

5 Days Vocational Training on Module on Solid Waste Management and Resource Recovery.



PAPER



GLASS



ORGANIC



PLASTIC



Clean up Nepal

Prepared By

CLEAN UP NEPAL

Ichhunadi Marg, Baluwatar, Kathmandu, Nepal

Phone: 01-4373175, +977-9823083505

Contents

1.Overview and introduction.....1

A: Introduction

B: Objectives

C: Use of the Module

D: Details of Audience

E: Schedule

F: Materials

Module 1: Introduction to Solid Waste Management.....10

Session Objectives

Session Guide

Materials

Facilitators' notes

Game 1 - Types and Sources of Solid Waste

Reading Materials

Module 2: Overview of Municipal Solid Waste Management in Nepal17

Session Objectives

Session Guide

Materials

Facilitators' notes

Reading Materials

Module 3: Waste Policy and Legislation in Nepal.....25

Session Objectives

Session Guide

Materials

Facilitators' notes

Reading Materials

Module 4: Occupational Health and Safety	31
Session Objectives	
Session Guide	
Materials	
Facilitators' notes	
Reading Materials	
 Module 5: Basic tools, equipment, and materials.....	 63
Session Objectives	
Session Guide	
Materials	
Facilitators' notes	
Game 1 - Types and Sources of Solid Waste	
Reading Materials	
 Module 6: Entrepreneurship Development.....	 70
Session Objectives	
Session Guide	
Materials	
Facilitators' notes	
Reading Materials	
 Sources.....	 94

1. Overview and introduction

A: Introduction

Green Empowering through Vocational Training for Solid Waste Management in Lalitpur (GEMS-L) Project is a pilot project focused on the Lalitpur Metropolitan City (LMC), the third largest city in Nepal. The project is funded by LEZ State Office for Development Cooperation (LEZ), Berlin Government, with the support of BGZ (Berliner Gesellschaft für internationale Zusammenarbeit mbH). The project will be implemented in four wards, 2, 7, 9, 11 of Lalitpur Metropolitan City. GEMS along with intellectual partnership with NEDEG e.V Berlin, aims to address the gap that arises due to enormous accumulation of waste in the city and the high youth unemployment problem in the city. These gaps will be addressed by implementing a vocational training program focused on the field of SWM for young people in Nepal. The project will focus on youth of the age group i.e., between the ages of 18 and 40 (National Population and Housing Census, 2021, a city has a population of 294,098, of which 46% are youths.

Waste is a growing problem in cities and rural areas in Nepal. The high youth unemployment rate is another major socio-economic challenge that Nepal encounters. Particularly, the majority of youths in urban areas have limited and unstable future perspectives. Based on the latest ILO report, the quality aspect of youth employment is low regarding productivity, earnings, and work conditions (ILO, 2023). The field of waste management will open good opportunities for youths, such as recycling and upscaling of waste resources. Solid waste management as an interactive theme in the green jobs field offers a sustainable solution by promoting environmentally friendly practices while creating employment opportunities. Youths can be trained in the waste management sector.

In Nepal, the local governments are facing serious challenges to manage solid waste generated in the cities, and keep cities clean. Among the 753

local governments, 293 are urban that include metropolitan and sub-metropolitan cities, and municipalities, and rest 460 are rural municipalities (CRISIL, 2020). Among other, the SWM is one of the most prioritized responsibilities of the local governments.

The Solid Waste Management Act, 2068 of Nepal has made the local governments responsible for the operation and management of infrastructure for collection, treatment and final disposal of the Municipal Solid Waste (MSW). Yet, it has largely remained a socially complex and technically ever-challenging task for the municipal authorities due to limited information on solid waste status, inadequate financial resources and insufficient well-trained human resources to address the issue. After state re-structuring, the most of the newly constituted municipalities are managing MSW on temporary basis due to lack of engineered, well planned SWM facilities to manage the wastes utilizing the sustainable management options.

Many municipalities still lack integration of SWM issues in their periodic plan, strategic plan and action plans. The quantity of solid waste is increasing every year in all municipalities as well as newly emerging cities mainly due to rapid urban population growth, market development and changing lifestyles.

Nepal also faces risks from failing to provide sufficient, suitable employment that is productive and remunerative for the country's youth, potentially resulting in substantial, lasting economic and social costs—not just for the affected youth but also for their families and communities. A particularly relevant issue for Nepal, given its recent history, is the interplay between poor labor market conditions and prospects for youth and social unrest.

The Nepal government aims to tackle the social and economic challenges faced by youth, recognizing their potential as essential to the country's economic growth and development. This training manual could also serve as a significant milestone in this effort.

B: Objectives

- To make the participants understand different types of solid wastes and various concepts of solid waste management and its importance.
- Effective and comprehensive approach to implementation, operation and management of SWM process.
- Current approaches towards efficient SWM in Nepal along with the challenges faced.
- Increased access to vocational training towards SWM addressing the unemployment situation of young people.

C: Use of the Module

This Training Module is prepared for five days workshop aimed to address the gap that arises due to enormous accumulation of waste in the city and the high youth unemployment problem in the city. The module is designed to be flexible, allowing customization to fit the specific needs of participants and the program. Depending on the program's goals, the training can focus more on sharing information.

D: Details of Audience

The manual designed for SWM for young people in Nepal, who youth of the age group. Likewise, this manual is appropriate for local governments, Civil Society Organizations (CSOs), Community-Based Organizations, and Academia.

This training is targeted for young people in Nepal, increases in the participation of 50% of women who youth of the age group i.e., between the ages of 18 and 40 (National Population and Housing Census, 2021, a city has a population of 294,098, of which 46% are youths.

Youth aged 18 to 40 face various forms of vulnerability, particularly in relation to poverty in Nepal. This group forms a significant portion of the population, and many of them live in conditions of economic hardship due to several interconnected factors. They are

1. Unemployment and Underemployment

- **High unemployment rates:** The lack of job opportunities, especially for educated youth, is a persistent challenge. Many young people either do not find work or are underemployed, meaning they work in jobs that do not match their skills or educational qualifications.
- **Migration for work:** Due to limited employment opportunities at home, many young Nepalis, especially men, migrate to countries like India, Malaysia, Qatar, and Saudi Arabia for low-wage jobs in industries such as construction and domestic work. While remittances are a significant source of income, migration can create vulnerabilities related to exploitation and unsafe working conditions.

2. Educational Disparities

- **Limited access to quality education:** In rural areas, many young people do not have access to quality education or vocational training, leaving them ill-prepared for the job market. This often traps them in low-paying, unskilled jobs.
- **Dropout rates:** Financial hardships push many young people to drop out of school to contribute to household income, further perpetuating the cycle of poverty.

3. Gender Inequality

- **Young women's vulnerabilities:** Young women face gender-based discrimination, limited access to education, and early marriages, particularly in rural areas. This severely restricts their economic opportunities and leaves them vulnerable to poverty. They also tend to bear a disproportionate burden of unpaid domestic labor.
- **Trafficking and exploitation:** The economic vulnerability of youth, especially young women, makes them more susceptible to human trafficking for labor or sexual exploitation.

4. Lack of Social Protection

- While some government programs exist, they often do not reach all those in need, and many young people remain excluded from the benefits.
- Informal labor market: A large number of young people are employed in the informal sector, where labor laws and protections are weak or absent. This leaves them vulnerable to exploitation, unsafe working conditions, and lack of job security.

Addressing the vulnerabilities of youth aged 18 to 40 in Nepal requires a comprehensive, multi-dimensional approach. A key aspect of this is tackling unemployment and underemployment, which are significant barriers to their economic progress. By creating more job opportunities, enhancing skills training, and promoting entrepreneurship, these efforts can help lift many young people out of poverty, enabling them to contribute more effectively to the economy and society.

In this context, the field of waste management will open good opportunities for youths, such as recycling and upscaling of waste resources. Solid waste management as an interactive theme in the green jobs field offers a sustainable solution by promoting environmentally friendly practices while creating employment opportunities. Youths can be trained in the waste management sector.

E: Schedule

The following schedule presents the estimated times for each module and offers a suggested training plan. However, it's important to note that this schedule is flexible and should be adapted in consultation with the organization to fit its specific time constraints and topical interests.

Day 1	Session	Topic	Format
45 Min	Introduction	Training Formalities (Introduction, Expectation, Norms and Pretest)	Introduction of participants (icebreaking activity).
5 hrs 15 Min	Module 1: Introduction to Solid Waste Management	<ul style="list-style-type: none"> • Overview of Solid Waste Management • Types and Sources of Solid Waste • The Impact of Poor Waste Management • Existing Solid Waste Management System • Resource Recovery Methods 	<p>PPT presentation of outline of the training modules, Sessions,</p> <p>Group review and discussion</p>
Day II	Session	Topic	Format
20 Min Review of First day 5hrs 30 Min	Module 2: Overview of Municipal Solid Waste Management in Nepal	Overview of Municipal Solid Waste Management in Nepal <ul style="list-style-type: none"> • Solid Waste Management Rules, 2070 (2013) • Challenges of Solid Waste Management • Integrated Solid Waste Management • Progress on SWM in Nepal • Resource Recovery Methods 	PPT presentation of outline of the training modules, Sessions, <ul style="list-style-type: none"> ● Game ● Plenary discussion ● Group discussion
Day III	Session	Topic	Format
Review of Second day 5hrs 30 Min	Module 3: Waste Policy and Legislation in Nepal	<ul style="list-style-type: none"> • Understanding Waste Management Regulations • Policy Development and Implementation • International Waste Management Standards • Navigating Legal and Regulatory Challenges 	PPT presentation of outline of the training modules, Sessions, <ul style="list-style-type: none"> • Plenary discussion • Discussion
Day IV	Session	Topic	Format
5hrs 30 Min	Module 4: Occupational Health and Safety Module 5: Basic tools, equipment, and materials	<ul style="list-style-type: none"> • Maintain personal hygiene • Use Personal Protective Equipment (PPE) • Ensure workplace safety • Ensure tools and equipment safety • Protect from fire hazard • Provide First Aid Service • Manage workplace waste 1. Collection Tools & Equipment 2. Transportation Equipment	PPT presentation of outline of the training modules, Sessions, <ul style="list-style-type: none"> • Plenary discussion • Discussion

Day V	Session	Topic	Format
Review of fourth day 5hrs Closing 30Min	Module 6: Entrepreneurship Development	<ul style="list-style-type: none"> • Concept of Entrepreneurship • Quality of Entrepreneurs • Small Enterprise Policy in Nepal • Business Plan 	PPt presentation of outline of the training modules, Sessions, <ul style="list-style-type: none"> • Plenary discussion • Discussion • Exercise of Business Plan

F: Materials

- Pre-training review (Venue, time, and other materials)
- Pre-post questionnaire
- Preparation of workshop slides or presentation flipcharts, if a slide projector will not be used
- Training Module in the Nepali language
- Flip chart, Zopp chart, Glue stick, Poster having welcome or Namaste, attendance sheet, notebook.

Day 1: Introduction Session

Session objectives

- Welcome everyone and learn something new about colleagues
- Review the workshop objectives and schedule

Session Guide

Topics	Formats	Timing
1. Welcome 2. Introduce participants 3. Training norms and Expectation 4. Overview of training program and guidelines	Plenary presentation Game Plenary presentation	Total: 30 min

Materials

- Prepare participant folders with the overall course schedule, course objectives, case study, and supplementary materials
- Slide 1-Workshop Objectives
- Flipchart 1—Training formalities (group formation, Norms, and time) for visualization

Facilitators’ notes

Welcome to the workshop/Training

The facilitator should start by welcoming everyone and showing a picture of a "Welcome" or "Namaste" gesture. Then, explain that the training has been designed for two main purposes:

- To give participants a clear understanding of solid waste management and entrepreneurship, including its basic principles, purpose, and importance.
- To provide an opportunity for participants to benefit from this knowledge.

Introduce participants

Now we will introduce ourselves to each other. You might know some people already, but today we'll make it fun for everyone to get to know each other. Here's how we'll do it:

- We'll pair up into groups of two. I'll explain how to pair up.
- Once you're paired, ask each other questions like name, address, likes, dislikes, etc.
- Following my instructions, you'll take turns introducing your partner to the group.

Expectation Collection

Distribute Meta cards to the participants, asking them to write their expectations on one card and any concerns on another. Collect the cards, then read each one aloud, posting them on a newsprint or flipchart. Similarly, the facilitator will divide the participants in groups of 4-5, and provide charts, where the group will discuss and write how they perceive waste, what are the waste around them and what it means to them, and how they think they can resolve the issue. The facilitator will then inform the participants about which of these points can or cannot be addressed during the training.

Norm settings (Preparation of Training Norms, Guidelines, and Distribution of Responsibilities)

With the aim of conducting the training in an organized manner, involve participants in creating the rules that need to be followed throughout the training period. For managing the five-day training, form management, reporting, and entertainment groups through a participatory approach, and explain the roles and responsibilities of each group."

Training program and guidelines

Show the training objectives using a slide presentation if you have a projector. If not, help participants find the objectives in their training folders. Let them know that the training objectives are in their folders. Quickly go through the goals for each day with them.

Module 1: Introduction to Solid Waste Management

Session Objectives

- Introduce youth / participants with the topic, providing an overview of what is solid waste, its types, perspective and policies.
- The participants will be familiarized with the concepts, legalities.
- The participants will receive a holistic perspective on solid waste management, why it is essential, and brainstorming on how they can bring in new ideas.

Session Guide

Topics	Formats	Timing
1.1 Overview of Solid Waste Management 1.2 Types and Sources of Solid Waste 1.3 The Impact of Poor Waste Management 1.4 Existing Solid Waste Management System 1.5 Resource Recovery Methods	<ul style="list-style-type: none">• Plenary discussion• Plenary presentation• Game	Total: 6 hrs

Materials

- Slide 1—Presentation slides
- Flipchart 1—Flips chart, markers, cards and masking type for visualize
- Materials for Game
- Chocolates

Facilitators' notes

In this session, facilitator will introduce the essence and objective of the training along with ice breaking with the help of games planned.

As the subject is vast, facilitator will use the help of pictures along with talks to make the participants understand better.

Pictures and diagrams are available in Annex 1.

Games has been planned to make the participants introduce and interact.

Game 1 - Types and Sources of Solid Waste

Game Name	Topic	Details
What am I ?	Types and Sources of Solid Waste	<ul style="list-style-type: none">• Various types of solid waste material related items (like, shampoo sachet, gloves, toothbrush, toothpaste packet, different packages of food items, bulb) will be placed on the table. Each participant will pick one and will have to describe it, the rest will guess what that is and whether it is Bio waste or Non-Bio waste.• After explaining the item, the participants will introduce themselves.

Reading Materials

1. Introduction to Solid Waste Management

1.1 Overview of Solid Waste Management

The term solid waste management mainly refers to the complete process of collecting, treating and disposing of solid wastes. In the waste management process, the wastes are collected from different sources and are disposed of. This process includes collection, transportation, treatment, analysis and disposal of waste. Solid-waste management, the collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful.

1.2 Types and Sources of Solid Waste

The process of waste handling and disposal varies in different countries. The processes differ according to the source of solid waste. They can be classified as:

1.2.1 Municipal Solid Waste

Municipal solid waste can further be divided into biodegradable, recyclable and hazardous domestic wastes. The biodegradable waste includes rotten food, vegetable peel and mostly wet kitchen waste. Recyclable waste includes plastic and hazardous wastes include, bulb, batteries, etc.

1.2.2 Hazardous Solid Waste

The industry generated waste from chemical factories, medical waste from hospitals are considered as Hazardous Solid Waste and they need special settings to dispose of them.

1.2.3 Sources of Solid Wastes

The sources of solid waste include residential, commercial, institutional, and industrial activities. Certain types of wastes that cause immediate danger to exposed individuals or environments are classified as hazardous; these are discussed in the article hazardous-waste management. All nonhazardous solid waste from a community that requires collection and transport to a processing or disposal site is called refuse or municipal solid waste (MSW).

Refuse includes garbage and rubbish. Garbage is mostly decomposable food waste; rubbish is mostly dry material such as glass, paper, cloth, or wood. Garbage is highly putrescible or decomposable, whereas rubbish is not. Trash is rubbish that includes bulky items such as old refrigerators, couches, or large tree stumps. Trash requires special collection and handling.

MSW consists of household waste, construction and demolition debris, horticulture and waste from streets. This waste is generated mainly from residential, commercial and institutional areas.

1.3 The Impact of Poor Waste Management

Improper disposal of solid waste can create unsanitary conditions, and these conditions in turn can lead to pollution of the environment and to outbreaks of vector-borne diseases that is, diseases spread by rodents and insects. The tasks of solid-waste management present complex technical challenges. They also pose a wide variety of administrative, economic, and social problems that must be managed and solved. Unmanaged disposal of medical wastes from hospitals and clinics also contribute to pollution and public health hazards in the localities. Therefore, SWM has become a major concern for the municipalities of Nepal.

1.3.1 Effects of Poor Solid Waste Management

Due to improper disposal of solid waste particularly by waste management organizations, the collected wastes gets heap up and become a problem for both the environment and also for the public.

By dumping of huge garbage, drives biodegradable materials to decay and decompose under abnormal, uncontrolled and unhygienic conditions. After a few days of decomposition, it becomes a breeding ground for different types of disease-causing insects as well as infectious organisms. A foul smell is produced and it also spoils the aesthetic value of the area.

The solid wastes collected from different industries include toxic metals, chemicals, and other hazardous wastes. When these wastes are released into the environment, they can produce biological and physicochemical problems to the environment, the chemicals may drain into the soil and pollute the groundwater and also alter the productivity of the soils in that particular area.

In rare cases, the hazardous wastes may get mixed up with the ordinary garbage and other combustible wastes causing the disposal process even harder and risky.

By burning the paper and other scraps along with the hazardous wastes, dioxins and poisonous gasses are produced and released into the air which results in causing various diseases including chronic disease, skin infections, cancer, etc.

1.4 Existing Solid Waste Management System

1.4.1 Collection and Segregation

Based on the study conducted by ADB in 2011, it was found that about 30% of surveyed households in the municipalities practice segregation of waste at source; which means that waste generated from about 70% of households in municipalities goes to the stream for collection and disposal by the municipalities in the form of mixed waste.

The households segregates kitchen waste for their own purposes, such as feeding cattle, making manure. Even though some municipalities have conducted activities to promote waste segregation at source in recent years, effective and large-scale segregation programs are yet to

be implemented by most municipalities. It was also reported that waste segregated at source is sometimes mixed again during collection and transport due to the lack of separate collection and treatment methods.

At present collection efficiency ranges between 70% and 90% in major towns and is below 50% in several smaller municipalities. On average, the collection efficiency is 62%.

The common ways that citizens dispose waste within their compound are either by unscientific composting, open burning, or throwing the waste in the surrounding open space. Collection, city cleaning, and sweeping is not done on a daily basis except in main markets, along main roads, and in some residential areas. The rest of the areas are served ranging from twice a week to twice a month, or are not served at all.

The problems faced by the municipalities at present include waiting for the government's decision and approval for land acquisition of proposed landfill sites, lack of technical support, financial constraints, problems in area selection, and strong opposition from nearby communities. Political interference has also been observed in many municipalities as well as technical problems such as flooding, shallow water table, highly permeable soil, and slope instability.

1.4.2 Transport and Final Disposal

The vehicles and equipment available for waste collection and transport varies widely. Vehicles commonly used include rickshaws and carts for primary collection, tractors for secondary collection or transport, and dump trucks for transport to the disposal sites. Not all municipalities have all three types of vehicles. Facilities and equipment available affect the efficiency of waste transfer from primary collection to processing centers or final disposal sites.

Transfer sites are not available in major municipalities except KMC, Lalitpur, and Madhyapur Thimi. This may be due to the shorter distances to the disposal sites from town centers in other municipalities. Sites for treatment facilities and sanitary landfill are yet to be identified by many municipalities and waste is currently being disposed of without treatment in crude dumping sites, creating public health risks and environmental problems.

According to the ADB report only six municipalities - KMC, Lalitpur, Pokhara, Ghorahi, Dhankuta, and Tansen—have constructed sanitary landfill sites. The proportion of MSW disposed of at sanitary landfills amounts to 37% of the total, as three largest generators of MSW—KMC, Pokhara, and Lalitpur—all have sanitary landfills. However, KMC and Lalitpur are facing the problems including frequent local protests, lack of proper management, and unavailability of necessary equipment, leading to unsanitary methods of disposal. While many municipalities have started to plan for a designated landfill site (whether sanitary or not).

1.5 Significance of SWM in Sustainable development Goals

SWM is one of the important targets to be achieved under the SDGs.

Significance of proper

treatment of solid waste is recognized in SDGs and it is embedded within the 17 goals either explicitly or implicitly. SDG 11, “Make cities and human settlements inclusive, safe, resilient and sustainable”, explicitly discusses about SWM. Target no. 11.6 of SDG 11, says, member states to reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management. Waste management has strong linkages to a range of global challenges, such as health (SDG 3), climate change (SDG 13), clean water and sanitation (SDG 6) and sustainable production and consumption (SDG 12).

Module 2: Overview of Municipal Solid Waste Management in Nepal

Session Objectives

- Shedding light on importance and significance of Solid waste management from global perspective.
- Participants will be able to understand why SWM is important and what are the challenges.

Session Guide

Topics	Formats	Timing
Game Overview of Municipal Solid Waste Management in Nepal <ul style="list-style-type: none">• Solid Waste Management Rules, 2070 (2013)• Challenges of Solid Waste Management• Integrated Solid Waste Management• Progress on SWM in Nepal• Resource Recovery Methods	<ul style="list-style-type: none">• Plenary discussion• Plenary presentation• Group discussionGame	Total: 6 hrs

Materials

- Slide 1—Presentation slides
- Flipchart 1—Flips chart, markers, cards and masking type for visualize
- Materials for Game

Facilitators’ notes

In this session, facilitator will discuss the definition and concept of Solid Waste Management (SWM). Session will be started by splitting the participants in a group of 5, the facilitator asks the participants: What do they understand by SWM?

Groups will discuss and work their understanding and will present their work. This is basically to have a comparative analysis of understanding, before starting the session and after the session.

Facilitator will primarily focus on SWM, it’s effect on global and international scale, the challenges faced internationally and nationally.

A discussion can be induced to let the participants brainstorm about possible solutions, inventive ideas, thoughts. The shared responses will be noted by the facilitator on the flip charts.

A discussion-based game will be conducted to enhance group work and innovative breakthrough.

Game name	Topic	Detail
Green or White	The Impact of Poor Waste Managem ent	<ul style="list-style-type: none">• Groups will be given to choose green or white paper cards/balloons.• Green will be for Biodegradable and White for Non degradable.• The groups will discuss and point out the harmful impact of poor management and prepare a chart.• Each group will present the chart and will have a short open sharing and feedback session.

2. Overview of Municipal Solid Waste Management in Nepal

2.1 Introduction

Solid Waste Management Rules, 2070 (2013)

In Nepal, the federal laws and policies provide a framework to set up municipal laws and regulations and to establish and implement the MSW management system. Federalism has transformed the responsibility to the local levels according to the constitution of Nepal, 2015. Despite the long history of the enactment of solid waste laws (e.g., before thirty years: Solid Waste and Resource Mobilization Act, 1986), the problem of solid waste management is still on the surface (Rijal and Sapkota, 2014; Dangi et al., 2017). More importantly, urban waste management remains unsatisfactory despite the policy and legal frameworks both in rural and urban areas of Nepal (ICIMOD, 2007). The major laws related to the SWM are Environmental Protection Acts, 2019; Solid Waste Management Act, 2011; Labour Act, 2017; The Public Health Service Act, 2018; Industrial Enterprises Act, 2017; Solid Waste Management Rules, 2013. Despite significant development in social, economic, and environmental sectors, especially in the urban areas the current solid waste management systems are inefficient, with waste harming human and environmental health, and the economy. Besides, there are no special policies at local and regional levels even after the restructuring of the federal government. Thus, there is an urgent need to move to more sustainable solid waste management practices at local levels, and this requires new management systems and waste management facilities, which should be led by local authorities according to the present legal provisions. Under the changing context of the political and administrative sectors, the local governments have a key role in managing the wastes in environment-friendly ways.

2.2 Challenges of Solid Waste Management

Lack of public awareness is one of the major problems of SWM. Based on the ADB's survey data, only 37 municipalities have awareness programs for SWM staff, only 10% of them conduct them on a regular basis, and more than 65% seldom conduct them.

Several municipalities collaborate with other stakeholders such as the SWMTSC, NGOs, and CBOs to undertake public campaigns. Moreover, 33% of the municipalities have conducted SWM awareness and promotion of 3R activities in collaboration with educational institutions. In contrast, the survey has revealed that more than 65% households are not aware of the SWM program implemented by their municipalities and less than 18% of households have participated in these programs.

Managing solid waste has been accorded a low priority mainly because the demand is higher for other public services in many municipalities in Nepal. Local bodies are experiencing difficulties in developing management plans due to the lack of SWM baseline information and data related to the functional elements of SWM. It is essential to know the quantity and composition of MSW when designing and implementing proper waste management plans that include resource recovery through appropriate methods.

Excessive littering by citizens and lack of pride among the city dwellers for cleanliness. Less availability of appropriate bins in public places for waste deposition and collection. Lack of human resource for regular cleaning, improper enforcement of penalties by authorities. Inadequate systems and technologies for segregated collection and processing of solid waste from households, commercial establishments and institutions. Inadequate systems of primary, secondary collection and transportation. Inability to meet revenue expenses including human resource cost, safety equipment and Personal Protective Equipment (PPE). Lack of motivation and skills among staff to

implement new and innovative practices. Inadequate funds for upgrading or modernizing SWM and adopting new technologies. Day to day expenses leading to a vicious cycle of poor performance. Solid Waste Management Policies in Nepal Solid Waste (Management and Resource)

2.3 Integrated Solid Waste Management

To overcome the challenges of SWM, ISWM is one of the guiding principles of MSW management. It proposes a waste management hierarchy, with an aim to reduce the amount of waste being disposed, while maximizing resource conservation and resource efficiency.

The waste management hierarchy emphasizes to take action first and foremost on preventing the generation of waste, followed by actions to reduce waste generation (e.g. through re-use). Recycling, is the next preferred action, followed by recovery of materials and waste-to-energy generation. The aim is to extract the maximum practical benefits from products and to generate the minimum amount of waste. The application of the waste management hierarchy has the following benefits - prevents emissions of greenhouse gases, reduce pollutants, save energy, conserve resources, create jobs and stimulate the development of green technologies. Often the waste hierarchy is referred to as the “3 Rs”, which identify the choices, in order of preference, as “Reduce, Reuse, Recycle”.

Integrated solid waste management refers to the strategic approach to sustainable management of solid wastes. An effective ISWM system considers how to prevent, recycle and manage solid waste in ways that most effectively protect human health and the environment. It involves evaluating local needs and conditions, and then combining the most appropriate waste management activities for those conditions. The major ISWM activities are waste prevention, recycling and composting, combustion and disposal in properly designed, constructed, and managed landfills with an emphasis on maximising resource use efficiency.

The selection of the most appropriate waste management systems and sustainable technologies is needed to deliver an optimum and sustainable ISWM system. In combination with economic and social considerations, this approach will help waste managers to design more sustainable solid waste management systems. Cleaner and safe neighbourhoods, high resource use efficiency, monetary savings, employment and business opportunities are some of the benefits of ISWM.

2.4 Progress on SWM in Nepal

According to the World Bank, based on the estimation the amount of waste collected in Nepal is reported to be approximately 700,000 tons per year. Most of the municipalities do not have reliable data on the total amount of waste they collect. The most common waste collection mechanism practiced in Nepal is roadside collection which is a very common practice in Nepal. Street sweeping for the collection of waste is an important activity in the waste management system (Shakya and Tuladhar, 2013). According to the information provided in the survey, it is found that some municipalities are practicing door-to-door collection waste from all households through the vehicle. This collection system is carried out by a municipality in coordination with other private and community sectors. Bio-degradable and non-biodegradable waste are not segregated in most of the municipalities. Different types of wastes are collected in the same garbage. However, the special wastes of hospitals are being managed out by a private organization.

The Kathmandu metropolitan city has recently announced that it will start penalising the households Rs 500 that do not segregate their waste, starting from July 17. The decision is one of the initiatives of the newly elected Kathmandu Mayor Balen Shah who has been actively speaking about solving the waste management problem of the city. However, researchers have opined that the new announcement to penalise the households is deemed to fail.

Mani Nepal and AK Enamul Haque who had conducted research in Bharatpur of Nepal and Sylhet of Bangladesh agree with the city government's new approach to the waste management problem but suggest that for waste segregation to work at the individual level, penalising them will not be effective and will only turn out to be a burden to the city. They, instead, suggest focusing on incentivizing good examples can work wonders.

2.5 Resource Recovery Methods

Tight municipal budgets and scarce resources have made municipal SWM an environmental, financial, and social burden to the municipalities. Although resource recovery from managing MSW has the potential to reduce such burdens and even generate revenue, this study found that minimal resource recovery activities are being conducted in the municipalities of Nepal.

2.5.1 Recycling

The household waste composition survey revealed that more than 25% of household waste and a much higher proportion of institutional and commercial waste could be either reused or recycled, excluding organic waste. However, no formal system was observed for reuse and recycling in most municipalities. While it is encouraging to note that people recover recyclable materials at source and sell them to the formal or informal sectors, a large amount of recyclable material continues to be disposed of on the streets and ends up at the dumping grounds. It has been found that only 32 municipalities have waste minimization programs, such as reuse and recycling activities via small entrepreneurs in the formal and informal sectors. Out of which, 27 municipalities have information about the scrap dealers and workers who collect or buy the recyclable and reusable products from the MSW stream.

2.5.2 Composting

Organic materials that could be used for producing compost account for 66% of household waste on average. It was noted that about 30% of surveyed households in the municipalities are practicing composting. Most of them are in the rural areas of the municipalities and manage their household waste using traditional composting methods. However, urban households are not generally practicing composting. Some municipalities have or plan to set up community or municipal composting plants. Composting not only provides fertilizer to farmers who otherwise have to buy chemical fertilizer at a very high price, but also reduces the volume of the solid waste stream to be handled and disposed of at final disposal sites.

Module 3: Waste Policy and Legislation in Nepal

Session Objectives

- Familiarizing the participants policies, laws, rules and regulations associated with SWM.
- Participants will gain knowledge about international standards, rules and requirement as well as local rules and regulations.

Session Guide

Topic	Formats	Timing
1.Understanding Waste Management Regulations 2.Policy Development and Implementation 3.International Waste Management Standards 4.Navigating Legal and Regulatory Challenges	<ul style="list-style-type: none">• Plenary discussion• Plenary presentation• Discussion	Total: 6 hrs

Materials

- Slide 1—Presentation slides
- Flipchart 1—Flips chart, markers, cards and masking type for visualize

Facilitators’ notes

In this session, facilitator will exclusively discuss the laws, rules and regulation associated with SWM, both internationally and locally. Facilitator will disseminate information about various acts and laws in municipal levels, along with international standards and requirements. A short video of how solid waste has been managed internationally can be shown to shed more light, provide even better ideas.

3. Waste Policy and Legislation

3.1 Understanding Waste Management Regulations

Different Acts were created in different years to transfer the responsibilities of solid waste management. However, these Acts never went into effect completely (Dangi et al., 2017). There are still many shortcomings in the legal provisions related to SWM Nepal due to lack of awareness, technical knowledge, and prioritizations of the wastes by the concerned authorities, etc. The SWM issues are more serious in Nepal, especially after the 1980s due to the rapid growth of the human population and urbanization. With these, the government started to formulate and implement SWM policies to address the issues and associated problems, especially in the urban area (Alam et al., 2008). Among the acts and policies to Solid Waste Management, the 2011 Solid Waste Management Act and the 1996 National Policy on SWM are particularly relevant (Asian Development Bank, 2013).

3.2 Policy Development and Implementation

The Government of Nepal enacted the Solid Waste Management Act of 2011 effective from 15 June 2011. The objectives of the act include maintaining a clean and healthy environment by minimizing the adverse effects of solid waste on public health and the environment. The local bodies, such as municipalities, have been made responsible for the construction, operation, and management of infrastructure for collection, treatment, and final disposal of MSW. The act mandates local bodies to take the necessary steps to promote reduce, reuse, and recycle (3R), including segregation of MSW at source. It also provides for the involvement of the private sector, community-based organizations (CBOs), and nongovernment organizations (NGOs) in SWM through competitive bidding.

The high organic content indicates a need for frequent collection and removal, as well as good prospects for organic waste resource recovery. The content of major reusable and recyclable materials (i.e., plastic, paper and paper products, metal, glass, rubber and leather, and textiles) comprised 29% on average.

3.2.1 Solid Waste (Management and Resource Mobilization) Act, 1987

It was the first law related to solid waste management in order to ensure the health convince of the common people by controlling the adverse impacts on pollution from solid waste. The salient features of these laws are:

- Under the provision of the Act Solid Waste Management and Resource Mobilization Center (SWMRMC) was established as the first authorized body to manage the solid wastes of major cities.
- This act identified solid wastes as resources, and raise public awareness and public participation.
- The reuse, recycling, and reducing the wastes at the local level are prioritized.
- The provision of revenue-generating activities, such as the sale of fertilizer, bio- gas, briquette from the produced solid waste as well the collection of disposal fees, sweeping charges
- Despite being the first solid waste law in Nepal, it failed to provide effective legislation. Municipality Act, 1992

The salient features of the acts are:-

- This act enforces waste collection, and proper disposal of wastes piled in streets, lanes, and footpath at the local level.
- It stated that the local entities can generate earnings from the sale of wastes carcasses.

- This act gives the municipality authority to collect the tax up to 50% from the parties that have profited from SWM-related business. Environmental Protection Act (EPA), 1997 EPA was the first direct and comprehensive legislation concerning the preservation, protection, and management of the environment. The salient features of the acts are: -
It emphasized various major environmental issues.

Among them, likely provisions for the management of solid waste are prevention and control of pollution, provisions of environment inspector, compensation and punishment, etc. Formation of necessary terms and conditions in order to examine and inspect.

3.3 International Waste Management Standards

General Obligations

Each Party shall take the appropriate measures to:

- (a) Ensure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects;
- (b) Ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal;
- (c) Ensure that persons involved in the management of hazardous wastes or other wastes within it take such steps as are necessary to prevent pollution due to hazardous wastes and other wastes arising from such management and, if such pollution occurs, to minimize the consequences thereof for human health and the environment;
- (d) Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes, and is conducted in a manner which will protect human health and the

environment against the adverse effects which may result from such movement;

(e) Not allow the export of hazardous wastes or other wastes to a State or group of States belonging to an economic and/or political integration organization that are Parties, particularly developing countries, which have prohibited by their legislation all imports, or if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner, according to criteria to be decided on by the Parties at their first meeting;

(f) Require that information about a proposed transboundary movement of hazardous wastes and other wastes be provided to the States concerned, according to Annex V A, to state clearly the effects of the proposed movement on human health and the environment;

(g) Prevent the import of hazardous wastes and other wastes if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner;

(h) Co-operate in activities with other Parties and interested organizations, directly and through the Secretariat, including the dissemination of information on the transboundary movement of hazardous wastes and other wastes, in order to improve the environmentally sound management of such wastes and to achieve the prevention of illegal traffic.

(i) The Parties consider that illegal traffic in hazardous wastes or other wastes is criminal.

3.4 Navigating Legal and Regulatory Challenges

Managing solid waste is one of the major challenges in urbanization. A survey conducted in all 58 municipalities of Nepal in 2012 found that the average municipal solid waste generation was 317 grams per capita per day. This translates into 1,435 tons per day or 524,000 tons per year of municipal solid waste generation in Nepal. Many of these technically and financially constrained municipalities are still practicing roadside waste pickup from open piles and open dumping, creating major health risks.

The survey and other assessment undertaken under the technical assistance identified eight key policy recommendations for solid waste management (SWM) in Nepal:

- an appropriate policy and strategic framework needs to be developed, together with technical guidelines on key issues such as organic composting and landfill operations, to properly guide local bodies in effective SWM;
- reduce, reuse, and recycle (3R) should be promoted. The survey identified great potential for resource recovery in Nepal, which could be realized with better public awareness and initiatives by local bodies and communities;
- strengthening the capacity of local bodies is essential, as they are mandated to provide SWM services to the citizens;
- enhancement of public participation and consultation would be effective in advancing SWM practices;
- costs for SWM need to be recovered, albeit partially at first, to provide better services. The public is generally willing to pay for services if the level of services is improved;
- current poor management practices such as open dumping and open burning should be stopped immediately to allow for more integrated SWM;
- public-private partnership offers opportunities for operational efficiency and cost effectiveness. The role of the private sector will be more important for complex tasks such as the operation of landfill sites, as municipalities are less experienced in these areas; and
- the management, updating, and dissemination of basic data will play an important role in improving planning by the local bodies and monitoring implementation progress.

Municipal Solid Waste is one of the demanding environmental challenges faced by many municipalities in Nepal. Current practices and systems in Nepal being unable to deal with the increasing volumes of waste generated by an increasing urban population and its impact on the environment and public health.

Module 4: Occupational Health and Safety

Session Objectives

- Acquainting the participants about the hygiene and safety.
- The participants will be able to list the required measures and standards of hygiene and safety personally and at workplace.
- The participants will not only become self-aware but also be able to spread awareness in their local communities, homes and family.

Session Guide

Topics	Formats	Timing
<div>1.Maintain personal hygiene</div> <div>2.Use Personal Protective Equipment (PPE)</div> <div>3.Ensure workplace safety</div> <div>4.Ensure tools and equipment safety</div> <div>5.Protect from fire hazard</div> <div>6.Provide First Aid Service</div> <div>7.Manage workplace waste</div>	<ul style="list-style-type: none">• Plenary discussion• Plenary presentation• Game• Discussion	<div>Total: 6 hrs</div>

Materials

- Slide 1—Presentation slides
- Flipchart 1—Flips chart, markers, cards and masking type for visualize
- Materials for Game

Facilitators’ notes

In this session, facilitator will present the topics more pictorial and promote discussion on topics of health and hygiene. To start the session, the facilitator asks the participants:

What is hygiene, what is safety, why it is important?

What are the measures that can been taken to promote better self-hygiene at home, school, workplace, community.

How can we make our environment safe for children and animals?
The shared responses will be noted by the facilitator or any participants on the flip charts.

Reading Materials

4.1 Maintain Personal Hygiene.

Why is personal hygiene important?

Good personal hygiene involves keeping all parts of the external body clean and healthy. It is important for maintaining both physical and mental health. In people with poor personal hygiene, the body provides an ideal environment for germs to grow, leaving it vulnerable to infection. On a social level, people may avoid a person with poor personal hygiene, which may result in isolation and loneliness. Good personal hygiene is vital because it helps stop us from getting sick. It also helps stop you from spreading germs and infectious diseases. The germs that cause many diseases can be passed on by:

- touching other people
- getting faeces (poo) or other body fluids on your hands
- handling contaminated food
- coming into contact with dirty surfaces or objects

i. Good personal hygiene helps stop you from getting sick and spreading germs.

ii. Washing your hands often is a good way to stop the germs on your hands making you sick.

iii. Bathing or showering often helps prevent infections and body lice.

Types of personal hygiene

There are many types of personal hygiene.

The following list is a good starting point for someone looking to build a personal hygiene routine:

Dental

Dental hygiene involves more than just having white teeth. A good dental hygiene routine can help prevent issues such as gum disease and cavities. It can also prevent bad breath.

Body

Several million sweat glands cover the human body. When bacteria break down sweat, the process creates a smell or body odor.

Washing the body will help prevent skin irritation, as well as removing the bacteria that cause body odor. Washing the hair removes oil and keeps a person looking clean and fresh.

Hand washing

Regular hand washing is one of the best ways to avoid spreading communicable diseases. The Centers for Disease Control and Prevention (CDC) Trusted Source recommend washing the hands at certain times:

- before, during, and after preparing food
- before eating food
- before and after looking after anyone who is vomiting or has diarrhea
- before and after treating a cut or wound
- after going to the bathroom
- after changing diapers or cleaning up a child who has used the toilet
- after blowing the nose, coughing, or sneezing
- after touching garbage or dirty surfaces or objects
- after handling pets or pet-related items, such as food

Nails

Fingernails may harbor dirt and germs, contributing to the spread of bacteria. It is easier for dirt and germs to collect under longer nails, so keeping them short can help reduce the risk of spreading infections. Keeping the body clean has positive effects on a person's social life and their physical and mental health. Personal hygiene is simply looking after the body and keeping it clean and healthy. Developing and maintaining a personal hygiene routine is key to having a healthy body and mind.

4.2 Use Personal Protective Equipment (PPE)

What is PPE?

Personal Protective Equipment (PPE) refers to protective clothing for the eyes, head, ears, hands, respiratory system, body, and feet. It is utilized to protect individuals from the risks of injury and infection while minimizing exposure to chemical, biological, and physical hazards. PPE serves as the final line of defense when engineering and administrative controls are insufficient in reducing or eliminating risks.

What is PPE Safety?

PPE safety is the practice of ensuring a safe, working environment for employees and visitors through the use of Personal Protective Equipment (PPE). Safety is paramount to all businesses across industries. Using PPEs, paired with inspections such as workplace and restaurant inspections, assessments like health and safety risk assessments, and analysis such as gap analysis—is essential to protect employees from risks and hazards.

The 4 Basic Types of PPE and Their Examples

However, even the strictest controls will not necessarily eliminate all the risks associated with most job tasks and this is where the need for PPE must be evaluated. A hazard assessment can help identify which specialized PPE will be required. There are numerous types of workplace safety equipment available depending on the hazard exposure and work conditions. The following are basic PPE that can help protect employees:

Face and Eye Protection

PPE includes safety goggles and face shields and should be used for tasks that can cause eye damage or loss of vision, sprays of toxic liquids, splashes, and burns.

Safety Tips:

- Check if safety glasses comply with the ANSI Z87.1 eye protection standard.

- Ensure that there are no cracks or deformities on the lenses.
- Ensure the strap is in good working condition and is firmly sealed to the cheek and forehead.
- Clean and disinfect after use.

Respiratory Protection

PPE includes full-face respirators, self-contained breathing apparatus, gas masks, N95 respirators, and surgical masks are used for a task that can cause inhalation of harmful materials to enter the body. This includes harmful gas, chemicals, large-particle droplets, sprays, splashes, or splatter that may contain viruses and bacteria such as COVID-19, viral infections, and more.

Safety Tips:

- Ensure that the equipment is fit-tested and the employee has undergone proper training before wearing one.
- Carefully read the instructions to determine if it is designed to help protect against the hazards you may face.
- Change filters on half-mask or full-mask respirators frequently.
- Replace disposable respirators with every use.
- Surgical masks are not to be shared with anyone.
- Avoid touching the surgical mask after wearing it.
- Change surgical mask timely and should be disposed of after use.
- Replace the mask immediately if it is damaged or soiled.

Skin and Body Protection

PPE includes the following categories to protect employees from physical hazards:

Head Protection

PPE includes hard hats and headgears and should be required for tasks that can cause any force or object falling to the head.

Safety Tips:

- Ensure that there are no dents or deformities on the shell and connections are tightened inside.

- Do not store in direct sunlight as extreme heat can cause damage.
- Choose appropriate cleaning agents as it can weaken the shells of hard hats and may eliminate electrical resistance.
- Always replace a hard hat if it was used for any kind of impact, even if the damage is unnoticeable.

Body Protection

PPE includes safety vests and suits that can be used for tasks that can cause body injuries from extreme temperatures, flames and sparks, toxic chemicals, insect bites and radiation.

Safety Tips:

- Ensure that they are clean and free from cuts and burns.
- Always get a good fit to ensure full body protection.
- Ensure bodysuit is heat-resistant clothing when working with high-temperature hazards.

Hands Protection

PPE includes safety gloves and should be used for tasks that can cause hand and skin burns, absorption of harmful substances, cuts, fractures or amputations.

Safety Tips:

- Ensure hand protection fits perfectly with no spaces and is free from cuts, burns, and chemical residue.
- Always replace them if any sign of contamination was observed.
- Use rubber gloves when working with heat and electricity to reduce the risk of burn or electrical shock.

Foot Protection

PPE includes knee pads and safety boots and should be used for tasks that can cause serious foot and leg injuries from falling or rolling objects, hot substances, electrical hazards, and slippery surfaces.

Safety Tips:

- Ensure boots have slip-resistant soles that can protect against compression and impact.
- Ensure the sole plate is in good condition to prevent punctures.

Fall Protection

PPE includes safety harnesses and lanyards and should be strictly used for tasks that can cause falling from heights and serious injury or death.

Safety Tips:

- Ensure that the straps are free from tears, deformities, and burn marks.
- Check the buckles if connected securely and tightly.
- Dispose of the equipment if used after a falling incident.

Hearing Protection

PPE includes ear muffs and plugs and should be used for tasks that can cause hearing problems and loss of hearing.

Safety Tips:

- Ensure the equipment fit the ear canal perfectly.
- It is recommended to use formable earplugs to fit different sizes of ear canals.
- Use protectors that reduce noise exposure to an acceptable level to have room for communication.
- Ensure earplugs are clean and in good condition.

Other examples of PPE include:

- safety glasses or goggles
- safety shoes
- high-visibility clothing or vests
- heat-resistant gloves
- anti-vibration gloves
- welding PPE such as helmets and flame-resistant clothing

- chemical-resistant suits or aprons
- safety harnesses and lanyards

Use of PPE should be mandatory for individual working in the SWM. It protects the individual from any potential germs and harmful bacteria. (A detailed figure in the Annex)

4.3 Ensure workplace safety

Workplace safety covers all factors that impact employees' health, safety, and well-being, and refers to the mitigation of any elements that can cause harm to workers or equipment. Such elements can include environmental hazards, unsafe working conditions, workplace violence, issues with equipment, and even drug or alcohol abuse. Ensuring a safe work environment requires a combination of workplace safety programs or policies, behaviors, precautions, and procedures to ensure worker safety and well-being. Workplace safety is a legal requirement, monitored at the national level.

5 Reasons Workplace Safety Is Important

There can be health and safety risks in any company, no matter the industry. For example, an IT firm's office may have faulty wires or electronics, causing electrical hazards. A factory handling hazardous chemicals causes health risks. So, workplace safety needs to be ensured no matter the size or type of your company. Here are some reasons why it's so important.

1. Compliance

The Occupational Safety and Health Act of 1970 defines certain rights for employees and places obligations on employers to ensure the safety and well-being of their workers. Under the act, employees must be told about all hazards in the workplace and about the health and safety laws applicable to the business. They should also receive safety training to avoid the hazards. If they suspect that the laws are being broken,

workers can confidentially file a complaint with the government without fear of retaliation.

As for employers, it is their duty to proactively seek out workplace hazards and address safety concerns before they cause harm. They must try to mitigate or remove as many hazards as possible and employees must know how to handle any hazards that can't be removed. If these regulations are not followed, organizations which enforces the regulations, may issue citations or impose hefty fines.

But regulatory compliance is not the only reason why workplace safety is important. There are several direct and indirect benefits to ensuring a safe work environment.

2. Employee Retention

If you ensure a safe workplace, it shows employees that you care about their safety and general well-being. So employees who feel safe at work are more loyal and tend to stay longer in the company, while those who don't feel safe are much more likely to leave and look for new opportunities.

3. Employee Productivity

Employees who feel safe at work are generally more productive than those who don't (or those who have been injured in the past). This is because poor or unsafe working conditions are more likely to make employees uncomfortable and anxious, which diverts their focus away from work. And productive employees are more efficient, producing more work in less time and thus reducing operational costs.

4. Financial Considerations

If the regulations are not being followed, or that safety and health standards are not being met, it can lead to serious fines and other liabilities. And if there is a workplace accident or injury, there may be legal issues over and above workers' compensation costs. There may also be other financial considerations involved, such as:

- The cost to find a temporary or permanent (depending on the extent of injury) replacement for an injured worker
- The cost of replacement or repair for damaged equipment during a workplace incident
- Reduced operational costs and increased revenue due to higher productivity of safe and healthy workers

5. Company Reputation

Companies with unsafe work environments can easily develop a poor reputation. This would have an impact on talent attraction and recruitment efforts, and customers, clients, and competitors perceive them as unprofessional. This could lead to loss of customers as they would look to competitors for the product or service. It could also cause the loss of good talent as employees don't want to work in unsafe conditions. On the other hand, if you keep your employees safe and happy, you're more likely to gain a good reputation in the market.

Workplace Safety Best Practices

To ensure worker safety, you need robust safety strategies or policies in place, and well-defined procedures to implement these policies. Here are some workplace safety tips and best practices you can follow to ensure a safe and healthy work environment.

Be Aware of Workplace Safety Hazards

The first step towards creating a safe workplace is to identify what the safety issues and hazards are. Only after they are identified can you take steps to address them.

Hazards can include ergonomic issues, dangerous chemicals, faulty equipment, electrical problems, slipping/tripping hazards, and environmental risks. You can implement various procedures to identify hazards and update your knowledge, such as regular safety audits and

thorough incident investigations whenever there's an accident or near miss. It's also important to encourage employees to report any safety concerns. Any fears of retaliation for reporting these issues should be put to rest, and employees should be reassured that the concerns will be addressed. Better yet, implement an anonymous reporting system to enable more people to raise their concerns.

Define and Implement Robust Workplace Safety Policies

An effective way to ensure workplace safety is to create a well-documented safety policy and define specific procedures to handle safety issues based on the policy. Good record-keeping is essential here as employees must be able to refer to the policy documents when in doubt. Of course, these policies and procedures must be implemented properly for them to actually work. You should remind employees of the importance of following the guidelines through regular safety meetings and clearly state the risks of not following them to ensure cooperation from all employees.

Institute Effective Safety Communication

Your workplace safety strategy will only be successful if you communicate it properly to everyone in your organization. This communication should ideally start as early as during the interview process, to ensure that your employees are onboard with your values. Articulate any safety concerns and requirements during the interview, and follow it up with a comprehensive safety training program during onboarding. After that, keep up continuous communication with employees about safety by:

- Ensuring that employees know where to look for safety plans and other documents related to safety procedures
- Letting employees know about updated policies, new equipment, new processes, and more

- Including clear instructions about what safety issues workers should report and how to report them in the safety documentation
- Ensuring that hazardous materials or machinery are clearly labeled and displayed prominently
- Having a communication system in place in case of any accidents or work-related injuries, to broadcast safety alerts to all employees as well as allow them to respond with information or questions

Provide Proper Safety Training

A workplace can't be made safe just with policies, however well-documented they may be. Employees need to know the hazards and take appropriate precautions. If they use heavy machinery or handle hazardous chemicals, they must have the knowledge and skills to safely do their work.

These skills and knowledge can be provided through standardized safety training covering topics like hazard awareness and response, basic first aid training, fire safety, and more, as relevant to your workplace. Such training is best delivered regularly, in the form of lectures as well as hands-on learning.

An effective way to train workers in safe working procedures is to get other workers who have experience with the specific type of work to teach the trainees. That way, workers can learn from each other (and teaching would reinforce the procedures for the trainers), and anyone who has seen or experienced an emergency situation can share their experience.

Encourage Employees to Make Safety a Priority

All possible safety procedures, policies, and written documentation is not enough if employees are not committed to keeping the workplace safe. You can appoint safety managers and consultants, train employees,

and more, but the effectiveness of all of that depends on a strong safety culture. Here are some tips to encourage employee engagement and strengthen your workplace safety culture:

- Create a simple (and preferably anonymous) way for employees to report safety concerns, and make sure the concerns are addressed
- Offer ongoing incentives to reward behaviors that prevent injury or help to eliminate unsafe work practices
- Recognize and praise employees who are willing to report safety concerns openly
- Encourage workers to approach and communicate with any co-worker engaging in unsafe practices
- Reward employees who come up with practical solutions to address any safety concerns

Provide Appropriate Safety Equipment

Some kinds of work, such as construction work, welding, electrical work, etc. require safety gear to prevent workplace injuries. Such protective gear can be the difference between life and death in case of accidents.

Employees who work with chemicals, machines, electronics, etc. must be provided with personal protective equipment (PPE) that is safely designed and fits comfortably. PPE includes gloves, protective clothing, boots, vision and hearing protection, helmets, hard hats, harnesses, and even medical masks (important now due to COVID). It is the duty as an employer to ensure that everyone has good, comfortable safety gear, and to replace such equipment quickly and easily if any piece of gear is missing.

Prioritize Emotional as Well as Physical Well-Being

Workplace stress can cause issues like anxiety, depression, and more. It can even lead to loss of focus, which could increase the risk of accidents.

Module 5: Basic tools, equipment, and materials

Session Objectives

- Elucidate the collection, transportation, processing equipment to the participants.
- The participants will be aware of the various ways of collecting SW, different tools and equipment utilized in collection and transportation.
- They will not only become self-employed by establishing their own enterprises but will also be capable of providing employment to others."

Session Guide

Topics	Formats	Timing
<ul style="list-style-type: none">• Collection Tools & Equipment• Transportation Equipment• Processing Equipment• Safety Equipment• Disposal Materials• Miscellaneous Materials	<ul style="list-style-type: none">• Plenary discussion• Plenary presentation• Discussions	Total: 6 hrs

Materials

- Slide 1—Presentation slides
- Flipchart 1—Flips chart, markers, cards and masking type for visualize

Facilitators’ notes

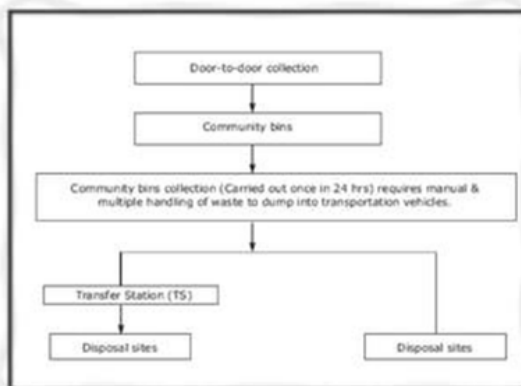
In this session, facilitator will elucidate the vast nature of collecting and transporting the SW. The session starts with the facilitator presenting the flow chart of the process of collection, then engage the group to participate if they have more ides and option that could ease the collection process.

This session is best covered with the help of pictures and short videos of the processes involved in SWM.

Reading Materials

Basic tools, equipment, and materials.

5.1 Collection Tools & Equipment



Types of collection

Municipal Collection Services:

a. Residential:

1. Curb (Kerb-side)
2. Alley
3. Set out and set back
4. Backyard collection

Curb (Kerb-side)

- House owner is responsible for placing solid waste containers at the curb on scheduled day.
- The work man come, collect and empty the container and put back at the curb.
- House owner is required to take back the empty containers from the curb to his house.
- Quickest/ economical
- Crew: 1 driver + 1 or 2 collectors
- No need to enter property.

Set-out, set back

- Collectors have to enter property
- Set out crew carries full containers from resident storage location to curb/ alley before collection vehicle arrives.
- Collection crew load their refuse into vehicle
- Set-back crew return the container to storage area.

Alley service

- The containers are placed at the alley line from where they are picked up by workmen from refuse vehicles who deposit back the empty container.

Backyard service

- The workers with the vehicles carry a bin, wheel – barrow or sack or cloth to the yard and empty the solid waste container in it.
- The bin is taken to solid waste vehicles where it is emptied.

Commercial-Industrial Collection Services:

- i. Large movable and stationary containers
- ii. Large stationary compactors (to form bales)

Collection Frequency:

- residential areas : everyday/ once in 2 days
- communal/ commercial : daily
- food waste - max. period should not exceed :
 - the normal time for the accumulation of waste to fill a container
 - the time for fresh garbage to putrefy and emit fous odor
 - the length of fly-breeding cycle (< 7

5.2 Transportation Equipment

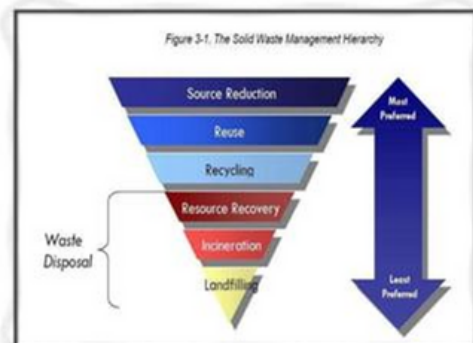


5.3 Processing Equipment

Treatment and disposal of solid waste

Several methods are used for treatment and disposal. These are:

1. Composting
2. Incineration
3. Landfilling
4. Pyrolysis
5. Recycling



Composting

- It is a process in which organic matter of solid waste is decomposed and converted to humus and mineral compounds.
- Compost is the end product of composting, which is used as fertilizer.
- Three methods of composting:
 - (a) composting by trenching
 - (b) open windrow composting
 - (c) mechanical composting

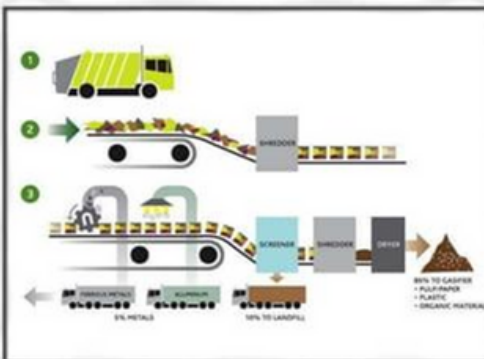


Composting by

- trenching 3 - 12 m long, 2 - 3 m wide and 1 - 2 m deep with spacing 2 m.
- Dry wastes are filled up in 15 cm. On top of each layer 5 cm thick sandwiching layer of animal dung is sprayed in semi liquid form.
- Biological action starts in 2- 3 days and decomposition starts.
- Solid waste stabilize in 4- 6 months and changed into brown colored odorless powdery form known as humus.

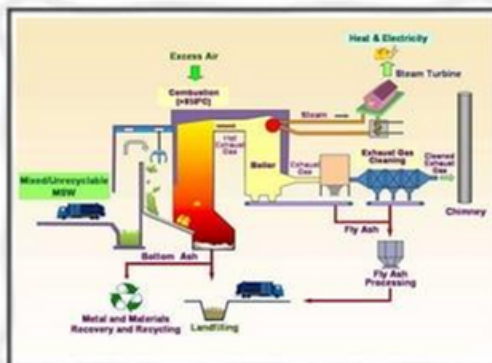
Mechanical composting

- It requires small area compare to trenching and open windrow composting.
- The stabilization of waste takes 3- 6 days.
- The operation involved are
 - reception of refuse
 - segregation
 - shredding
 - stabilization
 - marketing the humus



Incineration

- Incineration is a waste treatment process that involves the combustion of organic substances contained in waste materials.
- Incineration and other high temperature waste treatment systems are described as "thermal treatment".
- Incineration of waste materials converts the waste into ash, flue gas, and heat.
- Incinerators are used for this process



Important points regarding incineration

- Supplying of solid waste should be continuous.
- Waste should be proper mixed with fuel for complete combustion.
- Temp. should not less than 670 °C.

Advantages

- Most hygienic method.
- Complete destruction of pathogens.
- No odor trouble.
- Heat generated may be used for steam power.
- Clinkers produced may be used for road construction.
- Less space required.
- Adverse weather condition has no effect.

Disadvantages

- Large initial expense.
- Care and attention required otherwise incomplete combustion will increase air pollution.
- Residues required to be disposed which require money.
- Large no of vehicles required for transportation.

Landfilling

- A landfill site is a site for the disposal of waste materials by burial and is the oldest form of waste treatment.
- Historically, landfills have been the most common methods of organized waste disposal and remain so in many places around the world.
- The dumping is done with layers of 1- 2 m.
- The layer is covered with soil of 20 cm thickness.

Recycling

- Recycling is processing used materials into new products .
- It reduce the consumption of fresh raw materials, reduce energy usage, reduce air pollution (from incineration) and water pollution (from landfilling).
- Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, Recycle" waste hierarchy.

- Recyclable materials include many kinds of glass, paper, metal, plastic, textiles, and electronics.
- Although similar in effect, the composting or other reuse of biodegradable waste – such as food or garden waste – is not typically considered recycling.
- Materials to be recycled are either brought to a collection centre or picked up from the curbside, then sorted, cleaned, and reprocessed into new materials.

- Recyclable materials include many kinds of glass, paper, metal, plastic, textiles, and electronics.
- Although similar in effect, the composting or other reuse of biodegradable waste – such as food or garden waste – is not typically considered recycling.
- Materials to be recycled are either brought to a collection centre or picked up from the curbside, then sorted, cleaned, and reprocessed into new materials.



5.4 Safety Equipment



5.5 Disposal Materials

Garbage is mostly decomposable food waste, and rubbish is mostly dry material such as glass, paper, cloth, or wood. Rubbish includes bulky items such as old refrigerators, couches, large tree stumps, or construction and demolition waste like: wood, drywall, bricks, concrete, and rebar [a steel rod with ridges for use in reinforced concrete]), all of which often require special collection and handling.

Some forms of solid and liquid waste are classified as hazardous because they are harmful to human health and the environment. Hazardous wastes include materials that are toxic, reactive, ignitable, corrosive, infectious, or radioactive. Toxic waste is essentially chemical waste from industrial, chemical, or biological processes that can cause injury or death when it is either ingested or absorbed by the skin. Reactive wastes are chemically unstable and react violently or explosively with air or water. Infectious wastes (such as used bandages, hypodermic needles,

and other materials from medical and research facilities) are materials that may contain pathogens. Radioactive wastes (such as spent fuel rods containing fissionable materials used in nuclear power generation and isotopes of cobalt and iodine used in cancer treatment and other medical applications) emit ionizing energy that can harm living organisms. Hazardous wastes pose special handling, storage, and disposal challenges that vary according the nature of the material. (For more information on how these materials are treated, see hazardous-waste management.)

electronic wasteElectronic waste, or e-waste, encompasses various forms of electric and electronic equipment that have ceased to be of value to users or that no longer satisfy their original purpose as a result of redundancy, replacement, or breakage.

Electronic waste, or e-waste, is electronic equipment that has ceased to be of value to users or that no longer satisfies its original purpose as a result of either redundancy, replacement, or breakage. Electronic waste includes both “white goods” such as refrigerators, washing machines, and microwave ovens and “brown goods” such as televisions, radios, computers, and cellular telephones. E-waste differs from traditional municipal waste. Although e-waste contains complex combinations of highly toxic substances (such as lead and cadmium in computers and cellular telephones) that pose a danger to health and the environment, which should be treated as hazardous materials with respect to their disposal, it also contains nonrecyclable parts that enter the municipal solid waste stream. Electronic devices also contain recoverable parts made of gold, silver, platinum, and other valuable materials, as well as recyclable materials (such as plastics and copper), that can be used to make new electronic items. For more information on e-waste.

Module 6: Entrepreneurship Development

Session Objectives

- Encouraging the youth community aspiring to develop enterprises by providing them with vocational skills and knowledge to start their own businesses.
- They will be able to address the problem of unemployment by establishing enterprises through the mobilization of local resources.
- They will not only become self-employed by establishing their own enterprises but will also be capable of providing employment to others.
- Develop entrepreneurial skills in the waste management sector

Session Guide

Topics	Formats	Timing
6.1 Concept of Entrepreneurship 6.2 Quality of Entrepreneurs 6.3 Small Enterprise Policy in Nepal 6.4 Business Plan	<ul style="list-style-type: none">• Plenary discussion• Plenary presentation• Game and• Exercise	45 Min 1:15 1:15 2 hrs Total: 5:15

Materials

- Slide 1—Presentation slides
- Flipchart 1—Flips chart, markers, cards and masking type for visualize
- Materials for Game
- Chocolates

Facilitators' notes

In this session, facilitator will discuss the definition and concept of Entrepreneurship. To start the session, the facilitator asks the participants:

“What is entrepreneurship?”

How familiar are you with this?, including different in-between Business and enterprises?”

"What Types of Enterprise Business Based on the Nature of Work, Investment and Nature Ownership?

Please share your responses, and facilitator will note them on the flip charts. After summarizing feedback, facilitator will continue the session by presenting the following notes.

Reading Materials

6.1 Concept of Entrepreneurship

The word “Entrepreneurship” is derived from the French verb *entreprendre* which means “to undertake”. The term entrepreneurship thus refers to the following:

- The process of identifying opportunities in the market place, arranging the resources required to pursue these opportunities and investing the resources to exploit the opportunities for long term gains. It involves creating wealth by bringing together resources in new ways to start and operate an enterprise.
- The processes through which individuals become aware of business ownership then develop ideas for, and initiate a business.
- “The art of identifying viable business opportunities and mobilising resources to convert those opportunities into a successful enterprise through creativity, innovation, risk-taking and progressive imagination” ...ILO Youth Entrepreneurship Manual, 2009.

Entrepreneur

An entrepreneur is any person who creates and develops a business idea and takes the risk of setting up an enterprise to produce a product or service which satisfies customer needs. Entrepreneur refers to the person and entrepreneurship defines the process. Both men and women can be successful entrepreneurs; it has nothing to do with gender. All entrepreneurs are business persons, but not all business persons are entrepreneurs.

An effective and successful entrepreneur shows creativity and innovation in business and is an example for other people.

- An entrepreneur is an individual who:
 - 1.has the ability to identify and pursue a business opportunity;
 - 2.undertakes a business venture;
 - 3.raises the capital to finance it;
 - 4.gathers the necessary physical, financial and human resources needed to operate
 - 5.the business venture;
 - 6.sets goals for him/herself and others;
 - 7.initiates appropriate action to ensure success; and
 - 8.Assumes all or a major portion of the risk
- An entrepreneur is a job-creator not a job-seeker.
- An entrepreneur is a person who:
 - 1.Has a dream.
 - 2.Has a vision.
 - 3.Is willing to take the risk
 - 4.Makes something out of nothing

Entrepreneurship

Entrepreneurship is a practice and a process that results in creativity, innovation and enterprise development and growth. It refers to an individual's ability to turn ideas into action involving and engaging in socially-useful wealth creation through application of innovative thinking and execution to meet consumer needs, using one's own labour, time and ideas.

Engaging in entrepreneurship shifts people from being “job seekers” to “job creators”, which is critical in countries that have high levels of unemployment. It requires a lot of creativity which is the driving force behind innovation.

Benefits/importance of entrepreneurship

- Entrepreneurship allows one to undertake different forms of self-employment.
- Entrepreneurs are their own bosses giving them an opportunity to get more job satisfaction and flexibility of the work force.
- Encouragement of the processing of local materials into finished goods for domestic consumption as well as for export
- Healthy competition encourages higher quality products in the market thereby making more goods and services available to consumers.
- Development of new markets
- Promotion of the use of modern technology in small-scale manufacturing to enhance higher productivity.
- Freedom from dependency on the jobs offered by others
- Possibility of achieving great accomplishments
- There may be tax advantages

6.2 Qualities of Entrepreneurs

In order to be successful, an entrepreneur should have the following qualities:

6.2.1 Opportunity-seeking

An opportunity is a favourable set of circumstances that creates a need for a new product, service or business. It includes access to credit, working premises, education, trainings etc. An entrepreneur always seeks out and identifies opportunities. He/she seizes an opportunity and converts it into a realistic and achievable goal or plan.

6.2.2 Persevering

An entrepreneur always makes concerted efforts towards the successful completion of a goal. An entrepreneur perseveres and is undeterred by

uncertainties, risks, obstacles, or difficulties which could challenge the achievement of the ultimate goal.(Activity....)

6.2.3 Risk Taking

The best entrepreneurs tend to:-

- Set their own objectives where there is moderate risk of failure and take calculated risks
- Gain satisfaction from completing a job well
- Not be afraid of public opinion, scepticism
- Take responsibility for their own actions

Importance of risk-taking

- Build self confidence
- Create a feeling of leadership
- Create strong motivation to complete a job well
- An entrepreneur needs to consider the following issues before taking a risk.
- Is the goal set realistic?
- How big is the potential reward for this risk?
- How big is the potential loss?
- What is the probability of failure with this risk?
- How can I minimise the potential negative effects of taking this risk?
Examples: starting a business based on market study, share, forming cooperatives or associations etc
- What kind of support or resources do I need to have in place to help minimize or prevent potential negative effects from this risk?
- What further information do I need before taking this risk?
- What past experiences do I need to review in order to inform the strategy for taking this risk?

6.2.4 Efficiency and quality

Efficiency

- Being efficient means producing results with little wasted effort.

Quality refers to:

- The ongoing process of education, communication, evaluation and constant improvement of goods/services to meet the customer's need in a way that exceeds the customer's expectations;
- A characteristic of the product or service that makes it fit to use. It makes a product, process, or service desirable.
- The ability of a product or service to meet a customer's expectations for that product or service.

The importance of quality management in entrepreneurship is reflected in the income statement of the business. There is always a demand for quality products and efficient services. Quality plays an important role in this new era of globalisation because it confers certain benefits which include:

- **Reduction of waste:** Striving to maintain quality means examining all processes that contribute to the creation of a product, to remove non-productive processes and waste. If businesses keep to their standard of maintaining the quality of the product, the number of defective products will be reduced. Consumers prefer to buy quality products. Hence the quality products/services help in increasing the share in market and ensure that they will not be returned.
- **Cost-effectiveness:** Striving to ensure quality helps businesses to minimise the chances that they will make mistakes. As a result, the costs of re-doing work or changing the product after it has been sold are greatly reduced.
- **An increase in market share:** Customers prefer to buy the same product again and again if they are satisfied with the quality. If they are satisfied with the quality of a product, then they will not only purchase the product/services more than once, but they will also recommend it to their friends. As a result, this contributes to an increase in the company's market share.
- **Better profitability:** Better quality of product satisfies customers. Increased customers means increase sales, increased shares in market and consequently increased profits.

- **Social responsibility:** By providing quality products and services, a company is more likely to be able to fulfil its responsibility to the community and meet standards set by government.
- **Reputation:** Quality of goods and services improves the reputation of the business for competition in the market and growth.

6.2.5 Information-seeking

Successful entrepreneurs do not rely on guesswork and do not rely on others for information. Instead, they spend time collecting information about their customers, competitors, suppliers, relevant technology and markets. Gathering relevant information is important to ensure that the entrepreneur makes well informed decisions.

Types of information that are important for business

An entrepreneur should have sufficient information and seek additional information on various factors that are relevant to his/her intended new business activity. The different types of information required are indicated below.

Market

- Market segments for low, middle and high income groups
- Competitors and similar products
- Sales forecast
- Strategic business location

Supply

- Machines/equipment
- Raw materials
- Other assets like office furniture
- List of suppliers and prices

Infrastructure

- Business premises available
- Size of premises and rooms
- Power, water & other facilities
- Transport facilities

Business Management

- Organisational form of the business
- Needs in accounting & accounting courses
- Availability of qualified personnel
- Training facilities for staff and owner

Finance

- Micro-finance loan conditions
- Government financial facilities

Legislation

- Commercial code
- Business registration process
- Tax obligations
- Tender procedures

6.2.6 Goal Setting

A Goal - is a general direction, or long-term aim that you want to accomplish. It is not specific enough to be measured. It is large in scope, not necessarily time-bound, and is something that people strive for by meeting certain objectives which will hopefully add up to eventually achieving the goal.

Objectives - are specific and measurable. They can be output objectives, or they can be attitudinal or behavioural. But most of all, they can be measured. They are concise. They are specific. Think of the word object.” You can touch it, it’s there, it’s actual, and it’s finite. An entrepreneur must have a goal and an objective which is specific, measurable, attainable relevant, and time bound (SMART).

- **Specific:** Great goals are well-defined and focused. The moment you focus on a goal, your goal becomes a magnet, pulling you and your resources toward it. The more focused your energies, the more power you generate.
- **Measurable:** A goal without a measurable outcome is like a sports competition without a scoreboard or scorekeeper. Numbers are an essential part of business. Put concrete numbers in your goals to know if you're on track.
- **Attainable:** Far too often, entrepreneurs can set goals which are beyond their reach. Dream big and aim for the stars but keep one foot firmly based in reality.
- **Relevant:** Achievable business goals are based on the current conditions and realities of the business climate. For example, you may desire to have your best year in business or increase revenue by 50%, but if a national economic crisis is looming and three new competitors just opened in your market, then your goals are not relevant to the realities of the market.
- **Time-Based:** Business goals and objectives just don't get done when there's no time frame tied to the goal-setting process. Whether your business goal is to increase revenue by 20% or to find two new clients, it is important to choose a time-frame to accomplish your goal.

6. 2.7 Planning

Planning is making a decision about the future in terms of what to do, when to do, where to do, how to do, by whom to do and using what resources. An effective entrepreneur therefore usually plans his/her activities and accounts as best as they can for unexpected eventualities.

Short discussion:

- The facilitator will ask the participants whether they have a plan for their businesses and encourage those who do to share their experience.
- A detailed explanation about the processes that go into business planning will be discussed separately in Business Plan session.

6.2.8 Persuasion and networking

Persuasion is

- a way of convincing someone to get something or make a decision in your favour
- Inducing or taking a course of action or embracing a point of view by means of argument, reasoning, or entreaty; to convince
- to succeed in causing a person to do or consent to something; to win someone over, as by reasoning or personal forcefulness
- to cause to believe; to induce, urge, or prevail upon successfully
- Importance of Persuasion in Business
- We purchase goods from people
- We sell goods to people
- We need support from people
- We work with people.
- Without people be they suppliers, workers, and most importantly customers, there is no business.

Networking is an extended group of people with similar interests or concerns who interact and remain in informal contact for mutual assistance or support.

Business Networks

In a business environment where we are in, we network with customers, suppliers, competitors, various firms, different organisations, government offices and family, etc.

Factors that affect persuasion and networking

- Socio-cultural background and perceptions
- Communication skills (both verbal and non-verbal).
- Negotiation skills

6.2.9 Building self-confidence

Self-confidence is the state of being certain that a chosen course of action is the best or most effective given the circumstances. Confidence can be described as a subjective, emotional state of mind, but is also represented statistically as a confidence level within which one may be certain that a hypothesis will either be rejected or deemed plausible. Self-confidence is having confidence in oneself when considering a capability. Overconfidence is having unmerited confidence-believing something or someone is capable when they are not.

Characteristics of a self-confident person

A person with self-confidence may exhibit some of the following characteristics:

- Risk-taking: willing to take risks and go the extra mile to achieve better things.
- Independent: entrepreneurs like to be their own masters and want to be responsible for their own decisions.
- Perseverance: Ability to endure and survive setbacks and continue to build confidence in whatever you do in your business.
- Able to learn to live with failure. Entrepreneurs are going to make mistakes. They are human. But they learn from these mistakes and then move on.
- Ability to find happiness and contentment in work.
- Doing what you believe to be right, even if others mock or criticise you for it.
- Admitting mistakes and learning from them

6.2.10 Listening to others

An entrepreneur does not simply impose his/her idea on others. Rather, he/she listens to other people in their sphere of influence, analyses their input in line with his/her own thinking and makes an informed decision.

6.2.11 Demonstrating leadership

An entrepreneur does not only do things by him/herself, but also gets things done through others. Entrepreneurs inspire, encourage and lead others to undertake the given duties in time.

Self-assessment on entrepreneurial qualities

Activity: Complete a self-assessment of your entrepreneurial qualities
Annex: format

6.3 Small Enterprise Policy in Nepal

The definition of industries in Nepal, according to the Industrial Enterprise Act 2020, is summarized in Table 4.3. The major differences in the industry classification are based on the fixed capital, micro industry is classified as an industry with fixed capital of not more than two million rupees. Interestingly, energy used by a single piece of equipment is also added to the micro industry classification of Nepal (IEA, 2020). The Industrial Enterprise Act 2020 further classifies industries into various categories namely: energy-based, manufacturing, agriculture and forest-based, mining, infrastructure, ICT, information dissemination technology-based, and service industries.

Categorization of Micro, Cottage, Small and Medium Industry in Nepal

Parameter	Micro Industry	Cottage Industry	Small Industry	Medium Industry
Fixed capital	Not more than two million NPR	Not specified	Not more than 150 million NPR	Greater than 150 million- but tells than 500 million NPR
Owner	Involved in management and or operation	Not specified	Not specified	Not specified
Employees	Not more than 9	Not specified	Not specified	Not specified

Annual transaction	Less than 10 million	Not specified	Not specified	Not specified
Single equipment energy use	20 KW or less	Upto 50 KW	Not specified	Not specified
Remarks		Skill based on local and indigenous technology		

Source: Compiled by authors based on Industrial Enterprise Act 2020

6.4 Business Plan

A business plan is a written summary of your proposed business. It includes information about the plans, operations and financial details, its marked opportunities and strategies, as well as the entrepreneur's personal background. A business plan is a document used to summarise an entrepreneur's business aspirations, secure legal authority and mobilise resources to launch the business. Just as you need a map to help you find the route to an unknown destination, you need a plan to help you determine in which direction to go to get your business up and running. Written document explains your overall strategy and objectives in words and numbers. Your first plan should estimate your goals, your expenses, and how much you plan to charge for your services. It should also show how you plan to attract and keep customers. After you actually begin your business, you will find that the plan needs to be reviewed on an on-going basis. A business plan is a changing, dynamic document. There are no guarantees that your business will succeed but a well-written and well-researched business plan plays an important role in a business's success.

Why business planning is necessary

- Business plans show you if the business can expect to make a profit in the future. It shows what money to expect to come into and out of the business. For instance, if your costs are expected to be high, there would be need to increase prices.
- A plan will be able to identify parts of the business that require improvement. In so doing, one will be forced to think about every part of the business. To work out a plan, one must therefore think carefully about everything that affects the business
- A business plan makes it possible to access a bank loan because most banks are interested in knowing the expected sales, costs and anticipated profits as well as cash flows before offering a loan.
- It forces you to think deeply and plan every detail properly before you start your business.
- It helps you to determine the direction you want to move in.
- A business plan serves as a map against which you can determine your process.
- A business plan provides details of resources required and can be given to potential investors/financiers.
- A business plan indicates chances for success and potential critical points

Checklist for business plan: think about the following issues (not an exhaustive list).

The product

- Why would customers buy the product/service?
- Are the product specifications clear and acceptable?

The market

- Geographical description of the business location
- Is there local demand for the product and if not, how can it be created?
- Who are the big competitors, how can you counteract them and their influence?
- How many competitors does the business have? If they are many, your market share is low, which means that aggressive promotion is necessary to ensure visibility.
- Does your product need publicity and if so, what expenses would that incur?
- What is the trend in the selling price? Is there any seasonality?

Technical factors

- Have you selected all the necessary equipment? What are your reasons for this selection?
- If you buy machinery, check if you have a guarantee and if after sales service is included.
- Do you know where to source the equipment from? Who is the supplier?
- Do you have the necessary skills and if not, where can you get them?

Infrastructure

- Is the working/selling space adequate for your business operation to function?
- Are ownership/tenancy documents for the land/shop/workshop in order?
- If water is required for your business to operate, is it available close by?
- Do you have/need a supply of electricity?

- Is transport of raw materials or finished goods a critical factor and if so, how do you plan to handle it while minimising costs?
- Do you need to register your business? What are the legal requirements?

Financial analysis

- Have you done financial calculations of needed costs, resources, income etc?
- Have all the costs of production been included in your calculations?
- Does the business generate enough cash from the beginning so as to meet immediate liabilities (e.g. rent, loan repayment).
- Check your cash flow projections. Are they realistic?
- Check all estimates of capital required as well as running costs.

6.5 MARKET ANALYSIS

A market is an area of potential exchange, i.e., there are potential buyers (customers), and people who are willing to sell products or services. Prices are affected by the forces of demand (of products) and supply (by sellers).

- A product is anything that can be offered to a market for buying, use or consumption that might satisfy a want or need, for example, eggs, coffee, and mangoes.
- A service is performed when one group offers something to another. A service is not tangible and does not result in ownership of any kind. Examples include training services, and public transport services.

Market research

Market research is conducted in order to collect information, which enables you to make the right decision on the marketing of

your product/service. The main focus within this activity is to find out as much as possible about people's buying habits and your competition.

Market research is a systematic, objective collection and analysis of data about a particular target market, competition, and/or environment, often conducted as the first step in identifying the viability of business ideas. It always incorporates some form of data collection whether it is secondary research (often referred to as desk research) or primary research which is collected direct from a respondent.

Having developed a business idea you first need to know about your potential customers and competitors so you can position your business to maximise customers and overcome competition from others. Market research helps to assess the viability of a business.

How to do market research

1) Talk to potential customers. Ask them, for example:

- What products or services they want to buy?
- What do they currently buy?
- Where do they buy?
- Why do they buy from XY?
- When do they buy?
- How much do they buy?
- Which price do they pay?
- What are their preferences?
- Do they get any extras?
- What do they think about your competitors?

2) Study your competitors' businesses.

Find about:

- Their products or services, for example quality and design
- What prices they charge
- What exactly do they sell?
- How does their product differ from yours?
- Where do they get their inputs?
- Where do they sell?
- How do they promote their product/service?
- Do they have any special approaches to customer care?
- How can you compete?

Important note:

Be very careful to carry out your research in a friendly, sensitive way; ask questions and also observe – be aware: nobody likes more competition.

Ask suppliers and business friends

- Which goods sell in their business
- What they think about your business idea
- What they think about your competitor's product.

6.5.2 FINANCIAL ANALYSIS

BUDGETING

Every enterprise must have a budget. A budget is a calculated estimation of the value or price of the project and is always composed of the expenses – the costs of the project – and the income – the resources brought into the project to cover the expenses. Without a budget, it is impossible to control the project, and it is impossible to know if it is feasible. If you do not know how much it costs you will not know how much you need.

Income

Include all sources of funds necessary for the project (your organisations own resources, participants' contributions, grants, materials and services donated or loaned and amount requested from backers).

- Estimate the rental cost of material loaned or donated by sponsors.
- The total amount requested must be made clear (and must not exceed the maximum usually granted).
- Calculate total receipts. This figure must be higher than total expenditure (otherwise there will be no profit).

Expenditure

- List all expenses connected with the project.
- Estimate the cost of all outgoings (in the currency specified on the form).
- Your estimate must be realistic (show how you have arrived at the final sum).
- Expenditure must correspond to the anticipated programme of activities
- Estimate the rental cost of any material loaned by the private sector and include it under expenditure (and receipts).
- Calculate your total expenditure.

Resource mobilization

To mobilise resources effectively, consideration must be given to three elements, which together are referred to as a resource mobilisation framework. The three elements of the framework are 'resources', 'mechanisms' and 'resource providers'. If necessary, define each of these three and clarify their meaning by providing some examples.

- **Resources - Money** is one of the key resources that all projects need to be able to function and carry out their work. However, there are other resources that are also useful to starting a business. Examples include skills training, staff, inputs (e.g. seeds, tools, land etc).
- **Resource mechanisms - Resource mobilisation mechanisms** are the ways that resources can be mobilised from resource providers. Mechanisms are the actual processes of requesting or getting resources – for example, writing proposals, holding fundraising events, selling services, Selling products, face-to-face meetings, etc.
- **Resource providers – Resource providers** are the sources of funds and include banks, micro-credit agencies, government agencies, and charitable organisations.

A new entrepreneur should investigate as many sources of funding as possible in order to secure the best terms and conditions of repayment. The most important types of start-up funding are owner's equity, loans (personal or from a lending programme) and grants.

Owner's Equity

This is the private money one puts into the business. It is sometimes called risk capital because if the business fails, you lose this money. Investing your own money in a business is risky; however it puts less pressure on the business rather than borrowing. Investing your own capital may be risky but it shows that you have faith in your business idea. This can encourage others to invest with you. If you don't have enough capital you can try and find a partner who may be interested in the same business idea. A partner may or may not be work in the business but can invest money in it. Ensure you have clearly-defined terms of

partnership to avoid unnecessary misunderstanding later.

Loans

A loan for start-up capital refers to borrowed money which you will pay back at a later date with interest. The loan may be paid back in full in one or several instalments depending on the agreement. A loan inherently puts significant pressure on the business due to the requirement to pay it back. The more you borrow the more you pay in terms of interest and installments.

You may borrow money for:

- Land and buildings.
- Equipment.
- Working capital.

These are some of the possible requirements when applying for a loan:

- A thorough business plan with a business idea that the lending institution believes in.
- Some kind of collateral may be required. Collateral means security that the lending institution has for the repayment of your loan. This may be your business if you own one, your home, machinery and any other equipment.
- Being an account holder or member of a bank, credit institution or association and having operated an account successfully for some time
- Having a certain percentage (part) of the total loan as security in your account
- Information on yourself/yourselves and your ability to repay the loan
- Having a minimum age (mostly 18 or above)
- Referees, guarantors (honest people with a good reputation)

When is it useful to get a loan?

- When there is a justifiable financing gap in your business funding plans
- When other options such as saving and group-financing are not possible
- When there is the need to take up an urgent opportunity that could lead to quick profit

Where can you borrow?

- Banks and financial institutions
- Societies and associations
- Friends, relatives, family members
- Suppliers
- Government
- Savings and Credit Cooperatives

Types of loans

- Group loans
- Loans with formal banking institutions (such as SACCOs)
- Individual loans
- Loans with informal savings groups and associations

Before one borrows money, they should consider these factors seriously.

- Develop a solid business plan including total funding requirements and running costs for the first few months
- Develop a financing plan including identifying funding sources
- Identify and approach financial institutions in your area
- Obtain the terms and conditions for the loan to be availed
- Compare them with those of other financial institutions around

- Check your business plan to establish the implications of such a loan (monthly repayment and interest rates will affect your income/profits). Check if your business can cope with these implications
- Initiate further discussions with the financial institution or association

Grants

A grant is an allowance that a government or organisation gives to support small business creations in the country. Government and non-governmental organisations sometimes give grants to potential entrepreneurs to support them in starting small businesses. Further information on accessing funding through grants is covered in a later session.

6.5.3 REALISTIC PLANNING

Milestone-planning for the realisation of your business will have an essential influence on the financing and risks associated with the business. Planning helps you to think your way through all the aspects and to analyse the effects of individual steps in implementation.

However, realistic planning is not simple, more so when founding a new business. In spite of this, attempt to carefully sketch the individual steps needed to implement the business plan. In this way, you gain credibility from your backers and business partners and enhance the chances of success for your business.

Four simple rules can help simplify realistic planning for you:

1. Subdivide the tasks into packages

Since there is a great deal of detailed work to be carried out when

setting up a business, there is always the danger of losing sight of the big picture. Thus you should always organize the individual activities in “packages.” The business plan should, however, not contain more than ten such packages; you can specify them further at a later date. A concrete objective is to be set for each package.

2. Ask the experts

Make use of the expertise of specialists in order to underpin major steps in planning. Marketing specialists, for example, could show you how long it will take to develop and conduct a given campaign.

3. Set priorities

Every overall planning concept comprises a series of events and assumptions that in some cases run in parallel and are linked with one another. Certain activities can, if delayed, endanger the entire project – similar to assembly line production that comes to a halt, if certain parts are lacking. Activities such as these are referred to as the “critical path.” You should devote particular attention to them in your planning.

4. Reduce risks

Try to schedule activities that will reduce risks at the beginning of the implementation. You could, for example, carry out a market survey immediately or just shortly after market entry. If you do not carry out such surveys or polls until a later point in time and find that there are not enough customers for your product, all your previous work may have been in vain.

NOTE: A business plan is a document that describes your business details and giving goals and objectives and lists the steps you will undertake

Sources:

- 1.
2. <https://www.adb.org/sites/default/files/publication/30366/solid-waste-management-nepal.pdf>
3. <https://www.iso.org/obp/ui/#iso:std:iso:24161:dis:ed-1:v1:en>
- 4.
5. <https://www.adb.org/publications/solid-waste-management-nepal-current-status-and-policy-recommendations>
6. <https://www.slideshare.net/slideshow/solid-waste-managementpdf-256712600/256712600>
7. <https://www.healthdirect.gov.au/personal-hygiene>
8. https://s24.q4cdn.com/382246808/files/doc_downloads/2020/03/Waste-Management-Standard.pdf
9. <https://www.pulpstream.com/resources/blog/workplace-safety#:~:text=An%20effective%20way%20to%20ensure,policy%20documents%20when%20in%20doubt.>
- 10.
11. <https://prideoneconstruction.com/how-to-ensure-tool-and-equipment-safety/#:~:text=Proper%20tool%20maintenance%20is%20a,tool%20and%20have%20it%20repaired.>
12. <https://advancedct.com/tips-for-working-with-tools-and-equipment/>
13. <https://www.britannica.com/technology/fire-prevention-and-control>

Green Empowerment through Vocational Training for Solid Waste Management in Lalitpur (GEMS-L)

This project initiative focuses on developing skills in waste segregation, recycling, and innovative business practices within the green economy. With rapid urbanization and significant unemployment, GEMS-L addresses the critical need for sustainable waste management solutions and economic opportunities. The project comprises Stakeholder Networking and Knowledge-sharing, Capacity Building, Awareness Campaigns and Community Engagement, and Project Management and Coordination. Over seven months, the project will foster collaboration among NGOs, local authorities, and the community, promoting public participation and enhancing waste management infrastructure. By equipping youth with the skills and knowledge for entrepreneurship and self-employment, GEMS-L aims to create a more sustainable and economically resilient Lalitpur.

