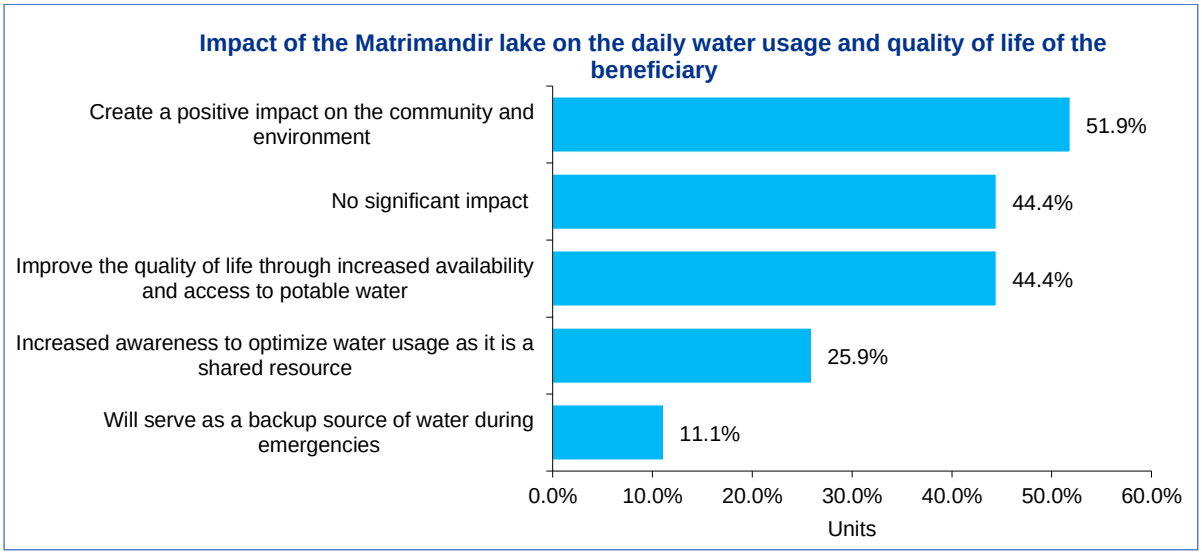
As the technology and model being developed at the Matrimandir test lake are novel in nature, the comparisons could only be drawn to itself in terms of the timeliness and cost effectiveness of the project intervention. Perceptions of the various stakeholders involved reveal that the project intervention largely utilized the resources well as human resources

were plotted well and the project was implemented as per it's timelines. **Hence, we may conclude that the project was moderately to highly efficient.**

3.2.5. Impact

A major goal of the test lake has to be established as a prototype to harvest rainwater for community usage and to increase the aesthetic value of the Matrimandir and its surroundings in a sustainable fashion while reducing losses to groundwater seepage, runoff and evaporation. We evaluate the responses of the respondents from Auroville and other stakeholders against the same.

Approximately 78% of the respondents from Auroville believed that the lake would contribute to solving water issues and improving the quality of life through increased availability and access to potable water. There were varied opinions on the impact of the Matrimandir lake on the daily water usage and quality of life of the Aurovillians.



A majority of the respondents, 56% precisely, were able to point out multiple benefits. These ranged from the lake having a positive impact on the community and environment, increased availability of potable water, serving as a backup source during emergencies and even increased awareness to optimize water usage as it is a shared resource. Approximately 44% of the respondents believed the lake would have no significant impact on their daily water usage and quality of life immediately. On delving deeper, it was understood that given the nascent stage of the lake's development, it would take several years for the impact to be unanimously felt among the wider community. The wider vision of the project involved creating structural and sustainable change that would take time to percolate and be felt among the community. On further inquiring the same beneficiary cohort, ~67% of them believed that it will lead to cleaner air, greenery and increased biodiversity.

Conversations with donors revealed that once the lake is complete, in it's first phase it shall serve Matrimandir gardens and it's immediate vicinity. In the second phase, it can start supporting the needs of the community. Eventually, the goal is that Auroville should be able to become water neutral or even water positive.

While technical experts were not able to comment on the actual impact achieved as they worked from a distant, donors did have some notable observations on the same. They mentioned that the quality of water was very clear and aquatic life had been observed which

is a very good indicator of the health of the lake. The project has had broader and unintended positive impacts, such as plans to create a hillock with excavated soil and plant trees.

These observations were echoed in the responses given by the representatives of Auroville Foundation. They also added on that, it was expected that the water evaporation will be 1 cm per day during summers however, but it has been observed that it is just 4mm per day during summers. We further understood from them that SAMIL's funding support was pivotal in achieving the above-mentioned impact and they can attribute 25% to SAMIL's support in achieving the overall goal of Auroville Foundation for this project.

We understand that the actual impact of the lake are yet to materialize and shall be visible only after the monsoon of 2024-25. Further, the broader completion of the lake is also a phased process that will require about a decade to become completely self-sustainable and functional and will reap results in due time. Responses received from the survey were based the perceptions of the respondents on the impact the project will create in the future or interim indicators pointing at the health of the lake. **Owing to these reasons, while the project prima facie holds immense potential for the future, we may conclude that as of time of evaluation the project may rate moderately impactful.**

3.2.6. Sustainability

This criterion assesses the likelihood that project achievements will continue after the project. This includes an examination of the capacities of the systems needed to sustain benefits over time. The criterion analyses the resilience, risks and potential trade-offs. The purpose of this criterion is to look at the longer-term effects of the intervention. The different aspects of sustainability include financial, institutional, technological etc. These different aspects have been assessed when looking at the sustainability of the intervention.

There was unanimous agreement within the respondents on the fact that the benefits provided by the Matrimandir Lake can be sustained over the long term. They believed the same could be achieved if the efforts continue to be put in by the teams on ground and community support (77%).

While interviewing the representatives from Auroville Foundation and SLMTT, it was understood that given the scale of the project, no single donor could meet these funding requirements. These were being mobilized from multiple resources to complete the lake. Once the lake is completed, they believed that minimal maintenance support would be required as there is no algae growth and the HDPE foil is self-sustainable that way. Technical experts also expressed their confidence in the HDPE foil. Donors interviewed responded that for them sustainability in terms of independence from external funding for the project in the future was not a significant factor. Their contributions in the lake were from a faith-based perspective and not assessing the sustainability of it as they do for other CSR initiatives or donations.

Basis the analysis above, it is understood that the community is driven to ensure the lake is sustainable in the long run. The technology used is durable and resistant to different climatic conditions it will be exposed to. Further, Auroville Foundation has the means to mobilize the funds from different sources given the faith people have in it's cause. **Hence, we may conclude that the project interventions is sustainable.**

CHAPTER 4

Conclusion

4. Conclusion

4.1. Overall assessment of the program's success

Overall, we may conclude that the project is aligned with the goals and objectives it had set for itself. The program fared extremely well on relevance, coherence, effectiveness, and sustainability. The program was rated moderate to high in terms of efficiency and impact.

As the technology and model being developed at the Matrimandir test lake are novel in nature, the comparisons could only be drawn to itself in terms of the timeliness and cost effectiveness of the project intervention. Perceptions of the various stakeholders involved reveal that the project intervention largely utilized the resources well as human resources were plotted well and the project was implemented as per it's timelines. We understand that the actual impact of the lake are yet to materialize and shall be visible only after the monsoon of 2024-25. Further, the broader completion of the lake is also a phased process that will require about a decade to become completely self-sustainable and functional and will reap results in due time. Responses received from the survey were based on the perceptions of the respondents on the impact the project will create in the future or interim indicators pointing at the health of the lake. They were largely optimistic in nature.

Nevertheless, the project is relevant to the needs of the target beneficiaries and stakeholders and coherent with internal and external policies. It is understood that the community is driven to ensure the lake is sustainable in the long run. The technology used is durable and resistant to different climatic conditions it will be exposed to. Further, Auroville Foundation has the means to mobilize the funds from different sources given the faith people have in it's cause. The lake holds huge potential in terms of creating an impact for the nearby community and the environment. The lake may also serve as a prototype to be replicated in other parts of the country and the world.

4.2. Strategic recommendations for future initiatives

Broad recommendations for the future initiatives with respect to the Matrimandir Test lake and similar initiatives are as below

1. At the time of project conceptualization, rigorous Key Performance Indicators (KPIs) should be formulated that allow monitoring and reporting of progress over time. A large part of the KPIs were based on broad activities as opposed to measurable indicators.
2. There is a need for better reporting as part of periodic monitoring. The submitted reports are largely narrative or anecdotal in nature and there is a need for more objectivity while reporting.
3. For the lake prototype to be replicable across geography and time, the on-ground implementation partner may strengthen the reporting process to objectively and succinctly document the process leading up to the lake's functionality and the hurdles faced along the way. This will lead to the project serving mankind as envisioned.

Contributing Authors

This report has been prepared by the ESG team of KPMG in India. The team comprises of

- Mohammad Gulrez
- Mudita Lall
- Aparajita Singh
- Tarif Abbas
- Vaidehi Kaul
- Ekta Godara
- Rakshita Singh
- Samridhi Agarwal

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