



Improving Productivity and Market Success of Ethiopian Farmers Project

# A guide to market-oriented extension services with special reference to Ethiopia



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Editing, design and layout—ILRI Editorial and Publishing Services, Addis Ababa, Ethiopia.

ISBN 92-9146-284-5

Citation: Gebremedhin, B., Jemaneh, S., Hoekstra, D. and Anandajayasekera, P. 2012. A guide to market-oriented extension services with special reference to Ethiopia. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project. Nairobi: ILRI.

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# Contents

Figures	v
Boxes	vi
Tables	vii
Chapter 1 Introduction	1
1.1 From production-oriented to market-oriented extension services	1
1.2 Purpose, objectives and intended users of this guide	2
Chapter 2 Nature of market-oriented extension services	3
2.1 Introduction	3
2.2 What is market-oriented extension?	3
2.3 Need for market-oriented extension	4
2.4 Key principles of market-oriented extension	5
2.5 Who provides agricultural extension services for market-oriented development?	6
Further reading	7
Chapter 3 Roles and functions of the market-oriented extension agent	8
3.1 Introduction	8
3.2 Roles	8
3.3 Functions	9
3.4 Knowledge, skills and attitudes	10
Further reading	12
Chapter 4 Basic concepts in agricultural marketing	13
4.1 Introduction	13
4.2 What is an agricultural market?	13
4.3 Types of agricultural markets	14
4.4 Agricultural marketing system	15
4.5 What is agricultural marketing?	15
4.6 Input and output marketing	16
4.7 Market participants and intermediaries	17
4.8 Business Development Services (BDS)	19
4.9 What is agricultural market orientation?	20
4.10 Demand and supply and price determination	20
4.11 Marketing mix or the 4 Ps	28
4.12 Marketing functions	28
4.13 Marketing costs	34
Further reading	36

Chapter 5 Agricultural value chains	37
5.1 Introduction	37
5.2 Agricultural value chains and related concepts	37
5.3 Value chain approach to analysis and development	41
5.4 Value chain mapping	42
5.5 Value chain upgrading	50
Further reading	53
Chapter 6 Farm planning and budgeting	54
6.1 Introduction	54
6.2 Farm planning	54
6.3 Farm budgeting	59
Further reading	69
Chapter 7 Agricultural market information services	70
7.1 Introduction	70
7.2 What are market information and market information services?	71
7.3 Why is market information important?	72
7.4 Collecting and processing market information for distribution to farmers	73
7.5 Disseminating market information	78
Further reading	80
Chapter 8 Facilitating market linkages and market opportunities	81
8.1 Introduction	81
8.2 What is market linkage and why is it needed?	82
8.3 Types of market linkage	83
8.4 Identifying profitable markets	87
Further reading	91
Chapter 9 Facilitating collective marketing	92
9.1 Introduction	92
9.2 Common marketing problems faced by smallholders and the rationale for collective marketing	93
9.3 Activities in collective marketing and organizing farmers for collective marketing	97
9.4 Factors influencing effectiveness of collective marketing	98
9.5 Key considerations to avoid collective marketing breakdown	99
Further reading	101

# Figures

Figure 4.1	Demand curve	21
Figure 4.2	From individual demand to market demand	22
Figure 4.3	Movement along the demand curve	22
Figure 4.4	Change in demand (demand increasing)	23
Figure 4.5	Change in demand (demand decreasing)	23
Figure 4.6	Supply curve	24
Figure 4.7	From individual supply to market supply	25
Figure 4.8	Change in quantity supplied (movement along the supply curve)	25
Figure 4.9	Outward shift in supply	26
Figure 4.10	Inward shift in supply	26
Figure 4.11	Market equilibrium and market clearing price	27
Figure 4.12	When supply shifts and demand constant	27
Figure 4.13	When demand shifts to the left (decreases) and supply is constant	28
Figure 5.1	Typical value chain and associated business development services	38
Figure 6.1	Graphical illustration of break-even analysis for a carrot enterprise	65

# Boxes

Box 5.1	Example of value chain core processes map for dairy production in Ethiopia	43
Box 5.2	Example of value chain actors and activities map for dairy in Ethiopia	44
Box 5.3	Example of product flow for dairy in Ethiopia	45
Box 5.4	Example of volume of product flow map for dairy in Ethiopia	46
Box 5.5	An example of mapping of actors and employment opportunities created for dairy value chain in Ethiopia—Case of retailing	47
Box 5.6	An example of value addition map for dairy in Ethiopia	48
Box 5.7	An example of information flow map in dairy in Ethiopia	48
Box 5.8	An example of mapping linkages and relationships in dairy value chain in Ethiopia	49
Box 5.9	An example of mapping business services that support dairy value chain in Ethiopia	49
Box 6.1	Cost items to be included in a budget	60

# Tables

Table 4.1	Descriptions of marketing mix elements	29
Table 5.1	An example of mapping constraints and possible solutions for a dairy value chain in Ethiopia	51
Table 6.1	Sample profit and loss statement (Ethiopian Birr (ETB*))	58
Table 6.2	Sample cash flow statement (first year)	59
Table 6.3	Wheat enterprise budget	63
Table 6.4	Break-even analysis for a carrot enterprise	64
Table 6.5	Break-even yield analysis when total cost = 157.50 and product price = ETB 80/quintal)	65
Table 6.6	Break-even price	66
Table 6.7	Four basic items to be considered in partial budgeting	67
Table 6.8	Partial budget for switching from hand weeding to herbicide application for wheat production	68



# Chapter I Introduction

## I.1 From production-oriented to market-oriented extension services

Many developing countries are embarking on agriculture development strategies aimed at promoting market orientation of subsistence farmers and their eventual integration into the market economy. Agricultural extension services are the major institutional support services playing a major role in commercial transformation of subsistence agriculture. However, most of the public extension services in developing countries still remain production- and subsistence-oriented. The target remains improving productivity and production for food self-sufficiency, and little attention is given to market-oriented production planning, and the input and output marketing services needed by smallholders to promote and expand their market orientation and market participation.

Focus on commercial transformation of subsistence agriculture requires that the mandate of the extension officer should not be limited to promoting increased productivity and production. It should also include provision of support services to rural households and their enterprises to earn better income from farming activities. Facilitating market linkages and building marketing and agribusiness capacity of subsistence farmers goes hand-in-hand with promotion of appropriate production technologies and practices. Hence, agricultural extension services in developing countries need to shift from production-oriented system to more market-oriented service to help farmers link and adapt to changing markets.

The major reasons for the predominantly production-oriented extension services in developing countries are: (1) historical emphasis on food security meant to be achieved through own production, and (2) lack of awareness or orientation and capacity to provide market-oriented extension. Most of the subject matter specialists (SMS) and development agents (DAs) have production background with little training on agribusiness, agricultural marketing, and market-oriented extension methods. Post-harvest and marketing aspects are considered outside of the mandate of the extension services.

Ethiopia has adopted commercial transformation of smallholder agriculture as a basis for its overall agricultural development strategy since about seven years ago. The extension services in Ethiopia are almost exclusively public and have seen tremendous expansion in the last decade. The number of extension agents grew from a mere 15 thousand to more than 80 thousand in about five years' time. However, although better attention seems to be given to marketing problems of smallholders, the extension services still remain primarily production- and subsistence-oriented. Subject matter specialists and DAs are trained in the three technical disciplines of crop production, animal production and natural resource management, with little background in marketing and business. Transformation into market-oriented agriculture requires that farmers receive extension services on market-oriented production and input and output marketing.

## 1.2 Purpose, objectives and intended users of this guide

The overall purpose of the guide is to contribute to raise awareness about the importance of market-oriented extension and to build the capacity to provide this service among those who work directly with farmers and their organizations, and small-scale rural enterprises. Such staff members include district level SMSs and DAs; and staff of producer and commodity organizations, development projects, non-governmental organizations, trading and processing enterprises, input suppliers and private extension providers. The primary target audiences of this guide are those development agents working directly with farmers at field level. Regional and federal level agricultural experts, and program leaders of development projects may find the guide useful reference for training or program planning.

The guide has three major objectives. First, it introduces the concept of market-oriented extension and the roles and functions of the market-oriented extension agent aimed at creating awareness about the role and importance of market-oriented extension. The second objective is to enhance the understanding of the extension staff about the basic concepts involved in market-oriented production, agricultural marketing and value chains. Poor knowledge about agricultural marketing and limited marketing support skills characterize the production and subsistence-oriented agricultural extension services. To effectively link farmers with markets, the market-oriented extension agent needs to understand the basic concepts in agricultural marketing and value chains. The third objective is to equip the extension officer with tools and methods of providing market-oriented extension to farmers and their organizations, and small-scale rural enterprises. These include promoting business development planning and budgeting, supplying market information, facilitating linkage of farmers with markets, and promoting collective action for marketing.

The guide is, therefore, divided into two parts. Part one deals with the nature of agricultural extension services for market-oriented development, the roles and functions of market-oriented extension agent, and basic concepts involved in agricultural marketing and value chains. Part two deals with business plan development and budgeting, supply of market-oriented extension, linking farmers with markets, and promotion of collective action for marketing.

# Chapter 2 Nature of market-oriented extension services

## 2.1 Introduction

This chapter introduces the concept of market-oriented extension, its rationale and the processes involved. First, we provide a working definition of market-oriented extension. Then we provide justification why it is needed and the possible processes involved in market-oriented extension.

The major objectives of this chapter, therefore, are to:

- define market-oriented extension
- explain why market-oriented extension is needed
- explain key principles of market-oriented extension
- identify the potential providers of market-oriented extension.

## 2.2 What is market-oriented extension?

Market-oriented extension can be defined as the total efforts extension officers put to increase market orientation and market participation of farmers. Therefore, market-oriented extension refers to the total effort of:

1. advising and supporting farmers to produce profitable market-oriented commodities and adopt appropriate technologies and practices
2. collecting and communicating market-related information
3. identifying profitable markets and buyers, and linking of farmers to buyers
4. building marketing capacity of farmers and
5. facilitating organization of farmers to conduct collective marketing of their produce.

## 2.3 Need for market-oriented extension

Commercial transformation of subsistence agriculture underpins the agricultural development strategy of Ethiopia. Many other developing countries have also adopted the same overall strategy. As countries embark on commercial transformation of smallholder agriculture, new challenges confront the production and subsistence-oriented agricultural extension system. As farmers become more market-oriented, extension workers are expected to advise farmers not only in market-oriented production but also in input and output marketing. Post-harvest handling, storage and packaging also become more important.

In subsistence agriculture, production is mainly geared towards meeting household food consumption requirements. Only surplus production over and above consumption requirements is sold. Hence, marketing aspects of agricultural produce are secondary to own consumption. With commercial transformation of subsistence agriculture, production is destined primarily for the market. As farmers plan to produce for the market, considerations related to cost of production and competitiveness, quality of produce and post-harvest handling become more important. Farmers need regular supply of market related information to keep abreast of changing market condition and consumer preferences.

Smallholders commonly face marketing problems. The common marketing problems that smallholders face include:

- limited business skills
- lack of or inadequate market information
- limited contact with input sellers and output buyers
- low volumes and quality problems
- low bargaining power
- low marketing capacity
- lack of transport service or high fees
- lack of storage facilities
- lack of knowhow on packaging and grading
- inadequate market infrastructure and
- inadequate market outlets.

Efforts are needed to alleviate these problems confronted by smallholders, if they are to integrate into the market successfully. However, production-oriented extension system is not geared towards providing farmers with the necessary support to overcome market related problems. Although improvements in production and productivity are essential for successful integration of smallholders into markets, additional services are required to overcome market related problems. Hence, market-oriented extension that includes promotion of profitable market-oriented commodities and appropriate production technologies and practices, and the provision of market related services to farmers is required.

## 2.4 Key principles of market-oriented extension

Market-oriented extension follows certain key principles: resource-based, consistency with business principles, commodity development approach, based on the value chain framework, and bottom-up and participatory.

1. **Resource-based:** Market-oriented agricultural development needs to be based on the comparative advantages of a given area. Such comparative advantages are based partly on the existing resource potential including land, water, vegetation, infrastructure and human resources. Hence, market-oriented extension services providers will have to assess and evaluate the resource base of the target area they are providing service to *vis-à-vis* the potential for commercial agriculture.
2. **Business principles:** Sustainable livelihoods and welfare is based on income and wealth accumulation. The primary aim of market-oriented extension is to help farmers achieve better income from their farming activities. Hence, explicit considerations of costs and revenues and profitability of enterprises should be guiding principles of the service.
3. **Commodity development approach:** In market-oriented extension services, every effort is geared towards the development of the market-oriented commodities. The centre of extension services planning will have to be the commodity. Hence, careful analysis needs to be done to identify the critical technological (varieties, breeds, farm machinery etc.), organizational (farmer groups, cooperatives, unions etc.) and institutional (input supply, credit service, market support etc.) constraints confronting the commodity. Extension interventions will then be based on priority constraints identified during the analysis stage.
4. **Based on the value chain framework:** A value chain refers to all firms and their activities involved in input supply, production, transport, processing and marketing and distribution of a commodity. Critical constraints hindering the development of a commodity may be related to any of the stages in the value chain. Hence, a market-oriented extension agent will be better placed to identify the priority intervention points if he/she follows the value chains framework in the analysis and identification of constraints and interventions.
5. **Bottom-up and participatory:** Market-oriented agricultural development depends critically on the knowledge, skills and experiences of producers and agribusinesses. Efficiency in production, input supply and marketing, and thus competitiveness in the market, depends primarily on the technical skills of farmers and agribusinesses and their capacity to market their produce. Farmers possess significant indigenous knowledge in production, storage and marketing of their produce. Market-oriented extension needs to build on the knowledge and experience of farmers and small-scale agribusinesses. Appropriate combination of indigenous and 'scientific' knowledge improves the success possibility of the agricultural extension services for market-oriented development.

## 2.5 Who provides agricultural extension services for market-oriented development?

Market-oriented extension can be provided by various organizations. Possible providers of extension services for market-oriented development include the public extension system, producer and commodity organizations, processing and trading enterprises, private extension services providers, and input suppliers.

**1. Public extension system:** The public extension system is the most important extension services provider in Ethiopia, and, perhaps, in many developing countries as well. As countries pursue market-oriented agricultural development strategy, the public extension system is expected to play major role in providing agricultural extension services for market-oriented development.

**2. Producer and commodity organizations:** Producer and commodity organizations may provide market-oriented extension using hired personnel or lead farmers. Such providers include informal farmer groups, or formal primary farmer cooperatives or unions. Producer and commodity organizations may also brokerage extension services for market-oriented development from other providers.

**3. Processing and trading enterprises:** Processing and trading enterprises that have vested interest in the quality of the product, timeliness and adequacy of volume may provide market-oriented extension to ensure sustainable supply and quality of products. Formal arrangements such as contract farming and out-grower schemes may embed the provision of extension services for market-oriented development as an integral component of the contractual arrangements.

**4. Non-governmental organizations:** Several non-governmental organizations implement agricultural and rural development projects. Such projects usually involve working directly with farmers. To the extent that such projects are involved in market-oriented development, extension services for market-oriented development will be among the menu of services they provide.

**5. Private extension services providers:** Although private extension services provision is rare in many developing countries, especially in Ethiopia, such service provision may be more important as the rural economy grows and extension services becomes more demand driven. Private extension services may fit well in areas with high agricultural potential areas where farmers are willing and able to pay for extension services.

**6. Input suppliers:** Input suppliers may combine the supply of inputs with technical and output marketing advice to farmers.

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# Chapter 3 Roles and functions of the market-oriented extension agent

## 3.1 Introduction

This chapter outlines the roles of market-oriented extension agents, and their functions, skills, knowledge and attitudes. Market-oriented extension agents are expected to help farmers develop the farm as a business enterprise, improve production efficiency and earn good income. Market-oriented extension agents play various roles and perform variety of function to realize this.

Market-oriented extension agents need a whole set of new skills, knowledge and attitudes to deliver extension services for market-oriented development. Communication and facilitation skills and good knowledge of production technologies, markets and the household economy are essential, as extension agents are expected to cover a wide range of marketing and socio-economic issues.

The objectives of this chapter are:

- To describe the role and functions of market-oriented extension agents
- To describe the skills, knowledge and attitudes the extension agents should possess.

## 3.2 Roles

A market-oriented extension agent is:

- Facilitator of the identification of the production and marketing possibilities and problems in the area:** Market-oriented production should start from the appraisal and knowledge of the resource base and potential of communities to produce for the market. Farmers may need support to identify new opportunities to respond to market demand.
- Promoter of the adoption of improved agricultural technologies for market-oriented commodities:** Improvements in productivity and efficiency in production are needed to be competitive in the market. Therefore, adaptation and adoption of improved technologies and practices are essential in commercial transformation of subsistence farmers.
- Supporter and advisor of business plan developments:** Benefit–cost calculation and business planning are needed to plan production for the market. However, farmer capacity in profitability calculations and business planning may be limited.



- d. **Facilitator of linkages of farmers with input suppliers and credit service providers, transporters, commodity buyers, and processors:** Farmer linkage with input suppliers, credit service providers and output buyers is low. Oftentimes, farmers lack information about the availability of suppliers and buyers. Farmers may need support to link with these agents.
- e. **Builder of marketing capacity of farmers:** Farmers' marketing capacity is usually low. Decision-making on when and where to sell, negotiations skills and marketing related capacities need be developed so that farmers will be able to make independent marketing decisions.
- f. **Collector, processor and interpreter and disseminator of market information:** Processing and interpreting marketing information is a difficult task for farmers. Access to market information by itself may not be sufficient unless the information is properly analysed and made ready for use in decision-making by farmers. The task of interpreting market information is thus another major role of market-oriented extension agents.
- g. **Repository of technical and market-related information to farmers and small-scale businesses:** Farmers need a source of technical and market related information to turn to as they undertake their market-oriented production activities, purchase inputs, and market their outputs. Hence, organizing such a source of information accessible to farmers is pivotal.
- h. **Facilitating provision of infrastructure and marketing support services:** Market infrastructure including market places and storage facilities, and market services such as packaging, cleaning, grading, and transport are limited in rural areas. There is a need to avail such facilities and services through the public extension system, community organizations, NGOs or the private sector to enhance market-oriented development.

### 3.3 Functions

Market-oriented extension agents perform a multitude of functions to promote market-oriented development of smallholders. The major functions include the following:

- appraise resource base *vis-à-vis* potential for commercial agriculture and identify profitable market-oriented commodities that could be grown in the area
- identify critical technical, organizational and institutional constraints of the development of the potential market-oriented commodities
- identify improved technologies and practices for the market-oriented commodities
- identify improved institutional and organizational interventions to solve critical problems of the market-oriented commodities
- demonstrate improved technologies and practices for market-oriented commodities to farmers
- train farmers on how to use new technologies and practices to promote adoption
- provide advisory services on post-harvest, processing, grading, packaging and labelling

- promote and support business development plans, budgeting and profitability analysis
- maintain constant contact with sources of technical and market information
- collect, analyse, interpret and disseminate market information to farmers
- subscribe to reports put out by the different information services, including internet access
- facilitate linkage of farmers with output buyers, especially for new commodities
- facilitate linkage of farmers with input suppliers, and credit service providers
- train farmers and their organizations on marketing skills
- organize farmer groups or cooperatives to conduct collective marketing and provide continuing technical and managerial support in their operations
- organize visits of farmers to markets, processors and distributors. This would enable farmers to better understand markets, and how their produce are sold and used, and create awareness about quality and other product characteristics
- organize visits from traders and wholesalers. Farmers visit to markets can be difficult and costly to organize. An alternative is to encourage wholesale agents and others to visit villages to hold group meetings with farmers
- assist farmers in their contract negotiations
- assist farmers in understanding production and marketing costs. Farmers do not just need to know how to grow new crops or raise animals; they also need to know what it is going to cost to do so. Extension officers should be able to help farmers estimate likely production costs for new products or for different technologies. Agricultural marketing costs can be substantial. However, farmers are not usually aware of marketing costs.

### 3.4 Knowledge, skills and attitudes

Market-oriented extension agents need to have breadth of knowledge in several areas as well as specific skills to perform their functions well. Market-oriented extension agents also need to have the right attitude to be effective promoters of market-oriented agricultural development.

#### Knowledge

Market-oriented extension agents need to have satisfactory knowledge on the following areas:

- household economics and livelihoods
- business principles
- budgeting and business plan development
- markets and marketing
- production and post-harvest techniques

- principles of farmer organizations
- participatory methods
- communication methods.

## Skills

The specific skills that market-oriented extension agents need to have include:

- budgeting
- planning
- profitability analysis
- facilitation
- rapid market appraisal
- networking
- communication
- adult training
- partnership development.

## Attitudes

To be effective in promoting market-oriented development, market-oriented extension agents need to be:

- open-minded
- willing to learn
- flexible
- dynamic
- creative
- positive
- seeing farmers and agro-enterprises as clients.

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# Chapter 4 Basic concepts in agricultural marketing

## 4.1 Introduction

The market-oriented extension agent needs basic knowledge of agricultural markets and marketing, and agribusiness to effectively discharge his/her duties as a promoter of market-oriented agricultural development. Extension agents should have a good understanding of the concepts underlying the nature, role and functions of markets, price determination and fluctuations, market costs, and several other related concepts. This chapter, therefore, introduces the concept of agricultural markets and marketing, market orientation, demand and supply interaction, the marketing mix elements, the various functions that markets perform and associated marketing costs.

The objectives of this chapter are to:

- provide operational definitions of agricultural markets, marketing and market orientation
- explain how demand and supply interact to determine price
- explain the differences between input and output marketing
- describe the marketing mix elements
- show the relationship between marketing functions and marketing costs.

## 4.2 What is an agricultural market?

An agricultural market is an institution in which exchange of agricultural produce or service takes place or a system where buyers and sellers interact to buy and sell agricultural goods and services. In its simplest form, an agricultural market can be a physical place where goods and services are exchanged. Market places can be found in various locations: villages, by the roadside, in small and medium towns, and in big cities. It is important to note that an agricultural market does not necessarily have to be a place or physical location. Exchange of goods and services can take place between sellers and buyers without the trading parties meeting face to face in a given location. For example, a farmer can agree to sell his produce to a buyer located somewhere else by reaching an agreement on the phone or some other communications means. The farmer can then send the product via a transporter and the buyer can send the money through a bank or some other means. As a specific example, a honey producer in one location can sell his produce to a buyer in another location through agreements concluded via communication means and receive his money through a bank or other means. The important point about a market is that there is an institutional and organizational environment (or a system) that facilitates exchange to take place. An agricultural market can be defined in relation to a (i) place (Addis Ababa market), (ii) a product (teff market),

(iii) time (summer market) or (iv) organizational level (retail market). The choice of the relational reference depends on the problem to be analysed. A market can also be defined as the demand for a product or service. According to this definition, a market is a group of people who have needs and are willing to spend money to satisfy those needs.

## 4.3 Types of agricultural markets

Different types of agricultural markets can be observed with regard to their physical location and primary purposes. Different classifications are given to crop and livestock markets. The types of crop markets can be categorized into four.<sup>1</sup>

**Farm gate markets:** These are markets where one-to-one selling and buying takes place at the farm gate. Buyers are usually itinerant traders who travel to villages and buy produce at the farm or the household.

**Assembly markets:** These are markets where smallholder farmers or local traders sell their produce to collectors, who would later take to wholesale or retail markets. Assembly markets may be small and occasional sites where farmers and traders gather for 2–3 hours during the harvesting season of a specific crop, or more formalized with weekly or bi-weekly market days. Assembly markets are normally located in rural areas, but can also be found in small towns close to farming areas. In such cases, assembly markets can also function as local wholesale markets, and even as retail markets. Assembly markets play an important role because they are more efficient for traders to be able to purchase from farmers at a few places, at a particular time, rather than visit individual producers on an *ad hoc* basis. Where feeder and secondary roads are poor, trucks cannot even go all the way to villages, especially during the rainy season.

**Wholesale markets:** These are markets where retailers and businesses buy their supplies. They are generally found in larger towns and cities. Farmers can also deliver produce to wholesalers in these markets. However, the main suppliers are usually traders who have bought from farmers or other small traders. In most cases, a wholesaler in the market will buy agricultural produce for sale to retailers, or wholesalers operating in other markets.

Wholesale markets play at least three important functions. (1) farmers and traders can deliver their produce to one location, (2) retailers can buy a wide range of produce from one single place and (3) trading of large quantities of produce in one place enables prices to be formed in accordance with the level of supply and demand of produce to the market. If individual traders were selling to individual retailers, prices would vary significantly within a town or city.

**Retail markets:** These are markets where consumers and small businesses, such as restaurants and street-food vendors, buy their supplies. Larger businesses normally prefer to buy from wholesale markets or directly from farmers. Retail markets can be found in rural as well as urban areas. Many villages have their own retail markets. Such markets are also common at commune and district level, and within large cities. They may open daily or on certain days during the week. Formal retail markets account for only a small share of sales to consumers since these often have a range of shopping options. They can buy from small retail shops and supermarkets, as well as from traders and entrepreneurs selling from trucks, bicycles, and roadside stalls.

**Supermarkets:** Supermarkets are basically retail markets. As urbanization has created ever larger market centres with higher levels of market demand, supermarkets have emerged as a convenient, safe, well managed marketplace for the mid to higher income urban consumer. Many supermarkets

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<sup>1</sup> Markets can also be classified into those where physical produce are handled or 'virtual' markets which do not involve the transfer of goods on spot. Discussion of the details of such markets is out of the scope of this guide. Interested readers can refer books on agricultural marketing.

are managed by large international companies, which enable them to offer goods from across the world. Whilst supermarkets were considered to be a marketing phenomenon only found in industrial countries, they are rapidly becoming a feature of large towns in virtually all countries including developing countries. Farmers can sell to supermarkets but the buying conditions are more stringent than the wet markets, in terms of food quality, but also in terms of supply frequency and financial regulation.

Livestock markets are usually classified into four as follows: local/farm gate, primary collection, secondary distribution and terminal markets.

**Local/farm gate markets:** These are the markets where livestock producers sell their animals to itinerant buyers who travel to villages to buy animals.

**Primary collection markets:** These are markets where producers sell animals to other producers (for stock replacement), local butchers (for slaughtering), consumers, processors and medium scale traders (who collect for resale in larger regional markets). Primary markets are usually located at districts (*woreda*) towns.

**Secondary markets:** These are markets where medium scale traders sell animals to consumers, local butchers, or large-scale traders.

**Terminal markets:** These are markets where large traders sell animals to consumers, slaughter houses, and to traders for export. Terminal markets are located in major cities and capitals.

## 4.4 Agricultural marketing system

A marketing system for a given commodity or closely related commodities includes all the players involved in the production and marketing of the commodity, the functions that the participants perform in transferring and transforming the commodity, the links between the different participants in the system, including formal and informal coordinating arrangements, the spatial commodity flows, the associated business development (support) services, the support infrastructure, and the policy and regulatory environment. An understanding of an agricultural marketing system requires the understanding of these different components, their roles and functions, and how they are coordinated to effect the flow of products and services from point of production to consumption.

## 4.5 What is agricultural marketing?

Agricultural marketing refers to the performance of all business activities involved in the flow of food products and services from point of initial agricultural production until they are in the hands of consumers. In other words, agricultural marketing includes those business activities that direct the flow of goods and services from producer to consumer. Simply stated, agricultural marketing are those activities linking producers and consumers. Hence, marketing ensures that products are available for consumption:

- in the right place
- in the right form
- at the time needed by consumers and users
- whenever possible, at the needed quantity and quality.

Agricultural marketing may involve a number of sequential activities. These activities include drying, cleaning, sorting, grading, processing, packaging, labelling, transporting, storing, advertising, and selling. Many of these activities add value to the product. These activities can be performed by the producer and/or businesses/traders.

Agricultural marketing can also be defined as the identification of customer needs and satisfying those needs at profit. According to this definition, agricultural marketing consists of identifying customer needs, and satisfying those needs at profit. Hence, marketing is more than just trying to sell what is produced. It is about producing what can be sold for a remunerative price and offering it for sale. The needs and wants of customers should determine what can be produced, how it is produced, and how, where and when it will be sold. This definition is particularly important in the context of transformation of subsistence agriculture into market orientation. Successful transformation into market orientation means having farmers who analyse the market, find out what buyers want, avail products and services that can satisfy identified needs, promote such products and services, market them in an appropriate manner, and make profit.

The importance of marketing includes:

- creating new demand
- activating existing demand (e.g. through promotion)
- transforming farm products (to meet consumer preferences)
- encouraging farmers to use new production opportunities
- promoting innovation in response to market signals (demands and prices).

## 4.6 Input and output marketing

Extension agents for market-oriented development need to differentiate between agricultural input markets and markets for agricultural outputs. The major differences between input and output markets include:

- characteristics of the products
- types of users or buyers
- exchange system or environment where transaction takes place.

Agricultural inputs are demanded as input to produce an agricultural output destined for sale or consumption.<sup>2</sup> As such, the demand for agricultural inputs is derived demand, i.e. their demand is contingent upon the demand for and profitability of the agricultural output they are intended to serve as input. On the contrary, agricultural outputs are meant for final consumption by consumers. The demand for agricultural outputs is determined by their price, and the income, preferences, and number of consumers. While agricultural inputs are ultimately bought by producers, agricultural outputs' ultimate buyers are consumers.

Agricultural inputs may be of higher cost and globally based. Most agricultural inputs are demanded not individually but as a package, which means that the use of one input entails the demand for other inputs. For example, the use of a high yielding variety may call for the demand of fertilizer

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2. Agricultural inputs can also be referred to as intermediate outputs.



and pesticides. Two major considerations characterize the demand for agricultural input demand: production potential and economic potential. The production potential refers to the effect of the input on productivity of crop or livestock production. The economic potential component refers to the fact that the use of agricultural inputs cannot be justified unless use of the input is economically profitable, i.e. the benefit from using the input exceeds the cost of using the input. Several factors (e.g. cost of transportation, knowhow etc.) may enhance or reduce the conversion of production potential to economic potential. Once effective demand is created, reliable input supply and distribution system must be put in place to sustain production and develop market orientation. Agricultural input markets are characterized by fewer market participants than output markets. Agricultural input markets also have shorter market channels.

A distinction can be made between external inputs and internal inputs. External inputs are inputs which are not produced on the farm, while internal inputs are produced on farm. When moving from subsistence agriculture to a more commercially-oriented agriculture, inputs which were previously produced by the farm as an integral part of the production system (internal inputs), are gradually produced by specialized input producers; examples are fodder, seedlings, and seeds.

## 4.7 Market participants and intermediaries

Market participants are all the people involved in producing (farmers), buying (traders), processing (processors), selling (traders) and consuming (consumers) the goods. Several market intermediaries are involved in the process of the transformation of the agricultural product from point of production to consumption. Market intermediaries or 'traders' are the people who handle a product from the time it leaves the farm until it reaches the hands of the final consumer. Farmers do not usually sell directly to consumers. Most often, farm produce change hands several times before they reach consumers. The people who are directly involved in moving products from the farm to consumers—the market intermediaries (traders)—play important roles in the flow of the produce from producers to consumers because:

- Most consumers live far away from production areas and products need to be transported, even long distances.
- Agricultural production is usually seasonal while consumption is continuous throughout the year. Hence, many agricultural products need to be stored.
- Most farm produce are not in the form that is acceptable to consumers. Some types of post-harvest handling and/or processing (cleaning, sorting, grading) are needed, and produce is presented to consumers in acceptable forms and right quantities.

There are different types of market intermediaries, each performing different functions in the marketing system. Below is a characterization of some of the most important market intermediaries in a typical agricultural market.

- **Itinerant collectors**

These are small and very mobile traders who visit villages and rural markets. They can buy from village bulking agents or directly from dispersed farmers. The itinerant traders then ferry their goods back to larger markets to sell to assemblers, wholesalers or retailers, in their area of operation and sometimes in neighbouring areas. These travelling traders rarely undertake storage for more than a few days. They are opportunistic and diversified traders who in many cases deal with a wide range of agricultural products. Their involvement in agricultural marketing is often seasonal and they may also be involved in farming and other activities. They operate with limited capital, trading small volumes

at a time and using very simple means of transport, such as bicycles and motorbikes. In the more remote areas, there may be many local bulking agents who collect produce. These are common in areas where farmers are poorly organized.

- **Assembly traders**

These are sometimes referred to as primary wholesalers. They normally buy from farmers and itinerant collectors, and sell to wholesalers. Their main function is to gather produce for sale to large traders who do not have the time to carry out small purchases from scattered producers and collectors. However, in some cases they may also supply local retailers. Assembly traders are normally based in rural markets or towns. They may own or rent small, motorized transport vehicles and small storage facilities.

- **Wholesalers**

Wholesalers vary in size of operation, but deal with larger volumes than collectors and assemblers, and often perform a more important storage function. They normally own or rent medium to large vehicles for transporting agricultural products, and own or rent medium to large-size storage premises, which allows them to postpone sales in anticipation of price rises, i.e. to speculate on the market. These traders cater for markets with significant concentration of retail outlets and consumers, i.e. large towns and cities. They sometimes buy produce from farmers and collectors, but tend to rely on assembly traders and other wholesalers as the main source of supplies. Wholesalers mainly sell to other wholesalers and retailers.

- **Retailers**

The main role of retailers is the distribution of products to consumers. Their function is to obtain supplies and display them in forms and at times convenient to consumers. Retailers are very diverse in size and operation from small kiosks and hawkers or roadside sellers that sell small volumes of a limited number of goods up to supermarket chains that deal with a vast range of agricultural products. In between these two extremes of retailers are a large array of village and small town or city shops that sell various goods but which generally do not keep sizeable stocks. Some retailers specialize in specific product categories, whereas others have a more diversified product portfolio of fresh, processed and frozen products.

- **Processors/commercial buyers**

Processors are those individuals and firms involved in the transformation of agricultural commodities. Rice and maize millers, bakeries, fruit juice makers and cassava starch manufacturers are examples. Processors can be small household enterprises or fairly large formal firms. They may employ traditional and labour-intensive methods or use modern, large-scale equipment, and be located in rural or urban areas. Large processors tend to have significant stocks of raw material to ensure continuous processing activity and high utilization of installed equipment during the off-season.

- **Exporters**

These are businesses involved in exporting the produce to foreign markets. The role of exporters is usually more important for high value commodities. Exporters are one of the market intermediaries that put stricter quality requirements on the produce they purchase. As the agricultural sector develops, export markets also become more important.

- **Producer organizations**

Formal producer organizations such as farmer cooperatives and unions or informal farmer groups such as those organized for collective marketing of a particular produce are another category of market intermediaries. These organizations play important role in marketing member's produce. They have the potential to increase the bargaining power of farmers, negotiate higher prices, reduce cost of transportation and other marketing costs. Producer organizations may also be involved in processing produce, in the procurement of inputs, or in providing support to members to sell their produce such as by creating market linkages and providing market information.

- **Government marketing organizations**

Government marketing organizations appear in different forms in different countries. In some countries, such organizations have monopoly power in agricultural marketing, although such forms of organizations are now disappearing. In other cases, government marketing organizations operate as semi-autonomous parastatals with some market power. The trend in recent times is for such organizations either to disappear altogether or play a price stabilizing role. In their stabilization role, such organization purchase produce if prices are declining and sell stock when prices are rising.

Two other groups that are sometimes included in the list of market intermediaries are brokers and commission agents.

- **Brokers**

These are individuals or organizations that facilitate linkages between buyers and sellers and facilitate negotiations on prices and terms of exchange. Brokers may also play role in contract enforcement. It is important to note that brokers do not physically handle produce. Brokers charge for their services as a proportion of the value of the produce exchanged, oftentimes from both sellers and buyers.

- **Commission agents**

These are individuals or organizations who assume responsibility of marketing on behalf of the traders. They charge for their produce based on the value of produce they manage to market on behalf of the business owner.

## 4.8 Business Development Services (BDS)

Market intermediaries usually handle the product directly. A number of business development services (BDS) are also critical for efficient production and effective marketing performance because market participants need support services to carry out their business activities. The most important support services are input supply, extension/advisory service, research, technical and business training services, transport, communications, market information and intelligence, support infrastructure, finance, and government policies and regulations. The role of business development services in marketing and agro-enterprise development is critical because these services not only help the market to perform efficiently, but they are also sources of many of the new innovations that can occur in a value chain to increase competitiveness and ensure sustainability. Although the government can have important role in providing business development services directly, most of the services are better provided by the private sector with the government playing supportive and regulatory roles.

## 4.9 What is agricultural market orientation?

Agricultural market orientation refers to the deliberate production decisions aimed at producing agricultural commodities for sale at profit. In other words, agricultural market orientation is producing commodity for sale, as opposed to trying to sell what is left as surplus. Market orientation is based on the comparative advantages of farmers and responds to market signals. In the past, smallholder's main focus has been on production for food self-sufficiency. Marketing strategies were based on availability of surplus production after meeting family food requirements. Most often this type of approach pursued by development agencies is referred to as the food security approach. The consequences of food security approach pursued by development agencies for decades has resulted in the domination of the country's agriculture by low value, staple food crops rather than considering diversified approach to farm incomes based on consideration of local opportunities, local assets and market access.

The market driven approach promotes market-oriented commodity development by farmers taking into consideration the economic opportunities and unique market characteristics that exist in different agro-economic climates. Free market system compels farmers to be market-oriented and decide on what to produce, how to produce and where to market their produce.

Technological improvements are creating conducive environment for producers by availing high yielding improved varieties, breeds, and better practices and also by enabling them to plant off-season. Market-orientation enables farmers to take advantage of opportunities created by new technologies in crop production and handling systems. Moreover, population growth, higher incomes and urbanization increase demand for food products both in quality and variety creating new opportunities for profitable markets. Increased opportunities in international trade, such as in high value crop and livestock commodities are additional impetus for market orientation.

## 4.10 Demand and supply and price determination

Extension agents should have a good understanding of demand and supply. Their advice to farmers should be informed by changes in supply and demand. Supply and demand interact to determine market price. In this section, we will define the concepts of demand and supply and describe how their interaction determines market prices.

What is demand?

Demand is the amount of goods and services that buyers are willing and able to purchase at different prices. It is important to note that the concept of demand implies that buyers should not only be willing to purchase the good or service, but also have the ability to pay for their purchase.

Determinants of demand:

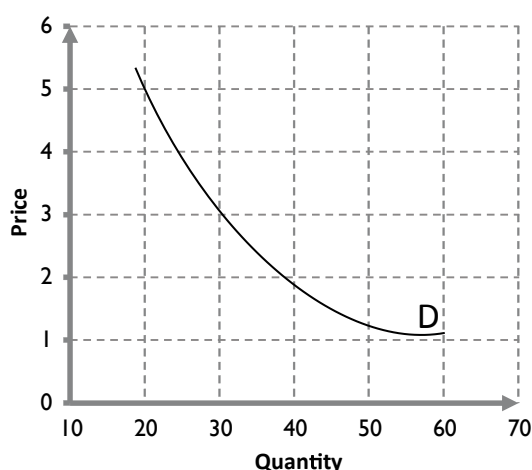
The most important determinants of demand are:

- **Prices:** If prices increase, demand will tend to fall. If prices fall, demand will tend to rise.
- **Income:** When income of buyers increases, their purchasing power increases and so demand may increase. When income of buyers decreases, demand may fall.
- **Population:** When the number of people using the product increases, the demand for the product will rise. When the number of population using the product decreases, the opposite will happen.

- **Prices of substitute goods:** If the price of a substitute good (a good that can be used instead of the good) increases, the demand for the good tend to increase. If the price of substitute good decreases, the demand for the good tends to decrease, as consumers will shift to the other good.
- **Price of complements:** If the price of a complement good (a good that has to be consumed together with the other) increases, the demand for the good tend to decrease. If the price for a complement good decreases, the demand for the good tend to increase.
- **Consumer preferences:** Demand is a function of consumer preferences. If preference of consumers for a good decreases, the demand for the good will decrease. If consumer preferences for a good increases, the demand for the good will increase.
- **Price expectations:** If consumers expect that price of the good will increase in the future, the demand for the good now will increase. If consumers expect that the price of the good will decrease in the future the demand for it now will decrease.

**Demand curve:** The graphical representation of the relationship between quantity demanded and prices is called the demand curve. Demand is represented graphically as a downward sloping curve with price on the vertical axis and quantity on the horizontal axis (see Figure 4.1). The downward sloping nature of the demand curve shows that demand decreases as price increases or vice versa.

Figure 4.1. Demand curve

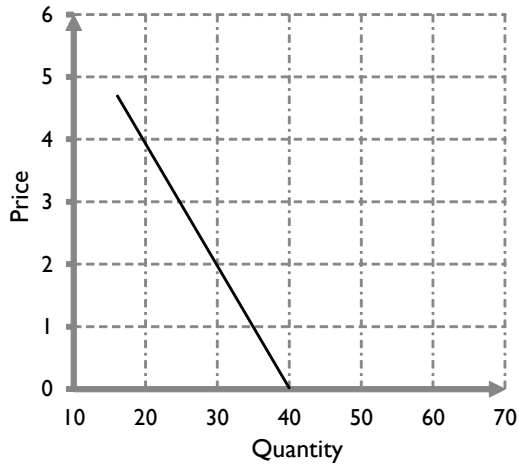


**Individual vs. market demand:** Individual demand refers to the amount of a good demanded by an individual at different prices. Market demand of a good is the horizontal summation of all individual demands for the good (Figure 4.2). Since what we are concerned with is about the market for agricultural goods, our focus will be the market demand. Hence, demand heretofore means market demand.

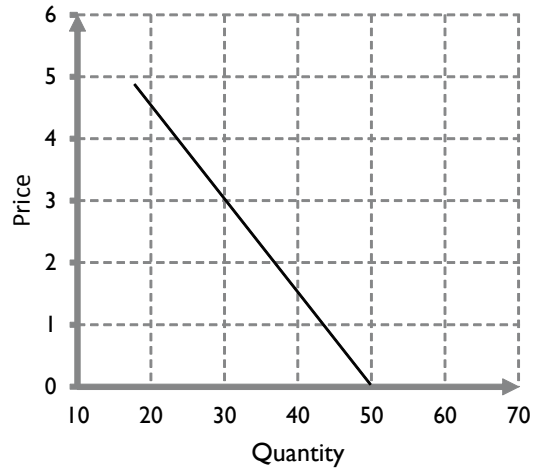
### Change in demand vs. change in quantity demanded

Change in quantity demanded refers to the change in the amount of the good demanded due to variations in the price of the good keeping all other determinants of demand constant. In other words, change in quantity demanded refers to the movement along the demand curve (Figure 4.3). Change in demand refers to the shift in the position of the demand curve caused by changes in factors other than own price. Demand can shift to the right (or increase) as a result of increase in population, consumer income or the price of substitutes, decrease in the price of complements, and the expectation that prices will increase in the future (Figure 4.4).

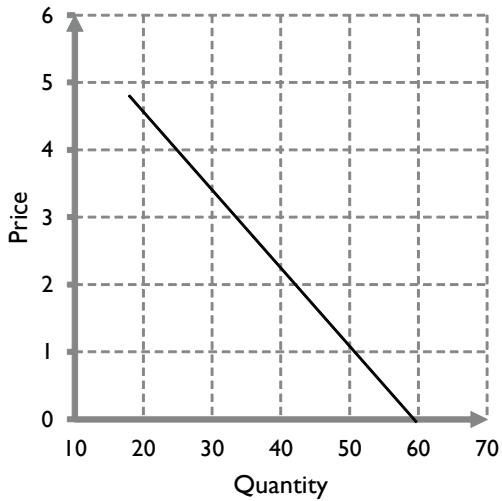
Figure 4.2. From individual demand to market demand



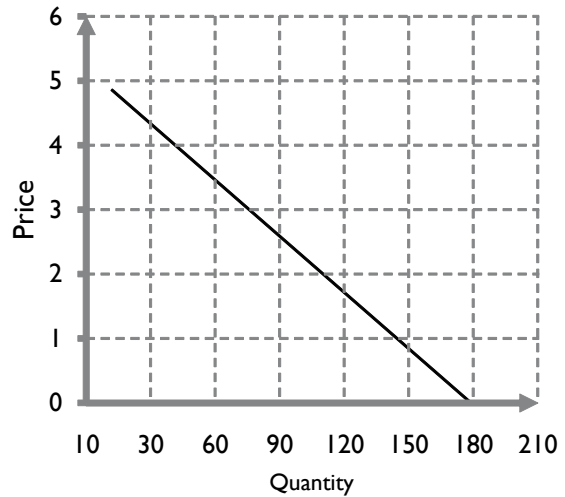
Demand 1



Demand 2



Demand 3



Demand 4

Demand can shift to the left (decrease) as a result of decrease in income of consumers, reduction of the number of the population consuming the good, decrease in the price of substitutes, increase in the price of complements, or consumer expectation that price will decrease in the future (Figure 4.5). In most cases, the major factors affecting demand change slowly implying that shifts in demand for agricultural commodities occur slowly and can be predictable.

Figure 4.3. Movement along the demand curve

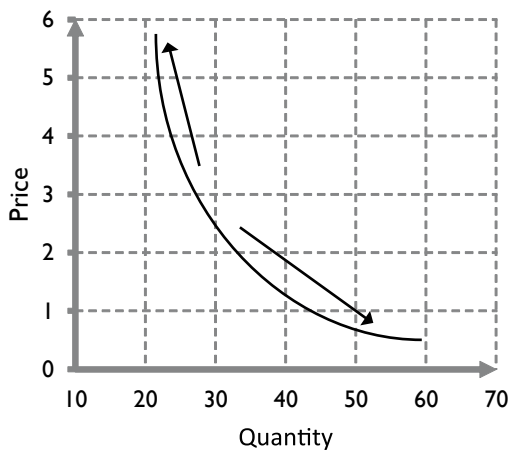


Figure 4.4. Change in demand (demand increasing)

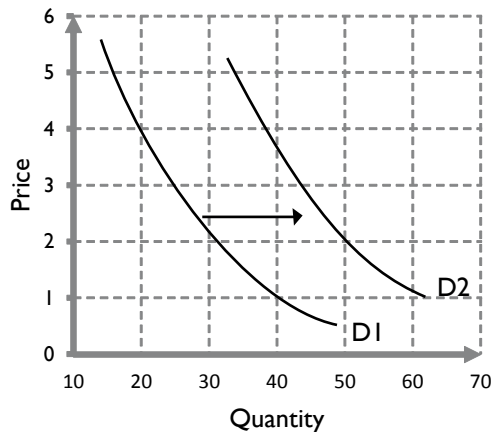
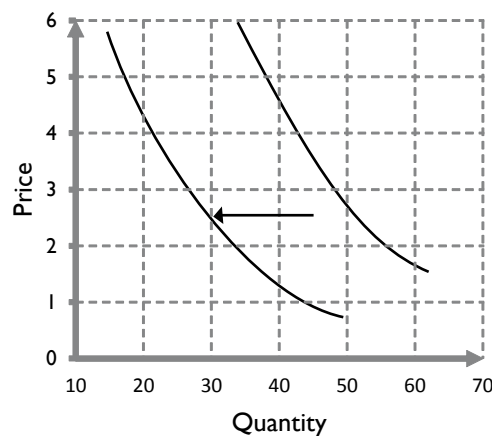


Figure 4.5. Change in demand (demand decreasing)



What is supply?

Supply is the amount of a good that agricultural producers or market intermediaries are willing and able to provide or sell at different prices. While supply is strongly influenced by production, the two may not be the same. Production and supply may not be the same because supply has its own set of determinants, one of which is production.

Determinants of supply:

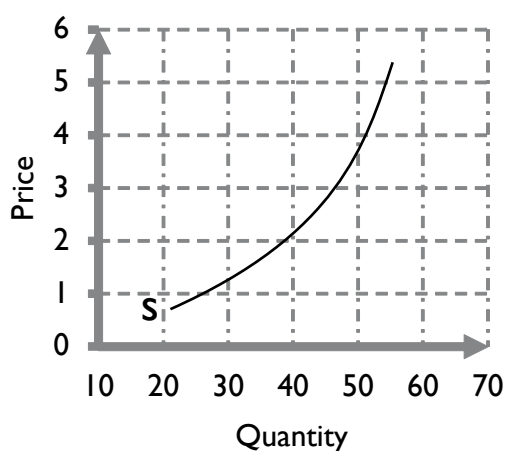
The most important determinants of supply are:

- **Prices:** When price of a commodity increases, supply of the commodity will increase. A decrease in the price of a commodity will decrease the supply of the commodity.
- **Price of substitute commodity:** A commodity is substitute in production to another commodity if producers will shift to the new commodity as the price of the new commodity increases. Hence, when the price of a substitute commodity in production increases (decreases) the supply of the commodity in question will increase (decrease).
- **Price of a complementary commodity in production:** A commodity is complementary in production to another commodity, if the commodities can be produced together. Hence, the supply of a commodity is expected to increase (decrease) as the price of the complementary commodity increases (decreases).

- **Number of producers:** When the number of producers of a commodity increases, supply of the commodity is expected to increase.
- **Climatic and related factors:** Favourable weather conditions will result in higher production and therefore have positive impact on supply. On the other hand, droughts will result in lower harvest and therefore have negative effect on supply. Floods, diseases, pests and other factors that reduce production will have negative effect on supply.
- **Production costs:** An increase in the production cost of a good will reduce the supply of the good because production may be reduced. Farmers may shift to other commodities which are less expensive to produce. A reduction in the cost of production will increase supply as farmers may be encouraged to produce more of the commodity.
- **Technology:** Improved production technology will increase supply due to its effect on increasing productivity and thereby production. This is the main reason why the extension services put significant effort in promoting improved agricultural technologies to farmers. The adoption of improved technologies is especially important for the transformation of subsistence agriculture into market orientation.

**Supply curve:** The graphical representation of the relationship between quantity supplied and prices is called the supply curve. Supply is represented graphically by an upward sloping curve with price on the vertical axis and quantity on the horizontal axis (Figure 4.6). The upward sloping nature of the supply curve shows that supply increases as price increases.

Figure 4.6. Supply curve



#### Individual supply vs. market supply

As in the case of demand, supply is also divided into individual supply and market supply. Individual supply is the amount of a commodity that an individual producer is willing to provide for sale at various prices. On the other hand, market supply refers to the horizontal summation of all individual supplies of a commodity (Figure 4.7). Since our focus in this guide is on markets, we will use the term supply and market supply interchangeably.

#### Change in supply vs. change in quantity supplied

Change in quantity supplied refers to the change in the amount of the commodity supplied due to variations in the price of the commodity keeping all other determinants of supply constant. In other words, change in quantity supplied refers to the movement along the supply curve (Figure 4.8).



Figure 4.7. From individual supply to market supply

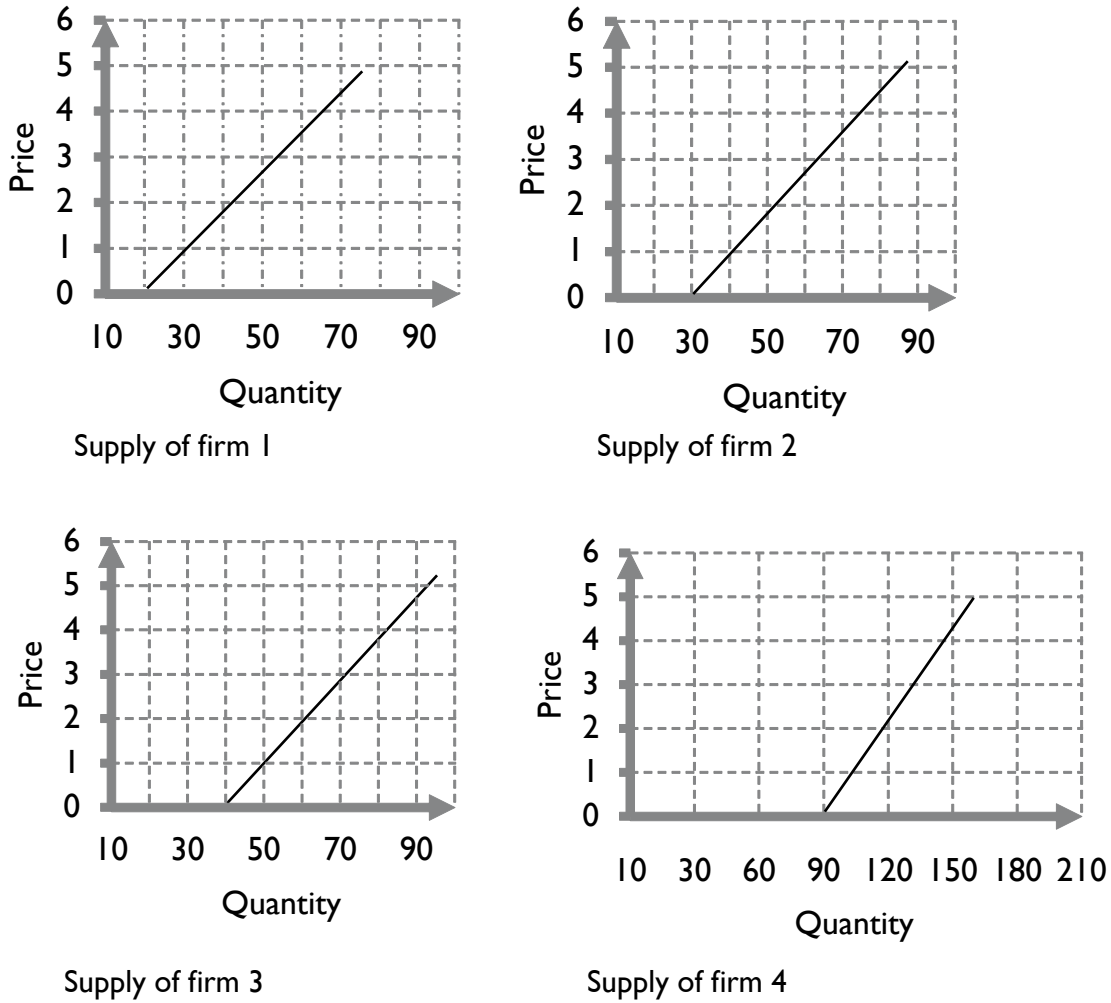
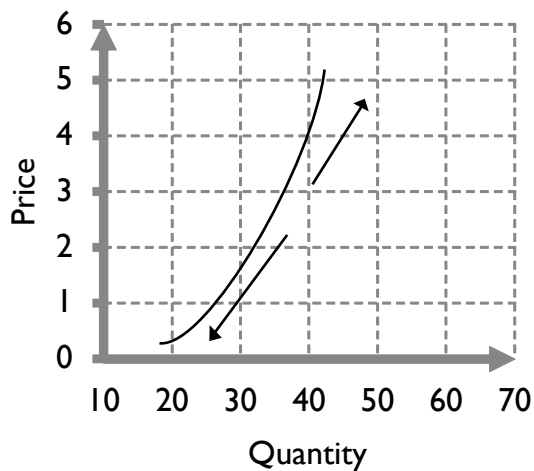


Figure 4.8. Change in quantity supplied (movement along the supply curve)

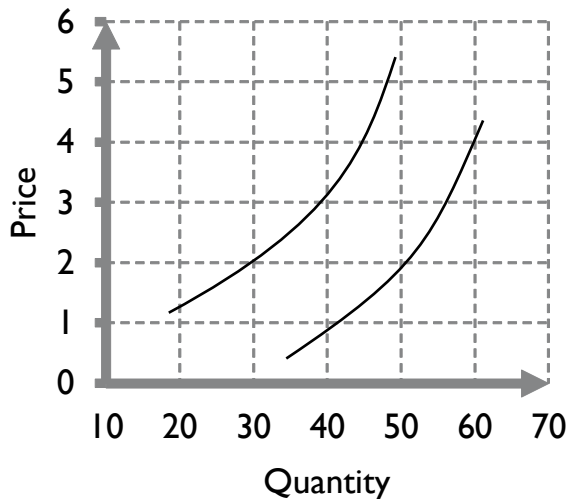


Change in supply refers to the shift in the position of the supply curve caused by changes in factors other than own price.

Supply can shift outwards (to the right) or increase as a result of increase in number of producers, favourable climate, reduced cost of inputs, improved technology, increase in the price of a complementary commodity or a decrease in the price of a substitute (Figure 4.9). Supply can shift

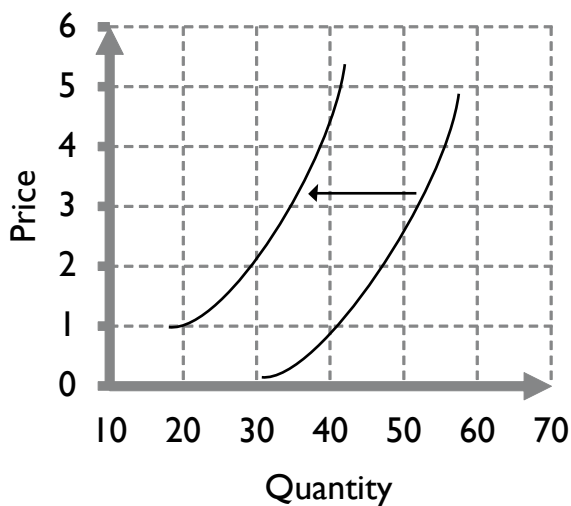
inwards (to the left) or decrease as a result of decrease in the number of producers, increase in the cost of inputs, unfavourable climate, decrease in the price of complementary commodity, or an increase in the price of a substitute commodity (Figure 4.10). In most cases, the major factors affecting supply change slowly implying that shifts in supply for agricultural commodities occur slowly and can be predictable.

Figure 4.9. Outward shift in supply



A shift inward in supply occurs when producers are willing to supply less of the product at all price levels (Figure 4.10).

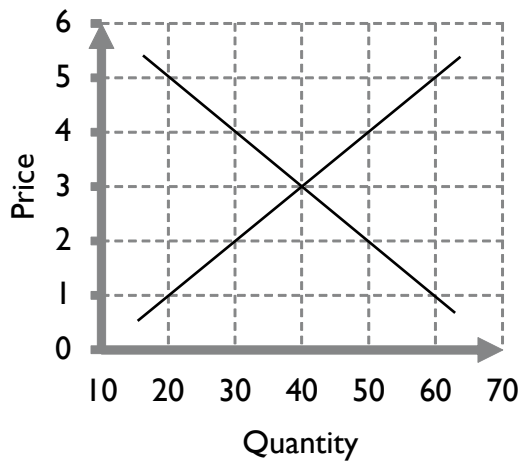
Figure 4.10. Inward shift in supply



How demand and supply determine market price

In a competitive market, market prices are determined by the interaction between demand for and supply of a commodity. The price at which quantity supplied by producers is equal to the quantity demanded by buyers is called the equilibrium price (the market clearing price) of the commodity. Graphically, this market clearing price level is depicted at the intersection of market demand and market supply curves (Figure 4.11). There is corresponding equilibrium quantity for an equilibrium price. In Figure 4.11, the equilibrium price is  $P = 3$ , and the equilibrium quantity is  $Q = 40$ .

Figure 4.11. Market equilibrium and market clearing price



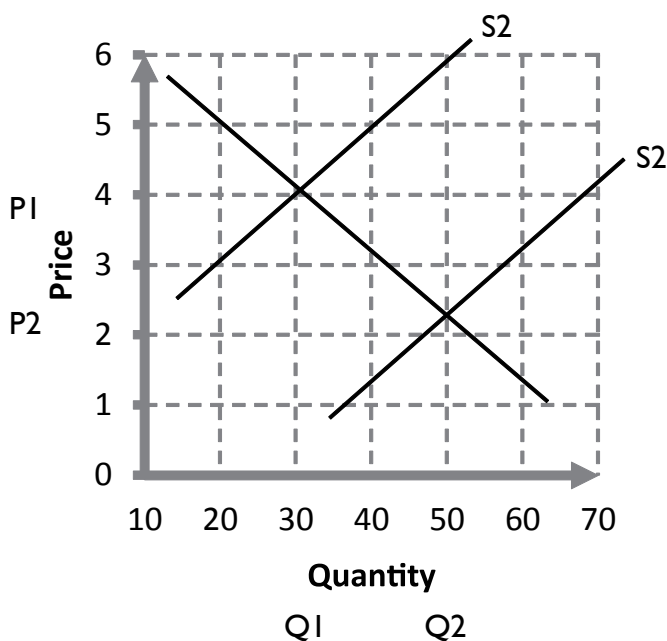
At all prices below the equilibrium price level, demand is higher than supply and there will be shortage of the particular commodity in the market. At all prices above the equilibrium price, demand is lower than supply and there will be excess supply of the commodity in the market.

### Change in equilibrium price

When either demand or supply or both of them shift, the equilibrium price will change. Some examples are given below to show what happens to price when supply or demand shifts occur.

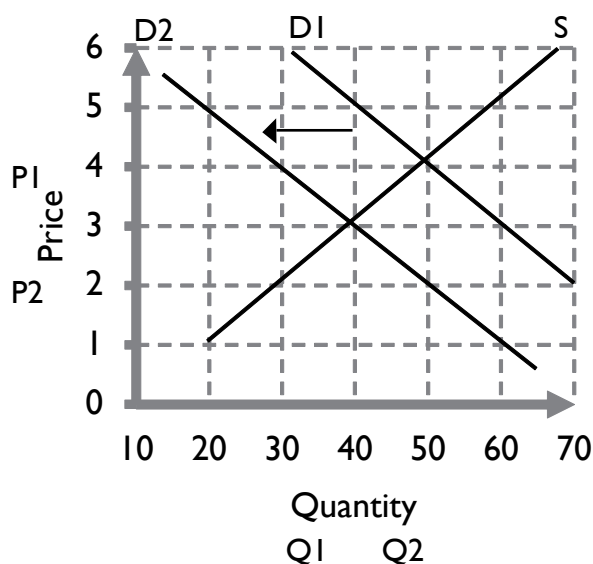
*Shift in supply:* A shift in supply, holding demand constant, changes the equilibrium price. For example good weather condition can shift the supply curve outward resulting in lower market clearing or market equilibrium price level (Figure 4.12). In Figure 2, the original equilibrium price was  $P = 4$ , and the corresponding equilibrium quantity was  $Q = 30$ . When supply shifts to  $S_2$ , the new equilibrium price is  $P = 2.25$  and the corresponding equilibrium quantity is  $Q = 50$ . If supply shifts inwards, equilibrium price will rise, and the corresponding equilibrium quantity will decline.

Figure 4.12. When supply shifts and demand constant



*Shift in demand:* A shift in demand, holding supply constant, will also result in change in the equilibrium price. For example, a decline in taste and preference for the commodity results in shift of the market demand curve to the left (decreases) resulting in lower market equilibrium price level (Figure 4.13). In Figure 4.13, the original equilibrium price was  $P = 4.25$  and the corresponding equilibrium quantity was  $Q = 50$ . When demand shifts to  $D_2$ , the new equilibrium price is  $P = 3$ , and the corresponding equilibrium quantity is  $Q = 40$ . If demand shifts to the right (increases) while supply is held constant, both the equilibrium price and equilibrium quantity will increase.

Figure 4.13. When demand shifts to the left (decreases) and supply is constant



*Shift in both demand and supply:* Shift in both demand and supply may also change the equilibrium price. However, the resulting change in price cannot be determined a priori; it depends on the nature of relative shift of the demand and supply curves.

## 4.1 | Marketing mix or the four Ps

Producers and sellers need to develop marketing and business strategies to improve product sales. The basic components that sellers consider in developing marketing and business plans are known as the 'marketing mix' or simply as the four Ps. The marketing mix elements are; Product, Price, Place and Promotion. Details of the four Ps are given in Table 4.1.

Market environments change constantly. Hence, appropriate marketing strategies must be designed for a particular market environment. A certain marketing strategy may be appropriate in one context, but lose relevance over time due to changing circumstances. Marketing strategies and choices should take into account the resources available to market participants, as well as their skills and knowledge.

## 4.12 Marketing functions

Marketing functions are the activities performed by market participants as the produce moves from the farm to the consumer. Marketing functions can be classified into three categories: physical, facilitating and exchange functions. Below we give brief description of these functions.

Table 4.1. Descriptions of marketing mix elements

Marketing mix element	Definition	Aspects of the element	Actions to be considered
Product	Commodity or service that is offered for sale which can satisfy a need or a want	Variety, type, quality, design, brand, packaging, sizes, labels, services, guarantees	The product or service supplied must satisfy consumer or user need. The product should be demanded and include features that are appreciated in the market (e.g. quality, appearance, size, packaging). In the case of farmers, it is important that they produce commodities for which there is strong demand. Farmers may need to dry, clean, sort, and grade the produce according to buyer requirements
Price (at what price to sell)	The monetary value that a seller charges for a unit of a product or service	Price lists, discounts, credit arrangements	The product must be sold for the right price, a price that is competitive, while at the same time generating a profit to the supplier. Farmers can influence prices through the choice of product type and quality management practices, the choice of market place and buyer, and through co-operation with other producers in the marketing, transporting and processing of the product, or vertical linkages
Place (point of sale and distribution channels)	Place of sale and distribution channels. A series of independent organizations involved in the process of availing the product or service to consumers or users	Market sales points, types of distribution channels, spatial coverage of distribution channels, transportation facilities	Producers should maintain regular contact with buyers and distributors, transporters. Producers should receive market information about prices and buyers. Farmers may find it easy to reduce costs, access market places, use distribution channels if volume of produce supplied would be high due to collective marketing. Formalized marketing arrangements with buyers such as contract farming, vertical integration, out grower schemes may facilitate market access to farmers
Promotion	Persuading consumers and users about the nature, quality, utility, benefit and value of the product or service	Advertising, trade fairs, personal sales, door-to-door sales, trade and consumer promotions and public relations	Realistic description of the product is important to build consumer confidence, continuous promotional strategies especially for new products or in new markets, careful consideration of costs, benefits and risks in different market options. Information needs of different types of buyers needs to be considered carefully. Buyers in different market places may have different product requirements. For example, local collectors normally buy very small volumes of unsorted produce directly from individual farmers, whereas supermarkets or importers in foreign markets require much larger volumes of standardized product

## **I Physical function**

The physical functions are those activities that involve handling, movement, and physical change of the commodity. The physical functions relate to the basic value adding process, including bulking, cleaning, drying, sorting, packaging, transporting, processing, and storage of agricultural produce. These functions can be performed by individual farmers, or better by organized farmer groups. The reality is that in many cases these functions are not undertaken by farmers which means the farmers lose their value adding opportunities which would bring them higher prices, and thus higher percentage of the final product price.

- **Bulking**

Bulking produce from several farmers is one of the most basic marketing functions that can be performed by farmer groups or local traders. Bulking enables farmers to provide larger amounts of product for sale at one time and negotiate for more favourable prices with traders. Different levels of itinerant traders may need different amounts bulked. Hence, it may be possible to fit the amount bulked with the needs of the type of buyer. Bulking also has advantages to traders since it reduces the cost of collecting small amounts, which may be of variable quality, from several smallholder farmers.

- **Cleaning**

Harvested produce may be mixed with foreign materials. Hence, there may be a need to clean the produce before trading, processing or consumption. Cleaning removes foreign materials such as sand, straw and stones. Agricultural produce can be cleaned by hand or through the use of manual or motorized equipment. The decision to clean the produce, and the choice of technology used will depend largely on product volumes and cost–benefit calculations based on the price incentives for cleaned products. For some crops, the increase in value due to cleaning can be considerable. Potato is a good example. Washed potato to remove earth gains significantly in value compared to potatoes that are sold in the harvested condition. Because of lack of price incentive farmers increase weight of their produce to increase income (examples are adding water to milk, adding earth to seeds etc.).

- **Drying**

Moisture content influences the perishability (or shelf life) or storability of crop produce and the efficiency of processing. Moisture content is the most important quality criterion for many products. High moisture content results in losses associated with pests, spoilage and germination. This is so especially for produce that will be stored for about one month to a year. Hence, maximum moisture content is set for many produce. For example, maize is often harvested with a moisture content of about 20–23%, a level which can be reduced to about 11–13% by drying. Excessive drying below the required level is not advisable. Excessive drying can result in loss of nutritional value of the crop, and change in colour and taste.

Farmers normally undertake some form of drying, mainly in the field. However further drying at subsequent stages of the marketing chain is common usually for higher value commodities, and motorized equipment is sometimes used for this purpose. In most developing countries farmers do not have access to equipment to measure or monitor the moisture content of their grain and so often encounter problems with post-harvest losses. When selling to higher order traders, many farmers are unable to negotiate price premiums based on moisture content as they are not equipped to do so.

- **Sorting or grading**

Sorting of harvested produce is needed to meet the standards and grades required by buyers (traders, processors, exporters, and consumers). Sorting differentiates produce according to important attributes or characteristics, including variety, size, colour, shape, degree of impurity, and ripeness. Sorting of produce is labour-intensive and time-consuming. Hence, cost–benefit considerations become important in the decision to sort produce. Market participants will only be willing to sort their produce if the market is prepared to pay a higher price for differentiated and higher quality products.

In many markets, premiums for differentiated quality produce are so low that there is no incentive to sorting. Market actors may sort produce only when there is demand from the buyer for it. Some markets have strict requirements for sorting and grading. Good examples are higher value markets such as supermarkets, hotels and export markets. These markets link sorting and grading to consumer preferences, and public laws and regulation on food safety. Such legal requirements are put in place to protect consumers from food safety problems.

- **Weights and measures**

Standard unit measures of length, volume or weight facilitate exchange as they provide information on the amount of produce. As such standard unit measures make exchange more efficient and enable buyers and sellers who were unable to meet to negotiate a transaction know how much they were buying for a given price. As with sorting and grading, the use of standard units provides an opportunity to either reduce the number of intermediaries, who need to physically see a product as it flows through the market chain, or provides a means for very distant buyers.

Common unit measures include grams, kilograms, tonnes, litres, and cubic metres. Produce that is sold in sacks can be sold in standard 20, 50 or 100 kg units. These are easily recognized and allow for rapid transfer of goods upon agreement of sale. In some developing countries these internationally recognized measures are not universally used and this is particularly so in more remote areas. In the absence of standard measures produce is sold in heaps or using local measures such as a bunch of bananas, or a cup, tin or bowl of grain/flour. Liquids such as milk, cooking oil and fuel are sold in bottles. As cups, bowls, bunches and bottles vary from village to village and between market to market, every transaction has to be verified and agreed upon on an individual basis. This offers both buyers and sellers opportunities to distort the measures to their advantage and thus transactions take both time and consideration before agreements can be made.

- **Processing**

Processing may be an important function as some agricultural products require processing to meet consumers' needs and tastes. In many cases, agricultural commodities cannot be consumed without processing (e.g. grains, livestock products). In urban areas, busy people would be prepared to pay for processed foods, including prepared foods, canned and frozen products. This is the case, for example, of rice and livestock. Processing can prolong the shelf life of a product, especially for perishable products. For example, processing fluid milk into dairy products such as butter, cheese and other products enables the producer to store the product longer.

Processing can be performed at different levels. Simple types of processing such as milling, cutting, and mixing can be performed with simple technologies or even manually. Advanced processing such as extraction, distillation, freezing, and extrusion may require advanced technology but also add higher value to the product. Farmers frequently undertake some low-cost processing, such as sun

drying of vegetables and fish. However, in many cases agroprocessing activities require technologies, skills, and a scale of operation that are beyond the means of individual farmers. In these situations, it is more efficient for specialized local business services to be responsible for developing processing activities, such as maize and rice millers, dairy processors, peanut shellers, juice extractors etc.

- **Storage**

Storage is needed at various levels as the product moves from production to consumption to reduce price fluctuations and avoid or minimize post-harvest loss. The storability of agricultural products may be different. Some products (e.g. tomatoes) have very limited storability, while certain grains can be stored for long time. Sometimes storage is required for just a few days, while the product is awaiting transport or the seller is searching for buyers.

In other cases, products may need to be stored for longer periods. Farmers must store agricultural products for their own consumption or for sale after the harvest season when prices would most likely be higher. Traders may also want to store produce for sale during the off-season period, when prices are higher. Finally, many governments undertake storage either as a strategic national reserve in case of unexpected shortfalls in produce or as an intervention to stabilize national supply and prices.

Storage involves costs and risks. The storage costs are related to rent, labour, pest control, product losses, and interest rates on the capital borrowed. Hence, storage decisions are based on cost–benefit calculations. In other words, storage is profitable if future price is higher than the present price plus storage costs. The costs of storage are a function of the type and characteristics of the commodity (e.g. dryness etc.), the type and quality of storage system, and other factors such as pests and climate.

The most important component of storage costs is the cost of capital used to build the storage facility. In developing countries, capital is usually scarce and costly, and stores used by traders are likely to be relatively small and not purpose-built. Few traders invest in good-quality storage facilities. Capacity utilization is perhaps the single most important factor affecting storage cost per unit product. Where a store is used frequently to full capacity, average storage costs will be low. Where it is kept empty for much of the time, average costs will be high.

- **Packaging, labelling and branding**

Packaging is an important physical market function since it reduces physical deterioration, theft and adulteration of produce. Packaging helps products to be marketed widely and efficiently. Packing may ensure product cleanliness and facilitate standardization of weights and measures.

Packaging also provides producers with the opportunity to differentiate their product by labelling with product attributes including a logo to identify the source, product descriptions, and ingredients and/or sales instructions. This information can be used for promotion and advertising purposes, making the product more attractive to the consumer. In time, a well-recognized label with strong consumer loyalty can become a ‘brand’, which many consumers recognize as a product with strong consumer support.

More recently, increasingly stringent food safety legislations also required sellers to label their products to facilitate tracing the product to its origin. It is likely that traceability requirements may be mandatory in the future.



The type of packaging material or container used will depend on the type of product and the physical and climatic environment, with higher value products using more sophisticated packaging materials. The type of packaging may also change as the product moves from the producer to the consumer. For example, a farmer is likely to sell grain in sacks. Consumers may need them in small bags. The use of labels and product packaging also offers producers with the possibility to promote and sell their produce based on its quality and source of origin.

## **2 Exchange function**

Exchange functions consist of buying and selling. The exchange functions are those activities involved in the transfer of produce and title to them from seller to buyer. The buying and selling function consist of searching for a supplier or buyer, searching for information on prices and buyers or sellers, negotiating prices and terms of sale, concluding contracts (when contract sales are involved), transferring the product and title to it from seller to buyer and effecting payment. Several of the physical function may be involved in the process of transferring the product and title to it from seller to buyer (e.g. bulking, packaging, transporting etc.). The selling function must be broadly interpreted as it is more than merely passively accepting the price offered. Advertising and other promotional activities to influence, create or mobilize demand are included in the selling function. Nurturing and maintaining customer relationships is vital for success in selling produce.

## **3 Facilitating functions**

The facilitating functions are those activities that make possible the smooth performance of the exchange and physical functions. These activities are not directly involved in either exchange or the physical handling of products. Without them, however, the modern marketing system would not be possible. The facilitating functions might be called the grease that makes the wheels of the marketing machine work. Facilitating functions include standardizations, financing, risk bearing, brokering and commissioning, and market information and intelligence.

- **Standardization**

The standardization function is the establishment and maintenance of uniform measurements for length, weight, quality and volume to simplify the exchange function. Standardization makes sales by sample possible. Standardization improves pricing efficiency. Small lots of commodities, produced by a large number of smallholder farmers, can be assembled into economic loads if these supplies are similar in grade or quality. The buyer will also have the option to choose the type and quality level of the product he/she would like to purchase.

Quality differences in agricultural products arise for several reasons. Production methods and technologies, quality of inputs used, quality of storage and processing, weather conditions, diseases and pests are some of the major factors affecting quality of agricultural produce. Technological innovations are usually expected to lead to quality improvement.

It is important to note that a buyer's assessment of a product's quality may be an expression of personal preference and may be conditioned by cultural and food habit of a given locality. For example, in some markets a small banana may be judged to be in some sense 'better' than a large banana; white sugar may be considered 'superior' to yellow sugar; and white maize may be considered 'easier to digest' than yellow maize. It may not matter much whether the criteria used in making such assessments are objective or subjective as both might have the same effect in the marketplace. What does matter in marketing is to understand how the buyers assess 'quality'. Quality preferences may change with income and demographic changes.

- **Marketing finance**

The financing function relates to the use of money to carry out the various aspects of marketing. Market participants need credit to finance operations or investments in market infrastructure such as storage and processing facilities and transportation means. In many developing countries, market participant's own or internal source of finance is not adequate to cover their financial requirements. Hence, marketing must address the question of where the funding required for operations and investment comes from. When own or internal finance is inadequate market participants may seek credit from development banks, commercial banks, credit cooperatives and credit unions, multipurpose farmer cooperatives or unions, micro-finances, other traders<sup>3</sup> etc.

- **Risk bearing**

Marketing has risks. The risk bearing function is about the acceptance of the possibility of loss in marketing and the arrangement of risk mitigating strategies. Market risks can be classified into two broad categories: physical risks and market risks. The physical risks relate to the loss due to the deterioration, reduction in the volume and quality of the product. Causes of such risk include fire, floods, accidents during transport, extreme weather conditions such as winds, floods, excessively high or low temperature etc. Market risks are those that occur due to changes in value of a product as it is marketed. A change in consumer taste might reduce the desirability and price of the product. Unexpected supplies to market may reduce price sharply. New government regulations may put price ceilings. New competitors (domestic and foreign) may offer the product at lower prices. Market participants may use insurance as a strategy against physical risk or futures exchanges in the case of price risks. It is important to note that risk bearing must be acknowledged as a cost since what is uncertain is not whether risks will occur, but when they will occur.

- **Market information and intelligence**

The market information and intelligence function is about collecting, analysing, interpreting and disseminating the large variety of data and information necessary to the operation of the marketing processes. Efficient marketing cannot operate in an information vacuum. An effective pricing mechanism is dependent on well-informed buyers and sellers. A large amount of market information needs to be assembled, analysed and disseminated in order for market participants to make informed decisions on how much to pay or charge for commodities, or what kind of pricing policy to follow.<sup>4</sup>

## 4.13 Marketing costs

Agricultural marketing incurs costs. The performance of marketing functions requires the use of resources including land, labour, various inputs, equipment, transportation means, processing facilities, advertisement, storage, government fees, and risk. Use of these resources incurs cost, and therefore all marketing activities generate costs. Hence, marketing costs are expenditures incurred by market participants as farm products move from initial point of production to final point of consumption. The amount of cost incurred in marketing of agricultural products depends upon the nature of the product (e.g. perishable products increase marketing costs), the need for processing, the number of intermediaries handling the produce, and the distance between farm gate and final consumption. It is important to note that every marketing function incurs costs and all costs need to

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3. Financial institutions in Ethiopia include public and private commercial banks, public development bank, microfinance institutions, saving and credit cooperatives and others.

4. In Ethiopia, market information can be obtained from ECX, TVs, radios, newspapers, regional agricultural market agencies and others, although the coverage may be limited.

be accounted for in computing total marketing costs. The costs incurred and the profits earned by market intermediaries account for the differences between prices at different stages of the marketing chain.

### Types of marketing costs

For ease of computation, marketing costs can be grouped into handling costs, packaging and labelling costs, costs of transportation, storage costs, processing costs, capital costs and risk allowances.

- 1. Handling costs:** Handling costs are costs related to bulking, cleaning, drying, sorting/grading, weighing, and loading/unloading. These costs are incurred as the product changes ownership. These costs are mostly less noticed as they sometimes become negligible. However, as the number of times a product changes title increases, these costs become visible. Under situations where labour costs are high, it is advisable to consider handling costs as separate cost items.
- 2. Packaging costs:** Most agricultural products require packaging prior to transportation. The packages can be jute sacks, crates, bottles, or the outer material of the agricultural commodity itself in case of vegetables. Most packaging materials are used more than once in marketing operation, which calls for the need to practice caution in calculating cost. The number of times the package is used needs to be considered in calculating packaging costs per unit product.
- 3. Transport costs:** Transport costs are all costs related to transporting the commodity from place to place. Transport costs include rental costs of trucks or pack animals; or cost of fuel, drivers and assistants, maintenance, spare parts, road tariffs and other similar costs if own transportation means is used.
- 4. Storage costs:** Storage costs include the actual per unit cost of keeping the produce in stores. Warehouse depreciation costs, costs of chemicals required to maintain the product in warehouse, costs associated with quality and quantity loss while the product is in a warehouse and the cost of money tied up while the product is in warehouse are some of the storage costs that need to be considered.
- 5. Processing costs:** Processing costs are costs incurred as the produce undergoes some physical transformation. These costs are usually incurred as raw agricultural commodities are converted into food products to meet the tastes and preferences of consumers. Cost of plant, labour, equipment, inputs and product loss are the major processing costs to consider.
- 6. Capital costs:** Capital costs are the interest paid to borrowed capital or the opportunity cost of own capital tied up in the marketing process.
- 7. Risk costs:** Risk is a fact of life in agricultural marketing. Risk allowances should be included in marketing costs. At times, risk costs could be the insurance premium paid to insurance companies. At other times, it may be a calculation of the potential loss in the event that a risky event occurs.

## Further reading

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# Chapter 5 Agricultural value chains

## 5.1 Introduction

The concept of agricultural value chains has gained popularity in the last decade. Agricultural value chain provides a comprehensive framework of thinking about the development of a market-oriented commodity. The agricultural value chain framework is now widely used by development projects and programs that intend to engage smallholders individually or collectively in the production of high value commodities. Extension agents working on commercial transformation of smallholder agriculture should know and understand the concept of value chains and the value chain development approach, to be able to identify critical intervention points to develop market-oriented commodities. This chapter introduces and defines the concept of value chains and the value chain approach to analysis and development.

### Objectives

The objectives of this chapter are to:

- introduce and define the value chain concept and related concepts
- describe the value chain approach to analysis and development
- explain the various value chain mapping exercises
- describe alternative value chain upgrading options.

## 5.2 Agricultural value chains and related concepts

### Agricultural value chain defined

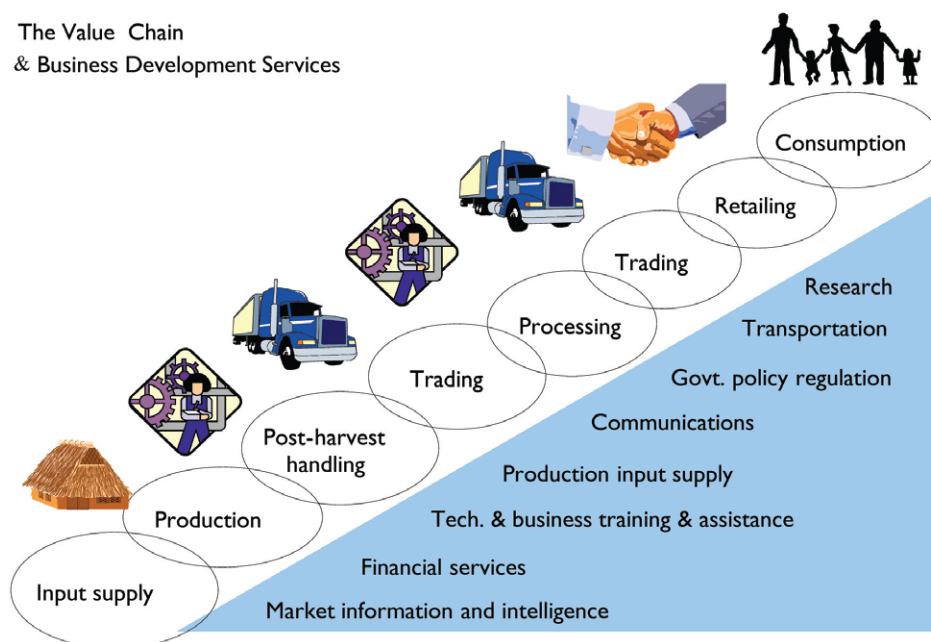
A typical agricultural value chain consists of all the firms and individuals and their activities involved in input supply, production, assembly, processing, wholesaling, retailing, and utilization (consumption), with export included as another stage for commodities that are destined for export. An agricultural value chain consists of chain actors who are involved in direct ownership of the product and value addition. It is important to distinguish between chain actors and value chain service providers. It is also important to note that not all value chains may have all the stages after production. For example, a value chain of a commodity that is not processed will not have the processing stage. A commodity value chain starts from input supply, since production is unthinkable without inputs.

An agricultural value chain can be defined for a particular commodity or group of commodities that are closely related. For example, one can think of a fluid milk value chain or dairy value chain—the latter including milk products in addition to fluid milk. Similarly, one can think of live cattle value chain or beef value chain.

The value chain concept entails the addition of value as the product progresses from input suppliers to producers and then to consumers. Therefore, a value chain incorporates productive transformation and value addition at each stage of the value chain. At each stage of the value chain, the product changes hands through chain actors, transaction is effected and costs incurred, and some form of value is created. Value addition results from diverse transformational and marketing functions including production, bulking, cleaning, grading, packaging, transporting, storing and processing.

The marketing functions of bulking, cleaning, grading, packaging, storage, processing and transporting add value to the commodity. These functions can either be done by the value chain actors themselves as part of their business, or as service functions by service providers at cost or for free. That is why the set of value chain actors does not include service providers (see Figure 5.1). Transporting a product from production site or market place to consumption area may be done by the trader or by a transportation service provider. In the former case, transportation is part of the trading actor, while in the latter case, transportation is provided as a service. That is why transportation is included as part of the business development services, and not in the value chain actor set.

Figure 5.1. Typical value chain and associated business development services



Source: Adapted from Ferris et al. (2006).

Value chains are also the conduits through which finance (revenues, credit, working capital) moves from consumers to producers; technologies are disseminated among producers, processors, and transporters; and information on customer demand preferences are transmitted from consumers to producers and processors and other service providers.

### Value chains and marketing channels

Marketing channel is sometimes confused with value chain. It is important to note the difference between the two. A market channel is a particular path through which commodity passes from producers to consumers. Other than defining the route through which a commodity passes from producers to consumers, nothing in the market channel concept indicates value addition, although potentially value may still be generated. On the other hand, a typical value chain is composed of several market channels. Several market channels can be used by farmers. In terms of the first buyer, farmers can use several marketing channels, including:

farmer → consumer

farmer → collector

farmer → assembler

farmer → wholesaler

farmer → retailer

farmer → exporter and

farmer → processor.

The amount of marketing costs is directly related to the length of the marketing channel. The further the product goes from the farm, the longer the channel, and the higher will be the marketing costs. However, it is important to note that shorter channels are not necessarily preferred to longer channels. Some nodes in the marketing channel may have important contributions to make and their exclusion from the marketing channel may reduce the efficiency of marketing.

### **Value chain stages**

In agricultural value chain, a stage of the value chain is any operating stage capable of producing a saleable product serving as an input to the next stage in the chain or for final consumption or use. Typical value chain stages include input supply, production, assembly, processing, wholesaling, export (for export commodities), retailing and consumption (see Figure 5.1).

It is important to note that each of these stages has its own role to play in the operation of the value chain, and ownership is transferred from one stage to the other. It is also important to note that not all of these stages may be necessary for every value chain. For example, value chains of products that do not require processing would not have the processing stage. Sale of fluid milk directly to consumers skips several of the stages listed above. A functional value chain would require well performing value chain stages. An underperformance of one stage would affect the performance of other stages, and eventually the overall performance of the chain.

### **Vertical coordination**

The performance of an agricultural chain depends on how well the actors in the value chain are organized and coordinated, and how well the chain is supported by business development services (BDS). Verticality in value chain implies that conditions in one stage in the value chain are likely to be strongly influenced by conditions in other stages in the value chain. It is important to note that a stage in a value chain can be affected by conditions in the other stages in direct or indirect ways, or in expected or unexpected ways.

It should also be noted that intra-chain linkages are mostly of two-way nature. A stage of a value chain is affected by the other stages in the chain, especially by the stages before and after it, and it also affects these stages. For example, agricultural production is heavily affected by the availability of inputs and the conditions in post-harvest handling of produce. Similarly, the processing stage is affected by the availability of adequate amount and quality of produce to process and by the availability of packaging and transportation facilities. The value chain approach to development, therefore, pays due attention to how the different stages in the value chain are supported by the other stages in the chain and how the particular stage supports other stages. Successful development of a value chain may be very difficult without effective coordination of chain stages.

Coordination among chain stages is, therefore, important because better vertical coordination leads to better match between supply and demand between chain stages, results in low-cost efficient exchange, helps maintain product quality, and facilitates overall good information on supplies and prices at different levels of the value chain. Coordination of value chain stages is especially important for agricultural value chains, because several factors affect vertical coordination in such value chains. Such factors include biological lag, incomplete information, random events (weather, pests, and diseases), perishability, storability, and price fluctuations. It is also important to note that smallholder value chains are usually uncoordinated and consist of various independent actors.

### **Business development services (BDS)**

Business development services are services that play supporting role in enhancing the operation of the different stages of the value chain and the chain as a whole. In order for farmers to engage effectively in markets, they need to develop marketing skills and receive services from a number of service providers, including input suppliers, information providers, training and technical backstopping, finance, and market and business support services. Business support services are, therefore, essential for the development and efficient performance of value chains and the transformation of subsistence agriculture into market orientation. Business development services may provide services at cost or for free. For example, public extension services may provide technical training and support to farmers for free. On the other hand, value chain actors may need to pay for transportation provider by private transporters.

Business development services can be grouped into infrastructural services; production and storage services; marketing and business services; financial services; and policies and regulations. Basic infrastructural services include market place development, roads and transportation, communications, energy supply, and water supply. Production and storage services include input supply, genetic and production hardware from research, farm machinery services and supply, extension services, weather forecast and storage infrastructure.

Marketing and business support services include market information services, market intelligence, technical and business training services, facilitation of linkages of producers with buyers, organization and support for collective marketing. Financial services include credit and saving services, banking services, risk insurance services, and futures markets. Policy and regulatory services include land tenure security, market and trade regulations, investment incentives, legal services, and taxation.

The role of the business development services has hitherto been neglected. The neglect was a result of the mistaken assumption that profitable business development services will emerge as value chains develop or that the public will provide business development services where they are needed and when markets are insufficient to provide profitable niches for competitive services to develop. Experiences with the development of business development services indicate that active intervention is needed from the public sector either in providing the services directly or in facilitating engagement of the private sector in providing these services. Availability of business development services is even more crucial in the transformation of smallholder agriculture into market orientation. Without adequate business development services, transformation of subsistence agriculture into market orientation may not be possible. Figure 5.1 presents a typical value chain and associated business development services.

### **Effective demand**

Agricultural value chain approach to development perceives effective demand as the force that pulls goods and services through the vertical value chain system. Hence, value chain analyses need to understand the dynamics of how demand is changing at both domestic and international markets, and the implications for value chain organization and performance. Value chain analysis also needs to



examine barriers to the transmission of information in the changing nature of demand and incentives back to producers at various levels of the value chain.

## 5.3 Value chain approach to analysis and development

The value chain approach to analysis and development is being widely used by government and non-governmental organizations aimed at transforming subsistence agriculture into market orientation. One important objective of the agricultural value chain approach is to enable farmers produce commodities that are demanded in the market, enable farmers to participate in the market as sellers and earn income for improving their wellbeing sustainably. Markets can be local, district, sub-national, national, regional or global markets. Hence, the value chain approach starts out by understanding consumer demand, and mapping the various aspects of the value chain, analysing the stages and actors involved and distribution of benefits, and identifying interventions for value chain upgrading.

Value chain analysis can reasonably be flexible and a value chain can be analysed from the perspective of any one or a group of the large number of actors in the chain. Value chain analysis can help design projects and programs to provide support to a value chain, to achieve development outcomes. Examples of development outcomes include increasing income of the poor, increasing the level of export, generating maximum employment, benefiting a particular group in a society, promoting use of local raw materials (e.g. hides and skins), concentrating development benefits in underdeveloped or disadvantaged regions of a country etc. The entry point and the focus of a value chain analysis are directly related to the desired development outcome.

The value chain approach seeks to facilitate changes in the orientation and capacity of producers and other value chain actors to increase the competitiveness of the chain and generate wealth for all participating firms, thereby contributing to a development outcome. Changing the orientation and capacity requires understanding of the incentives of the various stakeholders—why they behave in the way they do, and what is needed to motivate them to change their behaviour.

The value chain approach is mainly a descriptive tool to look at the interaction between different chain stages, actors and the role of business development service providers. Four aspects of agricultural value chain analysis are particularly important.

*1. Mapping:* Mapping in a value chain analysis includes mapping the core processes in the value chain, actors and their interactions, profit and cost structures, flow of goods and knowledge throughout the chain, geographical flow of the product, employment characteristics, linkages and interactions with service providers, and constraints and opportunities.

*2. Analysing role of upgrading in the chain:* Upgrading includes process upgrading, product upgrading and functional upgrading. Process upgrading refers to the efficiency of production by reducing costs, improving speed of delivery etc. Product upgrading refers to the introduction of new products or improving old products. Functional upgrading refers to the question of which actors should focus on which activities. For example, should a farmer be a producer, processor and transporter, or should he/she concentrate on fewer activities.

*3. Analysing role of governance in the chain:* Governance within a value chain refers to the structure of relationships and coordination mechanism that exist between actors in the value chain.

*4. Identification of distribution of benefits of actors in the chain:* Through the analysis of margins and profits within a chain, it is possible to determine who benefits from participation in the chain and which actors could most likely benefit from increased support.

In this guide, we focus on value chain mapping and analysis of upgrading options. Readers who are interested in knowing more about income distribution and chain governance are advised to refer to the references listed at the end of this chapter.

## 5.4 Value chain mapping

Mapping is a vital step in guiding value chain analysis. Mapping the value chain helps to identify value chain actors, service providers, their roles and functions; the various channels of product flows; the stages involved in the value chain; identify the location and position of particular chain actors of interest (e.g. the poor); and visualize networks to get a better understanding of connections and interdependencies between actors and processes in a value chain; identify constraints and opportunities at different stages of the chain. The mapping process is also important in demonstrating interdependency between actors and processes in the value chain. The mapping process further helps to create awareness of stakeholders to look beyond own involvement in the value chain.

A number of preliminary activities should be accomplished prior to putting together a value chain map. These include collecting data from secondary sources, key informant interviews/surveys, and other sources; and using a function/participant worksheet of input supply, production, assembly, processing, wholesale and export to organize key information about who is doing what in the value chain. A value chain has multiple dimensions and so there may not be such thing as a comprehensive, all-encompassing value chain map. Deciding what to map depends on available resources and the scope and objectives of the analysis.

The following questions can guide what dimensions to map:

- What are the major stages (processes) in the value chain?
- Who are the actors and service providers involved in these processes and what are their functions?
- How and in what direction do produce, finance, information and technology flow? What is the geographic span of these flows?
- What is the volume of products that passes through each of the channels constituting the value chain?
- How does value change throughout the chain? In other words, what are the value additions along the chain?
- What types of relationships and linkages exist?
- How is the value chain governed? What does the power structure in the value chain look like?
- What are the key constraints and opportunities the value chain have?
- What types of business development services support the value chain?

### **Steps in value chain mapping**

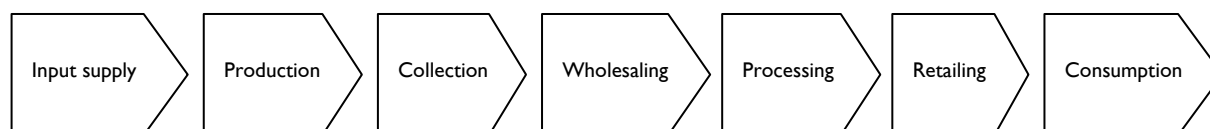
For a good value chain mapping, it is advisable that certain steps be followed, although this is not strictly required. The steps are arranged to facilitate the mapping exercise since one map may lead to another. The following steps are, therefore, recommended.

- Step 1. Mapping core processes in the value chain
- Step 2. Identifying and mapping main actors involved in the processes and their functions
- Step 3. Mapping flow of products and volume of product flows
- Step 4. Mapping geographic flow of products
- Step 5. Mapping number of actors and employment created
- Step 6. Mapping value additions at different levels of the value chain
- Step 7. Mapping flows of information and knowledge
- Step 8: Mapping relationships and linkages between value chain actors
- Step 9. Mapping business services that support the value chain
- Step 10. Mapping constraints and opportunities
- Step 11. Developing value chain map matrix.

## 1. Mapping the main stages (processes) in the value chain

In any value chain analysis, the core processes in the value chain need to be identified first. The core processes relate to the key processes through which inputs are transformed into products and ultimately distributed and marketed to consumers for consumption. A typical value chain may normally involve about 6–7 core processes. The core processes may vary depending on the characteristics of the product and the resulting chain being mapped. Box 5.1 shows an example of core chain process map.

Box 5.1. Example of value chain core processes map for dairy production in Ethiopia

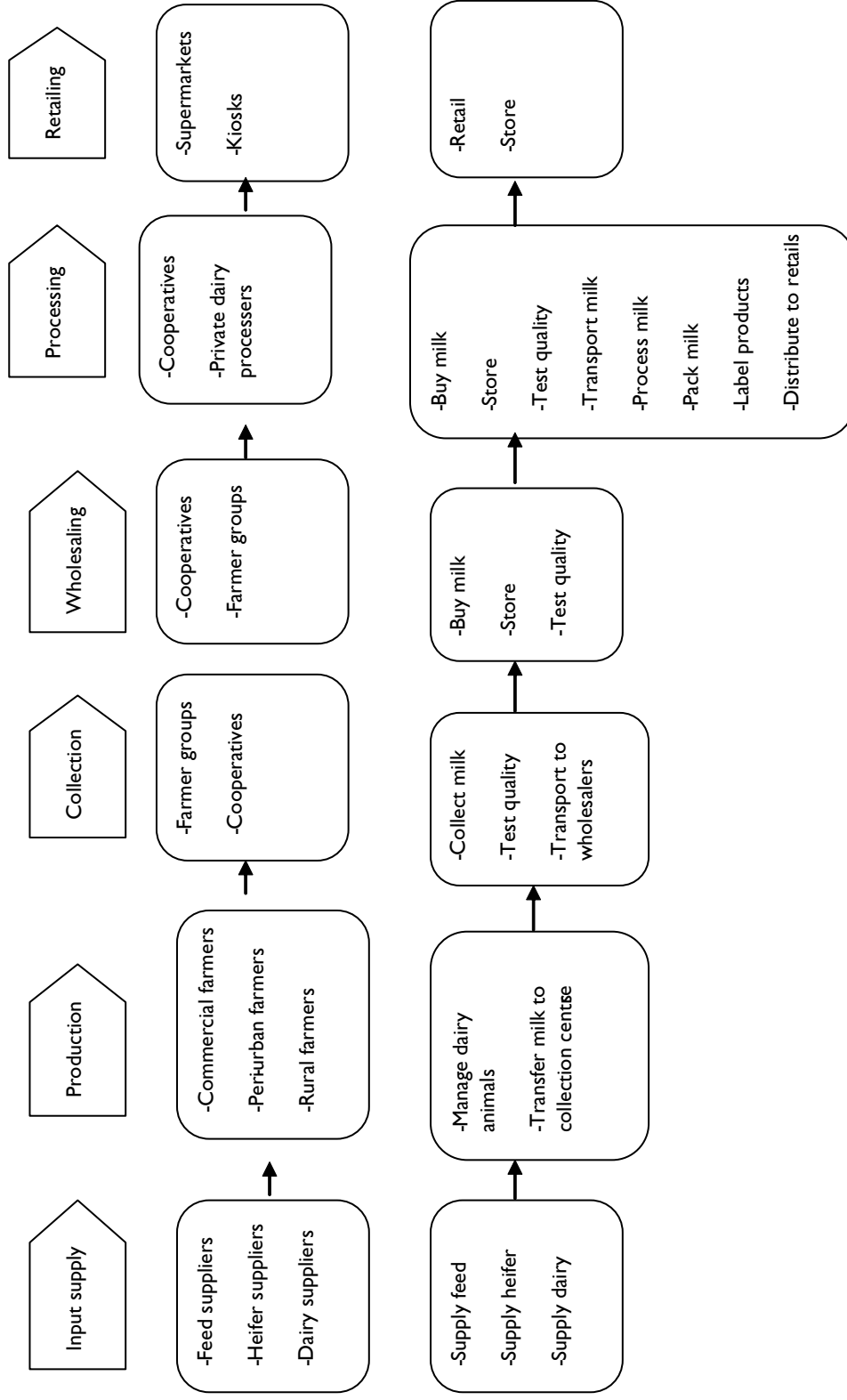


The example in Box 5.1 shows a simple linear value chain. However, it should be noted that for many value chains, there can be several products made from the initial raw material, each of which follows its own set of processes and channels to final consumption. In such cases, the process maps will be complex and involve parallel sets of processes and channels. For example, in the case of our dairy value chain, the final products could be fluid milk, cheese, cream, butter, or yogurt.

## 2. Mapping the main actors involved in the stages (processes) and their functions

Once the main processes are mapped, the next step is to identify the actors participating in the core processes and assigning the specific functions accomplished by each actor. Every value chain has its own core processes and associated specific activities. The level of detail of description of actors and their functions depends on the objective of the analysis. The easiest way of distinguishing among actors is according to their main function.

Box 5.2. Example of value chain actors and activities map for dairy in Ethiopia



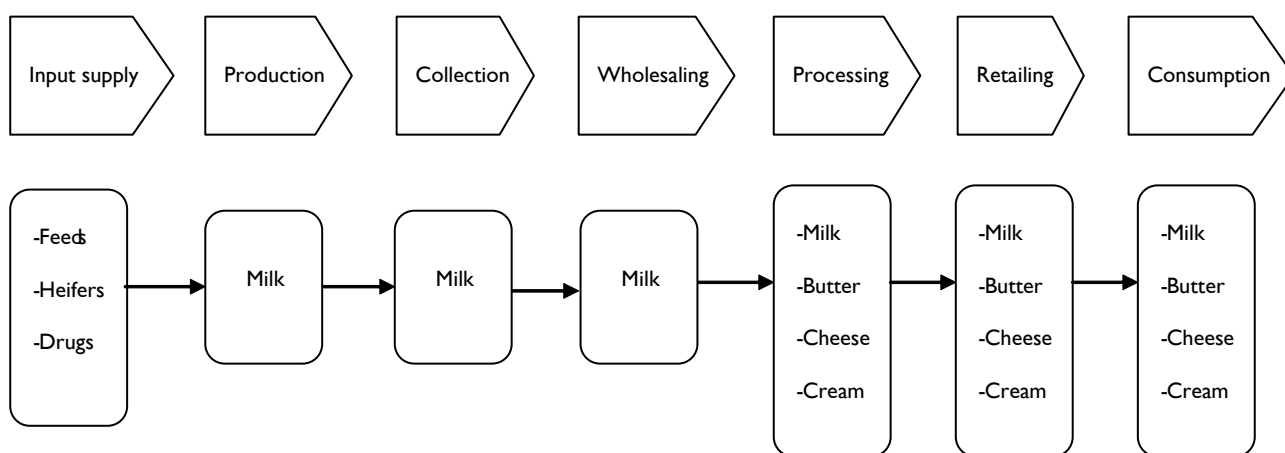
However, occupation alone may not give all information needed for useful analysis of actors and the planning of intervention. As a general rule, it is important that as much detailed information as needed should be included with regard to the type and characteristics of the actors and what they do. Actor characteristics could include type of organization (government, private, non-government, international organization, research etc.), type of business (licensed, unlicensed, family, cooperative, private limited company, sole proprietorship, micro-enterprise), size of capital, location of business (local, district, regional capital, national capital etc.), number of employees etc.

It is also important to note that in some value chains, especially in less developed value chains, actors may not have pure specialization. An actor may play several roles. For example, a farmer may be an input supplier and a trader, in addition to being a producer. A trader may also perform processing functions. An exporter may be involved in collecting produce from producers. A wholesaler may at the same time be retailing produce. Hence, a map of actors should capture the multiple roles of actors as they exist. Box 5.2 overleaf shows an example value chain actors and specific activities map.

### 3. Mapping flow of products and the volume of product flows

The reason for the existence of a value chain is that goods, services, information and finance are passed on between different actors. Mapping flows of products involves identifying the products at each stage of the process in the transformation of inputs into intermediate products, and then final products. Mapping product flows helps to get a clear picture of what forms of products are handled, transformed, and transported at each stage of the value chain. This mapping is useful to understand what stages are used to reach the final product. Box 5.3 shows an example of product flow map.

Box 5.3. Example of product flow for dairy in Ethiopia



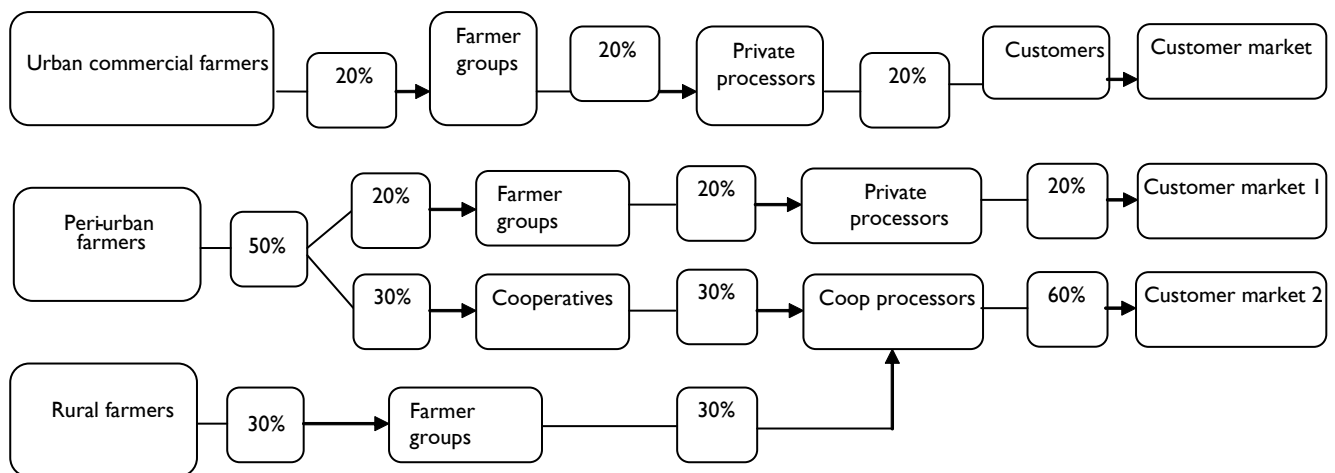
Mapping the product flow is a first step to mapping the flow of product volume. Finding out the volume of product flows helps identify the size of the different channels within the value chain and hence for the understanding of the relative importance of the different channels that make up the value chain. The relative importance of the channels in a value chain indicates where focus of interventions should lie. Mapping volume of product flow is usually done in proportional terms. Proportions at one stage of the value chain should always add up to 100%. Absolute volumes can also be added to each proportion. Box 5.4 shows an example of product volume flow map.

### 4. Mapping geographical flow of products

In mapping the geographical flow of products, the first step is to identify where each of the processes in the value chain are physically located (e.g. where the farms are, where the collectors are located, where processing takes place, where the final consumption centres are etc.). It is advisable to start

at the origin of production and see how the product travels to the final consumers. Wherever possible, a map of the region through which the product flows should be used. Preparation of a geographical flow map greatly facilitates the planning of subsequent field work to conduct further value chain analysis. Geographical map also helps understand locational differences. Such a map will help understand the importance of locations as sources of supply and points of final demand for the product.

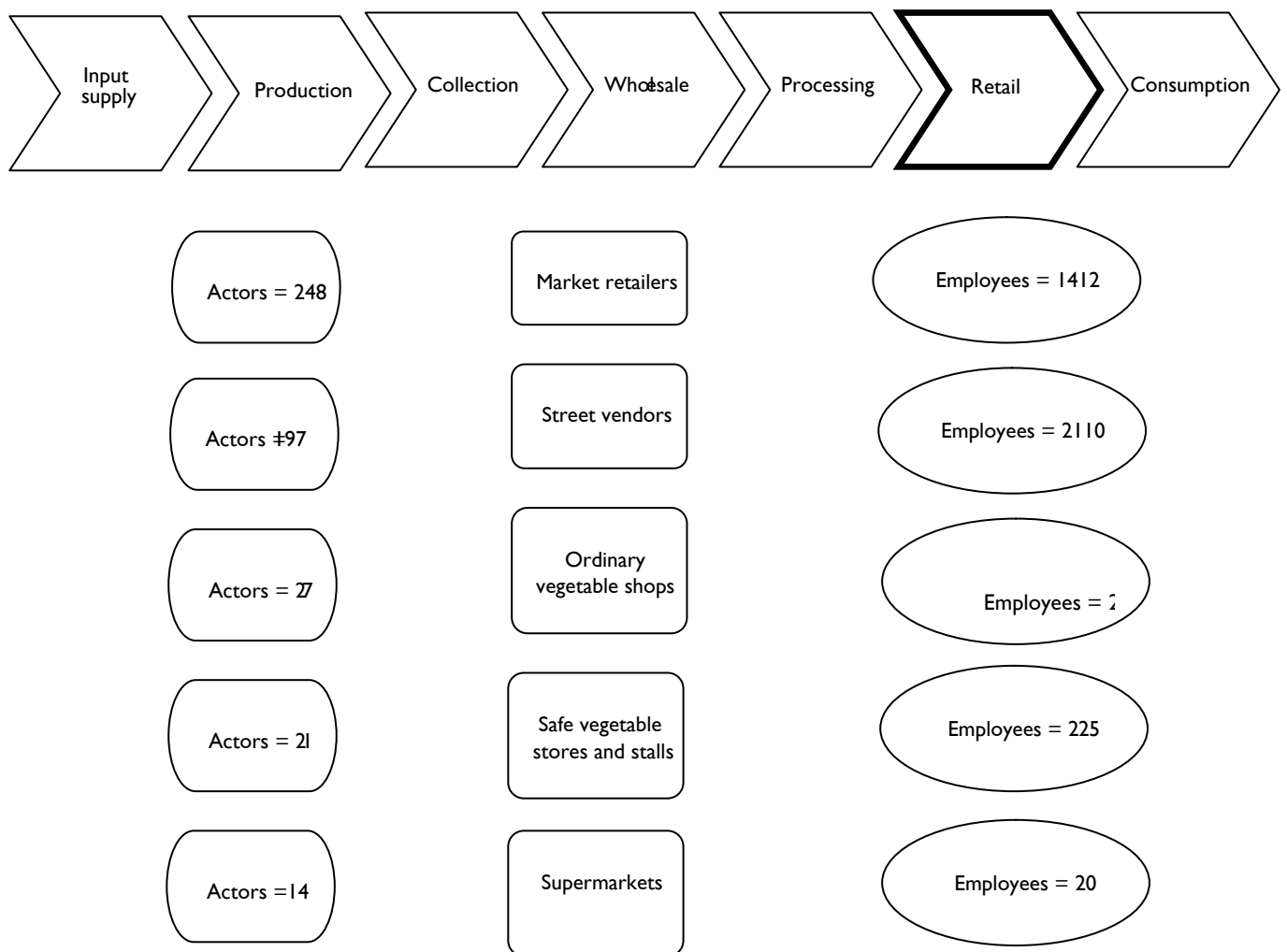
**Box 5.4. Example of volume of product flow map for dairy in Ethiopia**



**5. Mapping numbers of actors and employment created**

It may also be useful to map the number of value chain actors at each stage and the employment opportunities they offer. Once actor mapping is done, establishing the actual number of these actors within the value chain and the associated number of employees is a straight forward thing. Mapping number of chain actors and employment opportunities is especially important if the objective of the analysis relates to employment and income distribution. Box 5.5 shows an example of mapping actors and employment opportunities.

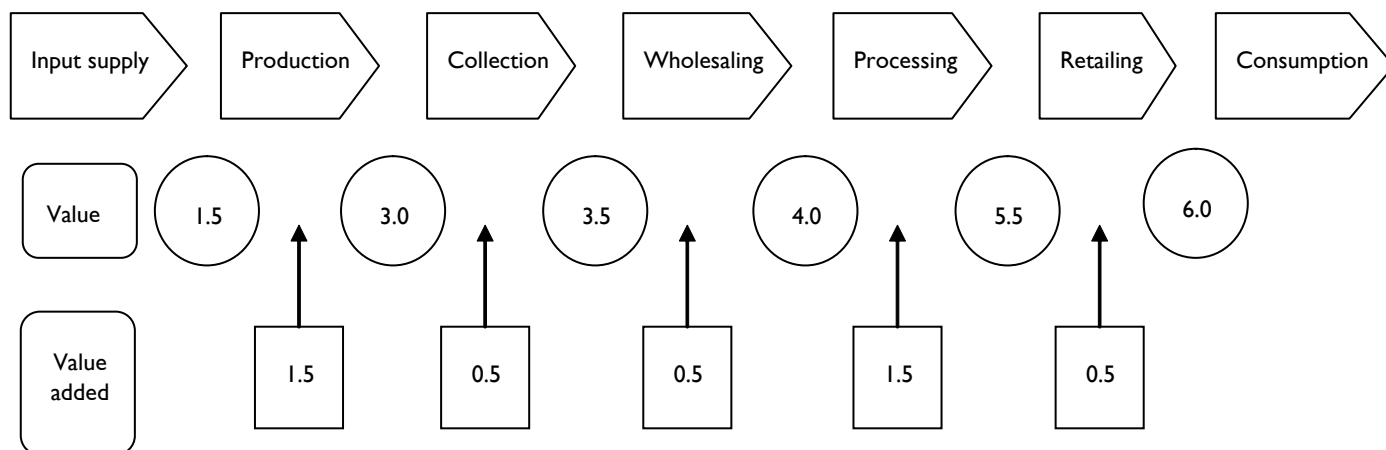
**Box 5.5.** An example of mapping of actors and employment opportunities created for dairy value chain in Ethiopia—case of retailing



**6. Mapping value additions at different levels of the value chain**

One of the core elements of value chain mapping is to map the monetary value of the product throughout the chain. Value maps help to understand how value is added throughout the chain. Together with cost information, value maps can be used as the starting point for analysing returns and margins. Box 5.6 shows an example of value addition mapping.

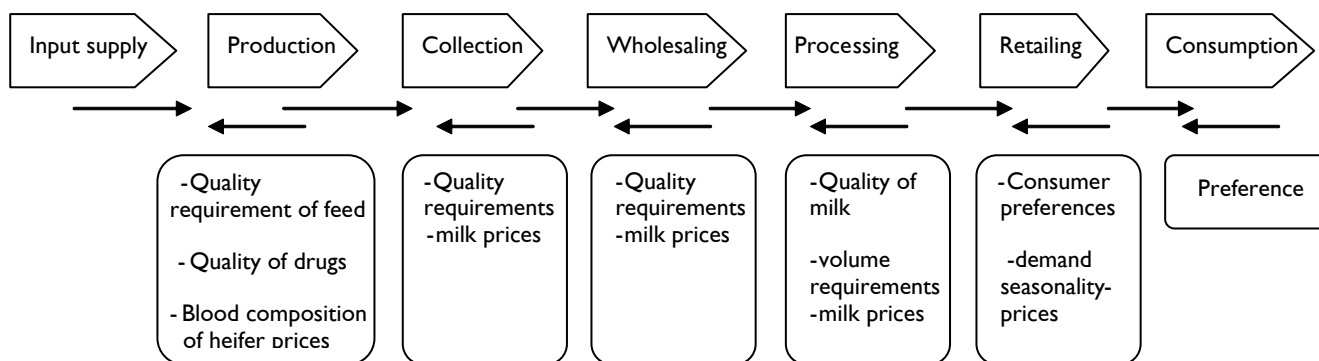
Box 5.6. An example of value addition map for dairy in Ethiopia



## 7. Mapping flow of information and knowledge

Mapping information flow shows the flow of information between actors at each process in the value chain. Mapping flows of products can be straight forward as it involves simply following the stages that the product passes through. Mapping flows of intangible aspects of a value chain is more difficult because the flow can be diffused and multidirectional. Information flows may often be going both directions. For example, a buyer informs a farmer about product qualities required, and the farmer may inform the buyer about availability and duration of production. Box 5.7 shows an example of information flow mapping.

Box 5.7. An example of information flow map in dairy in Ethiopia

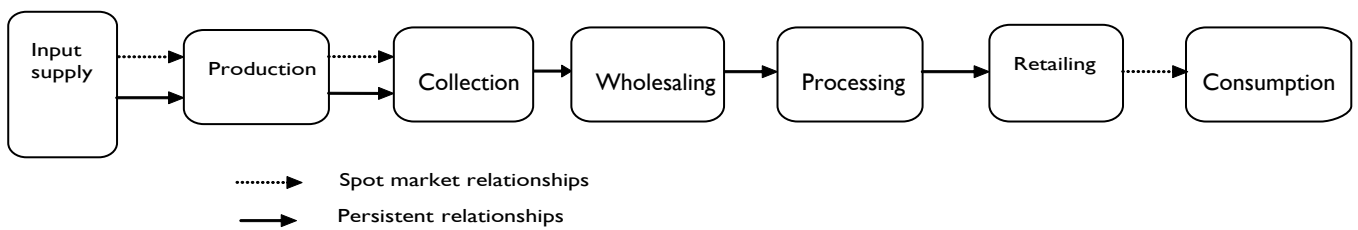


## 8. Mapping relationships and linkages between value chain actors

Once mapping of value chain actors is done, mapping the linkages between the actors can follow. Mapping value chain actor linkages helps understand the relationships between actors. It also helps understand the coordination mechanisms among the actors. Relationships can exist between actors at different process stages (e.g. producer and trader) or within the same process stage (e.g. farmer to farmer). Relationships between actors are usually market-based (which involves transaction). Relationships between actors and service providers can be market-based or non-market-based (e.g. public service provision through extension services). The market relationships between actors can be classified into spot market, persistent network, or integration (vertical or horizontal). To map the different types of relationships, different types of lines are usually used. Box 5.8 shows an example of relationship mapping.



Box 5.8. An example of mapping linkages and relationships in dairy value chain in Ethiopia



### 1 Spot market relationships

These are relationships that are created on the spot, such as when actors conclude transaction on the market place. Under this relationship, actors make transaction arrangements, including negotiations on price, volume and other requirements, on the spot and effect transaction.

### 2 Persistent network relation

Persistent network relationships refer to the condition when actors get into long-term relationship and effect transactions repeatedly over time. Such a relationship comes with a higher level of trust and some level of interdependence. Such relationships can be formalized in the form of different types of contracts. However, formal contractual arrangement is not necessarily required.

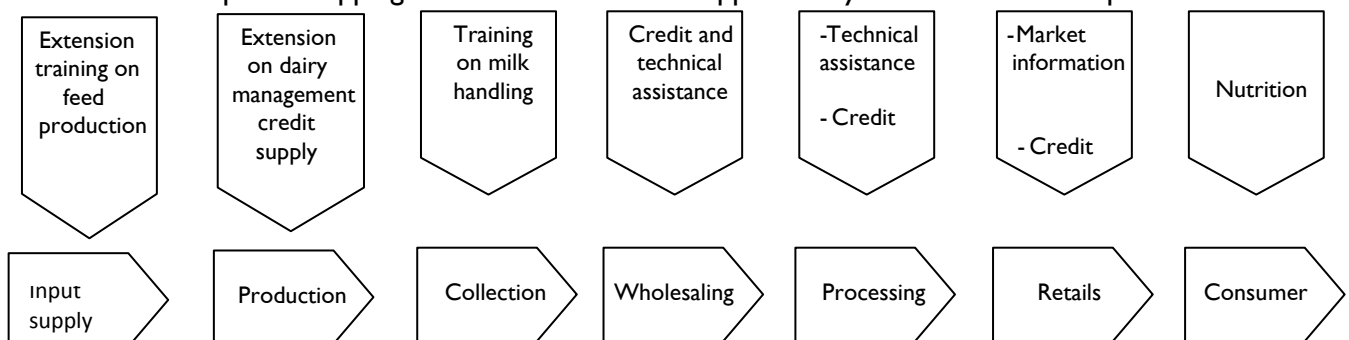
### 3 Integration

Integration refers to the situation where an organization plays a role on different stages of the value chain process. This actually goes beyond the definition of a ‘relationship’, since both actors share the same (legal) ownership. Only one organization (either enterprise or cooperative) deals with different processes throughout the value chain.

## 9. Mapping business services that support the value chain

In value chain analysis, it is important to give due attention to business services that support the different stages of the value chain and the value chain as a whole. Crucial information may be found in the rules and regulations that are governing the value chain or parts of it or in business services that are supporting the chain. Mapping these services will give an overview of the potential for interventions outside the value chain itself. Box 5.9 shows an example of mapping business services.

Box 5.9. An example of mapping business services that support dairy value chain in Ethiopia



## 10. Mapping constraints and potential solutions

Value chain development constraints need to be examined for each process/stage of the value chain. Constraints can also be analysed for the value chain as a whole. Once constraints are identified and understood, potential interventions to alleviate the constraints can then be identified. Of particular importance is the identification of constraints and solutions for each chain process in detail. Constraints may relate to technologies, processes, institutions, services or markets. In general, planning of value chain upgrading should be based on the analysis of constraints and options to alleviate the constraints. Table 5.1 shows an example of constraints and solutions for dairy value chain.

### 5.5 Value chain upgrading

Once the major constraints and potential solutions are mapped out, the next step in value chain analysis and development is to develop specific action plans and activities for implementation. It is important to clearly spell out what the activities are and which constraints the activities are expected to solve, what resource requirements are expected, at what time span the interventions are to be implemented, who would take the lead in implementation, and what would the ultimate output and outcome of the interventions would be.

Value chain upgrading refers to improvement in the performance of chain actors and/or the whole chain. Value chain upgrading may also require improvements in service provision. In general terms, value chain upgrading options can be categorized into three:

- **Process upgrading:** process upgrading refers to the efficiency of production in terms of cost reduction, increasing the speed of delivery, reduction of post-harvest losses etc. Any value chain upgrading strategy should look at this option carefully since efficiency enhancing processes are likely to develop continuously with developments in technology, procedures, and information.
- **Product upgrading:** product upgrading refers to the introduction of new products or improving existing products. Product upgrading options include improving product quality through better production, post-harvest handling, processing, preservation and packaging techniques. Producers can shift to new products due to emerging market opportunities, new technologies, improved knowledge and skills through training or experiences, or improved access to financial services.
- **Functional upgrading:** functional upgrading refers to the issue of which activities the actors in the chain should concentrate on. For example, if a producer is also at the same time an input supplier or a trader, would it be more value adding if he/she focuses on one function only? Would it be more beneficial if marketing is done collectively or by individual farmers?

In planning upgrading options of a value chain, it is also important to focus on the more important market channels of the value chain. A value chain may be composed of several market channels and the importance of the market channels may be different. A market channel that accounts for 60% of the flow of produce is certainly more important than a channel that accounts for 10% of the volume.

Moreover, value chain upgrading should target points of leverage that have a multiplier effect of interventions to maximize impact and outreach. In the case where large numbers of firms are involved, it may be difficult to develop interventions to help each individual firm, since the cost of contacting each and every firm could be prohibitively high. Hence, value chain analysis seeks to identify key nodes in the chain where actions can help large number of firms at once. Such interventions are referred to as leverage.

Table 5.1 .An example of mapping constraints and possible solutions for a dairy value chain in Ethiopia

	Input supply	Production	Collection	Wholesaling	Processing	Retailing
Activities	Supply feeds, heifers and drugs	Manage dairy farms, produce milk, transport milk to collection centres	Collect milk, test quality, transport to wholesalers	Buy milk, store milk, test milk quality	Buy and store milk, transport and process milk, package and label produce, distribute to retailers	Store produce, retail
Actors	Feed producers, heifer producers, drug retailers	Urban commercial farms, peri-urban farms, rural farms	Farmer groups, cooperatives	Farmer groups, cooperatives	Private dairy processors, cooperatives	Supermarkets, kiosks
Difficulties	Shortage of land for feed production, under-capacity of feed processing, poor AI services, shortage of capital for drug business	Feed shortage, poor quality of feed, lack of dairy heifers, quality problem of drugs	Shortage of testing equipment, poor hygiene of milk supplied, seasonal demand	Lack of cold storage facilities, seasonal demand	Low volume of supply, under-capacity of processing plants, seasonal demand	Consumer preferences unmet
Feasible solutions	Awareness creation of concentrate use, private AI service development, expand microfinance services	Improve crop residues, selection of local dairy breeds, drug quality control system strengthening	Improve importation of quality testing equipment, train farmers on milk handling, diversify dairy products	Provide credit for cold storage facilities, diversify dairy products	Expand collection centres, strengthen dairy extension, diversify dairy products	Feed back consumer preferences to processor and producers

If the right leverages can be identified and implemented, small but focused interventions can result in higher impact. Leveraged interventions are likely to benefit large number of chain actors and reduce per-firm contact costs. In some value chain studies, most attention may be given to a particular industry because of its importance and the low level of knowledge available about it. However, it must be noted that when a key constraint is solved, another constraint may stand out as critical. Hence, sequential interventions may be required.

To identify sources of leverage, one has to look at four key indicators: system nodes; geographic clustering; policy and institutions; and infrastructure. System nodes are points where large volume of product passes through the hands of only a few actors. Large input suppliers and output distributors often function as system nodes. Clusters refer to the locations where large number of farms or firms can be contacted at once. Clustering offers the possibilities to reach many actors in one go. Oftentimes, wholesale markets or distribution points may provide opportunities to reach a large number of small firms. Policies, institutions and infrastructure can be the most powerful leverage points, as they can likely affect a multitude of farms and firms spread geographically and in size. Leverage interventions may, therefore, involve working through large intermediary firms, delivering service to geographically clustered farms, or policy and institutional reforms, and/or infrastructural development.

Specifically, value chain upgrading options can be identified in terms of required knowledge, skills, and technology and support services and organizational or institutional innovations. Hence, in general, upgrading options in value chains can relate to:

- input supply
- market options
- farm level technical assistance and training needs
- farm level business training needs
- technical innovations needs/product development
- improvements in the organization and coordination of market functions
- improvements in market information and market intelligence
- development of market institutions (grades and standards, contracts, legal framework etc.)
- establishment of market associations or producer groups/cooperatives
- improvements in market infrastructure (roads, transport, storage, processing, communication, electricity)
- improvements in financial services
- policy and regulatory issues (taxation, subsidy, laws, price control etc.)

## Further reading

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Galvez, O., Felipe, C., Lundy, M., Gottret, M.V., Best, R., Peters, D. and Ferris, S. 2005. Identifying market opportunities for small-scale rural producers. Cali: International Centre for Tropical Agriculture (CIAT). (Available from [www.icra-edu.org/objects/anglolearn/Manual\\_2\\_MarketOpportunityIdentification.pdf](http://www.icra-edu.org/objects/anglolearn/Manual_2_MarketOpportunityIdentification.pdf)).

Kaplinsky, R. and Morris, M. 2000. A handbook for value chain research', prepared for the IDRC. Sussex: Institute of Development Studies. (Available from <http://www.bdsknowledge.org/dyn/bds/docs/424/Value%20Chain%20Handbook%20Kaplinsky.pdf>).

# Chapter 6 Farm planning and budgeting

## 6.1 Introduction

This chapter introduces the data requirements, steps and methods of farm planning. It also describes and illustrates the techniques of farm budget development that can enable farmers to make better decisions. A farm plan is a presentation of resource inventory available to the farm, the enterprise possibilities of the farm, the objectives and goals of the farm, and an assessment of the overall income that can be obtained from the enterprises operated. Budgeting refers to the method of estimating the expected profitability of a farm or its enterprises. The farmer as manager will need to prepare farm budgets to make better decisions about which enterprises to expand, reduce or eliminate; which new enterprises to introduce and what adjustment to make in the mix of agricultural enterprises. The extension agent for market-oriented development should have good knowledge of the methods and tools of farm planning and budget preparation to train or assist farmers in preparing farm plans and budgets.

### Objectives

The objectives of this chapter are to:

- introduce the method of farm plan development
- introduce the farm plan documents
- explain the importance of farm budgeting
- introduce the concepts of cost and the different types of farm costs
- explain the importance of farm record keeping
- explain the methods of whole farm budgeting
- explain the method of partial budgeting
- explain the method of break-even budgeting.

## 6.2 Farm planning

Farm plans are essential for market-oriented farms. Farm plans help farmers to analyse their businesses in a systematic way, to make profitable resource allocation decisions, plan farming activities, make prudent financial plans, and make appropriate market plans. This section introduces the methods of farm plan development. A farm plan is a written document that shows what the farmer plans to do and how he/she plans to do it. Farmers need to get a clear knowledge of the resource requirements of the farm, sources of raw material supply and buyers of products of the

farm. Planning helps to improve the probability of success of farming and minimizes the degree of risk involved in future outcomes. The importance of planning is more critical in farming because of the fact that agricultural production is highly characterized by risks including production and price risks.

A farm plan includes a list of possible enterprises, the levels of production of each enterprise, resource requirements for each enterprise and corresponding costs, and the income generated. The plan also presents market outlets, sources of inputs, and credit when needed.

Preparing farm plans

### **Data requirements for farm planning**

Farm planning requires some basic data. The data most needed to prepare farm plans are:

- inventory of available resources
- potential crop and livestock enterprises
- resource requirements per unit of each enterprise
- productivity data of each enterprise.

Given these basic data, it should be possible to select a combination of enterprises that generates the maximum total income for the farm that is technically and financially feasible.

Steps in preparing farm plans

Six steps are involved in preparing farm plans:

*Step 1: Assess resources that are available to the farm*

To prepare farm plans, an assessment of the resources available to the farm, including land, labour, livestock, farm machinery and equipment is first made. Then potential crop and livestock enterprises are identified based on the available resources and bio-physical conditions.

*Step 2: Prepare operational plan*

Once the potential enterprises are identified, detailed operational plans need to be prepared for each enterprise. The operational plans estimate calendar of operations, input requirements, expected yields and production.

*Step 3: Prepare budgets for the different farm enterprises*

Once the different potential enterprises that are technically and financially feasible are identified and their detailed operational plans are prepared, enterprise budgets for each enterprise are prepared. Gross margins are computed on per unit basis to allow comparison. The potential list of enterprises should include all possible new enterprises identified through the marketing plan.

*Step 4: Use enterprise budgets to determine which of the alternative crops and livestock enterprises would yield the highest gross margin*

One of the resources available to the farm may be relatively scarcer and become 'most limiting resource' (the resource that prevents the farm from expanding). Once the limiting resource is

identified, farm enterprises are then selected so that the farm can generate the highest gross margin per unit of the 'limiting resource'. It is not always easy to determine which resource is most limiting, and the farmer's judgment is needed to assess this. Most often, land is treated as the 'most limiting resource' and therefore, planning is conducted on the basis of gross margin per hectare. Generally, however, the limiting resource often depends on local circumstances; sometimes labour can be the limiting resource.

#### *Step 5: Estimate the total net income of the farm*

To estimate total net farm income, first gross revenue is computed by multiplying production by prices. When variable costs are deducted from gross revenue, we get gross margin. When fixed costs are deducted from the total gross margin on the farm, we get total net farm income. This shows the profitability of the farm as a whole; it is the reward for all the resources contributed by the farm family during the production year. See Section 6.3 for cost and revenue concepts that are useful in farm budget preparation.

#### *Step 6: Test sensitivity of the plan for key variables*

Enterprises budgets are prepared based on predicted prices of inputs and outputs, and yield and production levels. It is important to check how the profitability of the farm changes with changes in some of these parameters. Sensitivity analysis is conducted by repeating some of the enterprise budget calculations for different values of the key parameters.

### Farm plan documents

Farm plans can vary depending on the size of farm, the number of enterprises or the type of enterprises. However, a complete farm plan usually contains of seven major components:

- farm inventory
- calendar of operations
- schedule of labour requirements
- schedule of expected production
- enterprise budgets and whole farm budget
- profit and loss statement
- cash flow schedule.

#### **I Farm inventory**

The farm inventory document lists all farm resources available to the farm. The inventory should be as complete as possible in order not to miss important resources that can be used in farm operations. Farm assets include physical items such as tools and machinery, land and facilities, storage, feed, seeds, fertilizers and chemicals, and cattle and labour availability. To the extent possible, the inventory should specify the capacity of the assets in relation to farm operations. For example, a list of motor pumps should specify the capacity of the pump.



## **2 Calendar of operations**

This document contains the detailed list of farm operations, the time period during which they will be executed, and their requirements in terms of machinery, tools, labour and other inputs. This document should also specify the sequence of operations to ensure the smooth implementation of farm activities. In case the farmers have different plots of land or different enterprises in the farm, the calendar of operations should relate to the specific plot or enterprise. The calendar of operations should be prepared carefully because it will later be used as a guide for performing farming activities. Since most farm activities can depend on weather conditions, flexibility has to be built into the calendar of operations.

## **3 Schedule of labour requirement**

Farm labour use must be planned carefully since labour constitutes the major cost of farm operations. Farming by nature implies labour supply is irregular. Labour may usually be insufficient to cover all the necessary work during some periods or in excess during other periods. Hence, in labour planning, it is necessary to consider the peaks and troughs of seasonal labour availability in relation to farm labour requirements. Labour requirements in peak periods (e.g. planting, weeding, harvesting) can be met by casual labour, exchange labour or other means. Farms in a particular area follow the same calendar of operations, and, therefore, may have the same high and low demands for labour.

Labour planning can be done at the enterprise level or at whole-farm level. At the enterprise level, labour planning is aimed at improving the operations related to the enterprise. At the whole-farm level, use of labour throughout the year is assessed. It is important to note that the two levels of farm labour planning are closely linked.

In planning farm labour, labour profiles that show the seasonal labour requirements of each enterprise and the total demand of all enterprises for each month of the year in relation to availability of labour are prepared. Since many farm operations are carried out by women, labour profiles can be disaggregated by gender. Labour profiles are prepared as follows:

- calculate monthly labour requirements for each enterprise in person-days
- calculate labour available to the farm by month
- examine if there is labour shortage or excess labour
- formulate a strategy to deal with labour shortfalls or surpluses.

## **4 Schedule of expected production**

This document presents the expected productivity levels and the volume of production for each enterprise. The schedule of expected production is used as a basis to forecast farm revenue. Since productivity and production levels are highly dependent on biophysical conditions, ranges rather than specific values are sometimes recorded in this document.

## **5 Enterprise budgets and whole farm budget**

A farm budget is basically a financial statement of estimated incomes and expenses for a future period of time that result from predicted farm operations and resource use. Four types of budgets are usually prepared in farm planning: enterprise budget, whole farm budget, partial budget and break-even budget. Enterprise budgets are prepared for each enterprise separately. Whole-farm budgets bring the different enterprise budgets together and show the profit and loss condition of the farm as a whole. Partial budgets are prepared to show the effect of change in technology or farm practice

in a particular enterprise or whole-farm. Break-even budgets are prepared to determine the levels of production, productivity, sales to leave the enterprise or whole-farm at zero profit or zero loss. Details of the preparation of these budgets are given in Section 6.3.

## 6 Profit and loss statement

In preparing income statement (also known as profit and loss statement), one subtracts total costs from gross revenue. A sample profit and loss statement is given in Table 6.1.

Table 6.1. Sample profit and loss statement (Ethiopian Birr (ETB\*))

<b>Sales</b>		403,200
Less		
Raw material	312,840	
Labour	19,200	
Overheads	28,000	360,040
<b>Gross profit</b>		43,160
Less		
Marketing costs	6600	6600
<b>Operating profit</b>		36,560
Less		
Interest expense		7002
<b>Net profit before tax</b>		29,558

\* ETB (Ethiopian birr). In 2012, USD 1 = ETB 17.50.

Source: Adapted from CEFE (1998).

## 7 Cash flow schedule

The cash flow statement shows the sources (inflows) and applications (outflows) of the cash in the farm during the year. Cash flow schedule helps the farmer identify periods when operational capital can be in short supply and plan means to alleviate the problem. Table 6.2 gives an example of a cash flow statement.

Table 6.2. Sample cash flow statement (first year)

Cash flow	ETB*
Cash sales	201,600
Collection of receivables	184,800
Total cash inflow	386,400
Cash outflow	
Direct materials	312,840
Direct labour	19,200
Operational overheads	25,200
Marketing expenses	600
Interest payment	7002
Loan repayment	14,004
Total cash outflow	378,854
Net cash inflow (outflow)	7546
Cash balance beginning	61,020
Cash balance ending	68,566

\* ETB (Ethiopian birr). In 2012, USD 1 = ETB 17.50.

Source: Adapted from CEFE (1998).

### 6.3 Farm budgeting

Farm budgeting is a convenient means of summarizing cost and return projections to determine profitability of farm operations. In other words, a farm budget is a financial statement of estimated incomes and expenses for a future period of time assuming that resources are used in a certain way. Farm budgets are used in many management decisions. Farm budgeting utilizes estimates of projected yields, prices, input use and costs. Farm budgets are based on the identification of the output(s) to be produced, the farm operations performed, the approximate time the operations are to be performed, and the inputs used in the production process. Therefore, farm budget preparation requires a good understanding of cost and revenue concepts, cost items and the production process. It is important to note that costs and revenues are estimated for a given production period (a production season or an entire year).

The major components included in farm budget are gross revenue (estimated value of farm production), variable costs (costs that vary with the level of output), gross margin (gross revenue less total variable costs), fixed costs (costs that do not vary with the level of output), and farm profit (gross margin less total fixed costs). It is possible to have more than one type of budget for a particular farm as budgets can be produced for varied levels of production or types of technology.

A farm budget should include all costs and returns involved in an appropriate currency. All prices for outputs, operating inputs, and capital inputs must be stated at the same year prices. The current year market prices of the product(s), variable inputs, the current interest rate of operating capital and other annual inputs, are routinely used in preparing such estimates.

Cost items to be included in a budget

Typical cost items to be included in a budget are summarized in Box 6.1. Depending on the detail level of the budget, several of the cost categories listed in the box can be further classified into subcomponents.

**Box 6.1. Cost items to be included in a budget**

- **Operating costs (pre-harvest)**
  - Seed
  - Fertilizer
  - Chemicals
  - Feed
  - Labour
  - Operating cost of machinery/equipment
- **Harvest cost**
  - Machinery operating cost/rental cost
  - Labour
- **Ownership cost of machinery/equipment**
  - Machinery cost
    - Depreciation
    - Interest (on capital invested)
    - Insurance
    - Housing
  - Building costs
  - Land
    - Land taxes
    - Interest on land investment

Cost and revenue concepts

It is important to have knowledge of the different cost concepts to prepare a good farm budget. These concepts are introduced below.

**Fixed cost (FC):** These are costs associated with the fixed inputs to the production process and do not vary with the level of output. Examples are rental value of land, tractor, combine harvester etc.

**Total fixed cost (TFC):** TFC represents the sum of all fixed costs incurred in the farm operation. TFC does not vary with the level of output.

**Variable cost (VC):** These are costs associated with the variable inputs to the production process. VCs vary with the level of output.

**Total variable cost (TVC):** This represents the sum of expenditure on the variable inputs used in the production process. Examples include costs of supplies such as seed, fertilizer, feed, agrochemical for pest and disease control, irrigation cost, labour charges for hired labour, repairs and maintenance of equipment and machinery, interest on recurrent capital investment.

**Total cost (TC):** TC is the sum of total fixed cost and total variable cost. In other words, TC is the sum total of all costs incurred during the production process.

$$\text{Total cost (TC)} = \text{Total fixed cost (TFC)} + \text{Total variable cost (TVC)}$$

**Average variable cost (AVC):** AVC is the variable cost per unit of output produced i.e.

$$\text{AVC} = \text{Total variable cost (TVC)} / \text{Total output produced}$$

**Average fixed cost (AFC):** This is the fixed cost per unit of output produced i.e.

$$\text{AFC} = \text{Total fixed cost (TFC)} / \text{Total output produced}$$

**Average total cost (ATC):** This is the total cost per unit of output produced or the sum of the average fixed cost (AFC) and average variable cost.

$$\text{ATC} = \text{Total cost (TC)} / \text{Total output produced} \text{ or } \text{ATC} = \text{AFC} + \text{AVC}$$

**Gross (total) revenue:** This is the total value of output produced. If a farm produces more than one output, total revenue is calculated as the sum of the product of each total output produced by the price of that output. If a farm produces only one output, total revenue is calculated as total number of units produced  $\times$  price per unit of output.

**Gross margin:** is the total revenue less total variable costs incurred, i.e.

$$\text{Gross margin} = \text{Gross revenue} - \text{Total variable cost}$$

**Farm profit:** This is total revenue less total cost, i.e. Farm profit = Total revenue – Total cost. Farm profit can also be calculated as gross margin less total fixed cost i.e. Farm profit = Gross margin – Total fixed cost.

## Farm record keeping

Farm records are designed primarily to provide the necessary information useful for managerial decision-making. Farm records may record physical information (e.g. yield), financial information (costs and inputs), labour use or other farm operation related information. For smallholder farmers simple recording systems are preferred.

A good recording system should:

- be easy to keep
- give needed information
- provide information when needed
- be 'universal' to facilitate comparison with other business of the same type
- be 'uniform' to facilitate comparison over time.

Advantages of keeping good farm records include:

- enables to have detailed knowledge about the operation of the business
- helps preparation of budgets and farm plans
- facilitates identification of trends
- enables accurate control over finances
- helps keep track of money owed
- serves as evidence for tax authorities.

A farm may keep a variety of records. The most commonly kept records include:

- inventory of farm resources
- production records (livestock and crops performance record)
- sales records
- input use record (labour, seeds, fertilizer, agrochemicals, machinery use etc.)
- financial records (expenditure and revenue record).

There is no single correct way of keeping records. A farm can develop a record system that suits its needs best. However, records used by small farms should always be kept simple and contain all necessary information in accurate way.

### Whole farm budgeting

Whole farm budget is a budget prepared for an entire farm. A farm may include several enterprises (e.g. crop production, dairy production, small ruminant production etc.), and a whole farm budget incorporates the budgets of each enterprise in the farm. The preparation of a whole farm may follow certain steps as indicated below.

- Planning the farm operation process
- Predicting required variable and fixed input use
- Calculating variable and fixed costs

- Predicting yield and production of farm enterprises
- Calculating gross income from each enterprise including products and by-products
- Calculating gross margins
- Calculating measures of profit of each enterprise

## Enterprise budgeting

An enterprise budget is a budget prepared for each enterprise of the farm. If a farm has only one enterprise, then the enterprise budget is also the whole farm budget. If a farm has more than one enterprise, the whole farm budget is the sum of the enterprise budgets. Table 6.3 shows an example of an enterprise budget.

Table 6.3. Wheat enterprise budget

Item	Production unit	Volume of production	Price (ETB)	Revenue (ETB)	Total revenue (ETB)
Gross revenue	Quintal (100 kg)	15	500	7500.00	7500.00
Variable costs					
Seed	Quintal	1	6.50	650.00	
Fertilizer	Quintal	1	400	400.00	
Chemicals	Litres	1	45.50	45.50	
Hired labour	Person days	8	18	144.00	
Miscellaneous costs				60.00	
Interest on working capital (10% for 4 months)				15.00	
Total variable costs					1314.50
Gross margin					6185.50
Fixed costs					
Machinery depreciation				65.00	
Land rent				350.00	
Land tax				25.00	
Storage				45.00	
Total fixed costs					485.00
Total costs					1799.50
Enterprise profit					5700.00

## Break-even budgeting

Another tool used in analysing farm enterprise profit is the break-even budgeting. Break-even budgeting attempts to determine the minimum level of yield that would make total cost equal to total revenue at given prices of outputs and inputs, or the minimum level of output price that would make total costs equal to total revenue at given level of yield and input prices. Hence, profits are zero at break-even yield or breakeven output price levels.

### Example: Break-even budget

A farmer discovers that the market price of carrot is Ethiopian birr<sup>5</sup> 100 per quintal. The variable cost per quintal of carrot is ETB 40, and fixed costs are estimated at ETB 3000 for the carrot enterprise. The farmer is interested in knowing the break-even production level for his carrot enterprise.

At break-even point, total revenue = total cost. And we know that total cost = total fixed cost + total variable cost. Therefore, to find out the break-even production level, we proceed as follows:

$$100 Q = 3000 + 40Q \rightarrow Q = 50.$$

Hence, the break-even output level is 50 quintals. If the enterprise is able to produce more than 50 quintals of carrot, it will start generating profit. Table 6.4 presents the break-even analysis.

Table 6.4. Break-even analysis for a carrot enterprise

Units sold (quintals)	Sale price (ETB)	Gross income (ETB)	Variable costs (ETB)	Fixed costs (ETB)	Total costs (ETB)	Enterprise profit (loss) (ETB)
0	100	0	0	3000	3000	(3000)
10	100	1000	400	3000	3400	(2400)
20	100	2000	800	3000	3800	(1800)
30	100	3000	1200	3000	4200	(1200)
40	100	4000	1600	3000	4600	(600)
50	100	5000	2000	3000	5000	0
60	100	6000	2400	3000	5400	600
70	100	7000	2800	3000	5800	1200
80	100	8000	3200	3000	6200	1800
90	100	9000	3600	3000	6600	2400
100	100	10,000	4000	3000	7000	3000

Source: Adapted from FAO.

The break-even analysis presented in Table 6.4 can also be depicted graphically (Figure 6.1). The graph shows that the farmer would need to sell 50 quintals of produce at a value of ETB 5000 to cover the variable and fixed costs (total costs) of production. This would be the break-even point before beginning to generate a profit. If the farmer increases sales he/she will start to earn profit. For example, if he/she produces 100 quintals, he/she will earn a profit of ETB 3000.

### Break-even yield

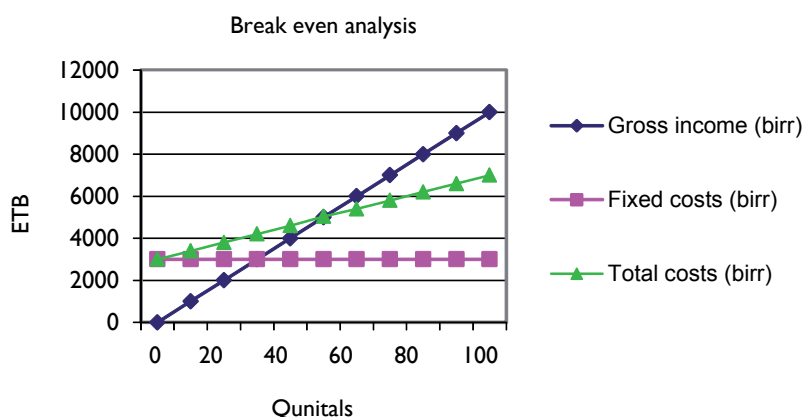
The break-even yield is the yield at which total cost is equal to total revenue, or where profit is zero, given some output and input prices. Break-even yield is calculated as:

$$\text{Break even yield} = \text{Total costs} / \text{Product price}$$

5. In 2012, USD 1 = ETB 17.50.



Figure 6.1. Graphical illustration of break-even analysis for a carrot enterprise



Source: Adapted from FAO.

For example, if total costs are 157.50 per hectare and the product price is given to be ETB 80 per quintal, then break-even yield will be 1.97 quintals per ha. The break-even yield is usually computed for a range of prices. This is because the product price is only an estimate. This provides some insight into the sensitivity of the break-even yield to changes in the output price as shown below.

Table 6.5. Break-even yield analysis when total cost = 157.50 and product price = ETB 80/quintal

Product price (ETB per quintal)	Break-even yield (quintals per ha)
40	3.94
50	3.15
60	2.63
<b>80</b>	<b>1.97</b>
90	1.75

Source: Adapted from FAO (2006).

Break-even yield has an interesting interpretation. If the actual yield is higher than the break-even yield, it will be profitable for the farmers to grow the crop. Conversely, if actual yield is lower than the break-even yield, farmers grow the crop at loss.

### Break-even price

The break-even price is the product price needed to just cover all costs at a given production level. In other words, the break-even price is the price level at which profit is zero for a given yield level.

$$\text{Break-even price} = \text{Total costs} / \text{Expected yield}$$

Using an expected yield of 2.5 quintals with the same total costs per hectare of 157.50 as before, the break-even price is calculated as follows:

$$\text{ETB } 157.50 / 2.5 \text{ quintal} = \text{ETB } 63 \text{ per quintal.}$$

Therefore, the break-even price for a yield level of 2.5 quintals per hectare is ETB 63.

The break-even price can also be computed from a range of possible yields as in Table 6.6. Different yields imply different break-even prices (and cost of production), and these prices can vary widely depending on the yield level.

Like the break-even yield, break-even price also has an interesting interpretation. Growing the crop is profitable if the price of the product is above the break-even price. Conversely, if the price of the product is below the break-even price, farmers will incur loss if they decide to produce the commodity.

It is important to note that since costs, yields and output prices in an enterprise budget are estimated or projected values rather than actual values, the calculation of the break-even yields and the break-even prices can assist farmers in making better decisions. By studying the various combinations of the break-even yields and break-even prices, farmers can make reasonable expectations about the possibility of making profits.

Table 6.6. Break-even price

Expected yield (quintals)	Break-even price (ETB)
1.0	157.50
1.5	105.00
2.0	78.75
2.5	63.00
3.0	52.50
3.5	45.00

Source: Adapted from FAO (2006).

### Partial budgeting

Partial budget analysis is concerned with evaluating the consequences of changes in farm methods or organization that affect only a part rather than the whole farm. Farmers can use partial budgeting as a planning tool to estimate the effect on farm profit of a particular change to an enterprise or activity within the farm. It takes into account only those income and expense items that are affected by a particular adjustment. Good examples can be comparing two farming practices (direct sowing vs. transplanting, hand weeding vs. herbicide application, manual threshing vs. machine threshing etc.), comparing levels of input use (fertilizer, seeds, labour etc.), comparing mechanized operation vs. manual operation of major farm operations etc. Thus, a partial budgeting technique aids the farmer in making a rational choice among alternatives. It is important to note carefully the difference between partial budgeting and whole-farm budgeting. While whole-farm budgeting includes all incomes and expenses of the entire farm, partial budgeting deals only with incomes and expenses associated with a particular change in the farm.

Partial budgets, in general, look only at the variable costs, and the way they affect the income, thus generally deal with:

- additional costs and reduced returns (both are income reducing)
- additional returns and reduced costs (both are income increasing).

Table 6.7 presents the cost and income categories of a typical partial budget. The partial budget evaluates whether or not the proposed change would be more profitable than the current situation. The difference between (a + b) and (c + d) will indicate whether the change is profitable. If (c + d) exceeds (a + b), the change increases farm income, provided that it is technically feasible.

There are certain basic steps that need to be followed (not necessarily linearly) in preparing partial budget:

- Describe carefully, and exactly, the change in farm organization/method/technology/activity being considered.

Table 6.7. Four basic items to be considered in partial budgeting

Cost (-)	Income (+)
Additional costs (a) (costs that are incurred as a result of the proposed change)	Additional income (c) (new income obtained as a result of the proposed change)
Income lost (b) (foregone income due to the proposed change)	Costs saved (d) (costs that would be incurred before the proposed change but are no more costs to farm operation after the proposed change)

- List and quantify the gains and losses resulting from the specified changes. Losses will include extra expenses or costs that occur because of the proposed change, and any revenue foregone in consequence of the change. Gains will include any expenses or costs saved as a consequence of the proposed change, and any additional revenue obtained as a result of the proposed change.
- The change in farm profit equals the total gains minus the total losses.
- It may be important to list any non-monetary factors associated with the change such as degree of production and marketing risk, work load on particular members of the family etc.

### Example of a partial budget

A farmer is considering switching from hand weeding to herbicide application for wheat production. Table 6.8 presents the partial budget for the proposed change.

Table 6.8. Partial budget for switching from hand weeding to herbicide application for wheat production

	Hand weeding	Herbicide application
Yield (kg/ha)	1800	2400
Gross field benefits (ETB/ha) (yield × ETB 4/kg)	7200	9600
Cost of herbicide (ETB/ha) (4 lt × 500/lt)	0	2000
Cost of labour to apply herbicide (ETB/ha) (8 persondays × 50/personday)	0	400
Cost of labour for hand weeding (ETB/ha) (32 persondays × 50/personday)	1600	0
Total cost that vary (ETB/ha)	1600	2400
Net benefit (ETB/ha)	5600	7200

The herbicide application has higher net benefit. It may appear that farmers should choose the herbicide application option. However, the choice is not as obvious as it looks, because farmers should also consider the increase in costs. It is necessary to compare the extra (marginal costs) with the extra (marginal) net benefits. The farmer will require an extra investment of ETB 800 (2400–1600). This extra cost should be compared with the gain in net benefits of ETB 1600 (7200–5600). Hence an extra net benefit of ETB 1600 requires an extra investment of ETB 800. One way of assessing the change is to divide the extra net benefit by the extra cost (investment) to get a measure known as the Marginal Rate of Return (MRR). This gives an MRR of 200%,  $[(1600/800) \times 100\%]$ . An MRR = 200% means that for each extra investment of ETB 1, the farmer recovers ETB 1, plus an extra ETB 2/ha in net benefits. If the MRR is higher than borrowing interest rate of capital, adoption of the alternative is justified.

## Further reading

CEFE. 1998. Manual for trainers. CEFE International. (Available from <http://www.bds-ethiopia.net/cefe1.htm>).

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FAO (Food and Agriculture Organization of the United Nations). 2006. Farm planning and management for trainers of extension workers. Enterprise Budgeting and Farm Planning. Rome: FAO. (Available from <http://www.fao.org/docrep/011/a1298e/a1298e00.htm>).

# Chapter 7 Agricultural market information services

## 7.1 Introduction

In market-oriented agricultural development, one of the marketing supports farmers need is the supply of marketing information. Due to the emphasis on market-oriented agricultural development embraced by many governments of developing countries, market information supply has now been recognized as an essential service to be given by the extension system. The key in market information service is ensuring that farmers get relevant, timely and reliable market information for their production and marketing decision-making.

Hence, the extension agent for market-oriented agricultural development is now expected to play key role in supplying market information to farmers in two ways. The extension staff can be involved in the collection, assembly, analysis and supply to farmers of market information related to the local markets, district and surrounding district markets. Alternatively, the extension staff can source, interpret and supply to farmers market information from regional, national or international market information systems that avail market information through radios/TV broadcasts, internet, and other electronic media such as SMS services. To provide effective market information services to farmers, the extension agent needs to be familiar with the concepts, methods and tools of collection, analysis, interpretation and supply of agricultural market information. This chapter is intended to equip extension agents with such knowledge and skills.

### Objectives

The objectives of this chapter are to:

- define market information and market information services
- explain the rationale for providing market information to farmers
- explain the different methods and tools of collecting market information
- describe the processing and analysis of market information
- explain the different methods and approaches of supplying market information to farmers.

## 7.2 What are market information and market information services?

Market information refers to all the information about the buying and selling of agricultural products and inputs, and services. It must be noted that market information is much more than just information about prices and quantities. Market information services stand for the function of collecting and processing market data systematically and continuously, and of making them available to market participants in a form relevant to their decision-making. Market information becomes more important for the sale of products in more distant markets and as market orientation of farmers increases.

Market information can relate to output or inputs. Output market information includes information on:

- Who and where the buyers of products are, including their contact and location
- What the volume requirements of buyers are
- What the conditions of business of buyers are
- What the quality and grades requirements of buyers are
- What the packaging and delivery requirements of buyers are
- What the payment conditions of buyers are
- What support services buyers might provide to sellers
- What the current and historical prices of the commodity in different markets are
- What price differences there are according to grade
- Price volatility behaviour across seasons
- Size of local, regional and national demands
- What main supply areas there are
- Quality differences among the main supply areas
- Seasonality of supply from the main supply areas
- Transport availability and costs
- Market fees
- Storage options and costs
- Availability and conditions of contract sales
- Availability and conditions of collective marketing options.

Input market information relates to:

- Who and where the suppliers are, including their contact and location
- Types and quality of inputs
- Prices of inputs
- Condition of purchase of the inputs
- Payment conditions
- Any technical support provided by the input suppliers
- Any financing arrangements available from the input suppliers.

### 7.3 Why is market information important?

Market-oriented farmers are constantly engaged in making production and marketing decisions. Market information offers a number of benefits to farmers. Market information helps farmers to make informed production, storage and marketing decisions. Market information may increase farm profitability thus helping farm growth. In general, market information helps farmers make optimal decisions on the basis of market signals. Farmers who do not have access to market information usually encounter problems of deciding the type and quantity of crop to be produced, and concerning the best time of production and marketing to maximize returns.

Specifically output market information helps farmers to:

- Decide what and how much to produce: information about costs and product prices can be used to calculate potential profit from different products and make choices to maximize profit. In other words, market information can be used to make optimal enterprise decisions to maximize returns to farm resources.
- Make appropriate decisions about technology uptake, including the varieties of crops to grow and the types of livestock products to produce: technology uptake heavily depends on expected profitability, and adoption of improved technologies can be facilitated if farmers are better informed about potential benefits of the improved technology.
- Make optimal efforts for quality and post-harvest handling: information about the willingness to pay of buyers for quality informs farmers about the level of effort they need to put in to respond to consumer preferences.
- Reduce marketing risks: knowing current prices and predicting likely future prices help farmers to decide whether to send their product to the market or defer marketing to future periods.
- Decide where to sell: prices are likely to differ from market to market. Different markets also mean different marketing costs and risks. Market information helps farmers to make informed decision on the location of their sale.
- Decide who to sell to: information about the business conditions of different buyers helps farmers make informed choices of buyers for higher prices and reduced risk.



- Decide when to sell: agricultural commodity demand and prices show fluctuations across seasons due to supply conditions, or religious and cultural factors. Information about demand and price characteristics across seasons helps farmers make appropriate decisions on when to sell.
- Make appropriate decisions about collective marketing: collective marketing may increase bargaining power of farmers and reduce marketing costs due to scale effects. Collective marketing may also imply costs to farmers. Information about options of collective marketing can help farmers to decide whether to join or not.
- Negotiate better on prices, and marketing terms and conditions: farmers are less likely to be cheated on prices and marketing terms and conditions if they are well informed about prevailing prices, and available terms and conditions and their implications in terms of costs and risks.
- Make appropriate storage decision: agricultural commodities may be stored for future sale if prices are expected to rise. However, storage has costs including financial and product losses. Hence, information about storage options and costs, and future prices helps farmers to make informed storage decisions.

Input market information helps farmers to:

- Decide on whether or not to use the input, and how much of it to use: farmers make decisions on whether or not to use an input and how much of it to use based on cost/profit comparisons, and associated risk considerations. Information that helps them calculate costs and benefits of input use will help them make right decisions.
- Decide where to buy the input from: different input source locations may mean different input prices and associated marketing costs. Input market information helps farmers make right decisions on locations of purchase.
- Who to buy the input from: different suppliers may charge different prices, and offer variety of options related to technical support or financing.
- Negotiate on prices, and terms and conditions of purchase: knowledge about prevailing prices reduces the chance that farmers would be charged unrealistic prices. Knowledge of available terms and conditions of purchase may also reduce risks associated with input purchase.

## 7.4 Collecting and processing market information for distribution to farmers

### Deciding what market information to collect

Extension agents need to collect relevant market information for distribution to farmers. Extension agents can only provide good marketing advice if they themselves are well informed about markets. They can make use of several sources. However, the collection of market information can be costly, and extension agents may need to be selective when they decide which information to collect. Not all market information may be relevant at a particular location and time. Some market information may also be accessible to farmers themselves.

In deciding what market information to collect, it is important to know the marketing concerns and aspirations of farmers, the type of marketing problems they encounter, the type of questions they are asking about agricultural markets and those for which farmers cannot provide answers to. By listening to farmers, extension agents may identify market information needs of farmers. Information about non-traditional agricultural commodities can also be important, as it can help farmers consider diversification options and alter their enterprise mixes.

The type and number of commodities on which market information is to be collected should also be determined carefully. Initially, it may be important to focus on selected key market-oriented commodities. Gradually, this list may be expanded. As a general rule, special attention should be given to the commodities that are most widely produced and sold in a given locality.

Once the commodities to be covered in market information gathering program are known then the need arises to decide on the varieties of crops or types of livestock products which are to be reported on because, in many cases, there will be significant differences between prices for different varieties for many crops or types of livestock products. It is obvious that different varieties or livestock products fetch different prices in different locations. As resources are limited to gather price information on every variety or product, it is essential to select the most essential varieties and products and name those when prices are disseminated.

Once the varieties or products on which to collect market information are selected, prices on these varieties or products will have to be collected, disaggregated by quality. Price information collected need to reflect the difference in quality as a wide variety of qualities of a particular product is likely to be available at any one time in any market. Different qualities of a product command different prices in a market. Therefore, price reports should indicate the various qualities and their respective price levels.

## Weights and measures

Standard weights using the metric system are not mostly used among smallholder farmers in Ethiopia and in other developing countries. Tins, bags, cartons, boxes, bundles etc. are used in place of the standard units. Nevertheless, the local units may have their equivalent metric measurement. If the participants in a marketing system do not have concept of standard weights, the provision of accurate and meaningful market information can be very risky. Therefore, it is preferable that prices be reported by making use of local unit of measurement. When produce is traded in local units, particularly at the retail level, then weighing at the time of price collection may probably be necessary. In any case, conversion factors need to be developed to convert local units into standard metric units.

## Market information collection formats

Market information should be collected on a pre-prepared format to make sure that all the necessary information is collected. The extension officer may prepare the market information collection format himself/herself, or seek technical support from subject matter specialists or staff of specialized marketing agencies. Using a pre-designed format also helps ensure that there will be certain degree of uniformity of the information collected across commodities.

How often should market information be collected?

Generally speaking, market information should be collected as often as time and resources allow. There should not be a mechanical schedule that limits the frequency and time to collect market information. Market information should be collected regularly, but flexibly according to farmers' need for market information, so that extension agents can adequately be valuable sources of market information to farmers. It is also important to note that market conditions change constantly, and it is important to monitor the changes and inform farmers on time.

The time and frequency of collecting price information may also depend on the type of agricultural commodity. For instance, information on prices of perishables (vegetables, fruits, dairy) is collected more often than information on grain prices. This is primarily because grains are harvested, processed and subsequently stored and thus daily supplies to the market are not subject to much variation.

Sources of market information

After determining the type of market information to be collected and the frequency of collection (subject to revision over time), the next step would be to identify the sources of the market information. Extension agents can collect market information from different sources. Care should be made in selecting the sources of marketing information because the credibility of sources may differ. Hence, selection of sources of market information should be based on cost, time and reliability considerations. Ideally, several sources should be used to collect market information. Relying on only one source may not provide sufficient information. Moreover, collecting market information from several sources can help to cross-check the validity of the information.

Extension agents may collect market information from the markets and its actors, radio/television broadcasts, and the internet or other electronic media. Below, we give brief description of these sources.

#### 1 Farmers

Farmers can be good source of market information, especially those farmers who are active in the market as sellers, and who are more market-oriented in their production decisions. Farmers who have more frequent market participation can be sources of latest information on prices, and demand characteristics.

#### 2 Traders, processors, retailers and exporters

Traders, processors, retailers and exporters make a living out of buying, processing and selling agricultural commodities, and so can be very useful sources of information. These businesses can be sources of the latest market information. These businesses may be willing to provide market information especially when they know that the extension agent is collecting market information to help farmers meet market demand, since they want to see farmers supply what they need. Extension agents should contact these businesses agents for recent market information. Best way would be to maintain contact information of these agents, such as their telephones or addresses. In many cases, subject matter specialists or regional experts may be in a better position to maintain regular contact with such agents.

### 3 Other extension agents

Market information exchange between extension agents can be additional source of market information. Such an exchange of information between extension agents must be encouraged and appropriate incentives put in place at the district level or between districts. Such an exchange of information can save cost and time that would have been spent to collect the same type of information that is already available with other extension agents. Information can be exchanged regularly over the phone or in meetings.

### 4 Farmer organizations

Farmer organizations such as cooperatives, peasant associations, and marketing groups may have useful market information in their records. Since farmer organizations are located within the operation areas of the extension agents, it is wise to consult these organizations for available information.

### 5 Business association

Private business associations are other sources of market information. Several business associations organized based on commodities or group of commodities maintain useful market information. Chambers of commerce can be other sources of information.

### 6 Audio and television

Market information is usually transmitted through radio and television programs. However, farmers may not have access to this information either because they do not own radio or television, or the schedule for the transmission of the programs do not fit with farmers' busy farm activities. Extension agents can be best placed to record the market information transmitted through radio and television and supply it to farmers on a regular basis.

### 7 The internet

The development of the information and communication technology (ICT) has reduced the cost of acquiring information tremendously. ICT has also made access to information much easier than before. To the extent that extension agents have access to the internet and are able to use it, the internet can be a good source of national, regional and international market information. If access to the internet is limited for the extension agents, subject matter specialists at district level or regional experts could search the internet for the information and supply the extension agents with it.

### 8 National or regional market information systems

Agricultural market information systems are being organized in many developing countries at national or subnational level. In Ethiopia, there exist both national, e.g. the Ethiopian Commodity Exchange (ECX), and regional market information systems, e.g. the Tigray Agricultural Market Promotion Agency (TAMPA). Market information systems distribute market information electronically through SMS, the internet, radios and televisions, pamphlets, magazines and newspapers. The extension agents need to make use of these sources to the extent they are accessible.

## Processing and analysing market information

Extension agents may need to do certain level of processing and analysing market information before they communicate it to farmers for decision-making. Well-analysed historical market information enables farmers to make production decisions in line with urban consumer demand, including those related to new products. It also permits farmers to make better decisions regarding the viability of intra and, perhaps, inter-seasonal storage. The most common and simple analysis include mapping of supply chains, computation of average prices, price ranges, price trends, and price seasonality.

### *Mapping supply chains*

Mapping the supply chain for a commodity may convey useful information with regard to supply sources, product flows, distribution channels, type of sellers and buyers, prices along the supply chain, and marketing services and marketing costs along the supply chain. Mapping of supply chains can be done in a participatory way with farmers and traders/processors. Simple diagrams may suffice to capture the essential elements of the supply chain. Once the supply chain is mapped and interpreted, the extension agent can engage farmers in an exercise on how they would want to position themselves in the supply chain in the future and plan accordingly. A supply chain map may need to be revised and updated to accommodate changes in the marketing system.

### *Price analysis*

Once raw price data is collected, simple analysis can convert the raw data into better use. Average prices of a commodity over a time period or across locations can be computed by summing the price data and dividing the sum by the number of data points. A simple measure of how the price is spread out can be computed by computing the difference between the highest and the lowest prices during a given period of time or across locations.

Knowing how prices have changed in the past, and analysing the reasons behind the changes, may help farmers make a reasonable expectation of future prices. Hence, simple graphical analysis of price trends can be useful in helping farmers visualize price behaviours. Closely related to price trends is the seasonality behaviour of prices. Prices may vary by season depending on weather and climatic conditions affecting supply of the agricultural commodity, or demographic, cultural and religious factors that affect demand. Hence, simple analysis of price variations by seasons of the year can help farmers understand how prices behave by season. It is important, however, to note that it is always better to use price trend analysis and price seasonality analysis together.

### *Visioning*

Once the extension agent communicates market information to farmers, it may be important to discuss the implications of the market and price trends in terms of future production and marketing plans. In other words, analysis and interpretation of market information can help farmers understand their current position better and envision options for future development in market-oriented production. Farmers can then consider alternative strategies to get there. Visioning can also help farmers plan on their marketing strategies. An important framework to follow in choosing marketing strategies is the Ansoff matrix, which divides market strategies into market penetration strategy (to sell more of an existing commodity in existing markets), product development strategy (to sell new products in existing markets), market development strategy (to sell existing products in new markets) or diversification strategy (to sell new products in new markets).

## 7.5 Disseminating market information

Market information must be disseminated to farmers in time. Market information that does not reach farmers in time may be of little use to farmers in making their decisions. There are many possible methods of disseminating market information to farmers. Each method may have advantages and disadvantages. Hence selection of methods to disseminate market information should consider the context and the preference of farmers. Usually, a combination of methods should be used.

The most common methods of disseminating market information include direct contact with farmers, telephone contact with farmers, central repository of market information, market information billboards, local radio and television programs, and market information bulletins and newspapers. With the development of ICT, CD-ROMs and the internet can also be used, if and when farmers have access to computers and the internet and are able to use them. Below, we give brief descriptions of the most common methods.

### 1 Direct contact with farmers

Direct contact with farmers is an obvious method of disseminating market information. Extension agents can meet with farmers on a regular basis to exchange information. Such face-to-face meetings can be held at pre-arranged places, or in places where farmers congregate for social or community purposes, such as church gatherings, community meetings, or other appropriate occasions. Direct contact with farmers can also be made when farmers gather at market places during market days. Whatever occasion is used for the meeting to exchange and discuss market information, adequate preparation must be made beforehand. Preparations include reviewing information needs of farmers, reviewing marketing problems faced by farmers, selecting and preparing the information to be disseminated, and preparing figures, charts or tables to help aid the exchange and discussion of the information. Extension agents can make use audio or visual aids, such as loudspeakers, overhead projects, or LCD projects as appropriate.

### 2 Telephone contact with farmers

With the expansion of fixed line and mobile telephone services in many rural areas, telephone can be used to exchange market information with farmers. The extension agent can make arrangements for telephone exchange of information with a group of farmers. Since telephone costs can be high, telephone contact may not replace other methods of information exchange and so should be used selectively. However, this method can be very useful when spatial distance makes it difficult to use direct contact or other methods.

### 3 Central repository of information

Central repository of information refers to the method of availing market information in a central location so that farmers can visit or call in to the location to get the information. This method has the advantages of making the information available at any time when farmers can visit or call in. However, it also requires the presence of an extension personnel, an office space, telephone connection and other facilities.

### 4 Market information billboards

Billboards are other methods of disseminating information to farmers. Billboards are used to post market information for certain period to stay on display so that farmers can read the information. Billboards can be placed in different locations: at market places, in community gathering areas, churches, peasant association offices, farmer training centres etc.

## 5 Local radio and television programs

Local/community radios are now widely used in rural areas to disseminate agricultural information to farmers. When such radio facilities are available, they can appropriately be used to disseminate market information, as well. Similarly, local television stations can be used to disseminate information. Local radios and television can reach a large audience in a short time. However, it is important to ensure that the time of dissemination of the information through radio or televisions does not overlap with the farming season when farmers are in the field. Men and women may have different time preferences, and this must be taken into consideration when timing the broadcast. Adequate preparation must be made to ensure that relevant market information is transmitted in as short air time as possible. The Ethiopian Television and several radio stations disseminate market information on selected market-oriented commodities regularly.

## 6 Market information bulletins and newsletters

Extension agents can prepare market information bulletins or newsletters in local languages for dissemination to farmers. Such bulletins or newsletters can be hand written or computerized. Bulletins and newsletters can then be distributed to groups of farmers or to locations where farmers can access them. For example, TAMPA (in Tigray) and ECX (nationally) distribute market information newsletters.

## Further reading

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# Chapter 8 Facilitating market linkages and market opportunities

## 8.1 Introduction

Market-oriented agricultural development implies that farmers prepare their production plans based on market signals and supply produce that are demanded in the market. The development of agroindustries and changing consumer demand also entails transformation of the agrifood marketing system. Hence, producers are increasingly expected to anticipate in advance when, to whom and at what price they are going to sell their produce. Coordination between producers and other actors in the food supply chain is becoming critical.

The traditional technology and production-focused agricultural development interventions implemented by the public sector and NGOs are inadequate to ensure sustainable income growth, poverty alleviation and ensuring food security. Consensus is building now that the technology and production-focused interventions need to be combined with the development of markets and facilitation of linkages of farmers to them. Hence, extension agents are increasingly expected to play role in facilitating farmer linkages with markets.

Farmers' awareness and exposure to market opportunities may be limited either because of limited experience in market-oriented production or because market opportunities are changing and new ones are emerging. Extension agents for market-oriented agricultural development should, therefore, have the conceptual knowledge and practical skills of linking farmers with markets.

This chapter is organized as follows. Section 8.2 presents concepts and methods of facilitating market linkages. Having access to markets is only a necessary condition for profitable market-oriented agriculture. The markets to which farmers have access should be able to generate reasonable net incomes for the farmers relative to existing or alternative markets. Hence, in Section 8.3 of this chapter, we explore strategic options in identifying profitable agricultural markets. The concept of adding values to agricultural commodities will also be explained as an important option to sell to profitable markets. Adding value helps to add consumer utility derived from the particular product. Section 8.4 briefly discusses factors that determine successes of market linkages.

### Objectives

The objectives of this chapter are to:

- define market linkages
- outline the advantages and disadvantages of market linkages
- explain the different types of market linkages

- briefly introduce key consideration in identifying profitable markets
- explain some key options in expanding market opportunities
- explain the determinants of success in linking farmers to markets.

## 8.2 What is market linkage and why is it needed?

What is market linkage?

Market linkage refers to the establishment of arrangements between farmers and buyers for the exchange of produce based on some kind of transaction agreements. The purpose of creating market linkages is to facilitate the flow of produce within the different levels of the marketing system. The concept of market linkages assumes the development of long-term business relationships rather than support for *temporary* sales. The rapid shift in many developing countries from sales in open markets to direct sales through linkages and alliances among supply chain actors is a response to the need for better coordination in the agrifood marketing system. In many cases, linkages may be based on mutual trust without formal written contracts. Formal contracts or out-grower schemes are preferred when the volume of transaction is high and quality and food safety standards are stringent.

Establishment of linkages can be done by extension agents, NGOs, farmers themselves approaching buyers, or buyers taking the proactive initiative of approaching farmers. For example, farmers can link up directly with retailers such as supermarkets or fast food chains, or link up with these buyers through intermediaries. In many cases, it may be important to organize farmers into groups (small size informal organization of farmers for a common marketing objective), or cooperatives (formal farmer organizations) or work with existing such farmer organizations to successfully supply produce to markets. Alternatively, linkages can be created through leading farmers.

Facilitating market linkage can mean different things. At the simplest level, it may refer to the very localized small-scale transaction arrangements. At a more complex level, market linkages may refer to linkages between organized farmers and agroprocessors, wholesalers and large retail traders for a sustainable and regular supply of raw materials. Contract farming and out-grower schemes are typical examples of complex linkages. In many developing countries rapid shift has been taking place from sales through open markets to direct sales that involve linkages and arrangements from production to consumption.

*Advantages and disadvantages of market linkages*

Market linkages have potential advantages to farmers and buyers:

1. In some cases, buyers may supply inputs and credit to farmers.
2. Buyers may also be prepared to provide technical support and extension advice, or work with the extension services for the provision of these services.
3. Market linkages can also provide market assurance, often on agreed prices, thus reducing market risk.
4. Buyers may provide transportation, packaging and other market services.
5. Traders, processors, agrifood companies, and retailers can get assurance of more reliable and regular supply, and have better control on the quality and delivery time of the produce.

6. Buyers may also be beneficiaries of scale economies and cost reduction.

Market linkages may also have disadvantages:

1. Buyers may default on linkage arrangements due to market and price fluctuations
2. Sellers may default on linkage arrangements due to better market and price opportunities
3. When contractual arrangements fail, farmers who made investments will incur loss and lose the flexibility to change enterprise mixes.
4. On the buyer side, the potential disadvantages include additional costs of providing extension, technical support and other services, cost that may not be borne by other competitors.
5. Lack of trust may lead to collapse of arrangements.

### 8.3 Types of market linkage

Based on the ranges of market opportunities available to the farmer, there can be several types of market linkages. Market linkages can be formal (written linkage arrangements) or informal (based on trust and understanding). Linkages can also be farmer initiated (farmers approaching buyers), buyer initiated (buyers approaching sellers) or facilitated by third parties (e.g. the extension staff, NGOs). Linkages can also be between individual farmers and buyers, through lead farmers, between groups of farmers and buyers, and between formal farmer cooperatives and buyers. Irrespective of how linkages are initiated, the extension staff may have role to play in supporting farmers link with and benefit from market.

The following major types of farmer-market linkages can be identified:

- farmer to domestic trader
- farmer to retailer
- farmer to agroprocessor
- farmer to exporter
- farmer to institutional buyer
- farmer to government marketing parastatal
- linkages through a leading farmer
- linkages through groups
- linkages through cooperatives
- contract farming
- out-grower schemes

These linkage types are not necessarily exclusive of each other. For example, processors can at the same time be exporters. Large retailers can engage farmers in contract farming. The distinguishing feature of market linkages is that some type of relation or arrangement is created between sellers and buyers.

Following is a brief description of these linkages.

#### *Farmer to domestic trader*

This is the linkage between farmers and traders who buy at local markets or at the farm gate on one-to-one basis. Economies of scale efficiency can benefit the trader if purchasing is done at local markets as this enables the trader to buy sufficient quantities. On the other hand, purchases at farm gate can be extremely inefficient most of the time contributing to high marketing costs arising from the fact that producers are dispersed across a wide area. This problem can be alleviated if farmers can gather their produce at a certain point for pick up by traders. However, to make this group arrangement possible, an external catalyst is required in most cases. Government extension staff can be considered as good external catalysts. For most traders, even if they are interested in working with smallholder farmers on marketing of the produce, they consider the negotiation and persuasion process with farmers as a time taking and costly process. Therefore, extension people need to undertake the initiative to facilitate this type of linkage. This linkage requires high level of trust, which, if sustained, may lead to long-term relationship.

An example of this type of linkage was observed in onion marketing in one of the IPMS pilot learning *woreda* of Alamata, in Tigray, northern Ethiopia. When onion started to develop as market-oriented commodity in the district, marketing emerged as critical issue. Local traders tended to collude and offer low prices. However, the IPMS staff and staff of the district office of agriculture and rural development (OoARD) facilitated linkages with wider domestic traders and farmers were able to get better prices.

#### *Farmer to retailer*

Large retailers such as supermarkets may not find it in their interest to deal with individual producers, since they need sustainable and regular supply of produce that satisfy minimum quality and food safety standards. Hence, the preference is for large-scale supplies on a long-term and sustainable basis. To make this happen, external organizations such as extension staff and NGOs can help bring small producers together and create the linkage with large retailers. The success of such linkages depends critically on the timely supply of agreed volume, and meeting variety, quality and safety standards. Several examples of linkages between producers and retailers were observed in the IPMS PLWs in milk marketing where individual producers supplied milk to restaurants on a regular basis.

#### *Farmer to agroprocessor*

Inadequate and irregular supply of raw materials is the major cause of underutilization of capacity for many agroprocessors. Hence, agroprocessors may initiate market linkage with growers to ensure full utilization of their capacity. Extension staff or NGOs working in agricultural development may also facilitate linkages between producers and agroprocessors. Farmers can be organized to bulk-up produce for collection by agroprocessors and facilitate input supply and technical assistance. In addition to the advantages of having secure markets, and the possibility of input supply and technical advice to farmers, the agroprocessors usually provide transport for the produce. Farmers may be required to meet certain quality and food safety standards.

An example of linkage between farmers and an agroprocessor was observed for honey in one of the IPMS PLWs, where a honey processing company, Beza Mar, collected raw honey from producers in the Goma district, south-western Ethiopia. Another example of such linkage was observed in Atsbi district, in northern Ethiopia, where Dimma Honey Processing collected raw honey from producers.

#### *Farmer to exporter*

One of the key problems exporters of agricultural produce face is supply of agricultural products that meet export standards. In most cases, smallholder farmers do not fulfil the requirements of large sophisticated world markets unless interventions are made. This is mainly due to inadequate, human, technological and financial capacity on the side of the smallholder farmers. Therefore, market linkages developed by exporters appear to be essential for continuous success of the export sector in high value markets. In such type of linkages, exporters may help farmers to get organized for technical training, financial assistance or on-farm monitoring. Linkages with exporters often require organizing suppliers. If export standards can be achieved, such linkages can bring high returns to farmers. Exporters often provide transport, packaging and other market services. On the other hand, export markets involve high risk.

An example of linkage between farmers and an exporter was observed by the IPMS project for Kabuli chickpea in the Ada'a district in central Ethiopia, where a pulse exporting company collected chickpea from the district farmers. Similarly, a linkage between coffee producers and coffee exporters was observed in the Dale district in southern Ethiopia.

#### *Farmer to institutional buyers*

Institutional buyers are buyers such as universities, hospitals, the military, schools and other organizations who are in need of supply of agricultural commodities regularly and sustainably at certain level of volume. The institutional buyers usually initiate linkage with farmers, or the linkage can be facilitated by extension staff or NGOs. Institutional buyers do not usually provide technical assistance or credit, but they can be sources of secure markets. An example of farmer to institutional buyer linkage was observed in Bure district in northwestern Ethiopia, where cattle fatteners sold to a military camp in the area.

#### *Farmer to government marketing parastatals*

Governments may establish agricultural marketing boards or parastatals for different purposes. Some governments establish such organizations to stabilize market prices by buying when prices fall and selling when price rise. Other governments establish such organizations to supply food to urban consumers at low prices. Whatever the objective, linking farmers with such buyers remains an option to link farmers with markets. However, marketing parastatals cannot be sources of secured markets as their buying decision may depend on market conditions. Moreover, they have little interest in providing technical assistance, extension services or credit to farmers.

#### *Linkages through a leading farmer(s)*

Lead farmers can be those with the potential to supply large volume of the produce of their own or those who have better knowhow and experience in marketing agricultural produce even though their own produce may not be large. Such farmers coordinate supply from other farmers in their area.

The motive of such farmers is not altruistic, but based on expected business opportunities: increasing volume of produce made available for sale may open up new business opportunities. The lead farmer's role emanates from their ability to coordinate a large volume of produce as a result of bringing the smaller farmers on board. Farmers coordinating supply through a lead farmer usually operate as

informal groups coordinated by one or a few leading farmers. Such an arrangement increases the negotiation power of farmers because of the volume offered for sale. Disadvantages of this approach include the possibility of the lead farmers pulling out of the venture and delayed payment. An example of market linkage through a lead farmer was observed in Fogera district, northwestern Ethiopia, where cattle fatteners sold their animals through a lead farmer.

#### *Linkages through groups or cooperatives*

Farmer organizations can be informal in the form of farmer groups or formal as farmer cooperatives. Farmer groups can be organized for various purposes, including procurement of inputs, output marketing, or credit services. Similarly the formal cooperatives can be multipurpose cooperatives or specialized marketing, input supply or saving and credit cooperatives. Farmer linkages with markets can be done through multipurpose or marketing cooperatives, or marketing groups. Multipurpose or marketing cooperatives are not new phenomena in Ethiopia. Several examples of well-functioning multipurpose and marketing cooperatives exist in Ethiopia, as are also those that struggle to survive or have collapsed altogether. Farmer groups or cooperatives can be instrumental in securing technical assistance or input supply to farmers. These organizations can also perform several of the marketing functions such as packaging, grading, storing, and sometimes processing. For marketing cooperatives to serve as effective linkages for their members, they need to be business-oriented, independent of political interference, acquire adequate managerial skills, and avoid elite capture.

#### *Contract farming*

Contract farming is an arrangement between growers and buyers entered into before the production season for delivery of product of certain quality and standards at future time at agreed prices. Contract farming has been practised for many years throughout the world. The experiences are mixed. While many companies engage in producing raw materials for their own processing, they have often also engaged in contract arrangements with smallholder farmers for the supply of the same raw material. Contract farming has the advantage to companies of overcoming land constraints and avoiding diseconomies of scale which comes as a result of stretching their managerial capacity. Moreover, it is politically friendly as it does not displace smallholder farmers for investment purposes by companies. However, farmers do sometimes engage in extra-contractual marketing (selling outside of the contract). The need to ensure that production is to the required standard and the task of organizing input supply, technical assistance and timely collection of outputs require considerable human and financial resources of companies.

#### *Out-grower schemes*

Out-grower scheme refers to schemes where agribusiness has considerable control over the smallholder production process, providing a large number of services, such as inputs, credit, tillage, spraying and harvesting. The smallholder provides land and labour in return for this comprehensive extension/input package. Hence, out-grower systems are schemes that provide production and marketing services to farmers on their own land. The advantages of out-grower schemes include that working with small-scale farmers overcomes land constraints faced by companies, purchase can be more reliable and sustainable while the company faces less risk by not being responsible for production. Moreover, more consistent quality can be obtained. However, adequate research, staffing, finance and management skills may be required. Poor management and lack of consultation with farmers may lead to farmer discontent and results in a long and expensive learning process for the firm. There is also the risk of farmers selling outside the arrangement and diverting inputs into other purposes.

## 8.4 Identifying profitable markets

### Key considerations in identifying profitable markets

There are two fundamental considerations that need to be taken into account in identifying profitable markets: the current and future size of the market, and the current and predicted profitability of the market. Market developers may make use of the Ansoff matrix mentioned in an earlier chapter. The size of the market can be evaluated based on present sales and on potential sales if the use of the product were expanded. To determine future size of the market, it may be necessary to understand the growth rate and the factors that determine the growth rate of the market.

A simple means to do this is to extrapolate historical data into the future. While this method may provide a first-order estimate, it may not be able to predict important turning points. A better method may be to study the growth drivers such as demographic changes (population growth and changes in the structure of the population), income of buyers, urbanization, and predicted sales growth in substitute and complementary products. Such drivers can serve as leading indicators that may be more accurate than simply extrapolating historical data.

The size of the market by itself may not guarantee profitability. The profitability of a market depends on buyer power, supplier power, ease of entry into the market, threats due to substitute products, and rivalry among sellers in the market. It is important to keep abreast of market trends as they can be sources of new opportunities or threats. The extension agents or NGOs are usually in a better position to assess the current and future potential of markets and the profitability of engaging in these markets than the farm community. Hence, extension staff and others working in market-oriented agricultural development should play the critical role of assessing markets and advising farmers accordingly, in consultation with marketing experts at higher level.

### Potential profitable market opportunities

There can be many different profitable market opportunities depending on the type of product, the level of market development, demand level, number of suppliers and volume supplied. The major options of profitable markets include the following: niche marketing, organic product marketing, diversifying export markets, brand promotion, developing local markets, encouraging local consumption, and adding value. Below, we give descriptions of each of these options.

#### *Niche marketing*

Niche agricultural products refer to specialized crop or livestock products for which there is a very particular but limited market. Niche marketing refers to supplying a good or service to a segment or target group of consumers whose needs cannot be met through the mainstream market. Essentially, the market segment has been previously ignored or is unsatisfied with the general market offering. In other words, the production and distribution of specialty goods or services for a limited number of consumers is categorized under niche marketing. Identifying niche markets is an important marketing tool. Niche markets do not have to be international markets; many developing countries provide for niche marketing, particularly associated with urbanization and income growth. Producers and consumers can participate in transactions out of the mainstream market via niche marketing. Specialty product may refer to innovation on existing product, or an entirely new product. Different market segments can be served by niche markets on the basis of income, geographic region, religion, ethnicity, age, and other factors.

Niche agricultural products are characterized by relatively small and unstable market, which makes their production attractive to the smallholder. Moreover, the markets for niche agricultural products are not that large for big companies to engage in their production. The market for niche products could fall suddenly or, if it grows, it could become attractive to large farmers that can easily undercut the smallholder's prices. Therefore, converting whole farms to the production of niche agricultural products can be a risky strategy. Farmers can be assisted by extension agents, NGOs or research institutes to identify the particular types of niche products which can be produced in their locality. The types of niche products vary depending upon climate and other agro-ecological conditions.

#### *Organic marketing*

Organic agriculture is based on minimizing the use of external inputs, and avoiding the use of synthetic fertilizers and pesticides. Organic production therefore is more than a system of production that includes or excludes certain inputs. Organic production is not merely concerned with a product, but also with the whole system used to produce and deliver the product to the ultimate consumer. Farmers with better organizations can relatively engage in organic farming as compared to individual small farms because of externalities of the use of agrochemicals.

Many developing countries have the potential to produce organic products due to low or no use of agrochemicals. The sale of organic products needs certification, which can be costly. Organic agriculture is more attractive to smallholders than to large-scale operators. However, as the demand for organic products grows, it may be attractive to large-scale farmers, the economies of scale of which may be a major competition to smallholder farmers. Organic products do not always have to aim at the export market. Developing country consumers may well be prepared to pay for organic products.

#### *Diversifying export markets*

Agricultural commodity export diversification can lower instability in export earnings, provides a broader base of exports, enhance growth by substituting commodities with positive price trends for those with declining price trends, and increases value-added of export commodities by additional processing and marketing. Export diversification can be enhanced either through increasing shares of commodities in the existing export mix, or by adding new commodities to the export mix. There are both horizontal and vertical dimensions to export diversification. Horizontal diversification involves adjustments in the export mix to counter international price (or export quantity) instability or decline. Vertical diversification involves creating additional uses for existing and new commodities through value-added activities such as processing and marketing. Vertical diversification can expand market opportunities for raw materials which enhance growth and lead to more stability since processed goods tend to have more stable prices than raw commodities.

#### *Brand promotion*

Brand promotion based on geographic origin or product attributes can increase the demand for agricultural commodities. Some product attributes such as organic commodities may require certification, although many attributes do not require certification. Brand promotion can, however, be expensive to smallholders and usually requires external assistance by governments or NGOs.

#### *Developing local market and encouraging local consumption*

Successful development of export markets is beneficial to exporting countries as a source of foreign currency. However, success in export markets can also be complex and expensive. This is so especially when a large number of smallholder farmers are suppliers of the export commodity. While marketing strategies need to consider export promotion seriously, the growing domestic



demand, particularly urban high-value demand offers considerable potential. Domestic demand offers more accessible and sustainable market for many smallholders and eases the stringent export standard requirements. Food imports in many developing countries are increasing, and to the extent that domestic supply can be expanded, can save foreign currency expenditures on food imports. Promoting domestic alternatives to imported products can benefit large number of smallholders.

### *Adding value*

Value addition refers to adding value to a raw product, such as raw agricultural commodity by taking it to the next stage of production. Agricultural products offer considerable scope for value addition. For example, scope exists to produce dairy products from fluid milk, flour from wheat or rice grain, or juices and jams from fruits. Value can also be added simply by cleaning and grading produce. Farmers can add value through membership in a cooperative that process farmers products, such as a cooperative coffee processing plant. Value-addition makes a greater proportion of revenue to be available to the producer. It also helps to expand the customer base for the product or commodity.

Value-addition can involve different activities: (1) change in the physical state or form of the product (such as milling wheat into flour or making strawberries into jam), (2) production of a product in a manner that enhances its value, as demonstrated through a business plan (such as organically produced products), (3) physical segregation of an agricultural commodity or product in a manner that results in the enhancement of the value of that commodity or product (such as an identity preserved marketing system which creates a special link/between the grower and consumer by meeting the specific requirements of food processors).

The driving factors behind value addition of a product include changes in consumer taste and preferences; higher consumer income; customers' requirement for convenience, quality and variety; increase in health consciousness of customers and increased competition among producers/suppliers. Value addition at farm level requires additional investment and care must be taken to ensure adequate returns to such investments in advising farmers. However, to the extent that investible funds are available and demand for added-value exists, value addition can be beneficial not only to the producers but also to other segments of the society through increased employment opportunities.

### Factors influencing market linkages

#### *Identifying linkage types and required support*

In linking farmers with buyers, the first step is to identify the type of linkage required and the level of support needed. Organizations working in facilitating linkages of farmers with markets need to be cognizant of the fact that transition from surplus selling to market-orientation may pose difficulties to farmers and can be a slow process. It is important to ensure right from the beginning that farmers will be able to meet buyer requirements in terms of variety, quality, safety standards, volume and regular supply. Several factors may hinder farmers from meeting buyer requirements, including production potential, available infrastructure, technological requirements and capacity, input supply and services, and finance. Rejection of produce on quality and safety standards can cause friction between linkage partners and may lead to the eventual breakdown of linkages. Hence, linking organizations need to identify potential problems faced by farmers and develop and promote solutions beforehand.

#### *Capacity of linking organizations*

Staff of organizations promoting linkages should themselves develop the capacity to facilitate commercial linkages effectively. Staff of linking organizations should have capacity in contract

negotiations, market analysis, farm profitability analysis and budgeting, business principles and documentation, among others. Linking organizations should assess their capacity and augment staff skills through training as needed.

#### *Careful use of subsidies and free service provisions*

Since market orientation should be based on business principles, subsidies and free provision of services to farmers may be incompatible with the long-term sustainability of agro-enterprises. To realize long-term viable commercial orientation of smallholders, linking organizations should aim at facilitating farmers to establish viable and profitable agro-enterprises. Farmers should be cost conscious and develop cost management skills. If subsidies are used, they must be used cautiously and smartly.

#### *Building trust between transacting parties*

Trust is a critical factor in successful linkages and transacting parties involved in market relationships should pay attention to the development of trust. Trust has been an important aspect of transactions between traders and farmers. Trust may not be as easily established between transacting parties in areas faraway from each other and had little or no prior contact. Trust building is a continuous process and hinges on honouring contractual or other transaction obligations.

#### *Farmer organizations*

Organizing farmers into groups or cooperatives has many potential advantages, but the mixed track record of farmer organizations points to the need to attend to the factors that detract effective performance of such organizations. The next chapter deals with collective marketing in detail.

#### *Contractual arrangements*

Farmers can be involved in oral or written contracts with buyers. A critical success factor of contracts is adequate specification of contractual obligations of both parties. An important motivation for contractual arrangements is risk management and therefore the issue of who bears which risk or how risk is shared among the parties should be specified as clearly as possible. Since not all risks can be foreseen, flexible contract arrangements with the potential for renegotiation may be needed. In addition to developing contract negotiation skills, farmers need to have sound background information on quality requirements and the resources needed to meet them, their costs of production, prevailing market prices, and forecast of future market conditions. It is always critical to ensure that contracting parties fully understand terms of the contract. Although some contracts may be based on trust and informational transparency, it is always useful to put contract enforcement and dispute resolution mechanisms in place.

#### *Financing*

Limited access to finance is usually a major constraint in the transition of subsistence agriculture into market orientation. Many market linkages may require financing production activities. In some cases, buyers may provide finance. In other cases, linking organizations may need to work with farmers for financial access from other sources. In any case, financing arrangements must be considered at an early stage of the process of linking farmers with buyers. There are various options of financial arrangement for market linkages. Traders usually advance finance to farmers. In some cases, farmers defer payments while companies may provide inputs and services (e.g. mechanization) on credit. Tripartite arrangements involving the buyer, the producer and finance institution can also be used.

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# Chapter 9 Facilitating collective marketing

## 9.1 Introduction

Smallholders are usually spatially dispersed, operate limited amount of land and/or own a few number of livestock. When they sell their produce individually, they face several marketing problems, including low volumes and low bargaining power, quality problems, lack of or inadequate market information, lack of or high cost of storage, lack of or high cost of transportation, lack of knowhow on packaging and grading, and little contact with buyers. Many of these problems can be alleviated if producers organize themselves to market their produce collectively.

Through collective marketing, smallholders may be able to reduce transaction costs, get necessary market information, secure access to new technologies, tap into high-value and distant markets, and thus become better competitors with large farms and agribusinesses. Collective marketing can shorten long marketing chains by bypassing certain intermediaries thus raising prices received by farmers. Longer value chains may pose challenges to smallholders. Hence, collective marketing can bring numerous advantages into commercialization activities by overcoming market entry barriers and can also contribute significantly to poverty reduction.

This chapter discusses the rationale for collective marketing, the various approaches to organize collective marketing, the advantages and disadvantages of collective marketing, and the general success factors. The chapter is structured as follows. Section 9.2 presents the generic marketing problems faced by smallholders and introduces the concept of collective marketing and its rationale. Section 9.3 presents the various organizational forms and the activities involved in collective marketing. The chapter concludes by discussing general factors that determine the effectiveness of collective marketing.

### Objectives

The objectives of this chapter are to:

- discuss the generic marketing problems faced by farmers as they market their produce individually
- define collective marketing
- explain the advantages and disadvantages of collective marketing
- discuss activities that can be carried out by collective marketing
- describe the organizational forms of collective marketing

- discuss factors that influence the effectiveness of and benefits to farmers from collective marketing
- offer suggestions to improve the effectiveness of collective marketing.

## 9.2 Common marketing problems faced by smallholders and the rationale for collective marketing

### Common marketing problems faced by smallholders

Smallholders face several marketing problems when they market their produce individually, many of which can be alleviated by collective marketing. The most important marketing problems are described below.

#### 1 Low volume of supply and high per unit marketing cost

Smallholders operate limited amount of land and/or own a few heads of livestock. Hence, their individual volume of supply to the market is usually small, which makes their per unit marketing costs (transportation, packaging, cleaning etc.) to be high. When larger farmers or farmer organizations supply in bulk, their per unit marketing costs can be significantly lower, thus rendering smallholders less competitive in the market.

#### 2 Quality and standard problems

Closely related to the problem of low volume of supply is the difficulty smallholders face in supplying produce with the required quality and standards, especially for produce that are sensitive to quality specifications such as vegetables, fruits, and dairy products. It is much easier for an organized group to bulk produce and clean, sort and grade supply to meet market requirements. Organized marketing also makes it easier to handle marketing based on quality differentials since organized sellers are in a better position to make marketing arrangements with buyers for different produce quality. An example is grain cleaning machines introduced by the Yerer Farmer Cooperatives Union.

#### 3 Storage problems

Smallholders typically do not have access to appropriate storage facilities or may face very high per unit storage costs, especially for perishable commodities. Smallholders also face high postharvest losses due to lack of storage facilities. Storage facilities can be critical when sellers face price or buyer uncertainty.

#### 4 Transportation problems

Given the spatial dispersion of smallholders in rural areas and weak road infrastructure and transportation means, smallholders typically either do not have access to modern transportation services or face high per unit transportation costs. Transportation problems render smallholders stick to subsistence orientation by reducing their access to markets.

#### 5 Low marketing skills

Smallholders have limited skills in performing marketing functions and in marketing their produce, including packaging, grading, labelling, negotiating, and contracting. They also face higher costs of accomplishing these marketing functions. It is much easier and less costly to give training on marketing skills to organized farmers than to individuals.

## 6 Little prior contact with buyers

Smallholders' linkages with buyers are usually limited, since they market their produce on spot markets and sell to many different types of buyers. Although individual farmers can also create linkages with buyers on a one-to-one basis, it is usually easier and less costly for organized groups to do so.

## 7 Low bargaining power

The bargaining power of smallholders is low essentially because of their low volume of supply, problems of market information, transportation and storage facilities. Individual farmers have little alternative to selling their produce at prices offered by buyers once they have transported the produce to the market.

## 8 Inadequate market information

Timely, reliable and comprehensive market information is important to access markets and negotiate on terms of exchange. However, smallholders usually either do not have or have only limited access to formal market information. The cost of acquiring market information can also be very high for individual farmers.

How does collective marketing solve these marketing problems?

Collective marketing is marketing activity carried out by a group of farmers who voluntarily joined hands to carry out marketing of their produce collectively. Usually, these farmers have agreed to work together for long-term marketing objectives in marketing their agricultural products. Collective marketing can be done either formally by using cooperatives or informally by making use of informal marketing groups. Collective marketing groups can own significant investment facilities such as processing facilities, distribution stalls, transportation vehicles or warehouses while informal collective marketing groups may rely only on the human and social capital of their members. Investment requirements favour formal organizations. Whatever the form, size, or asset base may be, the major focus of collective marketing is marketing of members' products for the benefit of members. Collective marketing is owned and governed by members. Collective marketing may be managed by members themselves or by hired professional managers.

By solving or at least easing the major marketing problems faced by farmers, collective marketing can be beneficial to farmers. Below, we present brief descriptions of the advantages.

### I Take advantage of economies of scale

Smallholders operate small plots of land or own a few heads of livestock and cannot, therefore, produce large volumes of surplus products for sale. The low volume of supply of individual smallholders means that they receive much lower prices from traders who would pay higher for bigger quantities. This is because traders who buy in small quantities incur costs in sorting and grading each parcel to match it with parcels of similar quality goods; weigh and re-pack the product and transport it to another market. Supplying higher volume can increase the bargaining power of farmers. Bulking can also attract more buyers, thus breaking the monopoly power of individual buyers.

Bulking up small parcels of produce into truckloads of goods offers farmers the possibility of reducing per unit marketing costs and selling their goods outside their immediate location. If farmers have access to very few buyers in limited locality, they may be forced to accept lower prices. In some

cases, traders may collude with each other to offer the same low price to local farmers. If farmers have a large stock of goods to sell they can hire transport for themselves and they can travel to more distant markets to find traders who pay better prices than local traders.

Hence, as compared to individual producers, collective marketing groups can benefit from significant cost savings or get a higher price by marketing a larger volume of product. Purchasing inputs in bulk for distribution to members can also reduce input costs or expand the input market opportunity. Collective buying of inputs can also improve the timeliness of input availability, and the quality of inputs. Cost of procurement of the inputs, such as transportation and storage can also be reduced with volume.

## 2 Maintain product supply and improving quality

Successful marketing requires regular supply of minimum amount of volume. Products may lose their market share if they cannot become available at the time when consumers need the products. Therefore, as individual producers may not be able to maintain a steady flow of product, it may be advisable to set up farmer market groups who can work together and extend the time their product is available and ensure sustainable product flow to the market. Higher profits achieved through collective marketing may in turn increase the farmers' incentive to increase production through using more land or higher inputs, adoption of modern technologies or using existing resources more efficiently.

If members of a collective marketing can bring their produce together, they may find it easier to raise and harmonize the quality of their produce, by sorting the deliveries from each small farm into heaps or bundles of a similar quality. Moreover, once similar quality goods are gathered together it may be possible to improve the overall quality by drying; sieving or hand-picking to reduce the admixture content (picking out stones, weeds etc.). It may then be possible to test the quality (moisture content, grain size, milk quality etc.) using simple testing equipment. This will allow the farmers to offer a standard grade of produce to buyers. Graded produce can be weighed using standard weights and packed into standard bags or bundles. Once the group gets a reputation for producing consistent standard grades in bundles or bags of accurate weight, more and more traders (especially the larger ones) will be more willing to buy from the group and pay higher prices as this saves the traders doing all this work themselves. However, it is important to maintain type of quality control from season to season to avoid losing such high reputation.

Sometimes, farmers in a collective marketing may make arrangements to plant the same variety of crop, to sow it at the same time and to adopt the same growing, harvesting and post-harvest techniques to better coordinate supply and quality. The most successful strategies for collective marketing include cooperation with the task of selling the goods and a high degree of collective activity right through the farming process. Farmers in collective marketing may also adopt staggered production to avoid sharp decline of prices due to oversupply.

## 3 Maintain an existing market or develop new markets

Collective marketing groups can help sustain previously existing marketing outlets. For example, government may exit from grain buying as a result of change in structure or policy. Under such circumstances, collective marketing groups can assume control of the facilities and marketing establishments previously used by government. This helps to avoid the shutdown of existing marketing outlet. This shows that in groups farmers can maintain buying stations even if original institutions exit from the market. Supply and demand are the two major components required for the prevalence of any market. Potential markets fail to exist due to lack of adequate marketable volumes. Therefore, marketing groups can help to bring about the minimum volume required for the development of potentially viable markets.

#### 4 Gain better access to inputs, services and professional expertise

Farmers may not have good incentive to act independently to bring about innovation and new product development, which can be a major approach to adding value to farm production. However, product development can be costly and risky for individual producer. To bring about new product development, farmers need to bring about raw product quality, processing and packaging technology, logistics and distribution systems to meet requirement trends in consumer preferences. Therefore, working collectively, farmers can bring together resources for activities that expand marketing opportunities for member farmers through innovations.

Most smallholders do not own enough assets to make them individually eligible for credit which requires collaterals. Banks or micro-finance institutions (MFIs) are much more likely to lend money to groups of farmers as the total assets of the group may be enough to cover the loan and a binding agreement between the bank and a group of farmers is seen as a satisfactory assurance that any loans will be repaid. In addition, small loans made to many people are much more expensive to manage than a larger loan made to a group of farmers. This makes large loans more attractive to the banks and MFIs. Hence, collective activity may help farmers to obtain credit more easily. They may be able to borrow money to buy inputs and improve their productivity and volume of production.

If farmers could borrow from an established bank or a microfinance institute (MFI), the rate of interest may not be so high and the farmers' bargaining relationship with the trader will be strengthened. Encouraging banks to make this kind of loan can be facilitated if the farmers' group can make savings of their own in credit unions or savings schemes.

It is much cheaper and easier for government and development agencies to organize training and agricultural extension services for groups of farmers rather than for individual farmers. Even if all farmers find it difficult to attend training sessions, individuals from the group can pass on advice and training to their fellow group members.

Groups of farmers can also construct communally owned storage facilities. If farmers can store their products they can improve their marketing performance. Communal storage facilities can be erected at access points on roads making it possible for farmers to collect products from group members into lorry-load quantities. Sorting, grading, weighing and packing facilities can also be established at these sites. Some of the increased revenue from collective marketing could also be invested in forms of transport facilities in the form of pack-animals, animal-drawn carts, and pick-up trucks could be used to collect produce from surrounding farms for delivery to communal storage sites. The use of a communally-owned weighing machine or scales will not only help farmers to keep proper records but also enhance the price of the goods to be sold as it saves the trader from carrying out this task. Accurate weighing also avoids suspicion between buyers and sellers that weighing scales are being used incorrectly.

Collective marketing can make the procurement and supply of market information easier. A group of farmers may be able to connect to landline telephone or purchase mobile telephone. Telephones can be used to contact potential customers, traders, market information providers and suppliers in distant places. They make it possible for isolated groups of farmers to negotiate sales transactions, learn about prices and market conditions in more distant places and to identify the cheapest and most appropriate sources of input supplies.



## 9.3 Activities in collective marketing and organizing farmers for collective marketing

### Activities in collective marketing

The ultimate objective of collective marketing is to achieve marketing benefits to members. However, the activities of collective marketing are not limited to marketing only. To be successful in collective marketing, production considerations like ensuring quality standard of products, and at the required volume of supply over a given period of time is important. Below, we describe the different activities involved in collective marketing.

#### 1 Prior determination of particular market for the produce

Market orientation implies that production decisions need to be based on market signals to produce outputs that are demanded in the market. Hence, one of the activities of collective marketing is for the group or its leaders to determine the target market or markets for their produce.

#### 2 Identifying any specific quality attributes demanded by the market

To sell products to buyers, fulfilling quality requirements may be essential. Products that fail to meet quality requirements either will fetch lower prices, or will be rejected altogether. Hence, another important activity of marketing group or cooperative is to carefully assess the quality requirements of the target market or markets.

#### 3 Ensuring produce quality standards

Once the quality requirements are known, members of a collective marketing need to coordinate their production activities to produce uniform quality produce. Such a coordination may be based on the selection of variety of crop to grow, the determination of planting and harvesting period, the appropriate use of fertilizers and chemicals, and disease control methods. In the case of livestock production, feeding and genetic resources, and animal health may be a critical considerations.

#### 4 Developing marketing infrastructure

Collective marketing may have a crucial role to play in developing basic marketing infrastructure for use by members. For example, collective marketing groups may build storage facilities, establish collection centres, procure quality control instruments, avail weighing scales and standard packaging materials and purchase transportation facilities including vehicles. In areas where roads do not exist, collective marketing groups can seek assistance from decision-makers for the construction of feeder roads to connect to the nearest all-weather road.

#### 5 Perform marketing functions

Collective marketing performs many of the marketing functions including bulking, sorting, cleaning, grading, packing, financing, transporting and storing products until sale. Performing these functions collectively is a source of economies of scale and cost advantages, the benefits of which will finally accrue to members. It is important to have the right skills in the leadership and staff of the collective marketing to ensure that these functions are performed properly.

## Organizing farmers for collective marketing

Collective marketing can be formal or informal. Below we give brief descriptions of these forms of organization.

### 1 Formal collective marketing

Formal collective marketing takes different forms including multipurpose farmer cooperatives (cooperatives organized to perform several collective functions including input procurement, consumer goods supply, output marketing etc.), specialized marketing cooperatives (organized for collective marketing purposes), commodity-based farmer cooperatives (organized around a given commodity and aimed at input supply, financing and marketing of a particular commodity such as coffee or tea). Such formal farmer organizations are officially registered and recognized legal entities. In some countries, including Ethiopia, formal farmer organizations are organized as private limited companies (PLCs). Formal farmer organizations are usually organized with the facilitation of government or non-governmental organizations, and usually receive financial and other support during establishment and thereafter. However, it is important to ensure that such organizations are established based on voluntary willingness of members and operate on business principles if we want them to be sustainable.

### 2 Informal collective marketing

Informal collective marketing is organized by farmer groups. These groups are organized voluntarily to perform marketing interest of members collectively. They are usually smaller in size, operate in small area, require little major investments, and are more flexible than the formal organizations. They are constituted by members who are more familiar with each other. Although such groups may seem temporary, there are examples where informal groups developed into strong and successful formal organizations. Informal marketing groups can be used as first step in organizing collective marketing, in which group members gain experience in managing and running collective marketing.

## 9.4 Factors influencing effectiveness of collective marketing

Collective marketing does not emerge and develop automatically. It requires facilitation and enabling conditions. In this section, we discuss factors that influence the formation, operation and effectiveness of collective marketing.

### 1 Types of markets and products

Smallholders can sell their products to several types of markets: local, nearby urban, regional, national or international. Local markets are easiest to sell to since they are closer, quality standards and scale issues are not so much of a concern, and there is less competition from large farms and international producers. Hence, sales to local markets offer relatively low incentive to organize collective marketing since individual farmers can easily sell their produce. Farmers have higher benefits, thus higher incentives to organize collective marketing if they sell to domestic urban, regional, national and international markets, because doing so helps them deal with transportation and storage issues, ensure quality standards and acquire certification for it, and reach the necessary scale. Growing domestic urban markets offer particular attraction at the early stages of commercialization of smallholder agriculture.

## 2 Characteristics of the commodity

Viewed in terms of marketing, smallholders' agricultural products can be categorized into three: staples, perishables and cash crops. Staples (e.g. wheat, teff, rice, barley, sorghum, millet etc.) are relatively easy to store and are usually destined for local markets, and thus offer lower incentive to organize collective marketing. Perishables (vegetables, dairy, fruits etc.), on the other hand, have higher storage and transportation requirements and costs, and so offer higher incentives for collective marketing. Cash crops (coffee, tea etc.) usually require processing, thus encourage farmers to organize in groups for processing and marketing.

## 3 Characteristics of the groups

Smaller marketing groups may have higher internal cohesion since it is easier to monitor other members. Successful group sizes of 20–40 members have been reported, although larger groups may better be able to achieve economies of scale. While similarity in socio-economic status between members may create stability and effectiveness, internal differentiation in terms of age and wealth may allow natural evolution of leadership. Building on prior experiences of working together facilitates trust and cohesiveness. Group leaders must be knowledgeable and skilled in terms of collective enterprises.

## 4 Institutional arrangements

Institutional arrangements (policies, rules, norms, procedures, by-laws etc.) for collective marketing can be critical for the success and development of collective marketing initiatives. Simple and understandable rules are more likely to increase compliance because they are easily monitored and reduce governance and coordination costs. Rules prepared by the group members themselves and adopted to fit into local contexts and national laws are more likely to be followed than those that are imposed from outside of the group. Clearly spelled out accountability and enforcement mechanisms also contribute to the sustainability and effectiveness of collective marketing efforts.

## 9.5 Key considerations to avoid collective marketing breakdown

As part of the institutional arrangements, there are a few key aspects that need particular attention to avoid collective marketing breakdown. Below we give brief descriptions of the most important aspects: members' rights to supply produce, regulating quality assurance, managing side-selling, arrangements for profit sharing, and free-rider problem.

### Right to supply

As long as the market can absorb whatever volume of produce supplied, it should not matter if one member supplies more than others. However, when the market is saturated (e.g. milk supply during Orthodox Christian fasting periods in Ethiopia), or processing facility is exceeded, tensions can emerge among members on supply rights. Quota systems are usually an option to ease such tension. In general, collective marketing need to clearly specify how supply rights would be apportioned when the group can only supply limited amount of volume to the market.

## Quality assurance

Transactions may often specify quality and standard requirements and members are expected to follow the requirements. Tensions may arise when individual members want to supply lower quality produce, and the collective marketing organization is obliged to meet the quality requirements. To ease such tension, the marketing group should clearly specify the grades and standards, and put effective internal system for quality control.

## Managing side-selling

Collective marketing organization may enter into contractual arrangements with buyers who may also supply services (e.g. input supply, technical assistance, credit) in anticipation of buying produce from the group. However, there always is the risk of opportunistic behaviour by producers which may result in side-selling their produce. Hence, clear mechanisms should be developed to prevent side-selling and/or to recover the costs incurred in providing the services.

## Profit sharing arrangements

Profit of a collective marketing organization can be used for either of two options: pay out to members as dividends or capitalize it to the organization. The allocation decision should be made during the organization's annual general meetings. To avoid tensions regarding profit sharing, the organization may develop general guidelines and routines to distribute gains or losses.

Low entry fees and easy exit options may enable some non-loyal members to have the same access to benefits as loyal members. To address such source of tensions, it is important to clearly specify membership policies or incentive systems that differentiate between members and non-members in access to services and benefits of the collective marketing. Targeted considerations for women to join collective marketing and benefit from it may also be needed.

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