

Training Manual for Local Governance and Women Group Representatives

Module II

Poverty, Rural Hunger and Migration

1. INTRODUCTION

This module highlights the critical importance of ensuring food security, i.e. combating hunger and paying attention to related aspects of agricultural and other economic activities. It outlines relevant features and characteristics of food security; the meaning and concepts of hunger, malnutrition and food insecurity. The module describes causes and effects of hunger on rural people and their children and suggests nutritional guidelines for the rural poor, disadvantaged and vulnerable people. The module encourages strategies that address the rural hunger, food wastage and food insecurity.

■ **After the completion of this module, you would be able to:**

Objectives

- Describe the meaning and concepts of hunger, malnutrition, food security and food insecurity.
- Identify causes and effects of hunger on rural people and their children.
- Prepare nutritional guidelines for the rural poor, disadvantaged and vulnerable people.
- Develop strategies that address the rural hunger, food wastage and food insecurity.
- Describe causes and consequences of migration.

■ **The module contains two sections with a detailed explanation on each sub-theme.**

Contents

- Understanding Rural Hunger
 - ▶ *Why rural people are hungry?*
 - ▶ *Nutrition and healthy food.*
 - ▶ *Household and community food security.*
 - ▶ *Causes and consequences of food insecurity.*
 - ▶ *Causes of food losses and food waste.*
 - ▶ *Food safety.*
 - ▶ *Understanding household food security.*
- Migration and its consequences
 - ▶ *Dynamics of labour mobility.*
 - ▶ *Rural-urban migration.*
 - ▶ *Push and pull factors.*
 - ▶ *Causes of migration.*
 - ▶ *Impacts and effects of migration.*

In this module you will find several practical ideas and skills on how to combat rural hunger and food insecurity. This will help you identify important gaps which may put at risk your investment plan for food and nutrition security. The important gaps discussed in this module are skill gaps, limited implementation capacities, and the low operating capacity and result orientation of people and institutions. The three inter-connected elements – food availability, food access, and food utilisation – have also been discussed.



2.

UNDERSTANDING RURAL HUNGER



2.1 Rural Hunger: State-Of-The-Art

Do you know that most of the world's hungry people live in developing countries? According to the latest estimates of the Food and Agriculture Organisation (FAO), there are 870 million hungry people in the world. Ninety-eight per cent of them are in developing countries. Table 2.1 and Table 2.2 highlight the distribution of hungry people in the world and the hunger indicator in a selected number of developing countries respectively.

Table 2.1: Distribution of Hungry People

Major regions	Hungry people (in million)
Asia and the Pacific	578
Sub-Saharan Africa	239
Latin America and the Caribbean	53
Near East and North Africa	37
Developed Countries	19

Source: FAO

Seventy five per cent of all hungry people live in rural areas, mainly in the villages of Asia and Sub-Saharan Africa. They largely depend on agriculture for their food. These populations have no alternative source of income or employment. As a result, they are vulnerable to crises. Many migrate to cities in their search for employment.

Table 2.2: Developing Country: Hunger Indicators

Country	Scale of hunger		Intensity of hunger	Rank for hunger
	Percentage of children under 5 years that are under-weight	Percentage of total population that are under-nourished	Food deficit of undernourished population	
Year	2000-2006	2003-2005	2003	
Weightage				
China	7	7	High	1
Ghana	19	9	Moderate	1
Uganda	19	15	High	3
Vietnam	20	14	High	4
Senegal	15	26	High	5
Lesotho	17	15	High	6
Brazil	4	6	High	7
Gambia	15	30	High	8
Kenya	17	32	High	8
Guatemala	18	16	High	8
Malawi	18	29	High	11
Nigeria	27	9	High	11
Nepal	39	15	High	11
Tanzania	17	35	High	14

Country	Scale of hunger		Intensity of hunger	Rank for hunger
	Percentage of children under 5 years that are under-weight	Percentage of total population that are under-nourished	Food deficit of undernourished population	
Cambodia	28	26	High	14
Guinea Bis-sau	22	32	High	16
Rwanda	18	40	Intense	17
Mozambique	21	38	Intense	18
Liberia	23	40	Intense	19
Bangladesh	39	27	High	19
Zambia	23	45	Intense	21
South Africa	9	5	Moderate	22
Sierra Leone	25	47	Intense	23
Ethiopia	35	46	Intense	24
Haiti	19	58	Acute	25
Pakistan	31	23	High	26
India	44	21	High	27
Burundi	39	63	Intense	29
D.R. Congo	34	76	Acute	29

Source: *Hunger Free, Actionaid*

FAO calculates that around half of the world's hungry people are from small-holder farming communities, surviving off marginal lands prone to natural disasters like drought or flood. Another 20 per cent belong to landless families dependent on farming and about 10 per cent live in communities whose livelihoods depend on herding, fishing or forest resources.

The remaining 20 per cent live in shanty towns on the periphery of the biggest cities in developing countries. The numbers of poor and hungry city dwellers are rising rapidly along with the world's total urban population.

Women are the world's primary food producers, yet cultural traditions and social structures often mean women are much more affected by hunger and poverty than men. A mother who is stunted or underweight due to an inadequate diet often gives birth to low birth-weight children.

Without enough to eat, people in developing countries cannot even begin to work their way out of poverty. For children especially, being hungry or malnourished means they can die from common infections or suffer poor health in the long run. This limits their ability to learn in school, work or progress. 165 million children under 5-years suffer from chronic malnutrition (Box 2.1).

Box 2.1

■ Agricultural Productivity in Vietnam

While many policies boost agricultural productivity, the policies implemented in Vietnam exemplify the benefits of supporting small-scale agriculture. From 1930 to 2006, Vietnam has halved hunger, reduced poverty from 58% to 18%, and transformed from being a rice importer to being the second largest rice exporter in the world. This development began with agricultural land reform and the public approval of smallholder agriculture (in which crops are mainly grown on small farms instead of commercial or collectivised farming). Vietnamese agricultural systems started becoming more liberalised in 1981, following a decree that de-collectivised agriculture from communal farming to small-scale family farming. Furthermore, Vietnam opened up to fertiliser imports, which lowered the prices of fertilisers and thereby increased their usage, enabling increased food production. Equitable land distribution and investment in agricultural infrastructure allowed Vietnam to increase food security and reduce hunger by half.

Source: FAO.

2.2 Why Rural People are Hungry - Causes of Hunger

Why does hunger exist? The causes of hunger are many and varied. Some are of natural origin such as drought, crop pests, natural disasters; others are created by humans, for example by war or over-exploitation of natural resources essential to food production. Yet the most important causes of hunger have their roots in economic, social and political factors, having to do with the ways in which the production and distribution of food are organised in the world. Table 2.3 lists the key causes of hunger.

Table 2.3: Factors Causing Hunger

Cause	Underlying factors
Nature	<ul style="list-style-type: none"> • Floods. • Tropical storms. All causing crop failures and heavy live-stock losses. • Droughts. • Climate change.
War	<ul style="list-style-type: none"> • Hunger emergencies due to displacement of people. • Weapon – destruction of food and livestock by soldiers; wrecking local markets; mining and contaminating water wells forcing farmers to abandon their land.
Poverty trap	<ul style="list-style-type: none"> • Restrictive economic system. • Farmers often cannot afford seeds to plant the crops. • Craftsmen lack the means to pay for the tools to ply their trade. • Others have no land or water or education to lay the foundations for a secure future. • Increasing global demand for energy in form of biofuels puts stress on food and energy supply
Agricultural Infrastructure	<ul style="list-style-type: none"> • Lack key agricultural infrastructure: <ul style="list-style-type: none"> ▶ Lack of roads (high transport costs). ▶ Lack of warehouses (storage facilities). ▶ Unreliable water supplies (irrigation facilities). • Lack of fair trade laws. • Policy negligence on rural development.

Cause	Underlying factors
Over-exploitation of environment	<ul style="list-style-type: none"> • Poor farming practices. • Deforestation. • Over-cropping. • Over-grazing. • Land erosion. • Salination. • Desertification. <p>All leading to a decline in land's fertility.</p>

Causes of hunger are many and complex as shown in Table 2.3. Some of the principal ones can be summarised as follows:

- **Agriculture being denied national priority:** *In most countries, governments simply do not give agriculture, fishing and forestry the priority they deserve.*
- **Land scarcity and its unequal distribution:** *If land continues to be degraded through soil erosion, chemical pollution, and salinisation and lost to highways, airports, and industrial or mining uses, the amount of farmland available will certainly not increase and may even be reduced.*
- **Harmful agricultural practices:** *As rural populations increase, land is divided into small plots (fragmentation of land). Lack of fertilisers and pesticides leads to soil degradation. Essentially, this is because the land is being farmed beyond its capability. Another problem is the clearing forests.*
- **Low farm prices:** *Frequently, farmers are simply not paid enough for their produce. At the same time, the prices peasants pay for tools, fertilisers, seeds and other inputs they need are constantly rising.*
- **The international trade situation:** *Rich countries buy products from poor countries - generally agricultural or raw materials - at low prices, while poor countries buy finished goods such as tractors, machinery, automobiles and even processed foods from industrialised nations at constantly rising prices.*

- ▶ **Problems of food distribution:** *Thirty-three low-income countries are unable to meet 100 per cent of the nutritional needs of their people (IFAD).*
- ▶ **Environmental overload:** *Over-consumption by wealthy nations and rapid population growth in poor nations strain natural resources and make it harder for poor people to feed themselves.*
- ▶ **Discrimination:** *Lack of access to education, credit and employment – a recipe for hunger – is often the result of racial, gender or ethnic discrimination.*
- ▶ **Lack of clout:** *Chronic hunger is caused by powerlessness. People who do not have power to protect their own interests are hungry. The burden of this condition falls most acutely on children, women and elderly people.*

Now you can safely say that poverty, food prices and hunger are closely linked. Poverty causes hunger.

2.3 Who in Rural Areas Suffer from Hunger?

In rural areas, several population groups are especially vulnerable to hunger. These are:

- Children;
- Rural inhabitants; and
- Slum dwellers.

It is in the rural areas of the developing countries that the largest masses of the poor are to be found. Those who live in the countryside- and who are actually involved in growing food- are undernourished. In times of shortage or crisis, rural areas are usually the hardest to reach with food and other supplies. Women, who are often active in food production as well as taking care of a family, are more likely than men to suffer from malnutrition.

2.4 Knowing the Consequences of Hunger

Hunger is uncomfortable. If you have ever missed a meal, you know, it directly affects your mood, your focus, and your sense of physical well-being. Hunger leads to:

- **High infant-mortality rates:** Malnourished women are more likely to be sick, have smaller babies, and die earlier, resulting in high levels of infant mortality in areas where chronic hunger is a problem.
- **Vulnerability to common illnesses:** More than 2 million children die every year from dehydration caused by diarrhoea (UNICEF). A malnourished child often lacks the strength to survive a severe case of diarrhoea.
- **Increased risk of infection:** A malnourished child has a weakened immune system, making the child more vulnerable to infection. Infections cause lack of appetite.
- **Acute vulnerability in times of disaster:** A community's poorest families are already living on the edge of survival. Unexpected shocks, such as crop failure, floods, epidemics, locusts or typhoons result in devastation and almost certain death to some members of the family.
- **Impediments to development:** Chronic hunger deprives children of the essential proteins, micronutrients and fatty acids they need to grow adequately. Globally, it is estimated that nearly 226 million

children are stunted – shorter than they should be. In addition, stunted children score significantly lower on intelligence tests than normal children. Childhood malnutrition can cause reduced intelligence, anxiety, psychiatric issues and cognitive impairment in the long term.

- **Impediments to economic growth:** For nearly 67 million children who weigh less than they should due to chronic hunger, completing school is an unlikely reality. Studies have shown that underweight children will probably spend fewer years in school, which, in turn, has a measurable impact on how much they earn in adulthood.

2.5 Nutrition and Healthy Food

The terms “hunger” and “malnutrition” are quite often used interchangeably. But they are not the same. It is, thus, necessary for you to understand the meaning of some basic concepts associated with hunger.

In addition to hunger and malnutrition, you will find below an explanation of other terms which are directly or indirectly associated with hunger.

- Hunger is not just the need to eat. **Hunger** means the continuing shortage of food for a person needed to support a healthy life.

Over time, hunger slows physical and mental development and leaves hungry people more vulnerable to illness and disease. Among some of the problems of hunger are lack of concentration, enervation, and weakened immune systems. Hunger can lead to malnutrition.

- Malnutrition refers to a state in which the physical function of an individual is impaired to the point where he or she can no longer maintain natural bodily capacities (WFP).

Problems that result from malnutrition include being underweight, stunted, or micronutrient-deficient. A malnourished person does not necessarily feel hungry.

For example, respiratory and diarrhoea infections are common in under-nourished children. Even diseases of vitamin A deficiency, which can cause blindness, anaemia are all due to iodine deficiency. Under-nourished adults lose weight. They are progressively weakened. They become apathetic, less creative and imaginative, and more irritable. You know that the great majority of hunger deaths come not from starvation but from nutrition-related sicknesses and diseases.

- **Under-nutrition** means that people do not get enough to eat. In rural areas, under-nutrition tends to occur yearly, on a seasonal basis, in the period just before harvest.

Under-nutrition takes place when the food stocks of a family or farm community are exhausted and the new harvest is not yet in. Under-nutrition becomes an extreme during a famine causing death by starvation.

- **Over-nutrition** defined as the over-consumption of nutrients and food to the point at which health is adversely affected (FAO).

Over-nutrition can develop into fatness. Fatness may result in heart disease, hypertension, cancer, and diabetes.

One of the factors responsible for over-nutrition is the spread of “fast-food culture” in many developing countries. China, for example, now has nearly 3,000 Kentucky Fried Chicken (KFC) restaurants. There is one new KFC opening in mainland China almost everyday (Rooney, B.). McDonald’s has already opened 1,300 locations in China. It has plans to open up one new restaurant everyday for another two years (Carey, P.) Furthermore, a growing number of Chinese households own television sets, personal vehicles, and other technologies that reduce physical activity and facilitate weight gain.

Nutrition influences every single aspect of our physical, mental, emotional and spiritual being.

- **Nutrition is** defined as the use of food by our bodies for growth, energy, reproduction and protection. Insufficient or unbalanced intake of food substances generally results in malnutrition.

The root of the problem of malnutrition is in the home. To solve it, you have to help the family learn better habits of nutrition. In rural communities the person responsible for health care at the family level is the “community health worker”, generally a woman worker. She is the point of contact. It is her who first treats the members of the family for their illness and who gives them advice on health matters.

In this section we will take a closer look at good nutrition. Food can be divided into three groups as shown in Figure 2.1 and Table 2.3. For a balanced diet, an average meal consumed by an individual should contain nutrients from each of these groups:

- Energy giving foods (carbohydrates and fats).
- Protective foods (vitamins and minerals): vegetables and fruits; vital for fighting infections and strengthening the immune system.
- Body building foods (proteins): “building blocks” for the development of muscles, cells, teeth and bones.

Figure 2.1: Main Food Groups

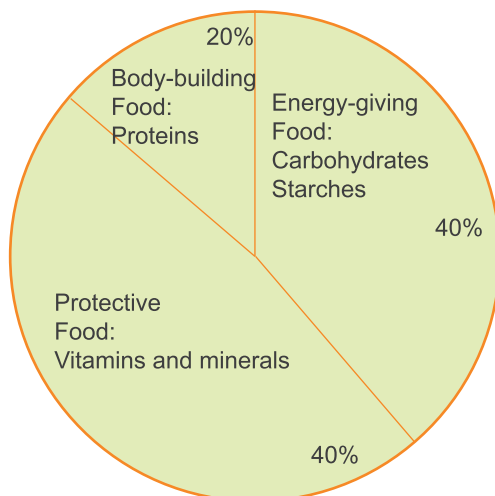


Table 2.3: Major Food Groups

Body building foods (proteins)	Protective foods (vitamins and minerals)		Energy-giving foods (Carbohydrates/starches)
	Vegetables	Fruits	
Beef Goat meat Lamb Chicken Pork Fish Eggs Grasshoppers White ants Milk Beans Peas Sesame	Cabbage Carrots Tomatoes Cassava leaves Pumpkin leaves Eggplant Bamboo shoots Cauliflower Cucumber Avocados	Pineapples Mangoes Oranges Papaya Ripe bananas Lemon Jack fruit Passion fruit Watermelons Gooseberries Guavas	Matooke Maize meal Cassava Rice Bread Potatoes Sorghum Chapatti Millet Yams Plantain Pasta

2.6 Household and Community Food Security

The issue of food safety is very important to developing countries, particularly in rural areas that lack control and supervision.

A large number of people fall sick because of intentional contamination of food by producers or because of careless and unsupervised practices. Thus it is important for us to know the basics of food safety.

Food safety helps protect us from:

- food borne illness
- food hazards
 - ▶ *biological*
 - ▶ *chemical*
 - ▶ *physical*
- cross contamination

2.7 Household Food Security

The ancient Chinese maxim still rings true: Feed a man a fish and he eats for a day – teach him to fish and he eats for a lifetime. Families become hunger-free when they can provide food for themselves. The solution is simple: jobs that pay enough for a family to live on.

- **Food security** refers to the availability of food and one's access to it. A household is considered food-secure when its occupants do not live in hunger or fear of starvation. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO).

There are three facets of food security (WHO):

- **Food availability** is having available sufficient quantities of food on a consistent basis.
- **Food access** is having sufficient resources, both economic and physical, to obtain appropriate foods for a nutritious diet.
- **Food use** is the appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.
- FAO adds a fourth facet: the **stability** of the first three dimensions of food security over time.

Food insecurity is an economic and social indicator of household well-being.

- **Food insecurity** is defined as “a household-level economic and social condition of limited or uncertain access to adequate food.” Households can have low food security or very low food security.

Low and very low food security have been associated with chronic health problems in adults, such as heart disease, diabetes, high blood pressure, obesity, and mental health issues, including major depression.

Child hunger can have serious health consequences, including anaemia, impaired cognitive development, and stunted growth, and can affect children's behavioural, social, and educational development.

2.8 Determinants of Household Food Security

The household food security depends on the:

- Level of household resources – capital, labour, and knowledge.
- Prices

In household food security, access to adequate food is not a serious problem. It can be achieved without households being self-sufficient in food production. The important aspect is the ability of households to generate sufficient income which, together with own production, can be used to meet food needs. If household food security is assured, it does not mean that individual food security has also been attained.

A distinction between chronic food insecurity and transitory food insecurity is also drawn.

- **Chronic food insecurity** refers to the inability to meet food needs on an on-going basis whereas the transitory food refers to the inability to meet food needs. It is, therefore of a temporary nature.

In this section of the module we will discuss household- and individual-level food security. While discussing food insecurity, we have to keep the following key questions that need to be discussed and explained in our analysis. Thus the key questions that this section attempts to answer include:

- Which crisis?
- What has been the impact of the crisis on the village and on the food security and livelihoods of the population?
- Which groups are at risk? Where? When? Why?
- What types of risks do these groups face?
- What type of response is required to assist these groups?
- How much assistance is required?
- How should beneficiaries be selected?
- How many people are in need of each type of assistance?
- When should the assistance be provided and for how long?
- What results are we seeking to obtain with our response?

2.9 Causes and Consequences of Food Insecurity

Causes of food insecurity can be temporary and some are chronic. For example, at the end of a dry season and beginning of rainy season there might not be enough food because the food stores are depleted and the fields are not yet ready for harvest. This is a temporary situation. Chronic food insecurity exists in communities experiencing high poverty levels and it is always difficult to get enough food. Table 2.4 lists the causes of food insecurity.

Table 2.5: Causes of Food Insecurity

Causes of food insecurity	Mechanism (how it leads to food insecurity)
Rapid population growth	<ul style="list-style-type: none"> • A high rate of population growth calls for more food production and the need for ploughing more land. This leads to deforestation. Population may exceed the carrying capacity of the fragile environment in some areas. • At the household level the food produced from the same plot of land that the household has may not be sufficient. It is also very difficult to purchase food for large numbers of family members.
Conflict/civil war/trans-border war	<ul style="list-style-type: none"> • Interferes with production, marketing and distribution. • Shunts the gross domestic product (GDP) towards purchase of war weapons.
Extreme production fluctuation	<ul style="list-style-type: none"> • Decreases food supplies available for consumption.
Decreases food supplies available for consumption.	<ul style="list-style-type: none"> • Leads to poor purchasing power of households.
Lower level of saving	<ul style="list-style-type: none"> • Leads to poor purchasing power of households.
High rate of natural erosion	<ul style="list-style-type: none"> • Poor soil fertility and decreased productivity leading to food supply shortages.
High rate of illiteracy and school attendance	<ul style="list-style-type: none"> • Poor income earning power and hence purchasing power due unemployment.
Poor health and sanitation	<ul style="list-style-type: none"> • Morbidity, mortality and reduced productivity due to illness.
Deforestation	<ul style="list-style-type: none"> • Leads to high top soil erosion and poor soil fertility. It will lead to decreased rainfall and dryness
HIV/AIDS	<ul style="list-style-type: none"> • HIV/AIDS leads to 'green famine' which has far-reaching adverse implications. There are four ways in which HIV/AIDS is linked to famine: <ul style="list-style-type: none"> ▶ Changes in dependency patterns (children are dependent on children or on the elderly due to death or frequent sickness of an adult). ▶ Loss of assets and skills associated with adult mortality. ▶ The burden of care for sick adults and orphaned children. ▶ The vicious interaction between malnutrition and HIV infection.

Causes of food insecurity	Mechanism (how it leads to food insecurity)
Poor governance	<ul style="list-style-type: none"> • Corruption and diversion of public resources to personal use.
High rates of chronic malnutrition	<ul style="list-style-type: none"> • Decreased well-being leading to decreased intellectual and physical productivity of people.
Natural resource constraints	<ul style="list-style-type: none"> • The limitations of rainfall in the country place certain constraints on improving food security. The chances of drought occurring in parts of a country can increase the probability of food insecurity, especially in the arid and pastoralist areas.

Source: Adapted from LabSpace.

The body's response to chronic hunger and malnutrition decreases the body size. In small children this is known as stunting, or stunted growth. It is indicated by low weight in relation to height. It leads to higher infant and child mortality, with rates increasing significantly during famines. Once stunting has occurred, improved nutritional intake later in life cannot reverse the damage.

2.10 Addressing Household Food Insecurity

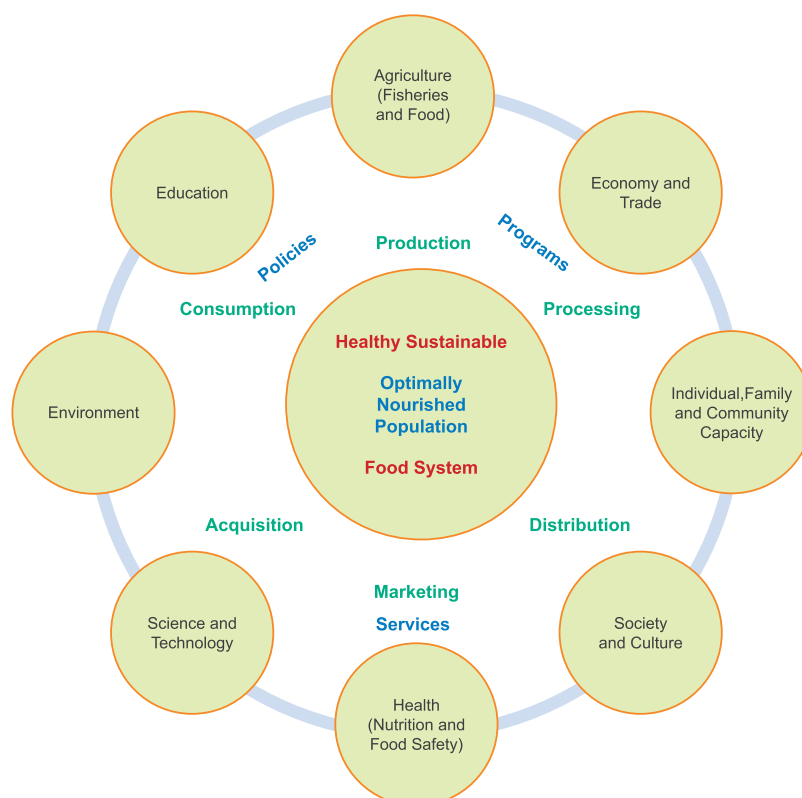
Unlike famine or periodic hunger due to war or natural disasters, chronic hunger may be a persistent condition that can affect generations of people in rural areas. You have noticed above that those living with chronic hunger face a host of problems that go beyond lack of food or money.

To alleviate this condition, our efforts should address the root causes. These efforts should be sustainable, that is, programmes must pay for themselves. The programmes need to be implemented by rural development partners (entities) involving the entire local community. Figure 2.2 shows a healthy, sustainable food system framework.

It should be noted that for the purposes of this module, consideration is given to community food interventions which aim to address accessibility. Generally, these activities are directed at the individual or household level while targeting specific populations such as those on low-income, the homeless, children or seniors.

- The goal of the community-based interventions(CBI) is to fight rural hunger and increase food security for the population in your community. The specific objectives to accomplish this goal are to increase:
 - ▶ *Awareness about food security.*
 - ▶ *Access to local, healthy food.*
 - ▶ *Food knowledge and skills.*
 - ▶ *Community capacity to address local food security.*
 - ▶ *Development and use of policy that supports community food security.*

Figure 2.2: A Healthy, Sustainable Food System Framework



Source: Adapted from Dahlberg et al. 1997, Tansey and Worsley 1995.

Before we discuss the community-based intervention, it is important to differentiate between food security and community food security.

2.11 Assessing and Addressing Household and Community Food Insecurity

The terms “food security” and “community food security” are generally not well understood and may be confused. As discussed above, food security refers to the ability of an individual or household to access nutritious food.

- **Community food security** refers to the capacity of a community to provide for the food security of its members. It refers to a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximises self-reliance and social justice” (FAO).

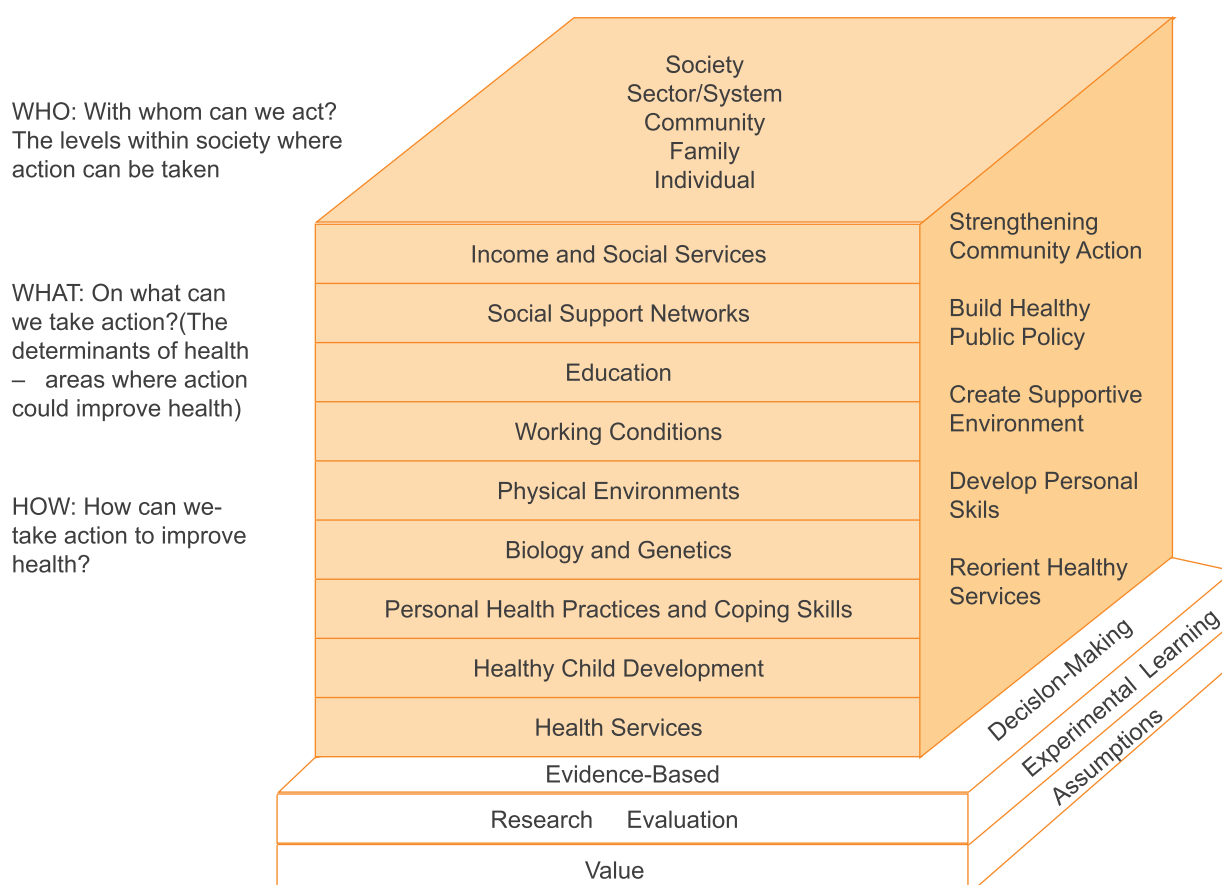
Community food assessment is one tool which you can use to assist your community in assessing its capacity to provide for the food security of its members. The tool offers an avenue for planning to address the underlying causes of hunger and malnutrition. There are six basic assessment components:

- Profile of community’s socio-economic and demographic characteristics
- Profile of community food resources
- Assessment of household food security
- Assessment of food resource accessibility
- Assessment of food availability and affordability
- Assessment of community food production.

2.12 Community-level Interventions for Food Security

Community food security is a conceptual model for thinking about food security and the health of a community (Figure 2.3). It highlights a range of determinants impacting on food and nutrition, and supports collaboration across a range of sectors.

Figure 2.3: Population Health Promotion Model



Source: Adapted from Nancy Hamilton & Tariq Bhatti, Health Promotion Development Division, 1996

Food security interventions occurring at the community level could be categorised according to the following themes:

- Charitable food activities
- Community development activities
- Nutrition education activities
- School-based activities

2.13 Charitable Food Activities (Food Outreach, Soup Kitchen and Food Bank Programmes)

The objective of these programmes is to get food to people who are hungry or malnourished and cannot effectively supply food for themselves through conventional shopping, purchasing and cooking practices. The outcome measure would be whether or not the programme delivered sufficient and nutritious food to the target group.

The target groups can be roughly divided into those in non-institutional and institutional settings. Programmes targeting non-institutional clients include food provision activities such as “soup kitchens”, “food banks” and “meals on wheels”. Programmes targeting institutional clients include providing meals to those in nursing homes, hospitals and the like.

These activities provide food access to clients by delivering prepared food (usually in a street environment) or by having clients come to a permanent location to have a meal or pick up hampers. They are supported primarily through charitable contributions and some grants. On the other hand, they do not adequately serve most that are in need. Secondly, the occasionally unsavoury atmosphere, regulations and food quality discourage those most in need from using these types of facilities. Finally, the balance of foods available can be overloaded on starches and lacking fruits and vegetables.

■ Meals on Wheels

In these programmes, pre-cooked meals are delivered to elderly people or to persons with a chronic or acute illness on a non-profit basis (as a service to the

community) or through charitable donations. They are very effective for low-income elderly people.

■ **Soup Kitchens**

These programmes serve regular free meals to those who come to the facilities. Religious organisations such as churches, mosques, temples, pagodas, and other charitable groups operate such programmes. As noted above, the occasionally unsavoury atmosphere, regulations, and food quality discourage those most in need from using these types of facilities.

■ **Gleaning Programmes**

Gleaning involves the collection of surplus produce from farms or individuals, which is then processed and distributed. While it allows less wastage, it is limited in that it is seasonal and involves the knowledge and capacity to process, distribute, and store the resulting food. These activities could work more effectively with an established organisation that has access to processing facilities (e.g., community kitchen, food bank). It is uncertain whether these programmes can significantly or reliably contribute to participants' daily nutrition, but they offer community and social capital building opportunities, as well as the possibility of educating for long-term attitudinal and behavioural change.

■ **Food Banks**

There are numerous food banks set up in rural communities and even within a university setting in the western European countries, offering a range of programmes and innovative fund raising efforts. However, food banks lack the capacity to respond to the food needs of those who seek assistance.

■ **Community Development Activities**

These programmes are based on a community development framework. Programmes in this group include community gardens, urban agriculture, farmers' markets, and community kitchens. The objective of these programmes is to sup-

ply participants with nutritious, affordable food while increasing the capacity of individuals in terms of awareness of healthy food and how to prepare it.

■ Food Box

Programmes such as these allow participants to pay for locally obtained fruits and vegetables (when available) at a reduced cost once or twice a month. While these sorts of programmes fulfil food security objectives in terms of delivering locally produced nutritious food at a reduced cost to people who need it, perhaps the relatively low frequency of access and small amounts delivered may be insufficient to affect eating habits.

■ Community Kitchens

The community kitchen group of programmes often have a well-supported implementation strategy. Community kitchen participation may enhance coping skills and provide valuable social support. However, the programmes have limited potential to resolve food security issues rooted in severe and chronic poverty because they do not alter households' economic circumstances in any substantial way.

■ Nutrition Education Activities

The premise of these programmes is that if people know more about appropriate eating habits, nutrition, preparing healthy food and so on, they will be better equipped to make informed choices about food and remain or become healthy. These activities are highly effective for the homeless who may have access to sufficient calories but do not make healthy choices where choices are available.

Education regarding nutrition and food systems could be integrated into the school system, through curriculum development or other strategies.

■ School-based Activities

School nutrition programmes running during the school year often are general

nutrition programmes and can include breakfast and/or mid-day meals.

School food programmes also address multiple goals such as nutritional adequacy for all children, nutritional education, positive socialisation, school attendance, family time-stress, community mobilisation, partnerships and social supports.

All this suggests that you have to play an important role in your community. You have to:

- Educate rural people – male, female, girls, children, parents, and care-givers – about proper nutrition and provide practical advice about improving nutrition and importance of balanced diet.
- Train the community volunteers to enable them provide information and advice on standard nutrition practices, as well as how to identify signs and symptoms of nutrition-related diseases is critically important.
- Help families start vegetable gardens (individually or communally) and grow varieties of crops to provide balanced diets.
- Develop school-based gardening programmes for older children.
- Train parents and care-givers of children in improved farming practices, food storage and food preservation skills.
- Involve agricultural extension workers in reaching out to chronically ill, elderly, disabled persons and other persons in need.
- Assist community members to start income generating activities that can raise money for food.
- Enable rural people to access treatment for worms and other illnesses that arise out of poor nutrition practices.
- Raise community awareness about good nutrition and advocate against cultural beliefs and practices that promote poor nutrition.
- Help rural households access food rations. Food rations can be mobilised within the community or household can be linked with NGOs that provide food aid).

Some interventions require support from outside the community. These interventions include, for example:

- Integration of issues related to rural hunger and food insecurity into community planning processes.
- Support for less-labour intensive farming technologies, e.g. ox ploughs for caregivers.
- Provision of agricultural tools and equipment for vulnerable households.
- Short-term food assistance to vulnerable households and communities.
- Promote innovative food security and nutrition campaigns, e.g. village competitions in food production in which prizes are awarded.
- Advocate for improved infrastructure, e.g. roads, transport facilities, granaries, drinking water, etc.

2.14 Causes of Food Losses and Food Waste

The term “food waste” most commonly means food that was purchased but not consumed and ends up in the garbage. Food losses take place during agricultural production, post-harvest, and processing stages in the food supply chain. Food waste, on the other hand, occurs at the end of the food chain (distribution, sale and final consumption). Food losses occur due to logistical and infrastructural limitations, while the food waste results due to behavioural factors.

Sometimes you may also encounter the terms such as field losses and spoilage. They refer to the loss that takes place in the fields and during transportation and storage.

Box 2.2

The Great Value of Small Morsels

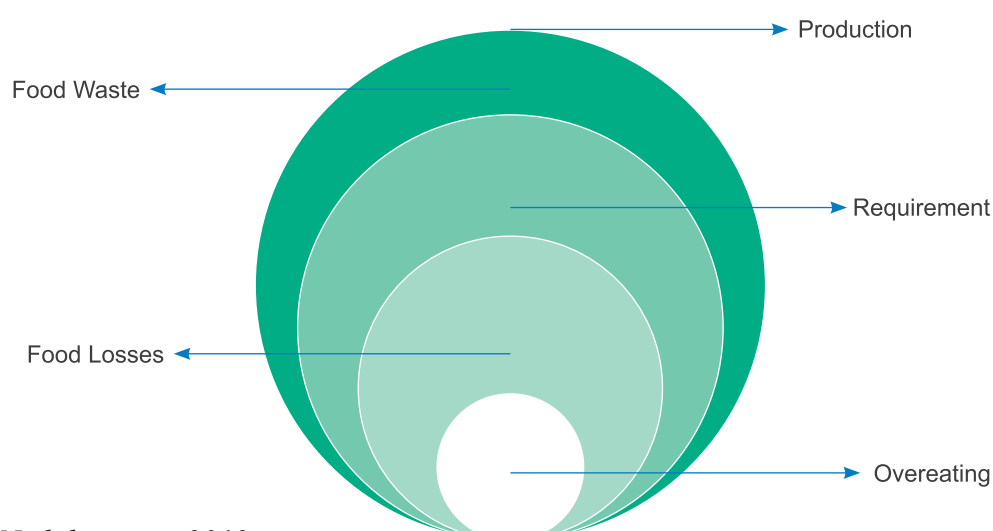
“The great value of small morsels: I remember my grandfather well, and how he used to sit at the table with us during family celebrations. When he had done eating, he started to collect the breadcrumbs that had fallen onto the tablecloth. He would form a bowl with his hand, put every single crumb inside one by one, and at last take his hand to his mouth.” Carlo Petrini, Founder and International Chairman of Slow Food.

Source: UNEP Working Paper, “Reducing Food Loss and Waste”.

It means we have to exercise how to manage with less, to consume less and to thereby raise our quality of life (Box 2.2).

You should know that food loss and waste only refer to products intended for human consumption. Thus, food loss and waste exclude animal feed and non-edible parts of plants and animal products. It means that food that was originally meant for human consumption, but which is no longer part of the human food chain, is considered as food loss. Figure 2.2 will give you some idea of food losses, waste and over-eating.

Figure 2.2: Losses, Waste, and Overeating between Food Production and Nutritional Requirements

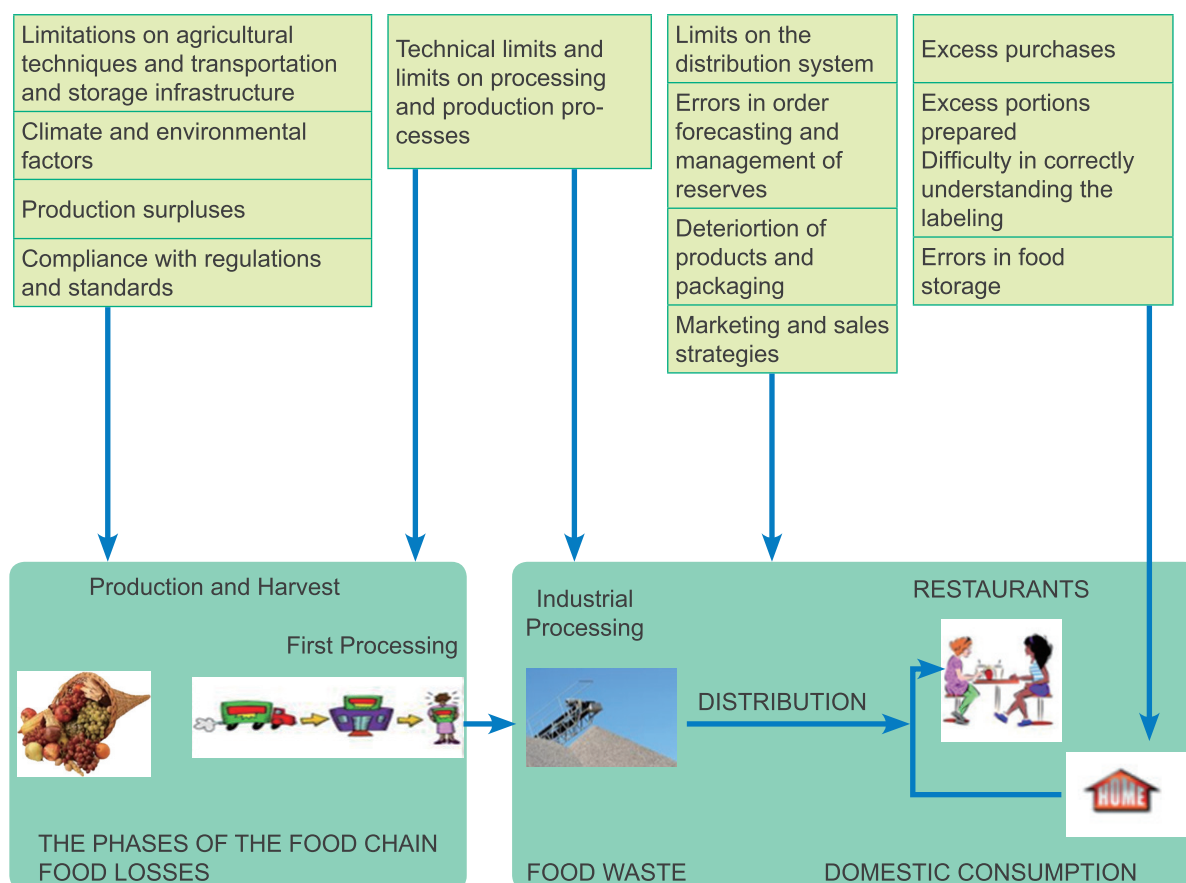


Source: BCFN elaboration, 2012.

Let us now focus on all the stages of the food chain to highlight various factors contributing to food losses and food waste. There are six main areas as shown in Figures 2.3 and 2.4. These are:

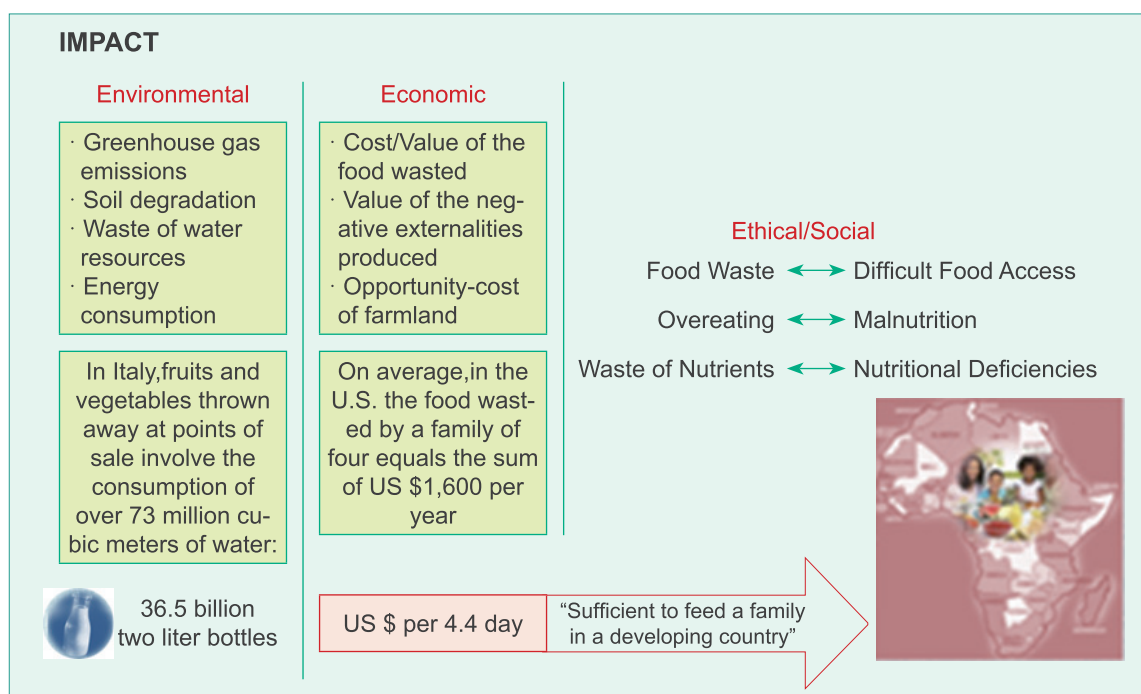
- Cultivation, agricultural production, and harvest.
- First processing.
- Industrial processing.
- Distribution.
- Restaurants and food service.
- Household consumption.

Figure 2.3: Food Losses and Food Waste: Causes



Source: Adapted from BCFN

Figure 2.4: Impact of Food Losses and Food Wastes



In Italy, per person, 146Kg. of food is wasted annually



1/3 of the world's food production ends up in the trash

1.3 billion tons

2.15 Managing Food Losses and Wastes – Community-based Interventions

- **Control** is a process by which a manager attempts to direct, regulate and restrain the action of people in order to achieve the desired goal.

This section of the module will equip you to become household food security facilitator with the skills that you can use to help control members of your community food losses and wastes.

Before explaining these measures it is important for you to know the important role women can play in controlling food losses and waste (Box 2.3).

Box 2.3

The Role of Women in Reducing Food Loss and Waste

Women, in both developing and developed countries, have an important role to play in reducing food loss and waste, since women interact with food at each stage of the value chain from farm to fork. Close to the farm, women comprise 41 per cent of the agricultural workforce worldwide and make up the majority of agricultural workers in South Asia and Sub-Saharan Africa. Surveys in a wide range of countries show that women are responsible for 85-90 per cent of the time spent on household food preparation. Therefore, targeting women in food loss and food waste reduction campaigns could result in greater reductions than pursuing an unfocused campaign.

One such gender-targeted initiative in Tanzania focused on providing female farmers with greater access to markets and supplied participants with access to solar drying technology that allowed for surplus fruits – that might otherwise be lost – to be dried and preserved.

Another campaign in Australia called “1 Million Women” encourages women to take action on a number of environmental issues, including reducing food waste. The campaign has hosted events with a celebrity chef to raise awareness of food waste, and its official website provides tips on how to reduce waste and recipes for how to efficiently use food.

Source: UNEP Working Paper, “Reducing Food Loss and Waste”.

■ Food redistribution

Food redistribution or donation programmes help us reduce both food loss and waste.

- **Food redistribution** means voluntarily giving away food that otherwise would be lost or wasted to recipients such as food banks, which then redistribute the food to those who need it.

This strategy applies at the production stage with crops that otherwise would go un-harvested, at the manufacturing stage with over-produced products and at the distribution and market stage with food left unsold at stores and markets (Box 2.4).

Box 2.4

Case Study: SecondBite

In Australia, the non-profit organisation SecondBite facilitates food donation by linking farmers and retailers with community groups and food banks. SecondBite effectively functions as a broker, first collecting food from donors and then distributing it among community groups that are already aware of where hunger and malnutrition are most prevalent. In this way, SecondBite draws upon existing knowledge and expertise of other organisations to further its mission. SecondBite also works with state governments in Australia to introduce Good Samaritan Acts to promote food donation. In 2012, SecondBite rescued and redirected 3,000 metric tons of fresh food that otherwise would have been lost or wasted.

Source: UNEP Working Paper, “Reducing Food Loss and Waste”.

■ Evaporative coolers

Evaporative coolers extend the shelf life of food and avoid spoilage by keeping food at lower-than-room temperatures without having to use electricity. This low-cost, low-energy technique provides an opportunity to store perishable foods longer in areas that lack electricity infrastructure or have low-income farmers (Box 2.5).

The device has several advantages. It is a relatively low-cost method of preserving fruits, vegetables, roots and tubers, especially in regions where electric refrigeration is either very expensive or unavailable due to lack of a reliable electricity supply. Furthermore, the materials necessary to construct evaporative coolers tend to be locally available and relatively simple to acquire.

Box 2.5

Evaporative Coolers in India

In the mid-1990s, the extension organisation Krishi Vagyan Kendra (KVK) began to investigate a common problem for farmers in dry land villages in India. Farmers were taking their crops to market far more often than they would prefer because otherwise the crops would spoil. Taking the crops to market every other day was strenuous and time-consuming, but lacking adequate storage, the farmers had no choice.

The KVK determined that ZECCs would be a useful solution for farmers facing this problem. With funds provided by the National Horticulture Board of India, the KVK constructed 200 ZECCs in 10 villages and conducted 40 training programmes on their construction and use during the period of 1997 through 2000. The KVK estimates that 1,200 farmers were reached as a result of this project, and found that additional farmers outside the programme area were requesting the installation of the chambers in their own villages.

Source: UNEP Working Paper, “Reducing Food Loss and Waste”.

■ Plastic storage bags

Damage from pests is a major source of food loss during the handling and storage phase of the supply chain. Take cowpeas for instance. The crop is important for many smallholder farmers due to the cowpeas' ability to adapt to dry, hot conditions. The crop is especially important in West and Central Africa, regions that account for approximately 69 per cent of the world's total production of cowpeas by volume. However, damage to cowpeas from insects can result in lower prices for farmers and even in outright loss of the crop. The damage can be reduced by developing a simple reusable plastic storage bag (Box 2.6).

Box 2.6

PICS in Nigeria

A study led by Research Into Use (RIU) in Nigeria in 2009 distributed PICS bags to approximately 600,000 farmers in an effort to introduce a commercially viable, non-toxic method of storing cowpeas. Before distributing any bags, RIU conducted a survey to assess awareness levels among farmers in the study areas. They found that only about half of surveyed farmers were even aware of improved storage techniques, such as PICS bags, while only about 25 per cent were making use of improved storage techniques.

Many farmers were sceptical of the viability of the PICS bags, despite PICS bags being cheaper than pesticides per use. One farmer who volunteered to store some of her cowpeas in a PICS bag was told by her neighbours that she would have to feed her crop to the chickens due to how infested it would be after a six-month storage period.

However, after the bags were distributed, farmers who used the PICS bags saw an increase in cowpea-related income of 48 per cent on average, and cowpeas that had been stored in bags generally fetched a price 5 to 10 per cent higher than cowpeas stored using other methods. The bags have proven popular enough that Lela Agro, the manufacturer of PICS bags in Nigeria, produced half a million PICS bags in 2012.

Source: UNEP Working Paper, "Reducing Food Loss and Waste".

■ Small metal silos

Small metal silos, which are intended for use by one farmer or by one household and generally hold between 250–1,000 kg of crops, can be an effective strategy for reducing food loss at the storage stage, especially for cereals and pulses (Box 2.7).

Box 2.7

Metal Silos in Afghanistan and Kenya

In 2009 in Afghanistan, an FAO project funded largely by the German government provided metal silos to 18,000 households. These silos were produced by local tinsmiths, who were trained in proper production methods. Almost immediately, recipients of the silos began reporting higher net incomes due to increased market sales and lower food losses, which fell from 15–20 per cent to 1–2 per cent per year. Perhaps the most telling sign of success was that local tinsmiths were subsequently hired by local non-participating farmers to build an additional 4,500 silos after they saw the success of their neighbours.

In 2012 in Kenya, FAO worked with a number of Kenyan non-governmental organisations to promote metal silo technology within the country. Funding from the governments of Sweden and Spain sponsored the training of metal artisans in eastern Kenya in how to produce the silos, and about 300 metal silos have been distributed to farmer groups. FAO has also been promoting the use of the silos through extension services and farmer groups and facilitating access to credit through community banks so that farmers without savings can purchase the silos.

Source: UNEP Working Paper, “Reducing Food Loss and Waste”.

■ Plastic crates

Using plastic crates instead of other forms of containerisation has demonstrated significant reductions in food losses during handling and storage, particularly among fruits, vegetables, and other forms of fresh produce (Box 2.8). In developing countries, 19 per cent of fruit and vegetable loss occurs in the handling and storage stage of the food value chain.

Box 2.8

Plastic Crates for Tomatoes in Afghanistan

In Karokh, Afghanistan, tomato growers were experiencing tomato losses of up to 50 per cent due to rough shipping and handling while transporting their crop to the nearest market in the city of Herat. As a result, these farmers had a difficult time selling their damaged products at the market and often had to accept whatever price was offered, since transporting leftovers back to Karokh would just result in even greater losses.

To assist farmers in reducing their losses, the development organisation CNFA, in partnership with Catholic Relief Services, awarded a US\$60,000 grant to Karokh's farmers in August 2005. This award matched a US\$60,000 contribution from the farmers themselves and allowed the farmers' collective to purchase 1,500 plastic crates and an overnight storage space in Herat for surplus goods. The farmers saw immediate benefits from this purchase.

The plastic crates reduced transportation spoilage from 50 per cent down to 5 per cent, and the incomes of farmers and their families in Karokh increased by a total of US\$75,000 compared to the prior year, recouping more than their own US\$60,000 investment. Buyers also were willing to pay up to 33 per cent more for Karokh tomatoes compared to the market price of tomatoes from other villages due to the increased quality and reliability that came with the introduction of the crates and the storage space.

Source: UNEP Working Paper, "Reducing Food Loss and Waste".

■ Food date labelling

Dates provided on the packaging of food and drinks, such as “use-by, sell-by,” and “best before,” are intended to provide consumers with information regarding the freshness and safety of foods. However, these seemingly simple dates can actually confuse consumers about how long it is safe for them to store food and when they should dispose of uneaten items (Box 2.9).

Box 2.9

Delivering “Best-in-Class” Date Coding

Tesco is one of the world’s largest retailers, serving 50 million customers around the world and sourcing food from thousands of suppliers across more than 70 countries. The company has a stated ambition to lead in reducing food waste globally by working with its producers and suppliers, and helping its customers to reduce food waste.

In the United Kingdom, households throw away an estimated 7.2 million metric tons of food every year; of this around 2.9 million metric tons is wasted before ever being cooked or served. According to the UK’s Waste Resource Action Programme (WRAP), confusion around on-pack date labels and storage guidance is a major contributing factor. In 2013, Tesco carried out its most extensive research to date on food waste which supported these findings.

As a result, Tesco undertook a review of how date coding and storage information are applied to packaging, revealing inconsistency in its approach. Food packaging has a number of combinations of “best before” and “display until” dates, which advise store staff and customers on quality, and “use by” dates which relate to food safety. WRAP guidance states that customers prefer single date codes and that “best before” is best understood and acted on. “Use by” should only be used where there is a food safety issue.

Box 2.9

Tesco has piloted the use of a single date code on meat, fruit, and vegetables in UK stores. On meat, a single “use by” date was tested. On fruit and vegetables, Tesco piloted “best before” on its packs, with “use by” only being implemented when necessary on prepared foods. Encouragingly, not only have these changes been well received by Tesco customers, dropping “display until” on these items has not created problems in stores—in fact pilot stores have actually seen reductions in food waste for items with a single date code. As a result, Tesco has rolled out the single code to pre-packed meat sold in more than 3,000 stores in the United Kingdom. The simplified date coding system for fruit and vegetable packs will be rolled out by the end of 2013.

To ensure it is applied consistently and can be extended to other food categories, Tesco is developing guidance, training, and auditing for its own staff and suppliers. Tesco is now looking to find ways to integrate the new date system into customer communications on storage advice and recipes.

Source: UNEP Working Paper, “Reducing Food Loss and Waste”.

■ Consumer awareness campaigns

Consumer attitudes and behaviour play a large role in determining the amount of food that is wasted in households. Although changing the way people consume and throw out food can be difficult, communication campaigns can help influence consumer behaviour at the household level (2.10).

Box 2.10

Worcestershire County Council

In 2011, the Worcestershire County Council in England undertook a three-month campaign to reduce food waste in a small geographic area containing roughly 9,000 households in Worcester City. The council formed partnerships with more than 70 local businesses, community organisations, and schools, many of which posted displays that held commodity-specific leaflets describing how to reduce food waste for meat, fish, bread, fruits, and vegetables.

The University of Worcester also hosted two free three-week cooking classes, which focused on teaching simple, healthy meals and effective reuse of leftovers. The council sampled the amount of food wasted in households in the area before and after the campaign. The study found that at the campaign's conclusion, household food waste had declined by 14.7 per cent after just three months. The campaign later won the 2011 award for "Best Waste Minimisation or Prevention Project" from the UK Local Authority Recycling Advisory Committee.

Source: UNEP Working Paper, "Reducing Food Loss and Waste".

■ Reduced portion sizes

For restaurants and other food service providers, food portion sizes can dictate the amount of food waste that occurs within the four walls of their business, since larger portions increase the likelihood that a consumer will not consume all of the food purchased. Reducing portion sizes for consumers in both direct and indirect ways can both decrease food waste and save money for food providers (Box 2.11).

Box 2.11

Tray-less Cafeterias

Cafeterias at American universities often offer “all you can eat” programmes for students and staff, in which customers can take as much food as they like, and as much as they can fit on a tray, for a set cost. In 2007, officials at Grand Valley State University (GVSU), located in the state of Michigan, decided to experiment with a “tray-less cafeteria.” By eliminating trays, GVSU officials hoped to reduce the amount of food waste at its cafeterias, as well as reduce energy and water use associated with washing trays. Under this system, students could return to the cafeteria to take more food as desired, but were limited on each trip to the amount of food they could carry on a plate in their hands.

GVSU piloted the programme in the spring of 2007, testing it for just a week to gauge reactions. During the pilot period, dining hall officials gained the support of administrators and the student body government by providing information on the resource and economic savings from eliminating trays. After a successful pilot, GVSU permanently adopted the tray-less system in the fall of 2007. The university found that after going tray-less, the university was throwing away almost 13 metric tons of food less than in previous years about 25 kg per person annually and was conserving 117,000 litres of water per year. The system was also economically beneficial, saving the university about US\$79,000 per year compared to a system using trays.

Source: UNEP Working Paper, “Reducing Food Loss and Waste”.

2.16 Food Safety

Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent food borne illness.

This includes a number of routines that should be followed to avoid potentially severe health hazards. Any measure to ensure food safety should look at safety between industry and the market and then between the market and the consumer.

Do you know that food can transmit disease from person to person as well as serve as a growth medium for bacteria that can cause food poisoning?

After the completion of this section, you would be able to understand the following five key principles of food hygiene and safe food:

- Five keys to safer food:
 - ▶ *Preventing contaminating food with pathogens (disease causing microorganisms, such as bacteria, fungi, and viruses) spreading from people, pets, and pests.*
 - ▶ *Separating raw and cooked foods to prevent contaminating the cooked foods.*
 - ▶ *Cooking foods for the appropriate length of time and at the appropriate temperature to kill pathogens.*
 - ▶ *Storing food at the proper temperature.*
 - ▶ *Use safe water and cooked materials.*
- How to conduct the food safety intervention study in rural village households.
- How to observe household food safety/ hygiene practices; and
- How to record information using the Food Safety Checklist Tool.

2.17 Why Food Safety is Important?

Can you think about a time when you were sick (vomiting, diarrhoea, or nausea) or a friend was sick. If yes, then we propose the following food safety guidelines that can help you reduce the risk that you, they or others will get sick. Before doing so, let us understand why food safety is important. It is important to:

- Meet customer expectations.
- Keep people from getting sick.
- Ensure continual improvement in food processing.
- Control food safety hazards.
- Follow food safety laws

It is, thus, important for you to know that not only can people get sick from food that is not properly prepared and stored but that in some cases death can occur (Box 2.12).

Box 2.12

Food Safety Tops Public Concerns in China

Illegal additives, poor hygiene and unsafe materials in the manufacturing process were the major concerns of the public in 2012, while private and multinational companies were the major sources of the worry, a new report says.....

“The country has been facing various crises of public opinion. At the same time, the emergence of new-media tools has been pushing public opinion more frequently than before, especially those concerning food safety, education and healthcare,” said Xie Yungeng, an expert on public opinion and new media at Shanghai Jiao Tong University.

Box 2.12

Private companies were most often mentioned in food safety scandals in 2012, accounting for 53.2 per cent of the total compared with 43.1 per cent in 2011, followed by multinational companies, accounting for 17.4 per cent.

In February 2012, frozen dumpling producer Zhengzhou Sinian Food Co in Henan province suffered a loss of public confidence after a customer found an adhesive bandage inside a glutinous rice dumpling.

In April, preserved fruits sold by several big-brand stores, including snack chains Laiyifen and Baiweilin, were found to be processed in unsanitary factories and had excessive additives. All are private companies.

In December, the Shanghai Food Safety Office said excessive amounts of antibiotics were found in eight batches of raw chicken samples taken from a KFC supplier from 2010 to 2011, triggering public outrage.

China's food industry suffered a crisis of confidence in 2008, when milk powder produced by a company in Hebei province was found illegally laced with melamine. The chemical additive led to the deaths of six children and sickened 300,000 others.

Even so, recurring scandals in the food industry in recent years suggest that lessons were not learned from the 2008 scandal.

Earlier this month, New Zealand dairy giant Fonterra said clostridium botulinum, a kind of toxin, was found in its whey protein, which other companies buy to produce baby formula and sports drinks.

After that, Chinese producers who used contaminated materials from New Zealand began to recall products, the latest blow to Chinese consumers' confidence in milk powder products.

Source: Wang Hongyi, China Daily, 21 August, 2013.

2.18 Preventing Contaminating Food with Pathogens

- **Contamination** means the presence of hazards in food that could cause injury or death.
- **Food borne illness** refers to anything that contaminates food, biological, chemical or physical properties, which can result in people getting sick or worse, death.
- **Food poisoning** refers to contamination of food during the processing part which can result in sickness or death.

Food borne illness or food poisoning happens when something you eat makes you sick. Symptoms of food borne illness can include nausea, vomiting, and diarrhoea.

Who are we trying to protect from food borne illness? We are trying to protect everyone, but mostly the elderly people, people with immune deficiencies, babies and children. Dehydration is a concern when children and babies suffer from the symptoms of food borne illness.

Food safety is based on understanding the hazards in food processing areas, (including storage, handling, production and packaging), and managing them to minimise the risks.

- **Food hazard** is defined as a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse effect on health. Food hazard can be anything that enters into the food whether visible, such as hair, or invisible, such as bacteria.

Primarily, there is the food itself and the microbes that come in the food. Storage and handling, if not done properly, can contribute further contamination (Box 2.13).

Box 2.13

The Story of Contaminated Spinach

E.coli is a biological food hazard. E.coli was found in the spinach, most likely through a contaminated water source. In 2006, a huge recall of packaged spinach occurred in many areas of the US and Canada. The spinach in question was contaminated with E.coli. The contaminated spinach resulted in hundreds of cases of illness and 3 deaths. The cost was \$7 million.

The source of contaminated spinach was investigated and determined to have come from one section of the field. The product was packaged on the same date with the same code. Possible sources of contamination were animal fences or contaminated irrigation water.

The company, Natural Selection Foods, packaged the spinach under many labels, therefore many companies were impacted. Spinach sales everywhere dropped immediately with the media coverage and have only recovered by 86%.

Source: http://www.youtube.com/watch?v=kIBsG_QO77w

■ Customer Responsibility

Many people have food allergies and could have an allergic reaction if they eat certain food. A customer is ultimately responsible for knowing what they are eating. Customers should check for food they know will make them sick. Allergens like milk, eggs, nuts, and selfish may cause an allergic reaction (Box 2.14).

■ Box 2.14

Food Safety and China: Scandal and Consequence

This year thousands of decaying pigs contaminated the Huangpu River, affecting the 23.47 million residents of the Shanghai metro area. In Beijing, vendors were passing off rat as lamb at the city's ubiquitous night time bar-beque vendors. And in May, cadmium, a metallic carcinogen, was found in rice crops in the southernmost provinces of the country, home to almost 105 million people in the Pearl River Delta. Not surprisingly, food safety is an issue of growing concern among Chinese consumers, and the increasing number of scandals could lead to a revision of international food safety practices across the country and worldwide.

This change in Chinese consumer habits has been documented for the past five years. It all began in Gansu, one of China's western-most provinces and a home to vital sections of the Silk Road. In 2008, government officials reported that several children had fallen ill and most likely due to San Lu baby formula powder. Despite apparent cover-ups by the government and possibly by San Lu and its New Zealand-based partner Fonterra, the story became public. This was the birth of a widespread distrust of domestic products, especially among middle-class Chinese.

The 2008 scandal, in which San Lu milk and infant formula products were found to contain traces of melamine, a chemical found in plastic and adhesives that can cause renal failure rocked China. By the end of 2008, China's Ministry of Health reported more than 300,000 children may have been affected by the contamination.

Box 2.14

As mass recalls began, Chinese consumers began looking toward foreign companies and products. Seemingly ignoring the fact that Fonterra owned almost half of San Lu at that time, Chinese consumers ordered the companies' infant formula products online in droves. Some even made trips to Australia and Hong Kong specifically to purchase infant formula or had friends abroad send them. In fact, restrictions had to be placed on sales of the product to prevent domestic shortages. With this kind of consumer behaviour, it should come as no surprise that by the beginning of this year, China was found to account for 23 per cent of the global market for baby food and infant formula, according to research previously published in an article in The New York Times.

In early August of this year, Fonterra admitted to finding traces of Clostridium Botulinum in their whey protein concentrate, a main ingredient in infant formula. The contaminant, a bacterium found in soil, can cause botulism. The spokesman said the bacterium may be due to a dirty pipe, but scientists claim this is unlikely.

What has baffled and infuriated consumers further is that Fonterra may have known about this contamination for over a year. This is reminiscent of the 2008 San Lu case, in which Fonterra took months to reveal San Lu infant formula's high melamine content because it was waiting for government action.

Box 2.14

Surprisingly, the government has acted relatively quicker than it had previously. According to a Reuters report, China barred all imports of New Zealand whey protein concentrate products on Sunday, barely one day after the scandal was announced. As was the case in the 2008 scandal, the products will be recalled and contained. The amount of whey protein that was contaminated may be upwards of 35 tons, according to a Reuters report. Fonterra CEO Theo Spierings also issued a public apology and says he hopes the embargo on Fonterra products will be lifted within several days' time, a necessary move in order to appease the Chinese market. Again in 2012, according to Reuter's reports, 90 per cent of Chinese infant formula imports came from New Zealand. The majority of that 90 per cent came from Fonterra.

The widespread distrust of domestic food products caused by this string of scandals has already taken root in China. Farmer's markets selling organic, locally grown goods are cropping up throughout China's major cities, and farms that provide home delivery of organic fruits and vegetables have cropped up on the outskirts of Beijing.

While China's growing distrust of local products has caused an overreliance on imports, continuing scandals on the part of companies like Fonterra are now causing distrust in foreign products as well. And because of the nationalist Chinese nature of equating all things foreign with each other without a regard for geopolitical boundaries, continuing incidents such as these could discredit foreign imports in general, isolating the coveted (and highly profitable) purchasing power of the approximately 1.3 billion Chinese consumers.

It is likely that such consequences will not be felt for a few years. Just as the effects of the 2008 milk scandal on domestic products are just starting to be reported on now, it could take a few more years before economists notice

Box 2.14

observable change in tastes for imported goods.

On a more optimistic note, these scandals could also bring about a revision of supplier safety practices. Because of the country's purchasing power, a revolution in food safety could very easily find grassroots in China. Rapid changes are already occurring in terms of the growing popularity of local farms and products. If food policy is not taken more seriously, middle-class, Chinese consumers may turn to these cleaner and safer products out of sheer desperation.

Source: Vaughn M. Watson, China Daily, August 7, 2013

Table 2.6: Example of Food Safety Checklist Tool

Observations – what village householder do?			Tick
Keep Clean			
Hand Washing	When	1. Food preparer washes hands before preparing food.	
		2. Food preparer washes hands after handling raw meats, raw fish and raw vegetables.	
		3. Do not wash hands.	
	How	4. Dish of water used by all family members.	
		5. Running water/ tap no soap used.	
		6. Use soap when washing hands.	
Separate Raw and Cooked Food			
		7. Raw meats, fish, chicken, frog, snail, shrimp, crab separated from cooked food.	
		8. Separate cutting boards used for raw meats, vegetables and cooked foods; How many cutting boards?	
		9. Do not use same knife for cutting raw food, vegetables and cooked foods: How many knives?	
Cook Thoroughly			
		10. Cooked red meats and chicken well done with no pink meat, no blood.	

Observations – what village householder do?		Tick
	11. Cooked fish with no pink meat and blood.	
Special Customs		
	12. Eating raw fish, raw shellfish, raw red meats etc. (a) Fish (b) Shrimp (c) Crab/snail (d) Cow (e) Buffalo (f) Pig (g) Chicken (h) Duck blood.	
	13. Main reasons why people eat raw fish and raw meats? (a) Delicacy that tastes good (b) Lao Custom (c) Makes body strong (d) Other reasons	
	14. Sex of Householders eating raw fish/raw meats (a) Men (b) Women	
	15. Do you think that people would stop eating raw fish and other raw meats because of the risks to health? (a) Yes (b) No (c) Maybe.	

Note: Questions 12-15 – Households need to be asked these questions.

Table 2.7: Findings of Baseline Study on Rural Household Food Safety Practices

■ Demographic and Social Information

Location	Frequency	Per cent
Name of the Community		
No. of Households		

■ Age Distribution

Age	Frequency	Per cent
10-20 years		
21 - 25 years		
>30 years		

■ Sex

Sex	Frequency	Per cent
Female		
Male		

■ Level of Education

Education	Frequency	Per cent
No school		
Special course/adult education		
Primary school		
Secondary school		
High school		
Other		

■ Sewage and Garbage Management

Method	Frequency	Per cent
Throw anywhere around house		
Bury in digging hole		
Burn		
Other		

■ Main Water Source

Main Sources	Frequency	Per cent
Drinking (potable) water		
Boiled		
Underground (pump)		
Well		

■ Keep Clean

Occasion of hand washing	Frequency	Per cent
Before food preparation		
After handling raw ingredient		
Method of hand washing (Current practice)		
Bowl/dish of water		
Tap water or water pouring by someone		
Washing with soap or ash		

■ Food Preparation

Food preparation	Frequency	Per cent
Separated kitchen		
Clean utensils for eating and cooking		
Food preparation at level or above knee		
Covering cooked food properly		
Presence of pet, rodent, chicken, duck, dog		

■ Separate Raw Food and Cooked Food

Activities	Frequency	Per cent
Separate raw meat, fish, chicken, frog, snail, shellfish separated from cooked food		
Separate chopping board for raw and cooked food		
Separate knife for cooked food and raw food		

■ Cook Thoroughly

Description	Frequency	Per cent
No pink or blood inside the cooked meat, chicken, seafood, etc.		
Fry meat, fish, chicken, seafood boiling oil		
Soup is boiling or steaming		
Rice/sticky rice		

■ Temperature of Cooked Food

Temperature of Cooked Food	Frequency	Per cent
Grilled meat, chicken, seafood, etc.		
Fried meat, fish, chicken, seafood		
Soup		
Cooked rice/sticky rice		

■ Duration of Keeping Cooked Food Before Eating

Duration	Frequency	Per cent
Less than 2 hours		
More than 2 hours		

■ Use Safe Water and Raw Materials

Activities	Frequency	Per cent
Washing vegetable and fruit before eating		
Eating raw fish, shellfish, meat, pastefish		

3.

MIGRATION AND ITS CONSEQUENCES

Labour migration is a pervasive feature of economic development. An estimated 175 million people – 2.9 per cent of the world's population – currently live outside their country of birth. The number of migrants has more than doubled since 1975, and sixty per cent of the world's migrants currently reside in the more developed regions, with 40 per cent living in the less developed regions (UN). Migration also takes place within countries.

For instance, there are estimated to be 200 million temporary and seasonal migrants in India, and 120 million internal migrants within China.

South-north migration (developing to developed countries) has important implications for development and poverty reduction in developing countries. But migration is not primarily a south-north phenomenon. Most migration, and especially labour mobility of the poor, takes place within and between developing countries. For example, several African countries simultaneously serve as both source and hosts to large number of migrants. Many countries in south-east Asia are heavily reliant on cheap migrant labour from neighbouring countries.

People's mobility for temporary or permanent labour purposes is a common practice of agricultural activity. There are very significant migration flows in some developing areas, with considerable impacts on individuals, households and regions at origin.

3.1 Dynamics of Labour Mobility

- In simple words **labour mobility** means "the capacity and ability of labour to move from one place to another or from one occupation to another or from one job to another or from one industry to another."

Mobility of labour is of following types.

- **Geographical mobility:** When a labourer moves from one region to another, within the boundaries of a nation or from one nation to another is called geographical mobility of labour.
- **Occupational mobility:** Movement of labourers from one job to another is occupational mobility. This is in addition classified into horizontal and vertical mobility.
- **Horizontal mobility:** Refers to the worker's movement not resulting in any change, that is, from one grade to the different job in the same grade.
- Whereas **vertical mobility** denotes, up gradation of jobs and status from lower to higher from one occupation to another is called vertical mobility.
- **Industrial mobility:** It refers to the movement of labourers from one industry to another without changing the occupation.

You might have noticed that skilled workers have low occupational mobility but high geographical mobility. Low-skilled or unskilled workers have high degrees of both types of mobility. Low labour mobility causes structural unemployment, which can be avoided by worker retraining schemes and by encouraging establishment of new industries in the affected areas.

3.2 Rural-Urban Migration

- **Rural-urban migration** is the movement of people from the countryside to the city.

Rural-urban migration causes two things to happen:

- Urban growth - towns and cities are expanding, covering a greater area of land.
- Urbanisation - an increasing proportion of people living in towns and cities - mega cities - those with over 10 million people.

■ Push and pull factors of migration

Urban pull factors (conditions encouraging people to move to the cities) include prospects of earning higher wages, a perceived demand for labour and better social services.

Rural push factors (conditions encouraging people to leave the land) vary considerably among regions and countries, as well as among social groups, and between men and women.

Rural unemployment resulting from rapid population growth and the mechanisation of agricultural processes has been identified as the leading cause of rural-to-urban migration. Another major “push” factor out of rural areas is the growing shortage of fertile arable land in the context of high population growth, landholding inequality, environmental degradation, rural poverty and the lack of infrastructure and social services in rural areas. Adverse environmental conditions, unfavourable macro-economic policies and declining markets for certain types of produce are also important “push” factors for male out-migration.

In the case of female rural-to-urban migration, pull and push factors are not the same as for man. For instance, rural women in Latin America out-migrate due to lack of access to land and the mechanisation of agricultural production, and move to the cities in search of employment in textiles, food processing and other labour-intensive industries, as well as in the informal sector. In Africa, economic reasons, particularly employment, are reported as the main reason behind to migrate. Table 2.8 highlights the push and pull factors of rural migration whereas Table 2.9 highlights the causes of rural to urban migration.

Table 2.8: Push and Pull Factors

Push factors	Pull factors
<ul style="list-style-type: none"> • Famine, drought, natural disasters • Poor living conditions - housing, education and health care • Agricultural change (Green Revolution) • Unemployment • War and conflict 	<ul style="list-style-type: none"> • Employment • Higher incomes • Better health care and education • Urban facilities and Way of life • Protection from conflict

Table 2.9: Causes of Migration

Causes of Migration		
Economic	<ul style="list-style-type: none"> • Poverty and marginalization • Unemployment • Low wages or insecure livelihood conditions • Lack of education and health services 	<ul style="list-style-type: none"> • Better wages and work conditions • More work opportunities • Access to education and health services
Political	<ul style="list-style-type: none"> • Insecurity and violence • Government weakness • Human rights abuse 	<ul style="list-style-type: none"> • Security • Political Freedom
Social and Cultural	<ul style="list-style-type: none"> • Discrimination • Ethnic tensions 	<ul style="list-style-type: none"> • Freedom from discrimination
Familial	<ul style="list-style-type: none"> • Broken families • Marriage 	<ul style="list-style-type: none"> • Family reunification
Environmental	<ul style="list-style-type: none"> • Scarce natural resources • Environmental degradation • Forced displacement due to development projects • Natural disasters • Climate change 	<ul style="list-style-type: none"> • Improved climatic conditions • Improved agricultural prospects

People migrate to urban areas because they think that they will have greater opportunities there. For many, life is better but some end up in poverty (Box 2.15).

Box 2.15

Migration in Sao Paulo Brazil

Sao Paulo is a cosmopolitan, industrial city with nearly 18 million people, with 11 shopping malls, many apartment blocks for the rich, and lots of entertainment. In the early 1970s the city was one of the fastest growing places in South America with 150 migrants arriving every hour, attracted by the prospect of jobs. Many of these put up shacks on land that was at the edge of the city.

In the next 25 years most of the housing was built with very little control or regulation.

Conditions were very poor, living spaces cramped, clean water was expensive and sewage a problem. Crime was rife and new rural families were vulnerable to gangs who occupied land and illegally sold off plots to newcomers.

Migrants live in shanty towns where housing is often a collection of primitive shacks made from any available material. Most houses lack such basic amenities as electricity, gas, running water and sewerage. There is hardly any refuse collection. There is serious lack of health services -lack of clean water, no disposal of human waste and rubbish lead to disease. The poor migrant cannot afford doctors. Education facilities are limited as there are very few schools. Many, even by the age of 6, are trying to earn some money. There are not enough transport systems and earth tracks are often just filled up with rubbish. Family life is under constant threat.

Box 2.15

Two government-assisted schemes in Sao Paulo aimed at improving the quality of life in the shanty towns are:

Low-cost Improvements

Existing housing is improved by re-building with cheap, quick and easy to use breeze blocks. A tank of water on the roof collects rainwater. Electricity and sewerage may be added. Most people who live in these will have some sort of employment so that they can pay low rents.

Self-help schemes

Groups of people are encouraged to help build their new homes. Each group will do basic work such as digging the ditches to take the water and sewerage pipes. The local authority will then provide breeze blocks and roofing tiles, and the group will provide the labour. The advantages of this is that it can be done in stages and create a community spirit.

Source: IFAD.

3.3 Impact and Effect of Migration

A primary impact of migration on sending regions is conceived in terms of remittances. Remittances are considered the major link between migration and development at origin.

Interpersonal ties, such as kinship, friendship and shared community origin, between migrants, former migrants and non-migration in origin and destination areas, are likely to increase the likelihood to migrate (at individual and household level).

One consequence of rural to urban migration is overcrowding. If migration takes place too quickly or unexpectedly, the planning necessary to accommodate growth will not be in place. Overcrowding leads to issues such as higher rents, traffic and pressure on resources such as schools and medical stores.

The growth in the working population will also mean more competition for jobs. This will prove advantageous to employers who can decrease salaries offered as demand for jobs may outstrip the number of jobs available. The lack of jobs may in turn lead to problems of vagrancy, prostitution and unfair treatment to the least skilled workers in the workforce.

The migration of people from rural areas to urban areas has detrimental effects on the rural economy. Some small communities may cease to exist overtime as there is no one left to run businesses, work in local companies or demand products from local firms because the younger generations of the area have migrated.

Lastly, there may be an increase in the spread of diseases from urban to rural areas. When workers return home to visit relatives and friends they may spread illnesses and diseases they contracted while in the city. This accounts for the spread of AIDS in rural areas of many African countries.

Migration from rural to urban areas occurs for several reasons, namely in the search of a better lifestyle and standard of living. However planning is necessary to properly provide for the additional strain that a growing population will have on a city's resources. Planning may also be necessary to protect rural communities and aid their growth as a solution to the overcrowding that occurs in most urban centres in countries around the world.

There are four priority areas – migrant remittances, migrant communities, migrant capacities and migrant rights – where you can help a determinant role to help rural migrants.

Rural migrants are not highly trained and educated people. Their knowledge about the dynamics of migration and its after effects is limited. One way in which you can help them is to organise regular meetings to discuss and listen to their problems and then ascertain their needs. Based on your needs survey you can help them plan and organise awareness raising campaigns and organise training in skills development and farm- and non-farm activities for youth and adults. This will require from you support for building an enabling environment for migration related activities and development projects for migrants and their families. The training that you plan to organise should focus on:

- Enhancing the capacity of migrants as partners in economic development.
- Developing gender-based interventions at the community level to improve the general conditions of women migrant workers.
- Mobilizing migrant organisations and local associations in maximising the development potential of migration whilst minimising its social cost on migrants and the families left behind.

You should make sure that the training is holistic. That is, it has a full mandate for pre-departure training, general migration information and social services for migrants and family members staying behind, assistance to the reintegration of migrants and increasing the development impact of migration and migrants' contributions. More in detail, the mandate will include:

- Pre-departure migration orientation and community-based safe migration information, orientation and advocacy campaign, including anti-trafficking information.
- Social services – psycho-social issues of 'children left behind' and furthering the economic empowerment of women, who are staying behind.

- Organising migrant workers' families.
- Training and technical assistance for financial literacy (addressing family issues, link with investments and training), livelihood strategies, skills training and entrepreneurship – training manuals, modules, guides on how to set up small business and on opportunities for becoming an entrepreneur (see modules IV and V). For designing training and training materials, help of experts of government agencies, private sector, local NGOs and youth bodies need to be ensured.

To provide these viable alternatives to rural migration, however, a combination of legal, policy and practical measures is required to ensure protection and welfare for migrants, encourage the best use of migrant earnings and learning by rural households and communities, and create viable and sustainable options for return and reintegration.

4. CONCLUSION

According to the latest estimates of the Food and Agriculture Organisation (FAO), there are 870 million hungry people in the world. 98 per cent of them are in developing countries. They largely depend on agriculture for their livelihood. These populations have no alternative source of income and employment. As a result, they are vulnerable to crisis. Many migrate to cities in their search for employment.

Instead of the fact that there is enough food in the world, there are almost a billion of people go hungry every day – not getting enough of the vitamins and minerals they need to live healthy and productive lives. The causes of hunger are many and varied. Some of them are of natural origin such as drought, crop pests, natural disasters; others are created by humans, for example, by war or over-exploitation of natural sources essential to food production.

To initiate community-based interventions to fight rural hunger and increase food security for the population we need to sensitise people of our community about food security and develop community capacity to ensure local food security. We also need to advocate development of appropriate policy and mechanism that support community food security and food safety by reducing food wastage addressing logistical and natural limitations.

An estimated 175 million people – 2.9 per cent of the world’s population – currently live outside their country of birth. Migration takes place within and among the countries. To mitigate the sufferings of the migrants we need to enhance the capacity of migrants as partners in economic development rather consider them outsiders. For the women migrant workers we should develop gender-based interventions at the community level to improve the general condition of women migrant workers. We can mobilise migrant organisations and local associations in maximising the development potential of migration whilst minimising its social costs on migrants and the families left behind.

5. FOLLOW-UP

Please compare your understanding of the subject matter of this module after reading the contents and information provided in this module. Please discuss also with your colleagues and relate it to your experience. Identify activities and make a plan which you can independently or collectively implement.

6. CONTENTS OF MODULE III

In the next module “**Developing Gainful Opportunities and Growing a Green Future**”, our focus will be on the following major topics:

- What is rural youth employability?
- What are different types of income generating activities?
- How income generating activities can help poverty alleviation?
- What are wage-employment and self-employment opportunities?
- How private sector can contribute in creating jobs and employment opportunities?
- What are the basic elements and process of developing a business development plan?
- What is the process of financial management?
- What are the roles and functions of entrepreneurs?
- How to mobilise stakeholders and partners for rural business development?
- What are life skills and their importance?
- What is green future?
- What are the methods and techniques for developing “Green Skills” and “Green Jobs” for ensuring sustainable livelihoods in rural areas?