

A Handbook for Entrepreneurs on Solid Waste Management

A Step towards *Atmanirbhar Bharat*



Shyamili Singh
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This handbook is dedicated to all those **mentors** who have inspired us to work in the field of solid waste management, **workers** in the sector who are making the work possible, and **aspiring entrepreneurs** who will carry the journey forward with zeal and passion.

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FOREWORD

The concept of entrepreneurship in waste management is close to my heart. My association with the environment, on a personal and professional front, has been long and enriching. One concern, that has always bothered me, is the rising figures of waste generation all over the world, especially in India. Over the years, many innovations have taken place in terms of rules and policies on waste management, cost effective technologies, infrastructure, methods and practices of reaching out to people, and participation and capacity building of all stakeholders involved in the generation and management of waste. The transformation has been visible especially after the launch of the *Swachh Bharat* Mission by, Hon'ble Prime Minister of India, Shri Narendra Modi in 2014. Environment, and specifically waste management, now occupies a considerable space in the political and social discourses. However, the intentions of policy makers still need to be synchronized with the efforts and initiatives taken by people at the local level. We need to develop an array of leaders who are passionate about management of waste and visionary enough to foresee the socioeconomic opportunities that it will bring in the future.

“Handbook on Solid Waste Management for Entrepreneurs: A Step towards *Atmanirbhar Bharat*” is an initiative in this direction. It aims to train and empower budding entrepreneurs to take up waste management as a profession. The handbook is a complete package of guidelines that enables readers to understand the sector at the conceptual level and on the practical level skills and processes that are involved in working in the sector. It acquaints the readers with the nature, issues, opportunities and policy landscape of waste management in India. The authors have further added practical aspects of the sector by including modules on proposal development, project implementation, financial management and documentation. With the help of eight comprehensive modules, it unfolds the realistic picture of the domain and provides a step-by-step guide to the readers.

I extend my heartiest congratulations to Indian Pollution Control Association (IPCA) and the team of esteemed authors who have compiled their knowledge and experience in the form of this handbook. I hope it will serve

as a highly beneficial resource for students, young professionals and people aspiring to form a start-up.

Dr Padma Vasudevan Sen
Retd. Professor, Indian Institute of Technology, Delhi
FNASc India, D.Sc (*honararis causa*), Aston University, UK

PREFACE

Waste management has always been a concern for the sustainable development of a country. With the current impact of globalization, consumerism and change in lifestyle in India, there is exponential growth in the rate of waste generation. It is mammoth task for the concerned authority to deal with the increasing quantum of waste in a country. Although the Govt. of India and its concerned ministries and departments have notified several rules, policies and guidelines, the implementation of these policies needs to be strengthened. There is a need for collaboration with additional stakeholders and for synergy among them.

Currently, a handful of individuals and organizations are working towards management of solid waste in India. We need to create a cadre of entrepreneurs who are technically qualified and skilled in the various components of solid waste management (SWM).

In 2020, Indian Pollution Control Association (IPCA) initiated Project RELISH (Recognizing and Empowering Local Initiative for a Sustainable Habitat), where twenty local entrepreneurs and enterprises working on SWM were selected from across the country. The goal was to create a group of like-minded organizations capable of bringing a change in the waste management sector of our country. The project has facilitated capacity building of these entrepreneurs and organizations through knowledge sharing, and sessions and interactions by mentors. However, it was felt that there were many more individuals and organizations that were passionate to work in the field of SWM but lacked the necessary guidance and handholding support to work effectively. Their involvement in the waste management cycle is of utmost importance in fulfilling the dream of the *Swachh Bharat* Mission. Therefore, for multiplying outreach and helping many more people, it is essential to develop a resource that can be accessed by all.

This handbook has been developed as a response to the above challenge. It is a conscious attempt to demonstrate SWM as a lucrative field for entrepreneurship and to provide guidelines for running a SWM enterprise. The handbook is a fine blend of theoretical understanding and practical

considerations of SWM that are based on IPCA's twenty years of field operations across India.

The handbook is written in an easily comprehensible tone and language so that it reaches out to people with diverse backgrounds. I hope that this handbook will be able to give you the support, direction and knowledge that you need to work in the SWM sector.

“Together we can, and we will make a difference.”

Ajay Garg
Secretary
Indian Pollution Control Association (IPCA)

PROLOGUE

This handbook is an outcome of the learning experience of the twenty-year journey of Indian Pollution Control Association (IPCA), which was inceptioned in 2001 as a Non-Government Organization. The journey would not even have started without the trust and support of its founding members and, especially, the co-founder, Ms Aarti Kaushik, who was instrumental in establishing IPCA. The journey began with the replication of learning from Campus Recycling Program, at IIT Delhi, under the mentorship of Prof. Padma Vasudevan Sen and Prof. G.V. Soumitri. The very first project of IPCA was to provide door-to-door waste collection services to one residential society and to uplift the rag-pickers' community so that they get recognition in society. We were able to scale up these services and expand our scope of work due to the dedicated efforts of Mr Ajay Garg, Secretary of IPCA. I would also take this opportunity to acknowledge the guidance, encouragement and support of Prof. Mukesh Khare, Prof. Arun Kansal, and Prof. Prateek Sharma in the growth of IPCA.

Over the years, we have associated with a wide range of organizations, including central and state government, municipalities, corporate businesses, educational institutions, industries, residents, waste workers, recyclers, etc., at various capacities. We have also developed innovative approaches and sustainable solutions to deal with the issue of solid waste and air pollution. I am highly grateful for all the collaborations that have helped us in serving society.

IPCA started its journey as a service provider of one component of the waste management system, i.e., waste collection. Currently, we are managing the entire supply chain of waste management from waste collection to recycling, along with the education and awareness generation of stakeholders. We have been able to scale up our operations to pan-India and reach out to millions of people. This has been possible with the support of our sincere and dedicated teammates and members. They took tough tasks and challenges and converted them into reality on the ground with ease. Their actions on the ground have really helped us to write this handbook and we took their real stories as reference in this handbook.

The journey has been made successful with the untiring support and patience of my family and friends. I would like to thank them and all the well-wishers for supporting me spiritually throughout my life.

Ashish Jain
Founder Director
Indian Pollution Control Association (IPCA)

ACKNOWLEDGEMENTS

This prestigious project of coming up with a handbook entitled “A Handbook for Entrepreneurs on Solid Waste Management: A Step towards *Atmanirbhar* Bharat” as a festschrift to IPCA was successful due to assistance received and time devoted by many prestigious personalities. Words are inadequate to convey the appreciation for all the help provided. The authors would like to thank each one of the mentors for their contributions. We would like to express our sincere gratitude to Dr Shyamala Mani, Ms. Sanchita Jindal, C.A. Parveen Agarwal, Dr S. K. Nigam, Mr Sandeep Kanda, Mr Siddharth Dutta, Dr Radha Goyal, Prof. Ajit Seshadri and Mr Naresh Rana for their contribution to Project RELISH. Their interactive sessions have helped us and all aspiring participants of project RELISH to learn on each aspect of solid waste management (SWM) in India. Without their support, this handbook would not have become a reality. The authors thank each of them for devoting their time and effort towards this handbook, which, we think, will be a great asset to the community!

The authors’ humble duty of acknowledging everyone will fail if we don’t thank the Publishers—Cambridge Scholars Publishing Limited, Lady Stephenson Library, Wellbeck Road, Newcastle Upon Tyne, NE6 2PA, United Kingdom—without their support and assistance the handbook would not have seen the light of the day.

Last but not the least, the authors express their sincere and heartfelt thanks to the Almighty for providing them with good health and peace of mind, which facilitated them in coming up with the handbook. The authors sincerely pray and wish to the Divine for many more such endeavours.

Shyamli Singh, Ashish Jain, Nidhi Pasi and Garima Kaushik

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INTRODUCTION

In India, about sixty-two million metric tons of waste are generated every year. Managing this magnitude of waste is a challenge for the concerned regulatory and implementing authorities. The conundrum will amplify in future as the quantum of waste generation is expected to rise considerably. The Ministry of Environment, Forests and Climate Change (MoEF&CC), of the Government of India (GOI), has notified several rules, policies and guidelines to regularize and strengthen the efforts towards management of solid waste in the country. However, there is a demand for increased engagement of intermediary agencies that can play as a conduit between policy frameworks and people. Presently, only a limited number of technically trained individuals and organizations are working towards management of solid waste. Although the storyline is gradually changing, there is still a solemn need to enable and empower budding entrepreneurs to take up this sector.

This handbook is a conscious effort to take entrepreneurs through the journey of establishing and working enterprises: a step towards *Atmanirbharta* (self-reliance) in the dynamic sector of SWM in India. The major objective of developing this handbook is to provide practical insights of implementing solid waste management (SWM) projects. It will further help to identify several rewarding business opportunities for the readers.

The handbook details the steps involved in founding and operating a business enterprise in SWM. This handbook is a step-by-step guidance for practitioners and entrepreneurs who are passionate about working in the field of SWM, providing a fine blend of theory and practice.

The handbook consists of eight modules covering topics like setting up an organization, policies, project management, documentation and communication. It also has a dedicated module that provides an assessment of various opportunities in the sector. The handbook further provides tools that can be used by the readers for the evaluation of their strengths and weaknesses in the form of SWOT Analysis, which will be helpful in the planning and execution of the projects. It is recommended that the reader of this handbook undertakes the SWOT Analysis, provided as Appendix A, to evaluate their strengths and weaknesses, and identify associated opportunities and threats.

The first module talks about different types of organization and their set up. It guides the reader regarding the procedure of registration and the steps involved in the documentation of registration for setting up a new enterprise.

Module two discusses the SWM policy landscape in India. This module dwells upon the need to understand the legislative framework for SWM in India, within which the organization aspires to operate. The history and evolution of the policy initiatives regarding SWM in India, from the 1990s to the 2016 rules (including amendments) for various categories of waste, is also presented in the module. A cognizance of this legislative and policy framework is essential for aspiring entrepreneurs to identify prospects, critical and appropriate stakeholders, and procedures for operation.

The third module enumerates the various opportunities in each component of SWM, including collection, segregation, aggregation, recycling/co-processing, disposal, and awareness. It also talks about Extended Producer Responsibility (EPR) as an emerging statutory compliance opportunity.

The inclusion of topics such as business development, project management, and financial management as specified in module four, five and six, respectively, gives the handbook a totally unique perspective. The proposal development module discusses the ways in which opportunities offered in SWM can be transformed into working projects. The project implementation module focuses on the implementation/execution phase, which holds a special place in the success of a project. The sixth module dwells upon financial management, the process through which an organization plans, organizes, controls and manages its financial resources. It includes managing processes such as budgeting, fund mobilization, managing expenses, payment mechanisms, and preparing financial statements.

The seventh module deals with the documentation requirement of the organization as well as individual projects. It lists the various statutory, regulatory, and general documentation requirements.

The eighth module discusses about the need for effective communication, which is the soul of any successful enterprise or project. The module provides information types, methods, and tools of communication. It also guides the reader through the design and development of the communication plan and preparation of communication material.

ABBREVIATIONS

AGM	Annual General Meeting
AoA	Article of Association
C&D	Construction and Demolition
CBO	Community Based Organization
CPCB	Central Pollution Control Board
CPWD	Central Public Works Department
CSR	Corporate Social Responsibility
CTO	Consent to Operate
DWCC	Dry Waste Collection Centre
E-Waste	Electronic Waste
EPF	Employee Provident Fund
EPR	Extended Producers' Responsibility
FCRA	Foreign Contribution Regulation A
GOI	Government of India
GST	Goods and Sales Tax
IEC	Information, Education and Communication
JD	Job Description
M&E	Monitoring and Evaluation
MoA	Memorandum of Association
MoEF	Ministry of Environment and Forests
MoEF&CC	Ministry of Environment, Forest and Climate Change
MoU	Memorandum of Understanding
MoUD	Ministry of Urban Development
MSW	Municipal Solid Waste
NGO	Non-Governmental Organization
NOC	No Objection Certificate
O&M	Operations and Maintenance
PAN	Permanent Account Number
PCC	Pollution Control Committee
PRO	Producers' Responsible Organization
PVC	Poly Vinyl Chloride
PWM	Plastic Waste Management
RFP	Reference for Proposal
RoC	Registrar of Companies

RWA	Residents Welfare Association
SOP	Standard Operating Procedure
SPCB	State Pollution Control Board
SWM	Solid Waste Management
TDS	Tax Deducted at Source
ULB	Urban Local Body
UT	Union Territory
WBS	Work Breakdown Structure

MODULE ONE

ORGANIZATIONAL SET-UP

Introduction

Entrepreneurship can be defined as a field of business that seeks to understand how opportunities to create something new (e.g., new products or services, new markets, new production processes or raw materials, new ways of organizing existing technologies) arise and are discovered, or created, by specific persons, who then use various means to exploit or develop them, thus producing a wide range of effects.¹ It is a way of innovatively providing solutions to the pressing problems of society. In India, waste and its management is one such concern/problem. For a budding entrepreneur interested in working on waste management, it is imperative to understand the value chain of waste and find a niche where they can contribute as a start-up. Once the idea is ready, it requires a structure to operate.

Well-designed structures provide clarity to the scope of work, enable smooth decision-making and define roles and responsibilities of their members. There are different ways in which a structure can be set up. One of the significant factors could be the decision regarding use/utilization of funds. The organizations formed with the primary intention of making, or not making, profits are both part of the Indian economy and sometimes even complement each other. Both have their own advantages and disadvantages.

In this chapter, different kinds of organizations will be discussed. The benefits of one type of organization over the others will also be discussed. Additionally, this chapter will guide the reader regarding the process of registration and the steps involved in the documentation of registration for setting up a new organization/enterprise.

¹ Robert Baron, Allison Rebecca Reuber and Scott Andrew Shane, *Entrepreneurship: A Process Perspective* (London: Thomson Learning, 2008), 4.

Types of Organizations

Organizations can be categorized by size, location, orientation, interest area, function, intention towards utilization of profit, etc. For the purposes of this handbook, we will be categorizing organizations based on what they intend to do with the profit earned. It is an essential criterion for registration of the organization.

Broadly, two types of organizations can be formed: For-profit and not-for-profit.



Figure 1.1 Types of organization

For an entrepreneur, it is imperative to understand the basic features of these organizations.

For-profit Organizations

The primary purpose of a for-profit organization is to generate profits through execution of its activities. The activities involve the sale of goods and services. The owner of such organization may earn profits and those profits can be kept by the owner as their income, and they may decide how to utilize the profits. Profits are either enjoyed by the owner, distributed amongst partners or reinvested in the enterprise. Employees are paid workers who contribute their labour to the business.

Advantages of for-profit organizations

- **Generation of profit:** These organizations generate profit for the owner. It depends upon the owners/partners to either reinvest the profits into the business or share them among themselves.
- **Wide scope:** This type of organization enjoys the freedom to generate income from different kinds of activities. The owners/partners do not need approval from competent authorities in order to add or change the scope of work.
- **Control:** Owners/partners have more control over the business.

Disadvantages of for-profit organizations

- **Submission of tax:** For-profit organizations do not get rebate from taxes. They must submit taxes to the government on their profits.
- **Influenced by market conditions:** The market and its fluctuations have a major impact on these organizations. The prices of goods and services vary as the market fluctuates.
- **Bearing losses:** Just like profits are enjoyed by the owner/partners, in most of the for-profit organizations, losses are to be borne by them.

There are different types of for-profit organizations—sole proprietorship, partnership firm, and limited liability companies.

Sole Proprietorship

Sole proprietorship is the kind of business that is managed by a single person. In this type of organization, the profits are enjoyed by the proprietor and losses are also borne by him/her. It is not mandatory to register a sole proprietary firm; it totally depends on the discretion of the proprietor. To start a business, the proprietor must apply for a PAN Card in the name of firm. Further to this, a bank account must be opened for the enterprise.

In case the owner wishes to register the enterprise, it can be registered under the Shops and Establishments Act 1953 or the Micro, Small and Medium Enterprises Development Act 2006. The following documents are required for registration:

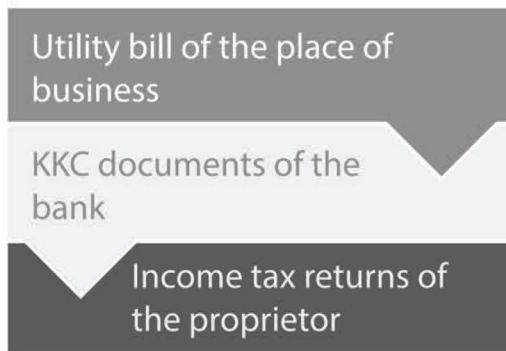


Figure 1.2 Documents required for registration of a sole proprietorship

Any two of the above-mentioned documents can be submitted for the bank account opening, along with the proof of identity and proof of address of the proprietor.

Partnership Firm

A partnership firm is a form of organization in which two or more people come together to start an enterprise. The profits and losses are divided among the partners in a predetermined ratio. Just like proprietorship, it is at the discretion of partners to register the firm. However, it is mandatory to have a partnership deed that lays the terms and conditions of the partnership.

A partnership firm can be registered under the Indian Partnership Act 1932.² An application form, along with a fee, is to be submitted to the Registrar of Firms of the state in which firm is situated. The application must be signed by all partners or their agents. The following documents are required at the time of registration:



Figure 1.3 Documents required for registration of a partnership firm

The time taken to register this type of organization is twelve to fourteen working days.

² Ministry of Law and Justice, *Indian Partnership Act, 1932* (New Delhi: Government of India, 1 October 1932), https://www.mca.gov.in/Ministry/actsbills/pdf/Partnership_Act_1932.pdf. This Act is administered by the Ministry of Corporate Affairs.

Limited Liability Company

A limited liability company is an association of persons, called partners, formed to carry out business. The partners have limited liability and are not responsible for each other's misconduct. This type of organization is registered under the Limited Liability Partnership Act 2008.³

The following documents are required at the time of registration:



Figure 1.4 Documents required for registration of a limited liability company

The process of registration of a limited liability company is mentioned below:

³ Ministry of Law and Justice, *The Limited Liability Partnership Act, 2008* (New Delhi: Gazette of India, Government of India, 9 January 2009), https://www.mca.gov.in/content/dam/mca/pdf/LLP_Act_2008_15jan2009.pdf. The Act was amended in 2021 and is now known as the Limited Liability Partnership Act (Amendment), 2021. Ministry of Law and Justice, 2021, *Limited Liability Partnership Act (Amendment), 2021* (New Delhi: Gazette of India, Government of India, 13 August 2021), https://www.mca.gov.in/content/dam/mca/pdf/llpAct2021_19082021.pdf. This Act is administered by the Ministry of Corporate Affairs.

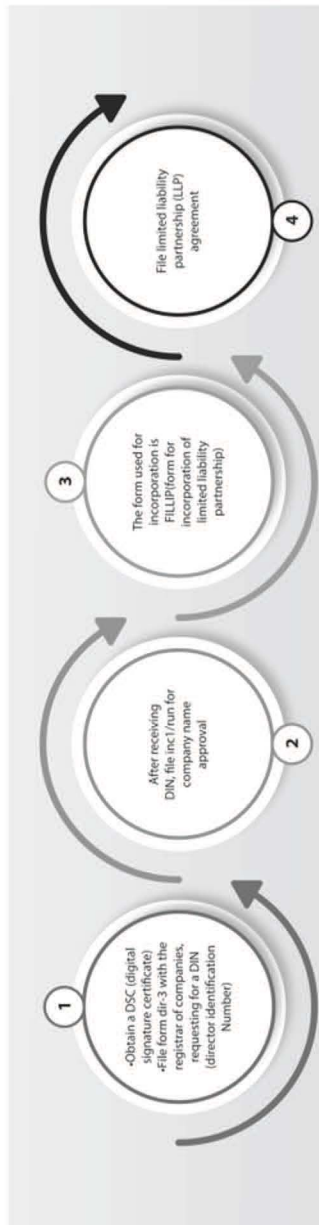


Figure 1.5 Registration process for a limited liability company

Not-for-profit Organizations

Not-for-profit organizations are formed with the primary objective of bringing a change in society or for the welfare of society. The change could be social, economic or environmental. These organizations do not run to generate profit, although efficient management of resources could lead to surplus. The surplus accumulated is added to the corpus of the organization or used for the expansion of the organization. It is not enjoyed by the founder or members, as in the case of for-profit organizations. The activities of this kind of organization are directed to specific beneficiaries. The sources of income generation are generally membership fee, donations, grants, and funding from other organizations. Some organizations are also involved in selling goods that either provide livelihood to marginalized communities or lead to environmental protection. These organizations are people- and community-oriented and believe that social and environmental interests come first. People involved in the activities of this kind of organization are both paid and voluntarily associated for the cause. Due to their contribution to the welfare and functioning of the society, these organizations are considered as the fifth pillar of democracy.

Advantages of not-for-profit organizations

- **Limited liability:** The founder, members, employees and volunteers of not-for-profit organizations enjoy limited liability. This means that they are not legally responsible for the damages done by the organization. However, they are responsible for any case of unethical behaviour on their part.
- **Eligibility for grants:** A not-for-profit organization is eligible to seek grants from the government and other entities.
- **Exemption from tax:** organizations registered as not-for-profit are exempted from submitting tax to the government, as per the Income Tax Act 1961.
- **Government schemes and subsidies:** This kind of organization is also eligible for various schemes and subsidies offered by the government.
- **Social and environmental welfare:** The satisfaction level of people working in not-for-profit organizations is relatively higher since they feel that their work is directly contributing to the welfare of the people/community/environment.

Disadvantages of not-for-profit organizations

- Limited purposes: A not-for-profit organization can only work in the domain mentioned in its rules. For changing the scope of work, it must go to the competent authority and seek its approval.
- Public scrutiny: A not-for-profit organization must keep transparency in its income and expenditures. The accounts of these organizations are open to scrutiny by the public.
- More compliance: Since these organizations enjoy benefits provided by the government, they also have to show more compliance compared to for-profit organizations.
- No profit for founders or members: The founder and members of this kind of organizations cannot distribute surplus among themselves. Thus, it does not directly benefit them.
- Time and money: It takes longer for not-for-profit organizations to gain the trust of its beneficiaries and donors and other stakeholders. Therefore, one must be patient in these kinds of organizations.

A Not-for-profit organization can be registered as a society, trust or section 8 company.

Distinctive features of these three types of not-for-profit organization are discussed Table 1.1.

Table 1.1 Distinctive features of a trust, society and section 8 company

S. No	Particulars	Trust	Society	Section 8 Company
1	Introduction	It is an arrangement between parties whereby one party holds ownership of property on behalf of another person. It is considered to be the oldest form of charitable organization.	It is formed when a collection of people come together for a common charitable purpose. It is not limited to charitable purposes but may extend to multiple, other fields.	It is a company established with the purpose of the promotion of commerce, art, science, sports, education, research, social welfare, religion, charity, protection of the environment, or any such other object, and where any profits are put into furthering its objective.
2	Governing Legislation	Indian Trust Act 1882 ⁴ A few states, like Gujarat and Maharashtra, have their own state laws.	Societies Registration Act XXI of 1860 ⁵	Companies Act 2013
3	Central Documents	Trust Deed	MOA (Memorandum of Association) and Rules and Regulations	MOA and AOA (Articles of Association)
4	Registration Authority	Deputy Registrar of the state	Registrar or Deputy Registrar	Registrar of Companies (ROC) or Regional Director

⁴ Ministry of Law and Justice, “The Indian Trusts Act, 1882,” Government of India, 13 January 1882, <https://legislative.gov.in/actsofparliamentfromtheyear/indian-trusts-act-1882>, accessed on 25 July 2021

⁵ Ministry of Corporate Affairs, “Societies Registration Act, 1860,” Government of India, 21 May 1860, <https://legislative.gov.in/sites/default/files/A1860-21.pdf>, accessed on 25 July 2021. It’s a pre-independence act, and is administered by the Ministry of Corporate Affairs.

5	No of members	At least two trustees	A minimum of seven are required to form a society at state level. In case of a national level society, eleven members are required, out of which eight should belong to different states. The members should not be related to each other.	Two directors and two shareholders. The directors can also be the shareholders.
6	Annual compliances	Not applicable	Filing of the list of names, occupations and addresses of the managing committee members of the society to the Registrar.	Filing of annual returns and accounts with the ROC.
7	Grants and subsidies from the government	Not much	Considerable	Considerable
8	Preference in registration under FCRA	Low preference	Low preference	Preferred
9	Registration under The Income Tax Act 1961	Allowed	Allowed	Allowed
10	Transparency	Low	High	High
11	Legal right over the property	Held by the trustee.	Held in the name of the society.	Held in the name of the company.

12	Registration period (approximately)	15–20 days	20–25 days	30–45 days
13	Stamp duty	Dependent upon the state stamp duty as well as the total worth of the property involved in the matter.	None	None
14	Registration Fee	INR 100/-	INR 50/- or less as decided by state government,	INR 3000/- plus 10% of authorized capital.

Source: cleartax, accessed on June 6 ,2021 “Which One Should You Choose: a Society, Trust, or Section 8 company?”⁶

⁶ “Which One Should You Choose: a Society, Trust, or Section 8 Company?” cleartax, accessed June 6, 2021, <https://cleartax.in/s/society-trust-section-8-company-comparison>.

Society

The purpose of forming a society should be literary, scientific and charitable. The Societies Registration Act XXI, 1860, specifies that the following can be eligible for registration as a society.⁷

- charitable societies;
- the military orphan funds or societies established at the several
- presidencies of India;
- societies established for the promotion of science, literature or fine
- arts, for the instruction, the diffusion of useful knowledge, or the diffusion of political education;
- the foundation or maintenance of libraries or reading rooms for general use among members, or the public, or public museums and galleries of paintings and other works of art, collections of natural history, mechanical and philosophical inventions, instruments, or designs.

Memorandum of Association (MoA)

It is a legal document that specifies the objective for which the organization has been set up. It contains the following:

- name of the society,
- object of the society,
- address of the society,
- details of governing body,
- details of desirous persons.

The society can only undertake the activities mentioned in the MoA. Any alteration to the MoA can only be done after it has been sanctioned by the registrar.

Box 1.1 Memorandum of association for a society

⁷ Ministry of Corporate Affairs, “Societies Registration Act, 1860,” Government of India, 21 May 1860, 6, <https://legislative.gov.in/sites/default/files/A1860-21.pdf>.

Documents required

The requirement for documents varies from state to state. However, a comprehensive list of documents that are required at the time of registration is mentioned below:

- cover letter requesting registration of the society;
- memorandum of association in duplicate;
- duplicate copy of the rules and regulations;
- affidavit number one, regarding ownership and NOC for the registered office of the society;
- affidavit number two, regarding the desirous persons, not related to each other, and name of the society, not identical or resembling any other registered/non- registered society;
- residential proof of identity for each of the desirous persons of the society (attested by the gazetted officer with proper seal);
- consent letter from all the desirous persons;
- PAN card of each of the desirous persons;
- ownership proof of registered office with proof of ID of the owner,
 - a) electricity bill or
 - b) water bill or
 - c) house tax bill or
 - d) property registered documents;
- declaration by the president of the society.

Rules and Regulations

This document specifies the rules that will govern the society. The following needs to be included:

- details of membership and subscription,
- termination of membership,
- details of the general body,
- details and functions of the governing body,
- details of the bank account,
- details of source of income and management of funds,
- powers and duties of office bearers,
- details of auditing mechanism, legal proceedings, dissolution, etc.

The rules and regulations must be signed by three office bearers of the society, usually the president, vice-president and chairman or secretary.

Box 1.2 Rules and regulations that govern a society

Registration process

The process of registration of a society is mentioned below.



Figure 1.6 Registration process of a society

Trust

A trust is formed when the owner of the property transfers the property to another person with the confidence that it will be used for the benefit of the general public. Any person, above the age of eighteen, who is mentally sound, can form a trust. In the case of a minor, the authorization of a Principal Civil Court of the original jurisdiction is required. The purpose for formation of a trust should be religious or charitable.

Documents required

The following list of documents is required for the registration of a trust:

- registration application attested with a court fee of INR 100);
- trust deed on stamp paper;
- declaration by all the trustees along with their signature;
- letter of consent by the trustor, attested with a court fee of INR 10;
- no objection certificate (NOC) from the trustor;
- a proof of identity, such as voter ID, driving license, *aadhaar* card, passport, etc., for at least two of the trustees;
- copy of the proof of identity of each of the two witnesses;
- passport-size photographs of all the parties and witnesses of the trust deed;
- PAN card of each party of the trust
- proof of the registered office address, such as an electricity or water bill.

Trust Deed

A trust deed is legal evidence of the existence of your trust and contains the rules and regulations of the trust. The deed is signed in the presence of two witnesses. All the rules and regulations related to the management of the trust are mentioned in the trust deed:

- name and address of trustor/owner of the property;
- name, age, address, occupation and designation of the trustee(s);
- address of registered office;
- objectives for which the trust is formed;
- rules and regulations of the trust;
- tenure of trustee;
- bylaws that dictate how the changes, removal and addition, of trustees should take place.

Box 1.3 Trust deed**Process of registration**

The first step is to seek an appointment with the sub-registrar office that has jurisdiction, based on the registered office of the trust, and the government registration fee is to be paid after that. On the appointed date, the trust deed is presented before the sub-registrar, where all trustees need to be present along with two witnesses. The registration process is then undertaken by the office of the sub-registrar, and the registered deed can be collected after one week's time. Once you have submitted the trust deed to the registrar, the registrar keeps the photocopy and returns the original registered copy of the trust deed.

Section 8 Company

A section 8 company can be formed for the purpose of promotion of commerce, art, science, sports, education, research, social welfare, religion, charity, protection of environment, or any other such object. This type of organization uses its profit in the promotion of its objective.

Documents required

Documents required for incorporation of section 8 company:

- a statement specifying, briefly, the grounds on which the application is made;
- a declaration in prescribed form, on non-judicial stamp paper, by each person making an application;
- a statement giving a brief description of work, if any, already done by the association;
- a declaration from every person filing the application;
- a list of names, descriptions, addresses and occupations of the promoters, as well as board members, of the proposed company;
- details of the directorship of the directors in any other companies or limited liability partnerships, if any;
- memorandum & articles of association of the proposed company;
- a declaration confirming the application by a company secretary in practice on the non-judicial stamp paper of prescribed value;
- proof of identity for all the directors and shareholders such as voter ID, PAN card, *aadhar* card, driving license, passport, etc. (passport is mandatory in case of foreign nationals);
- proof of residence such as electricity bill, telephone bill, mobile bill, bank statement, etc;
- recent passport-size photographs of all the directors and shareholders;
- proof of address of the registered office;
- a statement showing details of assets and liabilities of the company as on date of the application;
- an estimate of future annual income and expenditure of the proposed company, specifying the source of income and object of expenditure.

Process of registration

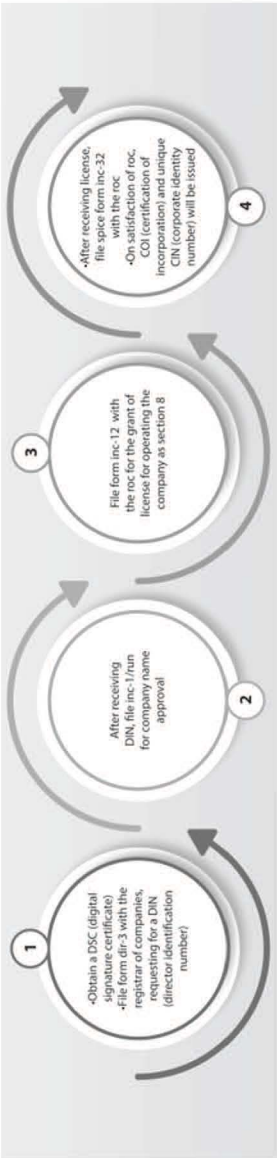


Figure 1.7 Process of registration of a section 8 company

In this chapter, generic information about the six most common types of for-profit and not-for-profit organizations has been given. **Having an organizational structure that meets the needs of the goal is crucial to its success.** It is important for entrepreneurs to have clarity about the purpose of setting up the organization. Once the vision is clear, the content of this chapter will help them in making an informed decision to register the start-up as any of the organizations. However, it is to be noted that the required documents and process may vary from one state to another. It is advisable to visit official websites and offices of relevant departments for more details.

MODULE TWO

SOLID WASTE MANAGEMENT POLICY LANDSCAPE IN INDIA

Introduction

Now that we have learnt how to bring an organization to life, we need to comprehend the legislative framework for solid waste management (SWM) in India within which we aspire to operate. We will also look into the history and evolution of the various policy initiatives regarding municipal SWM in India, from the 1960s to the recent 2016 rules passed (also, the key amendments after that), for the various categories of waste. An awareness of this legislation and policy framework is essential: to enhance our knowledge, recognize opportunities, identify critical and relevant stakeholders for operations and collaboration, and, finally, to understand challenges we might come across as we identify initiatives and business opportunities for sustainable waste management in the country.

Evolution of Waste Management Rules and Regulation in India

SWM is a humongous and an acute problem facing India. It continues to remain one of the most neglected areas for urban development. The sheer volume of the problem, along with the financial and infrastructural constraints such as non-availability of land for safe disposal of waste, lack of awareness and general apathy at all levels, gets in the way of efficient and safe management of urban solid waste.⁸ Besides creating awareness among the society at large of the detrimental impacts of improper waste management to public health, it is equally essential and critical to have proper legislation in place for addressing the issue. The presence of

⁸ Planning Commission, *Report of High Power Committee on Urban Solid Waste Management in India* (Planning Commission, Government of India, 1995), 1–2.

appropriate policies and their implementation is crucial to improving the situation.

Acknowledging the need for this, the Government of India (GOI) has taken many steps, such as drafting and implementing several legislative measures and rules, setting up high-level expert committees on technical aspects, drafting strategy papers, and formulating master plans for SWM in the country. The recent 2016 waste management rules, by the GOI (regarding solid, plastic, e-waste, hazardous, biomedical, and construction and demolition waste), are indicative of its earnest intentions to control and regulate the menace of solid waste in the country.

The early initiatives of the GOI regarding urban waste management focused primarily on promoting composting of urban MSW. The fourth five-year plan provided block grants and loans to state governments for setting up MSW composting plants. In 1974, the GOI introduced a revised scheme to revive urban waste composting. However, these efforts did not meet the desired levels of success.⁹

In 1975, a **high-powered committee on urban waste** was created by the GOI for the first time. The committee, in its report, made seventy-six recommendations, covering eight important areas of waste management.¹⁰ However, implementation of these recommendations was lacking. In 1990, the **National Waste Management Council (NWMC)** was set up and one of its objectives was municipal SWM. The council conducted a sample survey in various cities to find out about the recyclable material in the municipal waste, which is picked up by rag pickers and sold to industrial establishments through contracts. Financial assistance was provided to twenty-two municipalities to undertake this survey. The report was expected to provide concrete methods to improve SWM.¹²

The **outbreak of plague in Surat**, in 1994, “brought into sharp focus the abysmal state of sanitation and filth in the country’s urban areas.”¹³ The

⁹ Indrani Chandrasekharan, “Policy and Prospects: an Overview,” *Unpublished* (2003): 1–2.

¹⁰ Central Pollution Control Board, *Parivesh* (ENVIS Centre: Central Pollution Control Board, 1997), 13, http://www.cpcbenvnis.nic.in/cpcb_newsletter/SOLID%20WASTE.pdf.

¹¹ Chandrasekharan, “Policy and Prospects,” 1.

¹² Central Pollution Control Board, *Parivesh*, 13.

¹³ Christine Furedy, “Plague and Garbage: Implications of the Surat Outbreak (1994) for Urban Environment Management in India,” (paper presented at Learned

plague showcased the lack of, and decline in, urban infrastructure and in the standard of services, with regard to collection and disposal of household, hospital and industrial wastes, as well as in measures for ensuring adequacy of environmental sanitation and public hygiene.¹⁴ This, however, provided an impetus to the government to address the shortcoming of the SWM sector. A **high-powered committee was created in 1995**, under the chairmanship of Prof. J.S. Bajaj, Member, Planning Commission, GOI. The **Bajaj commission** was mandated to undertake an in-depth review of the multi-dimensional issues concerning SWM in India and to suggest suitable models for the development of cost-effective and environmentally friendly approaches to promote sanitary methods of collection, transportation and disposal of solid wastes in Indian cities and towns, especially those with a population size exceeding one million inhabitants.¹⁵ The Committee made a number of wide-ranging recommendations; some of them are as follows:¹⁶

- segregation of waste at household level should be encouraged and promoted;
- primary level of collection should be ensured from each household, private agencies / NGOs may be involved in primary collection;
- monthly charging for door-to-door collection, based on income groups, may be implemented;
- the vehicles for transporting solid waste from the transfer point to the disposal site should be of appropriate design, suiting the waste characteristics;
- along with land filling, composting of municipal solid wastes (MSWs) should be the next appropriate option;
- private participation in setting up pilot plants utilizing appropriate technologies for urban SWM should be encouraged.

The Bajaj Committee also gave recommendations regarding the operationalization of a program for urban SWM. The Committee

Societies Conference: South Asia Council Meeting, University du Quebec a Montreal, June 4–6, 1995), 4, <https://www.ircwash.org/sites/default/files/203.2-96PA-14485.pdf>.

¹⁴ Planning Commission, *Report of High Power Committee on Urban Solid Waste Management in India* (Planning Commission, Government of India, 1995), 1.

¹⁵ Planning Commission, *Report of High Power Committee on Urban solid waste management in India*, 2.

¹⁶ Central Pollution Control Board, *Parivesh* (ENVIS Centre: Central Pollution Control Board, 1997), 13, http://www.cpcbenvnis.nic.in/cpcb_newsletter/SOLID%20WASTE.pdf.

recommended that “in order to ensure cohesion, coordination and convergence of all such efforts it might be essential to evolve a National Policy as well as an Action Plan for Management of Solid Wastes.”¹⁷ The **key recommendations for the national policy were:**

- waste reduction through concerted IEC;
- segregation of different types of waste at source—at home, in the hospital and in industry;
- resource recovery and recycling so that waste is turned into useful material for use in daily life;
- appropriate technology for safe collection, transportation and disposal of solid waste.

Major components of the recommended National Action Plan of Urban SWM were:

- awareness generation at all levels—community, industry and hospitals;
- legal enactment to supplement and support the efforts generated through IEC;
- human resource development for better management of urban solid waste;
- research and development for evolving and evaluating appropriate technology for waste management;
- pilot projects, preferably in the joint sector, for utilization of proven technological options for urban SWM;
- strengthening the existing services for urban SWM;
- establishment of rag pickers’ cooperatives in association with NGOs.

In the same year, **1995**, a **National Programme on Sanitation and Environmental Hygiene** was formulated by the Ministry of Health and Family Welfare. It put forth **several recommendations for SWM**, such as:¹⁸

- source segregation into two receptacles, one for putrescible and another for non-putrescible waste from households, shops, establishments, slums and squatter settlements;

¹⁷ Planning Commission, *Report of High Power Committee on Urban solid waste management in India*, 7–8.

¹⁸ Central Pollution Control Board, *Parivesh*, 14.

- wherever economically viable, door-to-door collection of waste should be encouraged on a cost recovery basis, in other areas, smaller bins with two compartments to collect putrescible and non-putrescible garbage should be introduced;
- all open dustbins, masonry bins, and round, concrete bottomless bins should gradually be phased out by replacing them with good, mobile community bins;
- disposal of solid waste should be done by encouraging composting of waste—load on sanitary landfill sites should be reduced by filling only inert materials.

The **Ministry of Environment and Forests (MoEF)** and the **Central Pollution Control Board (CPCB)** further organized an interaction meeting (March 1995) with municipal authorities and other concerned ministries **to evolve a strategy for the management of MSW**. CPCB also formulated guidelines for the safe disposal of hospital wastes.¹⁹

In 1996, a **landmark public interest litigation (PIL) was filed by Almitra Patel** in the Supreme Court against open dumping of MSW, seeking direction from the Hon'ble Supreme Court of India to the urban local bodies (ULBs), as well as the GOI and the state governments in the country, for improving SWM practices expeditiously. This PIL reflected **an increased awareness among the community and people participating in SWM across India**. Several cities across India, in partnership with NGOs, were experimenting with organizing waste pickers, segregation of waste at source, building community awareness about SWM, thereby increasing the acceptability of the role of NGOs in the sector.²⁰

Following the 1996 PIL, the Supreme Court issued an order setting up an **Expert Committee to review the SWM conditions and all aspects of SWM in class I cities in India**. This committee was established in **1998** and it was created under the chairmanship of Mr. Asim Burman (Commissioner, Calcutta Municipal Corporation) and comprised of members from municipal corporations, CPWD, MoEF, Ministry of Urban Development (MoUD) and a public representative. This Committee identified the

¹⁹ Central Pollution Control Board, *Parivesh* (ENVIS Centre: Central Pollution Control Board, 1997), 13, http://www.cpcbenvnis.nic.in/cpcb_newsletter/SOLID%20WASTE.pdf.

²⁰ Isher Judge Ahluwalia and Utkarsh Patel, *Solid Waste Management in India: an Assessment of Resource Recovery and Environmental Impact* (Indian Council for Research on International Economic Relations [ICRIER]), 2.

deficiencies/gaps in the existing SWM system in the country and prepared the Interim Report, in 1999, on SWM practices for few cities.²¹ The Committee gave wide-ranging recommendations to improve the system of waste management, from storage of waste at source to its final disposal. It also covered institutional, financial, legal and health aspects. One of the key recommendations of the **Burman Committee** was to enable private sector participation (PSP).²² In addition to being a potential source of project funding, the rationale for PSP included benefits, such as cost savings and improvement in efficiency and effectiveness in service delivery. PSP was also seen as a means of accessing new technologies.

Furthermore, looking at the deplorable situation of SWM practices being adopted by the ULBs in the country, for various reasons, and having no action plan to solve the problem in future, the MoUD dealing with the subject of SWM decided to prepare a manual on “Municipal Solid Waste Management” to assist the user agencies in the proper management of solid wastes in urban areas. Accordingly, an **expert committee was constituted by the MoUD, GOI, during February 1998, to prepare a manual on “Municipal Solid Waste Management.”** The expert group included the members from the Central Public Health and Environmental Engineering Organization (CPHEEO), Central Pollution Control Board (CPCB), National Environmental Engineering Research Institute (NEERI), Ministry of New and Renewable Energy (MNRE), municipal corporations, World Health Organization (WHO), academic institutions, Housing and Urban Development Corporation (HUDCO), etc., and the **committee brought out a manual in May 2000.**

Additionally, pursuant to the Burman Committee recommendations on SWM for class I cities, the Supreme Court of India directed the MoUD to set up a “**Technology Advisory Group (TAG) on Solid Waste Management**” for a five-year period to collect information on various proven technology for the processing and disposal of wastes, identify appropriate and cost effective technologies suitable under Indian conditions, etc., to provide technical assistance to ULBs for adopting the suggested technologies where feasible. The committee was **constituted in August 1999**, under which three core groups were assigned: appropriate technology, research and

²¹ Ravneesh Agarwal, Mona Chaudhary and Jayveer Singh, “Waste Management Initiatives in India for Human Well Being,” *European Scientific Journal*, Special Edition (June 2015): 114.

²² Indrani Chandrasekharan, “Policy and Prospects: an Overview,” *Unpublished* (2003): 2.

development; financial resources and private sector participation; and capacity building, human resources development and Information Education and Communication (IEC).

Following the recommendation of the Burman Committee and in conformance with sections 3, 6 and 25 of the Environment Protection Act of 1986, the MoEF, of the GOI, developed and issued the **Municipal Solid Waste (Management and Handling) Rules 2000**.²³ These rules aimed at the standardization and enforcement of SWM practices in urban areas.²⁴ These rules dictated that “every municipal authority shall, within the territorial area of the municipality, be responsible for the implementation of the provisions of these rules and infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes.”²⁵ The Solid Waste (Management and Handling) Rules 2000 also laid out procedures for waste collection, segregation, storage, transportation, processing, and disposal. Further, these rules mandated that all cities set up suitable waste treatment and disposal facilities by December 31, 2001, or earlier. These rules also specified standards for compost quality, leachate

Current Regulations Relating to MSW

The Ministry of Environment Forest and Climate Change (MoEF&CC), in 2016, notified that the new **Solid Waste Management Rules 2016**²⁶ would replace the **Municipal Solid Waste (Management and Handling) Rules 2000**.²⁷ Construction and demolition waste used to be defined as part of

²³ Ministry of Environment and Forest, *Municipal Solid Waste (Management and Handling) Rules, 2000* (New Delhi: Gazette of India, Government of India, 25 September 2000), <https://www.mpcb.gov.in/sites/default/files/solid-waste/MSWrules200002032020.pdf>.

²⁴ Ravneesh Agarwal, Mona Chaudhary and Jayveer Singh, “Waste Management Initiatives in India for Human Well Being,” *European Scientific Journal*, Special Edition (June 2015): 114.

²⁵ Ministry of Environment and Forest, *Municipal Solid Waste (Management and Handling) Rules, 2000* (New Delhi: Gazette of India, Government of India, 25 September 2000), <https://www.mpcb.gov.in/sites/default/files/solid-waste/MSWrules200002032020.pdf>.

²⁶ Ministry of Environment and Forest, *Solid Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 8 April 2016), https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf.

²⁷ Ministry of Environment and Forest, *Municipal Solid Waste (Management and Handling) Rules, 2000*.

MSW, until recently, but Solid Waste Management Rules 2016 have taken construction and demolition waste out of that definition and the **Construction and Demolition Waste Management Rules 2016**²⁸ have been separately created.²⁹ Separate rules for **plastic waste management (PWM)**,³⁰ **e-waste management**,³¹ **biomedical waste management**,³² and **hazardous and other waste management**³³ have also been issued by the MoEF&CC, in 2016.

Currently, the **main regulations that govern MSW in India** are as follows:

1. Solid Waste Management Rules 2016
2. Plastic Waste Management Rules 2016, 2018, 2021
3. E-waste Management Rules 2016
4. Hazardous and other Wastes Management Rules 2016
5. Bio-medical Waste Management Rules 2016
6. Construction and Demolition Waste Management Rules 2016

²⁸ Ministry of Environment and Forest, *Construction and Demolition Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 29 March 2016),

<https://cpcb.nic.in/displaypdf.php?id=d2FzdGUvQyZEX3J1bGVzXzlwMTYucGRm>.

²⁹ Isher Judge Ahluwalia and Utkarsh Patel, *Solid Waste Management in India: an Assessment of Resource Recovery and Environmental Impact* (Indian Council for Research on International Economic Relations [ICRIER]), 3.

³⁰ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 18 March 2016),

http://jaipurmc.org/PDF/Auction_MM_RTI_Act_Etc_PDF/PLASTIC%20WASTE%20MANAGEMENT%20RULES%202016.pdf.

³¹ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules, 2016* (New Delhi: Gazette of India, Government of India, 23 March 2016), <https://cpcb.nic.in/displaypdf.php?id=UHJvamVjdHMvRS1XYXN0ZS9FLVdhc3RITV9SdWxlcl8yMDE2LnBkZg==>.

³² Ministry of Environment, Forests and Climate Change, *Bio-medical Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 28 March 2016),

https://dhr.gov.in/sites/default/files/Bio-medical_Waste_Management_Rules_2016.pdf.

³³ Ministry of Environment, Forests and Climate Change, *Hazardous and Other Wastes (Management and Transboundary Movement), 2016* (New Delhi: Gazette of India, Government of India, 4 April 2016),

<https://cpcb.nic.in/displaypdf.php?id=aHdtZC9IV01fUnVsZXNfmjAxNi5wZGY=>.

All of the above-mentioned waste management rules in India are subordinate to the Environment (Protection) Act 1986. In the year 2016, the waste management rules for all categories were revised, reflecting a paradigm shift in the management of solid waste in India. There was a realization that the waste needs to be managed through sustainable policies, scientific approaches and affordable technologies. The paradigm shift in waste management in India focuses on circular economy and looks at waste as wealth, or a resource, to be used for efficiency and sufficiency. The revised 2016 waste management rules are based on the premise of zero waste to landfill, with only non-usable, non-recyclable, non-biodegradable, non-combustible and non-reactive wastes making their way to a landfill. The revised rules also collate the various amendments to the previously existing rules for the different waste categories.

Solid Waste Management Rules 2016

The new Solid Waste Management Rules, notified by MoEF&CC, replace the Municipal Solid Waste (Management and Handling) Rules 2000 (GOI 2000) that had been in place for nearly sixteen years.

The new Solid Waste Management Rules 2016 are applicable beyond the municipal areas and include urban agglomerations, census towns, notified industrial townships, areas under the control of Indian Railways, airports, special economic zones, places of pilgrimage, religious and historical importance, and state and central government organizations in their ambit. Additionally, the Solid Waste Management Rules 2016 build on the 2000 rules and have made segregation of waste compulsory, assigning the responsibility for compulsory segregation into biodegradable, non-biodegradable and domestic hazardous waste (including sanitary waste) to waste generators themselves. There is also provision for penalty for non-compliance. Rule 4 clearly defines the **duties of the waste generators**.³⁴ The duties of key departments, such as MoEF&CC, MoUD, Ministry of Agriculture, Ministry of Chemicals, CPCB and State Pollution Control Board (SPCB), and those of key actors, such as secretary-in-charge of urban development, district magistrates, secretary-in-charge of village panchayats or rural development departments in the state and union territory, and panchayats are clearly defined and listed in the rules.

³⁴ Ministry of Environment and Forest, *Solid Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 8 April 2016), 55, https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf.

Some of the key provisions and highlights of the new Solid Waste Management Rules 2016 are as follows.

- Segregation at source by the waste generators for promoting waste to wealth through recovery, reuse and recycle. The waste generators have to segregate and store the waste generated by them, and have to pay user fees as specified by local bodies.
- Collection and disposal of sanitary waste with the manufacturers / brand owners being responsible for awareness of proper disposal of such waste by the generator. The brand owners are also responsible for providing a pouch or wrapper for disposal of each napkin or diaper along with the product.
- Collect back scheme for non-biodegradable packaging waste by brand owners.
- Integration of waste pickers and rag pickers to the formal sector.
- User fees and spot fines collection from generators or anyone found littering by local bodies. The local bodies have the power to decide the user fees. The municipal authorities will levy user fees for collection, disposal and processing from bulk generators.
- Waste processing and treatment through bio methanation or composting to be within the premises as far as possible. The developers in special economic zones, industrial estates, have to earmark 5% of the total area or a minimum of five sheds/plots for recovery and recycling facility.
- Promotion of the use of compost.
- Promotion of waste to energy plants. The rules mandate that all industrial units using fuel and located within one hundred kilometers from a solid-waste-based, refuse-derived fuel plant shall make arrangements within six months from the date of notification of these rules to replace at least 5% of their fuel requirement by refuse-derived fuel produced.
- Revision of parameters and existing standards for emissions and landfill sites.
- Instructions on the management of waste in hilly areas, the construction of landfills to be avoided on a hill.
- Setting up of bylaws for waste management and segregation by local bodies.

- Constitution of a Central Monitoring Committee to monitor the overall implementation of these rules.^{35 36}

Plastic Waste Management Rules 2016

The government notified the **Plastic Waste Management Rules 2016**,³⁷ as one comprehensive rule that encompasses all the amendments since the first rules were released for PWM in India, the Recycled Plastics Manufacturing and Usage Rules 1999. The 2016 rules replaced the earlier Plastic Waste (Management and Handling) Rules 2011.³⁸ In 2018, an amendment was brought about to this rule.³⁹ Another amendment to the Plastic Waste Management Rules 2016 was brought about in August 2021.⁴⁰

The new rules reflected a **paradigm shift to regard waste as a wealth and resource**. The new rules aim for a more efficient regulatory framework for the management of plastic waste generated in the country. At the same time, they will **give thrust to plastic waste minimization, source segregation, recycling, involving waste pickers, recyclers and waste processors in the collection of the plastic waste fraction either from households or any other source of its generation or intermediate material recovery facility,**

³⁵ Ministry of Environment and Forest. *Solid Waste Management Rules, 2016*, 55–65.

³⁶ Swati Singh Sambyal, “Government notified new solid waste management rules,” *Down To Earth* (April 5, 2016).

³⁷ Ministry of Environment and Forest, *Solid Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 8 April 2016), https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf.

³⁸ Ministry of Environment and Forest, *Plastic Waste (Management and Handling) Rules 2011* (New Delhi: Gazette of India, Government of India, 4th February 2011), https://www.indiawaterportal.org/sites/default/files/iwp2/Plastic_waste__managem ent_and_handling_rules_Ministry_of_Environment_and_Forests_Government_of_India_2011_.pdf.

³⁹ Ministry of Environment, Forests and Climate Change, *Plastic Waste Management (Amendment) Rules, 2018* (New Delhi: Gazette of India, Government of India, March 27, 2018), <https://cpcb.nic.in/displaypdf.php?id=cGxhc3RpY3dhc3RlL1BXTV9HYXpldHRlLnBkZg==>.

⁴⁰ Ministry of Environment, Forests and Climate Change, *Plastic Waste Management (Amendment) Rules, 2021* (New Delhi: Gazette of India, Government of India, 21 August 2021), <https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/aug/doc202181311.pdf>.

and adopt polluters pay principle for the sustainability of the waste management system.⁴¹

As compared to the **Plastic Waste (Management and Handling) Rules 2011**, which were applicable only to the municipal areas, the **jurisdiction under the 2016 rules extends beyond the municipal areas** to include outgrowths in urban agglomerations and rural areas. These Rules **apply to every waste generator, local body, Gram Panchayat, manufacturer, importer, producer and brand owner**.

The key feature and main provision of the Plastic Waste Management Rules 2016 is that **they talk about the responsibilities of the waste generators, along with the producers and the brand owners**. These provisions were **absent in the previous rules**.

Introducing responsibilities for the waste generators under the Plastic Waste Management Rules 2016 helps facilitate and improve segregation, **reuse and recycling**, thereby reducing littering and enhancing overall PWM. The **waste generators are mandated to segregate plastic waste at the source**. Also, all institutional generators **shall segregate and store the waste generated** by them and **handover segregated wastes to authorized waste processing or disposal facilities, by themselves or through the authorized waste collection agency**. All waste generators are mandated to pay user fees as specified by the bylaws of the local bodies.

Additionally, the Plastic Waste Management Rules 2016 clearly state that it is the primary **responsibility of the producers and brand owners** to develop modalities for a **waste collection system for collecting back multi-layered plastic waste (sachets, pouches or packaging waste)** within a period of six months, based on **extended producer responsibility (EPR)** in consultation with local and state authorities. These provisions further reduce littering, improve collection of plastic waste, and its recycle/reuse.

Conditions for the manufacture, sale and use of carry bags, plastic sheets and multilayered packaging have also been introduced. **“Carry bags made of recycled plastic or products made of recycled plastic shall not be used for storing, carrying, dispensing or packaging ready to eat or drink**

⁴¹ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 18 March 2016), 17, http://jaipurmc.org/PDF/Auction_MM_RTI_Act_Etc_PDF/PLASTIC%20WASTE%20MANAGEMENT%20RULES%202016.pdf.

food stuff,”⁴² as per the Plastic Waste Management Rules 2016. The sachets using plastic material shall not be used for storing, packing or selling gulkha, tobacco or pan masala.⁴³ Another key feature of the Plastic Waste Management Rules 2016 is with regard to shopkeepers and street vendors, where they shall not provide plastic carry bags or multilayered packaging for dispensing commodities to customers without registering with local bodies for **payment of an annual PWM fee of a minimum of Rs. 48,000, at the rate of Rs. 4,000 per month. Only the registered shopkeepers or street vendors shall be eligible to provide plastic carry bags for dispensing their commodities.⁴⁴**

As per the rules, **every local body shall be responsible for the development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of plastic waste, either on their own or by engaging agencies or producers.**⁴⁵

In 2018, amendments to the Plastic Waste Management Rules 2016 were undertaken.⁴⁶ The key changes made are listed below.

- The following definitions were included in the rules:
 - ‘alternate use’—use of material for a purpose other than for which it was conceived, which is beneficial because it promotes resource efficiency;
 - ‘energy recovery’—energy recovery from waste that is the conversion of waste material into usable heat, electricity or fuel through a variety of processes, including combustion, gasification, pyrolysis, anaerobic digestion and landfill gas recovery.

⁴² Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016*, 19.

⁴³ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 18 March 2016), 19, http://jaipurmc.org/PDF/Auction_MM_RTI_Act_Etc_PDF/PLASTIC%20WASTE%20MANAGEMENT%20RULES%202016.pdf.

⁴⁴ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016*, 23.

⁴⁵ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016*, 20.

⁴⁶ Ministry of Environment, Forests and Climate Change, *Plastic Waste Management (Amendment) Rules, 2018* (New Delhi: Gazette of India, Government of India, March 27, 2018), <https://cpcb.nic.in/displaypdf.php?id=cGxhc3RpY3dhc3RIL1BXTV9HYXpldHRILnBkZg==>.

- The manufacture and use of “multilayered plastic which is non-recyclable or non-energy recoverable or with no alternate use of energy” must be phased out.
- **The rule dealing with pricing of plastic bags** (where the street vendors had to register via payment of PWM fees with local authorities) **has been struck down.**
- The producers, recyclers and manufacturers, for the purpose of registration or renewal of the registration, have to make an application according to the number of states of operation. In a case where they operate in one or two states, or union territories, the application has to be made to the SPCB or Pollution Control Committee (PCC) concerned. In case of operation in more than two states or union territories, the application must be made to the CPCB.

The **first 2021 amendment** to the **Plastic Waste Management Rules** are in line with the GOI’s call to phase out single use plastic by 2022, considering the adverse impacts of these plastics on our ecology and ecosystems (both terrestrial and aquatic). The key changes are listed below.^{47 48}

- Prohibition of identified single use plastic items that have low utility and high littering potential by 2022. Therefore, the manufacture, import, stocking, distribution, sale and use of the following single-use plastic, including polystyrene and expanded polystyrene, commodities shall be prohibited with effect from the 1 July 2022:
 - a. ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol] for decoration,
 - b. plates, cups, glasses, cutlery, such as forks, spoons, knives, straws, trays, wrapping or packing films around sweet boxes, invitation cards, cigarette packets, plastic or PVC banners less than 100 µm, stirrers.
- To reduce and stop littering due to plastic carry bags, the thickness of these bags have been increased from 50 µm to 75 µm, from 30 September 2021, and to 120 µm, with effect from 31 December

⁴⁷ Ministry of Environment, Forests and Climate Change, *Amendment in Plastic Waste Management Rules, 2016*, Press Information Bureau, Government of India, August 13, 2021, <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1745433>.

⁴⁸ Ministry of Environment, Forests and Climate Change, *Plastic Waste Management (Amendment) Rules, 2021*, 4–5.

2022. The increased thickness will allow for the reuse of plastic carry bags.

- The non-woven plastic carry bag shall not be less than sixty grams per square meter (60 GSM), with effect from the 30 September 2021.

The **second amendment of 2021** to the **Plastic Waste Management Rules**⁴⁹ has allowed “carry bags” made of recycled plastic or products made of recycled plastic can be used for storing, carrying, dispensing, or packaging ready to eat or drink food stuff subject to the notification of appropriate standards and regulation under the Food Safety and Standards Act, 2006 (34 of 2006) by the Food Safety and Standards Authority of India.

E-Waste Management Rules 2016

The **E-Waste (Management) Rules 2016** were notified by the MoEF&CC on 23 March 2016.⁵⁰ The rules came into force on 1 October 2016. These new rules replaced the **E-Waste (Management and Handling) Rules 2011**. An amendment to the 2016 rules came on 22 March 2018—**E-Waste (Management) Amendment Rule 2018**.⁵¹ Like the Solid Waste Management Rules 2016 and the Plastic Waste Management Rules 2016, the E-Waste Management Rules 2016 **focuses on the paradigm of waste to wealth, with minimum movement of waste to landfill site**.

The objective of the E-Waste (Management) Rules 2016 was to focus on environmentally sound management of e-waste, taking all steps required to protect health and environment from any adverse effects. They, for the **first time, brought the producers under the EPR, along with targets and**

⁴⁹ Ministry of Environment, Forests and Climate Change, *Plastic Waste Management (Second Amendment) Rules, 2021* (New Delhi: Gazette of India, Government of India, September 17, 2021), <https://egazette.nic.in/WriteReadData/2021/229867.pdf>.

⁵⁰ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules, 2016* (New Delhi: Gazette of India, Government of India, 23 March 2016), <https://cpcb.nic.in/displaypdf.php?id=UHJvamVjdHMvRS1XYXN0ZS9FLVdhc3RITV9SdWxlcl8yMDE2LnBkZg==>.

⁵¹ Ministry of Environment, Forests and Climate Change, *E-Waste Management (Amendment) Rules, 2018* (New Delhi: Gazette of India, Government of India, 22 March 2018), [http://www.indiaenvironmentportal.org.in/files/file/E-%20Waste%20\(Managment\)%20Amendment%20%20Rules,%202018.pdf](http://www.indiaenvironmentportal.org.in/files/file/E-%20Waste%20(Managment)%20Amendment%20%20Rules,%202018.pdf).

requirements to collect e-waste and hand it over to recyclers.⁵² The producers, thus, have been made responsible for the collection of e-waste and for its exchange. The rules make the manufacturer responsible for collecting e-waste generated during the manufacture of any electrical and electronic equipment and sending it for recycling or disposal, and for seeking authorization from the SPCB. There has been an overall simplification of the process of permissions. A pan-India EPR authorization can be sought by producers from the CPCB. **The EPR authorization is now mandatory and has to be obtained by all producers.**⁵³

The rules now also include compact fluorescent lamps (CFL) and other mercury containing lamps, as well as other similar equipment, and have brought in penalty provisions in case of improper management of e-waste. A **deposit refund scheme** has been introduced as an economic instrument for the management of e-waste.⁵⁴ An **inter-state transport of e-waste, as per manifest system,**⁵⁵ has also been introduced.

Further, the **role of the state government to ensure the safety, health and skill development of workers** involved in dismantling and recycling has been introduced.⁵⁶ A **provision of penalties for the violation of rules** has also been introduced. **Liability for damages caused to the environment or third parties due to improper management of e-waste**⁵⁷ has also been introduced.

These rules apply to every manufacturer, producer, consumer, bulk consumer, collection center, dealer, e-retailer, refurbisher, dismantler and recycler involved in the manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment,

⁵² Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules*, 2016, 5.

⁵³ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules*, 2016, 3, 5.

⁵⁴ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules*, 2016, 5–6.

⁵⁵ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules*, 2016, 19.

⁵⁶ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules*, 2016, 9.

⁵⁷ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules*, 2016, 16.

listed in Schedule I, including their components, consumables, parts and spares that make the product operational but shall not apply to the following:

- (a) used lead acid batteries, as covered under the Batteries (Management and Handling) Rules 2001 made under the act;
- (b) micro enterprises, as defined in the Micro, Small and Medium Enterprises Development Act 2006 (27 of 2006);
- (c) and radioactive wastes, as covered under the provisions of the Atomic Energy Act 1962 (33 of 1962) and rules made there under.

In 2018, amendments to the E-Waste (Management) Rules were undertaken. The key changes made in the new **E-Waste (Management) Amendment Rule 2018** are listed below.

- Registration of **Producer Responsibility Organization (PRO)** with the CPCB to undertake the activities as prescribed.⁵⁸
- The **e-waste collection targets in Schedule III have been changed.**⁵⁹ Earlier, the targets for only EPR authorization were given (30–70% of the quantity of waste generation as indicated in the EPR plan). Now, this has changed from 10% of the quantity of waste generation, as indicated in the EPR plan in 2017, to 70% of the quantity of waste generation, as indicated in the EPR plan for 2023 onwards. These revised EPR targets shall be applicable from the 1 October 2017, as per Schedule III.
- Additionally, EPR targets have been added for producers who have started sales operations recently, i.e., number of years of sales operations is less than the average life of their products mentioned in the guidelines issued by the CPCB, from time to time. They have also been given a collection target that is lower than the targets for other producers. However, the legislation supports them by allowing them to set off this collected amount at the time of fixation of targets under the rules.
- Also, in rule 13, procedure for seeking grant of authorization, in sub-rule 4, procedure for grant of authorization to refurbisher, in clause

⁵⁸ Ministry of Environment, Forests and Climate Change, *E-Waste Management (Amendment) Rules, 2018* (New Delhi: Gazette of India, Government of India, 22 March 2018), 5, [http://www.indiaenvironmentportal.org.in/files/file/E-%20Waste%20\(Management\)%20Amendment%20%20Rules,%202018.pdf](http://www.indiaenvironmentportal.org.in/files/file/E-%20Waste%20(Management)%20Amendment%20%20Rules,%202018.pdf).

⁵⁹ Ministry of Environment, Forests and Climate Change, *E-Waste Management (Amendment) Rules, 2018*, 6.

(i), the words “grant or renewal of authorization,” shall be substituted for the words, “grant of authorization.”⁶⁰

- **The CPCB can conduct random sampling of the electrical and electronic equipment placed in the market to monitor and verify the compliance with the reduction of hazardous substances provisions, and the cost for sampling and testing shall be borne by the government,**⁶¹ which was not the case in the previous amendment. Earlier, the cost was borne by the producers. Only if the product does not comply with the reduction of hazardous substances provisions, will the cost of the reduction of hazardous substances test will be borne by the producer.
- The manufacturer, producer, importer, transporter, refurbisher, dismantler and recycler is now **liable to pay financial penalties, as levied under the Provisions of the Environment (Protection) Act 1986,**⁶² and rules made thereunder, for any violation of the provisions under these rules by the SPCBs, with the prior approval of the CPCB.
- As per the amendments, any person aggrieved by an order of suspension or cancellation or refusal of authorization or its renewal by the CPCB can submit an appeal, within thirty days to the appellate authority **(the Secretary or nominee of the Secretary of the MoEF&CC), against the order of CPCB.** Previously, this was submitted to the Environment Secretary of the state. If the appeal is against the order passed by SPCB, the aggrieved party can submit an appeal, again within a period of thirty days, **to the Secretary (Environment) of the state government / union territory administration, against the order of SPCB.**⁶³
- The collection, storage, transportation, segregation, refurbishment, dismantling, recycling and disposal of e-waste is to be in accordance with the **guidelines published by the CPCB.**

⁶⁰ Ministry of Environment, Forests and Climate Change, *E-Waste Management (Amendment) Rules, 2018*, 5.

⁶¹ Ministry of Environment, Forests and Climate Change, *E-Waste Management (Amendment) Rules, 2018*, 5.

⁶² Ministry of Environment, Forests and Climate Change, *E-Waste Management (Amendment) Rules, 2018*, 5.

⁶³ Ministry of Environment, Forests and Climate Change, *E-Waste Management (Amendment) Rules, 2018*, 5–6.

Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016

The Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016 were notified by the MoEF&CC⁶⁴ (GOI 2016d) on 4 April 2016. These new rules replaced the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules 2008. The hazardous waste management rules were notified to ensure safe handling, generation, processing, treatment, package, storage, transportation, use reprocessing, collection, conversion (and offering for sale), destruction and disposal of hazardous waste.

These rules shall apply to the management of hazardous and other wastes, as specified in the schedules to these rules, but shall not apply to the following:⁶⁵

- (a) wastewater and exhaust gases, as covered under the provisions of the Water (Prevention and Control of Pollution) Act 1974 (6 of 1974) and the Air (Prevention and Control of Pollution) Act 1981 (14 of 1981), and the rules made thereunder and as amended when necessary;
- (b) wastes arising from the operation of ships beyond five kilometers of the relevant baseline, as covered under the provisions of the Merchant Shipping Act 1958 (44 of 1958), and the rules made thereunder and as amended when necessary;
- (c) radioactive wastes, as covered under the provisions of the Atomic Energy Act 1962 (33 of 1962), and the rules made thereunder and as amended when necessary;
- (d) biomedical wastes, as covered under the Bio-medical Wastes (Management and Handling) Rules 1998, and the rules made thereunder and as amended when necessary;
- (e) and wastes covered under the Municipal Solid Waste (Management and Handling) Rules 2000, and the rules made thereunder and as amended when necessary.

⁶⁴ Ministry of Environment, Forests and Climate Change, *Hazardous and Other Wastes (Management and Transboundary Movement), 2016* (New Delhi: Gazette of India, Government of India, 4 April 2016), <https://cpcb.nic.in/displaypdf.php?id=aHdtZC9IV01fUnVsZXNfMjAxNi5wZGY=>.

⁶⁵ Ministry of Environment, Forests and Climate Change, *Hazardous and Other Wastes (Management and Transboundary Movement), 2016*, 1–2.

The rules lay down the corresponding duties of various authorities, such as MoEF&CC, CPCB, state/UT governments, SPCBs/PCCs, Directorate General of Foreign Trade (DGFT), Port Authority and Custom Authority, while SPCBs/PCCs have been designated with wider responsibilities touching across almost every aspect of hazardous wastes' generation, handling and their disposal.

The waste management hierarchy has been added to the 2016 rules in order of priority; prevention, minimization, reuse, recycling, recovery, co-processing, and safe disposal (this last item has been incorporated for the management of hazardous and other wastes).⁶⁶ The lists of hazardous materials that are exempt, or requiring consent for import from the ministry, have been clearly defined and identified.

In order to further strengthen the implementation of environmentally sound management of hazardous waste in the country, the MoEF&CC amended the Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016, in March 2019: **Hazardous and Other Wastes (Management & Transboundary Movement) Amendment Rules 2019.**⁶⁷ The amendment was done with consideration to the “Ease of Doing Business” and the “Make in India” initiative, by simplifying the procedures under the rules, while, at the same time, upholding the principles of sustainable development and ensuring minimal impact to the environment. Salient features include the **prohibition of solid plastic waste from import into the country; the import back of defective electrical/electronic assemblies manufactured in and exported from India within a year, obtaining permission from the MoEF&CC; and exemption of industries that do not require consent, under the Water (Prevention and Control of Pollution) Act 1974 and the Air (Prevention and Control of Pollution) Act 1981, from requiring authorization also under the Hazardous and Other Wastes (Management & Transboundary Movement) Rules 2016, provided that hazardous and other wastes generated by such industries are handed over to the authorized actual users, waste collectors or disposal facilities.**

⁶⁶ Ministry of Environment, Forests and Climate Change, *Hazardous and Other Wastes (Management and Transboundary Movement)*, 2016, 5.

⁶⁷ Ministry of Environment, Forests and Climate Change, *Amendment in Hazardous Waste (Management and Transboundary Movement) Rules, 2016*, Press Information Bureau, Government of India, March 6, 2019, <https://pib.gov.in/pressreleaseshare.aspx?prid=1567682>.

Bio-Medical Waste Management Rules 2016

The Bio-medical Waste Management Rules 2016 were notified by the MoEF&CC on 28 March 2016. These new rules replaced the Bio-medical Waste (Management and Handling) Rules 1998 that provided a regulatory framework for the management of biomedical waste generated in the country. The new rules have been implemented with the **aim of improving the collection, segregation, processing, treatment and disposal of these biomedical wastes in an environmentally sound way, thereby, reducing biomedical waste generation and its impact on the environment.**⁶⁸ The MoEF&CC amended the Bio-medical Waste Management Rules 2016 to further improve compliance and strengthen the implementation of environmentally safe management of biomedical waste.

The rules shall **apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle biomedical waste in any form**, including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, Ayush hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, first aid rooms of schools, forensic laboratories and research labs. These rules do not apply to the following:⁶⁹

- (a) radioactive wastes, as covered under the provisions of the Atomic Energy Act 1962(33 of 1962) and the rules made under it;
- (b) hazardous chemicals, as covered under the Manufacture, Storage and Import of Hazardous Chemicals Rules 1989;
- (c) solid wastes, as covered under the Municipal Solid Waste (Management and Handling) Rules 2000;
- (d) lead acid batteries, as covered under the Batteries (Management and Handling) Rules 2001;
- (e) hazardous wastes, as covered under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules 2008;
- (f) waste, as covered under the E-waste (Management and Handling) Rules 2011;

⁶⁸ Ministry of Environment, Forests and Climate Change, *Bio-medical Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 28 March 2016), 1.

⁶⁹ Ministry of Environment, Forests and Climate Change, *Bio-medical Waste Management Rules, 2016*, 2.

- (g) and hazardous microorganisms, genetically engineered microorganisms and cells, as covered under the Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms, Genetically Engineered Microorganisms or Cells Rules 1989.

Some of the key provisions of the rules are the **phasing out of chlorinated plastic bags** within two years of the date of notification of these rules; the **establishment of a barcode system for bags containing biomedical wastes** to be sent out of premises for further treatment; the establishment of a **global positioning system for handling biomedical wastes**; and **pre-treatment of laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilization on site** in the manner prescribed by the World Health Organization (WHO)⁷⁰ (Rana 2018). The biomedical wastes are to be **segregated, at the point of their generation, as per Schedule I, to a common biomedical waste treatment facility** for treatment, processing and final disposal.

The **prescribed authority for enforcement of the provisions of these rules**, with respect to all the healthcare facilities located in any state / union territory, is the **respective SPCB or PCC**. In the case of healthcare establishments of the Armed Forces under the Ministry of Defense, the Director General of the Armed Forces Medical Services (DGAFMS) is responsible.⁷¹ These rules stipulate the duties of the occupier or operator of a common biomedical waste treatment facility, as well as the identified authorities. According to these rules, **every occupier or operator handling biomedical waste, irrespective of the quantity, is required to obtain authorization from the respective prescribed authority, i.e., the SPCB or PCC, as the case may be.**⁷² The occupier and operator is also **responsible for providing training to all their healthcare workers and workers involved in handling biomedical waste and ensure their occupational safety.**⁷³

⁷⁰ SS Rana, "India: Bio-Medical Waste Management Rules Amended," *Lexology* (April 24, 2018), <https://www.lexology.com/library/detail.aspx?g=7646abb8-3d59-43b0-8db8-fa773301b696>

⁷¹ Ministry of Environment, Forests and Climate Change, *Bio-medical Waste Management Rules, 2016*, 8.

⁷² Ministry of Environment, Forests and Climate Change, *Bio-medical Waste Management Rules, 2016*, 9.

⁷³ Ministry of Environment, Forests and Climate Change, *Bio-medical Waste Management Rules, 2016*, 4,6.

The occupier or operator of a common biomedical waste treatment facility shall be liable for all the damages caused to the environment or the public due to improper handling of biomedical wastes.⁷⁴ In case of any accidents at the institution or facility handling biomedical waste, the authorized person shall intimate immediately to the prescribed authority and forward a report with twenty-four hours.

Construction and Demolition Waste Management Rules 2016

Construction and demolition waste used to be defined as part of MSW, until recently (as per the Municipal Solid Waste Management Rules 2000), but the Solid Waste Management Rules 2016 have taken construction and demolition waste out of that definition and the rules related to their management have now been separately issued. The Construction and Demolition Waste Management Rules 2016 were notified by the MoEF&CC on 29 March 2016.⁷⁵

The rules apply to all waste resulting from construction, remodeling, repair and demolition of any civil structure of an individual or organization or authority, such as building materials, debris, and rubble.

The rules clearly mandate that the generator of such waste is responsible for collection, segregation and storage of the waste generated within the premise, and the handover to authorized facilities to ensure that no littering, or obstruction of traffic or public drain occurs. Every generator is also liable to pay charges for collection, transportation, processing and disposal, as notified by the concerned authorities. The service providers, as per the rules, must have a comprehensive waste management plan within six months of notification of these rules for **segregation, storage, collection, reuse, recycling, transportation and disposal of construction and demolition waste generated** within their jurisdiction.⁷⁶ Similarly, the local authorities have to issue detailed directions with regard to the proper management of construction and demolition waste within its jurisdiction. **Incentives to**

⁷⁴ Ministry of Environment, Forests and Climate Change, *Bio-medical Waste Management Rules, 2016*, 12.

⁷⁵ Ministry of Environment and Forest, *Construction and Demolition Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 29 March 2016).

⁷⁶ Ministry of Environment and Forest, *Construction and Demolition Waste Management Rules, 2016*, 3.

generators for salvaging, processing and recycling in-situ have to be provided, **as well as incentives for the use of material made out of construction and demolition waste** in the construction activity.⁷⁷

The CPCB is responsible for sharing the annual compliance reports, prepared by SPCBs, with the central government. The state governments have to prepare **their policy document, with respect to the management of construction and demolition of waste, in accordance with the provisions of these rules within one year from the date of final notification** of these rules. They are also **responsible for providing suitable sites for setting up the storage, processing and recycling facilities** for construction and demolition waste.⁷⁸

Role of Citizens and NGOs in the Informal Waste Management Sector

The informal sector plays a critical role in waste management and acts in parallel to the formal waste management system in India. The waste management sector is labor intensive and comprises of rag pickers, waste pickers, itinerant buyers, small waste aggregators and recycling units. The informal waste management sector, comprising of these several actors (they account for nearly 1% of the urban population), collects, segregates, transports and recycles large amounts of waste. By doing so, they divert the burden of managing waste at no, or reduced, cost from the municipalities and local bodies: they enable reuse and recycling; help in resource recovery; and reduce the burden and dependence on landfills.⁷⁹ ⁸⁰ India is home to 10% of the world's waste pickers, or about fifteen hundred thousand waste pickers.⁸¹ According to another estimate, the quantum of the waste pickers' population is nearly 1.5–4.0 million across India.⁸² This informal sector

⁷⁷ Ministry of Environment and Forest, *Construction and Demolition Waste Management Rules, 2016*, 4.

⁷⁸ Ministry of Environment and Forest, *Construction and Demolition Waste Management Rules, 2016*, 5.

⁷⁹ Ministry of Housing and Poverty Alleviation, *Swachh Bharat Mission. An Inclusive Swachh Bharat through the Integration of the Informal Recycling Sector: a Step by Step Guide* (New Delhi: Government of India, 2016), 3.

⁸⁰ S. Thirunavukarasu, "Informal Waste Collectors in India," *International Journal of Scientific & Engineering Research* (October 2012): 2.

⁸¹ Ministry of Housing and Poverty Alleviation. *Swachh Bharat Mission*, 3.

⁸² Jignesh Mistry, Akriti Bhatia, Deepanshu Mohan, Shivani Agarwal, et al, "Wasted Lives: the Tragedy of India's 'Safai Mitra,'" *The Wire* (October 2, 2020).

population is responsible for the segregation and recycling of almost 20% of a city's waste.⁸³ Nearly 100% of door-to-door collection of waste from households is undertaken by the informal sector across most of the cities in India.

Thus, the informal sector contributes to both environmental protection and the expansion of livelihoods.⁸⁴ Research has shown that organizing the informal sector and promoting micro-enterprises has proven to be an effective way of extending affordable services, especially to poor urban communities.⁸⁵ Informal systems, in practice, are highly efficient in waste collection compared to the formal service providers. This is because they provide primary waste collection services mostly for free or by directly charging households a monthly fee, the cost is essentially zero. Waste collectors rely mostly on recyclables in the waste as their source of income.⁸⁶ If formal public or private organizations were to provide these services, they would cost more.^{87 88}

At the same time, organizing the informal sector can also help in the improvement of not only their informal working conditions (medical checks, access to safety equipment, toilets, protection against seizure of their supplies, etc.), but also progress towards less incomplete citizenship (access to necessary ID cards, credit, etc.); access to appropriate technologies for improving the ease of their work (such as access to technologies for composting, recycling, etc.); and, lastly, human development (access to housing, childcare, education of children of waste pickers and adult

⁸³ Ministry of Housing and Poverty Alleviation. *Swachh Bharat Mission*, 97.

⁸⁴ Barbara Harriss-White, "India's Informal Waste Economy and Urban Informality: an Illustrated Tour of the Epistemological Horizon," *Unpublished manuscript* (February 2018), 4, https://www.southasia.ox.ac.uk/sites/default/files/southasia/documents/media/bhw_waste_rev_lit_2018.pdf.

⁸⁵ Jorge Arroyo-Moreno, Francisco Rivas-Rios, and Inge Lardinois, *Solid Waste Management in Latin America: The Role of Micro- and Small Enterprises and Cooperatives* (Gouda, The Netherlands: WASTE, 1999).

⁸⁶ Aman Luthra, "Efficiency in Waste Collection Markets: Changing Relationships between Firms, Informal Workers, and the State in Urban India," *Environment and Planning A: Economy and Space*, vol. 52, no. 7 (2020): 1387.

⁸⁷ Anu Bose and Ian Blore, "Public Waste and Private Property: an Enquiry into the Economics of Solid Waste in Calcutta," *Public Administration and Development*, vol. 13, no. 1 (February 1993).

⁸⁸ Sarika Rathi, "Alternative Approaches for Better Municipal Solid Waste Management in Mumbai, India," *Waste Management*, vol. 26, no. 10 (November 2006).

education, their own sanitation infrastructure, reselling, etc.).⁸⁹ Thus, further promotion, organization, and development of recycling groups or informal waste/rag picker groups is also a means of upgrading their living and working conditions.

However, in many instances the contributions of the informal sector are not well understood or recognized. Along with instances of state and local government bodies not following rules and policies on inclusion of the informal sector, the informal sector faces problems of daily harassment by the police, municipal officers and the public. Nearly 88% of respondents in a survey of the informal sector, conducted in cities, noted a significant lack of respect by the public towards them and their work.⁹⁰ Thus, citizens, CBOs and NGOs can play a key role in supporting, organizing and promoting this informal sector, and play an important role in urban SWM in India.

The current set of waste management rules in India acknowledges the roles of the informal sector, citizens and public participation for a sustainable and efficient waste management in India. The evolution of the legislative framework on SWM, as discussed in the first section, also builds on this understanding and these partnerships. Several key milestones in the journey have resulted, due to the actions and participation of citizens and/or NGOs.

The Bajaj Commission (1995) recommended segregation of waste at household level by waste generator, that is citizens and the involvement of NGOs for the primary collection of waste. It also recommended working with rag pickers and the establishment of rag pickers' cooperatives, in association with NGOs, to strengthen household waste collection and its segregation. The 1996 landmark PIL in Supreme Court by a citizen led to the setting up of an expert committee, the Burman Committee, whose recommendations formed the basis for the Municipal Solid Waste (Management and Handling) Rules 2000 that were responsible for the standardization and enforcement of SWM practices in urban areas in India.

The newly updated Solid Waste Management Rules 2016 also reflect the principles of inclusivity of working with India's informal waste sector

⁸⁹ Harriss-White, "India's Informal Waste Economy and Urban Informality, 12.

⁹⁰ Ministry of Housing and Poverty Alleviation, *Swachh Bharat Mission. An Inclusive Swachh Bharat through the Integration of the Informal Recycling Sector: a Step by Step Guide* (New Delhi: Government of India, 2016), 9.

workers. The Solid Waste Management Rules 2016 clearly mandate for the inclusion of the informal sector, under Rule 15:⁹¹

- a) **establish a system to recognize organizations of waste pickers or informal waste collectors, and promote and establish a system for integration of these authorized waste pickers and waste collectors** to facilitate their participation in SWM, including door-to-door collection of waste;
- b) **direct waste generators are not to litter**, i.e., throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink cans, tetrapaks, fruit peel, wrappers, etc., or burn or bury waste on streets, open public spaces, drains, waste bodies; **and they are to segregate the waste at source**, as prescribed under these rules, and **hand over the segregated waste to the waste pickers or waste collectors** authorized by the local body;
- c) **set up material recovery facilities or secondary storage facilities with sufficient space for sorting recyclable materials to enable informal or authorized waste pickers and waste collectors to separate recyclables from the waste**, and provide easy access for waste pickers and recyclers for collection of segregated recyclable waste, such as paper, plastic, metal, glass, textiles, from the source of generation or from material recovery facilities.

As per rule 23 of the SWM Rules 2016, one of the members of the state-level advisory body, set up for the implementation of the rules, should be a **“representative from reputed Non-Governmental Organization Member or Civil Society working for the waste pickers or informal recycler or solid waste management.”**⁹²

The Plastic Waste Rules 2016, similarly, have called for the inclusion of the informal sector in the management of the specific waste streams, mandating that **local bodies engage civil societies or NGOs working with waste pickers in the collection of plastic wastes “of used multi-layered plastic**

⁹¹ Ministry of Environment and Forest, *Solid Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 8 April 2016), 58, https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf.

⁹² Ministry of Environment and Forest, *Solid Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 8 April 2016), 63–64, https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf.

sachet or pouches or packaging”⁹³ by establishing a system of partnership with producers, brand owners and importers. This is to establish a system for collecting back the plastic waste generated due to their products in the market.⁹⁴

Considering these provisions and already existing examples of partnerships in urban SWM in India, the citizens, NGOs and CBOs can play an important and crucial role. The support can be provided in the following areas:

- incorporation of micro-enterprises, informal waste recycling, and/or collection groups in the solid waste collection market;
- providing linkages between these incorporated informal groups with authorized waste aggregators, recyclers and operators;
- community-level waste collection, segregation, transportation and decentralized treatment;
- community education and awareness on the importance of segregation of waste, the linkage between improved sanitation and public health.

In this chapter, we have presented the information on various waste management laws across the different waste types, and subsequent amendments, in India. It is essential for the entrepreneurs and business enterprises, who aspire to work in this sector, to have a clear knowledge of these laws in order to identify the various opportunities and to understand the various process requirements to operate and function. The chapter also identifies and acknowledges the role of NGOs, communities and the informal sector for successful waste management in the country.

⁹³ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 18 March 2016), 20–21, http://jaipurmc.org/PDF/Auction_MM_RTI_Act_Etc_PDF/PLASTIC%20WASTE%20MANAGEMENT%20RULES%202016.pdf.

⁹⁴ Ministry of Housing and Poverty Alleviation, *Swachh Bharat Mission. An Inclusive Swachh Bharat through the Integration of the Informal Recycling Sector: a Step by Step Guide* (New Delhi: Government of India, 2016), 29–30.

MODULE THREE

OPPORTUNITIES IN THE SOLID WASTE MANAGEMENT PROCESS

Introduction

Solid waste management (SWM) is a big challenge in India not only because of the associated health and environmental concerns, but also due to the huge quantities of waste generated in the country and also due to inadequate waste collection, transport, treatment and disposal. India generates nearly sixty-two million metric tons of solid waste every year from the various activities and consumptions related to agriculture, industry and domestic consumption.⁹⁵ The volume of waste generated is projected to increase to one hundred and twenty-five million tons by 2031.⁹⁶ The problem of waste management is even more acute in the urban areas. The rapidly increasing urbanization and industrialization economic growth, and the subsequent associated growing populations in urban areas has led to the generation of increasingly larger quantities of solid waste that urban local bodies (ULBs) are unable to manage effectively and efficiently.^{97 98 99} Effective SWM is a major challenge in cities with high population

⁹⁵ Ministry of Environment, Forests and Climate Change, *Solid Waste Management Rules Revised After 16 Years; Rules Now Extend to Urban and Industrial Areas*, Press Information Bureau, Government of India, April 5, 2016, <https://archive.pib.gov.in/newsite/PrintRelease.aspx?relid=138591>.

⁹⁶ Isher Judge Ahluwalia and Utkarsh Patel, *Solid Waste Management in India: an Assessment of Resource Recovery and Environmental Impact* (Indian Council for Research on International Economic Relations [ICRIER]), 1.

⁹⁷ Shyamal Mani and Satpal Singh, "Sustainable Municipal Solid Waste Management in India," *Procedia Environmental Sciences*, vol. 35 (November 2016): 151–52.

⁹⁸ Satpal Singh, *Solid Waste Management in Urban India: Imperatives for Improvement*, ORF Occasional Paper, no. 283 (New Delhi: Observer Research Foundation, 2020), 5–6.

⁹⁹ Sunil Kumar et al., "Challenges and Opportunities Associated with Waste Management in India," *Royal Society Open Science*, no. 4 (February 2017): 1–4, <https://doi.org/10.1098/rsos.160764>.

density.¹⁰⁰ Recent research has also shown that most ULBs are unable to handle the huge quantities of solid waste generated, due to financial and institutional debilities.¹⁰¹ Moreover, while the daily collection efficiency is around 50%–60% and 90% in few ULBs, only 10% of the collected waste receives treatment and virtually nothing is scientifically disposed of in engineered landfills.¹⁰² The report of the Planning Commission of 2014 found that over 80% of the waste collected in India is disposed of indiscriminately in dump yards in an unhygienic manner, leading to health and environmental degradation.¹⁰³ The need (and priority) is to move from a reliance on waste dumps or landfills, which offer no environmental protection and recovery of resources, to waste management systems that retain useful resources within the economy and also provide public health and environmental benefits.

As per the current SWM rules issued by the ministry, municipal authorities are responsible for implementation of those rules and management of waste in urban areas, besides being responsible for the development of infrastructure for collection, storage, segregation, transportation, processing, and disposal of the waste. However, several challenges in implementation—in terms of waste collection, storage and transport—exist. Waste collection, which is a responsibility of the ULBs, is a big challenge, and often the waste (mixed biodegradable and inert waste) is dumped, with open burning a common practice. Additionally, more than 90% of the waste in India is believed to be dumped in an unsatisfactory manner, resulting in adverse impacts on environment and public health,¹⁰⁴ while, at the same time, leading to economic losses due to lack of effective and efficient material (such as paper, plastics, metals, glass, etc.) recovery, reduced recycling, loss of jobs, and reduced potential of thermal energy recovery.

The core reason for this ineffective management and poor status of SWM in India is the lack of vision of the existing authorities to view waste as a resource that can boost both the environmental and economic health of the society and country. There is a lack of training in the SWM sector and a

¹⁰⁰ Kumar et al., “Challenges and Opportunities Associated with Waste Management in India,” 2.

¹⁰¹ Mani and Singh, “Sustainable Municipal solid Waste Management in India,” 150.

¹⁰² Mani and Singh, “Sustainable Municipal solid Waste Management in India,” 151.

¹⁰³ Planning Commission, *Report of the Task Force on Waste to Energy* (New Delhi: Planning Commission India, Government of India, 2014), ii, http://swachhbharaturban.gov.in/writereaddata/Task_force_report_on_WTE.pdf.

¹⁰⁴ Kumar et al., “Challenges and opportunities associated with waste management in India,” 6.

limited availability of qualified waste management professionals that approach waste management as an opportunity and the use of waste as a resource with increased value through extraction, recycling, recovery and use. The current authorities view waste management through the limited lens of collection and disposal only, thus, having limited motivation and a reluctance to adopt innovative technologies, waste management and treatment options that could potentially transform SWM in India. In many cases, the local authorities also lack adequate funding and infrastructure, and, hence, are unable to adopt innovative and appropriate technologies for waste treatment and disposal.¹⁰⁵

At the same time, the informal sector has a key role in extracting value from waste. As mentioned earlier, the informal sector plays a critical role in SWM in India, with nearly 1.5–4.0 million waste pickers engaged in this parallel SWM economy across India.¹⁰⁶ The informal sector, that is engaged in collection, segregation, transportation and recycling of waste, sees waste as a resource. Working parallel to the formal system, they reduce/divert the burden of managing waste from the municipalities and ULBs, enabling reuse, recycling, and resource recovery.^{107 108}

In addition to the contribution of the informal sector and waste pickers to effective SWM in India through resource recovery, the waste management sector also needs to include attractive and profitable businesses to ensure both environmental and public health benefits while, at the same time, promoting economic growth, increased employment and livelihoods. Research also favours the rationale of encouraging private sector participation in waste management in India to ensure efficiency, enterprise and technology, due to the failure of ULBs in providing a proper SWM

¹⁰⁵ Satpal Singh, *Solid Waste Management in Urban India: Imperatives for Improvement*, ORF Occasional Paper, no. 283 (New Delhi: Observer Research Foundation, 2020), 7, 36–37.

¹⁰⁶ Jignesh Mistry, Akriti Bhatia, Deepanshu Mohan, Shivani Agarwal, et al., “Wasted Lives: the Tragedy of India’s ‘Safai Mitra,’” *The Wire* (October 2, 2020).

¹⁰⁷ Ministry of Housing and Poverty Alleviation, *Swachh Bharat Mission. An Inclusive Swachh Bharat through the Integration of the Informal Recycling Sector: a Step by Step Guide* (New Delhi: Government of India, 2016), 21.

¹⁰⁸ S. Thirunavukarasu, “Informal waste collectors in India,” *International Journal of Scientific & Engineering Research* (October 2012): 2–3.

service to the public and the general lack of concerted effort to create awareness about good waste management practices.¹⁰⁹

These private enterprises can work in close association with municipalities, ULBs and other responsible authorities, along with the larger informal sector to provide effective, affordable services to the community, reducing the waste management burden on these authorities and on the environment as well.

The following sections will discuss these opportunities, for entrepreneurs and business enterprises working or planning to make an entry into the waste management sector in India, in detail.

Different Opportunities in the Solid Waste Management Process

1) Collection and segregation

a) Collection of the segregated waste is the first step in the SWM process. An efficient, regular collection system is necessary to ensure that waste stored and sorted at source is not littered and disposed of on the streets, drains, water bodies, low-lying areas, vacant lots, etc. Collection also safeguards positive impacts on public health and the environment, while also ensuring the aesthetics of urban areas given the high urban population and quantum of waste generated daily.

Waste collection services can be provided at two levels, and these levels point to opportunities for entrepreneurs and private enterprises to engage.

- i) Primary or door-to-door collection
- ii) Secondary or *dhallon* (municipal bin) to landfill collection

b) Segregation of waste refers to the process of separation of the MSW into, basically, four groups: organic, inorganic, recyclables and hazardous waste. This is a critical step in SWM as it **enables recycling**,

¹⁰⁹ Deepa Karthykeyan, Arsalan Aziz, Ankit Kumar Chatri, and S.K. Shah, *Public Private Partnership in Urban Water Supply and Municipal Solid Waste Management: Potential and Strategies* (Chennai: Ganesh & Co., 2012).

reuse, treatment and scientific disposal of different components of waste. Sorting and segregation can take place at different levels.

- i) At source or household level
- ii) At *dhallon* or waste storage depot or transfer stations
- iii) At waste processing sites

In the majority of households and cities in India, source segregation does not happen. There are many reasons for this, the main one being the lack of awareness and capacity building of the waste generators (public) on the environmental and health impacts of waste. This provides an opportunity for private enterprises to engage in the SWM process (discussed in detail below in the “awareness” section) through awareness generation campaigns and training with community, institutions, and service providers.

The **opportunities for engagement** under the “collection and segregation” stages of SWM are as follows.

- **Provide door-to-door waste collection services to households,** through the Resident Welfare Association (RWA) or municipality/ULB/relevant authority, and get service charges through individual households, commercial centers and institutions. This also results in **ownership of waste**, which can then be segregated and channeled **for reuse, recycle, and recovery**. This will involve investment in transportation vehicles, such as cycle-carts, push-carts, tractors, mini-trucks, tippers, auto-tippers, tipper-trucks and compactors, according to the need or area.
- Work with community/RWA or municipality / ULB / relevant authority for **collection, transportation, and disposal of waste to municipal bins/dhallon for a tipping fee**.
- Based on the collection and ownership of waste, the private enterprises/entrepreneurs can **set up dry waste collection centers or material recovery facilities for segregation of waste and further reuse, recycling and resource recovery**. This involves investments to set up the above-mentioned infrastructures.
- Resource recovery of waste will involve segregation of waste into categories, such as paper, plastic, glass, metal, cartons, tetrapaks, etc., and sale to respective recycling industries. This venture will involve developing a network of waste pickers, rag pickers, scrap dealers and various recyclers to **establish a supply chain**. It is critical to provide **value addition to the supply chain of each waste category through quality segregation**.

- With regards to the **organic biodegradable waste collected, composting plants can be set up** (development of infrastructure involved; land requirement) to produce compost. Sale of this compost to organic farming entrepreneurs, nurseries, institutions, golf courses, and ULBs/municipalities can generate revenue.

2) Aggregation

Aggregation involves **categorization of waste into various waste types and categories**, such as paper, plastic, glass, metal, cartons, organic, etc. **Aggregation helps in resource recovery from the waste collected and efficient channeling of waste types into various recycling channels.** Aggregation can be done at multiple levels. At the initial level, major waste types and categories are identified, sorted and stored. In the second phase, further sub-segregation is done within a waste type to ensure quality reuse, recycling and resource recovery. The aggregator is a crucial link between collector/seggregator and the recycler. They ensure appropriate quality and sufficient quantity of supply of waste in the overall process of waste management.

The opportunities for engagement under the “aggregation” stages of SWM are as follows.

- Based on the collection and ownership of waste, the private enterprises/entrepreneurs can **set up dry waste collection centers or material recovery facilities for sorting and aggregation of waste types and further reuse, recycling and resource recovery.** This involves investments to set up the above-mentioned infrastructures.
- This also requires development of a network of waste pickers, scrap dealers and various recyclers to establish a supply chain.

3) Recycling/co-processing

Recycling of waste is defined as any **recovery operation by which waste materials are reprocessed into products, materials or substances, whether for the original or other purposes.** Currently, in India, nearly 70% of the waste is disposed of in landfills and open dumps, while only about 5% of the waste generated is recycled, and the volume of waste being generated is increasing rapidly. Thus, with such low rates, currently, recycling has very high business prospects and revenue generation potential for entrepreneurs and private enterprises looking to enter the SWM field. Additionally, the informal recycling

industry plays a major role in waste management. This is another avenue that can be tapped by entrepreneurs venturing into the recycling sector by forming alliances.¹¹⁰ Additionally, it may be noted that a majority of the SWM budget (nearly 75%) is allocated by the municipalities and ULBs for collection and transportation.¹¹¹ This leaves very little for processing or resources recovery and disposal. This provides additional business prospects and high potential for revenue for entrepreneurs and private entities to venture into the sector.

The opportunities for engagement under the “recycling” stages of SWM are as follows:

- **Develop a network of waste pickers, rag pickers, scrap dealers and various recyclers to establish a supply chain.**
- Resource recovery of waste will involve segregation, sorting and aggregation of waste into categories, such as paper, plastic, glass, metal, cartons, tetrapak, etc., and sale to respective recycling industries. This venture will involve developing of a network with the above-mentioned set of informal sector players (waste pickers, rag pickers), scrap dealers and various recyclers to establish a supply chain.
- It is critical to provide value addition to the supply chain of each waste category through quality segregation.
- **Setting up of recycling units for recycling of various/specific waste types and subtypes.**
- Another option is to **set up a business supply channel to trade in waste types / commodities / scrap material to relevant recyclers or industries as per their need.** Many industries also generate huge amounts of good quality waste material like packaging material and metals. Trading in this scrap material is also an avenue for revenue generation.
- **Setting up as a service provider to either recycle or dispose of hazardous waste and other wastes (management and transboundary movement) or e-waste generated from industries**

¹¹⁰ Samar Lahiry, “India’s Challenges in Waste Management,” Down to Earth, January 9, 2017, <https://www.downtoearth.org.in/blog/waste/india-s-challenges-in-waste-management-56753>.

¹¹¹ Isher Judge Alhuwalia, “Cities at Crossroads: Recycling Begins at Home,” *The Indian Express*, November 30, 2016, <https://indianexpress.com/article/opinion/columns/waste-recycling-organic-energy-garbage-management-disposal-pollution-metro-cities-4402086/>.

or households/institutions. This will require setting up of collection, dismantling and recycling facilities as per the Hazardous Wastes Rules and E-Waste Management Rules 2016.

- Another great opportunity is to **set up a network for EPR credit business for plastic and e-waste as per the Plastic Waste Management Rules 2016.**
- There is also the option of **setting up a workshop for the designing and fabrication of eco-friendly products made from recycled waste material.** This option will require the setting up of an infrastructure, plus having a design consultant on board. Development of a network to market the eco-friendly recycled product for revenue generation will also be required.

4) Awareness

As mentioned in the previous sections above, source segregation doesn't happen in the majority of households across India; awareness generation on SWM, the need for source segregation, waste minimization, adverse effects of improper waste management on public health and environment, and also changing public perception regarding waste generation and recycling are needed to improve the situation. This provides an ideal opportunity for private enterprises to collaborate with both government and NGOs to work on awareness generation, capacity building, and behavior change campaigns.

The opportunities for engagement under the “awareness” stage of SWM are as follows.

- Development of **community and public campaigns through ULBs, municipalities and relevant authorities.**
- **Development of IEC material and campaigns with corporates to tap into corporate social responsibility (CSR) opportunities** in relevant geographical areas and demographical profiles, according to the corporates' vision and mission.

5) Disposal

Disposal is a critical issue in India's SWM problem. Of the total waste generated daily in India, the majority is dumped on land, while only about 5% is composted. This has resulted in major environmental degradation and contamination of both land and water, while, at the same time, creating a major issue of overfilling landfills. We are

running short of space to accommodate fresh waste. According to waste management experts, the solution is to identify innovative methods for disposal of waste along with more recycling options.

According to the Solid Waste Management Rules 2016, the collection, processing, transportation and disposal of waste clearly states that **“municipal authorities shall adopt suitable technology or combination of such technologies to make use of wastes so as to minimize burden on landfill.”** It further states that **“the biodegradable wastes shall be processed by composting, vermicomposting, anaerobic digestion or any other appropriate biological processing for stabilization of wastes,”**¹¹² while **“mixed waste containing recoverable resources shall follow the route of recycling.”** Further, that **“land filling shall be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing.”**¹¹³ The national green tribunal’s (NGT) 606/2018¹¹⁴ order further backs the Solid Waste Management Rules 2016 on segregation and disposal of waste. It backs the decision that landfills should, preferably, be used only for depositing inert waste and rejects. These policy decisions can help India to reduce the load on landfills by 50%.¹¹⁵ Thus, the key is to ensure maximum segregation of waste at sources and resource recovery (recycling, composting, and reuse to name a few).

The opportunities for engagement under the “disposal” stage of SWM are as follows.

- **Develop organic waste treatment facilities, like vermicomposting, bio-methanation, or mechanized composting, with the support of**

¹¹² Ministry of Environment and Forest, *Solid Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 8 April 2016), 59, https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf.

¹¹³ Ministry of Environment and Forest, *Solid Waste Management Rules, 2016*, 60.

¹¹⁴ National Green Tribunal O.A. No. 606/2018, *Compliance on Municipal Solid Waste Management Rules 2016*, August 20, 2018, https://greentribunal.gov.in/sites/default/files/all_documents/Orders_in_Compliance_of_Municipal_Solid_Waste_Management_Rules-2016.pdf.

¹¹⁵ Anisha Bhatia, “NGT’s Order on Segregation of Waste Will Help Reduce 50% Load on Landfills: Delhi Civic Body,” NDTV, December 23, 2016, <https://swachhindia.ndtv.com/ngts-order-segregation-waste-will-help-reduce-50-load-landfills-delhi-civic-body-4475/>.

the municipality to reduce the burden and disposal of bio-degradable waste in landfill.

- **Engage with RWAs and set up home composters and/or community composters on a revenue generation model.** This can also be achieved through tapping CSR funds and working in collaboration with corporate house, NGOs and donor agencies.
- **Develop a market for end products like compost and biogas** with support of municipalities / ULBs / relevant authorities.
- **Setting up trommel machines** (this will require investment in machinery) that operate as segregators and sort waste into compostable fractions and non-compostable fractions. The government provides land for bio-composting in this scenario, while for the segregated combustible fraction (SCF) a **network can be established with the cement industry or waste-to-energy plans for supply to generate revenue.**

6) EPR as a compliance opportunity

According to the Plastic Waste Management Rules 2016, waste generators, including producers, retailers and street vendors, have been mandated to take steps to minimize generation of plastic waste and manage plastic waste.¹¹⁶ **The Plastic Waste Management Rules 2016 clearly state that it is the primary responsibility of the producers, importers and brand owners to develop modalities for a waste collection system for collecting back multi-layered plastic waste (sachets, pouches or packaging waste) within a period of six months,**¹¹⁷ based on extended producer responsibility in consultation with local and state authorities. These provisions further reduce littering, and improve collection of plastic waste and its recycle/reuse.

The E-waste (Management) Rules 2016 brought the producers under the EPR, along with targets and requirements for collecting

¹¹⁶ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 18 March 2016), 20–21, 23, http://jaipurmc.org/PDF/Auction_MM_RTI_Act_Etc_PDF/PLASTIC%20WASTE%20MANAGEMENT%20RULES%202016.pdf.

¹¹⁷ Ministry of Environment and Forest, *Plastic Waste Management Rules, 2016* (New Delhi: Gazette of India, Government of India, 18 March 2016), 21, http://jaipurmc.org/PDF/Auction_MM_RTI_Act_Etc_PDF/PLASTIC%20WASTE%20MANAGEMENT%20RULES%202016.pdf.

e-waste and handing it over to recyclers, for the first time.¹¹⁸ The producers, thus, have been made responsible for the collection of e-waste and for its exchange. The rules make the manufacturer responsible for collecting e-waste generated during the manufacture of any electrical and electronic equipment, for channeling it for recycling or disposal, and for seeking authorization from SPCB. There has been an overall simplification of the process of permissions. **A pan-India EPR authorization can be sought by producers from CPCB.**¹¹⁹ The EPR authorization is now mandatory and has to be obtained by all producers.

The opportunities for engagement under “EPR compliance” are as follows.

- The above-mentioned two waste management rules in India, thus, provide a business opportunity for prospective entrepreneurs and private entities **to operate as consultants or operators for EPR compliance.**
- It provides an opportunity to **work with producers and brand owners to develop a network for EPR credit business for plastic and e-waste,** according to the above-mentioned rules. This will involve registration with relevant authorities, such as CPCB, SPCB and/or PCC, as necessary.¹²⁰

This chapter discusses the need to view waste as a resource that can be effectively managed through innovative options. Recovery of valuable resources from waste can not only boost the economy through livelihood creation and employment generation, but also positively affect both the environment and economic health of the society and country. This chapter elaborates on the various opportunities for engagement in the waste

¹¹⁸ Ministry of Environment, Forests and Climate Change, *E-Waste (Management) Rules, 2016* (New Delhi: Gazette of India, Government of India, 23 March 2016), 5–7,

<https://cpcb.nic.in/displaypdf.php?id=UHVamVjdHMyRS1XYXN0ZS9FLVdhe3RITV9SdWxlcl8yMDE2LnBkZg==>.

¹¹⁹ Ministry of Environment, Forests and Climate Change. *E-Waste (Management) Rules, 2016*, 10.

¹²⁰ Ministry of Environment, Forest and Climate Change, *Guideline Document for Uniform Framework for Extended Producers Responsibility (Under Plastic Waste Management Rules, 2016)* (New Delhi: Ministry of Environment, Forest and Climate Change Government of India, June 2020), 8–9, <http://moef.gov.in/wp-content/uploads/2020/06/Final-Uniform-Framework-on-EPR-June2020-for-comments.pdf>.

management sector in India in the existing SWM policy landscape. These opportunities have been listed under the various components of SWM, such as collection, segregation, aggregation, recycling and co-processing, disposal, and awareness generation, and also looks at EPR as an upcoming compliance opportunity.

MODULE FOUR

PROPOSAL DEVELOPMENT

Introduction

In the previous chapters, different aspects of solid waste management, to strengthen the knowledge base of entrepreneurs and business enterprises, have been discussed. The process of the value-chain of waste management and its associated opportunities have also been discussed to inform the reader of the various prospects available within the sector. This chapter will discuss the ways in which opportunities offered in solid waste management can be transformed into working projects. The thread connecting the two is a **project proposal**.

A project proposal is a document that describes, in detail, the proposed project's context, timeframe and deliverables.¹²¹ It clearly defines the proposed approach for undertaking the project, including the detailed methodology, the planned activities and the methodology for implementing those activities. It also presents a justification of the capabilities of the service provider (entrepreneur and business enterprise) to implement the project. At the same time, it also states the budgetary allocations required to implement the proposed activities. In short, the proposal is a written manifestation of what the project intends to achieve, how and when it will be achieved, and how much cost will be incurred to achieve it. It consists of all the information that the implementing body needs to undertake the project. It is often said to be the guidebook that shows the path to use to take the project towards its outcomes.

There are two ways in which proposals are developed; they are either prepared as a response/solution by a service provider (i.e., the entrepreneur or business enterprise) to address the needs of a brand owner / corporate, or

¹²¹ Besim Nebiu, *Developing Skills of NGOs—Project Proposal Writing* (Szentendre: the Regional Environmental Centre for Central and Eastern Europe, 2002), 7–9, https://www.academia.edu/4147985/DEVELOPING_SKILLS_OF_NGOS_Project_Proposal_Writing.

as a response to reference for proposal (RFP) calls by government agencies, multilateral organizations, and corporates. The difference lies in the origin of the project idea. In the former, the idea is conceptualized and shaped by the service provider to address the needs of the client (brand owner / corporate). Once the concept is ready, it is pitched to the client. Upon attracting the interest of the client, it is eventually developed into a proposal. Whereas in an RFP document, most of the details, including the objectives, scope, timeline and location, are often provided. While preparing such a proposal, the focus is on developing a sustainable approach and methodology to achieve the objectives. However, both types of proposal have two components—technical and financial. These will be discussed, in detail, in the sections below.

- Read the document carefully. If need be, read it two to three times
- Review the grading matrix provided in the document and conduct a self-assessment
- Note the submission requirements. Make sure you have included all the documents that were asked for, along with the proposal. Prepare a checklist for submission documents.
- Note the submission date and time. Also, check the mode and place of submission. Plan accordingly.
- Many organizations ask for financial and technical proposals to be either mailed separately or in separate envelopes. Please check this information in the RFP document too.
- Sometimes, financial proposals are to be password protected or sealed. Please check for this information in the RFP document too.

Box 4.1: While responding to an RFP call

Technical Proposal

A technical proposal is a document that puts forth the detailed outline of how the project is proposed to be undertaken. It details the approach to solving the problem, the methodology and various activities to be undertaken, along with a timeline of such activities. It also presents the risks involved in undertaking the project and what mitigation methods there will be to overcome these risks. Finally, it lists the unique capacity and experience of the service provider to undertake the proposed project.

Developing the technical proposal is a skill; a skill to present the highly specific technical details of a complex approach to bring change. Before beginning the exercise of writing a technical proposal, it is essential to understand the problem and its proposed solutions.

- Should be focused
- Should be well-structured
- Should be methodologically rigorous
- Should be achievable: have clearly defined objectives, timelines and outcomes.
- Should have clearly identified stakeholders

Box 4.2: Features of a good technical proposal

Basic components of a technical proposal

All technical proposals are unique, since they propose to provide solutions to unique problems that are specific to the social, environmental, geographical, economic and political conditions. There are variations in the format and style of writing, based on nature of project and requirements of the funding organization. However, basic components that comprise a technical proposal are usually common to all. These common components are explained below.¹²²

¹²² S. Joseph Levine, *Guide for Writing a Funding Proposal* (East Lansing, Michigan: Michigan State University, 2020), <https://www.learnerassociates.net/proposal/>.

1. Title/Cover

The first page of the proposal is known as the title/cover page. The title page should indicate the name of the project, details of the service provider proposing the project and details of organization (client) to which the proposal is being submitted/addressed.

2. Table of contents

This page helps the donor to find relevant parts of the document. It is usually advisable to have this page in the proposal if the document is more than ten pages long. It should contain the titles and page numbers of different sections of the proposal.

3. Introduction

In this section, the following points should be included.

- a)* A statement of the problem for which the project is proposed. The context of the problem from a global to an Indian perspective needs to be developed. The context can be further narrowed down to state, municipality, block, or village level. It should include relevant data collected during the project planning phase or any findings of secondary research related to the topic.
- b)* The problem and its intensity need to be linked to the requirement of the project. It should be mentioned how the implementation of the project will contribute to India's national policy and global commitments.
- c)* The suitability and uniqueness of the proposing organization / service provider (i.e., you) undertaking the project should be explained and highlighted in this section. The service provider's commitment to solve the problem and its uniqueness in addressing it should be mentioned. Here, one may want to provide precise details of similar projects implemented by the service provider in the past—organizational capacity, in terms of technical knowledge, team, and outreach, can be emphasized, in brief, here.
- d)* Synchronization between the service provider's commitment to the issue and the mission statement of the client / funding agency also needs to be highlighted.

4. Organizational details

This section of the proposal should have a description of the service provider's capacities to implement the project. The following information regarding value propositions in terms of organizational capacity should be presented here:

- a)* organogram of the service provider's organization;
- b)* thematic expertise and specialization;
- c)* details of key clients, strategic partners and collaborators;
- d)* experience of implementing projects of similar nature and scale in the past;
- e)* presence of a multidisciplinary team;
- f)* service provider's commitment to sustainability while implementing projects.

(Templates for some of these points are attached as Appendix B, C, D, and E.)

This section should convince the funding organization that the service provider is capable, experienced, trustworthy, transparent, and, hence, is best suited for the project.

5. Approach and methodology

This section is the highlight of the proposal as it provides a description of the project. It carries the answers to the five "Ws"—**What** is the project trying to achieve? **Why** is it required? **Where** will it be implemented? **When** will it be implemented? **Who** will implement it and for **Whom** will it be implemented? In addition to the above, how will the project be implemented? A good project description brings clarity on the above questions and has the following sections.

a) Objectives

The project objective is a statement that describes what the project is trying to achieve. In the RFP document, the objectives of the project are already identified. However, objectives must be developed in case the service provider is initiating the proposal on their own.

Development of the objectives is directly related to the problem identified by the service provider and client. Two important concepts that help in defining project objectives are the problem tree and the objective tree. A problem tree (Figure 8) helps in analyzing the root causes of a problem and its consequences. This activity is conducted by involving different stakeholders so that different perspectives can be considered. Once the problem tree is ready, it is transformed into the objective tree. The problem becomes an objective, its causes become the immediate outputs/activities and the consequences become the outcomes (Figure 4.2).

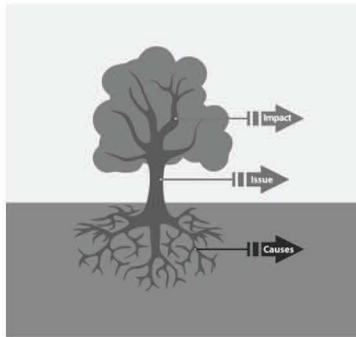


Figure 4.1 Problem tree

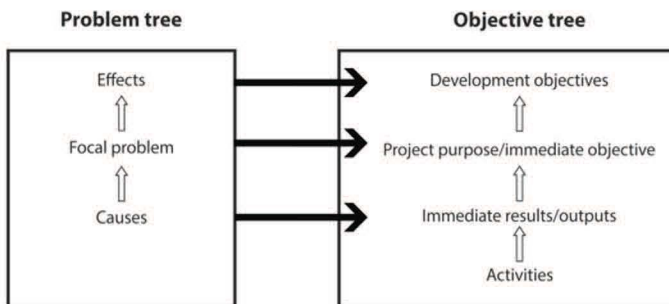


Figure 4.2 Converting the problem tree into the objective tree

The objectives should be **SMART** in nature.

Specific: They should outline a clear picture of a particular problem and its solution.

Measurable: The project team should be able to measure the progress of the objectives.

Achievable: The organization should be able to attain the objectives

Relevant: They should be relevant with respect to the problem, location, and target population.

Time bound: The organization should have a timeframe to achieve the objectives.

Box 4.3: SMART objectives

b) Stakeholders / target population

During proposal development stage, it is essential to identify stakeholders of the project. Stakeholders are people or organizations that can either affect the project or are affected by it. Government, beneficiaries, the project team, and NGOs are all examples of stakeholders. The proposing organization or service provider can mention all the identified stakeholders in the proposal, with a focus on the target population / beneficiaries. Details of beneficiaries, such as number, age group, gender, education level, and any other inclusion criteria, may be further mentioned.

c) Approach and methodology

Approach

This section explains the approach that the service provider will follow while implementing the project. The approach helps in defining the methodology that will be devised—to undertake the project. The approach can be problem-specific / issue-specific or client-specific. For one client, the approach to address a problem could be based on the principles of sustainability and, accordingly, the methodology will include activities or interventions that can ensure that the project is sustainable, even after the service provider has exited from the project implementation. Another client may have a participatory

approach and addresses the problem with the participation of beneficiaries at all times. Similarly, the right based approach, life-cycle approach, and eco system approach are examples of some of the approaches followed by proposing organizations or service providers.

Methodology

The project methodology is derived from the approach that the service provider and/or the client follows to address the problem. It is the sum total of activities that will be conducted, the schedule to which they will be conducted, the identification of risks and their mitigation, and the monitoring and evaluation plan.

Description of activities: the activities identified using the objective tree should be listed and explained here. The activities should be carefully planned so that the objective of project can be achieved. The outcomes, brief description, and frequency of these activities can also be mentioned in the proposal. It is advisable to spread the activities into three phases.

Phase I: the inception phase, which can also be referred to as the preparatory phase.

Phase II: the implementation phase, where core activities are implemented.

Phase III: the reporting and dissemination phase, where knowledge accumulated through the project is documented, reported and shared.

Some service providers consider it best to present the activities in the form of a logical framework analysis (attached as Appendix G).

Timeline: the activities listed above need to have a schedule. This schedule is presented through a **Gantt chart**, which is a tabular representation of the period of time when activities will be conducted. This helps in understanding the timeframe of the project, and helps us to understand the logical

sequencing and flow of activities. A template of the Gantt chart of a project proposed for six months is given below.

Table 4.1: Gantt chart showing the timeline for a six-month project

S. No	Activity/Month	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1	Desk research						
2	Identification of beneficiaries and seeking permissions						
3	Installation of compost bins and training of beneficiaries						
4	O&M of compost bins						
5	Handing over of compost						
6	Felicitation ceremony						
7	Submission of reports						

Risk assessment and management: risk is any uncertain situation or event that may lead to deviation from the expected outcome of the project. Risks in a project are encountered during its implementation and management. Risk management is the process of identifying, assessing and mitigating risks that might impact the scope, schedule and quality of the project.

It is important to identify risks that might be encountered during the lifecycle of the project. While presenting them in the proposal, the identified risks should:

- help to showcase the capacity and capability of the service provider to handle them, based on their team's expertise, experience and diversity;
- involve cooperation and coordination with the client;
- ideally, also have a mitigation measure identified.

An example of a risk mitigation matrix is given below.

Table 4.2: A sample risk mitigation matrix

S. No	Perceived risk	Mitigation measure	Time
1	Potential time overrun due to the existing pandemic.	Adequate reserve time to account for delays will be accounted for in the project schedule. We also have the ability to depute additional resources, if necessary.	-
2	Adherence to necessary EHS (environment, health and safety) regulations, including covid requirements.	To overcome this, the following measures are to be adopted: provision of necessary PPE to the waste pickers and scrap dealers/workers; measures for proper disposal of the PPE (as per Government of India [GOI] guidelines) to be undertaken; all the collection centers to have necessary provisions for drinking water and sanitation, including hand washing; each center will have a fire extinguisher in case of fire hazard.	During implementation phase
3	Quality of documentation and records	Standard operation procedures and necessary training will be conducted with the operators of the DWCC to ensure quality. Handholding support, followed by monitoring checklists and visits will be undertaken on a regular basis to ensure quality and corrective action.	During reporting and documentation phase
4	Lack of necessary authorized recyclers	ABC organization will facilitate the registration of recyclers with the State Pollution Control Board (SPCB) to ensure the smooth progress of project.	During implementation phase

Monitoring and evaluation (M&E) plan: a M&E plan is a document that describes the process that will be followed to monitor and evaluate the progress and impact of the project. The mechanisms that will be adopted to collect data, frequency and mode of data collection, involvement of internal/external teams, etc., need to be mentioned in the proposal.

The M&E plan for a project can list several evaluation studies, such as a baseline, midterm, or an end of the project evaluation, to understand the impact of the project or to propose any course corrections if implementation is not progressing as per the timelines. A regular monitoring plan to keep track of the progress of the project can also be proposed under the M&E plan. The monitoring plan can be monthly, quarterly, or six-monthly, based on the duration of the project.

It is important to have a M&E plan as part of the proposal so that budgetary allocations can be made in the financial proposal to ensure the smooth collection of data at regular intervals.

d) Project impact

Impact is the long term effect that the project has on a situation, or on the lives of beneficiaries, due to its implementation. Impact can be either positive or negative. For instance, a project to launch clean-up drives with volunteers may have positive impacts on the area that is being cleaned. However, if precautions are not taken, it might lead to harmful consequences to the health of the volunteers. While designing the proposal, all of the potential impacts of the project should be listed out. It also helps in providing a glimpse of the future, after the implementation of the project.

To validate that the project has led to the expected impacts, evaluation studies are conducted. These studies are part of the M&E plan, discussed above.

e) Project team

This section presents the structure of the team that will be involved in the project. The academic qualifications of team members, along with relevant professional experience (in terms of thematic expertise, years of experience, regional field experience, etc.), should be highlighted to substantiate their involvement in the project. Some clients also prefer knowing the roles and responsibilities of the team members assigned to the project. This needs to be clearly presented and accounted for. The clear allocation of resources and their time will also

help us in the preparation of the budget and the financial component of a proposal.

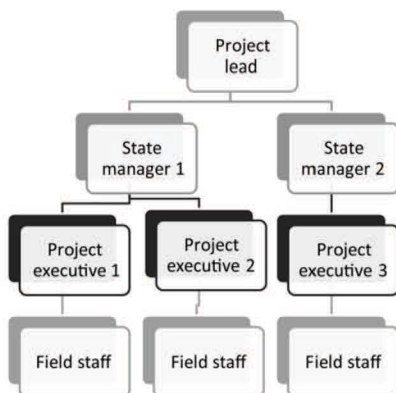


Figure 4.3 A representative sample for a project team organogram

The above details may be presented in a matrix format, as mentioned below.

Table 4.3: Representative sample for the roles and responsibilities matrix for a project team

S. No	Member of staff	Qualification and expertise	Designation in project	Description of roles and responsibilities
1	Asha Kumari	Masters in Social Work, Delhi University Twelve years of experience in implementing solid waste management projects.	Project Lead	Overall responsibility of the project Developing project design Enduring resource management Foreseeing implementation Managing stakeholder engagement Ensuring proper documentation and timely submissions

*Similar descriptions should be prepared for all team members.

In addition to the above, it is also essential to attach detailed CVs of the team members or at least of members in the leadership positions.

6. Annexures

In this section, all the additional documents that support the claims made in the proposal are attached. Examples of annexures are Registration Certificates, audited financial statements, annual reports, details of past projects, Goods and Service Tax (GST) certificates, CVs of project team, etc. It is important to clearly index the annexures so that the funding organization/client can access these documents conveniently.

Some important considerations when preparing a technical proposal.

- Before developing a proposal, it is essential to carry out a **need assessment study** to understand the requirement of the project. Very often, proposal developers confuse perceived needs with felt needs. Incorrect perception of a problem leads to faulty project proposals that ultimately either get rejected or fail during implementation. Therefore, a bottom-up approach should be followed while developing the project and its proposal.
- The **perspective of beneficiaries** should be included while formulating the proposal designed for them. This provides a deeper understanding of the problem and expands the horizons of intervention and engagement.
- Along with beneficiaries, team members should also be a part of the brainstorming sessions. They are the ones who actually work on the field and have a better grasp of the ground realities. Involvement of team members also helps in producing new ideas and viewpoints.
- Sometimes, service providers use the same methodologies for different projects. This should be avoided. The methodology proposed in the document to address a particular problem should be unique or adapted to the problem, location, beneficiary, and their culture. It should be **comprehensive** and understandable.
- The proposal should have an element of **sustainability**. A part of the proposal should mention the plan of ensuring that the project (or its impacts) will continue even after the service provider, or even the client, withdraws from it.
- The proposal should have **relevant data** from primary or secondary research. Project-related information should also be adequately mentioned in the proposal. After reading the proposal, the funding organization or client should have clarity about the project.
- It is very important to view the project, its objectives and activities through a **gendered perspective**. The project should not harm the integrity of any gender, rather it should be empowering in nature.
- The proposal should be designed in such a way that it is **sensitive to the sentiments of the society**. Any statement that might offend an individual or a group should be avoided.

Box 4.4 Points to keep in mind for the technical proposal

Financial Proposal

A financial proposal is a document that puts forth the budget and financial estimates for the implementation of the project. All the expenses that are expected to be incurred while implementing the project, in terms of physical resources, human resources, activities, administration, and taxes, are all budgeted in this important document, which accompanies the technical proposal.

The financial proposals should be carefully developed. It needs to be carefully synced with the technical proposal of the project to account for all the activities being undertaken and the resources assigned. The cost estimates need to be crosschecked with the current market rates so that a realistic budget is presented to the client or funding organization. It helps in appraising the project, with respect to the financial investment of the funding agency. The breakdown of cost helps them to understand how much money is required to implement the project. At the level of the service provider, it is important because it brings funding to the project. It also helps in maintaining cost control while implementing the project.

A good financial proposal

- Should be inclusive of all cost and taxes
- Should cover expenses of all activities mentioned in the technical proposal
- Should be based on recent market trends

Box 4.5: Characteristics of a good financial proposal

In some cases, funding organizations or clients have their own formats for developing financial proposals. In other cases, the service provider can have their own standard format. A template is attached, as Appendix F, for your reference. The components or budget heads of financial proposals are usually the same, only the ways in which they get presented vary. In the next section, important components of financial proposals are discussed.

Components of a financial proposal

1. Reconfirmation of the scope of work

In this section, the scope of work, deliverables and timeline proposed in the technical proposal should be confirmed in brief. This is essential to make sure that the financial proposal is in line with the work proposed in the technical proposal and that all activities are accounted for.

2. Total cost indication

This section provides a summary of the total cost of the proposal. The cost of major budget heads is mentioned without providing major details. The service provider needs to mention the currency in which the cost is estimated. Another important aspect is to mention any inclusion/exclusion made while preparing the proposal. This becomes increasingly important when mentioning taxes. This section helps the funding organization, or client, to assess whether the budget falls within their limit.

3. Breakdown of cost

This section provides the breakdown of the total cost for the project implementation. Different sub-heads are presented, and cost is estimated against each sub-head. Usually, the following sub-heads are used to budget the cost of project.

- a) *The professional cost* is the cost of the human resources that will be involved in the project. This figure is arrived at by revisiting the project team section of the technical proposal. A project involves professionals from different levels of hierarchy. So, the cost of individuals varies, according to their position in the organizational hierarchy. As service providers, you need to determine the cost of a workday of different professionals beforehand. This workday cost must be multiplied by the number of days for which the person will be involved (this is further linked to the various activities in the project) to calculate the professional cost of each member. The professional cost of each team member needs to be presented in this section.
- b) *The travel cost* covers expenses that will be incurred while travelling to project locations. Generally, two types of travel

cost are included: local travel and domestic travel. Domestic travel cost accounts for the cost of travel across states, while local travel includes travelling within the state. However, in projects involving international travel, another cost, in terms of the international travel cost, will also be added. The estimates are arrived at by identifying the number of travel trips that are required for conducting project activities and the number of people who will be required to travel. The travel cost is usually presented in a lump sum amount, considering the average number of trips proposed for various team members during the project timeline

- c) *The activity cost* is arrived at by determining the cost of individual activity described in the technical proposal. This provides an estimation of the direct expenses that are incurred while conducting project activities. The work breakdown structure often helps in ascertaining the cost of each activity. In case of a project involving equipment/machinery, a maintenance cost should also be added in this section.
- d) *Communication and documentation cost* is added if the project has an element of video documentation or requires preparation of post-project products (reports, films, other AV and social media material). This cost also includes the cost incurred while printing project reports, brochures, or any other resource material. Expenses incurred in order to enhance the outreach of the project are also included here. Some organizations keep this component as part of the project cost, while others find it convenient to keep this cost separate.
- e) *Administrative cost* is the cost that is incurred by the service provider and is indirectly linked to the project. For instance, cost of information communication technology (ICT) tools, camera, office supplies, electricity, etc. These resources are already available within the organization but are also used for the project. As a rule of thumb, 10% of the project cost is budgeted for administrative expenses.
- f) *Contingency cost* covers any unforeseen events, such as delays, addition of project activity, damage to physical resources, fluctuations in the market, or any other thing that is not accounted for in the budget. For this reason, it is advisable to include a contingency cost while preparing the proposal. As a rule of thumb, 10% of the project cost should be dedicated to the contingency fund.

- g) *Taxes*, where applicable, need to be added in the financial proposal. One way to do this is by including the tax amount towards the end of the budget heads. Another way is to exclude the amount and put on the statement that applicable taxes will be charged additionally. Most funding organizations clearly state their preference of inclusion/exclusion of the tax amount.

4. Payment schedule

The schedule by which payment is expected to be released should also be stated in the proposal. The following schedule is followed by most service providers.

20% of the amount—at signing the contract

50% of the amount—after completing 50% of the work

30% of the amount—after completing the project and submission of the final Utilisation Certificate

The schedule of payment is mutually discussed by the funding organization / client and the service provider.

5. Validity of the proposal

It should also be clearly mentioned in the financial proposal that the validity of the costs, and therefore of the proposal, is for a certain period of time. In most case, the validity of a proposal is for six months. This becomes important in cases where approval takes a lot of time. By the time the proposal gets approved, the market situation may have changed and the requirement to rework the budget will become an essential exercise.

Some important considerations while preparing a financial proposal

- A financial proposal is a comprehensive document that includes different types of direct and indirect cost. For beginners, it sometimes gets overwhelming to estimate all of these costs correctly. However, the target should be to achieve the closest cost estimates. **Market surveys** always help to get a realistic picture of the prices of goods and services. There is always a possibility to rework the budget as the project progresses; however, it is advisable that variation between estimated and actual cost should be low.
- In a case where the service provider has implemented similar projects in the past, the **actual cost incurred in a previous project** can be used to prepare budget estimates for the current proposal. However, it should be kept in mind that this proposal will be implemented in a different time and space. Accordingly, changes should be made.
- Activities listed in the technical proposal should be further broken down into smaller parts in the form of **the work breakdown structure (WBS)**. This structure helps in allocating cost to the smallest of components. The service provider may not present this micro-budget in the proposal but keep it for their own understanding and working.

Box 4.6: Some important considerations while preparing a financial proposal

The chapter provides a step-by-step guide to designing projects and developing proposals. It is important to prepare a comprehensive proposal since it becomes the foundation for implementation. Any ambiguity in the proposal may lead to chaos in future. This is often true in the case of restructuring the project team or the introduction of new members to the team. A clear and detailed proposal has answers to queries that might arise while implementing the project in the field. Hence, it should be prepared as a “go-to document” to be referred to by the project team in case of any confusion during the project implementation.

MODULE FIVE

PROJECT IMPLEMENTATION

Introduction

Project implementation is the third stage in the lifecycle of a project. The first two stages, opportunity identification (module three) and proposal development (module four) have been covered previously. While each stage is significant, the implementation/execution phase holds a special place in the success of a project. It is the phase in which plans are converted into action. The ideas conceived on paper are replicated in the field and are met with ground realities. It is the knot that ties the project's objectives to its outcomes. It helps in achieving the change and improvement for which the project was designed. It enables the beneficiaries to access better services and environment.

As mentioned earlier, in the domain of solid waste management, projects generally have the following phases.

1. Collection and segregation
2. Aggregation
3. Recycling and material recovery, including recycled product design and fabrication, marketing of finished products, etc.
4. Compliance (EPR)
5. Disposal and waste treatment (composting, up-cycling, refurbishment, recycling, incineration)
6. Awareness generation

All of these projects are equally important in the waste management cycle. An entrepreneur or a business enterprise can be set up to undertake either one of these projects or a combination of two or more projects. For instance, entrepreneurs who collect waste from a residential colony may want to educate the residents about source segregation. They may, therefore, also engage in awareness generation projects. Or an entrepreneur who collects plastic waste from industries may have a recycling factory to recycle the collected waste. More often, waste collection agencies also have their

segregation units where different categories of waste are segregated before sending them further to the respective waste processors. However, it is also not unusual for organizations to focus on a single domain.

Now, **depending upon the nature of work that the organization engages in, the steps of implementation of projects may vary.** Since the implementation phase aims to reach desirable outcomes with the help of deliverables, the activities of each kind of project may also be different. In this chapter, a general overview is provided, regarding of the components of the implementation phase, while providing examples of specific projects.

Getting Started with the Implementation Process

The implementation phase can be the simplest or the most challenging phase. The secret lies in the clarity of the project proposal, competent leadership, the quality and dynamics of the team, and the efficient utilization of resources. In order to produce deliverables, workable timelines and schedules need to be developed, resources mobilized and managed, roles and responsibilities assigned, stakeholders must be managed, work documented and communicated, and rigorous monitoring and evaluation must be undertaken.

In this section, standard steps that need to be taken during the implementation phase of solid waste management projects will be discussed.



Figure 5.1 Steps of the implementation phase

1. Site survey

The site survey refers to the process of identifying and assessing the location at which the project will be implemented. Depending on the nature of the project, site could mean different things. It could be a space for setting up a collection center, segregation unit, office, composting site, recycling factory, design factory, shop/outlet, training center, etc. It is essential to conduct a survey of the potential project site before initiating the project activities. Conducting a project site survey has the following benefits.

- a. It helps in understanding the condition of the site.
- b. It helps in ensuring that the site fulfils the requirements of the project.
- c. It provides scope for making changes to the site, in case gaps are identified.
- d. It helps in providing a visual of the project.
- e. It helps in identifying direct and indirect beneficiaries of the project.
- f. It helps in identifying stakeholders involved in the project.

- g. It helps in understanding the statutory or compliance status and possible needs of the project.

The site survey should be conducted by team members who have expertise in implementing similar projects, including the project/team lead. Adequate time should be dedicated for an in-depth survey of the site since it becomes the foundation of the project. This can be understood with the help of an example. Organization ABC aims to provide solutions to plastic waste emerging abundantly in society. It plans to set up a unit for recycling the plastic waste. For this purpose, it requires a space where the recycling process can be undertaken. A site of one hundred acres was identified near the industrial area. It seemed perfect since proximity to industries ensured the availability of raw materials for the recycling unit and, therefore, transportation cost could also be minimized. During the site visit, the team found that the site was not equipped with enough electricity capacity since it was previously only used for office purposes. Also, most of the land is covered with greenery that would have to be removed for setting up recycling equipment. The site also didn't fulfil compliance with the Central Pollution Control Board (CPCB). Hence, despite seeming appropriate for the project initially, based on its location and proximity to industrial area, the site was not finalized after the visit and survey by the project team.

2. Brainstorming for readiness

This is the second step taken by the organization before initiating project activities. Here, the team sits together and brainstorms regarding its readiness for undertaking the project. It is essential to take a note of resources required for the execution of the project. Here, resources are referred to as the material and non-material things that are the inputs in conducting project activities. This list then needs to be matched with the resources already available within the enterprise. Five domains that receive utmost attention in this step are discussed below.

- a. *Human resources* include the individuals / staff members / employees who work for the service provider organization / entrepreneur / business entity to help in fulfilling their goal. Human resources work in different capacities and render their services in undertaking projects. It is essential to estimate the

right number of people required to complete the tasks within a given timeframe. This is also known as manpower planning. Before initiating a project, you, as an entrepreneur or a business enterprise, should brainstorm about the requirement of team members with adequate skills and qualification for implementation of the project. A comparison between required and available staff should be done. The gap, if any, should be taken into consideration and worked upon. It can be explained using the example of a service provider who works on awareness- and action-oriented projects on post-consumer plastic waste. The organization has strength in the domain and has the required staff to train, collect, network, and channelize the post-consumer plastic waste. However, an element of internal monitoring and evaluation is added in an upcoming project. The organization does not have in-house personnel who could perform this role. So, it was highlighted that someone with the requisite skills and expertise is required for the project and can be brought on board as a consultant since M&E is generally not a part of any project of this organization.

- b. *Physical resources* include all of the tangible resources owned and used by the service provider organization / entrepreneur / business entity, such as land for various purposes, including office, segregation site, waste storage site, recycling or processing site, machines, equipment and tools, utilities, vehicles, and office equipment. Information technology and its attendant equipment, computers, networks, servers and others, are also included in the category of physical resources. It is essential to carry an assessment of the availability of the infrastructure required, within the service providers' organization, for executing the project. If the organization falls short of the necessary resources, this should be noted.
- c. *Compliance* is required for certain projects for which permissions must be sought from regulatory authorities. There are certain compliances that need to be adhered to while working in specific areas. For instance, for setting up a recycling unit, some of the required compliances are mentioned below.
 - The site should be set up at an approved industrial area, with approved land use and an approved building plan.

- Consent for the establishment from the SPCB / PCC
- Consent to operate for air and water from the SPCB / PCC
- Electric power load permission from the Electric Department
- Water use approval from the water authority concerned
- Incorporation certificate
- GST certificate
- An arrangement for storage and disposal of hazardous / non-hazardous waste disposal

Similarly, other spheres of solid waste management also have their own compliance. These compliances are mentioned in the respective SWM) rules and can be explored in detail on the respective SPCBs' and PCCs' official websites.

- d. *Communication resources* are the information, education and communication (IEC) materials that are developed to disseminate information to the beneficiaries / target audience. Most of the SWM projects require engagement with the beneficiaries, either to put forward their work or to sensitize them. Project/organization's standee, banners, visiting cards of team members, annual reports (sometimes), posters, and pamphlets are all examples of communication resources. During the brainstorming session, availability or usability of communication material should be analyzed. The requirement of new resources and their types should be noted at this time.
- e. *Financial resources / funds* are the fuel through which any project sees the light of the day. Hence, it is the foremost thing to consider before entering the field of implementation. In most of the projects supported by clients/sponsors, the payment schedule is such that a percentage of the budgeted amount is available after signing the contract for starting the project activities. However, in some projects, payment is received towards the end of the project. One such example is an enterprise that is engaged in selling recycled products. Now, for procuring raw materials and product preparation, capital is required. The organization must assess the accounts and note the availability of funds at hand versus the requirement for funds. Alternate sources of funds also need to be identified.

3. Procurement / resource mobilization

Resource mobilization is the process of taking planned action for the identification, collection and utilization of different kinds of resources (human, physical and financial) for the implementation of the project. It also involves maximizing the use of already available resources. This step corresponds to the previous brainstorming phase and fulfils the gaps identified in various domains. Let us explain the mobilization of each type of resource in the below section.

- a. *Recruitment of human resources* refers to the process of identifying, attracting, interviewing, selecting, hiring, and onboarding of human resources. It is an elaborate process and generally requires expertise in human resource management. Recruitment of project team members is a crucial endeavour since they will be representing the organization and will be responsible for delivering the project outcomes. Hence, organizations need to be highly careful and cautious about selecting people.

Once the requirement for manpower is highlighted in the brainstorming phase, a description of each job is prepared. A job description (JD) is a document that spells out the job responsibilities, job location, number of vacancies, number of required years of experience, level of qualification, deadline for application and, sometimes, remuneration as well. The JD is floated on various platforms to invite applications. Once the applications are received, the selection process begins. Organizations scrutinize the applications at multiple levels. Generally, a three-tier selection process is followed for recruitment—scrutiny of CV, telephonic interview, and face-to-face interview (offline/online).

The letter of employment includes the following details.

- Name of the employer
- Name of the employee
- Designation of the employee
- Tenure of employment
- Terms and conditions of employment and termination
- Remuneration

Box 5.1: Letter of employment

Once the appropriate candidate is selected, a letter of employment is provided by the employer. Upon joining, the team member is oriented about the organization and its work. Specific project activities, timeline, and specific job responsibilities are then communicated to the team member.

- b. *Procurement of physical resources*, of both high and low investment value, may be required by the organization to undertake a project. Depending upon the nature of project and fund availability, the organization may decide to procure or rent the resources. It is likely that the organization rents high investment resources, such as office/factory space and vehicles. However, all the other types of physical resources, such as machinery, furniture, stationery, computer appliances, and other office equipment, are generally procured. Hence, every organization is advised to develop its own procurement policy and ensure that it is followed whenever resources are procured.
- c. *Raising/mobilizing additional funds*: is applicable if it has been found that the funds available to the service provider are insufficient and additional financial resources are required to undertake the project activities. Additional funds can be generated by approaching clients of the project and stating the requirement. In case the requirement is beyond the provisions of the client, options like crowd funding and bank loans can be explored. Crowd funding is a strategy where the general public is approached to provide funding for a particular cause. Banks provide financial support for promising projects and enterprises.

in the form of loans. The loan is provided, keeping the feasibility and profitability of the plan. Bank statements, past income tax returns, credit score, ownership of assets, and the credibility of the applicant (individual or organization) are also contributing factors in bagging a bank loan.

Procurement Policy ensures that resources are purchased in terms of correct quality and specification. It also suggests that best value of money is achieved. Some points that are part of procurement policies are:

- Formation of a procurement committee
- Quotations should be invited from at least three vendors
- A comparison statement should be developed of all the quotations received
- The comparison statement should be reviewed by the procurement committee before order finalisation
- Terms and conditions of order, if any, should be signed by vendor and organization.
- In case of large organizations, order approval should be decentralized

Box 5.2: Procurement policy

4. Revisiting the project plan

The scope of the project and work/activities proposed in the proposal have to be organized into achievable plans in this phase. An important tool used in this step is the **work breakdown structure**¹²³ (WBS). A WBS is a visual-, hierarchical- and deliverable-oriented deconstruction of a project. Project activities are broken into smaller feasible tasks. This exercise helps in identifying even the smallest of efforts required in completing the

¹²³ Alan Wren, *The Project Management A-Z: a Compendium of Project Management Techniques and How to Use Them* (London: Routledge, Taylor & Francis Group, 2003), 347.

activity. For instance, one of the activities of the project is to install compost bins at project locations. The WBS for this particular activity will be as follows.

Table 5.1: Work breakdown structure

S. No	Activity	Work Breakdown
1	Installation of compost bins	Meeting and consultation with the Resident Welfare Association (RWA) of the project location
		Identification of the location for installing bins
		Site survey for assessing the size and kind of compost bins
		Inviting quotations for compost bins
		Procuring compost bits
		Booking vehicle for transporting the bins to site
		Installation at site
		Training of residents on use of compost bins
		Photo and video documentation

This deconstruction is important to clearly define tasks that are to be conducted as part of the activity. A similar exercise for all of the activities will give a visual of a complete WBS for the project. This becomes a starting point for developing the **responsibility matrix** and **Gantt chart**.

Once the WBS is developed, it is easier to designate work responsibilities to the project team members. This is usually done using a **responsibility matrix**, where the broken-down **tasks are assigned to team members**.¹²⁴

For example, XYZ has received a project on the door-to-door collection of waste from residents of ABC society, constituting one thousand households. XYZ has appointed three team members and a project lead for this particular project. Major activities of the project include collection of dry and wet waste separately, sensitizing residents to source segregation, and coordinating with

¹²⁴ Wren, *The Project Management A-Z*, 253.

the municipal corporation for the disposal of waste. The team leader first broke the activities into smaller tasks and then assigned responsibilities to team members. The responsibility matrix, prepared after the exercise, will look like this.

Table 5.2: Responsibility matrix

S. NO	Responsibility	Person Responsible	
		Primary	Secondary
1	Inception		
1.1	Inception meeting with municipal corporation	TL	TM1
1.2	Desk review of policies	TL	TM1
1.3	Meeting with stakeholders (RWA, residents, etc.)	TL	TM1
1.4	Mapping of informal waste pickers	TL	TM1
1.5	Development of checklist and SOPs for monitoring	TL	TM1
2	Implementation		
2.1	Procurement of dustbins	TM2	TM3
2.2	Arranging transport vehicle	TM3	TM4
2.3	Signing of agreement with informal waste pickers and aggregators	TM1	TM2
2.4	Training of waste collectors	TM2	TM3
2.5	Monitoring of waste and waste collectors	TM2	TM3
2.6	Development of IEC material	TM1	TL
2.7	Coordination with RWA for training sessions	TM3	TM2
2.8	Training sessions for RWA	TM3	TM2
3	Reporting and Documentation	TL	TM1
3.1	Compilation of daily data	TM2	TM3
3.2	Quarterly report	TM1	TM2
3.3	Project presentation	TL	TM1

*TL stands for Team Lead and TM stands for Team Member

Here, two members are assigned for each task included in the matrix. The member assigned with primary responsibility is the lead in undertaking the activities and the person assigned secondary is expected to support the lead. In case of the absence of the lead, the supporting person is accountable for delivery of the activity.

Another important aspect of the implementation phase is to plan how to complete project activities in a timely manner. The project team must be informed about the sequence and timeline of activities, their duration and schedule of implementation. The clarity is important for them to perform the activities on time. For the convenience of the team, a **Gantt chart** is prepared, which **helps in placing the activities in a timeframe**. The project manager carefully plans the activities according to the project proposal and decides a timeline. The timeline must be strictly adhered to while executing the project.

Let us take the example of a project on generating awareness amongst the students of fifty government schools, of Delhi, on waste segregation, in six months. The project activities must be broken down to smaller tasks, as explained in the WBS. Now, the smaller tasks are assigned time duration and deadlines.

Table 5.3: Sample Gantt chart for a six-month project

S. No	Tasks	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1	Planning Phase						
1.1	Inception meeting with sponsors						
1.2	Preparation of project background notes, permission letters, invitation letters, etc.						
1.3	Seeking permission of the Directorate of Education						
1.4	Identification of potential schools						
1.5	School visits and meeting principals						
1.6	Finalization of Schools						
1.7	Preparation of IEC materials and the training module						
1.8	Preparation of pre- and post-assessment forms						
2	Implementation Phase						
2.1	Coordination with schools for workshops						
2.2	Procuring resource material for workshop activities						
2.3	Conducting workshops						
2.4	Follow up of workshops						
3	Reporting and Documentation						
3.1	Quarter progress report						
3.2	Development of knowledge products						
3.3	End of project evaluation (audit)						
3.4	Project completion presentation						

Time intervals taken in the Gantt chart may vary in terms of weeks, months, quarters, and years, according to the duration of project. The above example is suitable for implementing a six-month to one-year project. If the project duration is two or more years, it is better to plan quarterly deadlines. However, micro timelines can be developed for activities in each quarter for clarity of the team members. It should be kept in mind that these timelines are met during the tenure of the project. Regular monitoring of project activities by the team leader can ensure this. In case there is any deviation, the client and relevant stakeholders should be informed of the delay, along with the reasons and alternative steps.

There is lots of software available on the internet that helps in preparing the Gantt chart. However, for a simple Gantt chart, like the one above, Microsoft Excel can also be used.

Similarly, the stakeholder identification exercise, conducted during planning stage, needs to be revisited at this time. Here, **mapping and management of stakeholders** will be done.

For instance, XYZ is about to start a project on upscaling waste to produce decorative items. The manager for the project will conduct a brainstorming meeting with the team members to identify and assess stakeholders of the project. The team together will prepare the following chart that will clearly map out the various stakeholders and their involvement in the project.

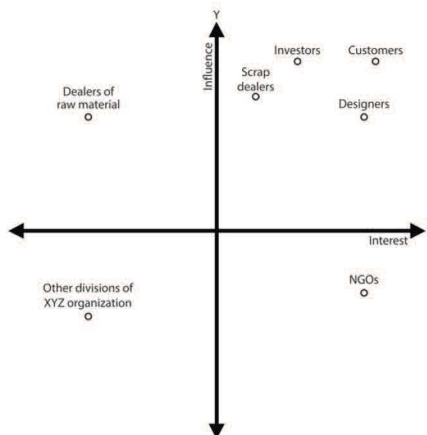


Figure 5.2 Stakeholder mapping

As can be seen, the x-axis represents the level of interest and the y-axis represents the level of influence of the stakeholders. The relevant stakeholders identified for the project's implementation are marked on the graph, according to their level of interest in the project and the influence that they are expected to have on the project. For example, dealers of raw material will have greater influence on a waste upscaling project; however, their interest in this project will be low. Similarly, many other stakeholders can be marked on the matrix. This mapping helps in identifying different types of stakeholders, their interests and influence on project, which can further affect how, and what levels of, communication on the project is maintained with them.

A project communication plan should be developed to chalk out method and frequency of engagement with identified stakeholders, according to their interest and influence level. The clients must be regularly updated about the progress of the project. In case of any deviation to the technical or financial aspect, the relevant stakeholders should be informed and their approval must be obtained. Similarly, communication with other stakeholders, such as government authorities, customers, beneficiaries, rag pickers, waste collectors, designers, etc., as per the nature of project, should be done.

5. Training of human resources

All team members may not have the required capacities and expertise to conduct the activities outlined in the proposal. It is, therefore, crucial that the team members are trained in skills and techniques relevant to the project. Training helps in increasing the knowledge and proficiency of the team for conducting project activities. It is always better to invest time in training the team, rather than experiencing delays and poor performance due to lack of necessary skills and knowledge on the team. Additionally, capacities of the team members can also be enhanced by on-the-job training, where the team members learn different aspects of the project while implementing it under the guidance of other trained team members. On-the-job training is an effective mode of training as it allows for hands-on, practical teaching of team members.

Broadly, training can be categorized into two types—technical and functional. **Technical training** includes imparting subject knowledge and technological skills. Technical training could involve a session, or two, on waste management rules, research methodology, use of equipment, use of computers and tablets for digital data collection, product design, use of machinery, workspace safety, etc. On the other hand, **functional training** may include sessions on team building, communication skills, report writing, monitoring, documentation, ethical conduct, and so on. While technical training brings expertise in the sector, functional training enables the development of a skillset for efficient performance. This training can be imparted at any point, as per the requirement of project, and can be added, accordingly, to the project activities in either the inception or the beginning of the implementation phase of the project.

For instance, in order to conduct a needs assessment survey of rag pickers in a community, using digital tools, team members should first be trained on using the digital devices. The reason for conducting the survey, survey questions, way of recording the responses, detail of the community, etc., should be explained very well to the surveyors. Adding to this, ethical considerations and the protocol for their conduct should be mentioned during the training. Lack of such training could lead to misinformation among rag pickers and collection of poor-quality data, to name a few consequences. Therefore, detailed briefing and training sessions should be conducted to clearly communicate the project objectives, processes and practices to the project team.

6. Operations and maintenance

Operations refers to the implementation of core activities for which the project was planned. In this phase, the project team undertakes project activities, such as door-to-door collection of waste, segregation of waste, awareness sessions, recycling of waste, composting, and product design, according to the project objectives. It is here that the tools of project management, i.e., work breakdown structure, responsibility matrix, stakeholder mapping, Gantt chart, etc., are used. The tasks must be performed on time, within budget and without compromising quality.

There are some projects that require installation of machinery or equipment. In such projects, operations must be complimented with maintenance. It is necessary that the composting bins installed in societies for management of organic waste are regularly checked and cleaned. Similarly, the pulping machine or grinder for the recycling of paper must be greased from time to time for best results. The expenses incurred in the maintenance of equipment are essential and must be included while preparing the financial proposal.

To ensure the smooth flow of the operation and maintenance activities of the project, it is recommended that a standard operating procedure (SOP) is developed for the project at the beginning of the inception phase. These need to be shared and agreed with the client as well to potentially remove any possible bottlenecks during the project implementation. All the project team members, staff and operators should be trained according to these SOPs. There should be regular check-ups of all machinery and equipment by the team leader of project to avoid, or reduce, the risk of any damage or accident.

7. Monitoring and evaluation

Monitoring and evaluation (M&E) is an important tool to assess the performance of any project. Monitoring is an on-going, systematic process in which information regarding project's performance is collected and analyzed. It is used to determine whether the project is going as per the plan and/or whether any changes are required in order to achieve the project objectives. It keeps a track of the project activities and ensures that the activities are implemented on time while maintaining utmost quality. Evaluation, on other hand, measures how well the project activities have been implemented and the extent to which the outcomes and impact of the project can be attributed to the project activities.

Monitoring and evaluation helps program implementers.¹²⁵

¹²⁵ Nina Frankel and Anastasia Gage, *M&E Fundamentals: a Self-guided Mini Course* (MEASURE Evaluation: University of North Carolina at Chapel Hill, 2007), 3, https://www.measureevaluation.org/resources/publications/ms-07-20-en/at_download/document.

- take informed decisions regarding program operations and service delivery;
- ensure that resources are being utilized efficiently;
- evaluate the extent of impact that the project has made;
- identify the gaps in the project and take corrective measures, if need be.

The M&E plan is an important component of the project proposal, and an appropriate budget needs to be allocated for various project monitoring and evaluation activities. The M&E plan should clearly describe the monitoring activities to be conducted as part of the project. Based on the nature and duration of the project, the frequency of the monitoring plan can be proposed, i.e., if the monitoring is to be done weekly, monthly, or quarterly. Additionally, the plan should also include the number of, and types of, evaluation studies to be conducted for the project. For most of the projects, baseline evaluation, to understand the current existing situation in the project area, along with end of the project evaluation, to understand the overall outcome and impacts of the project activities, is proposed. Budget for this should be allocated. In some projects of longer duration, a mid-line evaluation may be proposed to assess the project progress and suggest mid-project course corrections, if need be.

The M&E plan may also describe whether M&E will be conducted internally, by the implementation agency, or by a third party. According to the recent amendment to the Companies Act 2013,¹²⁶ impact assessment (also known as evaluation) by third party has been made mandatory for corporate social responsibility (CSR) projects with an average CSR spend of INR 100 Million or more in the past three financial years, or with a minimum budget of INR 10 Million in the last financial year.¹²⁷

¹²⁶ Ministry of Corporate Affairs, *The Companies Act, 2013* (New Delhi: Gazette of India, Government of India, 29 August 2013), <https://www.mca.gov.in/content/dam/mca/pdf/CompaniesAct2013.pdf>.

¹²⁷ Ministry of Corporate Affairs, *Companies (Corporate Social Responsibility Policy) Amendment Rules, 2021*, Gazette of India, Government of India, 22 January 2021, 16, https://www.mca.gov.in/Ministry/pdf/CSRAmendmentRules_22012021.pdf.

In a M&E exercise, indicators are developed for the objectives and outcomes, using project documents like the letter of association (LoA), project proposal, memorandum of understanding (MoU), etc. Based on these indicators, the tools of M&E are developed. For instance, organization ABC has bagged a project to collect household waste from five wards in a city that has a high occurrence of littering and diseases. The agency is mandated to collect dry waste every day and wet waste twice a week from each household of these wards. It must play the theme song of *Swachh Bharat Abhiyan* in all its collection vehicles so that the residents are aware of its arrival. The collection vehicle should reach the wards between 10 AM and 11 AM.

Now, based on the above project activities and deliverables, the following monitoring indicators can be developed for the project.

- Frequency with which dry waste is collected from the wards
- Frequency with which wet waste is collected from the wards
- Consistency, in days, for collection of wet waste
- Amount of waste collected every day
- Time at which the collection vehicles reach the wards
- Whether the collection vehicles play the theme song
- Percentage of households from which dry waste is collected every day
- Percentage of households from which wet waste is collected twice a week

Additionally, the following evaluation indicators can be developed to evaluate the impact, effectiveness, sustainability, and efficiency of the project, from when it was initiated to the end of the project.

- Percentage change in behaviour of residents in segregating dry and wet waste
- Percentage change in the cleanliness of the wards
- Percentage change in the accumulation of waste in *dhalaos*

Based on these indicators, data collection tools (questionnaires, interview schedule, FGD guidelines) will be developed and data will be collected from different stakeholders, such as residents, RWA members, and municipal corporation authorities.

8. Documentation

Documentation refers to the act of maintaining documents, details and descriptions of the process and activities involved in the project. It is a practice through which work undertaken by the project team can be showcased to the external stakeholders and for the internal learning of the organization. It also helps in maintaining transparency of work and fund utilization. There are different types of documentation practices used in the development sector. In the solid waste management domain, the following practices are extensively used.

- a. *Activity documentation* is generally used in CSR projects where the service provider (i.e., you as an agency implementing the project) must give an account of the activities conducted. This type of documentation is descriptive, where the objects and outcomes of the activities are also mentioned. Here, photos and videos accompany a textual description of activities. Traditionally, formal annual/quarterly reports were prepared for this kind of documentation. However, in today's digital times, updates on social media also provide documentation of activities conducted.
- b. *Financial documentation* is an extremely important type of documentation. All the expenses incurred as part of the project must be accounted for and their respective bills must be submitted. It is advisable for an organization to have a dedicated team member especially for maintaining financial records. These records and documents are required while producing utilization certificate for the client and for auditing purposes.
- c. *Documentation of organizational documents* of the organization, such as the Registration Certificate, AoA / MoA / Trust Deed / Partnership Deed, GST certificate, MoUs with other agencies, empanelment documents, work orders, completion certificates, etc., also needs to be maintained.
- d. *Project specific documentation* is sometimes required. For instance, a project on ensuring the compliance of corporates with respect to EPR would involve documentation for the

entire supply chain of waste, i.e., evidence from the waste collection point to the recycling point. This may include the weighing slip, invoice, e-way bill, transportation invoice, etc. Another example of project-specific documentation is maintaining a record of the amount of dry waste sent to the recycler in a month from a particular city. Thus, this documentation varies according to the requirement of the project.

Module seven of this handbook is dedicated to documentation. For an in-depth understanding, please refer to the same.

9. Communication

Communication, as understood simply, is the passing on of information from one person to another, where the receiver clearly understands what the sender wanted to share. The hoardings that are seen on the roads, advertisements on TV, news in newspapers, nodding of the head to say no, etc., are all examples of communication.

While undertaking a project, two types of communication take place—internal and external. **Internal communication** comprises of sharing information within the organization. This involves communicating the project plan, activities, schedule, etc., within the project team or informing other teams in the organization about a particular project. The tools used for this type of communication are simple and do not require much effort. **External communication**, on the contrary, is the sharing of information outside the organization and with various stakeholders (clients/sponsors, beneficiaries, public, government authorities, etc.). The tools used for this type of communication are many and may vary with the type of stakeholder involved. Some example of external communication tools include project reports, emails, social media platforms, pamphlets, video documentaries, one-to-one meetings, *nukkad natak*, newspaper, radio, telephone, etc. For professionals engaged in the management of solid waste, it is imperative to have expertise in both types of communication.

Communication as a skill and knowledge area is covered in detail in module eight of this handbook.

Some of the steps described in the implementation process continue from the beginning of the project until it ends. The project plan must be revisited throughout the project and revised plans must be developed as the project progresses. This needs to be done in collaboration with and with the agreement of the client. Similarly, communication and documentation must be done along with other activities of the project. M&E activities must be conducted multiple times during the project. Thus, the sequence of steps may change from one project to another. Hence, it is advisable that the organization carves out its own process of implementation.

The success of the implementation phase depends on the following factors.

- Efficiency in mobilizing and managing resources
- Competency of team members
- Timeliness in achievement of deliverables
- Proficiency in managing the stakeholders
- Frequency and quality of monitoring mechanisms
- Extent of deviation from the initial plan
- Effectiveness of communication mediums



Figure 5.3 Factors affecting the implementation phase

The old saying “practice makes perfect” holds completely true in the case of project implementation. The skills and expertise to implement a project by managing the above factors efficiently come with experience. However, an understanding of the steps of the implementation phase, along with an awareness of the success factors, provides a great deal of help to beginners.

MODULE SIX

FINANCIAL MANAGEMENT

Introduction

Financial management is the process through which an organization plans, organizes, controls and manages its financial resources. It includes managing the processes of fund mobilization, its funds, decision-making regarding expenses, controlling excessive expenses, payment mechanisms, risk assessment, preparing financial statements, etc. In short, everything that is even remotely related to money is included under financial management. The first two steps of the process, i.e., planning and organising financial resources, have been dealt with in the previous chapters on proposal development and project implementation. While it is difficult to mobilize funds, an equally challenging task is to efficiently manage the financial resources that are available to the organization to implement a project. These resources can be in the form of CSR funds, grants or the income of the organization. The only difference is the liability of the organization to justify utilization of these resources. In the case of grants and CSR funds, justification must be provided to the client. On the other hand, organizations working on an income model are liable to justify to the government how they are utilizing their financial resources. However, it is vital for all the organizations to keep checks and balances in place on how, where, when, by whom, and how much money is being spent. For a sustainable enterprise, planning, controlling, and managing costs and expenses are of utmost importance. In this module, basic financial systems and procedures will be discussed to equip organizations to manage their finances efficiently.

Importance of Financial Management

The practice of financial management should be followed by all organizations. Organizations may choose to either manage their finances by themselves or

appoint chartered accountants (CA) to do it. Some of the advantages of efficient financial management are discussed below.¹²⁸

- Careful management of finance helps in achieving the objectives of the organization. It helps in ensuring that adequate funds are available for undertaking the activities of the organization.
- Fair financial systems reflect the true picture of the financial condition of the organization. Organizations can aim to improve their financial conditions only when they are aware of where they stand at present.
- Many clients request financial documents, like balance sheets, annual turnover, income and expenditure accounts, etc., to check the financial stability of the organization. Sound financial practices followed by an organization, therefore, attract more investors and funders as they are directly linked to its credibility and capacity.
- It helps in building accountability since the justification of income and expenses is readily available within the organization.
- It helps in developing a rough sketch of mobilization, allocation, and control of funds.
- Transparency in financial systems helps in avoiding frauds and malpractices. It therefore also helps to avoid misuse of resources.

Developing a Financial Policy for Efficient Financial Management

The stepping stone of sound financial management is the development of a financial policy. A financial policy is a document that guides the organization to take decisions regarding fund mobilization, allocation, procurement procedures, investing, and other aspects of financial management. It is generally prepared by the senior management team of an organization, after conducting brainstorming sessions regarding its purpose, structure, procedures, and the roles and responsibilities of different members.¹²⁹ It is imperative to include stakeholders who have clear

¹²⁸ Samina Khushi, "Financial Management Basics for NGOs," *LinkedIn*, January 31, 2017,

<https://www.linkedin.com/pulse/financial-management-basics-ngos-samina-khushi/>.

¹²⁹ Samina Khushi, "Financial Management Basics for NGOs," *LinkedIn*, January 31, 2017,

<https://www.linkedin.com/pulse/financial-management-basics-ngos-samina-khushi/>.

understanding about the vision and scope of the organization and its financial aspects in the discussions on policy.

A financial policy helps in ensuring that

- financial transactions are governed by set systems and procedures,
- and that compliances with authorities are met with regards to financial matters.

Structure of a Financial Policy¹³⁰

- a. The purpose of the policy needs to be mentioned in the beginning of the policy document. It helps the users to understand the scope and perspective of the organization towards financial management.
- b. The principles of the policy should be incorporated. There are seven principles, i.e., consistency, accountability, transparency, viability, oversight, integrity, and accounting standard, suggested for inclusion in the policy document for comprehensive financial management.
- c. The scope of policy and procedures is included.

Components of Financial Management

A practical financial system of an organization is responsible and transparent. It consists of standard rules and procedures for documenting, controlling and maintaining all the aspects that include financial transactions. Some components, which are crucial for efficient financial management in any organization, are mentioned below.¹³¹

- **Funding agreement**

This is the most important document for organizations working with external funds. A funding agreement generally spells out the scope of work, deliverables, its duration and budget. It should also clearly specify the payment schedule in which funds will be transferred to the service provider. The project team, as well the accounting staff, must be aware about the terms and conditions mentioned in the funding agreement. This helps them in raising invoices as soon as deliverables are met. Within the organization, it also helps in figuring out, in advance, the time of and extent of

¹³⁰ Khushi, "Financial Management Basics for NGOs."

¹³¹ Khushi, "Financial Management Basics for NGOs."

expenses that are to be incurred. All this promotes sound financial management.

- **Bank account**

A bank account is an essential mandate for all organizations since most transactions are done through banks. Transfer of salaries, payment to vendors, receipt of payment, etc., are done through bank accounts. Organizations usually operate with a single bank account for different projects, unless otherwise suggested by the sponsor/donor.

Organizations follow specific policies with regards to the operation of bank accounts.

- The signatories to operate the bank account are either defined in the bylaws of the organization or decided with mutual agreement among the members of the governing body of the organization, through pass of resolution.
- In most cases, there is a hierarchy of approval for payment. For instance, an organization may decide that payments up to INR 15,000 will be approved by the finance assistant, up to INR 50,000 by finance manager and beyond INR 50,000 by the director. These guidelines will be applicable for cheques and electronic transfer.
- The signatories to sign cheques, therefore, vary depending upon the amount to be paid.
- All bank transactions need to be managed by the accounts department so that there is no discrepancy.
- The bank transaction statement needs to be updated on regular intervals.

- **Cash handling and transactions**

Along with bank transactions, cash transactions play an important role in the day-to-day operations of the organization. These transactions are incurred in case of minor expenses and unavailability of the banking service. Organizations follow guidelines for managing cash transactions.

It is advisable to assign a single person for handling cash transactions. A single person should have the key to the cash drawer, access to cash receipts and payments. Involvement of two or more hands in managing cash transactions will lead to confusion and chaos in the system. Therefore, a single person is responsible for cash receipts, cash payments and reconciliation of funds, and is liable for any deficit.

The cash book should be maintained for all cash transactions. The cash book is a financial journal in which details of cash receipts, payments, bank deposits and withdrawals are documented. It helps in maintaining records of all cash transactions for future reference. It should be kept in mind that there is no overwriting, cutting or alteration in the cash book. The person responsible for updating and maintaining the cash book should tally it on a monthly basis. Otherwise, there are accounting software available (e.g., Tally, Oracle, SAP, etc.) and accounting through software will be more effective, efficient and transparent.

• **Procurement**

As discussed in module five, organizations should have a separate procurement policy. Procurements are made either on cash or credit basis. In both cases, payments are to be made by cash, cheque or electronic banking. Some essential points to be kept in mind while procuring goods and services are mentioned below.

- Price bids/quotations from at least three vendors should be received or as per the procurement policy of the organization. The vendor quoting the lowest prices with the technical and quality eligibility criteria approved by the project team should be finalized for purchasing goods and services.
- Prices should be finalized and agreed upon mutually by the organization and vendors.
- Commercial terms and conditions, such as payment terms, delivery date, penalty clauses, billing details, taxes, job specification, etc., should be finalized before placement of orders.
- Approval procedures for various levels of order value should be set. For example, an organization may decide that procurement up to INR 50,000 will be approved by the accounts assistant, up to INR 100,000 will be approved by the accounts manager

and beyond INR 100,000 by the director. Such procedures enable smooth financial decision-making and timely approval for procurement.

- Records of all procurements should be maintained.

- **Payment**

Nowadays, most of the transactions are done by cheque or internet banking. Several points should be considered while making payments.

- Payment should be approved by the competent authority designated within the organization.
- Requisition forms should be carefully filed and signed by the competent authority.
- Details of payment, i.e., cheque number / transaction number, date, etc., should be mentioned in the invoice against which payment is made.
- In case of cash payments, acknowledgement of receipt of payment should be done.
- The cash book should be maintained.

- **Deduction/submission of direct/indirect taxes**

The accounts team should have knowledge about all applicable direct/indirect tax and the tax codes of items procured and services taken or offered. Accordingly, the accounts team make payment to the vendor or service provider by verifying the applicable tax details and deducting the applicable tax from the payment, if applicable. The accounts team is also responsible for submitting all tax amounts deducted or received from a vendor or client, respectively, to the revenue department of the government, within the time allowed.

- **Utilization Certificate**

If the organization executes project activities under CSR funds, then all expenses need to be incurred, according to the terms and conditions, or budget approved by the donor, of the CSR funds. A separate account needs to be maintained by the enterprise and that account needs to be audited by either a third-party auditor or the enterprise's chartered accountant. The utilization certificate is a

document issued by the chartered accountant, after a detailed audit of all income and expenses incurred during the execution of the project activities, and this document is also a token of confirmation by the chartered accountant to the donor that funds have been utilized appropriately.

- **Balance sheet and income statement**

An income and expenditure statement presents an account of revenue earned by the organization and expenses incurred during a financial year. It is a statement that reflects the source of funding and income received against project and organizational expenses. A balance sheet, on the other hand, reflects the assets and liabilities of the organization. In the balance sheet, assets are added and liabilities are subtracted to present the net worth of the organization.

Balance sheets and income statements are prepared by the chartered accountant of the organization.

- **Audited annual financial statement**

A financial audit is a mechanism to evaluate the financial transactions and systems of an organization. It assesses whether fair practices and procedures were followed by the organization while conducting its activities. It determines the accuracy and transparency of financial statements. Some donors/clients request a project-specific, audited financial statement to evaluate the expenses incurred by the organization on their project.

A financial audit is undertaken by an auditor, usually an external, who is an independent agency/individual with expertise and certification in accounting. The auditor should not be a relative or closely associated with the activities of the organization. Some organizations also carry out internal audits to make sure that fair processes and practices are in place.

Some of the documents that are essential for financial audit are mentioned below.¹³²

¹³² Theunis Keulder and Erika Benz, *A Practical Guide to Financial Management of NGOs* (Windhoek, Namibia: Namibia Institute of Democracy, 2011), 16–17,

- a copy of the organization's constitution (bye laws)
- copies of contracts, agreements, or letters setting out the conditions of grants, donations or other income received for specific purposes
- copies of budgets for on-going work or special projects
- copies of grant application forms
- copies of the minutes of board meetings
- income and expenditure analysis records
- supporting documentation for income
- receipt books if receipts for money received are issued
- petty cash analysis records
- supporting documentation for petty cash records
- copies of quotations received from vendors
- copies of invoices received from vendors
- bank statements for the year
- bank reconciliations for the year
- cheque stubs (counterfoils) for all cheque books used during the year, and the one currently in use, if it was used for the year under audit
- cheques returned to the organization by the bank once they have been cleared
- all deposit book records
- a list of creditors (everyone to whom the organization owed money) at the end of the financial year
- a list of debtors (everyone by whom the organization was owed money) at the end of the financial year
- a list of creditors and debtors from the end of the previous financial year
- records of statutory payments made, particularly on staff salaries
- details of all assets

Along with evaluation, auditors also guide the organizations on improving their financial management practices. At the end of the audit, the auditor provides a letter to the management with a complete report of the audit and their recommendations. The management is supposed to accept that letter and make sure that the suggestions are incorporated by the organization.

https://www.nid.org.na/images/pdf/ngo_management_training/Practical_Guide_to_the_Financial_Management_of_NGOs.pdf

Roles and Responsibilities

Financial management is a team effort. Board members, the governing body, senior management, and finance staff play a major role in the development and implementation of the policy. The board members are legally accountable and responsible for the financial systems of the organization. They should ensure that standard policies and procedures are developed, with reference to financial transactions of the organization.

Finance staff, in particular, oversee that the policy is followed by employees of the organization on a day-to-day basis. They clear payments, transfer salaries, collect bills/vouchers, prepare bills, etc., and make sure that fair practices are followed. For instance, in a case where composters are procured for a project, finance staff will check whether quotations were obtained from at least three vendors and that the one who quoted the least was selected.

For efficient financial management, it is essential to follow the strategy of **plan-do-review (P-D-R)**.¹³³ Once proper planning is done for mobilizing and utilizing the financial resources, it becomes easier to implement financial policy. While following / working to the financial policy, it is advisable to regularly review it to identify gaps and make amends. The gaps should be filled when the organization starts planning for financial resources again. This cycle should be repeated to arrive at best practices.

Best practices in financial management ensure the growth and development of the organization. They build a strong foundation for the financial stability of the organization. An organization can achieve its objectives, can plan for future activities, can organize the required resources and can develop standard mechanisms for its management, only when it is aware of its financial situation. At the same time, it must be confident that its financial dealings are transparent, fair and honest.

¹³³ Management Accounting for Non-governmental Organizations, *Financial Management Essentials: a Handbook for NGOs* (Oxford: Mango, 2013), 6, https://cuts-cart.org/pdf/Financial_management_handbook_for_NGOs.pdf

MODULE SEVEN

DOCUMENTATION

Introduction

In previous chapters of this handbook, we have learnt about proposal development, its execution, and financial management. This chapter refers to the need for documentation in the organization and for the project. Documentation refers to the process of collecting, recording and presenting information to use as a reference in various purposes. In an organization, the information may range from the date of its incorporation to the date of the last annual general body meeting, from its GST number to the number of people that it has reached out to, from making sure that its employees are treated with dignity to making sure that the environment is not harmed in any way through its working, and so on. These are just examples of the kind of information that the organization may want to collect, collate, record and present. Some of the information is recorded by the organization itself while other information is collected in the form of certificates and documents by the authorities concerned. Documentation is an essential and a critical activity for an organization. It has multiple benefits and uses. It can be used to scale up the organization or to replicate any project, or to demonstrate organization/project growth over a period of time, or to analyze the failure/success of the project, or to train existing staff / new staff, and so on. This chapter will point out various documents that are vital to an organization for its functioning.

Types of Documentation

There are, broadly, three types of documentation required by an organization.

1. Statutory compliance-related documentation
2. Regulatory compliance-related documentation
3. General documentation

Statutory compliance-related documentation

Statutory compliance is the pre-defined legal framework under which an organization must function. Some of the major documents that are required to fulfil statutory compliance, with regards to the solid waste management sector, are listed below:

a. The organization's registration certificate

This document proves that the organization has been legally established, in accordance with the laws of the country. This is the most important document and is required at every stage during the lifetime of the organization. This document is given by the company/society registrar's office of the government.

b. PAN card

Permanent Account Number (PAN) is a unique, ten-digit alphanumeric code issued by the income tax department to Indian taxpayers. The department records all tax-related transactions and information of an individual against their unique PAN. This allows the tax worker to link all tax-related activities within the department. The PAN primarily acts as a database for all individual transactions, such as the tax collected at source (TCS), tax deducted at source (TDS) credits, income tax payments, return on gift/investments/wealth, etc.

c. GST registration

GST is an indirect tax which has replaced many indirect taxes in India, such as the excise duty, value added tax (VAT), services tax, etc. In other words, GST is levied on the supply of goods and services. GST is a single domestic indirect tax law for the entire country.¹³⁴

Under the GST regime, the tax is levied at every point of sale. In the case of intra-state sales, central GST and state GST are charged. All inter-state sales are chargeable to the integrated GST.

Taxes are levied in the following stages of the supply chain.

¹³⁴ Ministry of Law and Justice, *The Central Goods and Services Tax Act, 2017*, Gazette of India, Government of India, 12 April 2017, <https://www.cbic.gov.in/resources/htdocs-cbec/gst/cgst-act.pdf>.

- Purchase of waste material
- Production or manufacturing of recycled products
- Trading of waste commodities
- Selling of recycled products to consumers
- Sale of the recycled products to distributors/retailers
- Provide service for waste collection, EPR, destruction, dismantling, and transportation of waste

d. Certificate of Consent to Establishment

If the organization is involved, or proposes to be involved, in an activity that may cause water or air pollution, then it is mandatory to get the consent to establishment from the concerned authority (SPCB/PCC), before starting the project and related activities. The proposed activities may involve the manufacturing of goods, dismantling of goods, handling of hazardous waste, processing or recycling of waste, or handling and treatment of biomedical waste and construction waste.

e. *Vyapar Aadhar / Udhyog Aadhar Card*

If the organization is setting up any manufacturing, processing, recycling or dismantling unit, it is mandatory to get the Vyapar Adhar/Udhyog Adhar Card/Number. This number is necessary to get a permission, or no objection, certificate from various other departments, like the electricity supply department, water supply department, income tax department, etc., to operate the unit.

f. Certificate of Consent to Operate (air and water)

After attaining the consent to establish a facility, it is imperative to seek consent to operate for water as well as for air from the concerned authority (SPCB/PCC). Without this consent, the organization is not supposed to start the operation and sale of its products. Through the Certificate of Consent, the organization is also making the commitment that its manufacturing or recycling unit will not cause any harm to the environment and that it will take necessary actions to control the air and water pollution that may be caused due to its activities.

g. Certificate of registration under the Plastic Waste Management Rules 2016

In case the organization is working in the domain of recycling of plastic waste, it is mandatory to register under rule thirteen of the Plastic Waste Management Rules 2016. The procedure and requirement for documents are mentioned in the act itself.

h. Income tax return (Annual)

Whether the organization is making a profit, incurring loss or having zero transactions, either in the initial stage of formation or during a particular financial period due to unavoidable circumstances, it is mandatory to submit the annual income tax return to the income tax department of the GOI. The organization may appoint a chartered accountant or qualified accountant to do this activity without any errors.

i. Certificate of the Foreign Contribution Regulation Act 2010 (FCRA) return

If the organization is keen to receive foreign contributions, then it is required to be registered under FCRA.¹³⁵ On receiving any foreign contribution, the organization is expected to file an annual FCRA return to acknowledge and account for the money it has received. Also, the organization, after getting FCRA registration from the Ministry of External Affairs, and after receiving foreign funds to carry out non-political activities, is required to open a separate bank account under FCRA regulation.

j. Certificate of GST returns

This document/process is an essential requisite for organizations registered under the GST act. As per the provisions of the act, the organization is required to file GST returns monthly, if the turnover of the organization is more than INR 50 Million. For organizations having a turnover of less than INR 50 Million, GST returns are to be filed quarterly.

k. Certificate of TDS return

Organizations that do tax deducted at source (TDS) for their payments to employees/consultants and vendors/contractors are

¹³⁵ Ministry of Law and Justice, *The Foreign Contribution (Regulation) Act, 2010*, Gazette of India, Government of India, 26 September 2010, https://fcraonline.nic.in/home/PDF_Doc/FC-RegulationAct-2010-C.pdf.

required to submit returns quarterly to the income tax department. This is an essential compliance-related document in India.

l. Certificate of registration under the Employee's Provident Fund (EPF) Act 1952

The EPF Act¹³⁶ necessitates that organizations with ten or more employees should register under the act. EPF is a social security net for employees where an equal amount of an employee's salary (usually 12%) is contributed by the employer and the employee every month. The organization should deposit the EPF amount on a monthly basis and fulfill all statutory obligations of the act.

m. Certificate of registration under the Employee State Insurance Act (ESI) 1948

Organizations with ten or more employees are required to register under the Employee State Insurance Act 1948.¹³⁷ The organizations registered under this act are required to deposit an amount of money for the insurance of some of its employees/workers. The employees or workers whose monthly wages are equal to or less than INR 21,000 are covered under this act.

n. Annual returns for air/water/plastic waste

The SPCBs and PCCs have their own format to submit annual returns against the consent to operate (CTO) air and water, and plastic waste management (PWM) certificate issued to the organization. If the organization fails to submit annual returns to their respective SPCB/PCC, then the SPCB/PCC may cancel or terminate the CTO issued to organization to operate the facility.

Regulatory compliance-related documentation

Regulatory compliance is the adherence to a set of guidelines by an organization in accordance with the law of the land. Some compliances are common to all organizations across the sectors, while some are specific to

¹³⁶ Ministry of Labour and Employment. *The Employees' Provident Funds and Miscellaneous Provisions Act, 1952*, Gazette of India, Government of India, 4 March 1952,

https://www.epfindia.gov.in/site_docs/PDFs/Downloads_PDFs/EPFAct1952.pdf.

¹³⁷ Ministry Of Labour and Employment, *The Employees' State Insurance Act, 1948*, Gazette of India, Government of India, 19 April, 1948,

<https://www.esic.nic.in/attachments/actfile/ae036213fec2e5ca97e2c9314a1fc9e9.pdf>.

working in a particular sector. In this chapter, most of the regulatory compliance-related documents are discussed.

a) Human resource (HR) policy

This document provides the framework in which human resources will be treated in an organization. It lays down the guidelines for the recruitment of employees/staff, their orientation, capacity building, and training. It also states the organizational structure and the reporting hierarchy. It clearly spells out the policy related to leavers and other entitlements of the employees. The standard of behaviour accepted and encouraged in the organization is also mentioned in this policy.

b) Performance appraisal policy

This document clearly states the mechanism followed by an organization for the performance appraisal of its employees. The frequency of appraisals, procedure and appraising authority for different levels of organizational structure are mentioned in this policy.

c) Child labor prevention policy

This policy of the organization affirms that no children under the age prescribed under law are hired as employees/laborers. The organization's policy should comply with the Child Labor (Prohibition and Regulation) Amendment Act 2016.¹³⁸

d) Sexual harassment policy

The organization has to be a safe place for women. The place of working, working conditions and behavior of other employees towards women employees should be fair. All organizations need to comply with the provisions of the Sexual Harassment of Women at Workplace Act 2013,¹³⁹ and develop a sexual harassment policy

¹³⁸ Ministry of Law and Justice, *The Child Labour (Prohibition and Regulation) Amendment Act, 2016*, Gazette of India, Government of India, 29 July 2016, https://labour.gov.in/sites/default/files/THE%20CHILD%20LABOUR%20%28PROHIBITION%20AND%20REGULATION%29%20AMENDMENT%20ACT%20C%202016_0.pdf<https://labour.gov.in/whatsnew/child-labour-prohibition-and-regulation-amendment-act-2016>.

¹³⁹ Ministry of Women and Child Development, *The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013*, Gazette of India, Government of India, 9 December 2013,

for their organization. The act provides guidelines for the formation of the internal complaints committee at the organization level for redressal of grievances of women employees.

e) Covid-19 policy

Considering the pandemic situation, this policy has become extremely important for the day-to-day operations of the organization. This policy states the guidelines for practices and procedures to be followed by employees, while working since the outbreak of Covid. It is advisable for organizations to develop policies and protocols for operations during these times.

f) Travel policy

This policy states the rules and regulations to be followed while planning, booking and undertaking travel for official purposes. A comprehensive travel policy would involve guidelines for both domestic and international travel. It includes information and guidelines for the booking procedure, approval mechanism, reimbursement mechanism, allowed cost of travel, and permitted and non-permitted expenses during travel. It also has provisions for special exceptions based on project requirements and demands.

g) Occupational health, safety and environment policy

This policy states the commitment of an organization to provide safe and healthy working conditions for its employees. It is important to identify the risks associated with the operations of the organization and to develop protocols to avoid any damage to humans or property. This policy also indicates that the organization is determined to avoid any activity that may have adverse impacts of the environment.

h) Procurement policy

This policy outlines the standards and guidelines for taking decisions regarding the purchase of goods and services. Details of procedures for procurement, approving authority, mode of payment, terms and conditions of purchase, etc., are mentioned in this document. It is essential for enabling employees to follow uniform steps while undertaking procurement and maintaining transparency.

i) Human rights policy

This policy states the commitment of the organization to respect human rights and treat its employees with dignity. This policy is generally developed keeping in mind international human rights frameworks and standards. Organizations are expected to remain unbiased with reference to the caste, class, ethnicity and gender of its employees.

j) Record retention policy

Every organization must make a decision regarding the upkeep and maintenance of records and documents. This policy helps in making a conscious effort to determine the tenure and procedure for retaining the records of the organization. Ideally, records are retained for at least seven years in the organization.

k) Employee rehiring policy

There are times when an employee leaves the organization for personal or professional reasons. There are also times when they want to come back and work for the same organization again. This policy helps in bringing clarity on the conditions and reasons of resignation that will be considered for the rehiring of ex-employees.

l) Business ethics and code of conduct policy

Organizations are expected to lay down rules and codes under which they will conduct their operations. This policy states that the organization follows fair, transparent and ethical practices while working.

m) Land rights policy

Use of land is inevitable for all organizations. They should make sure that the property/land used for the purposes of their operations is not disputed or illegal. This policy states the compliance of organizations with the laws governing land rights.

General documentation

This category of documentation includes other documents that are required to be maintained by an organization for its efficient functioning. It involves reports and minutes of meetings that help in either portraying the work of

the organization or in taking decisions for its future operations. Some of the important documents are mentioned below.

a. Annual report

This is a comprehensive document that is prepared by an organization, describing the activities it has undertaken during the year. This is an important document for disseminating information about the work of the organization to its stakeholders and other interested entities.

b. Minutes of executive and annual general board meeting (AGM)

Organizations hold general body meetings every year, where the work undertaken by the organization, and its future plans, are shared with the board members / shareholders. The rules governing the AGM vary according to the laws under which the entity is registered. It is essential to document the points discussed and suggestions received from the members of the meeting. The minutes should include the date, time, names of members present, points of discussion, action points, etc. The minutes are also circulated with the members. Minutes of the AGM become important documents in case of any dispute/confusion regarding a decision.

c. Project report

Project reports are the documents that showcase the work undertaken by an organization in a particular project. Project reports can be prepared monthly, quarterly, bi-annually or annually—the frequency of reporting is mutually decided by the organization and the clients before starting the project. A project report or project progress report helps in accessing the amount of work completed. It also helps in identifying discrepancy in terms of implementation of project proposal, if any. Mostly, they help in documenting the work of the organization.

d. Project-specific documents

Some projects require organizations to maintain records/documents that are specific to the activities undertaken. For instance, forms B and C are to be maintained by organizations while working on CSR projects. Project-specific documents vary according to the nature of the project and activity undertaken by the organization.

The documents mentioned above are important for efficient and effective working of an enterprise in the field of solid waste management.

MODULE EIGHT

COMMUNICATION

Introduction

Communication is a process of exchanging information from one person to the other. It is a two-way process where the recipient completes the loop by responding, ensuring that the message has been correctly received. There are two ways in which people communicate—verbally and non-verbally. **Verbal communication** is where words are used to communicate the message. Words can be spoken or written. On the other hand, **non-verbal communication** includes actions, body language, gestures or signs to communicate the message. Both types of communication have their advantages and disadvantages and their appropriate use can strengthen the impact of communication.

At an organizational level, communication means sharing information with internal and external stakeholders, and making sure that the information is received correctly by the recipient. Here, recipients may include team members, members of other divisions, clients, beneficiaries, or people at large. Both verbal and non-verbal communications hold prime importance when communicating at this level. Verbal communication can be done in the form of reports, posters, banners, street plays, pamphlets, etc. Use of pictures, hand gestures and body language while talking or listening to someone is an example of non-verbal communication. It is often advised to combine both these types of communication to maximize impact. For instance, the use of pictures in a project report helps the clients to develop a visual scenario of what is written. Similarly, while interacting with young school students during an awareness session on e-waste management, a smiling face works better than a face with no expression. The aim should be to match the right words with right visuals/gestures.

Communicating the right message and communicating it right are two very important aspects of communication. There have been multiple instances where strong communication has helped in building the credibility of an organization. For example, Nike came into limelight as a sustainability

organization after its advertisement on using recycled ocean plastic waste to make its products. Conversely, sometimes poor communication also leads to negative consequences. For instance, a simple miscommunication regarding the date and time of meeting can cause of a lot of inconvenience among attendees. It may even lead to a loss of opportunity. Hence, communication as a tool needs to be used very carefully and strategically by organizations.

Methods and Tools of Communication

The method of communication is the way by which communication takes place—the way in which people and organizations reach out to others. There are basically two widely used methods, **mass communication** and **interpersonal communication (IPC)**. In mass communication, the message is meant to reach a large number of people. On the contrary, IPC has a personal touch and reaches out to a limited number of people. **Tools of communication** are the medium through which the message reaches the audience. Television, radio, loudspeakers, posters, videos, social media, etc., are all examples of the tools of communication.

Mass communication	Interpersonal communication
When information is to be disseminated to a large number of scattered people.	When information is to be disseminated individually to people, this method of communication happens between two or more people.
<input type="checkbox"/> Radio, website, hoarding, documentary, newspaper, newsletters, loud speaker, television, social media, etc, are some of the tools used.	<input type="checkbox"/> One-to-one session, door-to-door sharing of information, presentation to clients, telephone, pamphlets, street play, wall painting, posters, brochure, in-person meetings, reports, etc, are some of the tools used.

Figure 8.1 Methods of communication

The methods used by an organization to connect with its stakeholders are based on the objective of the project. If the objective of the project is to raise the awareness of people at large on refusing single use plastic, it may opt for a mass-communication method that reaches a larger audience. However, if it aims to raise awareness of people living in a residential society, it may use methods that will target a definite number of people who are the residents. Similarly, the methods for sharing information about the progress of a project with the client and general public will vary.

An organization must be very careful in selecting the relevant method of communication. It may use a single method or a combination of both, depending upon the purpose of communication and the needs of the project. For instance, the city of Indore used both methods to tackle the issue of waste management and has been successful in maintaining the top position in the *Swachhta Sarvekshan* for the last few years. The authorities placed hoardings, message boards, banners, and wall paintings all over the city to give out the message that the city should be litter free. At the same time, students, teachers, community members, waste collectors, rag pickers, NGOs, etc., were also approached directly through workshops, street plays, social media, and posters, which are tools of inter-personal communication.

The tools of communication for each of the methods are generally different. Even within the same bracket, careful selection of tools needs to be done. For instance, a street play is a better way to communicate with people living in communities, while one-to-one meetings are a more suitable option for communicating with clients. For people with internet access, social media is a better tool to communicate than newspapers. While for reaching people who do not have access to the internet, radio and television are the most appropriate tool.

Some examples of appropriate use of tools

Case 1: Communication about the organization

Tools: Website, radio, television, newspaper, seminars, conferences, and social media

Case 2: Door-to-door collection of waste

Tools: Posters, messaging, special app developed by the organization, social media, and loudspeakers

Case 3: Awareness on source segregation of waste

Tools: Posters, messaging, special app developed by the organization, social media, wall paintings, street play, and pamphlets

Case 4: Communication regarding finished recycled products

Tools: social media, email, exhibition and display, website, and online portals

Box 8.1: Examples of appropriate use of tools for communication

Communication Plan

There are essentially two types of messages that an organization sends out to its stakeholders. The first is with regards to the project(s) undertaken by the organization, independently or in association with other clients. The second is about the organization itself. Project presentations, reports, posters, wall paintings, street plays, meeting minutes, etc., are the tools used to communicate, with regards to the project, with the stakeholders. On the other hand, use of the logo in project material, visiting cards, newspaper articles, staff, etc., helps to communicate about the organization itself.

For efficient dissemination of messages and information, an organization is advised to develop separate communication plans for itself and for its projects at the onset of each project. A communication plan details the following.

- What does the organization wish to achieve through communication?
- Who will be the target audience?
- What are the strategies (both methods and tools to be used for communication) that the organization will follow to communicate with the target audience?
- At what time will the organization communicate with the audience?
- How will the organization evaluate the effectiveness of the communication plan?

The above-mentioned points can also be summarized as the **MAST** approach,¹⁴⁰ which is often considered when communicating with the target population.

- **Message:** The most important ingredient in any kind of communication is the message that needs to be shared. The message should be clear, concise and correct. It should also consider the cultural, social, class, and geographical context. A lot of attempts to communicate effectively fail because the message is not clearly developed. For instance, a message to urge people to stop littering the public places reads, “Save Your Mother Earth, Do Not Pollute The Environment.”

¹⁴⁰ Richard Sayers, *Principles of Awareness-raising for Information Literacy: a Case Study* (Thailand: UNESCO Bangkok, 2006), 16, <http://www.unesco.org/new/en/communication-and-information/resources/publications-and-communication-materials/publications/full-list/principles-of-awareness-raising-for-information-literacy-a-case-study/>.

This message is not clearly communicating the message. Instead of this, the message that reads, “Use Dustbins, Do Not Litter,” will be more effective. Similarly, for all the information that needs to be communicated, the message should be carefully and objectively developed.

- **Audience:** Another essential point is to understand the audience to which the message must be communicated. One should be aware about the age, gender, socio-cultural background, language, level of access to technology, literacy level, motivating factors, etc., of the target population. This helps in selecting the ways in which the message can be shared. For instance, for raising awareness among women in villages, posters should be put up in *anganwadis*, water outlets, hospitals, dispensaries, schools, etc. These are the places that women regularly visit. Similarly, text should be included in the poster, in case the audience can read. For an audience that does not read, the message in the poster should be conveyed through visuals and graphics. Hence, understanding of the audience helps in taking decisions regarding the placement of posters and their content.
- **Strategy:** Once the message is ready and the organization has researched the target population, it is important to brainstorm the techniques and ways in which the information (or message) can be shared. For instance, to instil the habit of using safety kits among waste collectors, an organization may conduct training on the harmful impact of waste on their health and distribute safety kits. At the same time, it may develop posters with pictures of waste workers wearing gloves, caps and masks. This may reiterate the message that the organization wants to give to the waste workers, who might not be educated to read or to visit its social media pages. However, to communicate the harmful impact of waste among college students, workshops and social media updates give the best results.
- **Timing:** The time that the information is communicated is also of critical importance, since appropriate action can be taken only when the information reaches the target population at the correct time. For instance, late submission of quarterly reports to the client may lead to a delay in important decisions that are dependent on the report. Similarly, sharing content on social media regarding a plastic waste collection week only one day in advance may not bring desired results, since the target population may not be ready to give away its

plastic waste. A communication campaign for behavioural change, therefore, needs to start at least two to three weeks in advance. Therefore, timing is very crucial to successfully communicate the information.

A clear understanding of the message that needs to be disseminated, the target audience and the strategy that needs to be developed for communicating this message helps in developing communication material that is used to share the information/message. **Communication material** is the product that is developed by the organization to communicate with the stakeholders. The content of the communication material depends on the objectives of the project and, accordingly, the tools of communication selected by the organization. For instance, the content for a pamphlet will be different from that of a street play, even though they both help in generating awareness among people.

Preparing Communication Material and Using Tools of Communication

Listed below are some effective techniques and points to keep in mind while attempting to communicate the necessary content and information to different stakeholders, using various tools and material. These are general tips that can help an organization to effectively communicate with the audience.

a) Posters, pamphlets, hoardings, wall painting

- The target population/audience needs to be kept in mind while designing the material.
- Precise, relevant and correct messages should be developed.
- Avoid using negative messages.
- Use language that is acceptable to all people included in the target group.
- Use words and phrases that are familiar to the target population.
- The material should be culture, religion and gender sensitive.
- Quote reliable sources if you are including any factual information.
- The font should be selected, while keeping in mind its legibility.
- Include signs/pictures/clipart wherever possible. The visuals should correspond with the content of the material.
- The logo of the organization and/or client should be visible on the material.

- There should be a mention of a contact point, in case people need more details or any clarification. This could be a website link, email id and, in some cases, telephone number.
- The most appropriate tool for disseminating information should be selected.
- The material should be visually appealing and easy to comprehend.

b) Television ads, project videos, documentary, jingles, radio announcements

- A message that can be easily understood by the majority of the target audience and stakeholders should be included.
- Precise, relevant and correct messages should be shared.
- The message should be interesting and catchy so that the audience are attracted to it and it remains with them for a long time (a higher recall value is there).
- Use language that is acceptable to all people across social, cultural, gender, religious, class/caste groups included in the target population.
- Subtitles should be added in a second language to reach out to a greater number of people
- The name of the organization and client should be included when developing material. For visuals, the logo of the organization should be present on the screen.
- Towards the end, contact information should be given in case the audience needs more information or any additional clarification.

c) Organizational logo

- The logo should be carefully designed to depict the name and vision of the organization.
- The organization should get its logo copyrighted.
- Guidelines should be developed on the use of the logo by the organization. Guidelines should include details about the colour of logo, its placement, and the approval mechanism on its use.
- The logo should be placed on every communication material of the organization
- Ideally, colours used in the logo should only be used in the communication material

d) Social media pages and website

Website

- Every organization should have its own website and presence on at least two social media platforms.
- Information about the organization, its activities, partners, team members, and contact details should be available on the website.
- Relevant key words should be identified and added in the keywords section of the website, to increase its outreach.
- The information should be regularly updated and the latest stories of success should be added on a regular basis.

Social media

- Pictures and/or videos of activities and events with a brief description should be posted on a regular basis.
- The material should be creatively developed to attract the audience.
- As a rule of thumb, one post per day should be done on social media (LinkedIn, Facebook, Twitter, Instagram) so that regular engagement with audience can be maintained.
- For enhancing engagement, participatory activities, such as a quiz, poll, and discussion on recent developments of the sector, can be planned on social media by the organization.
- Hashtags should be used wherever possible to maximize outreach.

Myths and Facts about Effective Communication

There are many myths in the development sector regarding communication. There is a need to demystify these myths and do away with the stereotypes. In the section below, some myths and their corresponding facts are mentioned for the knowledge of the readers.

Table 8.1: Some myths and facts about effective communication

S. No	Myth	Fact
1	A person who can communicate in English language is a good communicator.	A good communicator is the one who can share the message correctly with the audience, no matter in which language.
2	A person who speaks Hindi language needs to improve their communication skills.	If the audience understands Hindi and the person can successfully share the message, it is sufficient.
3	A lengthy report is a better report.	A report that shares relevant information precisely and succinctly is an effective report.
4	A message sent is a message received.	One should always check whether the content of the message has been correctly received. There should not be any assumptions.
5	Communication skills are a gift.	Communication skills are a learned skill and can be developed with appropriate training.
6	Short sentences show lack of writing skills.	It is better not to complicate writing by merging sentences just for the sake of it.

Basic concepts of communication have been discussed in this module. Some useful tips for developing communication material have also been shared. However, mastering the field takes some time. The service providers need to understand their audience and develop their communication plan accordingly. The skill of communication is gradually acquired with practice and experience. Always remember, “communication works for those who work at it.”

APPENDICES

Appendix A: SWOT Analysis for Working in Waste Management

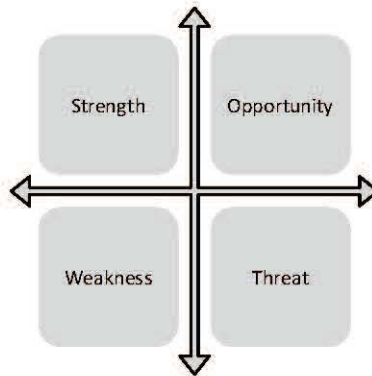
Introduction

“SWOT Analysis is a simple but powerful tool for sizing up an enterprise’s resource capabilities and deficiencies, its market opportunities, and the external threats to its future.”¹⁴¹ It is used by individuals, groups, teams and enterprises to assess their current capabilities and faults, and to gauge the factors that might affect their functioning, positively or negatively. SWOT stands for ‘Strength,’ ‘Weakness,’ ‘Opportunity’ and ‘Threat.’ It is an internal assessment tool that consists of four elements; strengths and weaknesses are internal elements that are within the reach and control of individuals and enterprises, while opportunities and threats are external factors that can’t be controlled by them. It is used in enterprises for strategic development and management. The analysis is conducted in a two-by-two matrix, shown in Apx_Figure 1.

There is no ideal time for conducting a SWOT Analysis. Enterprises that are in their inception period or those that have survived for twenty years can undertake this analysis to improve their efficiency and effectiveness. There is a lot that can be learnt from one’s own decisions and mistakes. In this ever-dynamic socioeconomic and environmental ecosystem, development in policies and technology can lead to a lot of change. The enterprise then needs to re-evaluate its capacities and capabilities to take on the new developments. However, it is most important for start-ups and entrepreneurs to evaluate themselves since they are planning to enter a field that is new to them. An in-depth exploration of the skills and expertise that are required to work in the sector, and its offerings in terms of potential areas of work, can

¹⁴¹ Arthur Thompson, Alonzo J. Strickland, and John Gamble, *Crafting and Executing Strategy-Concepts and Cases*, 15th Edition (New York, USA: McGraw-Hill Irwin Publisher, 2007), 97.

never go to waste. Similarly, an examination of required skills against available skills and expertise is always fruitful.



Apx_Figure 1 SWOT Analysis

Advantages of SWOT Analysis

SWOT Analysis is a brainstorming exercise that is suggested to be undertaken by individuals planning their start-ups, budding entrepreneurs, and organizations aiming for growth. It helps entrepreneurs and organizations in understanding their existing position in the waste management sector and highlights the skills and factors that need to be worked on. Once they identify the strengths, weaknesses, opportunities and threats of their own self, their enterprise and the sector, they are in a better position to make informed decisions regarding the future. Awareness of one's strengths boosts confidence and helps in further improving them. Knowledge of weaknesses helps in identifying the areas and skills that need to be converted into strengths. An understanding of opportunities helps in planning future actions and activities in the right direction. Lastly, being mindful of threats that might affect the enterprise helps in mitigating and managing the risks in advance.

In short, SWOT Analysis allows maximising strengths, overcoming weaknesses, decreasing threats, and taking advantage of opportunities. It has the potential to provide important data for the development of sound organizational strategy.

Steps to Conduct SWOT Analysis

As discussed above, SWOT Analysis has four components—Strengths, Weaknesses, Opportunities and Threats. These components cover almost all aspects that are involved in decision making and strategic planning. The process of identifying SWOTs is simple; however, mere identification is not enough. The points jotted down in different sections of the SWOT Analysis matrix have to be wisely discussed and analyzed. Subsequent actions need to be taken on the basis of this analysis. Failing to do so would defeat the purpose of the analysis.

The step-by-step process of conducting SWOT Analysis is explained below.

Step 1: Bring the team together

The first step is to bring the people who will be involved in conducting the SWOT Analysis. For start-ups, entrepreneurs should sit with sector experts who can guide them, specifically, through the opportunities available in the domain and potential threats that they can entail. For existing enterprises, management and senior team members can be involved in conducting the analysis.

Step 2: Prepare the structure

Take a piece of paper and draw a matrix with four equal quarters, like the one shown in Apx_Figure 1. The following should be labelled in each section: Strengths, Weaknesses, Opportunities, and Threats. Alternatively, a table with two columns and four rows will also work; each row will have a component of SWOT Analysis and a column for writing responses.

Step 3: Brainstorm strength and weakness

Discuss your **strengths**, anything you do correctly, or what other people consider your strengths, within your group or team. List everything that you possess that can be helpful for the enterprise. Be realistic, not humble. Similarly, ask questions related to your weak points. Delve into situations where you had to take hard decisions because of lack of resources, skills, knowledge, etc. For this particular section, be your own/enterprise's critic. It's best to be realistic now and see hard truths as quickly as possible.

Step 4: Contemplate the prospects

Once you have identified your / your organization's strengths and weaknesses, start deliberating the prospects that are offered by the sector. List all of the problems that are part of the sector and how your enterprise can provide a solution to them. Write names of individuals, enterprises, and government agencies working in similar ecosystems, and if there are potential chances for collaboration.

Step 5: Anticipate threat

Now, move one step ahead and think of possible risks that might impact your operations. These could be related to a change in policy, technology, style of working, change in leadership, etc. Jot down all the threats that you can think of. Be futuristic and wisely anticipate all potential threats.

Step 6: Utilize the information and conduct in-depth analysis

Now, you have all the information relevant to your organization and external forces that might affect your work. Have a detailed discussion on how to convert your weaknesses into strengths, further intensity and cash on the strengths, grab opportunities with timely action and decision making, and be prepared for unforeseen events. This step will lead to planning for a future course of action. Make sure that the action points are feasible and achievable. Give timelines to all the action points and assign responsibilities.

Step 7: Conduct a follow-up meeting

SWOT Analysis is useful only when proactive measures are taken on the basis of information gathered during the exercise. Decide a timeframe and organize a follow-up meeting to track the progress made so far regarding the decided course of action.

It is advisable for organizations to adopt the practice of conducting SWOT Analysis at regular intervals, possibly every alternate year.

Examples of Elements of SWOT Analysis from Waste Management Start-ups and Organizations¹⁴²

STRENGTHS

- The organization's geographic presence in many locations may be a big asset. It determines the business's reach and accessibility to the target market.
- A broad product selection can help an organization gain new customers and balance losses from one product category with gains from another.
- Effective social media management may increase the impact of good e-WOM and build strong customer connections.
- A healthy and strong financial situation allows for more investment.
- Having access to low-cost raw material sources can increase overall business efficiency.
- A locational advantage can improve a firm's competitive stance by lowering costs, increasing accessibility, or improving brand image.
- A well-designed and integrated IT infrastructure can boost operational efficiency and keep up with market developments.
- Competent and dedicated human capital may provide a significant competitive advantage, especially in service-oriented businesses.
- High product quality enhances brand loyalty and performance in a competitive market.
- Workplace diversity may be a key competitive advantage, especially when targeting foreign markets.
- Better access to raw materials and faster product delivery to end customers can be achieved through horizontal and/or vertical integration.
- An organization may possess several intellectual property rights that make its products distinctive and difficult to copy.
- Interconnected paradigms focused on SWM, such as changing waste generators' mentality, waste clean-up, and natural disasters
- All-purpose ideology
- Focusing on segregation, collection, and problems of municipal disposal yards. This is a great place to start if you're looking for a low-cost alternative to plastic using bamboo-based items.

Apx_Box 1 Examples of strengths of organizations

¹⁴² David Williamson, "Waste Management SWOT Analysis / SWOT Matrix," *Essay 48* (December 5, 2018), <https://www.essay48.com/term-paper/12828-Waste-Management-Swot-Analysis>

WEAKNESSES

- Environmentalists criticise the organization for inadequate waste management and failure to integrate sustainability into commercial operations.
- A lack of cash or current assets hurts the company's liquidity and overall success.
- A lack of marketing and promotion expenditure limits the firm's capacity to grow its client base and promote repeat purchases.
- Less spending on R&D might hurt the firm's success, owing to lack of local/global market expertise.
- A lack of understanding of consumer demands and expectations leads to poor strategic decision-making. This shortcoming may prevent the organization from identifying possible product/service enhancement areas.
- The business's prices may not be justified by the product/features. It means revising the pricing approach.
- Poor customer service (such as ineffective complaint management) can negatively impact business growth.
- Waste management organizations take too long to make decisions, causing costly delays in launching new goods.
- Ineffective project management might hinder an organization's capacity to create additional branches or extend its product range.
- Low organizational commitment can lead to increased recruiting expenses and worse production.
- Job stress and bad morale reduce productivity.
- A mismatch between a company's leadership style and its key strategic goals might cause confusion.
- When culture does not correspond with strategic/business objectives, it creates a major internal vulnerability. For example, the chosen organization's major strategic goal is to introduce new items to the market. However, the organizational culture inhibits people from thinking creatively.
- Global network and global presence
- No qualified counsellor, mentor, or expert to help and RDF lacking funding

Apex Box 2 Examples of weaknesses of organizations

OPPORTUNITIES

- No competitors for bamboo-based items in the area
- Changing consumer demands, tastes, and preferences may be an opportunity if the company knows the market.
- To integrate innovation in company processes, new technologies for product/service creation and delivery might be developed. Advanced technological integration may save costs, increase efficiency, and speed up product development.
- A rise in disposable money and wealthy client base may be used to launch more high-end items.
- Lowering interest rates facilitates low-cost money raising and financing.
- Changing tastes may drive customers to prefer new and inventive products/services.
- The rise of e-commerce and social media marketing as a trend might be a wonderful opportunity for Waste Management Inc.
- New market segments and niches open doors for company and product expansion.
- This allows the organization to expand its worldwide market reach, target geographically dispersed customers and enhance profitability.
- Government subsidies and other initiatives to improve the business climate are favourable external environmental factors for waste management organizations. This means additional possibilities to sell goods and services to clients as their lifestyles improve.

Apx_Box 3 Examples of opportunities of organizations

THREATS

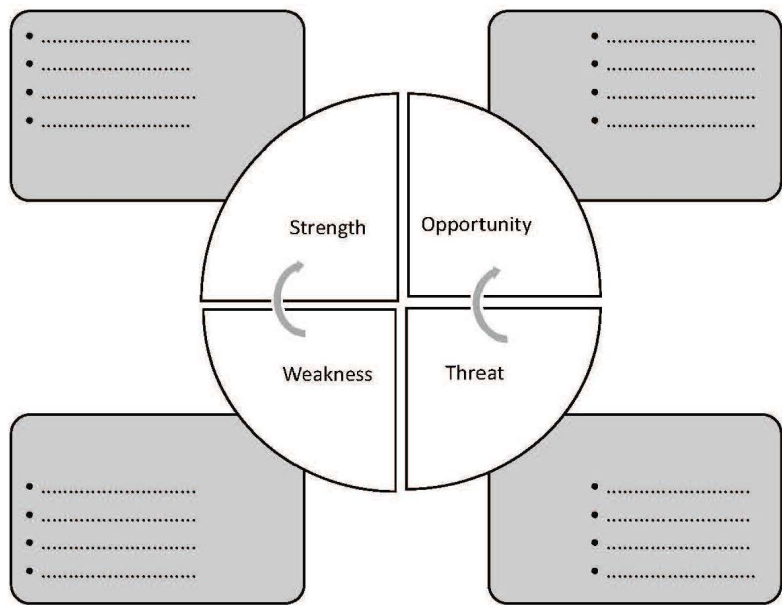
- New technical advances by competition—customers attracted to new technology may switch to competitors, reducing Waste Management's total market share.
- Suppliers—as the number of suppliers decreased, so did their bargaining strength. Input expenses for Waste Management may rise as a result. This puts Waste Management at jeopardy of losing clients to newcomers.
- Increasing competition within the business has pushed down prices. If Waste Management does not modify its prices, it may lose market share.
- Exchange Rate—the exchange rate fluctuates, affecting companies like Waste Management that sell worldwide yet source locally.
- Political unrest in the country hinders company performance and causes needless expenditures.
- The country's changing interest rates do not promote financial and economic stability.
- As consumer tastes evolve, firms are forced to adapt their products to satisfy changing consumer demands.
- International trade regulations are always changing, and firms must comply to operate worldwide.
- The availability of substitute products is rising, posing a challenge to the sector as a whole.
- The rising cost of gasoline has raised Waste Management's input expenses. These expenses have grown since other sectors that supply this company's inputs have suffered from rising gasoline prices.
- Increasing competition has posed a challenge to Waste Management. Most media are cluttered, and customers are inundated with messages. Waste Management's advertising messaging are less successful.
- Constant technological advancements necessitate worker training or Waste Management may lose company.
- High tooling costs to regulate upcycled product prices
- Existing trash management giants investigate upcycling and technological platforms.
- Lack of confidence in ground employees owing to strong ties with intermediaries.
- Favouritism from government-controlled agencies like MCD, Urban Development
- Uncertainty regarding the required flexibility for digital platforms/businesses due to disparities in waste management throughout India.

Apx_Box 4 Examples of threats of organizations

Exercise

Conduct Your SWOT Analysis

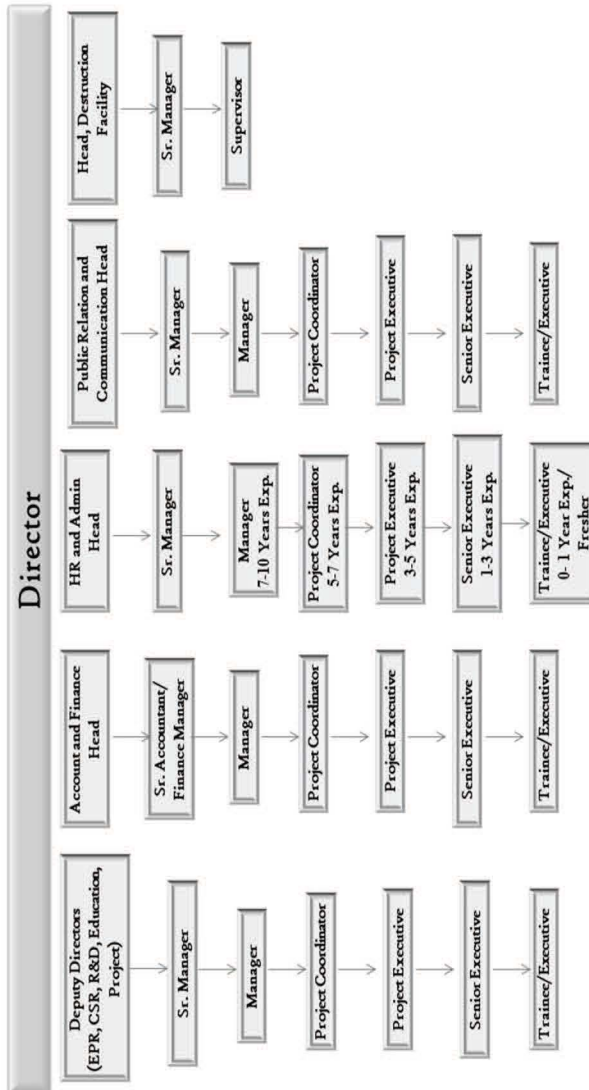
Now that you are familiar with SWOT Analysis, its components and contribution in taking the organization in the right direction, use the space given below to conduct your own/organization’s SWOT Analysis.



Apx_ Figure 2 Self-evaluation matrix

It is our advice that you conduct a similar exercise after reading this handbook and assess your knowledge base and skills set.

Appendix B: Organogram of the Service Provider's Organization



**Appendix C: Details of Key Clients, Strategic Partners
and Collaborators**

Corporates	Government	Multilaterals and Bilaterals
1. 2.	1.	1.
	2.	2.
	Academia/Universities	
	1.	
	2.	

Appendix D: Experience of Implementing Projects of Similar Nature and Scale in the Past

S. No	Project name & country of assignment	Client & reference contact details	Contract value	Period of activity and status	Types of activities undertaken
1					
2					
3					
4					
5					

Appendix E: Presence of Multidisciplinary Team

S. No	Name of the member of staff	Area of expertise relevant to assignment	Designation for the project	Activities assigned	Number of days
1					
2					
3					
4					
5					

Appendix F: Standard Financial Proposal

S. No	Item/Activity	Unit cost (in INR)	No. of units	Total (in INR)
A	Project Activities			
1				
2				
3				
4				
Total (A)				
B	Operations and maintenance (wherever applicable)			
1				
2				
3				
4				
Total (B)				
C	Human resources			
1				
2				
3				
4				
Total (C)				
D	Transportation			
1				
2				
Total (D)				
E	Communication, documentation and certification			
1				
2				
Total (E)				
	Total for activities/items (F)			
	Admin charge (5% of Total F)			
	Grand Total*			

*Additional taxes will be applicable as per provision.

Appendix G: Logical Framework Analysis

Some service providers prefer presenting objectives, activities, output and outcomes in a systematic structure known as Logical Framework Analysis (LFA). LFA is a structured project design that suggests a logical sequence and linking of individual activities with the output, outcome, and objectives. It also acts as a tool to monitor the progress of the project and analyze its impact. It is a compact matrix that presents the entire project, its implementation and monitoring in one place. Steps followed to prepare LFA are analysis of the project's context, stakeholders' analysis, problem/situation analysis, objective analysis, project plan, resource planning, measurement indicators, risk management, and analysis of assumptions.¹⁴³

A typical example of the LFA format is given in Apx_Figure 3.¹⁴⁴

The logical Framework Matrix			
Object & activities	Indications	Means of verification	Assumptions
Goal (Impact)			
Purpose (Outcome)			
Outputs			
Activities			

Apx_Figure 3 Logical framework matrix

¹⁴³ Kari Ortengren, *A Summary of the Theory behind the LFA Method: the Logical Framework Analysis* (Stockholm: Swedish International Development Cooperation Agency (Sida), Methods Development Unit, 2004), 7–18, <https://www.alnap.org/system/files/content/resource/files/main/the-logical-framework-approach-a-summary-of-the-theory-behind-the-lfa-method.pdf>.

¹⁴⁴ Oliver Bakewell and Anne Garbutt, *The Use and Abuse of the Logical Framework Approach: a Review of International Development NGOs' Experiences* (Stockholm: Swedish International Development Cooperation Agency-Sida, 2005), 2–3, <https://www.alnap.org/system/files/content/resource/files/main/the-use-and-abuse-of-the-logical-framework-approach.pdf>.

Inputs: These are the things that are put in the project to conduct activities. Examples of inputs are time, human resources and financial resources.

Activities: These are the actions that are done in order to produce results. Examples could be designing and fabrication of recycled product, collection of industrial waste, etc.

Output/Results: The outputs are the direct results of the activities. These are the actual tangible results that are direct consequences of project activities. Many activities may produce a single output. For example, collection of one hundred tonnes of waste from a society, awareness of two hundred students on waste segregation and the final designed and fabricated recycled product.

Outcome: This is the situation that is expected to be achieved if the project delivers its expected outputs. Many outputs may, together, bring a single outcome. For example, improved health of children during the rainy season due to collection of waste and awareness sessions for students.

Goal: This is the highest, long-term effect that the project aims to achieve. Examples could be improved livelihood of waste workers, reduction in diversion of waste to landfills, etc. The goal is generally much bigger, and project activities, outputs and outcomes contribute to achieving it.

Indicators: Indicators are the benchmarks that determine that the expected goal/outcome/output has been achieved.

Means of verification: These are the sources of information/proof used to show that the indicators are met.

Assumptions: These are the important conditions or events that are beyond the project's control but are required to be maintained for achieving the project goal/outcome/output.

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