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# AGRO-VALUE CHAIN ANALYSIS AND DEVELOPMENT

## The UNIDO Approach

*A staff working paper*



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

AGRO-VALUE CHAIN ANALYSIS  
AND DEVELOPMENT

**The UNIDO Approach**

A staff working paper



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION  
VIENNA, 2009

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## Executive summary

Policy-makers focus increasingly on the development of agro-industries with emphasis on promoting effective agro-value chains as a means of further expanding the leading role played by agriculture in economic growth and poverty reduction. Such chains uniquely integrate natural sources of supply with the dynamics of food and fiber demand. Their development has a positive impact on employment in both rural and urban areas (off-farm processing and income diversification), offers market access to smallholders, and creates business linkages to small and medium enterprises (SMEs). It also builds up responsible and sustainable relationships among chain actors and enhances food security by reducing post-harvest losses and by extending the shelf life of food and fibers for rapidly growing urban populations. With their combined effects of employment gains and food security, efficient agro-value chains can play a key role in reducing poverty in the developing world. However, to participate successfully in sustainable agro-value chains, developing countries must cope with the numerous challenges and constraints posed by a continuously changing marketplace. Most noteworthy among these challenges are the intense competition due to the globalization of economies and the liberalization of markets; the impact that the governance of international supermarkets, retailers and buyers has on access to markets; the growing demand for high-quality, organic, minimally processed products and the emphasis on traceability and social responsibility; and the increasing risk of marginalization faced by areas with poor infrastructure and small farms.

The United Nations Industrial Development Organization (UNIDO) has developed, tested and refined a set of tools that it uses to support its programmes for the promotion of the agro-industrial sector. Such tools are “How to Start Manufacturing Industries,” “Methodological Guide: Restructuring, Upgrading, and Industrial Competitiveness,” “Principles for Promoting Clusters and Networks of SMEs,” and “Export Consortia Tool to Increase SME Exports,” all of which address both technical and business subjects specific to the sector. This publication describes UNIDO’s approach to agro-value chain analysis and development. Its purpose is to promote a pragmatic scrutiny of value chain realities and opportunities in order to single out areas of possible performance improvement and consequently design custom-tailored projects to be supported jointly by donors and development partners. The publication also describes the services that the Organization provides to improve the performance of agro-value chains and outlines selected UNIDO case studies regarding various agro-commodities and regions of the world.

The conceptual framework of UNIDO’s strategy acknowledges that value addition and trade are largely structured and governed by leading firms. While the analysis and promotion of value chains is not a brand-new alternative to traditional approaches such as cluster development, local economic development or export promotion, it is a very useful tool in the endeavour to understand overall trends of industrial reorganization and to identify change agents and leverage points for policy and technical interventions.

Given the complexities of agro-value chains and the fact that they are embedded in broader relationships (regulatory and policy framework, chain governance, social and cultural environments, market globalization, rapid progress and application of technologies, etc.), their analysis is an indispensable task prior to any intervention. It provides a deeper understanding of chain structure and functioning by portraying the various chain actors and elements on the canvas of their intricate relationships. It goes beyond looking at agro-industrial production in isolation to analyze interactions and synergies among actors and between them and the business and policy environment. It shows that power relations are crucial to understanding how entry barriers are created and how gain and risks are distributed. It treats competitiveness in a global perspective and draws attention to the role of actors and factors external to clusters, including such issues as knowledge flows and learning.

By revealing strengths and weaknesses, value chain analysis helps participating actors to develop a shared vision of how the chain should perform and to identify collaborative relationships which can lead to improvements in chain performance. For policy-makers, value chain analysis is a means of identifying corrective measures, investment priorities and development opportunities. For UNIDO and other development assistance agencies, it is a reliable way to ensure that their support to agro-industries is precisely tailored to the specifics of each value chain and thereby becomes more effective.

A value chain describes the entire range of activities undertaken to bring a product from the initial input-supply stage, through various phases of processing, to its final market destination, and it includes its disposal after use. For instance, agro-food value chains encompass activities that take place at the farm or rural level, including input supply, and continue through handling, processing, storage, packaging, and distribution. As products move successively through the various stages, transactions take place between multiple chain stakeholders, money changes hands, information is exchanged and value is progressively added. Macroeconomic conditions, policies, laws, standards, regulations and institutional support services (communications, research, innovation, finance, etc.) – which form the chain environment – are also important elements affecting the performance of value chains.

Taking into consideration these broader relationships, UNIDO's systematic approach to value chain analysis and promotion focuses on the relevance of agro-value chains for pro-poor growth while bearing in mind pragmatic economic parameters to ensure their sustainable development. The Organization's aim is to focus on those areas which lead to improvements in value chain performance in terms of: (i) increasing the quantity and improving the regularity and continuity of production; (ii) improving the quality and safety of products; (iii) reducing the time needed to reach the customer; (iv) minimizing transactional costs; and (v) improving the capacity of chain actors to follow and assimilate technology and market developments. To achieve these objectives, UNIDO's approach entails the following stages:



- Selecting and prioritizing value chains for promotion. This process is carried-out to identify the value chains that offer the most promising prospects for economic growth and poverty reduction. It is based on a review of key issues that have an impact on industrial development and the capacity of a given country to produce and export manufactured products competitively. The choice of value chains can be further refined by applying priority criteria, weighting their relative importance and establishing ranking score sheets.
- Mapping value chains to obtain a clear understanding of the sequence of activities and the key actors and relationships involved in the value chain. This exercise is carried out in qualitative and quantitative terms through graphics presenting the various actors of the chain, their linkages and all operations of the chain from pre-production (supply of inputs) to industrial processing and marketing. Depending on the level of detail needed, this exercise may focus also on factors such as the size and scale of main actors; production volume; number of jobs; sales and export destinations and concentration; etc.
- Analyzing the value chain technological capacities. This analysis is made in order to assess the value chain production system and tools; evaluate their technical performance; and determine the principal technical actions that need to be carried out to upgrade individual enterprises within the chain and to enhance their competitiveness. Among the elements that are assessed are the utilization of inputs, human resources and technical capacities; the technology and processes used; the production management methods; and the environmental aspects.
- Analyzing the value chain economic performance and competitiveness. This analysis entails the measuring of economic factors (production costs, margins, added-value, etc.) as well as benchmarking in order to position the chain vis-à-vis alternatives or competitors. It is an effective means of identifying strategic and non-strategic activities and of raising awareness among chain actors concerning cost drivers, margins for price negotiation and value addition possibilities. It also reveals leverage points for action at policy, institutional and enterprise level.
- Formulating an upgrading strategy for the selected value chain. At this stage, upgrading plans are drawn up which describe the interventions required in the agro-value chain, including policy and institutional recommendations. Specific interventions at enterprise level are also outlined, and so is the advocacy necessary to implement them. Roles and responsibilities are assigned to all actors and agencies involved.
- Implementing the upgrading strategy, monitoring and impact assessment.

Given the extensive scope of the interventions that may be required for value chain development (policy issues, infrastructure improvements, compliance and certification systems,

technology and knowledge transfer, etc.), UNIDO can: (i) facilitate and lead the brokering of relationships and partnerships at the national level and involving chain actors and development partners (AfDB, IFAD, WB, FAO, etc.); (ii) identify and prioritize agro-value chains; (iii) undertake holistic agro-value chain analyses in cooperation with its partners; and (iv) design strategies for the implementation of interventions and support.

UNIDO focuses on private sector development solutions to promote selected agro-value chains. Specific interventions capitalize on the Organization's wide range of programmes and services in order to provide the many-sided assistance required to improve the performance of targeted value chains.

At policy and institutional level, the initial focus is on removing constraints identified as obstacles to the effective performance of value chains. UNIDO services in this area include: (i) creating an enabling environment for private sector development; (ii) developing business services including the collection and dissemination of market information and the promotion of knowledge flow, and assistance in such areas as technology upgrading, quality management, and training; and (iii) establishing the necessary infrastructure for compliance with accreditation systems – food quality, hygiene and safety standards as well as social and environmental standards that may be demanded by specific markets or buyers.

To improve the productive capabilities of enterprises, techno-economic assessments are conducted. Together with information on the interactions among chain actors, these assessments highlight specific areas where UNIDO interventions can improve the performance of individual firms as well as the relationships among firms in the chain. The outcome is a blueprint for: (i) skill and technology upgrading and the introduction of quality standards; (ii) networking programmes for SMEs to support collective efficiency in local clusters and help linking them to buyers; (iii) business partnership programmes with emphasis on multi-stakeholder partnerships with transnational corporations (TNCs) for supplier development; (iv) support to SMEs in rural areas (in particular women entrepreneurs) to facilitate market access and thereby promote local informal value chains; (v) promotion of enterprise development where opportunities for new enterprises or producer associations have been identified; and (vi) support to corporate social responsibility (CSR) in SMEs.

Finally, in the area of investment promotion, the Organization pursues its long tradition of providing matchmaking services for subcontracting and, more recently, is increasingly involved in supplier development and industrial upgrading to improve the productive capacity of agro-input suppliers in developing countries.

## Part I. Value chains: Concept and issues

For a large part of the world's growing population, the increasing integration of the global economy has provided the opportunity to achieve significant prosperity gains. For developing countries, the globalization of manufacturing has opened up new prospects of upgrading their industrial and service sectors. It also holds the promise of higher incomes, increasingly differentiated final products and a greater availability of quality goods. Most notably, free trade agreements and other accords have created new export opportunities – mainly for food products – as the demand for variety continues to grow in developed countries. These market changes have encouraged governments and investors, including farmers, to expand agro-industrial activities and linkages to export markets as a means of increasing local food production, employment, business development and international trade. This has led to competition among producers to meet export market demands in terms of cost, quality and delivery times. Consequently, a wide range of companies have evolved to provide goods and services to help agro-industries meet those demands. At the same time, policies, regulations, support services, tax and trade instruments and their associated actors and institutions have also developed to become intrinsic parts of so-called “value chains.”

However, while the increasing integration of the global economy offers many opportunities for growth, value chain promotion in developing countries is a complex task that faces many daunting challenges. Among these challenges are flaws in the business environment; intense competitive pressures for higher productivity and efficiency to maintain market share or at least survive; governance by international supermarkets, retailers and buyers affecting access to markets; international consumers demanding high quality, organic, minimally processed products, traceability and social responsibility; and a higher risk of marginalization faced by areas with poor infrastructure and small farms. Hence, there is an urgent need for a comprehensive approach to value chain development. This technical report describes UNIDO's contribution to this endeavour and focuses on agro-based value chains (food, leather, wood and non-wood forestry products, and textiles).

### 1.1 What are value chains?

The value chain is a concept which can be simply described as the entire range of activities required to bring a product from the initial input-supply stage, through various phases of production, to its final market destination. The production stages entail a combination of physical transformation and the participation of various producers and services, and the chain includes the product's disposal after use. As opposed to the traditional exclusive focus on production, the concept stresses the importance of value addition at each stage, thereby treating production as just one of several value-adding components of the chain.

The macroeconomic landscape, policies, laws, regulations, standards and institutional elements such as research and innovation, human resource development and other support services form the environment in which all activities take place and therefore are also important actors and activities in the value chain. Figure 1 below illustrates these relationships within a generic value chain.

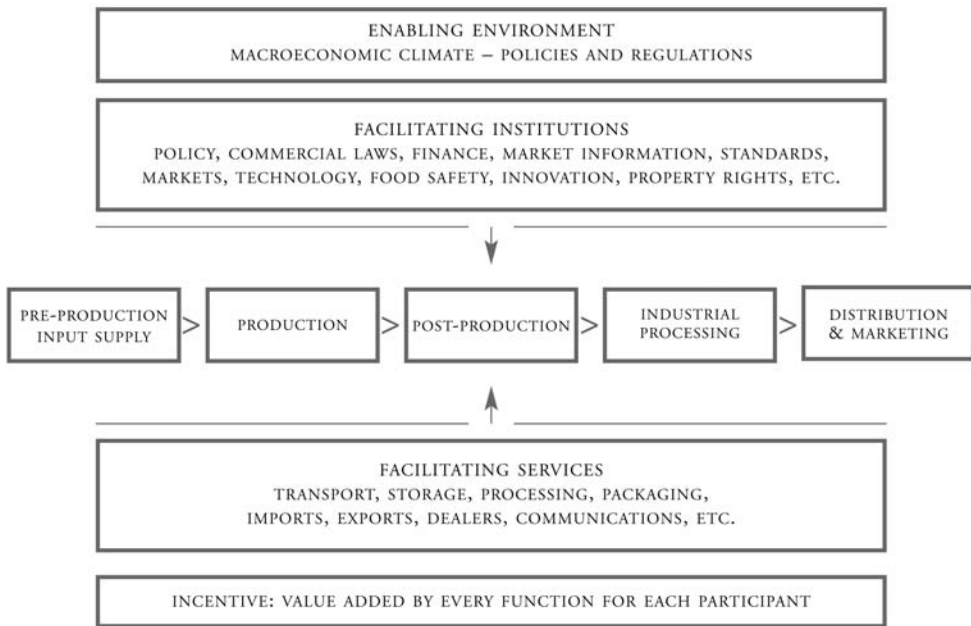


Figure 1. A generic value chain.

In reality, value chains tend to be more complex, to involve numerous interlinked activities and industries with multiple types of firms operating in different regions of one country or in different countries around the globe. For instance, agro-food value chains encompass activities that take place at the farm as well as in rural settlements and urban areas. They require input supplies (seeds, fertilizers, pesticides, etc.), agricultural machinery, irrigation equipment and manufacturing facilities, and continue with handling, storage, processing, packaging and distribution activities (Figure 2). Other elements, such as power generation, logistics, etc., which form the chain environment, are also important factors affecting the performance of value chains.

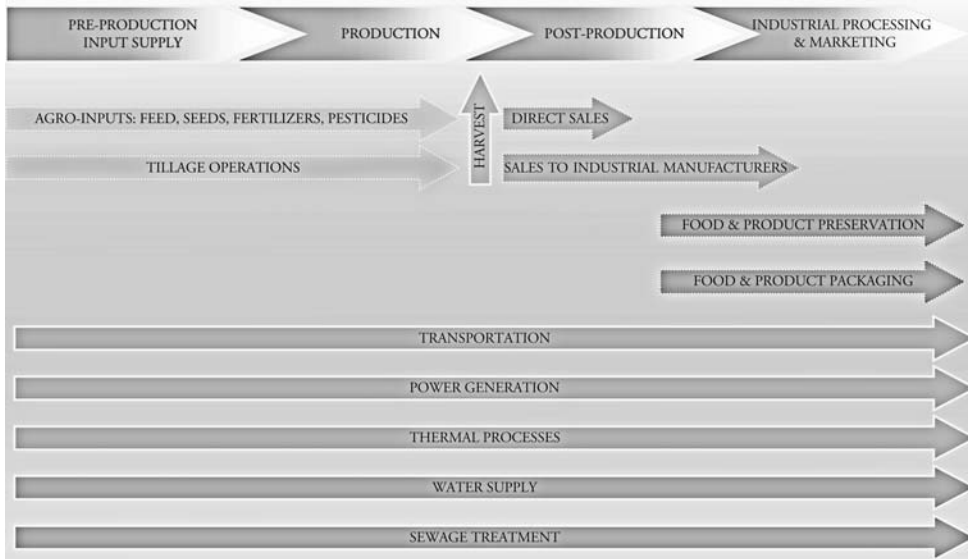


Figure 2. Links in the food value chain.

Furthermore, both industrial and commercial firms have been promoting globalization by establishing two types of value chains (Gereffi, 1994 & 1999). One is “producer-driven,” the other “buyer-driven.” In producer-driven value chains, large, usually transnational, manufacturers play the central roles in coordinating production networks (including their backward and forward linkages). This is typical of capital- and technology-intensive industries such as the automotive, aircraft, computer, semiconductors and heavy machinery industries. Buyer-driven value chains are those in which large retailers, marketers and brand manufacturers play the pivotal roles in setting up decentralized production networks in a variety of exporting countries, typically developing countries. This pattern of trade-led industrialization has become common in labour-intensive industries that produce consumer goods such as garments, footwear, toys and consumer electronics. Tiered networks of contractors in developing countries produce finished goods for foreign buyers. Large retailers or marketers that order the goods supply the specifications.

Unlike producer-driven chains, where profits come from scale, volume and technological advances, buyer-driven chains yield profits from combinations of high-value research, design, marketing and financial services. By controlling these elements, retailers, designers and marketers are able to act as strategic brokers that link overseas factories and traders with product niches in their main consumer markets. Profitability is greatest in the consolidated parts of global value chains that have high entry barriers for new firms.

In producer-driven chains, manufacturers of advanced products like automobiles and computers are the key economic agents in terms of their earnings as well as of their ability to exert control over backward linkages (with suppliers of raw materials and components) and forward linkages (with distributors and retailers). The lead firms usually belong to international oligopolies. By contrast, buyer-driven value chains are characterized by highly competitive and globally decentralized factory systems with low entry barriers. The firms that develop and sell brand products have considerable control over how, when and where manufacturing will take place and how much profit accrues at each stage. Thus, large manufacturers control producer-driven value chains at the point of production, whereas in buyer-driven value chains, marketers and merchandisers exercise the main leverage at the design and retail stages (Gereffi & Memedovic, 2003).

A major hypothesis of the global value chain approach is that national development requires linking up with the most significant lead firms in an industry. These lead firms are not necessarily traditional vertically integrated manufacturers, nor are they necessarily involved in making finished products. Lead firms such as fashion designers or private-label retailers can be located upstream or downstream from manufacturing, or they can be suppliers of critical components (e.g., microprocessor manufacturers like Intel or software firms like Microsoft in the computer industry). What distinguishes lead firms from non-lead firms is that they control access to major resources (such as product design, new technologies, brand names or consumer demand) that generate the highest returns (Gereffi & Memedovic, 2003).

### 1.2 Why value chain analysis?

Value chain analysis is a useful analytical tool that helps understand overall trends of industrial reorganization and identify change agents and leverage points for policy and technical interventions. It is increasingly used by donors and development assistance agencies, including UNIDO, to better target their support and investments in various areas such as trade capacity, enterprise competitiveness, income distribution and equity among value chain participants.

Value chain analysis is the process of breaking a chain into its constituent parts in order to better understand its structure and functioning. The analysis consists of identifying chain actors at each stage and discerning their functions and relationships; determining the chain governance, or leadership, to facilitate chain formation and strengthening; and identifying value adding activities in the chain and assigning costs and added value to each of those activities. The flows of goods, information and finance through the various stages of the chain are evaluated in order to detect problems or identify opportunities to improve the contribution of specific actors and the overall performance of the chain.

By going beyond the traditional narrow focus on production, value chain analysis scrutinizes interactions and synergies among actors and between them and the business and policy environment. Thus, it overcomes several important limitations of traditional sector

assessments which tend to ignore the dynamic linkages with and among productive activities that occur outside the particular sector under assessment or involve informal operations.

Value chain analysis also reveals the dynamic flow of economic, organizational and coercive activities involving actors within different sectors. It shows that power relations are crucial to understanding how entry barriers are created, and how gain and risks are distributed. It analyses competitiveness in a global perspective. By revealing strengths and weaknesses, value chain analysis helps participating actors to develop a shared vision of how the chain should perform and to identify collaborative relationships which will allow them to keep improving chain performance. The latter outcome is especially relevant in the case of new manufacturers – including poor producers and poor countries – that are seeking to enter global markets in ways that can ensure sustainable income growth.

### **1.3 The relevance of agro-value chains for pro-poor growth**

In many parts of the world, agriculture continues to play a central role in economic development and to be a key contributor to poverty reduction. However, agriculture alone will not be sufficient to address the poverty and inequality that are so pervasive in today's world. It is becoming increasingly crucial for policy makers to focus immediate attention on agro-industries. Such industries, established along efficient value chains, can increase significantly the rate and scope of industrial growth. Agro-industrial products offer much better prospects of growth than primary commodities. In addition, the marked trend to break down production processes into specific tasks opens up new opportunities for developing countries to specialize and take a more profitable part in global trade provided they meet increasingly stringent market requirements.

In developing countries, a significant proportion of national funds are used to support agricultural production inputs – primarily seeds, fertilizers and irrigation systems. Traditionally, little attention has been paid to the value chains by which agricultural products reach final consumers and to the intrinsic potential of such chains to generate value added and employment opportunities. While high-income countries add nearly US\$185 of value by processing one tonne of agricultural products, developing countries add approximately US\$40. Furthermore, while 98 percent of agricultural production in high-income countries undergoes industrial processing, barely 38 percent is processed in developing countries (Table 1). These data indicate that well developed agro-value chains can utilize the full potential of the agricultural sector.

However, participation in value chains implies both opportunities and pitfalls for developing countries. The prospect that lead firms such as brand owners, innovators and system integrators may appropriate increasing shares of rent and therefore further widen the gap is very real (Altenburg, 2006). Another danger is that SMEs (including farmers) will face

	INDUSTRIALIZED COUNTRIES	DEVELOPING COUNTRIES
AGRICULTURAL PRODUCTS PROCESSED (%)	98	38
VALUE ADDED OF AGRICULTURAL PRODUCTS PROCESSED (US\$/TONNE)	185	40
POST-HARVEST LOSSES (%)	MIN.	40

Table 1. Comparative data on processing of agricultural products in industrialized and developing countries (UNIDO industrial statistics).

insurmountable difficulties as international supermarkets, retailers and buyers govern the access to markets by setting up food safety and quality standards that impose a substantial cost of compliance. Since subordinate firms are standard-takers, their bargaining power is reduced and so are their shares of rent. Furthermore, value chains may increase the risk of marginalization faced by areas with poor infrastructure and small farms since chain development may favour larger farms and processing plants which can invest in infrastructure and increase their production capacity.

One opportunity resides in the fact that, in pursuit of lower transport and transaction costs, TNCs increasingly subdivide and relocate production processes in developing countries. In addition, modern chains require smooth product flows, high standards and error-free production. Consequently, lead firms are willing to invest in knowledge transfer to the benefit of local industries, institutions and service providers. Finally, consumer pressures and CSR provide incentives for responsible lead firm behaviour.

Other opportunities exist in niche markets, both domestic and foreign, particularly for specialized and natural products found only in developing countries, such as cacao and other tropical fruit as well as numerous spices and oils. Small farmers can also participate in these chains that yield higher incomes.

Value chains are likely to produce both winners and losers, and the net effects may not always be positive (Altenburg, 2006). For example, shifting from in-house production to external suppliers may reduce well-paid wage labour in the lead firm and increase the number of lower-pay jobs in supplier firms; inducing foreign companies to resort to local small-scale suppliers may favour technology transfers but reduce the efficiency of the supply chain; holding back concentration and internationalization in the retailing business may protect small enterprises but lead to higher consumer prices; higher social or environmental standards may reduce competitiveness vis-à-vis competitors with lower standards and may also lead to the exclusion of poor informal suppliers. The conclusion is that SMEs in developing



countries face both opportunities and risks when they consider engagement in global value chains. This raises the questions of how policy makers and development assistance agencies should deal with these trade-offs and how the long-term effects of engagement can be assessed.

#### **1.4 The purpose of the present publication**

In line with its mandate to “*reduce poverty through sustainable industrial growth*,” UNIDO plays a leading role in agro-industrial development in developing countries. This publication describes the Organization’s approach to agro-value chain analysis, which is used as a methodological tool in order to gain a full understanding of chain structure and functioning and thereby to better identify and design project interventions in agro-industrial development. In addition, it provides readers with selected examples of UNIDO’s experience in supporting the development of sustainable agro-value chains. However, the publication is not meant to be used or read as a thorough step-by-step methodology for value chain analysis and development. It is rather intended to contribute to the body of useful value chain knowledge accumulated both within and outside the Organization. The publication draws upon various working papers, technical guidelines and sector studies prepared by the Organization’s Strategic Research and Economics Branch and its Programme Technical Cooperation Division; it also reviews opinions expressed in papers published by FAO, GTZ, IRDC, the World Bank Group and others. All sources are listed in the bibliography section.

## Part II. Main aspects of UNIDO agro-value chain analysis

The global agro-industry business is increasingly dominated by value chain relationships in which lead firms exercise vertical coordination (Humphrey & Memedovic, 2006). For instance, in various food industry operations, lead firms have taken on the attributes associated with modern manufacturing, including driving product differentiation and innovation, a shift from quality control, based on inspection and testing, towards quality assurance, based on risk management and process control, and just-in-time delivery. These changing environments associated with evolving markets highlight a number of challenges and opportunities for various actors involved in value chain development. Most important is the need for a careful review of policy issues that may have an impact on the structure and development of value chains, especially policies that support pro-poor value chains. This is particularly relevant for agro-value chains in developing countries, often characterized by the prevalence of traditional social norms and ties in which the poor may be negatively affected by chain actors and/or promoted activities. In addition, value chain structures can be used to draw conclusions on the participation of the poor and the potential impact that value chain promotion can have on poverty reduction. Humphrey and Memedovic (2006) grouped such promotion policies in three broad areas of focus: (i) ensuring the continued access of agro-producers to global markets and supporting the competitiveness of the sector; (ii) increasing revenues from the agro-industrial sector, particularly through adding value both for local and export markets; and (iii) enhancing the poverty alleviation impact of export-oriented businesses.

Agro-value chains encompass activities that take place at various levels (farm, rural and urban), starting with input supply and continuing through product handling, processing, distribution and recycling. As products move successively through the various stages, transactions take place between multiple chain actors, money and information are exchanged and value is progressively added (Da Silva and De Suza Filho, 2007). The analysis of such value chains highlights the need for enterprise development, enhancement of product quality and safety, quantitative measurement of value addition along the chain, promotion of coordinated linkages among producers, processors and retailers, and improvement of the competitive position of individual enterprises in the marketplace. This approach goes beyond looking at agro-industrial production in isolation to scrutinize interactions and synergies with other actors and the business and policy environment. By revealing strengths and weaknesses, value chain analysis helps identify possible corrective measures. Stakeholders and policy-makers develop a shared vision of how the value chain should develop and forge collaborative relationships which will improve coordination and performance in the future. In addition, this approach brings together the various levels and components of potentially upgrading chain interventions.

While there are a number of published handbooks on value chain research, Kaplinsky and Morris (2001) stress that there is no “definite” method to carry out a value chain analysis. Basically, the methodology to be applied relies on the research questions that are to be answered. This fact is due to the complexity of value chains, especially in the middle tiers. Moreover, individual enterprises may feed into numerous chains; hence, which chain (or chains) is/are to be targeted depends largely on the point of entry for the research inquiry. Appendix A presents examples of entry points for value chain analysis.

Nonetheless, the following four steps of value chain analysis, summarized by M4P (2008), are essential when applied to the agricultural/agro-industrial sector:

1. Mapping the value chain to understand the characteristics of the chain actors and the relationships among them, including the study of all actors in the chain, of the flow of goods through the chain, of employment features, and of the destination and volumes of domestic and foreign sales. This information can be obtained by conducting surveys, interviews and participatory workshops as well as by collecting secondary data from various sources.
2. Identifying the distribution of actors’ benefits in the chain. This involves analyzing the margins and profits within the chain and therefore determining who benefits from participating in the chain and who would need support to improve performance and gains. In the prevailing context of market liberalization, this step is particularly important, since the poor involved in value chain promotion projects are the most vulnerable.
3. Defining upgrading needs within the chain. By assessing profitability within the chain and identifying chain constraints, upgrading solutions can be defined. These may include interventions to: (i) improve product design and quality and move into more sophisticated product lines to gain higher value and/or diversify production; (ii) reorganize the production system or invest in new technology to upgrade the process and enhance chain efficiencies; (iii) introduce new functions in the chain to increase the overall skill content of activities, for instance, moving from OEM (original equipment manufacture) to ODM (own-design manufacture) and then to OBM (own-brand manufacture); and (iv) adapt the knowledge gained in particular chain functions in order to redeploy it in other sectors.
4. Emphasizing the governance role. Within the concept of value chain, governance defines the structure of relationships and coordination mechanisms that exist among chain actors. By focusing on governance, the analysis identifies institutional actors that may require support to improve capabilities in the value chain, increase value added in the sector and correct distributional distortions. Thus, governance constitutes a key factor in defining how the upgrading objectives can be achieved.

Taking into consideration the above, UNIDO's systematic approach to agro-value chain analysis and development focuses on the relevance of agro-value chains for pro-poor growth while bearing in mind pragmatic economic parameters to ensure sustainable development. The Organization's aim is to focus on those areas which lead to improvements in value chain performance in terms of:

- increasing the quantity and improving the regularity and continuity of production;
- improving the quality and safety of products;
- reducing the time needed to reach the customer;
- minimizing transactional costs;
- improving chain actors' capacity to follow/assimilate technology and market developments.

By promoting agro-value chains, UNIDO pursues three development goals that can benefit the poor as well as all other actors in the chain: (i) increases in productivity and value added; (ii) improved employment opportunities; and (iii) market access and higher export levels.

The next sections present the main aspects of agro-value chain analysis and development as undertaken by UNIDO. Figure 3 below describes the basic steps of such interventions:

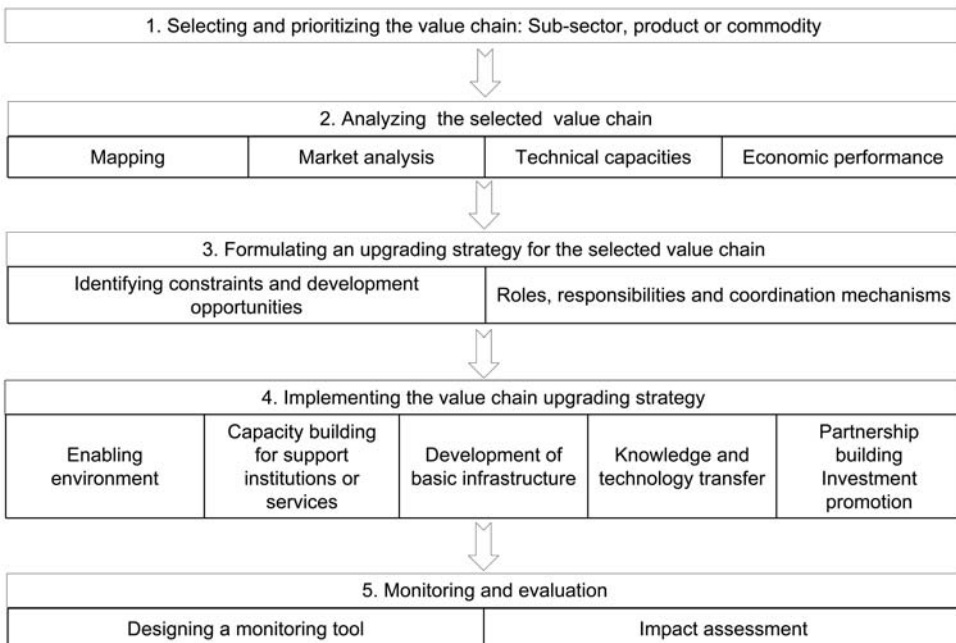


Figure 3. Basic steps of UNIDO's approach to agro-value chain analysis and development.

## 2.1 Selection and prioritization of value chains

### 2.1.1 Basic considerations

The selection and prioritization of value chains to be analysed are the first steps and they certainly entail some of the most important decisions to be taken in any value chain development project. The selection of sectors, sub-sectors, products or commodities determines to a large extent the prospects for a value chain's impact on socio-economic indicators. An important aspect of the selection and prioritization process is to see if basic measures are in place for the participation of the poor in business-related markets. If these are missing, the formulation of a development programme may involve additional components to facilitate and support a value chain promotion project.

In general, requests for value chain analysis are submitted for the Organization's consideration by its member states, partner institutions and/or donor agencies. Usually, these requests specify the sectors (or sub-sectors, products, commodities) to be targeted. In this respect, UNIDO conducts a rapid appraisal on suggested agro-value chains to identify those that offer the most promising prospects for economic growth. This appraisal is based on a desk review of key issues that have an impact on industrial development and the capacity of a given country to produce and export manufactured products competitively. A quick comparative analysis of the main manufacturing sub-sectors is carried out with emphasis on agro-industrial ones, such as food, textiles, wearing apparel, etc. This exercise leads to the preliminary identification of a set of priority agro-industrial activities and, by extension, the agro-value chains they are part of or the ones in which they could be integrated if the appropriate conditions were in place. The identification of priority chains is based on such factors as their current and potential contributions to GDP, manufacturing value-added, price factors (labour costs, the cost of inputs, exchange rates), investments (both national and FDI), domestic and/or international demand for a product (market potential), and spill-over effects on other economic activities. The main business environment and policy framework factors driving or constraining industrial performance are also considered when selecting value chains.

After the rapid appraisal, the choice of value chains to be targeted is refined by applying priority criteria, weighting their relative importance and establishing ranking score sheets. This exercise is conducted with the participation of a broad range of stakeholders (government, private sector, service providers, sector associations, etc.) to ensure ownership for future value chain upgrading activities, and also to assess the sector's willingness to reorganize and change.

Since one of the main objectives is to support pro-poor value chains, the established priority criteria will reflect this dimension by providing answers to questions such as:

- How does the sector fit within the country's overall strategy for poverty reduction?
- Is the incidence of poverty in the project geographic area high and/or is the target region marginalized?
- What is the value chain potential for employment generation, for example, through participation in product markets and/or labour-intensive manufacturing industries?
- What would be the required start-up costs – are there value chains not requiring high investments and able to employ low-tech skills?
- To what extent higher environmental and social standards may affect costs and competitiveness and thereby raise entry barriers for poor agro-processors?
- What would be the impact of the value chain on the rural economy – diversification of incomes; jobs for women; local processing of raw materials, etc.?
- What would be the risks and threats of promoting the selected chain, including the replacement of unskilled work force and the environmental sustainability aspect?

Other criteria that relate to economic growth and reflect a pragmatic approach to a sustained development of value chains will include:

- What is the potential domestic and/or international demand for a particular product?
- What are the production costs in comparison to those of competitors – benchmarking and competitiveness factors?
- What are the prospects for attracting public and/or private investments?
- Are the available resources in line with the number of operators involved in the value chain?
- What is the potential for local SMEs (including informal suppliers) to be integrated in regional/international markets?
- What is the situation with regard to existing infrastructure, financial and non-financial business services, availability and accessibility of raw materials and other inputs?
- What is the level of skills of the labour force and management in the sector?
- How may the selected chain affect/promote policy changes – creating an enabling environment for private sector development?
- Are there complementarities with other projects in the region/country and is there potential for scaling-up?

This list of criteria is not exhaustive; it can be expanded or modified depending on the situation and environment of the targeted region/sector. Also, the weight to be assigned to any criterion will depend on its relative importance. Table 2 (opposite) provides a sample weighted score sheet which can be used (as such or modified) to prioritize value chains.

It is worth noting that, while the objective of this exercise is to eventually prioritize a sub-sector, a product or a commodity for analysis, it is important to keep the focus on the entire

Weight %	Criteria	Score for each value chain (1 to 5)		
		Value chain 1	Value chain 2	Value chain...
Poverty reduction, X	Fits the country's strategy for poverty reduction			
	Potential for employment generation			
	Number of small producers in the sub-sector			
	Required investments			
	Entry-barrier levels for poor agro-processors			
	Geographical location of producers			
	<i>Sub-total (A)</i>			
<i>Poverty impact <math>\mu = (X \times A)/100</math></i>				
Economic growth potential, Y	Contribution to GDP – export earnings			
	Potential for domestic/international demand			
	Public and private investment prospects			
	Potential for market integration of local SMEs			
	Promotion of policy changes			
	Scaling-up potential			
	<i>Sub-total (B)</i>			
<i>Economic growth impact <math>\alpha = (Y \times B)/100</math></i>				
Pragmatic aspects, Z	Market demand			
	Extent of value-adding potential			
	Production costs in comparison to competitors			
	Available resources and number of operators			
	Availability of raw materials and other inputs			
	<i>Sub-total (C)</i>			
	<i>Pragmatic aspects <math>\beta = (Z \times C)/100</math></i>			
<i>Total score (A + B + C)</i>				
<i>Total score based on weight (<math>\mu + \alpha + \beta</math>)</i>				

Table 2. Sample weighted score sheet used to prioritize value chains.

sector in order to not oversee pertinent issues related, for instance, to trade and investment policies, tax and financial incentives, market potential, etc.

### 2.1.2 Preliminary market analysis

It should be emphasized that the existence of a demand potential (market) for a product (or commodity) is a *sine qua non* condition and the fundamental factor in selecting and prioritizing a value chain. While a detailed market analysis is not justified at this stage, it is important to gain a sound understanding of elements and variables such as (see Appendix B):

- The specifics of the existing market and the opportunities for marketing identified products (or commodities) in the short, medium and long term. The main factors of interest in this connection are: market size and dynamics over time, both in terms of value and volume; type of products in demand, their price fluctuations and demand peaks; access

to raw and intermediate inputs to the product and their global price fluctuations; possible existence of a market niche and its growth potential.

- The competitors operating in the market and their performance. This involves collecting data on: key producers and suppliers competing in the market, their products and linkages with global value chains; the existence of one or several dominant firms; the performance of these competitors in terms of market shares and product prices and quality; and their competitive advantages (level of industry integration, distance to markets, etc.).
- The prevailing conditions regarding market access. Some of the factors to be investigated here are: the existing physical infrastructure (communications and roads, storage facilities, logistics and distribution channels, etc.) and its impact on the productivity of the sector; specific applicable product standards (technical and quality) and the costs of compliance (ISO, HACCP, organic products, labour and environmental standards, etc.); the market structure of the industry (monopoly, transparent and fair competition, entry barriers, etc.); and the facilities for licensing and issuing of permits.

This initial market study can be supplemented by an assessment of the product strategic positioning so as to measure the commercial performance of the value chain and of each of its areas of strategic activity. Also, one can gauge the strategies implemented to achieve the commercial objectives set by the various chain actors. The results of the assessment would allow to: (i) identify and classify the principal external and internal strategic difficulties related to the product markets and to deduce the main opportunities and constraints; and (ii) evaluate the market for products at the national and international level based on a retrospective analysis of the market and the projected development of macroeconomic indicators influencing the consumption of the products in question.

The UNIDO training manual “Module 2: Market Analysis and Marketing” provides the main tools for conducting a market analysis and determining and forecasting demand. The Organization also publishes several specialty publications which provide a range of useful information on economic and market trends. Such publications are the industrial development reports, the investment survey reports, comparative analyses of industrial performance, and the Industrial Statistics Databases (INDSTAT) at the 4-digit level of the International Standard Industrial Classification of all economic activities (ISIC). See the tools and guidelines developed by UNIDO and listed in Appendix C.

### **2.1.3 Case profile: Commodity value chain prioritization in Ethiopia**

In the process of preparing an agro-industrial master plan for Ethiopia, a prioritization process was conducted for several commodities to identify those offering the highest



prospects for growth (UNIDO and FAO, 2009). The prioritization process emphasized the potential for agricultural commercialization and agro-industrial development by using the following main criteria:

- Commodities of importance to the economy on the basis of: (i) the population involved in production, marketing, processing and related services especially from income generation and employment perspectives; (ii) relevance in terms of national food security; and (iii) contribution as a source of foreign exchange.
- Competitive advantage with respect to production and agro-processing in comparison to other countries and especially neighbouring countries. The factors considered included productivity, cost of production, existing support infrastructure and facilities (roads, logistics, marketing, etc.), and the business environment.
- Attractiveness of industry to investors – policy environment and incentives available to investors, including FDI.
- Access to the requisite technology, infrastructure, services and facilities.
- Potential for short-term impact – sectors and commodities that can achieve significant improvements along the value chain without requiring major infrastructure investments.

Twenty-two commodities were assessed through reviews of secondary data and interviews with key sources including government departments and the private sector (producers, traders, agro-processors, etc). Several validation and planning workshops were also held. Based on the criteria mentioned above, twelve commodities were initially selected and classified in three groups as follows:

Group 1: Commodities that are highly important to the economy due to the large population involved in their production and to their contribution to national food security. They are also important as a source of foreign exchange and have good potential for short-term impact with relatively low investments. This group includes: (i) cereals (wheat, maize, teff and barley); (ii) oilseeds (sesame, Niger seed, linseed and rapeseed); (iii) coffee; and (iv) sugar.

Group 2: Commodities that are of importance to the economy due to the number of people involved in production, processing and marketing as well as to their contribution to food security. They are also important in terms of income and employment generation and as a source of foreign exchange. However, this group would need significant investments, especially in infrastructure, and would also require a concerted effort to enhance competitiveness in the global arena. This group includes: (i) dairy products; (ii) meat; (iii) tea; and (iv) fruit and vegetables.

Group 3: Commodities that entail a competitive advantage for Ethiopia. They are attractive to investors and have potential for short-term impact. However, they have relatively low national economic importance and are more relevant for niche or specialized markets. This group includes: (i) honey; (ii) pulses; (iii) spices; and (iv) grapes/wine.

In addition to this selection and classification process, a prioritization exercise involving all stakeholders was conducted and yielded the priority commodities illustrated in Figure 4 below. These were (i) cereals (wheat, maize, teff and barley); (ii) oilseeds (sesame, Niger seed, linseed and rapeseed); (iii) coffee; and (iv) sugar. The value chains for these commodities were analyzed and strategies to support commercialization and agro-industrial development were proposed (with the exception of the sugar sub-sector which already had an industrial development strategy).

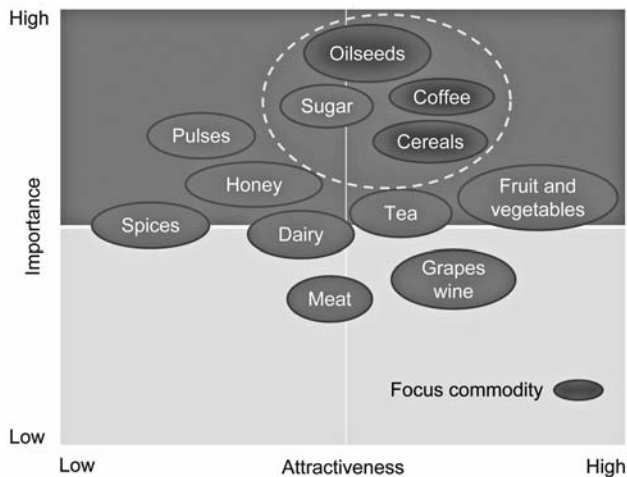


Figure 4. Results of prioritization of agro-commodities in Ethiopia (UNIDO and FAO, 2009)

## 2.2 Mapping the value chain

Mapping a value chain facilitates a clear understanding of the sequence of activities and the key actors and relationships involved in the value chain. This exercise is carried out in qualitative and quantitative terms through graphs presenting the various actors of the chain, their linkages and all operations of the chain from pre-production (supply of inputs) to industrial processing and marketing. When dealing with value chains where benefits are sought for the poor and the marginalized, it is also important to give special consideration to poverty, gender and environmental factors.

The mapping diagrams are prepared through an iterative process which can be divided into two stages:

First, an initial map is drawn which depicts the structure and flow of the chain in logical clusters: the main actors and the activities carried out at the local level, their links to activities at other domestic or foreign locations, the supporting services and their interactions, the links to the final market, and some initial indications of size and importance.

The second stage is quantifying the value chain. This involves adding detail to the basic maps drawn initially (structure and flow). Depending on the level of detail needed for the research entry point, this exercise may focus on elements such as size and scale of main actors; production volume; number of jobs; sales and export destinations and concentration.

However, it may be erroneous to speak of one final map. In general, the outcome is several maps (to avoid information overload), providing different (but interlinked) chain information. The resulting maps will depend on the scope and objectives of the type of research conducted and its entry point or dimension. Sample mapping questions are given below (adapted from M4P, 2008):

- What are the main activities carried out in the value chain to manufacture the final product (or category of products)? These activities will vary depending on the type of chain being analyzed (agricultural commodities, industrial products or services). However, it is advisable to identify not more than six or seven main activities between the start of the production process and sale to the final customer.
- Who are the operators involved in these activities and what are their roles? It is important to differentiate the actual owners of the products. If they source out or sub-contract processes to other businesses, the latter should be categorized as operational service providers. Other factors to map out at this stage are the poverty ranking, the locations of the various actors (commune, district, province, country, etc.) and their legal status.
- What are the flows of products, information and knowledge in the value chain? These flows can be both tangible and intangible, for instance, products, money, information and services.
- What are the production volumes, the number of actors, the number of jobs? This information helps picture the size of the various channels within the value chain. The dimension of the vulnerable segment of the population in the chain (including gender differentiation) and employment opportunities can also be portrayed.
- Where does the product (or service) originate from and where does it go? This map captures the physical flow of the product or service and illustrates regional variations, such as the transaction costs related to transport.
- How does value change through the value chain? This factor is useful in measuring the competitiveness of each operator within the chain (and of the chain as a whole). The simplest method of picturing this element is by computing value addition at each stage of the chain – the value of output at market price minus the value of all intermediate inputs (materials or services) purchased from other firms.
- What types of relationships and linkages exist among the various chain actors? These may include a market relationship, a persistent network relationship between independent firms, a vertical integration, etc. Appendix D provides basic conventions for mapping these relationships and linkages.

- What types of business services are feeding into the chain, including the regulatory and policy framework in which the sector is operating? This map will illustrate the external sources of competitiveness and highlight the need for potential interventions outside the value chain.
- What is the market share of the value chain? This variable can be defined as the percentage of the sales value in the overall market.
- What are the main strengths and weaknesses of the chain? These factors can be identified by carrying out a SWOT analysis which can then be integrated in the mapping exercise. Figure 5 below provides a sample SWOT analysis for the oilseeds value chain in Ethiopia.

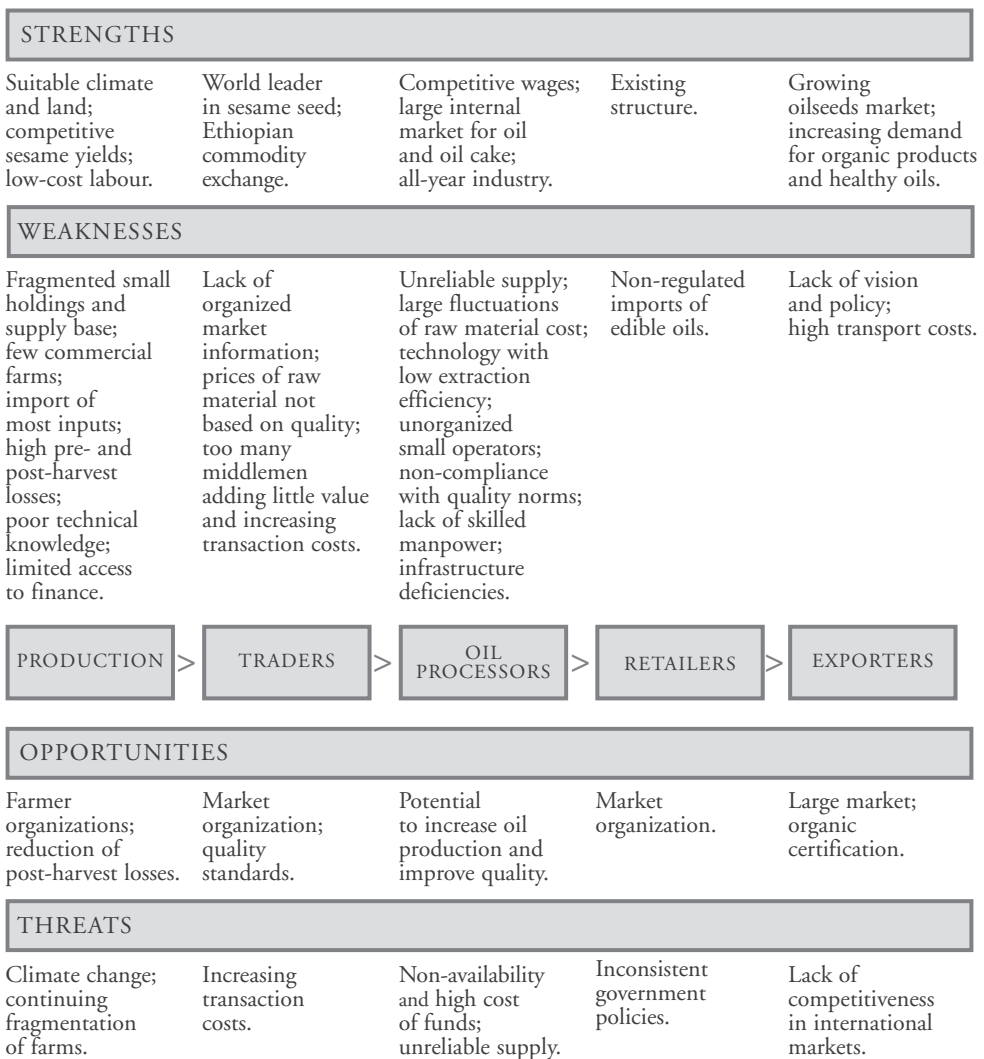


Figure 5. Sample SWOT analysis of the oilseeds value chain in Ethiopia.

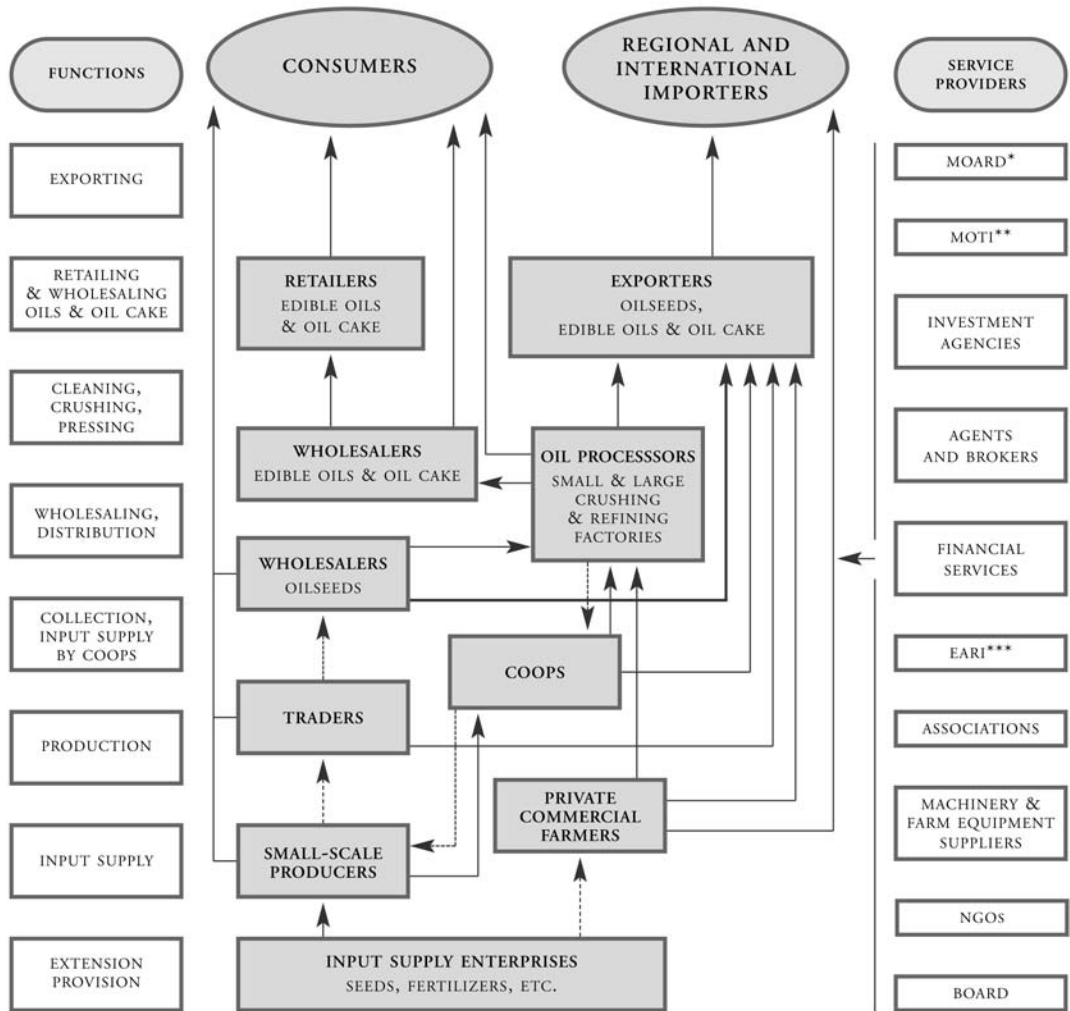


Figure 6. Map of oilseeds value chain in Ethiopia.

\* Ministry of Agriculture and Rural Development

\*\* Ministry of Trade and Industry

\*\*\* Ethiopian Agricultural Research Institute

-----> casual relationship

————> network relationship

————> vertical integration

Value chain mapping is preferably conducted by an interdisciplinary team of experts using observation of chain activities, interviews with chain actors, and participatory workshops to develop and obtain feedback on the chain maps. Apart from its contribution to the mapping exercise, the participation of the key chain actors is important as it helps them build a shared vision of the problems to be overcome, develop a collaborative upgrading strategy and take joint decisions regarding future interventions.

Humphrey, J. (2005) in his report on shaping value chains for development provides some basic conventions for chain mapping. These are outlined in Appendix D and were used for mapping the main structure and actors within the oilseeds value chain in Ethiopia (overleaf).

### 2.3 Analyzing value chain technical capacities

In an economic environment characterized by intense competition and increasingly rapid industrial changes, the analysis of value chain technical capacities is made in order to: (i) assess the production system and tools; (ii) evaluate technical performance; and (iii) determine the principal technical actions that need to be carried out to upgrade individual enterprises and enhance their competitiveness. UNIDO's methodological guide for restructuring and upgrading and industrial competitiveness outlines the parameters which are important for such analyses as shown in Figure 7 below.

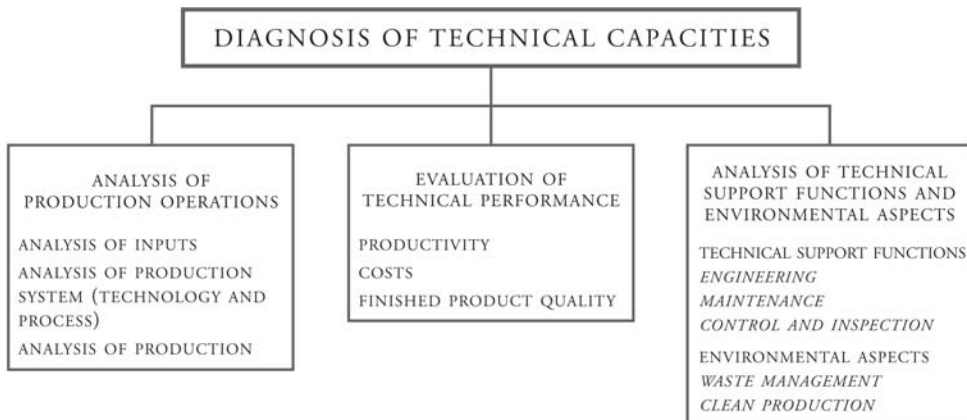


Figure 7. Analysis of value chain technical capacities (UNIDO, 2003)

These analyses would be carried out by a UNIDO technical expert with knowledge of the management of agro-value industrial operations. Three aspects of production are to be assessed:

1. Utilization of inputs (raw materials and supplies, labour, water and energy, production materials, equipment, etc.). Raw materials and supplies are examined in terms of characteristics, compliance with technical specifications, patterns of consumption by manufactured unit, and losses and waste. Human resources are assessed with respect to skills and technical capabilities, staff training and occupational safety.
2. The production system (technology and process). This is compared with systems used in the sector by the main competitors in terms of the utilization of raw materials, labour, etc., the flexibility to produce a range of products and to adapt to fluctuations in volume, and the capacity of the staff to assimilate technology change and to innovate. The capacity of the enterprise to provide finished products that meet the needs of customers in terms of quality, delivery time and cost is also assessed. Production management methods, particularly research, planning and scheduling, maintenance management, and quality control and assurance are evaluated.
3. The products manufactured by value chain enterprises. Products are analysed in terms of characteristics (such as nature, quality, price, delivery times, distribution, after-sale services, compliance with standards) and in relation to those of the competition and those demanded by customers.

With regard to technical performance, the products of an enterprise are evaluated in terms of productivity, costs, and quality levels. Productivity is measured by analyzing records of production volume by product line, type and production time. The productivity of the main processing lines is compared with data for main competitors where possible. Measurement of performance in terms of costs is based on an analysis of cost patterns for raw materials, energy, maintenance, subcontracting and personnel as well as of the cost of tying up of stocks. Finally, data on quality levels are reviewed in terms of levels of defects or percentages of output meeting quality standards.

The last stage assesses technical support functions and environmental aspects. The former are examined to determine the engineering, maintenance, and inspection and control conditions required so that the chain enterprises operate with minimal breakdowns and within local occupational health and safety and legal standards for agro-processing plants. The capacity of an enterprise to minimize environmental problems and comply with relevant legislation is assessed in terms of waste management and the opportunities to utilize cleaner production methods. These may need to be documented in order to comply with private standards demanded by buyers.

On completion of this assessment, UNIDO technical experts are in a position to identify, structure and classify fundamental problems and bottlenecks hindering proper technical functioning of individual enterprises and, in particular, to recommend a detailed plan of action to improve production performance, especially in the case of enterprises linking into new markets with more demanding requirements.

## **2.4 Analyzing economic performance and benchmarking competitiveness**

### **2.4.1 Basic objectives**

After having developed the general conceptual map (or maps) of the value chain, the next step is to analyze the chain's economic performance and competitiveness (including a review of external sources of competition). Production costs, margins, price markups, productive capacity and productivity are among the possible measures of chain performance. The calculation of these variables makes it possible to:

- position the chain vis-à-vis alternatives or competitors – benchmarking;
- identify strategic and non-strategic activities;
- raise awareness among chain actors concerning cost drivers, margins for price negotiation, and possibilities for value addition;
- recommend leverage points for action at policy and institutional levels as well as at enterprise level.

The measured economic and competitiveness variables can also be used as the baseline for monitoring the potential impact of upgrading interventions in the value chain – for instance, poverty reduction through increased margins/incomes for poor stakeholders; productivity gains through the introduction of more efficient technologies or processes; increased exports as a result of improvements in product design and quality; a friendlier business environment achieved by removing institutional bottlenecks. Most of these aspects of chain performance can be influenced by the collective action of enterprises and support services.

### **2.4.2 Analysis of external sources of competitiveness**

The economic environment in which a value chain operates can have a positive or negative impact on its performance. Therefore it is important to analyze the principal components of this environment and to identify its limitations and opportunities with respect to any value chain promotion project. UNIDO's "Methodological Guide: Restructuring, Upgrading and Industrial Competitiveness" specifies the main elements to be investigated. These are summarized in Figure 8 (opposite).



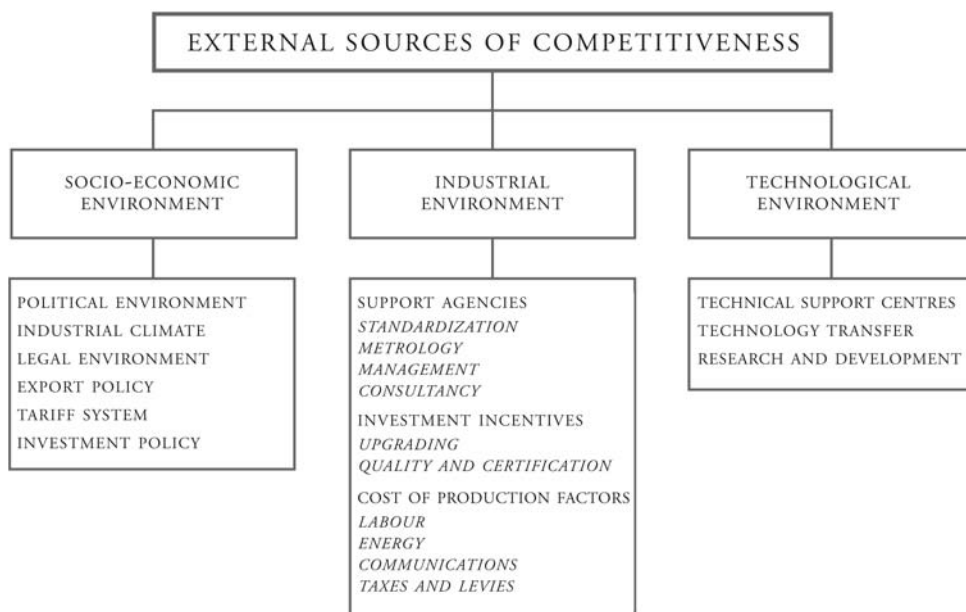


Figure 8. Analysis of main external sources of competitiveness (UNIDO, 2003)

a. Economic and social environment

The analysis of this environment provides a significant pointer to the origins of opportunities for upgrading the target value chain as well as to the sources of existing constraints. It may include:

- The trends in the basic economic data of a country, such as: (i) average per capita income, gross national product, consumption, investments, economic growth rate, exchange rate; (ii) exports and/or imports by the country, sector and industry, and of products manufactured by the value chain under consideration; (iii) economic policy: development objectives, economic orientation, programmes and strategies of the country, sector and industry.
- The principal economic measures adopted by the state to promote and finance industry and associated services and to support the restructuring and upgrading of enterprises.
- The impact on the performance of industry of various economic and political variables, such as currency devaluation, increase in the cost of particular factor inputs, average cost of capital, labour and severance.

#### b. Industrial environment

The industrial environment of a value chain is made up of all the actors (individuals, enterprises and organizations) and factors (economic and technical) that exert influence on its own results and also on those of its direct competitors. The assessment of this environment consists therefore of an analysis of the various institutional and support agencies (standardization, certification, accreditation, metrology, financing, management, maintenance and consultancy services, etc.) so as to identify the constraints and opportunities related to upgrading and developing the value chain in an open and competitive market.

#### c. Technological environment

This analysis investigates the technical support systems that enable the value chain operators to use and access technical information, to select and acquire technologies, equipment and manufacturing procedures, to adapt and control technology transfer and, finally, to capitalize on technological know-how.

### 2.4.3 Analysis of economic parameters

The indicators of major interest for such an analysis are the production costs, value added and productivity. Frequently, the calculation of these variables is complex due to the multifaceted elements of value chains. Various problems may be encountered in the analysis, particularly in small and medium-size enterprises, regarding the reliability, availability, regularity and homogeneity of the accounting data and the conversion of the latter into required economic data. Thus, economic analyses of value chains often have to be based on cost estimates. Such estimates should however be carefully checked, for instance, against data of similar projects when available. When faced with questionable estimates, it may be necessary to verify such costs by using other data sources. In any case, the economic analysis should provide useful indications to guide choices and support decision making for future strategic chain upgrading interventions. Final investment decisions will have to be based on an in-depth and thorough analysis of technical and financial data.

#### a. Production costs

The production costs in value chains can be calculated by aggregating costs incurred by enterprises in each segment of the chain. The Analytic Analysis by Product Table (AAPT) – Table 3 (opposite) – can be used as a basis for the computation of these factors. The review of the AAPT data will help identify the operations that account for the largest shares of the overall production costs at enterprise level. A more detailed analysis of these

<i>Designation</i>	<i>Unit</i>	<i>Year (n-4)</i>	<i>Year (n-3)</i>	<i>Year (n-2)</i>	<i>Year (n-1)</i>	<i>Year (n)</i>
1. Production capacity	tonnes					
2. Actual production	tonnes					
<b>3. Value of production sold</b>		<i>Costs (%)</i>	<i>Costs (%)</i>	<i>Costs (%)</i>	<i>Costs (%)</i>	<i>Costs (%)</i>
4. Raw materials consumed at cost price (RM)						
RM 1						
RM 2						
RM 3						
5. Consumable materials at cost price (CM)						
CM 1						
CM 2						
CM 3						
6. Rent						
7. External work and services						
8. Other production costs						
9. Personnel costs						
10. Technical assistance						
<b>11. Manufacturing cost (4+5+6+7+8+9+10)</b>						
12. Packaging						
13. Distribution costs						
<b>14. Cost of distribution (12+13)</b>						
<b>15. Production cost before amortization and financing costs (11+14)</b>						
16. Amortization in financial year						
17. Financing costs						
<b>18. Production cost before general costs (15+16+17)</b>						
19. General costs						
<b>20. Total production cost (18+19)</b>						
<b>21. Pre-tax profit (3-20)</b>						

Table 3. Analytic analysis by product (UNIDO, 2003).

operations may point to cost reduction prospects and/or upgrading strategies. Pre-tax profit can also be derived from the AAPT data.

A further step in calculating production costs relates to each function within the chain. As an example, in the case of the textile and apparel value chain, these costs will be broken down to account separately for all activities required to manufacture and market a product: (i) yarn – spinning; (ii) fabric – weaving, knitting and finishing; (iii) garment production – designing, cutting, sewing, buttonholing and ironing; and (iv) marketing and distribution operations. Such information does not illustrate the enterprise accounting details, but rather the costs along the sequence of production and marketing operations within a value chain. The cost of each activity can be combined with the measurement of productivity and converted into a production cost per unit of output (i.e., USD per kg of yarn or fabric). Here again, the unit costs that are high can be analyzed for potential reduction. Figure 9 below illustrates the case of men's T-shirt production in Bangladesh.

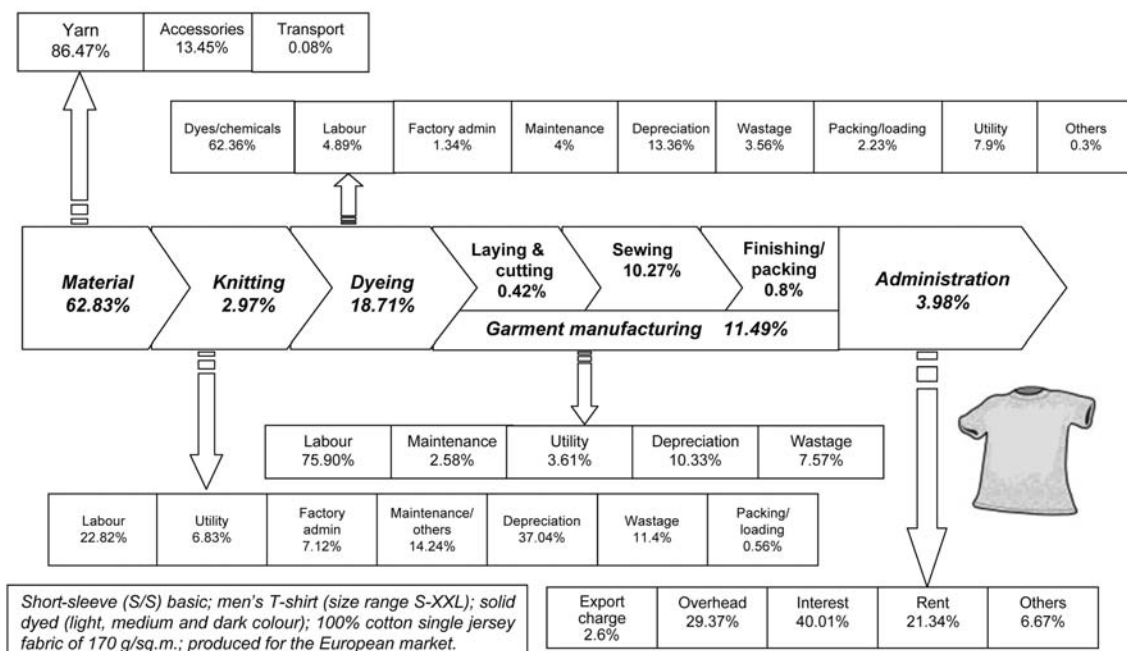


Figure 9. Production cost of men's T-shirts in Bangladesh (iART & BKMEA, 2007).

b. Value added

Value added ideally represents the value created during the manufacturing process conducted by each industrial establishment. It is measured as the difference between the value of all goods and services produced and the value of those purchased non-labour inputs which have been used in the production process. This type of measure avoids double counting, since what each establishment has purchased from other establishments is deducted from the value of its own production. Inputs to be considered may include materials and supplies, fuel, electricity, contract work, repairs, maintenance and transportation as well as other industrial services. The value at which these inputs were purchased is deducted from total revenue from production in order to obtain the establishment's value added. Revenue from production can be reported at basic or producer prices. The difference is that the latter includes indirect taxes and excludes subsidies.

The above principle is applied at each stage of the selected value chain. It is also important to distinguish, along these stages, those goods and services that are provided by the chain members from those provided by external entities. The measurement of value added created throughout the chain provides a sound basis for formulating possible upgrading strategies by highlighting where value is added and by whom. Such an analysis has direct implications for pro-poor growth.

Figure 10 illustrates the distribution of value addition in the textile sector expressed by a Value Index (Gherzi research, 2005). The latter shows the incremental increases in value addition for each stage along the textile chain (i.e., the production sequence), from raw cotton to ready-made garments, for example, shirts and trousers. The cost of raw cotton is taken to have an index of 100; the increase to lint cotton stage is 15, and so on to reach

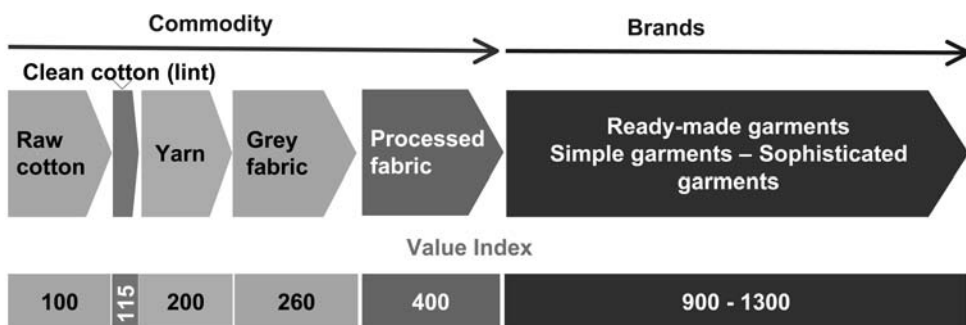


Figure 10. Value addition in the textile chain (adapted from Gherzi research, 2005).

a value of 900 (simple garments) to 1,300 (more sophisticated garments) for the finished product.

c. Performance benchmarking

In today's rapidly evolving markets, benchmarking the performance of a value chain is important as it helps understand where the chain stands in relation to competitors or to a particular standard. This task involves comparing a number of key parameters along the value chain against those of a panel of countries (or other value chains). Such key parameters are the unit cost of production, labour productivity, the quality of a specific process, etc. The outcome is often a business case for making changes in order to make improvements.

Like the calculation of production costs, benchmarking a value chain is often complex. The required information may not be readily available and can be difficult to obtain. In general, one has to rely on inputs from industry experts or to access specialized data banks. Also, depending on the type of value chain (or product) under investigation, the key indicators to be measured may vary.

A benchmarking exercise conducted by UNIDO in 2005 for the textile industry of a typical developing country was based on the following parameters:

- mill working hours per year;
- cost of wages per hour;
- cost of electrical power;
- cost of cotton per kg;
- cost of capital;
- freight costs;
- age structure of machinery.

Using these parameters, the benchmarking study compared Country X with a number of countries it competes with either directly or indirectly, and yielded the following main conclusions (Table 4 on opposite page):

Parameter	Conclusion
Mill working hours/year	The level of mill hours per year worked in Country X is quite low compared to those in the reference countries. The result is a low level of utilization of capital-intensive spinning, weaving and processing machines. Furthermore, additional investment is required to generate the same fixed product volume.
Cost of wages/hour – skilled workers	Country X has a comparative advantage in the average cost of hourly wages, including social charges. But the advantage is lost when the low labour productivity of the workers is built into the cost calculation. Higher labour productivity levels are essential if Country X is to capitalize on this comparative advantage.
Cost of electrical power/kwh	Country X is not disadvantaged in the cost of power. However, nor does it have a comparative advantage
Cost of cotton/kg (staple length = 11/8 <sup>m</sup> )	Data suggest that the textile industry of Country X has an advantage in the price of domestic cotton.
Interest rates (average first quarter 2003)	Interest rates in Country X are competitive. The private sector suffers, however, due to the absence of an adequate banking system.
Freight rates	Freight rates and shipping times are important cost factors when calculating the comparative advantage of companies, especially in the garment industry. For example, the cost of shipping a 40-foot container from Egypt to Hamburg is about €500. A lorry carrying double that load from Turkey to Germany costs about €1,500. It is presumed that Country X has about the same comparative advantage as Egypt.
Age structure of installed capacities: <ul style="list-style-type: none"> <li>- Short-staple spinning machines</li> <li>- Open-end spinning machines</li> <li>- Weaving equipment</li> </ul>	Country X should take full advantage of its modern spinning, weaving and processing capacities to boost exports: <ul style="list-style-type: none"> <li>- It has the highest share of modern ring spindles compared to the reference countries.</li> <li>- Only Turkey and Italy have more modern installed OE-rotor capacities.</li> <li>- The shuttle-less looms in Country X are very modern, and only China and Turkey have higher modern shares.</li> </ul>

Table 4. Benchmarking of the textile industry of a typical developing country (UNIDO, 2005).

## 2.5. Formulation of an upgrading strategy for selected value chains

### 2.5.1 Basic principles

Irrespective of the type of industry and the size of the value chain project, success or failure will largely depend on the target market and the nature of the strategy adopted to confront potential competitors. Several management tools are available in the literature on methodologies to develop such strategies. Those commonly used are based either on cost leadership or on product differentiation (Porter, 1980). The cost leadership strategy has the objective of delivering the same product or service as that provided by competitors but at a lower cost. The product differentiation strategy relies on developing a position that creates a sense of product value and potential customers see as unique. Elements considered here are quality, functional features or design and even availability (timing and location).

However, as a development agency, UNIDO cannot confine the objectives of its assistance to the technical efficiency of the value chain, or to profit maximization; its mission is to seek the optimal combination of all these technical and economic aspects in pursuit of long-term economic growth and poverty reduction.

Considering the economic, technological, ecological and political changes in today's world, there is no universal strategy for upgrading value chains. Each chain represents a unique case of real and potential competitive advantages and of existing and potential opportunities and constraints. However, in many industries, different winning strategies may coexist, and it is possible to conceive an upgrading strategy for a specific segment of the value chain. What is most important is that the chain actors themselves make those final strategic decisions on the types of advantage or the competitive fields that are to generate greater value added, thereby defining the desirable future of the value chain.

Any value chain upgrading strategy should therefore be systematically developed through a consultative process in which all actors participate. Most likely to succeed is a strategy that: (i) secures the ownership and commitment of the chain actors; (ii) clearly defines the role of each concerned party, including chain operators and supporters; and (iii) enables the achievement of objectives in ways that are acceptable to all actors and with the lowest usage of resources – an adequate balance between objectives and means is indispensable. When objectives are set too high, upgrading activities may run short of resources before those objectives are reached. If targets are too low, however, the full potential of the value chain will not be harnessed and therefore the best possible competitive position will not be attained. In any case, it is important to identify quick-start activities as a means of gaining the commitment of chain actors. UNIDO can lead or facilitate this process, which is organized in accordance with a strategic planning procedure that entails several stages.



### 2.5.2 Setting the objectives: The value chain vision

Taking into consideration the findings of the mapping exercise and its overall techno-economic assessment, the actors should formulate the general objectives of the value chain upgrading strategy. The latter should result in the actors developing a common understanding of what is the leading idea or value chain vision and of what are the options and preferences with regard to the basic strategic principles. Table 5 below provides some examples of strategies and potential strategic objectives.

Strategies	Strategic objectives	Sub-strategies
Marketing	Markets Products Marketing and productivity	Market performance Price, volume Marketing treatment Distribution, new outlets
Production	Production Productivity Supplies	Production methods Automation Suppliers, resources, stocks
Products	Cost reduction	Standardization of production, automation, subcontracting Positioning in price-sensitive markets Emphasis on productivity

Table 5. Examples of objectives and strategies.

In general, the value chain upgrading vision should focus on those objectives of direct relevance to the operators, mainly value creation (increased sales volume and/or cost differentiation) or value capturing (increased incomes of operators). Of particular importance to UNIDO is an upgrading strategy leading to enhanced value captured or jobs created for the benefit of the poor. However, the chain operators should be primarily directed to improving their competitiveness and not to engagement in solving social issues. Also, under conditions of unrelenting competition, the operators must continually review the objectives and refine the type of advantages they are seeking and the field within which their competitive advantages can be achieved.

The example below provides the strategic upgrading vision set for 2010 for the textile and garment industry of the country mentioned earlier as the subject of a benchmarking exercise conducted by UNIDO in 2005.

a. What does the sector represent?

A profile of the textile and garment industry in Country X shows that the industry is: (i) a strategic non-oil industry based on the country's indigenous cotton; (ii) a major employer, especially in the downstream garment sub-sectors; (iii) the second largest textile industry in the Middle East; (iv) an industry with the latent capability to meet a larger share of the world's increasing demand for garment and household textile imports if it were to be upgraded to the efficiency levels of its competitors; (v) inside the key Middle East market and closer to the EU market than many of the present suppliers; (vi) characterized by strengths, especially in public sector spinning companies and private downstream businesses that need to be developed further; and (vii) hampered by problems in the public sector mills, where recent modernization investments are underutilized (for instance, in fabric processing), and by very high stock levels (SP10.2 bn at the end of 2001, representing 77% of the year's production value). At the same time, the sector accounts for: (i) 24% of industrial production; (ii) 30% of employment; and (iii) 45% of exports.

The textile and garment industry in Country X has potential for generating greater benefits to the national economy in terms of job creation and foreign currency earnings, but a number of key challenges have to be met first. The industry has to: (i) evolve from a centrally planned economy to a free market economy; (ii) adjust to the dynamics of the changing global markets as they move from the MFA regime, where exports were restricted by quotas, to the liberalized markets of the post-MFA era under the auspices of the WTO; (iii) achieve international performance standards in the public sector mills in which US\$680 mn have been invested in recent years and these new capacities have yet to be fully utilized; (iv) focus on private manufacturing companies which will be the engine of further sustained growth in the industry and in the national economy. The public sector mills will help with economic growth, but their contribution will be largely to support private companies as suppliers of cotton yarn.

b. Vision 2010

Vision 2010 recognized the 2004 position of the industry and set the targets for export sales in 2010, namely: (i) reaching SP100,000 mn (US\$2,000 mn) in export sales, of which 75% would represent garments and 25% would come from sales of yarn, fabrics and home textiles; (ii) being a major contributor to the foreign currency

earnings of the country; and (iii) continuing to generate the largest number of manufacturing jobs in the private sector.

The strategic action plan to achieve this vision identified the steps to be taken during the next six years to upgrade performance and increase output of existing facilities and to build up the downstream capacities in order to achieve increased sales of value added products – garments and home textiles. This was to be achieved by: (i) maximizing the strengths of the public sector mills by converting as much domestic lint cotton into yarn within the country as possible, based on the full utilization of the existing spinning capacities; (ii) supplying all domestic users of yarn preferentially and exporting the balance; (iii) encouraging private sector investments in end-product capacities – ready-made garments and home textiles, especially for export; (iv) capitalizing on market opportunities in the Greater Arab Free Trade Area and in the EU-Middle East Trade Agreement; and (v) assisting the public sector mills to achieve international levels of performance (over 8,400 production hours per year) in terms of capacity utilization, machine efficiencies, and productivity.

### 2.5.3 Identifying constraints to chain performance

The value chain maps and the findings of the techno-economic assessment are valuable tools for identifying constraints to chain performance. Each activity (or function) in the chain can be assessed with respect to areas such as: (i) market failure – unfair competition practices such as the use of subsidized distribution by public sector and some donors; high transaction costs; stringent standards to access the market; lack of information or absence of market; (ii) effectiveness and transaction costs of products, regions and countries; (iii) capacity of chain actors to follow and assimilate technologies and market developments; (iv) appropriateness of government and institutional interventions – policies and regulations that discriminate against the private sector and discourage competition; administrative failure; etc. This assessment can be complimented by a SWOT analysis of different segments of the value chain (see Figure 5 on page 18).

At a further stage, identified constraints can be synthesized and ranked according to their priority and can be assessed with regard to their influence on backward and forward linkages in the value chain.

Keeping in mind the value chain strategic objectives (or strategic vision) to be achieved, the identified constraints can be turned into action proposals, and investment and development opportunities can be identified along with potential chain upgrading intervention needs. Table 6 (overleaf) illustrates the constraints faced by the garment industry in most developing countries.

Operation/factor		Degree of deviation				Constraints
Pre-production	Product development	+	+	+	+	Limited market research Lack of CAD/CAM systems Poor skills in pattern making Missing marker plan
	Customer service/merchandiser	+	+	+	+	Position missing Long lead times for deliveries Costing/pricing procedures not accurate
	Planning and follow-up	+	+	+	+	Planning department missing Poor process coordination
	Fabric purchasing	+	+	+	+	No data on performance of raw material suppliers Testing procedures missing Lack of scheduling, stocking and follow-up
Production	General management	+	+			Separate cutting/sewing/finishing rooms Management focuses on sewing (which represents only 10% of general costs)
	Cutting	+	+			Layouts are not engineered Waste due to incorrect flow Available technology suitable only for basic process
	Preparation for sewing	+	+	+	+	Seldom performed directly in lines Inadequate accessory supply causes waste/errors Poor quality control of sewing inputs
	Sewing	+	+	+		Difficult to manage efficiency and quality Inexperienced production manager and technicians Poor process quality Medium-level sewing technology Overall efficiency is 30%
	Special operations	+	+	+	+	Limited to few companies Problems in printing and dyeing Lack of experienced personnel
	Finishing	+	+	+	+	Workforce not sensitive to customer demands Insufficient training and inadequate settings No quality control points
Quality assurance		+	+	+		Only partial system with limited effect Audits not carried out on a systematic basis No control points inside the process
Logistics		+	+	+		Low level of raw material availability Inability to manage the sourcing of fabrics Absent transport system, inadequate warehousing

(continues on opposite page)

Operation/factor		Degree of deviation					Constraints
Marketing	Internal market	+	+	+			No market research Poor marketing strategy – no presentation of products Unsatisfactory range of locally produced fabrics Fabrics and accessories are difficult to import
	Export market	+	+	+	+	+	Quality does not meet export market demands Low ability to interact with EU/US buyers Lack of information about foreign market demands
Business environment	Enabling environment	+	+	+	+		Labour laws considered one reason for poor efficiency and high turnover Foreign investors cannot buy land Banking system is not developed
	Facilitating institutions	+	+	+			Lack of a training institute for textile engineers/technicians Limited access to market information
	Facilitating services	+	+	+			High transport costs and unreliable transport firms Poor IT communication services

Table 6. Constraints faced by the garment industry and degree of deviation from best practices.

#### 2.5.4 The value chain upgrading strategy

At this stage, the value chain upgrading strategy is drawn up. It should describe the interventions required to develop the target value chain, including priority policy and institutional recommendations as well as specific interventions at enterprise level, together with the advocacy necessary to implement them. It should be prepared rigorously, in a consultative manner and taking into account the chain internal and external environments.

The established strategic vision and the identified constraints and opportunities are to be used as the basis for developing an overall plan that reflects the objectives determined by the chain actors and describes the ways and means necessary to achieve them. In particular, it should define the type of commitment required from each actor. The latter should be developed and formalized in a plan of action clarifying the “who does what, how and when” in implementing the strategy. It is important to distinguish among the roles and responsibilities of all chain actors, including government entities, support institutions, and chain operators (see section 2.5.5).

The upgrading strategy should provide a detailed programme and implementation timetable on the objectives to be achieved, all planned activities for each segment of the chain, and the expected results in figures. More specifically, it should comprise:

- Actions relating to tangible investment, intangible investment (technical assistance, skill development, including management personnel, etc.), and resource requirements.
- Actions in detail: aim, description, cost, financing, duration.
- Planning of actions for the three subsequent years, year by year, distinguishing between short- and medium-term actions.
- An organization chart defining responsibilities in the actual implementation of the upgrading plan.
- A simple follow-up and monitoring system for all actions (including a means of measuring the situation before, during and at the end of each action).
- A plan of action summarized in a single table containing the cost and financing of each action and the programme as a whole.

The overall upgrading strategy should be drafted in the form of a dossier suitable for presentation to a financial institution (bank or development partner), including a profitability study for planned investments. Preferably, it should be drawn up in cooperation with one of the financial institutions or donors interested in promoting the target value chain.

### **2.5.5 Definition of roles and responsibilities**

Agro-value chain development projects cut across the responsibilities and interests of several ministries, sectors, institutions and businesses. UNIDO's challenge is to channel these various interests and inputs to effectively focus on the systematic identification of its priority areas of action while ensuring that local governments and other partners deal with associated issues where they have a comparative advantage.

As a general rule, the role and responsibility of governments in value chain development projects would be mainly the provision of public assistance, which consists of goods and services for which the private sector provides limited or no investments. Government support includes: (i) direct interventions such as building required infrastructure (roads, irrigation systems, energy sources, etc.) and establishing support services for private sector development (extension services, technology promotion services, R&D centres, etc.); and (ii) indirect measures, for instance, coordination of macroeconomic and sector policy, ensuring market transparency and fair competition, provision of legal securities, etc.

The chain operators (firms, business associations, service providers, etc.) will be responsible for the direct upgrading activities related to their enterprises. Unless they take up this responsibility, external assistance will not be successful and will result in limited impact. Thus, a main task in planning the upgrading strategy is the judicious choice of those chain actors who have the willingness and interest to move the chain forward. Those assuming responsibility should be capable to contribute to the planned upgrading activities and entirely subscribe to the upgrading strategy, including the expected public benefit (economic and social change).

The main role of external actors, such as UNIDO or other development agencies, is to facilitate the value chain upgrading process. At UNIDO, an Interdisciplinary Team on Agro-Value Chains composed of experts from the Organization's various Technical Branches provides services including (see Part 3 for details): (i) collecting information (industrial statistics, knowledge, etc.), facilitating the information flow, and providing data and analytical tools for various sectors; (ii) conducting feasibility studies and advising on investments such as those related to the development of basic infrastructure to facilitate market access and enhance competitiveness; (iii) capacity building in agro-industrial sectors, including certification and compliance systems; (iv) benchmarking; (v) support for private sector development; (vi) providing linkage to financing sources; (vii) promoting a forum for public and private sector dialogue and partnership; (viii) encouraging regional economic integration; etc.

If required by the local situation, the UNIDO expert team can be fully responsible for overseeing the formulation of value chain projects and the process of outcome and knowledge management. However, the team may also limit its interventions to providing technical assistance to an existing department (or coordinating group) within the recipient country serving as the lead agency for implementing the upgrading strategy. Obviously, such an agency should include representatives from the value chain business community (operators and service providers) as well as those of supporting entities (government, financial institutions, donors).

Given its international status, UNIDO also influences the active and open participation of private sector actors in value chain projects. Understandably, private companies are not always willing to reveal the way they operate, especially to government agencies and public institutions. UNIDO's presence may reassure these companies in terms of confidentiality and the importance of their participation. As a neutral agency, UNIDO is well placed to broker partnerships among various public and private sector actors in the agro-value chains of interest. Their regular interaction and collaboration is essential to the successful implementation of upgrading strategies.

## 2.6 Implementation of upgrading strategies

The implementation of the upgrading strategy varies from one value chain to another. Each value chain is an individual case with its own particular characteristics, but in general, the implementation of the upgrading strategy is a long-term process requiring the commitment of all parties. It involves securing and putting into practice on schedule the contributions agreed upon by all partners. It relies on the synergies established among them, their common objectives and coordinated decision making and action. Any delay in implementation, particularly in the removal of barriers or the mobilization of means, can jeopardize the achievement of objectives and expected results.

In the process of implementation, it is important to establish a good climate based on motivation and profit-sharing among all chain operators. This involves: (i) bringing chain actors together and enabling them to organize themselves and take action; (ii) a transparent and continuous flow of information and communication on the changes within the chain and the results being achieved; (iii) facilitating resolution of conflicts that may emerge over time and nurturing a common understanding of expectations; (iv) building on existing initiatives or projects and focusing on implementing quick-start activities as a means of gaining the full commitment of chain actors. Taking into account the opportunities and constraints identified in the value chain, such activities may include:

- Reorganizing the value chain structure in order to reduce costs and improve productivity.
- Stimulating sales and marketing activities.
- Introducing a quality management system and computerized systems for better management processes.
- At the technical level, progressively introducing and improving flexible production systems to permit an efficient adaptation and rapid reactions by the chain to the uncertainties and risks posed by the environment and the market.
- Personnel training and skill development to carry out the activities cited above and to ensure greater staff flexibility and mobility. This aspect deserves particular attention due to its impact on productivity and on the performance of individual enterprises.

Subsequently, medium-term upgrading activities can be implemented to consolidate profitability and ensure the long-term competitiveness of the value chain.

The implementation planning should be respected and, where necessary, revised as the upgrading plan is being carried out. At all stages of the upgrading process, the chain



operators should be encouraged to collaborate with the government and other partners, participate in R&D, establish market networks, form sector/producer organizations and develop a self-monitoring mechanism to measure achievements.

## 2.7 Monitoring and impact assessment

Monitoring and impact assessment in value chain promotion projects provide UNIDO and its member states with the means of learning from past experiences in planning, resource allocation and service delivery. These activities ensure accountability by reporting on UNIDO projects to partners, donor governments (taxpayers) and all other stakeholders in value chain development programmes. More specifically, the focus is on reporting on the use of funds and on the extent to which the project achieves its objectives and contributes to Goal One of the Millennium Development Goals: “Eradicate extreme poverty and hunger.”

Furthermore, in a permanently changing economic and market environment, value chain promotion projects require constant vigilance to detect potential risks of failure and adjust strategy and resources (or even expected results) if required. For this reason, there is a need to put in place a rigorous system of monitoring value chain functioning and its positioning within its environment and of assessing if the upgrading process is in fact achieving the expected results or if the strategic vision is still valid.

UNIDO seeks to implement a monitoring and impact assessment system driven by a results-based management (RBM) tool. The concept of RBM is very simple: Whatever we do, we should do it without stopping from pursuing the results we want to achieve. Hence, within the upgrading strategy, it is important to institute a clear and transparent system for documenting results at all stages, from inputs through activities and outputs to outcomes and impacts. This requires designing a functional logical framework to be used for monitoring allocated resources (financial, workforce, time) and project performance and for managing results. Monitoring should include a set of objective indicators and targets accompanied by a description of how attribution/contribution is measured/assessed. For instance, if any attribution for changes at the enterprise level is established, this should be clearly described. The monitoring system should include a method for regularly verifying that change measurements are still reasonably accurate (accounting and financial documents). Also, all assumptions behind an intervention should be clearly outlined, and major public programmes (donor and government) which have contributed to changes must be identified and quantified in financial terms. Objective indicators may be: (i) fewer poor operators; (ii) job creation; (iii) higher profits for operators; (iv) increased production, productivity and trade; (v) lower production costs; (vi) improved access to business development services; (vii) application of standards regulating product quality and safety; (viii) new investments; etc.

Given the emphasis on poverty reduction and regardless of the specific characteristics of the target chain, UNIDO's value chain interventions can be grouped into three broad categories: (i) interventions aiming at improving policy frameworks; (ii) interventions aiming at strengthening support bodies and structures; and (iii) direct support to chain enterprises/service providers. The expected impacts are improved economic and social conditions for the chain operators, that is, higher real incomes for the poor and higher value added. Figure 11 below illustrates a poverty reduction model based on net increases in real income.

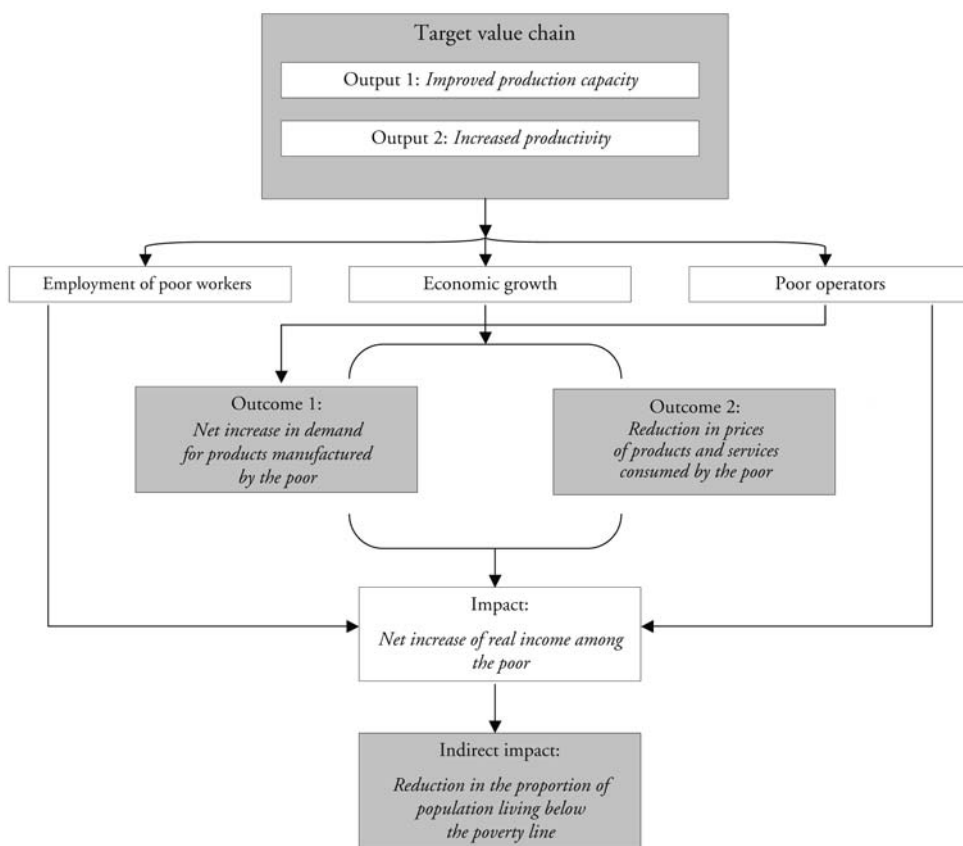


Figure 11. Poverty reduction model based on net increases in real income (UNIDO/EVA, 2008).

## Part III. UNIDO assistance in value chain development

UNIDO initiatives are firmly rooted in the premise that the private sector constitutes the driving force of industrial growth in virtually all countries, and that it can play a crucial role in meeting the Millennium Development Goals. The Organization focuses on private sector development (PSD) solutions to promote agro-value chains. To function successfully, these chains require a growth-fostering environment, including easy access to business information, technical support services, funding and national and international markets.

To support agro-value chain development, UNIDO applies a strategy that has three main components: (i) assistance in the area of business environment and industrial policy; (ii) support to institutions whose actions have a positive impact on the structure and growth of value chains; and (iii) specific direct interventions at one or more stages of the value chain. The interventions rely on the wide range of development assistance services rendered by the various specialized branches of the Organization. It is the analysis of the targeted value chains that indicates which services should be provided, the links of the chain where they should be brought to bear, and how these specific interventions must be blended with the promotion of an environment conducive to agro-value chain development.

### 3.1 Business environment and industrial policy assistance

UNIDO services in the area of business environment and industrial policy are based on the generic principles of: (i) accepting the central role of the private sector in economic development and poverty reduction; (ii) developing a balanced approach that recognizes both market and government failures; (iii) designing inclusive industrial policies; (iv) organizing search processes and feedback loops together with the private sector rather than relying on “solutions” hammered out in isolated state bureaucracies or development agencies; (v) ensuring a systemic approach to integrating elements at all levels of economic activity; and (vi) customizing policy advice to specific circumstances (instead of using blueprints). The services provided include:

- Advisory and capacity building support to improve the overall business environment. The assistance covers the policy, legal and regulatory dimensions of business environment reform across sectors.
- Designing and implementing specific policies for SME development. Custom-tailored strategies and policies are often needed in order to facilitate access to crucial resources such as finance and information and to encourage a geographically balanced distribution of business activities. Such strategies and policies require the adaptation of legal and/or regulatory provisions and the establishment or upgrading of SME support institutions. UNIDO supports the creation of coherent SME policy frameworks linked to broader economic and social goals.

- Creating and training “pockets of excellence” in strategic government and private sector agencies, called Competitiveness Intelligence Units (CIUs) and composed of highly skilled young technocrats who are equipped with state-of-the-art logistical infrastructure and have direct access to the highest level of policy making and strong links with the private sector.
- Establishing an Industrial Competitiveness Observatory. The Observatory is the cornerstone of the logistical infrastructure set up to support the staff of the Competitiveness Intelligence Unit. A centralized information system provides intelligence to assess global and regional trends in industry and trade, benchmark the performance and capabilities of countries, identify potential sectors/products with high growth prospects and niche markets, monitor progress of programmes and policies and assess their impact.
- Capacity building in support institutions for analysis of industry and trade competitiveness, and value chain studies. This capability provides the hard empirical foundations for public-private sector dialogue, policy formulation and action plans.
- Brokering public-private partnerships at the national and local level. Such partnerships are now a *sine qua non* component of successful industrial policy making and implementation. The presence of an “honest broker” such as UNIDO and its technical experts at meetings of business membership organizations (BMOs) and public institutions will often help to remove any initial reticence or distrust, create a constructive working environment and result in realistic strategies and policies to which both public and private sector institutions can contribute as equal partners.

### 3.1.1 Case profile: Support to SME development in Viet Nam

UNIDO has been providing technical support to strengthen SMEs in Viet Nam since the mid-1990s. Initially, the Organization assisted the Ministry of Planning and Investment (MPI) in drafting the Government Decree on Support to SME Development. The next phase was the establishment of an institutional infrastructure that led to the creation of the Agency for Small and Medium Enterprise Development (ASMED), now known as the Enterprise Development Agency (EDA), and the SME Development Council (SMEDC), both of them national institutions. Links were also established with the country’s 63 provinces. A Five-Year SME Development Plan (2006-2010) was drafted in 2005 with the participation of at least 21 “SME task groups” and 34 business associations. One objective of the Plan is to see the number of registered private enterprises double from 250,000 in 2005 to 500,000 by 2010. If this target is reached, an estimated 2.7 million new jobs will have been created and the export performance of the SME sector will have improved significantly.

To achieve this goal, the Plan defines 45 specific actions, of which 39 aim at improving the regulatory and administrative environment by dealing with issues ranging from business registration and licensing to procedures for bankruptcy registration, accounting and financial reporting, dispute resolution, and access to finance, land and technology.

The cornerstone of the Business Registration Reform project, launched in 2008, is the setting up of an electronic single-point business, tax and registration system. This will help lower the cost of market entry as well as the cost and risks of doing business in Viet Nam since enterprises will be able to obtain valid nationwide information on potential partners. UNIDO also helped establish a government business portal ([www.business.gov.vn](http://www.business.gov.vn)), which contains some 300 user-friendly fact sheets on business licensing and has over 7,000 pages of downloadable legal texts. The portal also provides basic business advice for small businesses and comprehensive information on SME support institutions, policies and programmes.

### **3.2 Enhancing institutional support**

UNDO helps build-up the capacity of institutions that support the private sector. This type of assistance is brought to bear in the following areas:

#### **3.2.1 Improving access to business development services**

Reflecting the international consensus that strong business development service (BDS) markets are preferable to direct, subsidized – and often unsustainable – services at project level, UNIDO stimulates the provision of both industry-wide and sector-specific BDS by private and public institutions. This activity is often a direct result of needs assessments at sector level that identify shortcomings in sector-specific support services and institutions. The scope of this activity is often sub-regional.

#### **3.2.2 Strengthening the role and capacities of business membership organizations**

Well-performing self-help entities in the private sector such as chambers of commerce and industry or business associations at sector level serve as providers and/or brokers of business services to their members and communicate the concerns of business to policy makers, often contributing to mutually acceptable solutions. UNIDO helps to bring BMO management in line with international best practices and to strengthen the core functions of these institutions. The latter may include the installation of business intelligence platforms and the upgrading of capacities needed for an effective participation in public-private sector dialogues.

#### **3.2.3 Compliance with safety, health, quality, and environmental requirements**

Manufactured products must comply with increasingly stringent standards with regard to product quality and safety, health and environmental impact in order to be sold in domestic or export markets. At the national level, government standards, or technical regulations, are developed and promulgated by federal, state and local agencies to address these concerns.

They are mandatory by law. International standards are developed and disseminated by international governmental and non-governmental organizations, such as International Standardization Organization or Codex Alimentarius. They are voluntary standards, but are often required in international trade.

Industry/private/buyer standards can be broken down into three categories: (i) consortia standards, which are often developed by a sector-specific consortium (such as EurepGAP); (ii) civil society standards established as initiatives by non-profit organizations, usually as a response to concerns over social and environmental conditions (e.g., Fair Trade); and (iii) company-specific standards, which are developed internally and apply to the entire supply chain of a company (e.g., Tesco's Nature's Choice in the United Kingdom).

There is an emerging consensus that the multitude of private standards and retailer requirements which now exists has a growing impact on the ability of enterprises in developing countries to participate in global production and supply chains. Exporters, moreover, need proof from internationally recognized institutions that their products comply with these requirements. All this calls for a variety of support services, which are needed at multiple points in the value chain and for a range of actors. UNIDO has developed a comprehensive programme (outlined in Table 7 below) to help developing countries overcome the shortcomings of their standards and conformity infrastructure. The Organization identifies the critical components required for improving the value chain of interest and helps integrate them into a coherent infrastructure, so that effective standard compliance is achieved by the various actors in the chain.

STANDARDS	METROLOGY	PRODUCT TESTING
<ul style="list-style-type: none"> <li>- Establishment or strengthening of standardization bodies</li> <li>- Harmonization of standards at the national and regional level</li> <li>- Assistance to participation in regional and international standard-setting activities</li> <li>- Assistance in developing product conformity mark schemes</li> </ul>	<ul style="list-style-type: none"> <li>- Establishment or strengthening of laboratory capacities for legal and industrial metrology in accordance with industrial and export requirements</li> <li>- Assistance in laboratory networking and inter-laboratory comparisons</li> <li>- Assistance in laboratory accreditation</li> </ul>	<ul style="list-style-type: none"> <li>- Establishment or strengthening of laboratory capacities</li> <li>- Assistance in the harmonization of testing procedures, laboratory networking and inter-laboratory comparisons</li> <li>- Assistance in laboratory accreditation</li> </ul>
CERTIFICATION	TRACEABILITY	ACCREDITATION
<ul style="list-style-type: none"> <li>- Developing national certification capability</li> <li>- Pilot projects for capacity-building on specific standards (ISO 9000, ISO 22000, etc).</li> </ul>	<ul style="list-style-type: none"> <li>- Developing national capacity to comply with EU 'farm to fork' traceability laws</li> <li>- Undertaking pilot projects to promote compliance with traceability laws</li> </ul>	<ul style="list-style-type: none"> <li>- Establishment or strengthening of accreditation bodies</li> <li>- Helping national accreditation bodies to obtain international recognition</li> </ul>

Table 7. Services provided by UNIDO to improve standards and conformity infrastructure.

### 3.3 Specific direct interventions and programmes

#### 3.3.1 Cluster and network development

The UNIDO cluster and network development programme fosters linkages among enterprises as well as collaborative relations with local support institutions. It aims to promote collective efforts so that SMEs combine their strengths and jointly take advantage of market opportunities or solve common problems. The methodology used enhances cooperation among producers located in close proximity to each other, both in terms of improved logistics and information exchange. The UNIDO methodology involves the following steps:

- Cluster selection, which entails the identification of the cluster(s) to be assisted.
- Diagnostic study – an action-oriented analysis of strengths, weaknesses, opportunities and threats.
- Vision building and action planning – the formulation of a vision and a corresponding development strategy shared by the entire cluster.
- Implementation – the management and coordination of activities outlined in the action plan, including the establishment of horizontal and vertical networks.
- Monitoring and evaluation of the qualitative and quantitative outcomes of the project.

This methodology helps trigger the process of cluster development. To make it sustainable over time, UNIDO works with local institutions to strengthen their capacity to assume leadership of the process and support cluster firms in their future endeavors.

UNIDO has designed a number of tools that are applied as components of a cluster development project or stand-alone measures, some of which may be appropriate for the value chain of interest. They include: cluster mapping, the formulation of a taxonomy of existing clusters in a region or country; awareness raising initiatives to sensitize promoters of cluster development; training for policy makers, project managers and policy advisors involved in cluster development; study tours to expose cluster members to organizational forms, policies, institutional arrangements and technologies adopted by other dynamic clusters; cluster twinning initiatives, including business-to-business networks, inter-institutional partnerships and alliances among cluster associations; development of horizontal and vertical networks and export consortia; monitoring and evaluation of networks and cluster development programmes; training and support for the introduction of corporate social responsibility (CSR) practices.

### 3.3.2 Case profile: The 13-year milestone – cluster development in Nicaragua

Small and medium enterprises play a central role in the economy of Nicaragua. Approximately 93% of the industrial sector consists of SMEs, firms that contribute by far the largest share of employment and income. However, Nicaraguan SMEs are often unable to capitalize on growth opportunities. Due to their small size and limited resources, they are trapped in a perpetual predicament of low productivity, cut-throat competition and near-poverty. In 1995, in order to boost the development potential of SMEs, UNIDO started promoting horizontal and vertical business networks seeking to facilitate economies of scale and improvements in efficiency and product quality, and to enhance market access. Lessons learned and good practices identified during project implementation led to a shift in focus from support to business networks to promotion of clusters, geographically defined business systems where firms specialize in the same or related production activities.

Between 2003 and 2005, eleven clusters received UNIDO assistance in the ceramics, cocoa, wood furniture, leather, and dairy sectors. Working together and linking up with support institutions, cluster SMEs reduced production and marketing costs, modernized their production techniques, introduced environmentally friendly production processes, improved product quality and increased their overall efficiency – outcomes that are mostly out of reach for individual enterprises.

More recently, between 2005 and 2007, the assistance provided by the Organization focused on the development of institutional capacities and skills to ensure the application of the cluster approach beyond the end of the project. National and local policy makers were sensitized in this respect and seven universities received support in the formulation of curricula addressing cluster development. In addition, intermediary institutions such as business associations and NGOs were trained to use the UNIDO methodology for network and cluster development and are now providing assistance to the eleven clusters initially supported by UNIDO.

The project ended in 2008, thirteen years after UNIDO's first initiative as a provider of support to Nicaraguan SMEs. Now, the promotion of SME networks and clusters is further carried out as an important strategy for private sector development, and the improvements achieved by the assisted clusters have induced private investment and have attracted funds from other donors.



### 3.3.3 Entrepreneurship development

UNIDO's Rural and Women Entrepreneurship (RWE) Programme contributes to poverty reduction through entrepreneurship projects that focus on rural development and gender equality. These are important elements of UNIDO interventions in agro-value chains, since the initial stages of such chains take place in rural areas and women are often involved in post-harvest operations.

The main objectives of this Programme are to create a business environment that encourages the initiatives of rural, young and women entrepreneurs, and to enhance the human and institutional capacities required to foster entrepreneurial dynamism and increase productivity. The Programme focuses on: (i) strengthening the public administration in ways that make the regulatory and administrative environment more favourable to rural, young and women entrepreneurs; (ii) developing human resources to facilitate competitive entrepreneurship, technology absorbing capacities and women's control in asset management; and (iii) fostering policy advocacy and collective self-help capacities among rural, young and women entrepreneurs.

### 3.3.4 Support to small and medium agro-enterprises

Current trends such as global and regional economic integration, urbanization, privatization and the reduced role of national governments entail both opportunities and threats for agro-industries. Penetration of the market economy into isolated areas opens up opportunities for the production and processing of new goods. However, this also poses great challenges, particularly to developing countries, where the agro-industrial sector is facing increasing competition and market volatility. These challenges confront governments and support institutions that have to make fundamental changes in policies, strategies, workforce skills and organizational linkages to respond to developments in the world markets and to promote sustainable employment in the agro-industrial sector. Support institutions such as design and technology centres, professional associations, non-governmental organizations and private consultancy companies are at present staffed by people who are often insufficiently familiar with the requirements of regional and international markets.

It is in this context that UNIDO seeks to facilitate the strengthening of agro-industrial linkages that improve opportunities for added value and serve as effective means of achieving economic transformation and sustainable livelihoods. The scope of this assistance goes beyond urban agro-industries to reach poor and marginalized rural populations as well as communities in post-crisis situations with services such as emergency supplies of agro-equipment and the rehabilitation of industries. The services provided cover the following

key areas: (i) advice on techno-economic development options for strengthening the agro-industrial sector and fostering the equitable integration of SME's into market-oriented systems – special emphasis is given to technical feasibility studies, assessments of potential economic and environmental impact, international procurement and organizational linkages; (ii) capability building at institutional and industry levels as a key means of enhancing industrial productivity and marketing performance – particular attention is paid to strengthening technical support institutions and professional associations as well as to the creation of design and technology centres and demonstration units for basic and advanced technologies; and (iii) support to traditional agro-industries to improve their productivity and efficiency and increase their integration into global value chains and promote rural livelihood diversity.

### **3.3.5 Case profile: Integrated support to Ethiopia's leather industry**

In 2003, the Government of Ethiopia launched its Industrial Development Strategy, which singled out the leather and leather products sector as one of the main beneficiaries of the new policy. Ethiopian leather exports have recently exceeded US\$75 million per year, and their growth potential is substantial. Government estimates for shoe production alone point to an increase from 6.4 million pairs in 2005/06 to 20 million pairs by 2010, and shoe exports are expected to reach a total value of US\$300 million in 2010.

UNIDO has been supporting the Ethiopian leather sector since 1990. The Organization assisted the Ministry of Trade and Industry to prepare a Master Plan to upgrade the leather and leather products industries. The problems to be dealt with were many, from a shortage of high-grade hides and skins (mainly due to parasites and inadequate slaughtering infrastructure) to daunting difficulties faced by firms trying to acquire up-to-date technology and high-quality designs. Equally significant were the low levels of productivity caused by a lack of skilled labour at all stages of the value chain.

With extensive interventions in the entire leather value chain, UNIDO has been for almost two decades the Ethiopian Government's main partner in this undertaking. Its support is largely credited with such achievements as:

- The establishment of the Leather and Leather Products Technology Institute, which now offers complete courses in tanning, leather technology and shoemaking as well as short-term skill upgrading training for employees.

- The establishment of treatment plants for tannery effluents.
- Successful export promotion campaigns for leather products.
- Assistance to clusters of small footwear producers in Addis Ababa to benefit from a high concentration of shops that sell locally manufactured shoes.
- Lucrative subcontracting, mostly with Italian and German companies, to enable the Ethiopian leather sector to access the global value chain (the footwear value chain being buyer-driven, major buyers with core competences in branding and marketing are the driving forces and door-openers in the chain).
- A better image of Ethiopian leather products as a result of a “Made in Ethiopia” marketing campaign (the Ethiopian brand Taytu, for example, was quite successful at a Paris fashion show).

### 3.3.6 Case profile: Adding tasteful value to Ecuador’s top-grade cocoa

In the late 19th century and through the first half of the 20th, cocoa was Ecuador’s most lucrative export, and many of the country’s major roads and railways were built with revenues from the sale of *pepitas de oro*, as the cocoa beans came to be known. But Ecuador really made its mark once many of the leading European chocolatiers developed a legitimate fondness for its unique *cacao nacional* (or *arriba*), one of very few cocoa varieties capable of giving an exquisite flavour to the blends used primarily in the making of fine dark chocolate.

With the world’s sixth largest total area planted with cocoa, Ecuador is still a major producer of this important commodity. However, it exports mainly raw cocoa beans, including small quantities of the top-grade *arriba*, while the value of intermediate products (such as cocoa butter and cocoa powder) and chocolate is three times higher and their prices are less volatile than those of cocoa beans.

The Agri-Business Development Branch of UNIDO designed a project with a clearly stated objective: to establish a model small chocolate factory specialized in fine products featuring premium Ecuadorian cocoa. Another strategic decision made by UNIDO was to choose as its local partner an organization (Ce-Mujer) with a sound record as a champion of women’s advancement.

During the next two years, some forty women came to master the craft of the artisan chocolatier using state-of-the-art tempering and coating equipment procured under the project. The skills and a fair amount of otherwise jealously guarded business secrets were imparted initially by a UNIDO expert.



Figure 12. Fine chocolate produced by a small enterprise established with UNIDO support in Quito, Ecuador. The company uses high-quality *arriba* cocoa and local exotic fruit.

To secure the all-important supply of high-quality couverture (large slabs or blocks of “base” chocolate used as raw material by chocolatiers and pastry chefs), UNIDO brokered a partnership with industry giant Nestle, whose significant presence in Ecuador was largely focused on R&D projects involving *arriba* blends.

The all-female enterprise adopted the name of one of Ecuador’s most famous cocoa plantations at the beginning of last century, La Carmela, and set up shop in a restored colonial building in Old Quito’s La Tola district. A project extension allowed UNIDO to provide crucial marketing assistance that included designing original packaging and the production of advertising material.

### 3.3.7 Supplier development

Growing competition within the global economy has for many years been forcing enterprises to reduce their costs. However, traditional approaches have been limited to eliminating wastage within an enterprise. Now, outsourcing offers new possibilities. Cooperation with subcontractors makes them more efficient and allows them to sell their contributions at lower prices. For their cooperation to be effective, suppliers and subcontractors have to address specific problems relating to their production costs, product quality and timeliness. UNIDO supports programmes that assist subcontracting firms

or suppliers with advice and services provided by industrial subcontracting and partnership exchanges (SPXs), which improve their skills, capacities and, primarily, their competitiveness.

In its value chain interventions, UNIDO utilizes its Subcontracting Exchange Programme, which facilitates the exchange of information and orders between buying and selling companies in 32 countries. An SPX is a centre for technical information and promotion and matching of capacities, processes and production or industrial service specialities. Its basic purpose is to help bring together enquiries for and offers of subcontracting work and outsourcing. It also offers services that can ensure the effective operation and continuity of partnerships, such as solving problems regarding quality, delivery times, etc., or providing investment advice.

Supplier development is a broad concept. The general purpose is to strengthen the performance of subcontracting firms not only by enabling them to acquire the skills and capacities required by the main contracting (or client) enterprise, but also by raising their awareness and assisting them in reducing their costs. UNIDO's programme provides the necessary assistance to supplier firms with regard to cost control, pricing policy, technological improvements, quality management, certification, internal enterprise organization, logistics and the environment. Table 8 below outlines the stages of the programme methodology, which is adapted for use in value chain interventions.

- |   |
|---|
| <ul style="list-style-type: none"> <li>- Publicizing the programme.</li> <li>- Selecting main contractors.</li> <li>- Analyzing client needs and subcontracting/supplier requirements.</li> <li>- Selecting subcontractors/suppliers.</li> <li>- Surveying suppliers' production/manufacturing processes and productivity.</li> <li>- Analyzing subcontractors' ability to meet main contractors' requirements.</li> <li>- Formulating technical recommendations for carrying out necessary adjustments.</li> <li>- Training suppliers.</li> <li>- Subcontractors' implementation of recommendations and training received.</li> <li>- Analyzing the possibility of establishing partnerships and strengthening existing ones.</li> </ul> |
|---|

Table 8. Ten-stage application of the supplier development programme.

### 3.3.8 Promoting export consortia

Creating the conditions for consortia development is a demanding task. Due to a lack of knowledge and weak institutional and regulatory frameworks, attempts to establish export groups of SMEs in developing countries often fail. As a result, external assistance may be critical to developing sound export consortia. Capitalizing on its long experience in SME cluster and network development, UNIDO has developed a comprehensive service package to help developing countries and transition economies establish and support export consortia. The assistance provided by the Organization focuses on:

- Supporting the creation of export consortia. Groups of SMEs are identified and coached during the whole process of consortium development: identification of common objectives and consortium services to be provided, choice of legal form, development of the business plan and implementation of the first pilot promotional activities. UNIDO assistance is temporary and therefore includes the identification of technical and financial schemes that can ensure the longer-term development of export consortia, and support in preparing requests for access to these schemes.
- Capacity building in public institutions that promote or regulate export consortia. This includes organizing workshops and study tours (that introduce policy makers to the concept), improving the legislative and policy framework, and developing an incentive system.
- Capacity building in private sector institutions that provide assistance in the establishment and operation of export consortia. Business associations, chambers of commerce, regional agencies, export consultants, etc. are made aware of the benefits of consortia and learn how to support their establishment and operation through training, presentations by experts, study tours and benchmarking exercises.
- Skill development for export consortium managers. This includes the provision of information, workshops, discussion fora, best practice demonstrations, meetings with consortium promoters, and demonstration projects showing how consortium participants can overcome distrust and undertake cooperative projects.

### 3.3.9 Case profile: Boosting Morocco's exports

Since 2004, UNIDO, the Moroccan Ministry of External Trade, and the Moroccan Exporters' Association (ASMEX) have been developing export consortia through a project funded by the Italian Government. A national awareness campaign for SMEs jointly organized by various associations and chambers has been conducted by UNIDO experts. Interested firms have been organized in groups and supported in the creation of consortia.

As a result, 15 export consortia now have legal status and nine are under development. More than 100 enterprises, accounting for 14,000 jobs and covering ten industrial sectors in six regions, are actively involved in the project.

All consortia have developed their promotional image (logo, leaflets and catalogues, web sites), have negotiated preferential tariffs with service providers (raw materials, logistics, banking, insurance, etc.) and have participated in trade shows and commercial missions. Some of the consortia have also jointly undertaken a comprehensive modernization and upgrading process, including the organization of a shared training facility, the restructuring of compliance departments, the introduction of a strategic information system, and the development of new products.

Export consortia are considered by the Moroccan authorities to be an effective tool not only for market access but also for SME upgrading and modernization. Institutions such as the Agency for SME development (ANPME) and the Export Promotion Agency (CMPE) provide special assistance and grant preferential treatment to export consortia. In view of their importance to SME development, the Moroccan Government has set up a special fund for export consortia. The fund co-finances start-up tools (leaflets, web sites, office equipment) and promotional activities (fairs, exhibitions and commercial missions) for new consortia for a three-year period.

### 3.3.10 Industrial upgrading

UNIDO considers industrial upgrading as a continuous process by which enterprises and their environment adjust to the requirements of free trade. Enterprises should aim for competitiveness in terms of price, quality and innovation, and must have the ability to follow and assimilate technology and market developments. As illustrated in Figure 13 (overleaf), the Organization's upgrading programme begins with a diagnosis of the enterprise and its environment with respect to competitiveness, product markets and positioning, financial status, technical capacities and managerial skills, especially related to quality management. An upgrading plan is then designed and implemented to improve the performance of enterprises and of the value chain in question. Annex E defines the main components of UNIDO's upgrading programmes.

The upgrading strategy to be employed depends not only on the strengths and weaknesses of the enterprise, but also on opportunities and constraints in its environment. Based on the diagnosis of the enterprise and its environment, three strategies can be used – specialization,

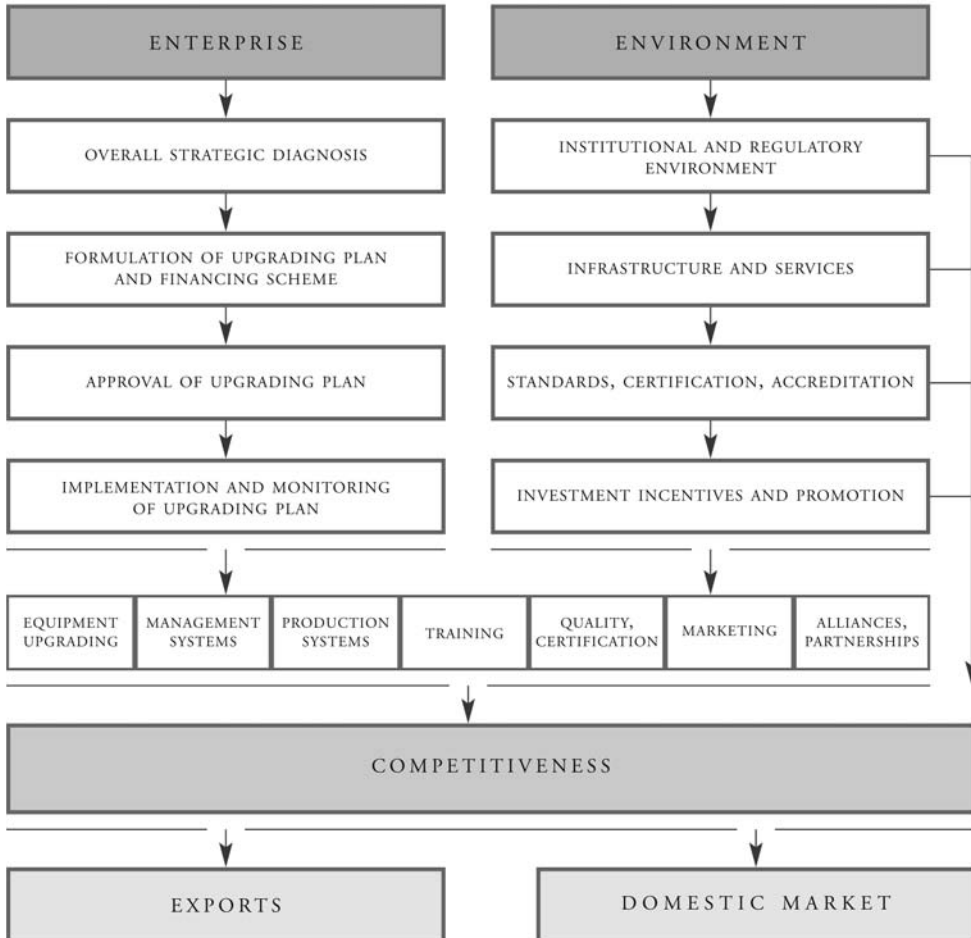


Figure 13. The upgrading process (UNIDO, 2003).

alliance, and flexibility. Agro-value enterprises can adopt an alliance strategy and form partnerships with companies in other countries, so that they can reduce costs associated with selling in foreign markets and concentrate on production processes and quality. In other cases, a specialization strategy can be applied to upgrade production systems for specific quality products. The case of a UNIDO upgrading project for a dairy, outlined in Table 9 (opposite), illustrates the breadth of technical and marketing interventions undertaken.



<i>Action/recommendation</i>	<i>Actual/expected impact</i>
Setting up milk collection centres; organization of milk transport to the dairy; training of milk producers in villages.	Restructuring of the network at national level; purchasing power increase in farming communities; job creation by increasing milk quantity & quality.
Pending an increase in the local production of raw milk, manufacture of dairy products using reconstituted milk.	Increase in the utilization of existing installed capacity from 20% to 50% in 2002 and to 100% in 2003; reduction in imports of finished products; use of reconstituted milk to permit regular flow of fermented milk.
Manufacture of new products such as ultra-high-temperature (UHT) fermented extended-shelf-life (ESL) milk and ESL yoghurts with a wider range of flavours.	Development of new market; increase in sales volume; reduction in imports of finished products; increased possibility of exporting finished products.
Through widespread training of farmers, ensuring that raw milk does not contain antibiotics.	Improved quality of fermented milk and savings on imported ferments.
Refrigeration of raw milk at 4°C from collection to delivery at plant, storage and then heat treatment.	Increased productivity and quality through improved work organization.
Pasteurization of fermented milk at 95°C before processing.	Reduced risk of product deterioration during transport and distribution and increase in life of fresh product.
Homogenization of milk, recovery of cream with 40% fat and transformation into pasteurized processed cream and butter.	Reduced losses, sale of new products and increased productivity.
Provisions for automatic regulation of temperature and concentration of cleaning solutions; provision of a vat to recover water from cleaning-in-place (CIP) system and introduction of automatic sorting; provision of a 20m <sup>3</sup> daily-storage vat with epoxy resin or stainless steel inner lining.	Efficient cleaning of plant, improved quality, reduced losses; estimated 5 m <sup>3</sup> of water saved per day; clean process and CIP water available; reduction in production stoppages caused by water shortages.
Provision of plastic crates to store and distribute products.	Reduced risk of product loss during handling and transport.
Introduction and monitoring of operating modes and quality plans in accordance with Good Manufacturing Practices (GMP) and HACCP.	Consistent and reliable quality of products.

*(continues on overleaf)*

Table 9. UNIDO upgrading project for a dairy in Rwanda (UNIDO, 2003).

Assistance in setting up a marketing system.	Loyal clientele, increased sales, increased market share, committed staff; creation of private integrated agricultural initiative (IAI).
Introduction of the proposed maintenance, hygiene and safety plan.	Introduction of butter packing machine; regular supply to yoghurt and fermented milk packing machines to control production times.
Reduction in volume of water used and processing of waste water; reduction in packaging waste.	Better environmental protection.
Establishment of several sales kiosks for dairy products on a franchise basis.	Increased sales; additional jobs created.

### 3.3.11 Investment promotion

In addition to helping enterprises identify policy, institutional and infrastructural changes required to improve value chain performance, UNIDO assists countries to promote the investments needed to implement changes. This may include facilitating access to loans from development banks for public sector investments and to the more critical financing of upgrading and effective value chain integration of private enterprises.

UNIDO's network of Investment and Technology Promotion Offices (ITPOs) as well as the SPX centres offer services that help countries attract investments (both local and FDI) for financing technological and business development projects. The case profile on the opposite page highlights a recent initiative in which an alliance between UNIDO, through its ITPO in Cairo, and an Egyptian holding company facilitates business plan preparation and upgrading investments in companies operating in agro-value chains in Upper Egypt.

### 3.3.12 Case profile: The Agri-Fund in Upper Egypt

The basic function of the Agri-Fund in Upper Egypt is to enable “post-harvest efficiencies” that maximize the effectiveness of the entire value chain by increasing the volume of consumable products for both local consumption and export. The Fund is also intended to make farming more profitable and reap substantial benefits for itself.

Returns will be captured in two stages, first by capitalizing on the revenues generated by reducing the current harvesting wastage (ranging between 30% and 70%, depending on crop and farm location), and then by leveraging the extensive newly built infrastructure to achieve future regional harvesting growth. An important aspect is UNIDO’s role as the Fund development agency, the provider of project sponsoring and technical assistance.

The implementation and management of the Fund are based on actual mapping of the “farm-to-shelf” value chains of various crops/products which led to the identification of specific chain segments that needed to be enhanced, completed or built. The next step was the development of business plans to be implemented by experts.

The Fund will seek to increase the production capacity of local enterprises as well as to establish new enterprises and capacities to produce a wider range of products along the value chain. The investment objective is to provide investors with exposure to an actively managed portfolio of agri-business projects. The Fund will invest in projects capable to maximize value creation in the entire spectrum of agricultural business.

The Agri-Fund is a win-win proposition for all parties involved. The Fund owners will earn high returns and at the same time address a growing global problem; UNIDO will achieve its development goals by contributing to the welfare of farmers and the environment; and the numerous government agencies involved will deliver on their promise to develop Upper Egypt and raise the living standards of the region’s population.

## Appendix A: Examples of points of entry for value chain analysis

Primary area of research interest	Point of entry	What to map	Examples
The global distribution of income	The final consumer (and recycling) in a sector	Backwards down whole chain to retailers, buyers and producers	In furniture, begin with groups of customers of department and specialist stores in rich countries
Role of retailers	Supermarkets or retail chains	Forwards to type of customer; backwards through buyers, producers and their suppliers	In food, begin with supermarkets
The role of independent buyers	Independent buyers, wholesalers	Backwards to producers and their suppliers in same chain; forwards to retailers	In shoes, begin with specialist buyers; in fruit and vegetables, begin with category buyers
Design	Independent design houses, advertising agencies or large firms with global brands	Forwards to retailers in various final markets; backwards to a variety of producers and their suppliers	In clothing, begin with Prada and the GAP in the volume markets, and with Gucci in haute couture markets
Role of key producers	Large OEMs assembling final products	Forwards to retailing; backwards to suppliers and their suppliers	In autos, Ford; in consumer electronics, Sony
First-tier suppliers	Large firms providing subassemblies to OEMs	Forwards to OEMs and their customers, perhaps in more than one sector; backwards to suppliers and their suppliers	In autos, Magna and Delphi; in computers, to motherboard and monitor manufacturers
Second-tier and third-tier suppliers	Generally small firms	Forwards to customers in a variety of sectors; backwards to suppliers and their suppliers	In food, to firms printing packaging materials; in banking, to providers of software modules
Commodity producers	Generally large firms	Forwards to producers, buyers and final markets; backwards to machinery and input suppliers	In copper, to major buyers at London Metal Exchange and to suppliers to the telecom sector
Agricultural producers	Farms	Forwards to processors, buyers and their customers; backwards to input suppliers	Fresh vegetables to salad packers and category buyers in final markets
Small firms and farms	Small farms, industrial SMEs	Buyers in a range of value chains; input suppliers	Handicraft suppliers to exporters; small farms to processing plants
Informal economy producers and traders	Home-based workers, street traders	Forwards to processors, assemblers or third party organizers/distributors; backwards to retailers	Outsourcing in clothing and shoes; recycling cardboard cartons to mills; street-based tourist handicrafts
Gender, age and ethnicity	Female labor	Use of female labor throughout value chain	In clothing, women in cotton farms, factories, export agencies, design houses, advertising agencies, retail stores

Source: Kapinsky and Morris, 2001

## Appendix B: Checklist for analyzing market structure and characteristics

VALUE CHAIN	
<b>1. MARKET DEFINITION (PRODUCT GROUPS, REGIONS)</b>	
<b>2. STRUCTURE OF THE TARGET MARKET</b>	
<b>PRODUCT</b> Scope of product mix Depth of product mix Quality Design Packaging Maintenance Service	<b>PRICE</b> Price positioning Rebates and conditions of payment Financing conditions
<b>PROMOTION</b> Advertising Public relations Personal sale Sales promotion Brand policy	<b>PLACE</b> Channels of distribution Distribution density Lead time Stock Transport
<b>3. ANALYSIS OF THE MARKETING SYSTEM</b>	
Branch structure	Name of suppliers of goods and services Heterogeneity of suppliers Types of enterprises offering products or services Organization of the branch (associations, etc.)
Customer structure	Names of customers Types of customers
Employment and competition	Utilization of installed capacities Action against competitors
Principal means of competition	Quality Product assortment Advertising Pricing Terms of delivery
Structure of distribution	Geographical distribution Channels of distribution
<b>4. ANALYSIS OF MARKET CHARACTERISTICS</b>	
<b>QUANTITATIVE DATA</b> Market volume Position in the market life cycle Saturation of the market Growth rates (absolute values and annual %) Partial market Stability of demand	<b>QUALITATIVE DATA</b> Structure of customer needs Purchasing motives Purchasing process, attitudes (relative to information) Intensity and strength of competition

**5. ANALYSIS OF COMPETITORS**

GENERAL INFORMATION ABOUT COMPETITORS

- Total sales
- Sales in most important segments
- Total market share
- Market shares in most important segments

TOTAL MARKETING EXPENDITURES

FIRST STEP:

- What are the aims of competitors?
- How do competitors behave?
- How do competitors assess their own situation?
- What are the strengths and weaknesses of competitors?

SECOND STEP: MAIN STRENGTHS AND WEAKNESSES OF COMPETITORS

	<i>Assessment relative to own value chain</i>			
	<i>Worse</i>	<i>Equal</i>	<i>Better</i>	<i>Notes</i>
PRODUCT				
Scope of product mix				
Depth of product mix				
Quality				
Design				
Packaging				
Maintenance				
Service				
PRICE				
Price positioning				
Rebates and conditions of payment				
Financing conditions				
PROMOTION				
Advertising				
Public relations				
Personal sale				
Sales promotion				
Brand policy				
PLACE				
Channels of distribution				
Distribution density				
Lead time				
Stock				
Transport				

6. VALUE CHAIN INTERNAL ANALYSIS			
<i>Factor</i>	<i>Strengths</i>	<i>Weaknesses</i>	<i>Conclusions</i>
MARKETING Market performance Price performance Promotional distribution  PRODUCTION Facilities Capacities Productivity Availability of supplies  RESEARCH AND DEVELOPMENT Activities Know-how Patents, franchises  FINANCE Capital volume and structure Reserves Financing potential Working capital Liquidity Capital turnover Investment intensity  PERSONNEL Employee qualifications Human relations Social benefits  MANAGEMENT ORGANIZATION Information Planning control Clear organizational development			

*Note: This checklist highlights some of the most important areas that are generally subject to internal analysis. As it is impossible to establish an even fairly complete list, a "custom-tailored" questionnaire must be prepared for each individual case and with the assistance of experts.*

## Appendix C: Selected UNIDO guidelines and tools

### **The International Yearbook of Industrial Statistics, 2009**

The Yearbook is the only international publication providing economists, planners, policy makers and business people in general with worldwide statistics on current performance and trends in the manufacturing sector. It is intended to facilitate international comparisons relating to manufacturing activity and industrial development and performance. It provides data which can be used to analyze patterns of growth and related long-term trends, structural change and industrial performance in individual industries. Statistics on employment patterns, wages, consumption and gross output and other key indicators are also presented.

<http://www.unido.org/index.php?id=03544>

### **UNIDO Database of Industrial Statistics, 2009**

INDSTAT4-Rev.3 contains time series data on selected data items from 1990 onwards. The data are organized at the 3-digit and 4-digit levels of ISIC (Revision 3) for the manufacturing sector, which comprises 151 manufacturing categories.

<http://www.unido.org/index.php?id=03533>

### **UNIDO Industrial Demand-Supply Balance Databases, 2009**

In addition to offering sets of production-related industrial statistics, such as INDSTAT3 and INDSTAT4 databases, UNIDO makes its Industrial Demand-Supply Balance Databases (IDSB) available to external users. These databases for industrial output, trade and apparent consumption are available on CD-Rom.

<http://www.unido.org/index.php?id=100311>

### **A Roadmap to Quality: An e-Learning Manual for Implementing Total Quality Management, 2007**

This is a manual on implementing Total Quality Management (TQM) in enterprises. Its 20 units with over 160 short texts provide clear practical guidelines for the full range of management activities – from managing company policy to keeping the workplace clean and tidy. Learning activities help relate the guidelines in each text to the actual situation in a particular company, and facilitate the preparation of well-structured implementation plans.

[http://www.unido.org/fileadmin/media/documents/pdf/tcb\\_roadmap\\_to\\_\\_qualitiy\\_vol1.pdf](http://www.unido.org/fileadmin/media/documents/pdf/tcb_roadmap_to__qualitiy_vol1.pdf)

[http://www.unido.org/fileadmin/media/documents/pdf/tcb\\_roadmap\\_to\\_\\_qualitiy\\_vol2.pdf](http://www.unido.org/fileadmin/media/documents/pdf/tcb_roadmap_to__qualitiy_vol2.pdf)

### **Food Processing Toolkits, FAO/UNIDO, 2007**

This CD-ROM is a practical guide that can be used by small and medium-scale food processors, primarily in developing countries. Each section contains a wide range of practical information and technical details that processors need when they establish or wish to improve food processing enterprises. Also included on the disc is the “mini-agriventure” software that can guide users through the entire process of data entry and analysis required in the formulation of an agro-industrial investment project.



**Product Quality: A Guide for Small and Medium-Size Enterprises, 2006**

This guidebook seeks to help small and medium-size enterprises and other interested users to understand in simple terms how to control product quality. The guide also includes various third-party schemes for product certification and pre-shipment inspection and explains how the WTO agreement on Technical Barriers to Trade (TBT) can facilitate the product conformity assessment procedures.

[http://www.unido.org/fileadmin/media/documents/pdf/tcb\\_product\\_quality.pdf](http://www.unido.org/fileadmin/media/documents/pdf/tcb_product_quality.pdf)

**Role of Measurement and Calibration in the Manufacture of Products for the Global Market: A Guide for Small and Medium-Size Enterprises, 2006**

The purpose of this guidebook is to help small and medium-size enterprises and other interested users to understand the important role played by measurement and calibration in securing the competitiveness of products manufactured for the global market.

[http://www.unido.org/fileadmin/media/documents/pdf/tcb\\_role\\_measurement\\_calibration.pdf](http://www.unido.org/fileadmin/media/documents/pdf/tcb_role_measurement_calibration.pdf)

**Role of Standards: A Guide for Small and Medium-Size Enterprises, 2006**

The purpose of this guidebook is to help small and medium-size enterprises and other interested users to understand in simple terms the development and implementation of company, national, regional and international standards, including the technical barriers to trade that arise from standards and technical regulations.

[http://www.unido.org/fileadmin/media/documents/pdf/tcb\\_role\\_standards.pdf](http://www.unido.org/fileadmin/media/documents/pdf/tcb_role_standards.pdf)

**Code of Conduct for Industrial Subcontracting, Supply and Partnership Relations, 2006**

The growing use of industrial subcontracting has encouraged the development of a new concept of subcontracting relationships. It has also demonstrated the importance and necessity of transforming a relationship that started out as unbalanced and unequal into one that is more balanced and more sustainable. To ensure that all parties of a transaction are fully aware of their responsibilities, this code of professional ethics can play an important regulating and moderating role as it outlines certain general principles of good business conduct observed by UNIDO in various countries.

[http://www.unido.org/fileadmin/import/49144\\_Code\\_of\\_conduct\\_E.pdf](http://www.unido.org/fileadmin/import/49144_Code_of_conduct_E.pdf)

**A Guide to Export Consortia: Development of Clusters and Networks of SMEs, 2005**

Due to a lack of knowledge and preparation, many attempts to establish export groups of SMEs have failed. Emerging economies in particular lack experience as well as the institutional and regulatory framework to promote and support SME consortia. This guide provides an overview of the main aspects which must be considered to ensure the successful operation of export consortia as viable alliances. It seeks to help those involved in the creation and development of export consortia, such as promoters, support institutions and policy makers.

[http://www.unido.org/fileadmin/user\\_media/Services/PSD/Export\\_Consortia/GuideExportConsortia.pdf](http://www.unido.org/fileadmin/user_media/Services/PSD/Export_Consortia/GuideExportConsortia.pdf)

**Investment Project Preparation and Appraisal: Teaching Materials, 2005**

This CD contains seven teaching materials for a training programme in investment project preparation and appraisal. The materials cover analysis and appraisal of new and expansion investment projects from the

point of view of direct stakeholders such as investors, financiers, guarantors and suppliers. The scope of investment analysis is comprehensive, linking the commercial with the larger external environment in which a project is to function. The teaching materials are organized in Seven Modules: 1) Overview; 2) Market Analysis and Marketing; 3) Technical Analysis; 4) Financial Analysis; 5) Economic Analysis; 6) Expansion/Modernization Projects; and 7) Project Appraisal.

<http://www.unido.org/index.php?id=o3698>

#### **How to Start Agro-Food Industries, second edition, 2004**

This is a CD-ROM intended to assist users in directing agro-industrial strategy and in making technological as well as economic choices. It includes general and specialized information classified in files of different and complementary levels.

#### **Partnerships for Small Enterprise Development, 2004**

This report documents 21 cases of innovative partnership approaches by large corporations in support of small and medium-size enterprises (SMEs). These cases provide concrete suggestions to multinational corporations as to how to increase their support to and engagement with SMEs in developing countries in furtherance of their commercial and corporate social responsibility objectives.

[http://www.unido.org/fileadmin/user\\_media/Services/PSD/Clusters\\_and\\_Networks/business\\_partnerships/Partnerships\\_for\\_Small\\_Enterprise\\_Development\\_-\\_A\\_Joint\\_UNDP-UNIDO\\_Publication\\_.pdf](http://www.unido.org/fileadmin/user_media/Services/PSD/Clusters_and_Networks/business_partnerships/Partnerships_for_Small_Enterprise_Development_-_A_Joint_UNDP-UNIDO_Publication_.pdf)

#### **UNIDO Manuals on Preparing Industrial Feasibility Studies and Evaluating Industrial Projects**

This CD-Rom contains six UNIDO publications: Manual for the Preparation of Industrial Feasibility Studies; Manual for Small Industrial Businesses: Project Design and Appraisal; Guide to Practical Appraisal: Social Cost-Benefit Analysis in Developing Countries; Manual for the Evaluation of Industrial Projects; Practical Appraisal of Industrial Project Applications: Social Cost-Benefit Analysis in Pakistan; and Guidelines for Project Evaluation.

<http://www.unido.org/index.php?id=o3698>

#### **Computer Model for Feasibility Analysis and Reporting COMFAR III**

The COMFAR III Product Palette consists of three fully data-compatible software products developed by UNIDO (<http://www.unido.org/comfar>):

- **COMFAR III Expert** is a software which facilitates the financial and economic appraisal of investment projects. It allows users to simulate the short-term as well as the long-term financial situation of industrial and non-industrial investment projects, from new investments to rehabilitation, expansion, privatization and joint-venture projects.
- **COMFAR III Business Planner** offers the full functionality of COMFAR III Expert with the exception of the economic cost-benefit module (macroeconomic appraisal).
- **COMFAR III Mini Expert** is a software for those financial analysts particularly interested in the preliminary assessment of investment opportunities from a purely financial point of view.

**Guide to Supplier Development – for programmes to be implemented by industrial subcontracting and partnership exchanges (SPXs), 2003**

The Guide aims to assist subcontracting firms, through the advice and services provided by industrial subcontracting and partnership exchanges (SPXs), in their effort to improve their skills, capacities and, primarily, their competitiveness. It defines the support to be provided to subcontracting firms with regard to cost control, pricing policy, technological improvements, quality management, certification, internal enterprise organization, logistics and the environment.

[http://www.unido.org/fileadmin/import/9607\\_GuidetoSupplierDevelopment.pdf](http://www.unido.org/fileadmin/import/9607_GuidetoSupplierDevelopment.pdf)

**Methodological Guide: Restructuring, Upgrading and Industrial Competitiveness, 2003**

This methodological tool was designed for the heads of industry in developing countries and economies in transition and for consultants offering specialist advice in restructuring and industrial upgrading. The first part of the Guide describes UNIDO methodology in the areas of strategic diagnosis, enterprise restructuring and upgrading, and adjustments in the economic environment. The second part presents a number of successful experiments and programmes designed and implemented by UNIDO in close collaboration with the authorities of a number of countries.

[http://www.unido.org/fileadmin/media/documents/pdf/tcb\\_methodological\\_guide.pdf](http://www.unido.org/fileadmin/media/documents/pdf/tcb_methodological_guide.pdf)

**Partnership Guide, 2002**

Partnerships can be defined as structures for joint action in which complementary resources can be tapped and different interests can be balanced while the parties involved retain full independence. The Guide is intended to serve those actors in the public and private sector who may become involved in a UNIDO business partnership for industrial development.

[http://www.unido.org/fileadmin/user\\_media/Services/PSD/Clusters\\_and\\_Networks/business\\_partnerships/Partnership\\_Guide.pdf](http://www.unido.org/fileadmin/user_media/Services/PSD/Clusters_and_Networks/business_partnerships/Partnership_Guide.pdf)

**Integrating SMEs in Global Value Chains: Towards Partnerships for Development, 2001**

This document helps establish a sound conceptual basis for UNIDO's partnership programme with the business community. It surveys the changing role of the private sector in economic and industrial development, reviews how the formation of TNC-SME linkages and the insertion of SMEs into global value chains can contribute to SME development, and assesses the measures that national and multinational bodies such as UNIDO can take to promote such development in partnership with the business community.

[http://www.unido.org/fileadmin/user\\_media/Services/PSD/Clusters\\_and\\_Networks/business\\_partnerships/Integrating\\_SMEs\\_in\\_Global\\_Value\\_Chains\\_Towards\\_Partnership\\_for\\_Development.pdf](http://www.unido.org/fileadmin/user_media/Services/PSD/Clusters_and_Networks/business_partnerships/Integrating_SMEs_in_Global_Value_Chains_Towards_Partnership_for_Development.pdf)

## Appendix D: Value chain mapping conventions

Mapping conventions yield a basic map for subsequent analysis and development. From this basic framework, different maps can be developed.

- Value chain maps can be made at various scales (depending on the nature of analysis, more or less detail may be needed). Parts of a value chain map can be exploded out to provide greater detail, particularly when maps are used to show information such as costs, employment or wages in different parts of the chain.
- Overly detailed maps prevent identification of significant characteristics and relationships in the chain.
- Different aspects of value chains can be mapped onto the basic outline. Such aspects are firm size, value added, wage levels, information flows, and points of compliance with standards.

The following is one way of mapping a value chain:

1. Select the value chain.
2. Identify not more than six main activities between the start of the production process and sale to the final customer. Work horizontally from left to right so that final outlets will border on the right margin.
3. Identify distinct marketing channels or final outlets (supermarkets, wholesale markets, food processors, etc.). Choose not more than three of these (in some cases there may be just one).
4. Work backwards along the chain and identify the types of firms that carry out each successive function.
5. Define the governance relationship between adjacent enterprises in the chain using the following symbols:
  - a dotted line for an arm's-length market relationship;
  - an unbroken line for a persistent, network relationship between independent firms;
  - a thicker unbroken line for vertical integration (successive stages within a single enterprise).
6. Indicate areas for which adequate information is not available by placing question marks on the map.

Mapping is an iterative process. Having carried out the first six tasks, the level of detail in the map needs to be considered. For instance:

- Are there too few or too many stages?
- Would it be better to explode some stages out, possibly on a separate map?
- Are the end points of the chain correct?
- Are the different marketing channels correctly represented?
- Is the chosen product category causing problems because it is too narrowly or too broadly defined?

Once there is some basic agreement on the adequacy of the map, the next stage is to consider differences between marketing channels and the requirements of different types of end users. For example:

- How does the domestic marketing channel differ from the export channel?
- What are the differing requirements of different types of domestic buyers (large retail, small retail, processors, etc.) and how do they translate into different patterns of chain organization?
- Are there differences in export market characteristics?

This process produces a template that can be used for further value chain analysis. The mapping process itself is a good ice-breaker for stakeholder interaction.

## Appendix E: Outline of a UNIDO upgrading programme

<i>First component</i>	<i>Assistance in the design, implementation and follow-up of a national industrial restructuring and upgrading programme (beneficiary: Ministry of Industry)</i>	<i>Short term</i>	<i>Medium term</i>
<b>Result I</b>	<b>Formulating and assisting in implementation of restructuring and upgrading programme</b>		
Activity 1	Formulation of restructuring and upgrading programme	X	
Activity 2	Designation of steering committee and agency responsible for implementation of programme; identification of other interface agencies and organizations	X	X
Activity 3	Establishment of information and awareness-raising programme	X	X
Activity 4	Training of body of specialists responsible for programme implementation	X	X
<b>Result II</b>	<b>Design and formalization of procedures and regulatory framework</b>		
Activity 1	Formalization of procedures for implementing upgrading programme	X	
Activity 2	Updating legislation or regulations directly concerned with enterprise recovery	X	
<b>Result III</b>	<b>Study for setting up a restructuring/upgrading fund</b>		
Activity 1	Analysis of current situation regarding financing of investment tangibles/intangibles	X	
Activity 2	Study of possibility and feasibility of setting up a restructuring/upgrading fund	X	
Activity 3	Assistance in setting up the fund and drafting mode of operation		X
<b>Result IV</b>	<b>Study for setting up an upgrading performance measurement function</b>		
Activity 1	Identification of needs by means of a survey of actors involved	X	
Activity 2	Definition of a mechanism for inputting, processing and retrieving information; identification of technical, financial and regulatory conditions for its operation	X	
Activity 3	Project approval by steering committee and implementation	X	
<i>Second component</i>	<i>Strengthening capacities of enterprise support systems (beneficiary: support institutions)</i>	<i>Short term</i>	<i>Medium term</i>
<b>Result I</b>	<b>Strengthening capacities of consultancy firms and banks</b>		
Activity 1	Organization of training session on strategic diagnosis and upgrading plan	X	
<b>Result II</b>	<b>Strengthening capacities of standardization, certification and accreditation agencies</b>		
Activity 1	Evaluation of current quality infrastructure with regard to material and human resources	X	
Activity 2	Formulation of a programme for upgrading and strengthening capacities of standardization, certification, metrology and accreditation bodies		X
Activity 3	Assistance to standardization, certification, metrology and accreditation bodies in obtaining international recognition		X
<b>Result III</b>	<b>Strengthening capacities of technical centres</b>		
Activity 1	Evaluation of needs for and availability of technical assistance	X	
Activity 2	Organization of training sessions for staff of technical centres	X	X
Activity 3	Assistance in setting up technical and commercial databases		X
<b>Result IV</b>	<b>Strengthening foreign trade support mechanism</b>		
Activity 1	Evaluation of current status of support mechanism for stimulating exports and access to international market	X	
Activity 2	Formulation of a trade facilitation programme	X	
Activity 3	Assistance in programme implementation	X	X

<i>Third component</i>	<i>Support programme for restructuring and upgrading pilot enterprises chosen from priority sectors (beneficiary: enterprises)</i>	<i>Short term</i>	<i>Medium term</i>
<b>Result I</b>	<b>Upgrading diagnostic report on each pilot enterprise selected</b>		
Activity 1	Diagnosis of products, markets and strategic positioning	X	
Activity 2	Financial diagnosis	X	
Activity 3	Diagnosis of managerial skills	X	
Activity 4	Diagnosis of technical capacities and quality diagnosis	X	
Activity 5	Drafting of diagnostic report	X	
<b>Result II</b>	<b>Choice of upgrading strategy for each enterprise</b>		
Activity 1	Study of possible strategies	X	
Activity 2	Choice of upgrading strategy for each enterprise selected	X	
<b>Result III</b>	<b>Upgrading plan</b>		
Activity 1	Formulation of upgrading plan	X	
<b>Result IV</b>	<b>Direct assistance in upgrading</b>		
Activity 1	Training activities	X	X
Activity 2	Assistance in implementation and monitoring of intangible investments including ISO certification, introduction of hazard analysis and critical control points (HACCP), and identification of partners	X	

## Appendix F: Agro-value chain analysis: Generic terms of reference

These generic terms of reference outline the application of UNIDO's approach to agro-value chain analysis. Given the complexities of agro-value chains and their entrenchment in broader relationships, their evaluation plays a role of utmost importance in improving performance all along the chain. For the very same reason, UNIDO's approach involves synergizing the technical expertise and experience of various technical branches of UNIDO: the Agri-Business Development Branch (AGR), the Industrial Policy and Private Sector Development Branch (PSD), the Trade Capacity Building Branch (TCB), the Environment Management Branch (EMB), and the International Financial Institutions Partnership Unit (IFI).

### The objective of value chain analysis

The objective of conducting a value chain analysis in a particular country (for a proposed sub-sector, commodity or product) is to single out areas of possible performance improvement and consequently design custom-tailored projects to be supported jointly by donors and development partners.

### Team composition

The analysis will be conducted preferably by a UNIDO team of experts selected to cover the major substantive fields of the value chain. Depending on the situation, type and scope of the value chain, the team members should ideally cover the following areas:

- industrial economics (preferably covered by the team leader);
- marketing (dealt with by a market analyst or marketing expert);
- process engineering and technology (covered by a specialist in the particular agro-industry);
- industrial financing and accounting;
- environmental impact assessment.

The team may be assisted on a short-term basis by experts such as sector policy specialists or sociologists, as necessity arises. The team leader's responsibility, in addition to his or her role as a specialist, is to plan, organize, direct and supervise all activities of the team until the value chain analysis is finalized and the upgrading strategy is formulated. The project promoters should be encouraged to actively participate in the analysis of the value chain.

### Details of tasks

By adopting a consultative process, the team shall carry out the value chain analysis by applying the methodology described in this guide. More specifically, the team shall conduct the following key tasks:

### **Task 1: Value chain selection**

The team will facilitate the selection of the value chain to be developed by:

- Identifying the agro-value chains that offer prospects for growth and development based on a desk review of available data; and verifying drivers and constraints of the identified chains, considering the competitors and available performance data as well as the production, trade, and main competitiveness factors impacting the performance of the sector under study (including potential poverty reduction impact).
- Undertaking a brief market assessment to identify local, national and regional trends, market size, supply and demand gaps, imports and exports, distribution networks, etc.
- Reviewing the legal and regulatory environment in which the value chain operates. This review will focus on policies, incentives, available export promotion tools, financing of tangible and intangible capital outlays, training, employment, quality promotion, certification, standardization, competition, research and development, and partnerships.
- Holding consultations with the stakeholders to present initial findings and determine specific value chains appropriate for further analysis. A ranking score table may be used to facilitate the selection process.

### **Task 2: Mapping the value chain**

In consultation with stakeholders, the team will carry out the value chain mapping exercise, which includes:

- Describing the structure and flow of the chain in logical clusters – the various actors of the chain, the links among them, and the whole range of chain operations from pre-production (supply of inputs) to industrial processing and marketing.
- Quantifying the value chain. This involves adding detail to the basic maps drawn initially (structure and flow). Depending on the level of detail needed for the research entry point, this exercise may focus on elements such as: size and scale of main actors; production volume; number of jobs; sales and export destinations and concentration; policy and regulatory framework, etc.
- Holding workshops with stakeholders, including various actors from the entire chain, and presenting findings of the mapping exercise for discussion and agreement prior to moving on to analyze the value chain performance.

### **Task 3: Analyzing value chain activities and performance**

This task is to analyze the performance and competitiveness capabilities of the value chain in the context of national and global trends in the target industry. Thus, the experts will:

- Identify key quantitative and qualitative indicators (time, cost, value added and productivity at each stage) for the selected value chain.
- Analyze the value chain external sources of competitiveness, including its economic and social environment and its industrial and technological environment.
- Analyze the value chain technological capacities, including utilization of inputs, the production system and the products manufactured.
- Carry out an economic performance analysis and benchmarking against potential competitors.



**Task 4: Identifying value chain performance constraints and development opportunities**

This task is to define lacking competitiveness drivers (chain constraints) and analyze opportunities for value chain development. It entails:

- Facilitating the definition of the value chain vision and objectives by taking into consideration the findings of the mapping exercise and of the overall techno-economic assessment.
- Identifying constraints and ranking them by assessing their impact on backward and forward linkages.
- Identifying and ranking potential development opportunities in the chain. This activity may be complemented by a SWOT analysis.

**Task 5: Defining development interventions**

This task establishes the development strategy and entails:

- The formulation of the value chain upgrading strategy, including required interventions and related investments and planning of actions. Recommendations on policy measures and support programmes to be undertaken in order to enhance the competitive performance of the sector should be duly considered. The same applies to support services (technology, financing, investment and export promotion, etc.).
- The clarification of roles and responsibilities for the implementation of the upgrading strategy.
- A validation workshop with stakeholders to present proposed interventions for agreement, including a monitoring and impact assessment system.

**Key deliverables and timetable**

1. A first report on the selection and prioritization of the value chain to be promoted, including the map(s) describing the chain on the basis of the analysis of chain activities and performance and the key constraints and opportunities. This report should be submitted within X months after the beginning of the assignment.
2. A second report on the value chain upgrading strategy, which should define the short-term targets (one year) and medium-term objectives (three to five years). The upgrading strategy should comprise: (i) actions related to tangible and intangible investments (technical assistance, personnel training, etc.); (ii) action details: description, aim, cost, financing, responsibility and duration; (iii) planning of actions for the three subsequent years, year by year, distinguishing between short-term and medium-term actions; (iv) measurable impact of each action (including a means of quantification to measure the situation before, during and at the end of each action); and (v) a summary of action programme recapitulating the cost and financing of each action and of the programme as a whole. The entire upgrading strategy should be drafted in the form of a dossier suitable for presentation to a financing institution (bank or donor), including above all a profitability study for planned investments. This report should be submitted within Y months after the beginning of the assignment.
3. The report mentioned above is to be submitted to validation workshops within the country. The comments made during these workshops will be incorporated in a revised and final report to be submitted Z days after holding the validation workshops.

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