Mid Term Evaluation

Of

Plastic Waste Recycling Management: A partnership Project

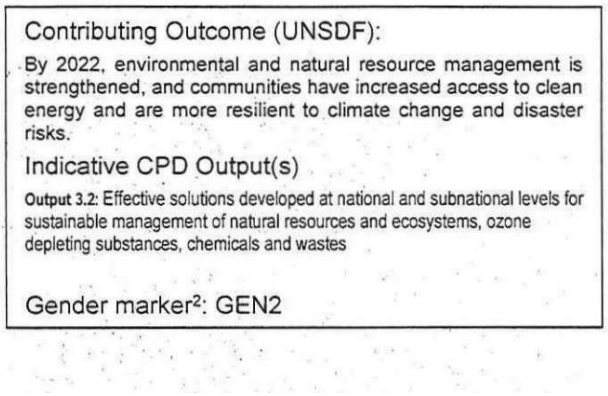
A report submitted by

Dr Shyamala K. Mani

August 2023

Project Information Table

S.No.	Description	Details
1	Title of PWM UNDP supported by private sectoral donors	Plastic Waste Recycling Management: A Partnership
2	UNDP project ID#	00096923
3	Project Number (Atlas Output ID)	00100826
4	MTR time frame	January 2018- October 2022
5	Region and countries included in the project	Pan India
6	Executing Agency/Implementing Partner and other project partners	Independent consultant
7	MTR team members	Dr. Shyamala K. Mani
8	Acknowledgements	All team members of UNDP team implementing Plastics Recycling Project
9	Funding/ Donor source	Hindustan Coca-Cola Beverages Private Ltd. (HCCBPL) and Hindustan Unilever Ltd. (HUL)
10	Implementing agency	UNDP through partner NGOs



Contributing Outcome (UNSDF):

By 2022, environmental and natural resource management is strengthened, and communities have increased access to clean energy and are more resilient to climate change and disaster risks.

Indicative CPD Output(s)

Output 3.2: Effective solutions developed at national and subnational levels for sustainable management of natural resources and ecosystems, ozone depleting substances, chemicals and wastes

Gender marker[2]: GEN2

Total resources required:	USD ($) 22,777,137	
Total resources allocated:	UNDP TRAC:	$200,000*
	Donor (HCCBPL):	$16,609,808*
	Donor (HUL):	$1,093,166*
	Total (In Cash)	$17,902,974
	In-Kind:	
	State Govt./ULBs	$3,294,923
	NGO/Recyclers/RWAs	$1,579,240
	Total (In Kind)	$4,874,163

Evaluation Information		
Evaluation type (project/outcome/thematic/country programme etc)	Project	
Final/Mid Term/ Other	Mid Term	
Period under evaluation	Start	End
	January 2018	October 2022
Evaluators	Shyamala Krishna Mani	
Evaluator email address	Shyamala.mani@gmail.com	
Evaluation dates	Start	End
	August 25th, 2022	April 31st, 2023

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Special thanks go to Ms. Saloni Goel, Head of Circular Economy & Plastic Waste Management, Mr. Ramakrishna Bhatta, Project Officer (Finance and Operations) for the Plastic Waste Management Project, and Dr. Shilpi Karmakar, Project Manager for the Plastic Waste Management Project, for their continuous assistance and diligent follow-up throughout the review process. I also extend my gratitude to Dr. D.P. Rath, Ms. Pratibha Sharma, Ms. Alpita Rathod, and Ms. Priyanka Walanj for their valuable support during the MTR process.

Furthermore, I acknowledge the significant contributions of the implementation partners to this review process. Their warm reception, candid responses during direct interviews and MRF visits, and their cooperation in providing questionnaire-based feedback from their workers and associates were instrumental in enhancing the comprehensiveness of the review.

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Acronyms and Abbreviations

AIPIA	All India Plastic Industries Association
AIPMA	All India Plastic Manufacturing Association
ASSOCHAM	Associated Chambers of Commerce & Industry of India
BER	Back-End Recycler
CII	Confederation of Indian Industries
CIPET	Central Institute of Plastic Engineering Technology
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
DRWHF	Decentralized dry waste handling facility
EPR	Extended Producer Responsibility
FICCI	Federation of Indian Chambers of Commerce & Industries
HCCBPL	Hindustan Coca Cola Beverages Private Limited
HUL	Hindustan Uni-Lever
ICPE	Indian Centre for Plastics in the Environment
IP	Implementation Partners
MoHUA	Ministry of Housing and Urban Affairs
MRFC	Material Recycling Facility Centre
MT	Metric Tonnes
MTR	Mid-term Review
NGO	Non-Governmental Organization
PIBO	Producers, Importers, Brand Orders
PWM	Plastic Waste Management
RWA	Resident Welfare Association
SDG	Sustainable Development Goals
SHG	Self Help Group
SK	Safai Kendra
SPCB	State Pollution Control Board
TOR	Terms of Reference
ULB	Urban Local Body
WtE	Waste to Energy

Executive Summary

The Plastic Waste Recycling Management: A Partnership project, jointly undertaken by UNDP India in partnership with Hindustan Coca-Cola Beverages Private Ltd (HCCBPL) and Hindustan Unilever Limited (HUL), was initiated in 2018 with the establishment of Material Recovery Facilities (MRFs) in 36 locations across 25 cities. The project's overarching goal was to address the critical issue of plastic pollution and to promote sustainable plastic waste management practices. As the project progressed, it encountered challenges, particularly with the changing Extended Producer Responsibility (EPR) policy landscape, resulting in some MRFs becoming redundant and leading to the early exit of Private Individual Business Operators (PIBOs).

Despite these challenges, HCCBPL and HUL demonstrated commendable resilience and adaptability to the evolving policy environment. Notably, the project successfully formalized 11,889 Safai Sathis (waste-pickers), significantly improving their socio-economic conditions through collective efforts and the formation of Self-Help Groups (SHGs). The implementation of extensive awareness workshops and training programs effectively boosted citizen participation and facilitated better plastic waste segregation at the source.

The Mid-Term Review (MTR) yielded a positive assessment of the project's strategy, progress towards key deliverables, and gender equity. However, certain aspects, such as the declining number of functional MRFs and the project's overall sustainability, raised concerns. In response, the MTR underscored the importance of efficient documentation and a revised approach to effectively address the evolving Plastic Waste Management (PWM) and EPR policies.

Moving forward, it is imperative to sustain and scale successful MRFs, ensuring their financial viability through strategic market linkages, and fostering stronger collaboration with diverse stakeholders, including ULBs, citizen forums, recyclers, and aggregators. A pivotal aspect is prioritizing the social and financial inclusion of Safai Sathis, necessitating innovative financing models to support their initiatives. Additionally, designing and executing a nationwide behavioural change campaign will play a vital role in promoting responsible plastic waste management. Furthermore, encouraging innovators and startups in the recycling and repurposing domain is vital for achieving long-term success.

In conclusion, the HCCB-UNDP & HUL-UNDP partnership effectively executed the Plastic Waste Recycling Management project, leading to the formalization of Safai Sathis and widespread awareness about responsible plastic waste management. Embracing the dynamic policy landscape, HCCBPL and HUL successfully completed their projects and are currently exploring new avenues to support the community in an effective and sustainable manner. As we move forward, a comprehensive and well-aligned approach will be pivotal in overcoming challenges and ensuring the enduring success of the project.

Project Description

The project "Plastic Waste Recycling Management - A Partnership," initiated in 2018 by UNDP India Country office in partnership with Hindustan Coca Cola Beverages Pvt Ltd., & with Hindustan Unilever limited aims to catalyse transformative changes in India's plastic waste management practices. Aligned with the Swachh Bharat Mission and Plastic Waste Management Rules 2016 & amendments, the project envisions a socio-technical model to achieve enhanced resource utilization and uplift the lives of waste pickers by institutionalizing them within the governance framework as Safai Sathis, leading to improved social conditions.

With the generous support of two donor partners, HCCBPL and HUL, the project seeks to effectively manage approximately 87,000 MT of plastic waste over a 6-year period with HCCBPL, and around 34,300 MT in 4 years with HUL. This approach holds the potential to create a positive impact, improving the socio-economic conditions of 32,600 Safai Sathis. Furthermore, the project remains open to other producers, importers, and brand owners (PIBOs) who utilize plastics for packaging, as they may consider joining the initiative in the future, contributing to its scalability and expanding its positive influence.

Project Components and Activities

The project is structured into 4 components. These are

Component 1: Socio-technical model for packaging plastic waste management developed,
supported and implemented.
Component 2: Pilot Material Recycling Centres (Swacchta Kendras) for improved plastic waste
management implemented.
Component 3: Institutionalization of Swachhta kendras within governance bodies and improved socio-economic conditions of waste pickers obtained.
Component 4: Knowledge management, monitoring and communication system developed.

Significant activities listed under the components are:

Under the project, the following technical and passive activities have been undertaken:

1. The foundation of a socio-technical model for plastic waste management has been established, encompassing aspects such as plastic waste generation, collection, segregation, recycling, and exploring other end-use options. Health and environmental impacts have also been assessed at the project level.

2. Model implementation has been demonstrated through the establishment of Swacchta Kendras (SKs), which serve as integrated decentralized dry waste handling facilities (DRWHFs) / Material Recycling Facility Centres (MRFCs) to enhance dry waste management.

3. Safai Sathis have been institutionalized within governance bodies, namely Municipal Corporations/Municipalities, aiming to improve their socio-economic conditions significantly.

4. A comprehensive knowledge management, monitoring, and communication system has been designed and effectively established, ensuring efficient information dissemination and tracking of project progress.

5. The Swachhta Kendra has been instrumental in securing a relatively stable economic share of the value chain by directly linking and entering agreements with back-end recyclers. This measure ensures the sustainability and viability of the recycling process.

Evaluation approach and rationale

The evaluation approach exercised a comprehensive set of criteria to assess the project's performance based on its stated objectives, outputs, and outcomes as outlined in the project documentation. This approach aimed to gain a thorough understanding of the project's evolution, including the establishment of baselines, data collection methods, theory of change, results framework, and the overall efficacy of the proposed project methodology.

In line with required standards, the evaluation also considered cross-cutting issues to ensure a holistic assessment of the project's impact. These issues encompassed environmental safety, economic viability, inclusivity, gender equality, and the livelihoods of waste collectors, aggregators, recyclers, and retailers. By framing targeted questions, the evaluation captured the significance of all three pillars of sustainable development, namely Economic, Social, and Environmental aspects. Additionally, the evaluation process considered specific disaggregated data, providing insights based on gender and other relevant categories.

A rigorous examination of the project's performance was conducted, analysing the extent to which it achieved its intended objectives and contributed to the desired outcomes. Key performance indicators were utilized to quantitatively measure progress and ascertain the effectiveness of various project components. Qualitative assessments were also undertaken to gain deeper insights into the project's impact and its alignment with the overarching goals of sustainable plastic waste management.

The evaluation approach adhered to evaluation principles, ensuring impartiality, reliability, and validity of the findings. A combination of desk reviews, field visits, interviews, and surveys facilitated data collection from multiple sources to triangulate information and enhance the credibility of the evaluation results. This approach allowed for a comprehensive understanding of the project's strengths, weaknesses, opportunities, and threats, providing a basis for actionable recommendations.

Furthermore, the evaluation considered the context in which the project operated, acknowledging the dynamic nature of the plastic waste management landscape and the changing policy environment. This contextual analysis enabled the identification of

external factors that influenced project implementation and contributed to a nuanced assessment of the project's performance.

In conclusion, the evaluation approach employed robust criteria, thorough data collection methods, and an inclusive analysis framework to assess the Plastic Waste Recycling Management project's performance. By adhering to international standards and emphasizing the principles of sustainability, inclusivity, and gender equality, the evaluation provided valuable insights to enhance the project's effectiveness and ensure its long-term success. The comprehensive evaluation report encompasses actionable recommendations, guiding future project initiatives for improved plastic waste management practices in India.

Evaluation Objective Purpose and Scope

1. The clarity and measurability of project objectives, outcomes, and activities would be assessed to ensure they are well-defined.
2. The definition of clear targets and timelines for achieving outcomes and activities would be examined to determine their effectiveness.
3. The extent of progress towards achieving objectives, outcomes, and activities would be evaluated, along with identifying factors contributing to success or challenges faced.
4. The alignment of strategies and action plans with the Sustainable Development Goals (SDGs) would be analyzed, along with compliance with local laws, promotion of gender equity, and adherence to international treaties.
5. Recommendations and suggestions for enhancing project implementation would be provided, focusing on areas of improvement and opportunities for greater impact.

Evaluation Method:

The evaluation was conducted following international standards and employed a variety of methods to ensure comprehensive and reliable findings.

1. Performed a thorough desk analysis of provided and requested documents to gather relevant information.
2. Conducted semi-structured interviews and consultations with a diverse range of stakeholders to obtain comprehensive insights.
3. Devised a mission plan to visit Material Recovery Facilities (MRFs) for on-site evaluations.
4. Developed tailored questionnaires for different stakeholders, emphasizing specific aspects related to plastic waste management.

Data collection systems were established, ensuring accurate recording of data on collection, processing, recycling, and creating a mapping dashboard for traceability. Regular production of comprehensive reports was ensured throughout the evaluation process. Financial aspects of the project were studied, including waste collection, processing, and disposal data, as well as associated processing and transportation

costs. Data analysis, interpretation, gap analysis, and report writing were conducted to provide valuable insights.

Cross-cutting issues such as environmental safety, economic viability, inclusivity, gender equality, and livelihoods were carefully addressed in the evaluation process. Secondary data was collected and analyzed to complement primary findings and gain a holistic understanding of the project's impact and challenges.

The evaluation adhered to international standards and methodologies, guaranteeing objectivity and credibility in its findings. Recommendations and actionable insights were derived from the evaluation to enhance plastic waste management practices and contribute to sustainable development goals.

Limitations

1. The sample size was limited, consisting of only two Implementing Partners (IPs) with 8-10 responses from each IP. Additionally, only one mission was permitted, although two were initially requested (notwithstanding, a visit to the location in BBSR was conducted for study purposes).
2. Efforts to obtain maximum responses were made, but contacting non-permanent beneficiaries proved challenging, resulting in limited data from this group.
3. Disaggregated data by gender and age was not fully available, leading to incomplete columns in the data reflecting these categories.
4. Despite reminders, no filled responses were received from the donors, which affected the completeness of the data.
5. Government functionaries and community-based organizations, including residents' associations, also did not submit filled questionnaires, limiting the perspectives and insights from these stakeholders.

Project Findings Summary

1. The establishment of Material Recovery Facilities (MRFs) in 36 locations across 25 cities commenced in 2018 as part of Project Prithvi (HCCB). Additionally, MOUs were initiated with ULBs to enhance collaboration. In Mumbai, HUL-supported MRFs were set up in 3 out of 4 planned locations.

2. The number of functional MRFs supported by HCCB began decreasing, going from 33 in December 2020 to 20 in December 2021. Subsequently, only 8 MRFs were operational in the first quarter of 2022, which further reduced to 6 in the second quarter. A few MRFs were taken over by other donors or state government departments.

3. The amendment to the PWM Rules in Feb 2022 led to changes in the EPR Rules, enabling Private Individual Business Operators (PIBOs) to directly obtain EPR certificates from recyclers. Consequently, some MRFs became redundant, and traceability mechanisms were no longer necessary.

4. PIBOs seized this opportunity to exit the project earlier than agreed, i.e., after the 4th year instead of continuing until the 6th year, as the cost of obtaining EPR compliance certificates directly was more feasible for them than operating MRFs.

5. The MRF system involves operational costs and worker safety, whereas PIBOs can purchase certificates without such responsibilities, making it challenging to match their costs with the MRF system.

6. In the Mumbai project supported by HUL, 3 out of the 4 planned MRFs remained functional until October 2022.

7. HCCBPL and HUL have successfully completed their projects with UNDP while adapting to the changing EPR policy landscape.

8. They acknowledge the significance of functional MRFs in addressing the challenges faced by the Safai Sathis.

9. Instead of extending their contracts with UNDP, they are exploring alternative ways to support the community more effectively and sustainably, such as funding IPs through CSR funds for the socio-economic benefits of Safai Sathis.

10. A reason was found by the PIBOs to exit the project after the 4th year instead of fulfilling the original commitment to continue until the 6th year. Overcoming this barrier was challenging as the cost of obtaining EPR compliance certificates for the PIBOs through the MRF system could not be matched. The MRF system necessitates minimum care and expenditure, particularly for operational costs and worker safety, while the PIBOs now acquire certificates without assuming such liabilities. In the project aided by HUL in Mumbai, 3 out of the 4 planned MRFs were operational until October 2022.

11. HCCBPL and HUL have effectively concluded their projects with UNDP, adapting to the evolving EPR policy landscape.• The importance of functional MRFs in addressing the challenges faced by the Safai Sathis was recognized by them.• Consequently, the donors have chosen not to extend their contracts with UNDP and are now exploring alternative ways to support the community in a more effective and sustainable manner, such as providing funding to IPs through CSR funds for the socio-economic benefits of Safai Sathis. They are supporting city governments for conducting awareness and training workshops for improving segregation of waste at source

MTR Rating & Achievement Summary

MTR Rating & Achievement Summary Table 1 of “Plastic Waste Recycling Management - A Partnership” being implemented by UNDP India Country office with support from private partners started in 2018 by the donors HCCBPL and HUL

MTR Criteria	MTR Rating	Comments
Project Strategy	Green	The project proposal was developed based on the previous project implemented and lessons learned. Experts were consulted and an international consultant was hired to draft the project proposal to the satisfaction of the donor partners.

		The project is designed to address a specific and relevant environmental threat issue of plastic pollution. The project is relevant in many respects. It focuses on the following project objectives: Develop, implement, and support an economically sustainable model for managing plastic waste from packaging, ultimately reducing the negative impact of plastic use on the environment and health. Design, sustain and support elements to institutionalize the plastic waste management model in governance bodies in cities. Create improved socio-economic conditions for waste-pickers The project's Theory of Change was designed with the perspective of only plastic waste collection and recycling, while certain gaps in terms of considering the non-recyclable fractions of plastics, change in regulatory & policy landscape were not considered in the theory of change. Project Activities are correctly phrased and described in sufficient details in most cases, including budgets; few activities could be further defined to meet the exact deliverables like EPR along with considering the right budget for execution of those activities
Progress Against Key Deliverables	Green	The project was rolled out in 25 cities, establishing around 36 MRFs in various locations. Several MOUs were initiated with the ULBs in the cities. Simultaneously plastic waste collection was initiated and a total of 125,011 MTs (HCCB+HUL) in 4 years out of a target of 1,21,300 in 6 years of plastics were collected. The project was able to formalize 11,889 Safai Sathis nationally (gender wise data not given) while over 300 workshops were conducted and 90 SHGs formed. With the evolving policy landscape of Plastic waste Management & Extended Producer Responsibility there was shift of donor interest in retaining the MRFs, the functional MRFs started to reduce from 33 in December 2020 to 20 by

		December 2021. It further dropped to 8 MRFs in the first quarter of 2022 and to 6 in the second quarter. The amendment to the PWM Rules 2016 in Feb 2022, which changed the EPR Rules and allowed PIBOs to obtain EPR certificates directly from recyclers resulted in MRFs becoming redundant and rendered the elaborate mechanism of establishing traceability unnecessary, thereby giving the PIBOs a reason to exit the project after the fourth year instead of continuing till the sixth year. This barrier was difficult to overcome since it is difficult to match the cost at which the PIBOs obtain their EPR compliance certificates with the MRF system, which requires a certain minimum care and expenditure especially towards operational costs and safety of the workers with the cost of purchasing them sans liabilities. In the project supported by HUL in Mumbai, 3 out of the 4 MRFs planned were functional until Oct 2022.
Progress Towards Results		
Component 1: Socio-technical model for packaging plastic waste management developed, supported, and implemented	Outcome 1 (Sociotechnical Model) Achievement Rating: (rate 6 pt. scale) 4.25/6	Very few baseline studies were done and no pilots were done nor any testing of the socio-technical model conducted before rolling out the project in 25 cities. The project was rolled out in around 33 MRFs in 25 cities for HCCB plus 4 MRFs in 4 wards in Mumbai with support of HUL for implementation of the socio technical model for packaging plastic waste management. However, the MRFs reduced to 22 MRFs in Dec 2021 and in the 4th year until end of Q2 only 8 were remaining, which also finally closed in Oct 2022. The gap was in documentation of the baseline studies and other relevant action taken for the implementation of the said component. delivery is 70.8% of planned by the Mid-Term
Component 2: Material Recovery Centres (Swacchta Kendra) for	Outcome 2 (Material Recovery Centre) Achievement Rating:	HCCBPL – (Started with 33 MRFs in 25 cities but were left with 22 MRFs in Dec 2021 and in the 4th year until end of Q2 only 8 were remaining, which finally closed).

improved plastic waste management developed implemented	(rate 6 pt. scale) 3/6	Some of the MRFs were as per standard design and others were retrofitted or accommodated in the space allotted by the ULBs making them congested and unsafe and hence did not achieve the objectives of achieving 'a socio-technical model' ideal for the safai sathis to work at. HUL – 3 MRFs out of 4 planned were executed delivery is 50% of planned by the Mid-Term
Component 3: Institutionalization of Swachhta Kendra in governance bodies and improved socioeconomic conditions of waste pickers obtained	Rating 4.2/6	The project has been successful in onboarding several erstwhile waste workers as Safai Sathis. A total 11889 Safai Sathis were onboarded under HCCB out of the 33334 targeted until mid-term, while 1227 Safai Sathis were onboarded under HUL out of the Midterm Target of 1200 Safai sathis. To improve the socioeconomic conditions, the safai sathis were collectivised and formed into SHGs to facilitate their linking to banks, ensuring social security measures like having identity cards, insurance cards, etc. This helped improve their socio-economic conditions. delivery is 70% of planned by the Mid-Term
Component 4: Knowledge management, monitoring and communication system developed	Rating 4.8/6	579 Number of training programmes on project implementation, skill building, systems approach were conducted by HCCB although no break-up was found for the data provided. Under HUL a total of 219 activities were conducted which can be further broken up as Awareness activities: 98; Safai sathi capacity Building activities: 36; Health camps: 19; Project meetings: 66. delivery is 80% of planned by the Mid-Term
Project Implementation	(rate 6 pt. scale) 4/6	Overall effectiveness of project management as outlined in the Project Document is good, however lack of proper documentation is the

and Adaptive Management		biggest barrier in efficient evaluation and effective ranking of the project's progress. UNDP created a good human resource team and oriented them adequately for constantly supporting the Implementation, Enterprise and Special partners and helping them maintain accurate data regarding the incoming and outgoing books of material as well as revenue and their supporting traceability documents. The project has successfully created a lot of awareness among citizens and some good models of citizens participation and enhanced collection of plastics preventing littering was established through various activities, workshops etc, however the project needs to retrospect on its approach and charter a new course of steering this project for better efficiency and impact with the evolving landscape of PWM, EPR and other climate centric initiative dealing with Plastic Pollution.
Gender Equity	5/6	Gender equality is not just about employing a few women and onboarding women as safai sathis to fulfil the target. Women in this sector have contributed significantly especially in the area of recognizing and sorting different categories of dry waste especially waste plastics. It is just that they have different needs ergonomically, physically, in terms of sanitation, a place to look after and nurse their children and sometimes change, rest, which are common to all genders and these must be catered to. The project gave importance to this cause and worked towards gender equality to a great extent although it may not have achieved a great deal since this kind of thing takes time.
Sustainability	(rate 4 pt. scale) 2.5/4	There is an opportunity to improve the institutional framework and governance surrounding sustainability efforts. By considering the perspectives and experiences of collectors and aggregators, as well as established institutions like NGOs, its needed to be ensured that the project's efforts are efficient and effective. While there has been some progress

		in building skills related to sorting and identifying high-value plastics, it may be worth reassessing the emphasis placed on certain machinery like the 'Phatka machine' and extruder to avoid unnecessary costs, environmental, health, and operational stress. Additionally, by increasing the number of registered recyclers capable of issuing valid recycling certificates, we can better regulate the industry and reduce the prevalence of unregistered and illegal facilities.

Note: (color code as Green= Achieved Yellow= On target to be achieved Red= Not on target to be achieved)

Concise summary of conclusions

- Partial achievement was observed in establishing the foundation of a socio-technical model among the four components.
- For the component demonstrating the model through Safai Kendras, some were successfully planned and built on dedicated land, ensuring proper facilities. However, others received retrofitted ideas and equipment due to space limitations, falling short of being considered as a model.
- The institutionalization of Safai Sathis and improvement of their socio-economic conditions through government schemes were well-implemented, though it remains unclear whether the exact target numbers were achieved.
- The design and establishment of the knowledge management system included the creation of a dedicated software and data upload, but the lack of maintenance led to its current unavailability.
- In ensuring a relatively secure economic share of the value chain, partial success was achieved. Notably, a significant portion of the waste coming to the MRF is non-recyclable, resulting in higher disposal costs compared to recyclable earnings.

Recommendations

Table 2: Recommendation table

Corrective actions for the design, implementation, monitoring, and evaluation of the project
1. It is recommended to adopt the time-tested UNDP model for developing a strategy, which involves a participatory, multi-stakeholder approach based on primary and secondary research, and proper validation.
2. To ensure the accuracy and effectiveness of a socio-technical model, it is important to consult with scientific and regulatory institutions that have a thorough understanding of the subject matter. Therefore, when developing such a model, it is highly recommended that assumptions not be made without first seeking input from these institutions.
3. It is recommended to not to skip steps like establishing advisory committees, stakeholder committees, having regular interaction and getting feedback from policy makers, donors, implementers, regulators, beneficiaries and involve all stakeholders including the

Implementation Partners and beneficiaries in planning, implementing, self-evaluation and course correction.
4. Make sure pilots are well designed, need based and adaptive and make sure the output steps are followed meticulously, for instance of having 10 pilots in the first year instead of jumping into establishing 33 models in the first year and not being able to sustain them
5. It is recommended to avoid being donor-driven and not succumb to unnecessary pressure from specific stakeholders, even if they are donors. Instead, focus on developing a comprehensive and sustainable project plan through a participatory approach with all stakeholders' inputs, needs and priorities.
6. Make a hypothesis for the theory of change (anticipated impact) and review it and change it, if necessary, at the end of the first year after the 10 pilots have given the necessary feedback
7. Make sure that the real beneficiary, in this case the waste worker/ safai sathi, is truly benefited. Do not compromise any objective, risking their livelihood by changing indicators. In case a new model for waste management is being proposed, it is recommended to involve experienced professionals and stakeholders in the field.
8. Conduct baseline surveys to determine the status of waste workers in terms of age, gender, daily earnings, city type, dwelling conditions, and access to healthcare, nutrition, and education for their children. Based on the findings, include more development-based indicators in the waste management plan to ensure the well-being and socio-economic development of waste workers.
9. Conduct baseline surveys on existing Material Recovery Facilities (MRFs), Dry Waste Collection Centres (DWCCs), and Integrated Waste Management Stations and assess the minimum monthly and annual expenditure, including one-time costs. Based on this assessment, create a realistic budget for the establishment and maintenance of the MRFs and other waste management facilities.
10. Assess the potential risks to both the project and its beneficiaries. This analysis should include a comprehensive review of the donor's expectations, the project's objectives, and the needs of the beneficiaries. Risk assessment and risk mitigation should be scientific, honest, and realistic; any hidden risks ignored in the early stages will threaten the project implementation and cause collapse. Develop a clear plan for how the project will meet the donor's conditions while minimizing any potential risks.
11. Implementation partners, co-financers along with donors should be taken into confidence right from the beginning and should be made aware of UNDP's own costs and their liabilities. Undue delays in disbursement increases the cost of the project, increases dissatisfaction and loss of motivation.
12. Knowledge management, development of educational material based on good pedagogy and learning experiences sharing should be done with a lot of care and should be shared on the social media so that there is transparency and the project benefits from feedback.

Section 1 - Introduction

1.1 Purpose of the MTR

The mid-term review (MTR) of the project "Plastic Waste Recycling Management - A Partnership," implemented by UNDP India Country office with support from private partners, serves a crucial purpose in evaluating and understanding the project's progress and impact. The MTR aims to comprehensively assess the project's objectives, intent, and scope while developing a robust methodology to capture its achievements. It involves evaluating both tangible and intangible milestones set by the project, including key performance indicators (KPIs) and social indicators related to gender equality, equity, and sustainable development goals.

The MTR aims to ensure that the socio-technical model developed for plastic waste management aligns with the Swachh Bharat Mission and Plastic Waste Management Rules 2016, including subsequent amendments. By adopting a participatory and multi-stakeholder approach, the MTR evaluates the project's capacity to drive positive change in plastic waste management practices in India. Additionally, it assesses the project's ability to increase resource utilization and improve the socio-economic conditions of waste pickers, fostering their institutionalization as entrepreneurs within the existing governance framework.

The review focuses on the contributions of the two donor partners, HCCBPL and HUL, in managing significant amounts of plastic waste (87000 MT and 34300 MT, respectively) over specific periods. Moreover, the MTR acknowledges the project's potential to attract other potential Individual Business Operators (PIBOs) in the future, scaling up operations and impact.

Crucially, the MTR emphasizes capturing the project's progress towards achieving its objectives and assessing the effectiveness of the milestones set, both quantifiable and qualitative. It includes a comprehensive evaluation of social upliftment, gender equality, equity, and alignment with sustainable development goals, ensuring that the project's outcomes are in line with international standards and best practices.

Through a rigorous and systematic methodology, the MTR seeks to validate the project's outcomes and impacts, considering all stakeholders' inputs, including implementers, regulators, beneficiaries, and partners. By employing a participatory approach, the MTR identifies strengths, areas of improvement, and potential challenges, enabling timely course corrections to ensure the project's long-term success.

Overall, the MTR is an essential mechanism to assess the Plastic Waste Recycling Management project's effectiveness, progress, and alignment with international standards, ensuring that it remains on track to achieve its envisioned socio-economic and environmental objectives. Therefore, the objective and scope of the MTR is as follows:

1.2 Objectives

1. To assess whether the project objectives, outcomes, and activities have been clearly defined and are measurable.
2. To evaluate the clarity and adequacy of targets and timelines set for achieving the project's outcomes and activities.
3. To determine the extent of progress made towards achieving the stated objectives, outcomes, and activities, as well as the reasons behind any deviations.

4. To analyse the alignment of strategies and action plans with Sustainable Development Goals (SDGs), local laws, gender equity principles, and international treaties related to Climate Change mitigation and adaptation.
5. To provide constructive suggestions and recommendations for enhancing the project implementation and addressing any identified shortcomings or challenges.

1.3 Scope

The mid-term review of the Project 'Plastic Waste Recycling Management - A Partnership', implemented with support from HCCBPL and HUL from August 2018 to October 2022, aims to comprehensively evaluate the project's strategy, implementation, and effectiveness in addressing issues at project locations across India for HCCBPL and specifically in Mumbai for HUL. Gender equality, being a critical parameter, has been carefully examined during the MTR. The scope of the review emphasizes an in-depth assessment of the project's alignment with this significant theme to ensure it is adequately reflected in the project's overall objectives and outcomes.

1.4 Evaluation Criteria and Questions

The mid-term review of the project employed evaluation criteria aligned with the developmental context, SDG goals, gender equality, and socio-economic development envisioned for the welfare of waste workers. Understanding the suitability of the socio-technical model, its technological aspects, limitations, and compliance with environmental and legal provisions were deemed essential for effective project design and implementation. Through desk analysis, comparative assessments of existing management models, risk analysis, project design, implementation strategy, and resource allocation, the appropriateness of these aspects was assessed.

To comprehensively evaluate each component and their respective activities, a questionnaire-based approach was employed, catering to various stakeholders. Section 6 - Annexes presents the detailed questionnaire, covering aspects related to the principles of MTR design and execution, data collection methods, and any limitations encountered. The review also encompassed the assessment of the Theory of Change, Results Framework, Approaches, and implications of the proposed methodology. The evaluability of the project was considered, enabling comparisons from the project's outset to its current stage, representing an approximate mid-point of completion.

1.5 Cross-cutting Issues:

1.5.1 The mid-term review comprehensively addressed cross-cutting issues, including environmental safety, economic viability, inclusivity, gender equality, and livelihoods for waste collectors, aggregators, recyclers, and retailers. To evaluate the significance of these aspects aligning with sustainable development, a set of questions capturing the pillars of Economic, Social, and Environmental sustainability were framed and analyzed to derive their values.

1.5.2 Data collection for the review involved primary research conducted through questionnaire-based data collection, with a focus on disaggregating the data by sex and other relevant categories. Stakeholder interviews were conducted to capture their feedback and perceptions, while secondary data analysis was carried out, categorized, and analyzed with a gender and equity lens.

The details of data collection methodologies and analysis can be found in Annexure 6.3.

1.6 Mid-term Review Assessment Methodology

1. The desk analysis phase involved a thorough review of provided documents, including the pro-doc and amended pro-doc developed by UNDP. The objective was to gain a comprehensive understanding of the expected outcomes, plan of action, and key performance indicators (KPIs) for self-assessment. In addition, various documents were procured in accordance with the pro-doc and its outlined processes.
2. A wide range of stakeholders were engaged through semi-structured interviews and consultations. Conversational format questions, as detailed in Annex 6.4 and 6.6, were utilized to facilitate insightful discussions with the stakeholders.
3. A mission plan was devised to visit Material Recovery Facilities (MRFs) for understanding their operations, achievements, constraints, and challenges, as outlined in Annexure 6.6.
4. A comprehensive questionnaire with distinct emphases for different stakeholders was prepared, as specified in Annexure 6.3. This questionnaire addressed various critical aspects, including:
    - Establishing systems for data collection, processing, recycling, and creating a mapping dashboard for waste traceability through apps and hand-held devices.
    - Reports were generated to establish compliance with Extended Producer Responsibility (EPR) requirements to the government.
    - An analysis of the costs associated with running the MRFs, such as electricity, water, permissions, authorizations, health and safety measures, and audits.
    - Data analysis, interpretation, gap analysis, recommendations, and report writing were conducted, adhering to the prescribed format and covering all aspects outlined in the guidelines.

1.7 Limitations

The questionnaires were distributed to the IPs, requesting their completion by various stakeholders, including waste workers (safai sathis), supervisors, and senior functionaries. Equal representation from men and women was sought, with a goal of obtaining maximum responses in proportionate sampling.

During interviews with senior functionaries of the IPs, both IPs reported having approximately 10 permanent waste workers employed. While they had facilitated the onboarding of several waste workers who benefited from the project, contacting non-permanent beneficiaries for questionnaire responses proved challenging.

The analysis process involved utilizing available disaggregation by gender and age in the data. Due to the limited number of responses (around 10 in the stakeholder questionnaires from each of the IPs), simple calculations like mean and percentage were applied.

Despite multiple reminders and requests, no filled responses were received from the donors. Consequently, the gist of the online meetings and their responses to questions (based on the questionnaires sent to them) were recorded and analyzed.

Similarly, government functionaries and community-based organizations, including residents' associations, did not submit filled questionnaires. As a result, their responses to stakeholder questions during interviews were recorded and analyzed. All questionnaires used, conducted interviews, and count tables are systematically arranged in Section 6 - Annexes.

Section 2 - Structure of the MTR report

The Mid-term Report is structured such that initially after the main details in the

- Cover page,
- Acknowledgements,
- Acronyms & Abbreviations,
- Executive Summary,
- Table of Contents

there are six sections. These are

- Section 1 Introduction,
- Section 2 Structure of the MTR report,
- Section 3 Project Description and Background Context
- Section 4 Findings
- Section 5 Conclusions & Recommendations
- Section 6 Annexes

In these 6 sections, it was endeavoured to address the following specific points and aspects of the project:

- The global and Indian context of the plastic waste issue was introduced, encompassing a life cycle study and value chain analysis in both informal and formal waste management systems. The Plastic Waste Management Rules in India, including EPR rules, were discussed, along with the alignment of waste management with Sustainable Development Goals.
- The project's design was evaluated, including the consultation with different stakeholders before and during the design phase, as well as before signing contracts with donor agencies.
- The baselines that prompted the development of KPIs and other milestones were examined to assess the project's starting point and objectives.
- Regular interaction with stakeholders, such as visits, meetings, brainstorming sessions, and continuous evaluation, was assessed for its integration into the project.
- The realism and achievement of the KPIs were analyzed, including the percentage of successful completion and satisfaction levels among various stakeholders.
- The integration of inbuilt course correction, consultation with experts, and responsiveness to recommendations and donor feedback was evaluated, with relevant examples cited.
- The government's role as a stakeholder and its consultation before committing to donors and beneficiaries were evaluated. The flow chain study and addressing roadblocks were considered.
- Management and organic issues of the waste management value chain were assessed to determine if they were addressed sensitively and separately.
- The prioritization of public health and public good was explored, along with the achieved improvements in working conditions, exposure to toxic materials, and hazardous material. Air quality monitoring before deploying equipment in the MRFs was examined.
- The decision-making process for revenue generation in the MRFs, considering quality, wages, working conditions, equipment maintenance, O&M, recurring expenditure, and market vulnerabilities, was analyzed. The basis for setting EPR rates, whether market-driven or based on health, hygiene, equity, and social justice, was also assessed.

Section 3. Project Description and Background Context

3.1 Development context

1. Introduction to the global and Indian plastic waste issue -

3.1.1 The current developmental challenges in plastic waste management are attributed to five immediate causes:

- Insufficient knowledge about waste generation, Life Cycle Analysis (LCA), material flows, environmental impact, health consequences, and associated waste management costs.
- Economic interests of plastic producers and major plastic packaging users.
- Consumption patterns within society.
- The low cost and desirable properties of plastics, such as lightness, water resistance, and transparency.
- Challenges in separating and collecting plastics due to non-cooperation from citizens and other stakeholders.

3.1.2 Heavy littering is prevalent due to the extensive use of packaging material, with over 50% comprising single-use plastics. Plastic's versatile properties make it widely used for packaging various products, including liquids, solids, raw, cooked, or preserved food. It is employed at all stages of product distribution and sales, from small convenience stores to large-scale food and beverage distributors.

3.1.3 Despite bans on plastic use, large industrial consumers continue to dispose of packaging waste in the environment, with the government bearing the collection, incineration, and landfill costs through taxpayer contributions.

3.1.4 India faces challenges in adopting innovative and effective waste management approaches. Approaches used in industrially developed countries, such as large waste-to-energy facilities for home heating, may not be suitable for the country. Moreover, government-led collection and management methods have primarily focused on disposal options rather than involving people at all stages of plastics and waste management.

3.1.5 Collection and recycling of plastic litter pose difficulties due to soiled plastics mixed with organics and various types of plastics, leading to reduced recycling rates and value. While recycling technology exists for most types of plastics, the process often results in downcycling, compromising its overall value. Effective solutions require cost-effective collection and sorting by communities of practice (waste pickers), supported by back-end recyclers who must be willing to accept and fairly compensate for plastic waste materials, presenting a real challenge.

3.2 Environmental and Sustainability Assessment

Considering the prevailing environmental challenges such as climate change, pollution, biodiversity loss, and population growth, it is inspiring to witness projects striving to improve the lives and livelihoods of individuals and communities. Recognizing the interconnectedness of global and national impacts, it is essential for all projects to consider their activities' wider ramifications. By doing so, we can ensure that our endeavours not only bring positive change locally but also contribute to global progress, aligning with the Sustainable Development Goals (SDGs) guidelines.

This Mid-term review aims to assess the project's alignment with SDG goals and its commitment to environmental sustainability, while also scrutinizing gender equality and justice aspects. By acting as a reflective mirror, the MTR intends to provide implementors with valuable insights and recommendations for potential course correction, ensuring the project's effectiveness and impact are maximized. Emphasizing the need for meaningful contributions towards creating a better world, this evaluation will help foster a more sustainable and equitable future for all stakeholders involved.

3.3 Problems that the project sought to address: threats and barriers targeted

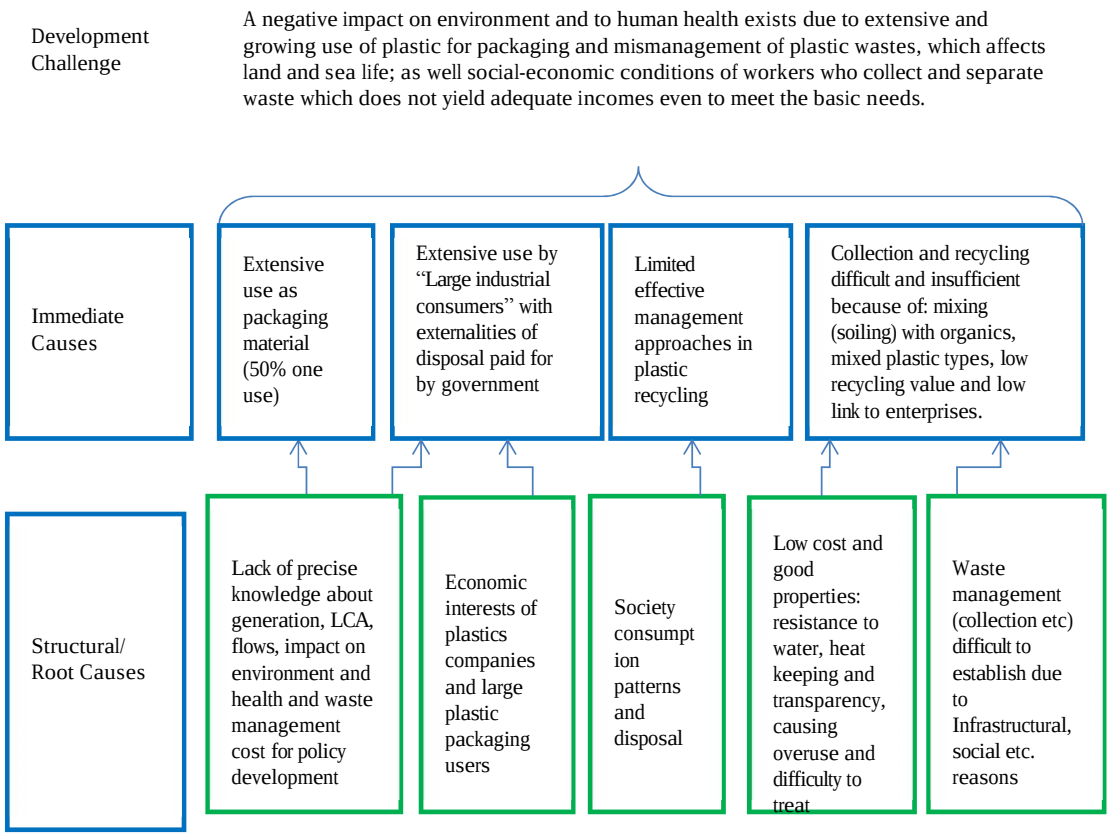


Fig 1: Theory of Change, Problem Tree, for Plastics waste management in India

3.3.1 Assumptions, Threats, and Barriers to the Theory of Change:

1. It is assumed that all plastics are saleable and recyclable, contributing to a circular economy through multiple recycling cycles.
2. Non-recyclable plastics are considered minimal and can be effectively co-processed in cement kilns, MSMEs, or used for road construction.
3. Recycling and management of plastics are expected to be economically viable, providing livelihoods and a safe environment for waste pickers/Safai Sathis. Swachhta Kendras are seen as sources of full and fair employment for all Safai Sathis.
4. The assumption of absence of Life Cycle studies and case studies on plastic waste recycling in India posed a challenge in devising a sustainable plastic waste management system.

5. It is believed that the operational and maintenance costs of Swachta Kendras can be covered through selling plastics to authorized recyclers or by producing and marketing pellets.

3.3.2 Need of the FMCG sector Producers Importers & Brand Owners:

1. FMCG sector aims to maximize collection of plastic packaging, particularly PET, LDPE, HDPE, and PP, commonly used for packaging and transportation purposes.
2. Proper collection and processing of PVC, PS, and MLP plastics, which are used in various stages of packaging and serving, are essential for co-processing and energy recovery processes.
3. EPR requirements, especially after the amendment in March 2021, necessitate the Producers, Importers, and Brand Owners (PIBOs) to obtain certification from recyclers regarding the fate of their packaging waste, including recycling and diversion from landfilling.
4. Establishing an institutionalized model of waste pickers/Safai Sathis would have supported the existing plastic packaging usage for PIBOs. However, now they must ensure proper certification of recycling and disposal.
5. Supporting Safai Sathis and Swachta Kendras improves the brand image of PIBOs, as they invest in the social, economic, and technical upliftment of waste workers, thereby enhancing the marketability of their products.

3.3.3 Main risks in implementation are as follows:

Prior to 2022, institutionalization faced resistance from the government, as they were reluctant to accept safai sathis as quasi-civil workers. Some waste workers were also skeptical about the benefits of organized operations. Additionally, recyclers were concerned about potential price increases for their feedstock due to institutionalization.

The informal nature of the market posed challenges in achieving 100% channelization of recyclable plastic waste to registered recyclers or certified disposal plants as required by EPR Rules. Limited registered recyclers and poor linkages with road laying projects were significant barriers impacting MRF's financial health and compliance with guidelines.

Difficulty in finding agencies with the required competencies for short-term procurement cases and delays in delivering activity results were common hurdles. Social unrest, natural disasters, and the COVID-19 pandemic further disrupted project timelines and results, impacting the jobs and income of waste pickers and increasing operational costs.

3.4 Project Description and Strategy

Objective, outcomes, and expected results, along with the description of field sites, are provided below:

Objective: The objective is to enhance sustainable Plastic Waste Management practices in India through the implementation of a socio-technical model (separation-collection-recycling). This approach aims to minimize negative impacts on the environment and human health while institutionalizing efficient governance mechanisms and ensuring compliance with regulations.

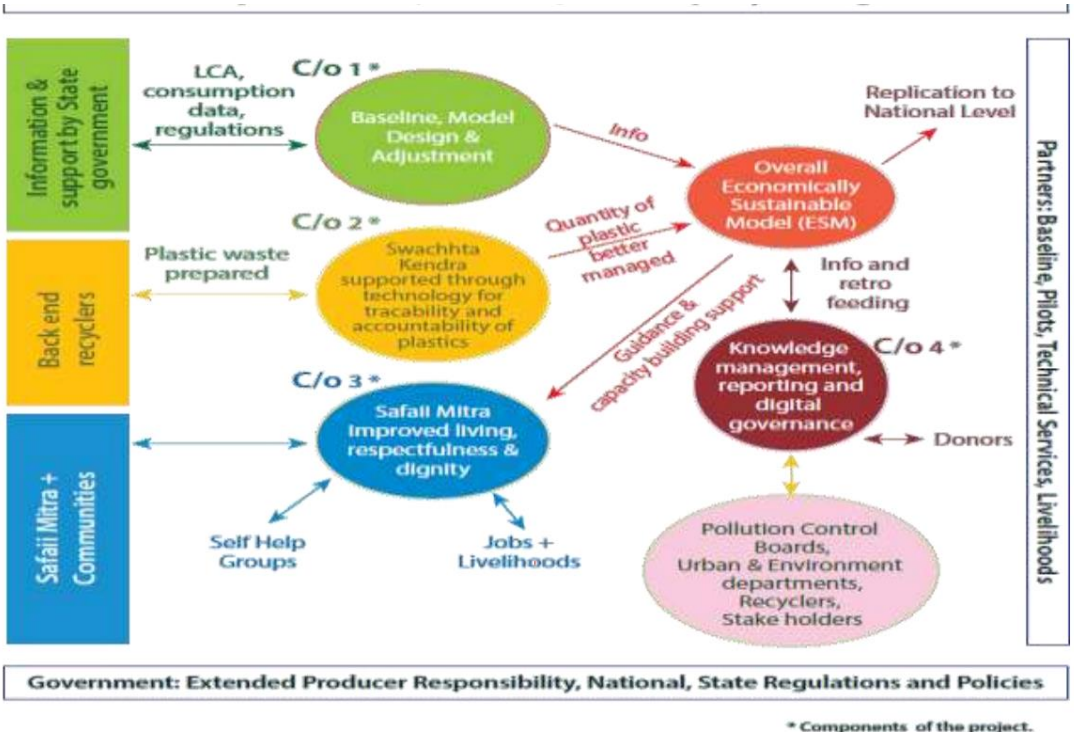
The project aligns with the Swacch Bharat Mission in India, seeking to improve resource utilization and enhance the social conditions of waste pickers.

Conservative baseline estimates project significant benefits over a span of six years. The project anticipates improved management of more than 1,40,000 MT of plastic waste and positively affecting the livelihoods of approximately 44,000 waste pickers. The value of the plastic at baseline is estimated at about 13.5 M US$/year, amounting to an average benefit of about 360 US$/year per worker. Furthermore, these advantages will extend to other stakeholders, including service providers and implementation partners.

The project's implementation of decentralized city-level management models for plastic waste management will foster the recycling of plastic waste, leading to socially beneficial outcomes. The documentation of these results will enable replication and scaling up of successful practices. By ensuring compliance with existing regulations, the project will identify and address any gaps, contributing to a strengthened regulatory framework for plastic waste management.

The attainment of project objectives, illustrated in the figure below, relies on a combination of socio-technical interventions. These interventions include a Pilot Project in 10 locations during the first year, followed by implementation in 25 cities in the second year. In the third and fourth years, replication and scaling up would be extended to 25 additional cities, involving collaborative efforts and shared responsibilities with Urban Local Bodies (ULBs) and State Pollution Boards. The project's success will be reinforced through targeted interaction, raising awareness among key stakeholders at the city, state, and national levels, as well as conducting gap analysis and proposing regulatory amendments.

Figure 1: Integrated approach of Project’s activities, interaction, and stakeholders



3.5 Project Implementation Arrangements

A brief description of the Project Board and key implementing partner arrangements is provided below, aligning with UNDP's global standard of writing and maintaining a constructive and passive voice:

The project will be primarily implemented by UNDP in strategic collaboration with various stakeholders, including NGOs, municipalities/municipal corporations of respective cities, state pollution control boards, state government departments, Resident Welfare Associations (RWAs), and other donors and charities. A systematic approach will be developed by UNDP to establish linkages between government sectors (e.g., State Pollution Control Board, CIPET, ICPE, AIPAs, Municipalities/Corporations, ULBs) and informal sectors like waste pickers, self-help groups (SHGs), and Non-Governmental Organizations (NGOs).

Formal contractual agreements for plastic recycling will be developed with NGOs and appropriate backend recyclers (BERs), aiming to enhance the livelihoods of waste pickers through source segregation and value addition. UNDP will explore scientific and technical interventions to ensure environmentally safe and sustainable uses of recycled plastic. Efforts will be made to promote research and development (R&D) for value-added materials from waste plastics by establishing partnerships with reputable institutions like CIPET, with the objective of securing better payment for waste pickers.

Regarding Component 2, Clause 31 on Page 7 of the Amended Prodoc mentions the establishment of centres under Extended Producer Responsibility (EPR) areas by donors. Clause 38 on page 8 highlights the importance of the Plastic Waste Management (Amendment) Rules 2021, recently approved by the Ministry of Environment, Forest, and Climate Change, Government of India. Section 9(1) of these rules makes it compulsory to fulfil Extended Producer Responsibility (EPR) regarding plastic waste.

According to the rules, plastics waste that is recycled must be transformed into new products or raw materials for producing new products, while non-recyclable plastics can be used for road making or energy recovery. Donors play a crucial role as stakeholders in this project by providing financial support, aligning with the 5 by 20 Vision - aiming for 5 million women entrepreneurs by 2020. The project emphasizes improving the working conditions and livelihoods of women waste workers and complying with regulatory mechanisms involving manufacturers in setting up plastic waste collection centres based on extended producer's responsibility (EPR) principles. The project seeks to learn from other similar programs nationally and through government-linked skills India projects to create more job opportunities locally.

3.6 Main stakeholders

Table 3: Partnerships and supported activities through collaborative institutions

Sr. No	Institutions	Indicative activities to be supported
1	Donors	The primary stakeholder in this project, responsible for financing the major portion of its implementation, are the donors. Technical guidance shall be provided by the project team of donors periodically throughout the implementation and review of project stages.

2	Ministry of Housing and Urban Affairs and State and City Municipal Corporations/ Municipalities	The line ministry for the project and the chair of the Project Steering Committee will be the Ministry of Housing and Urban Affairs (MoHUA). Direct involvement in the project will be undertaken by municipal corporations/municipalities, responsible for authorizing the collection of funds from residents, conducting the verification and issuance of Identity Cards for waste pickers. Moreover, each selected city's municipality will provide the necessary land/space, machinery for the development of plastic waste recycling centres, and vehicles for transporting the plastic waste..
3	UNDP	The project will be implemented by UNDP, which will serve as the implementing agency. The complete set of activities and the implementation strategy are described in the project document, along with the management arrangements.
4	Resident Welfare Associations and other Institutions	The project will involve direct participation from Resident Welfare Associations and other institutions, including waste pickers and women self-help groups. These stakeholders will play a significant role in the collection and segregation of all types of plastic wastes. Emphasis will be placed on livelihood creation and empowering women through enterprise development.
5	Research and other Institutions	Constructive partnerships will be established with CIPET (Central Institute of Plastics Engineering and Technology, Chennai) and its 32 regional and state centres, along with other producers under the extended producer responsibility players, such as Reliance Industries, among others. Collaborations will be sought with the Ministry of Earth Sciences and the Department of Science and Technology for assessments of various new technologies. Additionally, links will be established with national laboratories to facilitate testing of grades, toxicity, and other related aspects. Indian Centre for Plastics in the Environment (ICPE) in Mumbai, as well as Plastic Industry centres at Hyderabad and Delhi (AIPMA and AIPIA), will be engaged for technical support during the project's execution. Efforts will be made to enhance connections with Industry Associations like FICCI, PHD Chambers, ASSOCHAM, and CII. These associations will serve as valuable resources to understand the steps taken for necessary recycling of plastic waste. Collaborating with them on various platforms will facilitate the exchange of experiences and valuable insights.

6	Private Entities	The principles, practices, and incentive systems in the project will be learned by engaging the ongoing service providers and responsible parties involved in plastic and solid waste management.
7	Civil Society	The principles, practices, and incentive systems will be learned by engaging the ongoing service providers and responsible parties involved in plastic and solid waste management.
8	Technical Consultants	Technical inputs related to design, development, implementation, and review of the project will be sourced from Technical Consultants. Additionally, support will be received from these consultants for capacity building, technical monitoring, documentation, and dissemination of project learnings.

Table 4: Key Stakeholders

S. No.	Key Stakeholders	Strategies to ensure Key stakeholders are engaged
1.	State Pollution Control Boards (SPCBs)	The regulatory guidelines to be adhered to during the implementation of this project are currently the Plastic Waste Management (PWM) Rules, 2021, and its amendment, which apply to all plastics, including plastic bags. The monitoring of regulatory compliance during the project's implementation will be carried out by the authorized agency, the state pollution control board. The project will encompass all aspects of the PWM Rules, ensuring comprehensive compliance and focus on effective plastic waste management.
2.	Ministry of Housing and Urban Affairs (MoHUA) State Urban Development Government Departments	The project will be implemented in 50 selected cities in India, and as a result, direct coordination will be facilitated with local state government officials during its implementation. The Ministry of Housing and Urban Affairs (MoHUA) will serve as the line Ministry for the project and will lead the Project Steering Committee.

		Logistic support for the management of non-recyclable plastic waste will be provided by State Urban Development Government Departments. Adequate space for setting up the Swachhta Kendras (SKs) will be provided by Urban Local Bodies (ULBs), along with access to essential services such as healthcare in hospitals, fire brigade, water supply, electricity supply, and sanitation, to ensure the smooth functioning of the SKs. Close coordination will be maintained with the District Administration and Block Offices, including Panchayat Samitis, Block Development Officers (BDOs), and Gram Panchayats to garner administrative and political support for the project initiatives.
3.	Swachh Bharat Mission; Urban Development Ministry	At a later stage, when the project has been well-established and has achieved successes, it may be included in the ambit of Swachh Bharat Mission (Urban). At that point, the plastic waste could be utilized for higher value purposes. However, to achieve this, background research needs to be completed and a well-established model and value chain must be in place.

3.7 Project timing and milestones

Figure 2: Project timing and Milestones

Date of Signing of amended document: Aug 18th, 2022

. The **figure 3** clearly defines the cyclic approach for implementation of the project on plastic waste management and recycling in Cities and the total number of waste pickers involved and the waste collected. The project will continue its intervention for 4 years in each city; withdrawing in a sustainable manner in every city through a more institutionalized process with the Municipal Corporation/Municipality and the support responsible parties/service provider facilitating the process, however the total time period for the project is for 6 Years.

S. No	Activities	1st Year 2018-2019	2nd Year 2020	3rd Year 2021	4th Year 2022	5th Year 2023	6th Year 2024
1	Start-up of Cities	10	15	25		-	-
3	Adding more Cities		15	25			
4	Placing the regional team members in States (Offices)#.	03	05	10	10		
5	Total waste pickers integrated	7000	14,000	21,000	35,000	-	- -
6	Waste Collection and processing at the Swachhta Kendras	1.2 kgs per day per city	2.0 MT per day per city	3.0 MT per day per city	2.5 MT per day per city	1.5 MT per day per city	100kgs per day per city

Increase in plastic waste collection quantity has been considered based on increase in awareness and population growth.
as required will be placed, may be as consultants.

Figure 3: Adoption of the Cities in stages.

Section 4 – Results

4.1 Findings

4.1.1 Strategy

The strategy for this project appears to have been derived from the experiences of a previous project, which may not have aligned with the current project's developmental goals, particularly in terms of promoting gender equality, livelihood, and environmental protection as outlined in UNDP's overall developmental goals. Given that this project deals specifically with plastics, which contribute significantly to pollution worldwide while also serving as a source of livelihood for the underprivileged, it necessitates a sensitive and well-thought-out strategy based on thorough baseline studies. However, Clause 39 on page 8 of the amended prodoc states that "The strategy for this project draws on previous experiences gathered in this regard under the Small Grant Program of MoEF & CC, Government of India, and GEF UNDP." To ensure the project's effectiveness and alignment with its developmental objectives, it is essential to reevaluate the strategy, considering well-defined goals and objectives in line with UNDP's developmental vision and addressing the unique challenges posed by plastics as both a pollutant and a source of livelihood for vulnerable communities.

While drawing upon previous experiences is valuable, it is crucial to acknowledge the uniqueness of the current project, necessitating a customized approach. As stated in the Prodoc, establishing baselines, and conducting pilot projects in 10 cities were essential steps before scaling up the project. This approach would have ensured the project's alignment with present circumstances and its successful implementation, catering to the requirements of all stakeholders. Clause 40 on page 8 of the Amended Prodoc clearly outlines that documenting and sharing activities, results, and lessons from pilot projects would provide wider stakeholder access to valuable information and experiences. As emphasized in clause 47 on page 12 of the Amended Prodoc, baseline estimates are instrumental in assessing the overall negative impacts of plastic waste and evaluating the existing systems and processes for sustainable management. The intended objectives of this project could have been achieved by adhering to the recommended approach of conducting pilots and baselines. Highlighting the significance of baselines and pilots would have led to a tailored and context-specific project implementation in the target areas, resulting in more effective and sustainable outcomes. Clause 50 on page 13 of the document highlights the importance of aligning the project with the Plastic Waste Management Rules, 2016. It points out the existing gaps at regulatory and implementation levels and proposes a need gap analysis to identify areas where greater clarity is necessary. The analysis should have addressed the following aspects:

• Greater clarity on regulating Extended Producer Responsibility for plastic bottles.

• Compliance with regulations concerning different categories of plastic.

• A sustainable and long-term solution for cleaner consumption.

Regrettably, the necessary gap analysis was not conducted as required.

When developing a strategy for a project like this, rigorous documentation of stakeholder consultations is essential. The project aims to ensure citizens' active participation in segregating, collecting, and handing over valuable plastics. Moreover, it focuses on ensuring

that such plastics reach the collection and sorting centres, which, in turn, benefit the waste workers by facilitating organized collection and recycling. Clause 64 on page 17 of the Amended ProDoc indicates that UNDP will be the primary implementer of the project, collaborating with various stakeholders such as NGOs, municipalities/municipal corporations, state pollution control board, state government departments, resident welfare associations, and other Donors and Charities. UNDP aims to create a systemic approach that links government sectors with informal sectors (waste pickers), self-help groups (SHGs), and NGOs, including CIPET, PACE, ICPE, AIPAs, Municipalities/Corporations, and ULBs.

However, due to inadequate documentation of the process, including formal meetings, recording minutes, and incorporating suggestions, it was challenging to determine whether the strategic collaborations outlined above were effectively carried out. This lack of documentation may have hindered the integration of valuable corrections into the project strategy, potentially impacting its sustainability and environmental safety. Room for improvement exists in India's plastic waste management practices, requiring better implementation and rationalization. The process of developing the socio-technical model envisioned for the project aligns with the Swachh Bharat Mission (SBM) and Plastic Waste Management (PWM) Rules. Moreover, the project's goal of enhancing the lives of waste pickers and establishing them as Safai Sathis is a significant step toward achieving social justice.

Despite allocating sufficient resources for improving collection, acquiring space and equipment for sorting and storage, and linking the chain of producers, aggregators, recyclers, etc., and tracking plastic movement through dedicated software, the donors could only achieve partial collection and processing of the targeted plastic waste within the specified period.

To enhance plastic management in India, it is crucial to adopt a strategy that addresses the dynamic challenges of the sector, without assuming that providing infrastructure in the Swachta Kendras or stakeholder education will automatically lead to the sorting of all valuable plastics. Therefore, the strategy requires strengthening to ensure compliance and better outcomes.

4.1.2 Project Design

The project is structured into 4 components or outcomes.

These are:

1. Establishing the foundation of a Socio-technical model for plastic waste management

The achievement of this component was only partial as the proposed or envisaged socio-technical model did not result in favourable health and environmental impacts.

2. Demonstrating model implementation via Swacchta Kendras (SKs)

Model implementation of integrated decentralized dry waste handling facility was demonstrated by some Swachhta Kendras (SKs), while others did not achieve the same level of success. The discrepancy occurred because some SKs were planned and built on specifically acquired land, adhering to a well-conceived design that ensured adequate space, ventilation, safety, sanitation, and ergonomic comfort. In contrast, other SKs were provided with ideas, recommendations, and equipment that were retrofitted into the available space,

which turned out to be less than ideal. As a result, these SKs became congested, posed health hazards, and were exposed to the risks of disasters like fire and flood.

3. Institutionalizing Safai sathis in governance bodies

The improvement of the socio-economic conditions of waste pickers was effectively implemented through various government schemes, granting them access to identity, insurance, healthcare, and banking facilities.

During the initial phase of the project, there was a lack of documentation of the initiatives with safai sathis. However, this issue was addressed through course correction, resulting in better gender-disaggregated data of safai sathis and their enhanced social inclusion during the latter part of the project. Although the achieved results may not fully match the targets outlined in the prodoc, this entire intervention was well covered through donor support and successfully implemented.

However, due to the limited availability of donor support for the full intended duration, the benefits of the project to the Safai Sathis could not be fully realized.

4. Incorporating a thorough design and establishment of a knowledge management, monitoring, and communication system.

For the purpose of monitoring, data mapping, and knowledge management, the Kobo platform was engaged for data capturing and reviewing on a daily, weekly, and monthly basis. This proved to be highly useful in tracking the waste flow from different routes to the Material Recovery Facility (MRF) and its subsequent journey to various recyclers or disposal units, such as cement plants and Waste-to-Energy facilities.

Unfortunately, the maintenance of the database could not be ensured, leading to the discontinuation of the data and knowledge management system. As a result, the system is currently unavailable.

5. Ensuring a relatively secure economic share of the value chain through the Swachhta Kendra in direct link and agreement with back-end recyclers.

The achievement of this aspect is also partial, as between a quarter to half of the waste coming to the Material Recovery Facility (MRF) is non-recyclable, with a significant portion comprising plastics. The cost of disposing of these non-recyclable plastics exceeds the earnings from the sale of recyclable waste. As a result, the objective of securing an economic share of the value chain through Swachhta Kendras (SKs) was not fully realized.

4.1.3 Project Impact (Theory of Change)

The estimated project impact (theory of change) of achieving better management of 1,21,300 MT of plastic waste in 6 years could not be fully realized; however, a collection of 1,25,011 MT was achieved. There was a shortfall in the collection and processing of certain categories, both on a per Material Recovery Facility (MRF) per month basis and overall. Nevertheless, the support provided to waste pickers in terms of social and economic assistance resulted in improved livelihoods and the transition of many waste pickers to Safai Sathis.

The project also contributed to the implementation of decentralized city-level management models for plastic waste management, promoting recycling efforts for plastic waste found in

the waste stream. While some states like Odisha, Kerala, Karnataka, and J&K continued the work in the developed MRFs, including plastic waste management, many others discontinued the efforts.

To strengthen the regulatory paradigm for plastic waste management, it is crucial to identify and communicate the gaps and challenges faced during project implementation to the relevant authorities.

4.2 Analysis

4.2.1 Progress Against Key Deliverables

Table 5: Expected Output, Output Indicators, Targets and Risks

Project strategy	Indicator	Midterm Target	End-of-Project Target	Mid-term Level and Assessment	Achievement Rating	Justification for rating
Component 1: Socio-technical model for packaging plastic waste management developed, supported, and implemented	Number of studies and workshops conducted in cities Baseline: 4 Target: 50	HCCB - 50 HUL - 4	50 4	HCCB - 2 HUL – 2	3/6 3/6	Complete Data not available
Component 2: Material Recovery Centres (Swacchta Kendra) for improved plastic waste management developed implemented	Number of Swachhata Kendras set up in cities Baseline: 0 Target: 50	HCCB -33	50 - HCCBPL	HCCBPL – (Started with 33 MRFs in 25 cities but were left with 22 MRFs in Dec 2021 and in the 4th year uptil end of Q2 only 8 were remainin	5/6	Midterm Target achieved although none were pilots

		HUL - 3	HUL - 4	g, which finally closed) HUL – 3 MRFs	5/6	Midterm Target achieved
Component 3: Institutionalization of Swacchta Kendra in governance bodies and improved socioeconomic conditions of waste pickers obtained	Number of waste collectors on board Baseline: 0 Target: 35000	HCCB – 33334 HUL – 1200	31000 1600 for four years	11889 Under HCCB 1227 SS onboarded under HUL	5/6 5/6	Midterm target achieved Midterm Target achieved
Component 4: Knowledge management, monitoring and communication system developed	Number of training programmes on project implementation, Skill Building, systems and approach conducted Baseline: 0 Target : 200	3100 meetings / workshops etc for HCCB 400 under HUL	100 Meeting for onboarding stakeholders 2000 for creating RWAs 1600 for awareness 250 w/s for experience sharing 1 Strategy	579 under HCCB Break-up not found Under HUL Awareness activities: 98 SS capacity Bldg: 36 Health camps: 19	3/6 4/6	Break-up of meetings not clear Participatory, feedback meetings not documented

			design w/s SHG formation w/s 400 Project technical advisory 200 Project workshops 10 = 4650 meeting/ w/s etc	Project meetings : 66		
Project management Aspects and Costs	Amount of plastics that can be better managed along with Swachh Sathis getting secure economic share of the value chain, better pricing for the collected waste, reasonable workers' compensation, and lost work time cost:	56666 MT for HCCBPL or as per Theory of Change estimate93 ,333 MT in 4 years) 13850 MT for HUL as per reports	87000 MT in a period of 6 years with HCCBPL and 34300 for HUL (As per Theory of change 1,21,300 MT to be achieved in 6 yrs)	1,19,407 MT collected under HCCB Under HUL 5604.484 MTs	5/6 3/6	Midterm target achieved but not the categories as per donor's specifications Midterm target not achieved

	Baseline: 0 Target: 91000 MT plastic					

4.2.2 Progress towards results

4.2.2.1 Outcome Analysis

In the first year of the project, named Project Prithvi as per the National Report 2019 for HCCB, operations commenced in 36 locations across 25 cities, initiating several MOUs with Urban Local Bodies (ULBs) in these cities. Simultaneously, plastic waste collection was initiated, resulting in a total of 27,811 MTs of plastics collected. According to Figure 7 of the report, the composition of the plastics collected was as follows: mixed plastics (49%), PET (9%), HDPE (9%), LDPE (11%), PVC/PP/MLP (16%), and others (6%). Nationally, a total of 2,725 Safai Sathis were formalized, with gender-wise data not specified. Additionally, over 300 workshops were conducted, and 90 Self-Help Groups (SHGs) were formed during this period. In the one completed right before the midterm review, that is Q2 report 2022 (April – June 2022) for HCCB, the project was operational in 8 locations across 8 cities, and a total of 4,091 MT of plastics were collected in two quarters, indicating an estimated collection of 8,182 MTs of plastics in a year. According to Fig 2B of the report, the composition of the collected plastics was as follows: mixed plastics (46%), PET (10%), HDPE (7%), LDPE (14%), PVC (4%), PP/PS/PC (7%), MLP (5%), and others (7%). In Q2, 205 Safai Sathis were onboarded, out of which 158 were women and 47 were men. In Q1, 287 Safai Sathis were onboarded, with 53% being women. Additionally, 75 Self-Help Groups (SHGs) were formed in 2022. Several Information, Education, and Communication (IEC) activities were conducted in the cities, although the exact number was not specified in the report.

4.2.2.2. Identifying remaining barriers to achieving the project objective in the remainder of the project

One of the barriers in the HCCB funded project is related to the amendment in plastic waste management Rules, which required Producers, Importers and Brand Owners (PIBOs) not only to assist in collecting brand-agnostic plastics but also the specific category of plastics primarily used in packaging their consumer products. In anticipation of this Rule, HCCB made efforts to enhance the collection of PET bottles, as they were not being received in substantial quantities at the Material Recovery Facilities (MRFs). This is evident from the data provided, where the composition of plastic waste at the MRF in 2019 showed only 9% PET, while 49% was mixed plastics out of a total of 27,811 MTs of plastic waste collected. There was a significant push for increased PET collection, which is evident from interviews with the Implementation partner and the composition of plastic waste at the MRFs. This resulted in a notable increase in PET plastics to 35% (from 9% in the previous year) and a reduction of mixed plastics to 35% (from 49% the previous year) of 33,417 MTs in 2020. Additionally, there was a further increase in the percentage of PET to 54% and a decrease in mixed plastics to 25% in 2021, out of a total of 50,429 MTs collected. The implementation partner was encouraged to provide training to their waste sorters, enabling them to segregate mixed plastics into several categories, thereby increasing the revenue from the sale of plastics. To enhance the revenue further, high revenue plastics like PET bottles were purchased from

those who had better access to it, such as door-to-door collection agents, housekeeping staff in apartments or office complexes, hotels, hostels, malls, ULB sweeping staff, shops, and even householders, despite the low profit percentage from such purchases. This approach, however, imposed a financial burden on the Material Recovery Facilities (MRFs). The decision to engage in such practices might have been driven by the need for Producers, Importers and Brand Owners (PIBOs) to demonstrate traceability through a detailed data management system to fulfil Extended Producer Responsibility (EPR) compliances. The MRFs and implementation partners were likely tasked with achieving traceability for the specific plastic, in this case, PET, put out by the PIBOs in the environment. In the fragile environment of plastic collection and recycling, the MRFs faced an additional burden of establishing traceability with registered recyclers who required GST payment and transportation to their facilities, and whose recycling capacities were limited. To compound this situation, the MRFs had to incur expenses for establishing traceability of non-recyclables, which needed to be transported long distances for disposal in cement factories or road laying and for obtaining Extended Producer Responsibility (EPR) certificates. Since almost half of the plastics collected were non-recyclable, profit margins not only decreased but losses also accumulated. This further added to the challenges faced by the MRFs. The assumptions regarding the effectiveness of equipment such as the phatka machine, shredder, or extruder in increasing the saleability of plastics and enhancing compliance in the outgoing books of implementing partners for plastic waste collected in the target cities proved to be a significant barrier. The challenge arose when trying to add equipment to boost the revenue of the Material Recovery Facility (MRF) and gain acceptance of self-authorized Extended Producer Responsibility (EPRs). Although the project covered partial salaries (up to 60%) of Safai Sathis and full salaries of one supervisor and a manager, the MRF incurred many recurring costs.

Running heavy equipment like the phatka machine, extruder, or shredder resulted in substantial electrical charges, and obtaining pollution control board's authorization compliances was also expensive, particularly if the products, such as shredded plastics or 'gattas,' did not have significant resale value. Consequently, these factors created significant challenges for the MRFs and posed the biggest barrier in the project implementation.

One of the reasons for the reduction in the number of functional MRFs from 33 in December 2020 to 20 by December 2021, further dropping to 8 in the first quarter of 2022 and 6 in the second quarter, was likely due to several factors. Many of these MRFs eventually closed down or were taken over by other donors, state government departments, or agencies. The amendment to the Plastic Waste Management (PWM) Rules in February 2022 played a significant role in this trend. The change in the Extended Producer Responsibility (EPR) Rules allowed Producers, Importers and Brand Owners (PIBOs) to obtain EPR certificates directly from recyclers, making the support provided to the MRFs redundant. The elaborate mechanism established to ensure traceability became unnecessary, providing the PIBOs with the choice to exit the project after the fourth year instead of continuing until the sixth year. Overcoming this barrier is challenging since it is difficult to match the cost at which PIBOs can obtain their EPR compliances directly from recyclers with the cost of obtaining it through the MRFs. The shift in the EPR rules significantly affected the project's dynamics and made sustaining the MRFs financially challenging.

Both HCCBPL and HUL have decided to close their projects with UNDP due to only partially fulfilling their Extended Producer Responsibility (EPR) targets through this mechanism. They both expressed that despite substantial financial investments on their part, the desired impact on waste segregation at the source by citizens and the improvement of working and living

conditions for waste workers was not fully achieved. Consequently, they have chosen not to sign any further contracts with UNDP, making it a significant barrier. HUL has verbally indicated that they may continue supporting initiatives with CSR funds, but they have not yet proposed a specific model for future collaboration. According to the feedback from implementation partners, the most significant barrier they faced was related to non-recyclable plastics, which posed challenges in achieving project objectives.

4.2.2.3 By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits

The project has achieved success in onboarding a significant number of former waste workers as Safai Sathis, with a total of 11,889 individuals under the HCCB funded initiative. These individuals have been organized into self-help groups (SHGs). According to the Safai Sathis, the project's objective is to foster a community-centric approach by building institutions and integrating both men and women waste pickers into small self-help groups (SHGs). This facilitates their connection to banking services, ensures access to social security measures such as identity cards and insurance schemes. The project aims to strengthen the social fabric surrounding waste pickers by enhancing their understanding of the importance of their work in the waste industry. Simultaneously, it seeks to secure recognition for them from government officials and local Urban Local Bodies (ULBs). The project's core focus is to provide fair wages and appropriate prices for the collected material, thus fostering socio-economic upliftment and empowerment of the Safai Sathis. The project generated significant interest and engagement with citizens through Project Prithvi, conducting numerous workshops and organizing programs like "Plastic lao Thaila pao," "Meal for Plastic," and "Plastic bharao Recycle karo." These initiatives effectively motivated citizens, especially the youth, to actively collect plastics and bring them to designated locations, discouraging littering. As a result, a greater volume of plastics was collected and directed to the Material Recovery Facilities (MRFs), significantly increasing recycling rates and reducing plastic waste going to landfills or water bodies. However, finding environmentally friendly technologies for managing the collected plastics under these schemes remains a subject of ongoing debate. Further exploration and research are required to identify sustainable solutions for handling the collected plastics to ensure their proper management and minimize environmental impact. Continuation of these initiatives with CSR funds is possible, and it serves as a crucial function that donors can readily sustain. Therefore, it should be carried forward. There is a need to onboard a larger number of waste workers and form them into self-help groups (SHGs) to enhance their lives and well-being. By expanding these efforts, we can make a positive impact on the lives of more waste workers and promote socio-economic improvement in their communities.

4.2.2.4 Identifying and recommending measures to strengthen gender related results for the programme including review of indicators, activities, and achievements.

In the HCCB donor project, approximately 80% of the total onboarded Safai Sathis are women. The project demonstrated its commitment to safeguarding the livelihoods of Safai Sathis (waste pickers) during the pandemic. For those who did not migrate, the project provided assistance by issuing passes to enable them to continue their movement for waste collection at the Swachhta Kendra. Within the Swachhta Kendras, 40-45% of the workforce comprises women. The project facilitated various health camps and conducted training and skills development programs for both men and women, resulting in significant improvements in their lives. This empowerment has enabled them to earn a sustainable livelihood, lead better lives,

and support their children's education. The project's efforts have played a pivotal role in fostering socio-economic growth and gender empowerment among the waste worker community. Similarly, in the HUL donor project, approximately 40-45% of the waste workers onboarded are women. As part of this initiative, waste workers were provided with training and skill development opportunities, aimed at enhancing their lives and livelihoods. The project also organized health camps to ensure their well-being, and they were further supported with health insurance, identity cards, and facilitated access to banking and credit services. These interventions have contributed significantly to the socio-economic upliftment of waste workers, creating a positive impact on their lives and empowering them for a better future. While efforts have been made by many of the MRFs in these projects to integrate sanitation facilities, including toilets for women and a creche for children, not all of them have implemented these measures. This aspect of the project requires further strengthening. Rather than being a retrofit, it is essential to collaborate with the government to acquire land and construct dedicated facilities. This approach ensures that women and children using these facilities truly benefit from them and experience improved working conditions and enhanced well-being. By proactively addressing this need, the project can create a more inclusive and supportive environment for waste workers and their families. Similarly, there is a need to improve working conditions at many of the existing sorting centres and Material Recovery Facilities (MRFs). These facilities should be transformed into safe and ergonomically suitable environments for waste workers, ensuring they are not excessively congested. Such improvements are vital to safeguarding waste workers, both men and women, from continuous exposure to dust, toxic fumes, and microorganisms. By prioritizing the health and safety of waste workers, the project can foster a more conducive and sustainable working environment, ultimately enhancing the overall well-being and productivity of the workforce.

4.3 Project Implementation and Adaptive Management

The project is directly implemented by UNDP, assuming responsibility for mobilizing and effectively applying the necessary inputs to achieve the expected outputs. UNDP takes on the overall management responsibility and accountability for project implementation. Accordingly, UNDP adheres to all established policies and procedures for its own operations, ensuring efficient financial management, reporting, procurement, and recruitment services. By taking on these roles, UNDP ensures the successful execution of the project and upholds high standards of transparency, governance, and performance.

4.3.1 Management arrangements

4.3.1.1 Overall effectiveness of project management as outlined in the Project Document and recommended improvements.

The overall effectiveness of project management, as outlined in the Project Document, is deemed good. While only one set of minutes from the committee's review meeting with a donor is available, it is evident that regular communication channels were established with stakeholders. The project management team took sufficient care to accommodate the needs and requirements of stakeholders. They diligently noted corrective measures and provided additional recommendations to the team members through effective communication. This approach has contributed to a collaborative and responsive project management process, fostering a positive working relationship with all stakeholders. However, it is evident from both the minutes of these review meetings, where no member or representative from any Implementation Partner is present, and the feedback obtained from interviews with the

Implementation partners, Enterprise partners, and Special partners during the Mission and questionnaires distributed by the Consultant to the IPs, their staff, and ULB members that the process was donor-driven. The views and challenges expressed by the Implementation partners and other stakeholders were either not considered or not adequately acted upon. The review process emphasizes performance-based indicators and payment tied to performance, which created challenges for the general operations of the MRFs, particularly if they were unable to meet the specific performance indicators due to reasons other than COVID-19 related ones. This approach may have led to difficulties and limitations faced by the Implementation partners, affecting the overall project implementation and outcomes.

The assumption that lack of professionalization is the sole reason for IPs not meeting the Key Performance Indicators (KPIs) is concerning and requires immediate correction. Moreover, several IPs expressed deep dissatisfaction over the lack of proper communication regarding the discontinuation of the project. Personal interviews, questionnaires, and online and phone interactions with the IPs revealed that while there was initial interaction and discussion with them, as the project progressed, the level of interaction decreased significantly. Communication primarily revolved around signing contracts and submitting traceability documents and EPR certificates. This unhealthy trend should be promptly rectified, especially considering that many IPs have extensive experience in waste management and recycling. Their valuable insights and understanding could have been effectively utilized, but unfortunately, this opportunity was missed. It is essential to reverse this approach and involve them actively now to benefit from their expertise and knowledge for the project's success. Emphasizing better communication and collaborative engagement with IPs will foster a more productive and fruitful implementation of the project.

4.3.1.2 Quality of execution of the Executing Agency/Implementing Partner(s) and recommended areas for improvement

Most of the Implementing partners/Executing agencies have performed in accordance with the contracts signed with UNDP and have adhered to their respective ULBs' conditions and requirements. They have consistently engaged with UNDP team members, actively contributing to conducting various awareness, training, and skill development programs, workshops, and diligently maintaining traceability registers and documents for incoming and outgoing materials and accounts. Throughout the project period, they encountered multiple challenges in the continuous operation and management of MRFs, particularly due to non-receipt of grants and insufficient revenue from sales. These financial constraints were especially pronounced during the COVID-19 period and subsequent times, making it difficult to sustain the MRF operations for extended durations. Despite these obstacles, the Implementing partners have shown resilience and dedication to fulfilling their responsibilities. Their commitment to the project's objectives and their efforts to address the hurdles have been commendable. Recognizing their efforts and providing them with additional support can further enhance the project's outcomes and sustainability. The experienced IPs have indicated that they were briefly consulted for the development of the socio-technical model, and at times, equipment that they did not require was introduced to the MRFs, leading to reduced working space and increased running costs without any added benefits. According to the IPs, a scientific regulatory need gap analysis was not conducted, and they lacked resources to undertake it themselves. Nevertheless, they shared their valuable suggestions for enhancing the system through discussions. As per the IPs, the socio-economic conditions of the SSs worsened during the COVID period. In response, the IPs provided support to the SSs through kits and government donations, utilizing their own resources for several months. This

assistance reflected their commitment to the well-being of the SSs despite facing their own challenges during the pandemic. In light of the IPs' experience and expertise, their feedback and suggestions should be earnestly considered and integrated into the project's approach. Collaborative efforts and open communication between UNDP and the IPs can help address the identified shortcomings and enhance the overall effectiveness and impact of the project.

The implementation of the app faced challenges due to the limited access to smartphones among waste workers, making data input through the app impractical. As a result, waste workers could not utilize the app effectively for data collection. Regarding the question of waste workers getting a share in the value chain, IPs responded negatively, attributing it to the impact of COVID-19 and the lack of traceability, which prevented SSs from gaining economic benefits from their work. Similarly, IPs reported a negative response to the query about better pricing for the collected waste, citing traceability conditions and GST as obstacles in offering fair prices to waste pickers. Despite these challenges, IPs affirmed their support for the integration of SSs, providing them with ID cards, insurance, and banking facilities. However, they were unable to secure lost work time compensation through any of the schemes. Addressing these issues and finding innovative solutions to overcome the barriers faced by waste workers in accessing economic benefits and fair pricing for their work is crucial. Collaborative efforts with IPs and relevant stakeholders can help design effective strategies and programs to enhance the socio-economic well-being of waste workers and create a more inclusive and sustainable waste management system.

4.3.1.3 Quality of support provided by the UNDP and recommended areas for improvement

A competent human resource team was established by UNDP and appropriately trained to provide continuous support to the Implementation, Enterprise, and Special partners. They played a crucial role in assisting the partners in maintaining precise records of incoming and outgoing material, as well as documenting revenue proofs and traceability documents. After reviewing reports, MOMs, analyzing questionnaires, and conducting personal, online, and phone interviews, it becomes evident that the donors' and IPs' expectations from the project varied significantly. The donors, who also act as PIBOs, faced pressure from the government to provide sufficient and suitable evidence for EPR compliance. Their primary concern was to maintain their business volume and profits without disruptions. On the other hand, both the IPs and UNDP aimed to ensure that the MRFs benefited the waste workers and contributed to controlling plastic pollution. The divergent expectations created challenges in aligning the project's objectives and outcomes among different stakeholders. Therefore, the PIBOs consistently urged the IPs through the UNDP city and MRF teams to achieve the targets for both collection and processing of various categories of plastic waste, despite the IPs being aware of the ground-level challenges. The IPs understood that, except for PET, which is upcycled into fibre, all other plastics undergo downcycling and lose value. Consequently, the IPs faced difficulties in meeting the plastic processing targets, particularly with the added burden of GST payment, transportation, and other costs to maintain traceability with recyclers. The recycling of other plastics predominantly remained in the informal sector due to limited investments in upgrading recycling technology. However, the PIBOs unjustly attributed the slow outward movement of plastics from the MRFs to inefficiency and lack of professionalism on the part of the Implementing partners. As a result, they introduced Enterprise and special partners, none of whom could significantly change the situation. On the other hand, the IPs, with their extensive experience in the field and dedication to improving the livelihoods and remuneration of waste workers, had actively collaborated with the government, CSR

initiatives, and various mechanisms to pursue social and economic justice for the waste workers. Their vision was to uplift the lives of the waste workers through their partnership with PIBOs. However, they were disappointed to find that the PIBOs lacked understanding of the ground-level challenges and were solely focused on advancing their own agenda. While UNDP made efforts to bring all stakeholders, including the government, together for collaborative discussions, it faced challenges in forging a unified and purposeful plan of action, which was the project's main objective. Although UNDP successfully raised awareness among citizens and implemented effective models for citizen participation to prevent littering and improve plastic collection through workshops and activities, there is scope for improvement in addressing the technologies used for processing plastics other than PET. Therefore, it is crucial for UNDP to reflect on its strategies and chart a new course to further enhance the impact of this project.

As a development agency, UNDP's core focus should be on improving the lives of the underprivileged and marginalized communities, working towards their upliftment and social justice, as evident in its efforts through projects like Utthan. Utilizing Extended Producer Responsibility (EPR) as a catalyst for positive change is commendable, but setting impractical targets for plastic collection and processing should not be within UNDP's scope. It is essential to reexamine and realign the theory of change, if necessary, to prioritize the needs of the poor and waste workers rather than solely catering to the insatiable requirements of large PIBOs, which might diverge from developmental objectives.

4.3.2 Work Planning

4.3.2.1 Reviewing any delays in project start-up and implementation, identifying the causes, and examining if they are resolved

Limited information is available on project start-up and implementation delays. In a few reports, it is mentioned that delays occurred primarily due to the process of obtaining permissions and signing MOUs with the ULBs. The identification of suitable land for MRF construction also caused significant delays in some cities. Additionally, ULBs took time to commit to the construction of MRFs, purchase equipment, and provide essential utilities such as electricity, water connections, and sanitation facilities, along with necessary amenities like offices and creches. In interviews conducted with both IPs and UNDP teams, it was emphasized that approaching the state Urban Development Department could have potentially avoided the delays experienced during project implementation. In the case of the HCCB project, this approach was adopted in some later projects, resulting in positive outcomes. Cities responded promptly, and some states like West Bengal and Odisha adopted the model and continued its implementation. However, in the HUL funded project, there was a setback when the ULB in Mumbai withdrew its permission to allocate land for the MRF due to delays caused by the COVID pandemic.

4.3.2.2 Suggesting ways to re-orient work planning to focus on results

Involving state and local governments in the planning and monitoring of projects can significantly enhance their effectiveness and sustainability. When UNDP creates successful and sustainable models, state governments often adopt and integrate them through their ULBs or rural local bodies. This collaborative approach can be observed in various instances within this project, where the team proactively coordinated with state governments and their subsidiary agencies to achieve positive outcomes.

4.3.2.3 Examining the use of the project's results framework/logframe as a management tool and reviewing any changes

The project's results framework/logframe would benefit from significant improvement. While review meetings and guidelines have been conducted, the reporting lacks essential details. The reports mainly focus on the quantity of plastic waste collected, processed, and the types of plastic waste depicted through pie diagrams. Additionally, they provide information about the number of waste workers onboarded. However, they lack specific data on the number of workshops and skill training sessions conducted, their types, and their locations. Including these details would enhance the project's monitoring and evaluation process, allowing for a more comprehensive understanding of its outcomes and impact.

None of the reports, whether quarterly or annual, contain a proper results/logframe framework that comprehensively tabulates and reports all the four components and their sub-components. Inconsistencies are observed in reporting some elements, like the number of established SHGs, in different reports, making it challenging to enumerate and assess sub-components accurately. Additionally, the gender-wise onboarding of waste workers/SSs is available in some reports but absent in others, further hindering a comprehensive evaluation of the project's objectives. These gaps need immediate attention to ensure a thorough assessment of the project's implementation at the end of its period.

Furthermore, the management and finances of the HCCB funded project are not adequately reflected in any of the reports. However, a positive note is that one of the MRFs in the HUL funded project has undergone a comprehensive financial analysis, providing insight into the financial problems and challenges faced. It would be beneficial to extend such analysis to all MRFs involved in the project to gain a holistic understanding of financial issues across different locations. Addressing these concerns and enhancing the reporting structure will help in better evaluation and learning from the project's outcomes and challenges.

4.3.3 Finance and Co-financing

4.3.3.1 Considering the financial management of the project, with specific reference to the cost-effectiveness of interventions

The financial details available only up to the total utilization certificate for the entire project indicate that 74.43% of the funds were utilized for the four main components of the project, which form the actual project implementation. The remaining slightly over 25% has been allocated to project management costs and general management support, excluding the salaries paid to UNDP team members or consultants. In my opinion, this is a significant allocation, and UNDP justifies it as information shared with and agreed upon by the donors. However, it is essential to note that the financial utilization for each of the sub-components as outlined in the Project Document is not available, making it challenging to assess the specific financial allocation and utilization for individual project elements. To ensure transparency and effective financial management, detailed reports on the utilization of funds for each sub-component should be made available for further evaluation and accountability. After discussing with the person responsible for financial management, it was clarified that the various items debited to each major head in the Utilization Certificate (UC) were carefully documented. The actual expenditure reported under each component of the project aligns with the budget specified for the respective donor-funded project. It is worth noting that the budget is denominated in US dollars, while the UC is in Indian Rupees. To make a comparison between the budgeted and utilized amounts, an average exchange rate of Rs. 75 per US dollar

was used. However, it is important to mention that as an audited project, such intricacies would have been thoroughly addressed by the auditors. Since UNDP is a multilateral agency, its books of accounts are maintained in US dollars, and the Prodoc Budget is also captured in US dollars. Nonetheless, the Donor Agreements are denominated in Indian Rupees, and accordingly, the UC is submitted in Indian Rupees to comply with the donor requirements.

HCCBPL Project:

Regarding the cost-effectiveness of the HCCB funded project, it is evident that the budgeted amount for Component 1, which involves developing a socio-technical model and conducting meetings and workshops in the cities, was INR 54,72,11,150 for four years and INR 82,08,17,725 for six years, as per the Project Document. However, the actual utilization under this component is INR 16,22,80,32, which is approximately one-third of the estimated amount for four years. The Project Document had allocated this budget for conducting 100 meetings for the selection of stakeholders and 2000 meetings for establishing ward-wise Resident Welfare Associations (RWAs) over six years. Even if the number of meetings was reduced to 66 and 1333 respectively, considering 33 cities instead of the original plan, it would still account for nearly 2500 more meetings and workshops for Components 2, 3, and 4 over the six-year duration. However, the reports do not provide comprehensive information on whether these meetings and workshops were held for their intended purposes. Moreover, there is no consistent log frame report available that enumerates the workshops/meetings held for each component. Furthermore, there is no detailed enumeration of the number of RWAs established in the different cities as per the original plan. To ensure a more accurate assessment of the project's progress and cost-effectiveness, a more comprehensive reporting framework and consistent documentation of activities across all components are crucial.

The stakeholders have acknowledged having meetings with the UNDP team, but it is apparent that the expected number of studies (50 in six years or 33 in four years) for the establishment of a socio-technical model is not available in the reports. Therefore, the results of these studies, which were intended to be a crucial part of the project, are also missing from the reports. As a result, it is challenging to ascertain the effectiveness of this component in achieving its objectives. Further documentation and reporting are necessary to ensure a comprehensive understanding of the progress and impact of the project in this area. Similarly, the largest component of the project, which involves implementing an economically sustainable model, plastic waste preparation for recycling, and strategies for replication, monitoring, etc., had a total allocated amount of INR 78,17,59,650 for six years and INR 52,11,73,100 for four years. However, the utilization of funds under this component shows only INR 19,41,92,920 for four years, which is merely 37% of the allocated amount. This underutilization is evident in the decline of the project from initially having 33 Material Recovery Facilities (MRFs) in 25 cities to having only 22 MRFs by December 2021, and further dwindling to just 8 MRFs by the end of the 4th year in October 2022. The inefficiency is also reflected in the fact that almost half of the 1,19,407 MT of plastics collected during these four years could not be recycled, resulting in the project incurring transportation and co-processing costs for disposal. The lack of cost-effectiveness is evident as the project's intended strategies for replication were not achieved, leading to the unfortunate closure of established MRFs. To improve cost-effectiveness, a thorough evaluation of the strategies and their implementation is necessary to ensure the sustainability and success of the project. For component 3, aimed at institutionalizing plastic waste management into ULBs, mainstreaming of Safai Sathis, and forming SHGs for SSs to improve their living and economic conditions, the budget allocation was INR 28,65,25,950 for six years and INR 19,10,17,300 for four years. As per the utilization

certificate, INR 3,24,84,735 was used, accounting for 17% of the allocated amount. This amount was employed for institutionalizing 11,889 SSs, which is 36% of the targeted 33,334 SSs to be institutionalized in four years. Although the target may not have been fully achieved, this component can be considered cost-effective, as corroborated by the responses from the questionnaires. Although the SSs did not experience significant economic benefits or considerable improvement in living and working conditions, this initiative marked a promising beginning and provided them with access to essentials like identity, bank accounts, and credit. It laid the groundwork for potential future advancements in uplifting their livelihoods and social status. For component 4, a significant portion of the total budget, 44%, was allocated for knowledge management, monitoring, and the development of a communication system, which was successfully accomplished to a great extent. An app was developed and utilized for inputting all data related to incoming and outgoing quantities of plastics and other dry waste at the MRFs, their processing, sale, EPR earnings, and helped in efficient project monitoring. The app proved to be a valuable tool, but it was eventually closed due to certain reasons. However, the data registers that were used to capture information and establish traceability through documents proved useful in maintaining continuity. This component can be considered somewhat cost-effective, even though achieving certain objectives such as best practices in 10 cities, guidelines for innovative practices, permanent and online project results monitoring, and information exchange protocols could not be fully realized. Nonetheless, the knowledge management and monitoring efforts contributed significantly to the project's overall success.

HUL funded project:

In this project, the allocated amount **for component 1** is INR 51,58,800 for 4 years, covering baseline methodologies, studies, and establishment of RWAs with meetings. The utilization is INR 5,21,584 for 3 years, which is 18.3% of the budgeted amount (INR 2,855,500) for the same period. Due to the absence of logframe format reports, it is challenging to determine the exact number of baseline studies and established RWAs, making this component less cost-effective. Although the report claims 38.66% achievement in onboarding 78,464 households/institutions until Dec 2021, it falls short of the target (25%) cumulatively.

For component 2, allocated at INR 4,78,10,530 for establishing MRFs and plastic waste preparation for recycling, the utilization is INR 3,49,54,702 in three years, showing 73% fund utilization. However, the plastics processed by registered recyclers until Dec 2021 is only 5,604.84 MTs, claiming 40.46% achievement of the target, which is only 16.34% when compared to the original target (34,300 MTs). Even if the target is proportionally reduced for three years, the achievement is just 20%, making this component not financially effective.

In component 3, the target adjusted for 3 years (1200 for 3 years from 1600 for 4 years) is 1227, which is 102.25% achievement. The amount utilized is INR 3,24,84,735 out of INR 3,23,70,668, making this component financially effective with a 100.3% utilization rate.

Regarding component 4, which involves communication, documentation of best practices, and monitoring, the allocated amount is INR 6,60,88,564, while the expenditure is INR 6,44,55,089, exceeding 100% utilization. However, the KPI for this component is not available, making it challenging to assess its cost-effectiveness.

4.3.3.2 Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.

The main reason for changes in fund allocation was the impact of COVID, which hindered the continued collection of waste from the various apartments and institutions that were onboarded. Additionally, the donors made an announcement by December 2021, stating their decision to discontinue the project due to the expected changes in the PWM Rules, which were scheduled to be promulgated from early 2022. Consequently, the time period for the project was shortened, leading to appropriate adjustments in the fund allocations.

4.3.3.3 Having the appropriate financial controls, including reporting and planning, does that allow management to make informed decisions regarding the budget and allow for timely flow of funds

Yes, that approach was taken, and informed decisions were made regarding the budget. However, due to the donors' insistence, performance-based disbursement of funds was adopted, causing various difficulties for Implementation Partners, who encountered numerous challenges, particularly in finding registered recyclers and generating revenue. Additionally, they had to manage the burden of paying GST and transportation costs, not only for recyclables but also for non-recyclables to distant co-processing cement plants. Many IPs expressed their dissatisfaction with this kind of decision, as they had to continue supporting SSs who heavily relied on their daily earnings from waste. IPs believed that such a stringent, donor-driven approach should have been discussed with them before its implementation.

4.3.3.4 Commentary on co-financing: is co-financing being used strategically to help the objectives of the project? (Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?)

The majority of the Co-Financers are ULBs in the cities who were approached, and regular reports were shared with them. The team and the implementing partners maintained constant communication with their respective ULB officials, ensuring commitment of funds for the construction of the MRFs with required facilities and equipment. This approach was successful in achieving the project objectives in most cases, except in a few instances like Siliguri, Ranchi, and G South in Mumbai, where co-financing could not be achieved. The IPs themselves acted as co-financers since the donors supported only partial salaries of Safai Sathis and full salaries of a supervisor and facility manager. The IPs had to cover the remaining costs from their earnings or grants received from the government or other agencies. Additionally, the traceability process for plastics required payment of GST and transportation, which consumed a significant portion of the revenue earned, reducing the amount that could be paid to the SSs. Some ULBs compensated the IPs, but in many cases, the IPs had to bear these costs from their own resources. Moreover, delays in document verification at the UNDP/donor end added further financial pressure on both the IPs and the SSs

4.3.4 Project-level Monitoring and Evaluation Systems

4.3.4.1 Reviewing the monitoring tools currently being used (Quarterly/Annual reports (for all donors) capturing tonnage, Safai Sathis number, IEC activities, visits to Swachhta Kendra by key officials): (Do they provide the necessary information? Do they involve key partners? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?)

The current evaluation tools, quarterly, and annual reports are satisfactory, but the format lacks comprehensiveness. A log frame format with distinct components and measurable KPIs

should be developed. Currently, the reports focus on plastic tonnage, processing, waste worker onboarding, and IEC activities in detail, which is primarily driven by donor requirements. A more holistic approach encompassing all project components and their respective outcomes would provide a better understanding of the project's impact. For effective monitoring of the project, comprehensive measurement of Component 1 should include details on baseline studies conducted, meetings with citizens to form RWAs, interactions with stakeholders (citizens, ULBs, and IPs) for developing the socio-technical model, etc. However, such specific details are not provided in the reports. Similarly, Component 2 encompasses more than just plastic tonnage and processing. It involves establishing MRFs, organizing drives, meetings, equipment usage, running costs, product management, handling recyclables and non-recyclables, cost-effectiveness, deficit analysis, SSs' salaries, support from donors and ULBs for their livelihood, working conditions, healthcare, education, etc. These aspects require proper enumeration and evaluation for a more comprehensive assessment. Component 3 should not only focus on onboarding waste workers but also on the number of SHGs formed, the type of skill-building and support provided, and the utilization and benefits received by the waste workers. Additionally, it is essential to include gender-based data to understand the integration and benefits received by male and female waste workers.

Regarding Component 4**,** the focus should extend beyond describing IEC activities to encompass the development of various educational materials, knowledge events, and products. It is important to track the number of model case studies developed and disseminated, as well as the approach for national spread and sharing of information.

Furthermore, if the app was used, detailed documentation of its utilization, the number of MRFs established using it, their cost-effectiveness, and specific uses should be included.

Hence, the current format for reports is inadequate for effective monitoring and evaluation, and a more comprehensive log frame format with measurable KPIs is necessary to assess the project's progress accurately.

4.3.5 Examining the financial management of the project monitoring and evaluation budget

(Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?)

The current monitoring approach appears satisfactory, but the discontinuation of the online monitoring app and the shift to manual methods with computerized databases is evident. To make monitoring more practical and inclusive, developing apps compatible with ordinary phones for waste workers would be beneficial.

Adequate funding for Missions is crucial, as reviewers and evaluators require sufficient resources to visit project areas, interact with people, and assess the project's on-ground impact effectively.

4.3.6 Stakeholder Engagement

In my opinion, stakeholder engagement mainly revolved around donors and ULBs. However, a better approach could have involved engaging with state governments to encourage cooperation from their respective ULBs. The perception among stakeholders was that the

project was driven by donors due to its association with EPRs, and adaptive management was influenced by donor preferences. RWAs, ALMs, Community, and Social Organizations had minimal engagement, often participating as audiences during workshops and training sessions, providing feedback to individual consultants for brief periods. A more inclusive and interactive approach with stakeholders would have been beneficial.

4.3.7 Project management

(Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders? Do these include CSO's including women led CSOs that have direct experience and knowledge of working with collectives of informal workers?)

The project successfully engaged with various stakeholders, including registered recyclers, co-processing units, transportation agents, and other entities. However, it missed the opportunity to involve women-led CSOs and organizations experienced in working with informal worker collectives directly. The project's focus on "professionalization" led to the inclusion of more enterprise and special partners to increase plastic collection, segregate plastics into numerous categories, and achieve targets. Unfortunately, this approach compelled Safai Sathis to procure EPRs instead of uplifting them. The implementing agencies, although experienced, were not adequately consulted on these aspects. A more inclusive approach with a focus on empowering informal workers could have yielded better results.

4.3.8 Participation and country-driven processes

(Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?)

Several local and state governments actively participated in the project, with some successfully integrating MRF management into their agencies, like in Kerala and Jammu, while others developed innovative models like Samruddi kendras in Odisha, combining wet and dry waste management in decentralized zones. However, in states where original IPs lacked support from donors or ULBs, they had to close their operations. At a national level, the Ministry of Housing and Urban Affairs (MoHUA) is developing a comprehensive guidebook on MRF development and management, which will be distributed to all states and Union Territories. This initiative aims to promote best practices and sustainable waste management across the country.

4.3.9 Participation and public awareness

(To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

The reports and notes indicate that the project focused on public awareness and involvement in waste segregation at the source. Various campaigns like "plastic lao thaili pao," "meal for plastics," and similar projects were conducted to incentivize the public to reduce wastage and increase plastic collection for the IPs. Additionally, efforts were made to prevent plastic "leakage" by engaging waste collectors and connecting them to the MRFs, while also involving local domestic helpers, municipal workers, and householders in the waste management process. The aim was to create a comprehensive approach to waste collection and segregation, encouraging active participation from various stakeholders in the community. The implementation of these schemes and incentives did not result in an increase in the waste

pickers' share in the value chain or significant improvements in their living conditions. While some newly constructed MRFs showed a slight improvement in their working conditions, the overall impact on waste pickers' socio-economic status remained limited. More comprehensive and targeted measures are required to address their needs and enhance their livelihoods within the waste management system.

4.3.10 Reporting

(Assess how adaptive management changes have been reported by the project management and shared with the Project Board.)

The project lacks documentation and transparency in terms of adaptive management changes and interactions with key stakeholders. There are no records of meetings or minutes of discussions with the project board or management team regarding adaptive management practices. Only one meeting between HCCB and the donors resulted in suggested changes, which were incorporated in subsequent MOUs with IPs and EPs. However, it is unclear if these changes were communicated to the project board. Additionally, despite requests, information about the project advisory board, expert group, and meetings with pollution control boards was not shared with the consultant, leading to limited insight into the decision-making process and stakeholder engagements.

(Assess how lessons derived from the adaptive management process have been documented, shared with key partners, and internalized by partners.)

No such documentation was received nor was it accessible to the consultant.

(Quarterly/Bi-annual/ Annual project reports – for all donors)

4.3.11 Communications

The consultant was informed that important quarterly and annual reports were regularly shared with all stakeholders. However, there is no evidence to support the claim that project outcomes and sustainability were shared with them. The lack of accessible communication makes it difficult to ascertain whether relevant information regarding project progress and its long-term impact was effectively disseminated among the stakeholders.

(Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?))

It is evident that no communication to the public regarding the impact of the project was conducted. The planned workshop and events to share the project's impact with the public were not accessible to the consultant, and no reports on these activities were available. The public awareness campaigns aimed to raise awareness about plastics, promote segregation, and encourage responsible waste disposal, but there is currently no evidence of their web presence or extensive reach.

4.4 Sustainability

4.4.1 Financial risks to sustainability

The analysis of the purchase and sales operations in the HUL project reveals that the waste collection and sales operations in MRFs are fragile, with only 50% of the sales coming from plastics and the other 50% from non-plastic waste like craft board, paper, and glass. This fragility is due to various factors, including the presence of non-recyclable plastics and mixed plastics in the waste brought to the MRFs, resulting in around 28% of the plastics being classified as rejects. Despite awareness programs and source segregation efforts, plastics collected by municipal trucks often contain mixed plastics and MLPs, which are then diverted away from the MRFs by housekeeping staff and municipal street sweeping staff in housing societies and commercial complexes.

Despite the various challenges and reasons mentioned, it is evident that MRFs are still able to purchase waste from different sources, including households, commercial establishments, and municipal workers, indicating that almost all the waste in a locality is finding its way to the MRFs. The main exception to this is PET bottles, which may be sold separately by intermediate waste collectors, such as housing society housekeeping staff or municipal workers. The attractiveness of lucrative streams established by fibre manufacturers to acquire waste at lower prices is a significant factor contributing to the diversion of PET bottles from the MRFs.

Despite these efforts, the expenditure and revenue statement reveals a delicate gross profit margin of 12%. However, this margin is eroded by significant indirect costs, where 65% is attributed to accounting costs and staff salaries (excluding labour charges already factored in while calculating gross profit). Consequently, the MRFs face financial losses, posing a considerable risk to the long-term financial sustainability of the project. Upon reviewing the Utilization certificates of both HUL and HCCBPL projects, it was clarified with the responsible accounts personnel that UNDP incurs certain overhead costs. Activities and budgets are meticulously discussed and agreed upon with respective donors. The overhead cost is 8% for HCCB and 13% for HUL, which includes DPC and GMS as UNDP Overheads. It's important to note that salaries and expenses of UNDP staff are charged under the Project Management Unit (PMU) cost, and not allocated to MRFs. PMU cost is attributed to project monitoring and not classified as overheads. Despite the donors' concerted efforts to support MRFs in maximizing plastic waste collection, covering transportation, and non-recyclable waste disposal expenses, the MRFs struggled to meet their recurring costs solely through this aid. Consequently, most of them faced financial unsustainability and eventually closed down. The donors were also taken aback as their best endeavours did not yield the expected impact on improving waste workers' livelihoods or fulfilling their EPR obligations.

In spite of some cosmetic improvements to existing MRFs, such as the addition of a creche and refurbishment of flooring, none of them were able to generate surplus funds for upgrading into model MRFs. The working conditions of waste workers, now called Swachh Sathis, improved as they gained access to government scheme benefits like Aadhar card, ration card, PMJAY, and bank accounts. However, even the newly constructed model MRFs, equipped with all facilities, have struggled to achieve financial sustainability under the UNDP project. Few implementation partners, like Stree Mukti Sanghatna (SMS) or Aasra Welfare Society, have continued with the project due to their well-established presence and financial strength, allowing them to survive the project and derive some benefits from it. Most other

implementation partners (IPs) expressed that the project was a costly experiment that had negative consequences, with the waste collectors bearing the maximum burden. IPs emphasized that they required Extended Producer Responsibility (EPR) in the form of financial support for managing the non-recyclables and rejects, which constituted a significant portion of the waste (at least one-third of plastics, even with efficient sorting, and up to half of plastics at worst), rather than just for recyclables.

4.4.2 Socio-economic (socio-technical) risk to sustainability

It is unfortunate that adequate due diligence on the scientific aspects of plastic recycling was not conducted before designing this project. There was an assumption that there was no lifecycle study or analysis of plastic waste in the country. Furthermore, sufficient consultations with scientific institutions and experts were not carried out. Despite multiple requests, there were no minutes of meetings available with scientific institutions such as CPCB, DPCC, MoEFCC, CIPET, NEERI, etc., and their reports were not accessible for the consultant's study or analysis. While component 1 outlines four activities, including baseline development, surveys, and consultations, the reports on these aspects are scarce. Only a list of plastic recyclers in India for the project locations is available. Despite inquiries with the CPCB official responsible for plastics and EPR, he denied any knowledge or advisory role in the project. The importance of the advisory committee activity outlined in the pro-doc is emphasized due to the abundance of information and published literature in India about plastic recycling practices. The regulatory ministry, MoEFCC, has promulgated various rules since 1999, including the PWM Rules 2016 and subsequent amendments, which are based on scientific studies. The PWM Rules 2016 also include detailed standards for the manufacture and degradation of bio-degradable and compostable plastics, promoting their use over synthetic polymers (thermoplastics). Additionally, it is essential to consider that many thermosets are not recyclable.

The introduction of Extended Producer Responsibility (EPR) for the FMCG industry was driven by the significant amount of plastics they use for packaging, leading to environmental challenges. Currently, waste picking by marginalized individuals is the primary means of collecting plastic waste from roadside bins, households, and commercial establishments. Further, waste pickers often supplement their income by collecting and selling around 50% of non-plastics, such as paper, cardboard, glass, and metal. The textile industry in India, a major contributor to export revenue, has made significant investments in research and development to establish high-end recycling processes for PET bottles. Through this innovation, PET bottle waste is transformed into high-quality polyester fibre, which can be used to produce premium synthetic clothing with substantial market value, thus facilitating upcycling. While there may be some wastage in this recycling process, it is comparatively minimal. However, it is crucial to differentiate between recycling and the circular economy concept. Although termed as a circular economy, the process mainly involves recycling, and eventually, the materials will reach their end-of-life and be disposed of in landfills. When beverage industries, like HCCBPL, are obligated to use 30% recycled content in their beverage bottles while ensuring consumer safety, the recycling process may lead to over 50% wastage and hazardous sludge, posing potential disasters to the environment. The adequacy of their Extended Producer Responsibility (EPR) to cover the environmental damage needs careful evaluation. Additionally, upscaling PET waste to food-grade plastics requires substantial investment in R&D, and it remains to be seen whether FMCGs in India will take on such ventures. Flexible plastics like LDPE, LLDPE, and PP used by FMCGs such as HUL, and some hard plastics like HDPE used for transportation by both HCCBPL and HUL, are

currently subjected to down-cycling processes mainly conducted by informal recyclers. The products obtained after multiple uses undergo significant degradation due to photo and thermal effects, and they contain toxic additives and migrating molecules. As a result, these recycled products can only be utilized for low-quality consumer goods with minimal resale value. Tragically, these materials ultimately break down into microplastics, posing grave environmental concerns and adversely affecting the health of all living organisms on Earth. Recycling flexible plastics like LDPE, LLDPE, and PP into food-grade plastics would indeed demand substantial investment. However, achieving such a goal and ensuring minimal wastage remains uncertain. Moreover, the issue of managing the resulting wastage arises, as an increase in Waste-to-Energy facilities might lead to severe air, soil, and water pollution.

Addressing these concerns requires careful consideration and robust environmental management practices. Merely submitting EPR certificates for plastic collection and providing basic facilities for waste collectors is insufficient and will not cover MRF expenses. Moreover, dealing with the large portion of non-recyclable waste poses challenges and burning it in cement kilns can worsen air pollution and expose us to harmful substances. To sustain plastic packaging, FMCG industries must invest heavily in advanced technologies like 'Feedstock recycling' to minimize waste and consider secure landfilling options. Responsible and sustainable solutions are essential to address the plastic waste issue effectively. The project's goal of providing improved facilities, PPE, and support to waste collectors and MRF workers is commendable. However, relying solely on the FMCG industry's EPR obligations to collect and channelize plastics to recyclers or cement kilns without proper research was overly ambitious. Assuming that plastic waste holds significant wealth and that the challenges faced by waste collectors are solely due to their qualifications reflects a lack of understanding of the recycling industry's complexities and realities. A more comprehensive approach, including advanced recycling technologies and sustainable waste management practices, is required to address these challenges effectively.

4.4.3 Institutional framework and governance risks to sustainability

Improving the institutional framework and governance surrounding sustainability efforts presents a valuable opportunity. By incorporating the insights and experiences of collectors, aggregators, and established NGOs, the project's efficiency and effectiveness can be enhanced. While some progress has been made in developing sorting skills and identifying high-value plastics, it may be prudent to reassess the emphasis on certain machinery like the 'Phatka machine' and extruder to avoid unnecessary costs and operational challenges.

Moreover, increasing the number of registered recyclers capable of issuing valid recycling certificates will aid in better regulating the industry and reducing unregistered and illegal facilities. To ensure the long-term viability of MRFs, a thoughtful consideration of the equipment and entities involved in their operation is crucial. While private entities bring specialized expertise, NGOs can contribute through community engagement and environmental stewardship.

By prioritizing the needs of MRF operators and focusing on equipment for secondary sorting and improved saleability, MRFs can continue to play a valuable role in the recycling process.

Emphasizing collaboration and a holistic approach will lead to more sustainable and impactful outcomes for all stakeholders involved in plastic waste management.

4.4.4 Environmental risks to sustainability

Plastics are chemical compounds which are complex molecules and are being used because of the specifications of polymerizing them and moulding them using additives and specific temperature and other conditions which can modify their ductility and plasticity as required for a particular use. Thermoplastics have the capability of being melted at a certain temperature and extruded as pellets which can be used for remoulding or for blowing into thin plastics. Since the whole process involves using low temperatures, in the range of 100-300 Celsius at the maximum, many ‘recyclers’ have been using this to create a demand for the plastics which are collected by ragpickers and waste collectors, who are extremely poor people dependent on collecting and selling waste to earn their livelihood.

These recyclers use bare minimum equipment to melt and remould, which cannot control the thermal degradation that the plastics would undergo in such operations and hence the entire recycling operation including the emissions emanating from such activities are very high risk to environmental sustainability. This has been established many times by placing air quality monitoring equipment in recycling units and measuring not only particulate matter but also gaseous emissions.

The resulting plastic agglutinate or granules despite the additives and colours added during the operation are highly degraded and are low value items and if they are mixed with virgin polymers to make them recyclable, they only result in products that are highly toxic, hazardous and would easily disintegrate in the environment creating microplastic pollution as well as pollution of air, soil, water, food, beverages too.

Installing Agglo gatta machines, Hoppers for melting and extruders in MRFs is highly hazardous and is extremely harmful to the health of the workers as well as to the nearby community since the pollutants will spread through air, water, food and affect the most vulnerable in the community. Shredders without proper pollution control will also significantly increase the particulate matter pollution. Hence, installation of such equipment in MRFs should be strictly avoided.

4.5 Risk Management

4.5.1 Validating the Risk

The identification of certain risks is of utmost importance, such as adhering to UNSMS requirements and ensuring that recipients are not listed by the Security Council Committee. Compliance with Social and Environmental Standards and related Accountability Mechanism is also crucial. Measures to prevent misuse of funds, fraud, or corruption by officials, consultants, subcontractors, and sub-recipients while implementing the project or using UNDP funds are duly acknowledged.

Furthermore, it is commendable that all clauses under the "Risk Management Standard Clauses" are adequately reflected, with necessary adjustments, in all subsequent sub-contracts or sub-agreements entered into after this Project Document, including capacity assessments and audits, etc. This demonstrates a proactive approach towards risk

management and accountability throughout the project's execution. It is also appreciated that the following are in place:

4.5.2 Branding and risk management

• Develop an easy-to-understand name for the partnership for easy audience identification and recall
• Develop a visual identity for the partnership
• Develop a joint strategy for crisis communications and reputation risk management
• Develop a crisis communications plan for risks specific to UNDP

It is also appreciated that communications risk assessment includes:

1. Identifying the potential media and communications risks for the partnership
2. Assessing the severity of these risks
3. Outlining a plan to mitigate risk

It is further appreciated that crisis communication will contain:

• A deep inventory of potential crisis and brand and public relations vulnerabilities
• Makeup of the crisis management team
• Team assignments and responsibilities
• Details on situation assessment procedures, including stakeholder analysis
• Guidelines for response, which include: Designation of spokesperson(s), internal communications, external communications, rumour control activities, response activity checklist
• List of pre-agreed holding statements
Protocols for follow up with UNDP India, with donors and outside agencies: Follow up Information, post-mortem meeting(s), plan update (if required). All these are in place.

4.5.3 Annex G: Capturing the Risk

Annexe G table unfortunately does not entirely capture the risks especially regarding Plastic waste reprocessing, which is stated as follows:

The potential health risks associated with the resizing, grinding, and extrusion processes are significant and should not be underestimated or overlooked. Inhaling dust particles during these operations can lead to upper respiratory ailments, while skin contact with dust particles can cause dermatitis and skin disorders. The release of volatile substances during extrusion, such as styrene and benzene, can result in pharyngitis, rhinitis, and unproductive cough. Additionally, exposure to fumes containing chlorine and HCl can impact the upper respiratory tract and cause lachrymation of the eyes.

These risks are further exacerbated by vibrations and mechanical friction during the process, which can lead to health issues like white fingers and callosities. Unfortunately, the risk and mitigation table in the Amended Project Document on pages 23 & 24 lacks a comprehensive understanding of the technology recommended and the actual site conditions in MRFs.

It is crucial to acknowledge that the health hazards extend beyond what has been stated in the project document. For instance, the release of volatile substances during extrusion can also lead to serious health issues, including cancer, as documented by the World Health Organization (WHO). The fumes containing chlorine and HCl can have far-reaching effects,

damaging not only the upper respiratory tract and causing eye irritation but also impacting the lungs, heart, and other organs.

Moreover, products manufactured through unsafe and low-grade recycling processes may contain harmful toxins, posing a significant risk to consumers' health. This could potentially lead to a major public health disaster if these products are used by unsuspecting individuals. Considering these hazards, it is imperative to reevaluate and address the safety and environmental concerns associated with the recycling processes being employed

4.5.4 Annexe F: Resource Requirements for Project Implementation

After examining all documents given, the consultant did not find any minutes of meeting or one which is based on any policy document. Hence, this is recognized as a big risk for the project and one that endangers the lives of the workers as well as the community. Furthermore, this risk also proved to be a financial risk for the running of the MRF as has been explained in previous sections. The inclusion of the following sub-section has no basis.

4.5.4.1 Land, Equipment and Machinery:

As mentioned in the Amended ProDoc on page 5, the project aims to establish plastic waste recycling centres in 50 selected cities. These centres will be developed at suitable sites, preferably on readily built-up land allocated by the respective municipalities. In each selected city, there will be several decentralized waste collection centres and one main waste collection centre, which will serve as the location for the recycling centre. Construction activities required for the sites will be undertaken with support from Municipalities or ULBs as needed.

The processing machinery, such as the fatka machine, bailing machine, shredder, extruder, etc., will be carefully selected and purchased based on the required capacity of the recycling centres, determined by the expected quantity of waste collected. The technical specifications for each machine will be designed and approved by the respective authorities before finalizing the purchasing process. In some cases, the machines may also be provided by backend recycling companies, subject to discussions and negotiations with municipal commissioners in different locations. The approach may vary depending on the specific circumstances and arrangements in each place.

The objective of the proposed project is: To minimize negative impacts and risks to environment and to human health in India, by enhancing sustainable Plastic Waste Management practices, through a socio-technical model (segregation collection/ recycling), its institutionalization with respective governance mechanisms, and ensuring compliance with regulations to improve use of resources and socio-economic conditions of waste pickers in line with the Plastic Waste Management (amendment) Rules, 2021 and subsequent amendments and the Swachh Bharat Mission in India.

4.6 Relevance

4.6.1 To what extent was the project in line with the national development priorities, the country program’s outputs and outcomes, the UNDP Strategic Plan and the SDGs?

The project is relevant in many respects. It is focusing on the following project objectives:

Develop, implement, and support an economically sustainable model for managing plastic waste from packaging, ultimately reducing the negative impact of plastic use on the environment and health.

Design, sustain and support elements to institutionalize the plastic waste management model in governance bodies in cities.

Create improved socio-economic conditions for waste-pickers

Which are in line with the country's policies and SDG goals 1, 2, 5, 8, 11, 12, 15, 17.

4.6.2 To what extent does the project contribute to the theory of change for the relevant country programme outcome?

The conception of the project, aimed at improving working and living conditions for waste workers in India, is not only noble but also appropriate, in line with the SWM Rules 2016, which emphasizes integrating waste workers into the formal waste management system and ensuring fair price sharing opportunities.

As outlined in the project document, the theory of change indicates that the project's impact will mitigate negative environmental and health impacts by promoting sound plastic waste management practices. The project is expected to better manage over 1,40,000MT of plastic waste over six years, positively impacting the lives of approximately 38,500 waste pickers. Additionally, the project aims to implement decentralized city-level management models of plastic waste management, fostering recycling and improving the social conditions of waste-pickers. These results will be documented for replication and scaling up, while also identifying and addressing regulatory gaps.

However, the project's reliance on the Extended Producer Responsibility (EPR) mechanism and funding from Fast-Moving Consumer Goods (FMCG) PIBOs (Producer, importers and Brand Owners), which are Producer Implementing Bodies to achieve these objectives might have contributed to its failure in attaining the predicted impacts in the theory of change. Using market forces for development work, especially in a sector that has long been neglected and faces challenges in benefiting from government schemes, may have hindered the project's effectiveness.

Moving forward, it is essential to reconsider the approach and focus on collaborative efforts involving various stakeholders, including government bodies, waste workers, NGOs, and scientific institutions, to develop a more comprehensive and sustainable solution for plastic waste management and the betterment of waste workers' lives.

4.6.3 To what extent were perspectives of those who could affect the outcomes, and those who could contribute information or other resources to the attainment of stated results, considered during the project design processes?

It is unfortunate but these vital perspectives were not taken during the project design process.

4.6.4 To what extent does the project contribute to gender equality, the empowerment of women and the human rights-based approach?

The project has made a significant contribution to gender equality by involving many women waste workers alongside their male counterparts. However, in MRFs where the implementation partners might not be well-versed with the importance of women's inclusion and their unique requirements, needs, and human rights-based approach (e.g., sanitation or childcare), sufficient safeguards and facilities for ensuring safe working conditions, particularly for women workers, have not been adequately provided.

Furthermore, it was observed that after the announcement of donor withdrawal, women, especially those in an age group where physical or biological factors such as childbearing were assumed to be disadvantageous, were quietly excluded from participation.

To improve gender equality and ensure inclusivity, it is crucial to sensitize and train all stakeholders involved, including implementation partners and ULBs, about the specific needs and rights of women waste workers. Comprehensive policies and measures must be put in place to guarantee safe and equitable working conditions for all waste workers, regardless of gender, age, or other factors. Empowering women waste workers and promoting their active participation can lead to more sustainable and effective outcomes for the project and the waste management sector as a whole.

4.7 Effectiveness

4.7.1 To what extent did the project contribute to the country programme outcomes and outputs, the SDGs, the UNDP Strategic Plan, and national development priorities?

Intended Outcome as stated in the UNSDF Country Programme Results and Resource Framework: The main stated outcome is to strengthen environmental and natural resource management by 2022, enhancing communities' access to clean energy and resilience to climate change and disaster risks. Integrated approaches focusing on chemicals and waste management are adopted to reduce pollution and environmental degradation. The achievements of project outcomes and components have been thoroughly examined in the table in the previous sections, with detailed accounts of accomplishments obtained from various sources, reports, and evaluations.

4.7.2 Applicable Output(s) from the UNDP Strategic Plan as mentioned in the CPD:

To some extent, the project contributed to the country program outcome and outputs, SDGs, the UNDP strategic plan, and national development priorities. However, stakeholders, including donors, implementation partners, and ULBs, expressed concerns about the project's design, stating that it could have been better researched before its initiation. As a result, there was limited policy development in this direction, except for one aspect that may be somewhat related:

Indicator 3.2.1: The number of policies and programs promoting sustainable livelihoods and incorporating gender-responsive strategies for natural resources and ecosystems management is not recorded in any government report.

Indicator 3.2.2: The number of scalable initiatives incorporating improved management of ozone-depleting substances, chemicals, and/or wastes, are not mentioned either.

Despite the challenges, in some states like Kerala and several other states, policy changes have occurred in making it more inclusive and gender balanced, in Odisha, the project stimulated the Urban Development Department to design its own model of decentralized Samruddi Kendras that integrated wet and dry waste and involved women's self-help groups (SHGs) in their operation. This initiative provided the SHGs with livelihood opportunities, access to education for their children, safer workplaces, and improved access to sanitation, health, and insurance. Therefore, policy changes in states which are looking for viable models, has occurred.

While there was a slight improvement in the working conditions of Safai Sathis during the UNDP-implemented project, it is acknowledged that they could have received better compensation or fairer remuneration for their work.

4.7.3 To what extent were the project outputs achieved?

Project outputs were achieved but could have been improved. Despite facing challenges, valuable lessons were learned, and successes were identified as a foundation for future endeavours. Self-help groups were successfully formed in some MRFs, with specific IPs leading the way. Although there were difficulties in integrating MRF workers into these groups in certain cases, this avenue remains promising for community engagement and empowerment.

Furthermore, the project provided an opportunity to explore innovative practices and guidelines for plastic waste management. While these were not readily available to the consultant, they can serve as a starting point for future efforts. Although the project outputs met initial targets, there are still opportunities to gather information on environmental and health impacts and assess the regulatory needs of the sector.

Moving forward, it may be beneficial to reevaluate the employed strategies and focus on replicating successful approaches nationwide. Despite some limitations in knowledge management and information exchange, valuable insights were gained from the meetings and workshops held. By building on these successes and addressing the challenges encountered, we can strive for more effective and sustainable solutions for plastic waste management.

4.7.4 What factors have contributed to achieving or not achieving intended country programme outputs and outcomes?

The reason of not achieving intended country programme outputs and outcomes is because firstly the following assumptions are questionable, based on which the project design was developed:

“At present conditions, 4 immediate causes are under the Development challenge, described in the underlying paragraphs to follow, based mainly in five structural causes:

(i) Lack of precise knowledge about generation, Life Cycle Analysis (LCA), materials flows, impact on environment and health and waste management cost for policy development.

(ii) Economic interests of plastics producing companies and large plastic packaging users.

(iii) Society consumption patterns.

(iv) Low cost and good properties: resistance to water, heat keeping and transparency; and,

(v) Waste management (mainly collection and separation) difficult to establish owing to social reasons”

Of the above, (i) is not correct, others are only partially right. None of these are corroborated by secondary or primary research.

“As part of the efforts to secure better payment to waste pickers for plastic waste collected by them, efforts will be made to promote R&D to develop value added materials from waste plastics by establishing partnerships with reputed institutions as CIPET”. There is no evidence of this either.

The above sentences in quotes are from project document under Partnerships.

4.7.5 To what extent has the UNDP partnership strategy been appropriate and effective?

The intent to have partnerships was commendable and could have been beneficial. However, the project was heavily donor-driven, as evident from the quoted sentences below, and its main focus was on achieving EPR tonnage for the PIBOs, leaving little room for fruitful partnerships, even with the donors.

The project document stated, "Donors play a crucial role as stakeholders in this project, providing the majority of the financial support for its implementation. As part of the 5 by 20 Vision – 5 Million Women Entrepreneurs by 2020, the donors will comply with regulatory mechanisms emphasizing the involvement of manufacturers in setting up plastic waste collection centres in line with the principles of extended producer's responsibility (EPR). The project aims to learn from other similar programs nationwide and through Government-linked skills India, thereby creating more local jobs."

Furthermore, engagement with private sector agencies was considered crucial for obtaining technical and funding support for various project initiatives.

Although the partnership strategy could be considered appropriate, it was not entirely effective. Implementation partners (IPs), Safai Sathis, and even the ULBs became overly focused on achieving the EPR targets of the PIBOs, leading to dissatisfaction and unhappiness among other crucial stakeholders. The PIBOs, such as HCCB and HUL, did not meet the targets for PET bottle collection and other recyclable plastics, causing widespread dissatisfaction too.

To improve future partnership strategies, it is important to strike a balance between donor-driven objectives and collaborative efforts with all stakeholders. This approach will ensure better engagement, effective utilization of resources, and increased chances of meeting project goals while fostering positive outcomes for all involved parties.

4.7.6 In which areas does the project have the greatest achievements? Why and what have been the supporting factors? How can the project build on or expand these achievements?

The major achievement of this project is the increased focus on space for sorting, which has historically been a significant constraint in waste management. While the SWM Rules 2016 emphasized the establishment of Material Recovery Facilities (MRFs), various MRFs with excellent results have been set up in different parts of the country, such as Mysore, Bengaluru, Ambikapur, Pune, and others. However, since the project was intended to cover 50 cities, there was a need for a common plan with space requirements of 2000-10000 sqft, accommodating all necessary facilities.

Several organizations like Swachh, Stree Mukti Sanghatna, Hasirudala, and others have been working on different MRF designs to ensure convenience and safety. This project has also presented a design worth examining and emulating. Notably, not all MRFs were newly constructed, but those supported by the ULBs, were motivated by the project's requirements, with a focus on gender rights, sanitation, and human rights, making for a well-rounded design.

Based on the learnings from this project, a guidebook should be developed, covering various aspects of MRFs, to help fulfil some of the desired outputs. Incorporating ergonomic, environmental, and occupational safety measures in these designs will further enhance the effectiveness and sustainability of future MRFs.

4.7.7 In which areas does the project have the fewest achievements? What have been the constraining factors and why? How can or could they be overcome?

The area of best practices and knowledge management had the fewest achievements. The project's focus on fulfilling specific targets for plastic collection and other objectives, combined with the challenges posed by COVID, might have diverted adequate attention from establishing a robust 'socio-technical' model. A study-based approach involving various stakeholders like RWAs, implementation partners, ULB officials, scientists, public health experts, government regulators (e.g., Pollution Control Boards), and representatives of waste workers and women's organizations could have been adopted to develop this model.

Such an inclusive approach would have provided an opportunity to create not just a model but also the potential for replication in at least 9-10 locations, as envisioned in the project. These best practices would have been valuable educational material, including videos and other promotional content, for dissemination through different channels, including social media. The constraints were related to the absence of a comprehensive study and efforts to establish a truly sustainable socio-technical model involving all stakeholders. The participation of technologists from CIPET, pollution control boards, public health specialists, citizens, and especially implementation partners (NGOs) was lacking.

Additionally, there was significant pressure from donors to achieve the collection tonnage, as they were required to submit EPR statistics and traceability documents to the Ministry of Environment. Consequently, the project became overly focused on meeting these targets.

It was assumed that a lack of a professional approach contributed to not achieving the targets. Most training programs and workshops concentrated on increasing plastic collection, overlooking the entire value chain and its associated issues and challenges. The lack of attention to the broader context might have limited the project's overall success. To overcome this, start from the beginning and focus on making the proper socio-technical model.

4.7.8 Are the projects objectives and outputs clear, practical, and feasible within its frame?

Yes, project objectives and outputs are clear, practical, and feasible within timeframe, had they been implemented as envisaged.

4.7.9 To what extent are project management and implementation participatory and is this participation contributing towards achievement of the project objectives?

Project management initially might have been participatory because from the answers received from implementation partners and workers and ULBs, it appears that it was initially participatory. Later it stopped being participatory and not meeting targets was attributed to lack of professionalism and no effort was made to find out what was the reason. Interaction became only for meeting targets.

4.7.10 To what extent has the project contributed to gender equality, the empowerment of women and the realization of human rights?

Gender equality extends beyond simply employing and onboarding women as safai sathis. Women have made significant contributions in various aspects of waste management, particularly in recognizing and sorting different categories of dry waste, including waste plastics. However, their specific needs concerning ergonomics, physical well-being, sanitation,

and childcare must be adequately addressed. These needs are common to all genders and require appropriate support and facilities.

The project recognized the importance of gender equality and made considerable efforts towards achieving it, understanding that sustainable changes in this regard may take time to fully materialize.

The project document outlines a multifaceted approach to achieve gender equality, encompassing activities aimed at raising awareness about clean and hygienic sanitation practices, education, and health for the families of waste pickers. Moreover, counselling and awareness initiatives were conducted for waste pickers, focusing on their children's education, protection from violence, and promoting positive behaviours like avoiding drinking and gossiping. These diverse approaches collectively contribute to the empowerment of women and the realization of human rights in the waste management sector.

4.8 Efficiency

4.8.1 To what extent was the project management structure as outlined in the project document efficient in generating the expected results?

As mentioned earlier, the implementation of the project did not align entirely with the project document. Some planned outcomes and outputs were not achieved, possibly due to certain steps being overlooked, and the functioning of oversight bodies like the advisory committee and project steering committee seems to have been limited or absent. Had these committees been actively involved, they could have provided valuable insights and prompted corrective measures during the implementation period.

Furthermore, not all reports adhered to the logframe structure, which led to a greater focus on tracking the quantities of plastic collected, processed, and disposed of, as well as the number of self-help groups onboarded and details of workshops. This reporting approach caused inefficiencies in monitoring, reporting, and corrective actions, as important aspects related to outcomes and outputs may have been overlooked.

To enhance project efficiency and effectiveness, it is essential to ensure better adherence to the project document, engage the advisory and project steering committees more actively, and follow a comprehensive reporting framework that includes all relevant aspects of outcomes and outputs. This will lead to more informed decision-making and improved project outcomes.

4.8.2 To what extent has there been an economical use of financial and human resources? Have resources (funds, human resources, time, expertise, etc.) been allocated strategically to achieve outcomes?

There has been economical use of financial and human resources. However, all the implementation partners felt that such a project covering only partial salaries of waste workers, the persons who should have been benefited by this project to the maximum were left out from being given their full due from the earnings or from the implementation partners. Especially during COVID when these waste workers could not go out to get waste or work in the MRFs, they had to depend on the project.

4.8.3 To what extent have resources been used efficiently? Have activities supporting the strategy been cost-effective?

This question has been addressed previously as well. However, it is worth mentioning that the ULBs were tasked with constructing the MRFs and purchasing equipment like the phatka machine, extruder, and aglo gatta, which were not necessary and resulted in a waste of resources. A simple conveyor belt or a table with a baler would have sufficed. Sending equipment to certain locations and MRFs without assessing their specific needs led to resource wastage.

Additionally, retrofitting some existing MRFs with unused equipment could have been avoided. Instead, the focus should have been on improving the working conditions of the MRFs by enhancing storage space, sanitation facilities, ventilation, or providing containers for sorted materials. Customizing the equipment for each MRF based on its specific requirements would have been a more effective approach than a predetermined strategy.

In my opinion, activities that support the project strategy could have been more cost-effective if tailored to the actual needs of each MRF. This way, resources would have been utilized more efficiently, leading to better outcomes for the project.

4.8.4 To what extent have project funds and activities been delivered in a timely manner?

This issue was significant as per feedback from most implementing partners, who expressed dissatisfaction with the untimely disbursement of funds. It is evident from the minutes of the meeting (MOM) that a donor, particularly dissatisfied with the collection tonnage of PET bottles, insisted on making the renewal of the Memorandum of Understanding (MOU) performance-linked. They decided that funds would only be released based on the achievement of targets and the submission of traceability documents from authorized recyclers or cement kilns. Although it was clarified during the presentation that this change was made due to non-utilization of funds by the IPs, the implementation partners faced numerous difficulties due to the altered payment schedule. Particularly during the COVID pandemic, they had to pay the workers from their own sources as the donors did not fully cover the wages to be paid to the safai sathis. This placed an additional burden on many IPs, most of which were NGOs and lacked access to loans from banks.

Several IPs received their payments as late as October 2022 for tonnage, evidence, and traceability documents that were submitted in June, as everything had to be meticulously checked and verified.

The activities were indeed carried out, but the major complaint from the implementing partners was the untimely delivery of funds, which impacted the smooth execution of the project.

4.8.5 To what extent do the M&E systems utilized by UNDP ensure effective and efficient project management?

The M&E systems utilized by UNDP have ensured effective and efficient project management. They have incorporated these in all projects and have utilised the learning from them.

Section 5 - Conclusions and Recommendations

5.1 Conclusion:

Based on all the findings presented and discussed in section 4, it can be concluded that the project, despite facing certain challenges, also presented opportunities that could have been harnessed more effectively. It served as a valuable initial step towards exploring socio-technical models for establishing self-sustaining and safe Material Recovery Facilities (MRFs) with improved working conditions for waste workers.

Moving forward, it would be prudent to reevaluate the employed strategy and ensure active consultation with all stakeholders to develop a comprehensive and participatory approach. Conducting a study-based assessment that addresses regulatory gaps and needs can help identify key challenges and opportunities for replication. Drawing from past experiences, such as UNDP's small grants program, can offer valuable insights and lessons learned that can be applied to this initiative.

Through careful consideration and collaboration among stakeholders, we can work towards a more effective and sustainable approach to MRFs, benefiting both the workers and the environment.

The establishment of the foundation for a socio-technical model was only partially achieved among the four components. Some Safai kendras (SK) were planned and constructed on acquired land with a conceived design, ensuring adequate space, ventilation, safety, sanitation, and ergonomic comfort, thus exemplifying a model. However, others received ideas, recommendations, and retrofitted equipment in limited available space, which cannot be considered a model.

Regarding the institutionalization of safai sathis and improving their socio-economic conditions through various government schemes, it was implemented well. However, achieving the exact target numbers is unclear due to the donor support not being available for the full planned duration.

For the design and establishment of knowledge management, a software was created, and data was uploaded, which proved useful in tracking waste flow to the MRF and its subsequent route to recyclers or disposal units. Unfortunately, the maintenance of the database could not be ensured, leading to the cessation of the data and knowledge management system, which is currently unavailable.

As for ensuring a relatively secure economic share of the value chain, only partial achievement was seen. Approximately a quarter to half of the waste received by the MRF was non-recyclable, with a significant portion being plastics, whose disposal cost outweighed the earnings from the sale of recyclable waste. Therefore, achieving a secure economic share of the value chain through SKs was not fully accomplished.

- **Conclusion on Theory of Change:** In certain states like Odisha, Kerala, and Karnataka, the implementation partner sustained the work of the MRF and plastic waste management. However, in many other states, it was discontinued. It is essential to identify and highlight the existing gaps and challenges to the authorities even now, to fortify the regulatory paradigm for plastic waste management.
- **Conclusion on Key Deliverables:** Midterm targets were partially achieved in the establishment of MRFs, onboarding of waste workers, and project management

aspects. Similarly, other targets were also partially achieved, as evident from the table "Progress Towards Results Matrix" (Assessment of outcomes against Midterm project Targets).

- **Conclusion on Barriers:** As per the implementation partners, the cost of disposing non-recyclable plastics and a donor-driven approach were identified as the major barriers.
- **Conclusion on expansion of benefits**: Continuation of the projects with CSR funds is essential and can be easily carried forward by the donors. It is crucial to onboard many more waste workers, forming them into SHGs, and improving their lives.
- **Conclusion on gender related programmes:** Improvement of working conditions for women should be prioritized by transforming many existing sorting centers/MRFs into safe and ergonomically appropriate spaces. These facilities should not be overly congested to ensure that waste workers, regardless of gender, are not continuously exposed to dust and microorganisms.
- **Conclusion on Management Arrangements:** The unhealthy trend of not interacting with IPs should be immediately rectified, as many of them possess extensive experience in waste management and recycling. Their valuable insights and understanding could have been utilized, representing a lost opportunity that needs to be addressed by involving them now.
- **Conclusion on Quality of Execution & recommended improvement**: The scope of UNDP does not include using EPR as an instrument of change and committing to meeting impractical targets of collecting plastics and ensuring its processing. Therefore, the theory of change should be examined and realigned, if necessary, to cater to the needs of the poor and the waste workers rather than fulfilling the insatiable requirements of large PIBOs, whose objectives may differ from developmental ones.
- **Conclusion on Delays in start-up and implementation:** Involving state and local governments in planning and monitoring the projects would help in taking them forward in a better way because any model created by UNDP, if good and sustainable, will be adopted and made sustainable by the state governments through their ULBs or rural local bodies.
- **Conclusion on Project Results Framework/Log frame:** The reports, whether quarterly or annual, do not provide a proper results/log frame framework with all the four components and their sub-components, if necessary, properly tabulated and reported.
- **Conclusion on Financing, Co-financing and Cost effectiveness:** In the context of both HCCB and HUL funded projects, it was observed that Components 1 & 2 were deemed as not being cost-effective, whereas Components 3 & 4 displayed a certain degree of cost-effectiveness.
- **Conclusion on fund allocation and fund flow:** The traceability process for plastics necessitated payment of GST and transportation, particularly as demanded by registered recyclers and co-processing plants, leading to significant expenditure that, in turn, diminished the amount payable to the SSs. In certain instances, the ULBs provided compensation; however, in numerous cases, the IPs had to bear these costs from their own resources. Additionally, extended delays in verifying the submitted documents at the UNDP/donor end further exacerbated the financial strain on the IPs and the SSs alike.
- **Conclusion on Monitoring Evaluation tools (Quarterly & Annual Reports):** The current format is considered to be of poor quality and is deemed insufficient for monitoring and evaluation purposes.
- **Conclusion on Stakeholder Engagement:** A lack of engagement was observed among many of the RWAs, ALMs, and Community and Civil Social Organizations, as they were merely passive audiences during workshops and training programmes. It

appears that they refrained from participating in the survey questionnaire distributed by the consultant for review purposes, citing it as "not applicable."

- **Conclusion on project management:** The due support given to MRFs was solely based on performance, and the consultant perceives this as a shameful denigration of the entire project. Instead of uplifting workers, it seemed to be transforming them into 'cheap labour' solely for the purpose of procuring EPRs for their masters.
- **Conclusion on country-driven process:** In states where the original IPs could not continue without support from donors, ULBs, or alternative sources like other CSRs, they have simply been closed.
- **Conclusion on participation and public awareness:** None of these schemes or incentives resulted in an increase in the waste pickers' share in the value chain, nor did they lead to an improvement in their living conditions. However, in some newly constructed MRFs, their working conditions showed slight improvement.
- **Conclusion on sharing of reports with stakeholders:** Despite several requests, the consultant was not provided with a list of the project advisory board, expert group, or meetings with central and state pollution control boards. Consequently, it became difficult to ascertain whether reports were shared with the Project Board, etc.
- **Conclusion on Internal and External Communications:** As shared earlier, public awareness campaigns were initiated to raise awareness about the project and to solicit people's cooperation in promoting awareness regarding plastics, reducing plastic usage, practicing segregation, and ensuring proper collection and disposal in designated bins or with specific collectors. However, no evidence of best practices workshops or communication was found.
- **Conclusion on Sustainability:** If the pilots had been conducted as originally envisaged in the project, the cost could have been controlled, and the Safai Sathis could have derived greater benefits from the project. Moreover, EPR (meaning financial support) would have been needed by IPs and SSs for managing the non-recyclables and rejects (which constitutes a minimum of one-third of the waste, despite efficient sorting and good networking with recyclers), rather than for recyclables. This aspect could have been addressed if pilot projects had been executed and evaluated as planned.
- **Conclusion on Socio-economic risk to sustainability:** To assume that there is real wealth in plastic waste, and that the reason the poor waste collector/aggregator does not make money is solely due to their lack of an MBA qualification, is extreme naivety, if not arrogance and a complete ignorance of the science of recycling.
- **Conclusion on Institutional framework and governance risks to sustainability:** The thrusting of unwanted equipment on MRF operators or the utilization of private entities instead of NGOs to manage MRFs, which are primarily intended for secondary sorting to enhance the saleability of sorted waste, is seen as a high-risk approach to viability.
- **Conclusion on Environmental risks to sustainability:** The installation of equipment like Phatka machines, shredders, extruders, and agglogattas in MRFs is considered highly hazardous and poses significant risks to the health of workers and the nearby community. This is due to the potential spread of pollutants through the air, water, and food, thereby affecting the most vulnerable members of the community.
- **Conclusion on Risk Assessment in the Project Document:** The risks were assessed, and mitigation was recommended in the risk and mitigation table on pages 23 & 24 of the Amended Project Document. The hazards cited and mitigation suggested for occupational and working hazards, physical risks, exposure to site contaminants, disease vectors, and pests display a complete lack of knowledge regarding the recommended technology and site conditions in MRFs.

5.2 Recommendations

Corrective actions for the design, implementation, monitoring, and evaluation of the project
1. It is recommended to adopt the time-tested UNDP model for developing a strategy, which involves a participatory, multi-stakeholder approach based on primary and secondary research, and proper validation.
2. To ensure the accuracy and effectiveness of a socio-technical model, it is important to consult with scientific and regulatory institutions that have a thorough understanding of the subject matter. Therefore, when developing such a model, it is highly recommended that assumptions not be made without first seeking input from these institutions.
3. It is recommended to not skip steps like establishing advisory committees, stakeholder committees, having regular interaction and getting feedback from policy makers, donors, implementers, regulators, beneficiaries and involve all stakeholders including the Implementation Partners and beneficiaries in planning, implementing, self-evaluation and course correction.
4. Make sure pilots are well designed, need based and adaptive and make sure the output steps are followed meticulously, for instance of having 10 pilots in the first year instead of jumping into establishing 33 models in the first year and not being able to sustain them
5. It is recommended to avoid being donor-driven and not succumb to unnecessary pressure from specific stakeholders, even if they are donors. Instead, focus on developing a comprehensive and sustainable project plan through a participatory approach with all stakeholders' inputs, needs and priorities.
6. Make a hypothesis for the theory of change (anticipated impact) and review it and change it, if necessary, at the end of the first year after the 10 pilots have given the necessary feedback
7. Make sure that the real beneficiary, in this case the waste worker/ safai sathi, is truly benefited. Do not compromise any objective, risking their livelihood by changing indicators. In case a new model for waste management is being proposed, it is recommended to involve experienced professionals and stakeholders in the field.
8. Conduct baseline surveys to determine the status of waste workers in terms of age, gender, daily earnings, city type, dwelling conditions, and access to healthcare, nutrition, and education for their children. Based on the findings, include more development-based indicators in the waste management plan to ensure the well-being and socio-economic development of waste workers.
9. Conduct baseline surveys on existing Material Recovery Facilities (MRFs), Dry Waste Collection Centres (DWCCs), and Integrated Waste Management Stations and assess the minimum monthly and annual expenditure, including one-time costs. Based on this assessment, create a realistic budget for the establishment and maintenance of the MRFs and other waste management facilities.
10. Assess the potential risks to both the project and its beneficiaries. This analysis should include a comprehensive review of the donor's expectations, the project's objectives, and

the needs of the beneficiaries. Risks assessment and risk mitigation should be scientific, honest, and realistic; any hidden risks ignored in the early stages will threaten the project implementation and cause collapse. Develop a clear plan for how the project will meet the donor's conditions while minimizing any potential risks.

11. Implementation partners, co-financers along with donors should be taken into confidence right from the beginning and should be made aware of UNDP's own costs and their liabilities. Undue delays in disbursement increases the cost of the project, increases dissatisfaction and loss of motivation.

12. Knowledge management, development of educational material based on good pedagogy and learning experiences sharing should be done with a lot of care and should be shared on the social media so that there is transparency and the project benefits from feedback.

5.2.1 Corrective actions for the design, implementation, monitoring, and evaluation of the project

1. A strategy can be developed by following the time-tested UNDP model, employing a participatory, multi-stakeholder approach based on primary and secondary research, and ensuring proper validation.
2. Assumptions should be avoided, particularly when developing socio-technical models. Consultation with scientific and regulatory institutions deeply involved in the subject is essential.
3. Necessary steps, such as establishing advisory committees, stakeholder committees, and maintaining regular interaction to gather feedback from implementers, regulators, and beneficiaries, should not be skipped.
4. Ensure well-designed, need-based, and adaptive pilots. Meticulously follow the output steps, for example, consider having 10 pilots in the first year rather than rushing into establishing 33 models and facing sustainability challenges.
5. Avoid being solely donor-driven and resist undue pressure to prioritize the needs of a particular stakeholder, even if that stakeholder is a donor.

5.2.2 Actions to follow up or reinforce initial benefits from the project.

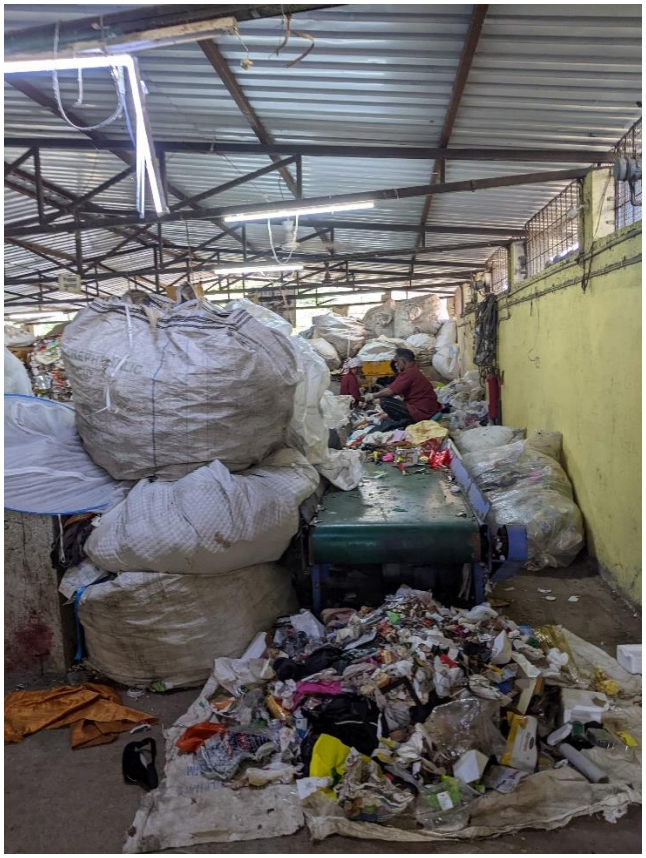
1. A hypothesis for the theory of change (anticipated impact) should be formulated and reviewed, and changes, if necessary, should be made at the end of the first year, following feedback from the 10 pilots.
2. Ensure that the real beneficiary, the waste worker/safai sathi, truly benefits. Avoid compromising any objective through patronizing assumptions, budgetary constraints, or sudden changes to performance-based indicators without consulting implementers, workers, or ULB partners.
3. Conduct baseline surveys on the status of waste workers, including their age, gender, daily earnings, living conditions in the city, dwelling status, access to nutrition, healthcare, and education for their children. Use this data to include more development-based indicators.
4. Conduct baseline surveys on existing MRFs, DWCCs, and integrated waste management stations. Assess their capital expenditure (capex), Operational Expenditure (opex), and minimum monthly and annual expenditures, including one-time costs, EMI, insurance, repair, maintenance, and replacement, to develop a realistic budget.
5. If proposing and testing a new model, involve experienced players in the field and develop an economic model after thorough discussions on the scientific, social,

economic, environmental, and health impacts of the proposed model, based on the baseline data and available resources.

6. If donors have conditions for project implementation, precisely understand their expectations and assess the risks to the project and beneficiaries accordingly. Proposals for future directions underlining main objectives
7. Scientific, honest, and realistic risk assessment and risk mitigation should be undertaken. Ignoring any hidden risks in the early stages can threaten the project implementation and result in collapse.
8. Implementation partners, co-financers, and donors should be taken into confidence right from the beginning, making them aware of UNDP's own costs and their liabilities.
9. Knowledge management and development of educational material based on good pedagogy, along with sharing learning experiences, should be approached with care. Sharing these on social media fosters transparency and allows the project to benefit from valuable feedback.
10. Financial management should be careful and thorough, avoiding undue delays in disbursement and ensuring proper cash flow, especially where daily and monthly expenditure for implementation partners is critical. Delays increase project costs, cause dissatisfaction, and lead to loss of motivation and interest. Inform donors in the project's early stages of their obligations and timelines for releasing funds. Sudden changes in financial arrangements, such as payment release based on performance indicators, can be disastrous and should be avoided.

Photos

Visiting MRF at Mukund Nagar, M ward managed by Stree Mukti Sanghatna (SMS), consultant Dr. Shyamala Mani is seen here with Ms. Sunita Patil and Ms. Nisha Kamble of SMS



Rejects after sorting at Stree Mukti Sanghatna MRF in M ward Mumbai

Consultant Dr. Shyamala Mani is seen interviewing Hyderbhai at MRF managed by Aasra Wefare Association in H ward, Mumbai

Creche at H ward, Mumbai for the workers' children

Consultant Dr. Shyamala Mani is seen meeting BMC officials at M Ward office Engineer, Mr. Madne and Asst. Engineer Mr. Ganesh Chandorkar

Consultant Dr. Shyamala Mani seen meeting M Ward Commissioner Shri. Mote at his office and noted his observations and suggestions

Section 6 - Annexes

6.1 MTR ToR (excluding ToR annexes)

https://jobs-admin.undp.org/cj_view_job.cfm?job_id=107622

6.2 Sources of data

6.2.1 Questionnaire for UNDP team members and request for documents:

Table 1: Questionnaire for UNDP team members and request for documents

Sr. no	Questionnaire	HCCB	HUL
1	List of meetings & MOM, technical consultation at the start of project duration or pre-project project consultation with technical units or institutes based on which plan of action made for project design & implementation.	Pre project document was shared	Pre-project consultations were carried out with HUL.
2	Any technical experts onboarded or consulted at the project design phase, did they considered the Indian technical issues, constrain in Indian perspective wrt plastic waste management.	Technical Expert was onboarded to draft the project proposal	Technical Expert was onboarded to draft the project proposal
3	Consultation with various Govt Officials, CPCB, etc. list to be proposed to UNDP and seek suggestions.	One MoM with CPCB was shared	For the purpose of MPCB Consent to Establish and Operate of Swachhata Kendras, consultations were carried out. CTE/O for centres is attached in Annex 1 folder
5	Project Start Date	04 May 2018 (effective date as per the MoU)	Oct-18
	Project duration signed for /Proposed Project ending Date	31-Dec-24	Mar-24
	Project ended/closed on date	31-Jul-22	Aug-22

8	Service Provider onboarding started	RFP publication and other information was shared, the start date as per the doc shared is 14 Aug 2018	28 December 2018
9	First phase of Service Provider Onboarding	14 Aug 2018	28 December 2018
10	Second Phase Service Provider Onboarding		As per the LoA signed with the ward office, MCGM, service providers were selected via competitive process Second phase - 04th November, 2020
11	Third Phase Service Provider Onboarding		NA
12	When did the HCCBPL started reducing the nos of cities	In December 2021 meeting, HCCB suggested to reduce the number of Cities, on 2 June 2022 meeting it was further mentioned not start any new initiative for 2022, on 14&15 June meeting HCCB suggested to stick to 3 or 4 cities identifed by them	September, 2022 onwards
13	When did the HCCBPL started existed the project		Same as above
14	Any reason was mentioned for exiting, any process was followed	HCCB wants to focus on fewer MRFs and reduce the number of cities	Reason for exiting - As COVID 19 has severely affected the overall project targets, HUL would like to exit the EPR modality and enter into the CSR modality of further executing the project.

			Process followed -
15	Any communication with service providers on project closure before scheduled time	No project was closed before scheduled time for the service provider	The contracts were duly closed as per the contract ending date and payments have been complete.
16	Any project handover process was designed and followed as a part of exit strategy while exiting from each city	The project handover process for the cities were designed and the letter to concerned ULBs are prepared which would be shared through the UNDP country office	Transfer of Title of all machineries is a document filled by the partners, transferring title back to UNDP/ULB
17	Any programatic audit comments that can be shared	NA	NA
18	Did any auditor mentioned check on first five city MRF was functioning well and whether it was worthwhile to buy the equipment		Regular external audits have been carried out.
19	Any meeting or consultation on course check was done, if yes share minutes	Review meeting with donor and UNDP - MoM of 6th Review meeting on 7 Feb 2020	We have appointed a full time M & E expert, with monthly monitoring of targets and accomplishment. External agencies are not hired for this purpose.
20	Infographic that was shared with Donor /part of pro doc explaining flow diagram project ecosystem	…. Monthly project reports, quarterly project reports, review meetings have been carried out with donor partner. Project	Monthly project reports, quarterly project reports, review meetings have been carried out with donor

		brochure developed highlighting details of the project	partner. Project brochure developed highlighting details of the project
21	Suggested sample batch of stakeholder listed for MTR interview	Yes	Yes
22	ULB Official	Yes	Yes
23	CPCB Official	No	No
24	SPCB Official	No	No
25	Service Providers 1. currently running a similar MRF 2. Was running an MRF and now operation at their own capacity 3. Was UDP's SP but now not operating on its own without UNDP's support 4	1. Yes 2. Yes 3. Yes	1. Yes 2. Yes 3. Yes
26	Consultation with Trashonomy for questionnaire development	No	No
27	Any other stakeholder	NA	NA
28	Speak to Donors like Surojit from HCCB	Yes	Yes
29	Cities & MRFs to be visited	Mumbai	Mumbai, H/W ward MRF
	Mission Cost is to be funded by UNDP or to be covered within contract value.	To be funded by UNDP	To be funded by UNDP

6.3 Evaluation criteria

6.3.1 Evaluation Objective Purpose and Scope

The criteria that the evaluation will use for assessing performance and rationale will be overall goals, objectives, literature review and technology assessment, comparative assessment of existing management models, risk assessment, design, implementation strategies, targets, time lines and financial allocation and management. The rationale for this is that for designing and implementing socio-technical model, it is not enough to have good intentions and socially relevant objectives but it is also important to understand technology, its pros and cons,

management constraints and the country's environmental and legal provisions which guide us to select the right type of implementation strategies.

Evaluation criteria will be based on each component and activities under them through a questionnaire-based approach appropriate for different stakeholders.

6.3.2 Evaluation Criteria and Questions

1. To understand whether the project objectives, outcomes and activities are clearly defined and are measurable

2. To understand whether targets and time lines for achievement of the outcomes and activities have been defined clearly

3. To evaluate whether these objectives, outcomes and activities are in the process of being achieved and if so to what extent and why/ why not?

4. Are the strategies and action plans in line with the SDG goals? Is the implementation in compliance with local laws, improving gender equity and is in line with international treaties contributing to Climate Change mitigation and adaptation?

5. What suggestions and recommendations can improve the project implementation?

6.3.3 Evaluability Analysis

The project, no doubt has formal outputs, indicators, but not sure whether it has properly evolved baselines and data (no clear evidence of review of existing situation, case studies nationally; there are references to South American countries and value of plastic in USD). Theory of change, Results Framework, Approaches and Implication of the proposed Methodology are available and hence evaluability is there since comparative assessments can be made from the start of the project to this, approximately mid-point of the project.

6.3.4 Cross-cutting Issues

Description of how cross cutting issues will be evaluated: Cross-cutting issues such as environmental safety and economic viability or economic viability and inclusivity and other issues like gender equality and livelihoods for waste collectors, aggregators, recyclers and retailers will be addressed. These will be evaluated by framing questions that can capture the importance of all three pillars of sustainable development or sustainability namely Economic, Social and Environmental and analyse it to get their values.

How data collection and analysis will integrate gender considerations: Through disaggregated data collection and analysis

Data should be disaggregated by sex and other relevant categories. Yes, that is addressed.

6.3.5 Environmental and Sustainability Assessment

All projects which aim to improve the lives and livelihoods of individuals and citizens in general are worthy of appreciation. However, in today's world which is challenged in many ways from multiple global environmental threats from climate change related disasters, air, water, soil pollution, loss of biodiversity, global population explosion, emerging diseases, projects should

also plan their activities keeping in mind the global as well national impacts. Many of the sustainable development goals in the SDG guidelines highlight these aspects by urging us to assess our actions globally and internationally while acting locally or nationally.

Hence, this Mid-term review will also try to assess whether this project and its goals along with the implementation strategies have addressed the requirements of the SDG goals as well as environmental sustainability. Gender equality and justice will be looked into keenly.

The main purpose of the MTR is to act as a mirror which will help the implementors do course correction if required after studying the assessments and recommendations that will be presented in the MTR report.

6.4 Methodology

6.4.1 Mid-term Review Assessment Method:

Reading the pro-doc and amended pro-doc developed by UNDP thoroughly and understanding the expected outcomes, plan of action and KPIs for self-assessment.

Procuring various documents as per the pro-doc and processes outlined therein.

Procuring the various reports as outlined from Final TOR, Annexe A and as per item 16 specified in it, ask for additional documents and information whenever required.

Studying all the documents including Minutes of Meetings and feedback processes carefully and understanding the fine points of the implementation process.

Presenting the various questions arising out of the study of the various documents to Project Officer/s and gathering their replies.

Making a list of stakeholders who need to be met, interviewed and their insights and inputs recorded and seeking the MRF teams' help & coordination for meeting them.

Making a mission plan after discussing with Project Officer/s and UNDP's Plastic Recycling project team for visiting MRFs and understanding their working, achievements, constraints and challenges.

Devising a questionnaire with different emphasis for different stakeholders, which will adequately capture their role in designing, planning, implementation, coordination with different agencies, designing educational material, conducting IEC events, workshops for residents, commercial establishments, offices, training safai sathis, helping in their rehabilitation process from ID cards to Personal Protective Equipment (PPEs), procuring equipment and machinery and facilitating their installation, running, contacting registered or other recyclers, establishing systems for recording data of collection, processing and recycling and establishing a mapping dashboard for traceability of the waste through apps and hand held devices and producing regular reports for donors to enable them to present their performance in terms of compliance to the EPR requirements to the government.

Studying the financial aspects of the project and whether regular payments to safai sathis and other workers in the MRFs are facilitated for the waste collected by them and for the sorting work they do at the MRF. Studying the waste collection, processing and disposal data as well as processing and transportation costs for assessing economic viability. Studying the other

costs of running the MRF like electricity, water, permissions, authorizations, health & safety and audits.

Data analysis, interpretation, gap analysis, recommendations and report writing as per the format prescribed and covering all aspects as indicated in the guidelines.

Provisional Expenditure statement for the project "Plastic Waste Management - A Partnership" for the period ending 30 June 2022

Sl. No.	Components	Cumulative Budget till 31-Dec-2020	Budget for the Calendar Year 2021	Cumulative Budget till 31-Dec-2021	Expenditure in INR		
					Cumulative Expenditure for the period 1-Jul-2018 to 31-Mar-2022	Expenditure for the period 1-Apr-2022 to 30-Jun-2022	Cumulative Expenditure for the period 1-Jul-2018 to 30-Jun-2022
A	B	C	D	E = C + D	F	G	H = F + G
1	Component 1: Socio-technic model for packing plastic waste management developed, supported and implemented	1,52,85,901	28,96,084	1,81,81,985	1,59,84,591	2,43,441	1,62,28,032
2	Component 2: Pilots Projects Cities Units (Swachhta Kendras) for improved plastic waste management implemented	12,85,19,309	16,17,69,135	29,02,88,445	19,19,52,921	22,39,999	19,41,92,920
3	Component 3: Institutionalization of Swachhta Kendras in governance bodies and improved socio-economic conditions of waste pickers obtained	3,04,38,001	19,32,667	3,23,70,668	3,22,85,014	1,99,721	3,24,84,735
4	Component 4: Knowledge Management, monitoring and communication system developed	5,85,60,247	75,28,317	6,60,88,564	6,34,01,016	10,54,073	6,44,55,089
5	Component 5: Project Management Cost	5,42,33,579	1,78,06,788	7,20,40,367	7,31,86,381	35,03,831	7,66,90,212
	GROSS TOTAL	**28,70,37,037**	**19,19,32,990**	**47,89,70,027**	**37,68,09,924**	**72,41,065**	**38,40,50,988**
6	General Management Support	2,29,62,963	1,53,54,638	3,83,17,602	3,01,44,794	5,79,285	3,07,24,079
	GRAND TOTAL	**31,00,00,000**	**20,72,87,629**	**51,72,87,629**	**40,69,54,718**	**78,20,350**	**41,47,75,067**

Note: Provisional management fee on expenditure is included in above. The total commitments including 8% management fee till 30 June 2022 is INR 4,93,02,958 which is not included in the above details. The total management fee will be adjusted subsequently as per actuals.

Provisional Expenditure Statement for the project "Plastic Waste Management - A Partnership" for the period ending 30 June 2021

Sl. No.	Components	Budget (INR)				Expenditure in INR		
		Year 1	Year 2 (2 wards year 2 budget + Additional 2 wards Year 1 budget)	Year 3 (2 wards year 3 budget + Additional 2 wards Year 2 budget)	Total Years 1 + 2 + 3	Expenditure for the period 29 October 2018 to 31 Dec 2020	Expenditure for the period 1 Jan 2021 to 30 June 2021	Cumulative Expenditure for the period 29 October 2018 to 30 June 2021
		A	B	C	D = A + B + C	E	F	G = E + F
1	Component 1: Socio-technic model for packing plastic waste management developed, supported and implemented	13,40,500	10,32,500	4,82,500	28,55,500	41,558	4,79,926	5,21,484
2	Component 2: Pilots Projects Cities Units (Swacchta Kendras) for improved plastic waste management implemented	1,47,92,000	2,07,16,600	1,23,01,930	4,78,10,530	2,43,89,897	1,05,64,805	3,49,54,702
3	Component 3: Institutionalization of Swacchta Kendras in governance bodies and improved socio-economic conditions of waste pickers obtained	3,60,000	5,90,000	4,90,000	14,40,000	9,61,768	1,96,618	11,58,386
4	Component 4: Knowledge Management, monitoring and communication system developed	24,35,000	29,75,000	20,68,280	74,78,280	49,88,191	11,42,938	61,31,130
5	Component 5: Project Management Cost	50,00,000	80,39,000	81,25,950	2,11,64,950	1,28,17,931	37,34,470	1,65,52,401
	TOTAL	**2,39,27,500**	**3,33,53,100**	**2,34,68,660**	**8,07,49,260**	**4,31,99,345**	**1,61,18,758**	**5,93,18,103**
6	Direct Project Cost	11,96,375	16,67,655	11,73,433	40,37,463	21,59,967	8,05,938	29,65,905
	TOTAL	**2,51,23,875**	**3,50,20,755**	**2,46,42,093**	**8,47,86,723**	**4,53,59,312**	**1,69,24,695**	**6,22,84,008**
7	**General Management Support**	20,09,910	28,01,660	19,71,367	67,82,938	36,28,745	13,53,976	49,82,721
	GRAND TOTAL	**2,71,33,785**	**3,78,22,415**	**2,66,13,460**	**9,15,69,661**	**4,89,88,057**	**1,82,78,671**	**6,72,66,728**

Note: Commitments INR 49,20,221 stands payable.

6.4.2 MTR evaluative matrix post analysis of questionnaires, final count for stakeholders of HCCB & HUL (evaluation criteria with key questions, indicators)

Table 2: MTR evaluative matrix post analysis of questionnaires, final count for stakeholders of HCCB & HUL (evaluation criteria with key questions, indicators)

						Plastic waste Recycling - A partnership	Stakeholders questions	7	3				
S.No.	Components	Question	Yes	No	Not aware	Not applicable	Remarks	Female	Male	Others	Age 16-24	Age 25 plus	Age 30 plus
	Socio-Technical model	Are you aware of the socio-technical model developed for this project?	8		2	NA	NA	NA	NA	NA	NA	NA	NA
1		Was there a consultative mechanism for developing the socio-technical model?	5	2	2	1	NA	NA	NA	NA	NA	NA	NA
		Were you consulted for developing the model?	5	2		3	NA	NA	NA	NA	NA	NA	NA

		As per your knowledge and experience, is the model appropriate for acieving the outcomes?	3	2	4	NA	NA	NA	NA	NA	NA	NA	NA
2	Model Implementation via Swachhta Kendra	Was a baseline developed for plastics generation, collection segregation?	4	1	5	NA	NA	NA	NA	NA	NA	NA	NA
		Was strengthening CSOs for managing, enhancing and maintaining facilities for plastic waste done in selected cities	4		3	3	NA	NA	NA	NA	NA	NA	NA
		Were Safai mitras or Safai sathis integrated into the project and their participation ensured? How many? Give age, gender in appropriate column	8		2	NA	All the decision were taken after consulting with committee members of PBVS. Waste pickers women are the members of PBVS committee in	9	8	NA	NA	NA	9

							the case of HCCBPL.						
		Was a regulatory need gap analysis conducted to address integral management of plastic waste?	5		5	NA	It was not a scientific research/analysis but we continuously discussed with waste pickers, ULB representatives, recyclers, various NGOs, aggregators to address the integral management of plastic waste in the case of HCCBPL.	NA	NA	NA	NA	NA	NA
		Did the project start in 10 cities first year, add 15 in the next year and plan for adding 25 cities in the year after that			2	8	NA	NA	NA	NA	NA	NA	NA

3	Institutionalizing Safai Mitras/Sathis in governance bodies	Were waste workers (Safai Mitras/ Sathis mainstreamed into the plastic waste management model? How many? Give give, age, gender in appropriate column	8		2	NA	NA	182	171			298	55
		Were SHG groups of Safai Mitras/ Sathis formed?	5	5		NA	Parisar Bhagini Vikas Sangha have formed our SHGs in the case of HCCBPL in Mumbai	NA	NA	NA	NA	NA	NA

		Did the living conditions of Safai Sathis improve? How many? Give age and gender in appropriate column	8		2	NA	Supported but not upgraded in the case of HUL in Mumbai. Stree Mukti Sanghatana has provided us health facilities by organising health camps also they have provided scholarship support to our children in the case of HCCBPL in Mumbai. Stree Mukti Sanghatana is working from last 24 years on the health, livelihood and educational aspects of waste pickers. According to them living condition of waste pickers has improved gradually due to the efforts of SMS and PBVS not immediately due to the UNDP project.	182	171	NA	NA	298	55

		Did the socio-economic conditions of the Safai Mitras/ Sathis improve? How many? Give age, gender in appropriate column	10	NA	NA	NA	Supported but not improved in the case of HUL in Mumbai.	182	171	NA	NA	298	55
		Did the credit access of Safai Mitras/ Sathis improve? How many? Give age, gender in appropriate column	8		2	NA	Bank Accounts opened & ATM card provided. Some SS could operate internet banking in the case of HUL in Mumbai. Credit Access is a part of federation where Parisar Bhagini Vikas Sangha (separate orgaisation of waste pickers) provides loans through the SHGs of waste pickers in the case of HCCBPL in Mumbai.	NA	NA	NA	NA	NA	NA

4	Establishment of a knowledge management, monitoring and communication system	Was traceability, accountability, digital governance achieved in the knowledge management system	5	1	4	NA	NA	NA	NA	NA	NA	NA	NA
		Were apps developed to integrate all stakeholders into one digital cloud?	1	4	5	NA	NA	NA	NA	NA	NA	NA	NA
		Was the tracking of plastic waste from collection to recycler achieved?	7		3	NA	There was software developed by the 'Mind Tree' company and the contract was over in 2020 so the app was locked. The app was not useful for us as per HCCBPL Implementation Partner in Mumbai	NA	NA	NA	NA	NA	NA
		Was documentation of best practices in	8		2	NA	NA	NA	NA	NA	NA	NA	NA

		the pilot cities achieved?											
		Was an online project monitoring, reporting, information exchange protocol established?	5	3	2	NA	As per the HCCBPL Implementation partner their daily waste collection data was maintained by our shed supervisor.	NA	NA	NA	NA	NA	NA
5	Project management Aspects and Costs	Were detailed budget lines and levels clearly defined?	1		7	NA	NA	NA	NA	NA	NA	NA	NA
		Did Swach Mitras/Sathis secure economic share of the value chain? How many? Give age, gender in appropriate column	8		2	NA	8 Safai Sathis Integrated in the case of HUL Implementation Partner and 9 in the case of HCCBPL Implementation partner in Mumbai	9	8	NA	NA	8	9

		Was the project able to offer better pricing for the collected waste? If yes to what percentage?	1	6	3	NA	Due to the rules and clauses of UNDP project like selling material to MPCB licence holders, waste pickers were not getting good rates compared to local vendors, but Stree Mukti Sanghatana tried to provide good rates at their own level as per the HCCBPL Implementation partner in Mumbai. Even if it increased sometimes, it was not more than 10% as per both HUL and HCCBPL Implementation partners in Mumbai	NA	NA	NA	NA	NA	NA

		Was reasonable workers' compensation for Safai Mitras/Sathis and health insurance achived? For how many? Give age, gender in appropriate column	10	NA	NA	NA	All got PMJAY in the case of HUL in Mumbai. However, as per HCCBPL Implementation partner in Mumbai, through the ESIC schemes, workers getting health insurance but they are not getting compensation. The workers said "SMS provided us health cards and schemes like Ayushman Bharat Yojana but we haven't received health insurance facilities under UNDP project."	2	9	NA	NA	NA	NA

		Was lost work time and worker replacement cost expenses met? For how many? Give age gender in appropriate column?	3	2	5	NA	As per the HUL Implementation Partner in Mumbai, there were around 45 male Safai Sathis and 5 female Sathis involved to achieve the plastic waste target of the project but only 8 Safai Sathis half salaries was received from the project i.e only for 14 months (Nov'20 to Nov'21) and (Jun'22 to July'21) but in between months no compensation was not covered by the project. As per the HCCBPL Implementation partner also there was no provision in ESIC schemes and UNDP project to compensate the women.	NA	8	NA	NA	8	NA

6.4.3 Sample Questionnaire or Interview Guide used for data collection from stakeholders

Stakeholder questions								Who is answering?					
S.No.	Components		Yes	No	Not aware	Not applicable	Remarks	ULB	Implementation Partner	Supervisor	Safai Sathis Male	Safai Sathis Female	Enterprise partner
	Socio-Technical model	Are you aware of the socio-technical model developed for this project?											
1		Was there a consultative mechanism for developing the socio-technical model?											
		Were you consulted for developing the model?											

		As per your knowledge and experience, is the model appropriate for acieving the outcomes?											
2	Model Implementation via Swachhta Kendra	Was a baseline developed for plastics generation, collection segregation?											
		Was strengthening CSOs for managing, enhancing and maintaining facilities for plastic waste done in selected cities											

		Were Safai mitras or Safai sathis integrated into the project and their participation ensured? How many? Give age, gender in appropriate column											
		Was a regulatory need gap analysis conducted to address integral management of plastic waste?											
		Did the project start in 10 cities first year, add 15 in the next											

		year and plan for adding 25 cities in the year after that											
3	Institutionalizing Safai Mitras/Sathis in governance bodies	Were waste workers (Safai Mitras/ Sathis mainstreamed into the plastic waste management model? How many? Give give, age, gender in appropriate column											
		Were SHG groups of Safai Mitras/ Sathis formed?											
		Did the living conditions of Safai Sathis improve? How many?											

		Give age and gender in appropriate column											
		Did the socio-economic conditions of the Safai Mitras/ Sathis improve? How many? Give age, gender in appropriate column											
		Did the credit access of Safai Mitras/ Sathis improve? How many? Give age, gender in appropriate column											

4	Establishment of a knowledge management, monitoring and communication system	Was traceability, accountability, digital governance achieved in the knowledge management system											
		Were apps developed to integrate all stakeholders into one digital cloud?											
		Was the tracking of plastic waste from collection to recycler achieved?											
		Was documentation of best practices in											

		the pilot cities achieved?											
		Was an online project monitoring, reporting, information exchange protocol established?											
5	Project management Aspects and Costs	Were detailed budget lines and levels clearly defined?											
		Did Swach Mitras/Sathis secure economic share of the value chain? How many? Give age, gender in appropriate column											

		Was the project able to offer better pricing for the collected waste? If yes to what percentage?											
		Was reasonable workers' compensation for Safai Mitras/Sathis and health insurance achived? For how many? Give age, gender in appropriate column											
		Was lost work time and worker replacement cost expenses met? For how											

		many? Give age gender in appropriate column?											

6.4.4 Questions for the Producer, Importer and Brand Owners (PIBOs)

1. What is your company's role in the partnership project with UNDP for Plastic Waste Recycling management project in India?
2. Was the design and implementation of this project as per your (i) company's goals, (ii) your company's requirements and (iii) larger socio-economic goals?
3. As per your assessment what among the above three were fully achieved, partially achieved, not achieved at all?
    - Company's goals
        - Fully achieved
        - Partially achieved
        - Not achieved
    - Company's requirements
        - Fully achieved
        - Partially achieved
        - Not achieved
    - Larger socio-economic goals
        - Fully achieved
        - Partially achieved
        - Not achieved
4. If you selected either partially achieved or not achieved in any of the above, what aspect of the project that you feel needs to be corrected to increase the level of achievement?
    - Design of the project
    - Technology
    - Business plan
    - Socio-Economic-Environmental (Sustainability) plan
    - Implementation
    - Selection of partners
    - Efficiency
    - Capacity building
    - Compliance requirements
    - Land allotment
    - Authorizations & permissions
    - IEC & Public support

6.5 Ratings Scales

Ratings: The ratings of the project's results and brief descriptions of the associated achievements will be recorded in a MTR Ratings & Achievement Summary Table in the Executive Summary of the MTR report. No rating on Project Strategy and no overall project rating is required & hence done

Ratings for Progress Towards Results: (one rating for each outcome and for the objective)		
6	Highly Satisfactory (HS)	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".
5	Satisfactory (S)	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
4	Moderately Satisfactory (MS)	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
3	Moderately Unsatisfactory (HU)	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
2	Unsatisfactory (U)	The objective/outcome is expected not to achieve most of its end-of-project targets.
1	Highly Unsatisfactory (HU)	The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets.

Ratings for Project Implementation & Adaptive Management: (one overall rating)		
6	Highly Satisfactory (HS)	Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as "good practice".
5	Satisfactory (S)	Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
4	Moderately Satisfactory (MS)	Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
3	Moderately Unsatisfactory (MU)	Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
2	Unsatisfactory (U)	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
1	Highly Unsatisfactory (HU)	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Ratings for Sustainability: (one overall rating)		
4	Likely (L)	Negligible risks to sustainability, with key outcomes on track to be achieved by the project's closure and expected to continue into the foreseeable future
3	Moderately Likely (ML)	Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
2	Moderately Unlikely (MU)	Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
1	Unlikely (U)	Severe risks that project outcomes as well as key outputs will not be sustained

6.6 MTR mission

6.6.1 Visit to Mumbai:

A mission plan was made to go to Mumbai in Oct-31st-Nov 3rd and approved. The mission was undertaken to meet and interact with implementation partners and stakeholders in Mumbai, namely Stree Mukti Sanghatna who was the implementation partners for the MRF identified for the project in 'M West' ward with Donor as HCCBPL and also other 6 MRFs in different wards, which also provided the data for the EPR and traceability which was required during the period August 2018-July 2022.

Similarly, the mission included visit to Aasra Welfare Society, which has its MRF in 'H West' ward who was the implementation partner for the MRF identified for working with HUL for providing the data for the EPR and traceability which was required during the period October 2018 – September 2022.

Meeting with ULB officials of M Ward and H Ward was also necessary since the strategy was to not only just involve the ULBs but also get them to take ownership for the MRFs created and the equipment provided both by the donors and themselves to jointly create better working conditions for the waste collectors and sorters and also help in higher amounts of waste to be recovered.

6.6.2 Following is the table with date and meetings with various stakeholders during the mission:

Table 3: table with date and meetings with various stakeholders during the mission

DATE/TIME	Meeting with	Contact Person	Phone, e-mail	Address	Relevance to the project
Travel to Mumbai 31st Oct 2022					
31st October 2022, Mumbai					
9am – 1pm	Travel to Mumbai from Delhi	Flight			
2 pm – 5:00 pm	Stree Mukti Sangathana Location: Swachhata Kendra, Mukund Nagar, M West ward	Sunita Patil	9967885140	SMS-Parisar Bhagini Vikas Sangh Dry Waste Centre, Near Mukund Nagar, Mysore colony, Chembur-74	Implementing partner Swachhata Kendra at this site
6pm-8 pm	Stree Mukti Sangathana Location: Swachhata Kendra, Chembur	Jyoti Maphsekar	9867724529	Stree Mukti Sanghatna Head Office, opposite Deonar dumpsite	Implementing Partner
1st November, 2022, Mumbai					
10:15am – 3 pm	Aasra Welfare Association Location: Swachhata Kendra, Bandra	Haider Bhai, President Aasra Welfare Association	9833888855	Dry Waste Center, next to MTNL, Telephone Exchange, Bandra (W) – 400050	Implementing Swachhata Kendra at this site
5pm-7pm	Report writing & data collection	Hariom Gond, Accountant, Aasra Welfare Association	8286058048	Dry Waste Center, next to MTNL, Telephone Exchange, Bandra (W) – 400050	Implementing Swachhata Kendra at this site

2nd November, 2022, Mumbai					
12pm-3:30pm	Vishwas Mote, Ward Commissioner, M Ward Along with Mr. Madne, Engineer and Ganesh Chandorkar (Sub-Engg)	Mr. Vishwas Mote	ae01swm.mw@mcgm.gov.in ac.mw@mcgm.gov.in	M/West ward municipal office Bldg, Sharadabhau Acharya Marg, Near Natraj Cinema, Chembur East-71	Stakeholder
5pm-7pm	Town Hall meeting with Garden Minister, DM Suburban, Commissioner GMC and all Asst. Commissioners at MMRDA on invitation from GMC M Ward Engr. Mr.Madne	Ms. Priyanka Wanjal, UNDP	9967540300	MMRDA	Stakeholder
3rd November 2022, Mumbai Departure for New Delhi					

6.6.3 List of organizations/persons interviewed.

1. *Visit to Stree Mukti Sanghatna, Mumbai on Oct 31st, 2022.*
2. *Visit to Aasra Welfare Association in H Ward on November 1, 2022*
3. *Meetings with ULB officers and staff*
4. *Interviews with Donor Agencies*
5. *UNDP Coordinator in charge of HCCBPL project (sought a similar interaction with HUL project coordinator but it could not happen) & one of the team members of HUL project*

6.6.4 Learnings and Recommendations from interviews

It is important to consult grassroots organizations, NGOs, workers, RWAs, ULBs, Recyclers before constructing any model, which was not done in this case wither for HCCBPL or HUL.

Land is an issue and getting permissions is also difficult. For instance, Mukund Nagar MRF is an industrial area where RCF & BPCO, a Petroleum industry are here. Therefore, when Shakti

plastics wanted to establish a plastic recycling factory in this location, they were not allowed to do considering that it could be a fire hazard.

In the UNDP project, equipment for the MRF was already decided and MRFs were compelled to take it. This is not correct. Equipment should be decided on, as per the needs of the MRF. For instance, it is difficult to get three phase connection for some of these equipment. Also with big equipment, you need to get Consent to Establish and Consent to Operate, which is cumbersome. The O&M costs of these equipment are high and cannot be borne by the MRF.

The operational costs of the equipment are very high. Therefore, the phatka machine is run only once a week, mostly for the waste brought in by the municipal collection vehicles, rarely for the directly collected or purchased waste. To reduce the electricity consumption, shredder is neither required nor used. Baler is the equipment most often used.

MRFs were set up in Mumbai since 2010-2012, approximately 2 per each ward and today ULB has set up 35 Dry waste collection centres in different parts of Mumbai. This is not a new concept for Mumbai. However, the UNDP project had pushed for improvement although BMC is not adhering to the standards. Many of the DWCCs among the 35 DWCCs do not have electricity or water connections and many don't have sanitation facilities.

SMS is running 8 of these DWCCs but only in 2 of these, BMC has given water and electricity connections despite Swachh Bharat Mission and UNDP's current project for achieving the standards of a good MRF.

SMS was set a target of 200 tons per month target while others were set a lower target. This is not a fair way to deciding on the target. Furthermore, under this project, only one of the MRFs was fully supported and six others were supported after 2 years and only for the Supervisors although complete data was taken from day 1 of the project. This is unfair.

HUL has been supporting SMS through CSR and is supporting 3000 women for different government schemes by setting up counselling centres etc. Hence, instead of EPR etc., UNDP needs to coordinate with the donors for CSR activities. EPR is inadequate and unfair to MRFs. "It was an expensive experiment which only caused unhappiness and dissatisfaction".

Non-recyclables are the items which require EPR support. He says for every 100 tons of plastic waste that the Producer/ Brand owner is asked to submit data for recycling, they should be asked submit certificates for 120-125 tons. This is because there is so much non-recyclable plastics which come to MRFs including those which come from their (brand owners') sources that storing these, transporting these and paying for their disposal is prohibitively high.

Underquoting for the EPR is the most difficult aspect to compete against and there are recyclers willing to give false certificates and this is causing a lot of confusion in the EPR market too. Hence, underquoting can be discouraged through defining base price.

EPR should be for non-recyclables and not for Recyclable plastics because extra funds are necessary to find better use, increase recyclability of non-recyclables and for their transportation and disposal. For instance, although MLPs have been considered as non-recyclable, those making agricultural pipes have used 5% of MLPs to increase their strength while recycling HDPE for this purpose. However, finding markets for them and transporting these is expensive.

CSR funds, which will benefit the activities towards improving the lives and livelihoods of the waste collectors and waste workers is a better method of improving the system so that the market-based activities such as finding markets for recyclables can be done without stress.

6.6.5 Suggestions from Donors:

ULBs had no idea about how much of the solid waste is plastics and what kind of plastics in particular wards or specific locations and how much of area will be required for storing and sorting these plastics before selling to aggregators and recyclers.

There were many locations where the space given by the ULBs was too little and hence the functioning of the MRF was hindered and operations abandoned in some cases although SOPs for running the MRFs were made and standardized.

Although the value of the PET waste world over is 100 million USD, hardly 5% of it was coming to the MRFs despite several IEC campaigns conducted in all the pilot locations.

Since most of the plastics coming into the MRFs are MLPs, many other FMCG companies whose plastics comprised 60-70% MLPs are finding the MRFs useful and can get certification from aggregators and recyclers.

As per the PWM Rules 2016, certificates from aggregators or UNDP declaration regarding collection, sorting etc., was sufficient but after the amendment only recycler certificates from registered recyclers are acceptable. Hence certificate purchase through MRFs wasn't useful.

Social impact as on improvement of lives and livelihoods of the waste workers was achieved through the MRFs established by HCCBPL and this should be acknowledged through a citation, a consolidated report as other companies are benefitting from these MRFs

Now HCCBPL own their plastics since they cannot let them become waste. They have to show at least 30% recycled content in their product/ s besides the EPR certification, which, now they are getting directly from PET to fibre manufacturers and from recyclers of flexible plastics for the secondary plastics (LDPE used for holding the bottles) and tertiary plastics (HDPE / PP for larger tray like containers etc).

The project, according to HCCBPL, did not have the kind of impact that was anticipated and despite the substantial contribution, mileage on plastic collection nor the inclusion of waste pickers nor the IEC seemed to have the expected impact.

Regulators were not satisfied and started pointing to defects although HCCBPL thought that this was a UNDP promoted model and hence is the gold standard.

PWM Rules 2016 was category agnostic but PWM Rules Amendment 2022 is category specific and the regulators want science-based targets and were not satisfied with mere setting up of MRFs or that they had social impacts or were inclusive for the waste pickers.

UNDP should have the expertise in any such project, confidence in the project they were doing and internal alignment before forging any partnership and wanting to change the status quo in the plastic waste scenario.

Financial support of not only minimum wages but also insurance, medical benefits and ergonomically safer methods of sorting the collected waste by using tables, conveyor belts and well-ventilated spaces for doing this and achieving a certain amount of self-sufficiency by

increasing the efficiency of sorting into more categories and finding better markets, have also been promoted by the MRFs established and run under the UNDP project. This should be continued in future models.

6.7 List of documents reviewed.

- Project Document & Amended Project Document
- Signed contract document
- UNDP Evaluation Guidelines
- Final TOR
- Pre-contract and Contract documents
- Base line and pre-project surveys
- MOMs of meetings with government bodies and functionaries
- Minutes, Reports and Documents sent to me by the UNDP Plastic Waste Management teams
- Knowledge products developed
- Utilization Reports of HCCB and HUL uptil June 2021
- Some specific sections in the Project Document, TOR, Guidelines