GUIDELINES
FOR VALUE CHAIN ANALYSIS
IN THE AGRI-FOOD SECTOR OF
TRANSITIONAL AND DEVELOPING
ECONOMIES

Prepared for
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EXECUTIVE SUMMARY

Identifying issues that are critical for progress of agri-food chains and designing action plans to embark upon these issues is an important mission for chain actors and support institutions. This is a demanding task; development success depends on a large number of variables.

The objective of the present work was to develop a practical guideline for value chain analysis with the major focus on identifying critical issues impacting the performance of value chains in the agri-food sector of transitional and developing economies. Several methods exist to analyse value chains.

The method that we have designed as foundation for the presented Guidelines departs from existing methods in several ways:

- A strong emphasis is placed on the development process of chain participants, i.e. firms (agricultural producers, processors, distributors etc.) and support institutions (financial institutions, educational institutions, regulatory bodies etc.). We strongly believe that chain development depends on the development strategy of all chain participants. Having a development strategy is a necessary condition, but not a sufficient one. The development strategy must also exhibit some desirable properties. Strategy assessment is a complex, time consuming and costly task. In strategic management literature, a separation is made between content, context and process. A good process is a key factor, as it increases the chance of having a good strategy. It also seems easier to assess the strategy building process of a chain actor, rather than to directly assess the content, i.e. the strategy itself. Thus, it is quite valuable in the long run to concentrate on the process than on its results. We take for granted that a sound process will deliver satisfactory results.

- The business development cycle often used by companies’ strategists is a useful concept. It provides focus on issues that become relevant for successfully moving from one development stage into the next one.

- Successful development of chain actors at each stage also requires adequate external conditions and sufficient coordination with other chain participants. Therefore, in addition to the analysis of chain actors, a second level of analysis must be added in order to investigate the external context and the coordination issues.

- Finally, recent development in strategic management have put most emphasis on value creation, value adding activities and "resources".

The focus of our work is on the identification of critical issues for successful development of agri-food value chains. It is by nature analytical for which three stages are necessary:

1. Gathering Information
2. Identification of critical issues
3. Validation by experts
While designing the method, we kept in mind FAO’s objectives for maximising the use of rare resources (e.g. experts’ time), for simplicity, reliability, comparability, versatility and the further use of the outcomes for policy and strategy design. The method has been standardised into the Guidelines presented in the following pages. We do believe that valuable FAO resources must be allocated preferably to further improvement and maintenance of the method and Guidelines.

The Guidelines identify critical issues one at a time. Due to the systemic nature of a chain, a validation stage, performed by experts, is indispensable to bring together all issues to structure a portrait of the chain, form a diagnosis, design policies and establish a prognosis. We believe that valuable expert time must be devoted to this last stage and much less on the collection and analysis of the data.

While identifying critical issues is an analytical task that can be performed without bias for all type of stakeholders, policy design can be influenced in several ways. Considering a principal-agent analogy, we can conclude that on the one hand, (multiple) principals might rather show an affinity to certain values (time preference, risk preference, etc.), resource management, information and preferred type of actions; on the other hand, the agents’ affinity might be directed to some type of policy, cost of efforts etc.

Relevant questions for the FAO regarding policy design includes: Who are our beneficiaries? How can FAO satisfy the needs of its beneficiaries? These questions are not specific to the FAO or to any other international institution, but they are shared by all agents dealing with "faceless" principals (e.g. companies’ managers dealing with interests of company’s shareholders). Although much energy has been spent on this topic, solutions remain unclear.

Identifying critical issues within the targeted development stream of an agri-food value chain is a necessary mission but not a sufficient one. If the current path pursued by chain actors is not appropriate – e.g. competitive threat from international chains not taken into account –, the chain under investigation might already be in danger. When required, external benchmarks must be brought into play in order to complete the analysis.

The present work was conducted as a joint project between the Food and Agriculture Organisation of the United Nations (FAO, Rome - Italy) and the ESSEC Business School (Cergy Pontoise – France). The project was carried out by a team of the ESSEC MBA Program in International Agri-Food Management in the scope of their final study. A FAO team from the Department of Agricultural Management, Marketing and Finance Service (AGSF) provided technical backstopping.

In the scope of the project, a fieldwork was carried out in Poland in order to verify the hypothesis of the underlying methodology for the Guidelines. The focus was directed on the Polish strawberry and pig meat chain. In the present work, the implementation of the Guidelines is shown on those two examples.
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1 INTRODUCTION

1.1 Introduction to the Guidelines

Increasing integration of the global economy has led to a strong economic growth for a big part of the world’s population. In the food and agricultural sector, globalisation means not only sourcing of agricultural raw materials globally, but also manufacturing of further processed food products on a global scale. For developing countries globalisation, on the one hand, opens up vast opportunities to increase their income, on the other hand, it means growing pressure on remaining competitive among worldwide suppliers. Failure in competitiveness can lead to the breakdown of individual actors, as well as to the end of a whole agri-food sector. Competitiveness therefore is directly related to profitability and requires a high level of efficiency in all activities of the sector. In order to avoid income polarisation among worldwide suppliers of agri-food products, it is essential for developing countries to remain active participants, thus strongly competitive in today’s global economy. However, the interaction of individual actors of an agri-food chain - from producers of agricultural raw materials to processors and distributors - is crucial for the success of the entire sector. It also requires sound policy environment and institutional support in order to enable a sector to grow.

The Food and Agriculture Organisation as the leading institution in the agri-food sector plays an important role to assist transitional and developing economies enhancing the performance of their agricultural sector. With view to this objective, value chain analysis can be used as a powerful tool for improving the decision-making process of private and public policy makers. The presented Guidelines can be distinguished from the traditional sub-sector analysis in the following points:

- Their focus is placed on issues that are critical to development of chains, i.e. moving from the current development stage into the next one
- The analysis is performed at two levels:
  - The chain actor level, i.e. the value creating units along the chain
  - The chain level, i.e. the chain actors’ environment
- They concentrate on inter-linkages within a whole chain and go beyond the boundaries of a firm.

1.2 Purpose of the Guidelines

The main purpose of these Guidelines is to clarify and make explicit the logical process and the analytical techniques used in identifying issues which are critical for agri-food value chains to successfully achieve a targeted development stage:

This requires:
- Identifying the current development stage of the chain: current state
- Identifying the development goal of the chain: target state
- Identifying issues that reduce the ability of chain actors and the chain to move from their current development stage into the targeted development stage
- Classifying issues as “critical” or “not critical” in view of achieving the targeted development stage

It is expected that adequate actions to deal with critical issues will improve chain performance. Sorting issues into “critical issue” and “not critical issue” supports policy makers and chain participants to focus on those issues being most important for the targeted chain development stage. During the design stage of the underlying classification method of the Guidelines, errors by excess have not been minimized. I.e. some “not critical issues” may be incorrectly assigned to the “critical issue” class. In this manner, the impact of “missed” critical issues will be reduced to a minimum.

Using an analogy with the strategic management concept of competitive advantage and its underlying economic logic for firms (or nations), value creation at chain actor level and chain level serves as the main assessment criterion. A strong emphasis has been put on activities (value creating and support activities) and little emphasis on the strategic positioning of the targeted development stage.

The current version of the Guidelines exhibits some limitations:

- Increasing globalisation sometimes imposes strong benchmarks. Even if all critical issues are successfully solved, it may not be sufficient to ensure a world wide competitive advantage for the chain. The current Guidelines do not incorporate such strong external benchmarks. This limitation is problematic for chains which face or will face substantial international competition.

- The second limitation derives from the emphasis put on the process/activities rather than on the content. Although, it seems more valuable in the long run to concentrate on “how things are done?” (Process) rather than on “what is done?” (Content), chain actors’ goals, opportunities, etc. are not directly assessed. I.e. the methods investigate issues affecting the ability to successfully develop the chain around a given opportunity (or a given goal), but not the value of the opportunity (or the goal) itself. Others and more interesting opportunities may be available to chain actors. This limitation is not exceptional, even for well-established and competitive businesses and chains.

1.3 Target Readership

The presented Guidelines are intended primarily for chain analysts from policy making support institutions (including FAO staff and consultants). They may be of value for analysts from various institutions (public sector) and businesses (private sector) which intend to assess challenges faced by a chain. In the public sector, governmental consulting bodies in charge of development, restructuring and modernisation of their national or regional agri-food sector, for example, can carry out this task. In specific regions, a close collaboration among (neighbouring) countries might be valuable to improve the performance of agri-food chains which go beyond national boundaries. In the private sector, large powerful companies, such as multinational food manufacturers or distributors acting as chain drivers, will be devoted to investigating and improving critical issues of agri-food chains when aiming to enter new markets, especially in developing countries in the scope of today’s globalisation.
The first two steps of the Guidelines (structured data collection process and classification of issues into “critical” and “not critical”) can be performed without a specific expertise. The third step (strategy building and validation step) requires value judgment and, therefore, some experience in the field of agri-food chain development. A team of individuals with different areas of specialisation and practical experience in agri-food chains offers the best structure to insure comprehensive, systemic and synthetic views of the chain challenges.

The current Guidelines, still in their infancy, are also meant for academic scholars and business consultants who wish to modify them for other purposes than identifying critical issues for development.

1.4 Structure of the Guidelines

The Guidelines consist of four major parts, represented in the following chapters with the content summarised below:

Chapter 2 provides an overview of the most important methodologies existing for value chain analysis, including the definition for value chains.

Chapter 3 is concerned with the underlying methodology developed for the Guidelines.

Chapter 4 explains the different steps of the Guidelines to perform value chain analysis and their use on two examples, the Polish strawberry & pig meat chain. The examples shown are based on secondary and primary data collection through stakeholder analysis, but also interaction with related support institutions in Poland. The analysis of the two chains is not complete and should serve only to demonstrate the application of the Guidelines.

Furthermore, practical recommendations on the implementation of the Guidelines and a number of indications on resources required are included in chapter 4.

Annexes contain the entire Toolkit for implementing the Guidelines:

Annex 7. Tables for Identification of Performance Indicators and Performance Targets for Critical Issues

Glossary contains definitions of key terminologies used in the Guidelines and the underlying methodology.
2 VALUE CHAIN ANALYSIS – AN OVERVIEW OF METHODOLOGIES

In this chapter, we briefly present different methods existing for value chain analysis. The chapter starts with a definition of a value chain. While studying the following methods, we recommend the reader to keep in mind the purpose of the Guidelines in the present work: Identifying critical issues for value chains in emerging and transitional economies, aiming to achieve a targeted development stage. Some methods (or parts) presented below are useful, alone or in conjunction with others, to delineate the chain, to identify possible factors influencing chain development and value creation or to classify issues as “critical” or “not critical”.

The Guidelines need to provide:
- A delineation of the chain (the entity under investigation) which can be structure, process and/or function oriented
- Identification of critical issues for value chain development which requires:
  o Establishing a list of potential factors affecting development
  o An identification process of those factors (critical issues)

Methods reviewed below can contribute to a better delineation of the chain; help identify potential factors affecting development or the identification process. Methods may also provide the analysts with valuable concepts.

2.1 Definition of a Value Chain

A Value Chain is an economic system which consists of all distribution and supply itineraries used by all producers who aim to sell a similar family of goods competing on the same consumer market. However, a Value Chain can refer to a certain consumer market (e.g. the frozen food chain etc.) or to a certain raw material market (pig meat chain, wheat chain, etc.). In the first definition, the itinerary of the product flow focuses on products from the consumer plate back to the farmer, while the latter focuses on the raw material from the farm to the consumer plate. In the present work, we are concentrating on raw material Value Chains.

According to Kaplinksy & Morris (2000) “Value Chains describe the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.”

In reality, value chains are very complex. Many input supplies are used at the different levels of the chain. For instance, seeds and fertilisers are used in the production of agricultural raw materials; machinery and packaging material are used in the manufacturing of food products. Furthermore, agricultural raw materials can be processed in a wide variety of food products and outputs at different levels of the chain might be flowing into several other chains. Therefore, it is essential for value chain analysis to clearly define the scope of the analysis. A value chain can be regarded as a tree with many branches. The scope will define the parts to consider during the analysis (key products of the chain and its geographical coverage). Furthermore, analysis of value chains needs a
clear focus on what the aim is and what researchers are seeking. Based on the focus, the underlying methodology for the analysis has to be chosen carefully.

2.2 Overview of Existing Methodologies for Value Chain Analysis

Different methods have been developed for analysis of value chains. Some methods, though not developed for chain analysis, are useful for that purpose. In the following paragraphs, a short overview of the most significant approaches found in literature is given. Furthermore, their advantages and limitations are discussed in regards to their ability to highlight critical issues impacting the performance of agri-food value chains.

2.2.1 The French Systematic Method

The concept of French scholars to the analysis of the so-called “Filière” (1960s) is mainly based on a descriptive approach. The focus of the French systematic approach is on the description of the physical flow of materials and services needed for manufacturing of a final product. As described by Kaplinsky & Morris (2000), French scholars built their model based on the value-added process of the US Agricultural Research and adapted it to the vertical integration of the French agriculture. This approach emphasises the inputs and outputs between firms. It also favours the interaction of dependence and dominance along a value chain.

Experts in the field of value chain analysis regard the French approach as static, not taking into consideration dynamic characteristics of growth and fall of products, of knowledge and of number of actors. Furthermore, the approach is considered as too descriptive, neglecting the strategic approach to value chain analysis.

Despite the limitations of the method mentioned above are surely, we recommend the use of the French Systematic Method in combination with other methodologies for value chain analysis. Although mainly descriptive, the proposed method is useful for chain mapping, as a first step of value chain analysis to obtain an overview of the chain, the product flows, the chain actors and type of interaction between the actors.

2.2.2 The Structure- Conduct-Performance Paradigm

The Structure-Conduct-Performance paradigm (SCP model) is an approach based on industrial economics, the field of industrial organisation. According to Scherer & Ross (1990), industrial organisation is concerned with “how productive activities are brought into harmony with the demand for goods and services through some organising mechanism such as free market, and how variations and imperfections in the organising mechanism affect the success achieved in satisfying an economy’s wants.”

The authors have developed a method for analysis of industrial organisations. The approach is based on their objective to determine how market processes impact the activities of producers in dealing with consumer demand, how the market processes can fail and how they can be adjusted to optimise performance according to some ideal standard.
The focus of the approach is on the fundamental principle that good performance is what society wants from producers of goods and services. Furthermore, the authors give the following four main pillars for the definition of a good performance:

1. Production decisions should be in-line with consumer demand on a quantitative as well as qualitative basis. In addition, scarce resources should not be wasted.

2. Producers should continuously satisfy consumers by improving their technical efficiency and by offering innovative products.

3. The producers’ operations should support a stable and full employment of human resources.

4. Reasonable price stability should lead to a fair distribution of income.

Although the authors state that it is not easy to measure the degree to which the goals have been reached, they recommend analysing relevant indicators, such as: price-cost margins, rates of change in output per hour of work, price levels, the difference between actual and lowest possible unit costs and the variability of employment over time.

The model used by the authors for identifying sets of attributes that impact economic performance is the Structure- Conduct-Performance Paradigm. The basic concept for this model was first established by Edward S. Mason of Harvard in the 1930s and further developed by many scholars.

According to the model, performance of industries depends on the conduct of buyers and sellers. Conduct consecutively depends on the structure of the relevant market, while market structure is affected by the basic conditions regarding supply and demand. In addition, the model is completed by the role of public policies which usually have an impact on conduct and market structure through different types of intervention. Figure 1 schematically illustrates the model.

The approach recommends state intervention for regulations. This concept, which is backed by the Harvard School, opposes the one from the Chicago School. The latter encourages the “laissez-faire” approach or the invisible hand.

Some experts argue that the model has little predictive power. The difference between industrial organisation research and agribusiness research has been highlighted in literature: while the first one focuses primarily on market performance, the latter focuses on firm strategy and firm performance, taking into consideration competitiveness.

Although the SCP-model provides a good structure, we believe that the framework is too linear for value chain analysis in its format presented in Figure 1. We believe that the model allows the researcher to analyse the chain from an external point of view without taking into consideration the opinions of chain actors. The model emphasises structural aspects (i.e. number of stage players, concentration) and the impact of structure on conduct and performance. Usually the model is limited to only one value chain stage. The model does not emphasise the nature and the structure of relationships between buyers and sellers and their satisfaction level. Thus, competitive factors relevant for a chain performance, as well as driving powers for a chain are not considered. Furthermore, the
sole existence of different parameters does not ensure their good implementation. For example, regulations might exist, but may not be well implemented. Therefore, a specific behaviour of chain actors might be misinterpreted.

This method contributes essentially to the Guidelines:

- Practically: Although the SCP model – in its basic format as presented below – shows some limitations, many aspects of the model are considered, but adapted and completed according to the needs of the Guidelines. The basic structure of the SCP-model provides us with a good framework for describing the chain structure. Therefore, we have used its structural approach to establish a kind of “checklist” for chain mapping (see Annex 1) from which the researcher can select the factors according to the focus of the analysis.

- Conceptually: the model provides us with a notion of potential factors (structure and conduct) impacting the performance of the chain.

Figure 1: Structure-Conduct-Performance Paradigme
2.2.3 The Neo-Institutional Approach

Institutions have been defined in several ways in literature. Williamson (1996) cites the following definition: “...the humanly devised constraints that structure political, economic and social interactions. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct) and formal rules (constitutions, laws, property rights).”

Williamson (1996) differentiates between two levels of institutions:

1. Institutional environment: based on the definition above, defining the “rules of the game”, could be considered as a given, difficult to change.

2. Institutions of governance: more micro-analytical, concerned with individual transactions which are aligned with the institutional environment.

Transaction costs are defined as “the costs of running the economic system “ or “costs of contracting” (Williamson, 1996). Coase (1998) further explains transaction costs as “the costs of carrying out a transaction by means of an exchange on the open market: marketing costs”. According to the author, the following parameters impact transaction costs:

- Search costs for customers (discovering to whom to sell)
- Costs for information exchange
- Costs for conducting negotiations with customers and suppliers (bargaining costs)
- Costs related to drawing up contracts and their monitoring, etc.

However, the experts in the field acknowledge that measuring transaction costs is extremely difficult. Furthermore, the neo-institutional approach is considered still at the level of research.

In the scope of this approach, experts see markets as institutions that exist to facilitate exchange and therefore reduce the costs of transactions. Markets should not only consist in providing physical facilities. Regulations are needed to a certain extent to reduce transaction costs (time for transaction, products for trade, responsibilities of participants, settlement of prices and disputes, etc.). Those who organise markets can set rules. However, legal systems at state level are necessary when buyers and sellers are numerous and scattered. Enforcement of rules can be challenging. Further laws are necessary regarding rights, such as land property rights or intellectual property rights. This is much related to contractual terms and moral hazards.

This method contributes essentially to the Guidelines:

- Practically: Although it is very difficult to obtain information and to do comparisons, we have included the notion of transaction costs in the Guidelines by investigating qualitatively the chain actors’ judgment about their time and effort related to search of customers, information exchange, bargaining, contract settlements etc.
- Conceptually: Many institutions affect the development performance. Transaction impacts the chain participants in many ways: costs, risk, efficient investments, etc.
2.2.4 The Strategic Approach

Competitive Strategy (Porter, 1980)

Porter (1980) supports the Strategic Approach with the model “The Driving Industry Competition” which describes five forces commanding competition:

1. Rivalry among existing firms
2. Bargaining power of suppliers
3. Bargaining power of buyers
4. Threat of new entrants
5. Threat of substitute products or services

However, many other forces could be introduced taking into account the context in which a firm (or a value chain) is embedded. For instance, the regulating role of public authorities could be a sixth force to be considered.

We believe that this approach is focused on a company and its movement. However, it also favours the dynamic of a chain under the strategic effect of its members or under the regulation or deregulation of political authorities.

In the scope of value chain analysis, we believe that the relationship between buyers and sellers (the chain actors) is very important. Rivalry at horizontal and vertical links might be obstacles in this scope. We do not consider potential new entrants into an existing chain as a threat.

Furthermore, “substitutes” can be considered as products from competing chains. Consumers unsatisfied with the products offered by the chain might switch to substitute products: e.g. pig meat vs. poultry. Moreover, foreign chains might offer the same products as the domestic chain and compete against it in satisfying customers’ needs in terms of quality, quantity and price.

This method contributes essentially to the Guidelines:
- Practically: possible critical issues for firm development
- Conceptually: focus on the firm (rather than chain) development issue

Competitive Advantage (Porter, 1985)

In contrast to “competitive strategy” which focuses on interactions between players and strategic positioning, “competitive advantage” deals more with the organisational context of the firm. A key tool is the firm value chain analysis and its underlying concepts of activity and competence. Both strategic content (the strategy itself) and strategic implementation (the way strategy is put at work) are important. Extending the remark to the creation of strategy, both the strategic process (strategic formation) and the strategic content are important. Following Porter's seminal work (Porter, 1985), scholars have produced conceptual and practical refinements. In essence, the whole literature provides an integrated view of blocks affecting firm performance: process, activities, content, context and competencies (resources). These concepts are useful at different levels: firm, chain, nations, etc.
This method contributes essentially to the Guidelines:
- Practically: possible critical issues for firm and/or chain development – activities and resources for successful development
- Conceptually: focus on the firm (rather than chain) development issues, but can be adapted to the chain level

### 2.2.5 Business Development Cycle – Product Development Cycle

The business development cycle and its refinements provide a focus on issues that are more relevant at a given stage. For example, product quality is not a critical issue at the first stage, but it becomes a critical issue at later stages.

Conceptually development can be seen as the process of moving from one stage to the next (desirable) stage. Although the initial concept is appealing, recent developments have shown that cycles can be more complex with respect to pursued goals (e.g. expansion versus efficiency building).

This method contributes essentially to the Guidelines:
- Practically: focus on issues most important at a given development stage for firm and/or chain
- Conceptually: focus on the firm (rather than chain) development issue, but can be adapted to the chain level. Recent contribution to the business development cycle literature have pictured industries (and chains) as ecological systems

The methods described above are related to the “substance” (what is studied?) rather than on the “process management” (how is it studied?). We would like to mention at this point that the construction of a screening process is inspired by the HACCP system (Hazard Analysis and Critical Control Points). The screening process will check whether an issue listed as a potential critical issue is “critical” or “not critical.” The concept of severity or gravity developed in the Guidelines has been also inspired by HACCP (see Chapter 3).
3 GUIDELINES – METHODS

3.1 Introduction

Keeping in mind the primary purpose of this work, i.e. to identify critical issues for chains targeting a specific development stage, the presented Guidelines are set up as a diagnosis tool. Desirable properties are twofold:

- Effectiveness: the ability to identify critical issues relevant for chain development
- Efficiency: the time and energy necessary to obtain an effective diagnosis

The Guidelines are structured around the following principles:

- Focus on chain actors’ development issues: The development of the whole chain depends on the development of its participants. Some potential critical issues are internal to the chain actors (e.g. inbound logistics), some are external (e.g. regulations) and some others are internal/external (e.g. vertical coordination between suppliers and customers).
- Find a balance between focus on chain actors’ development issues and focus on chain issues: The chain is more than the collection of single chain actors; some development issues which affect chain actors are beyond its reach.
- Not all potential critical issues have the same probability of being critical for a given chain and a given development stage. E.g. a chain exposed to international competition does not face the same challenges as a local chain; investment issues are often described as most critical in the Birth stage of a chain.
- The emphasis is put on the activities of the chain actors and how well those activities are managed. Activities related to strategy formation are considered as highly important: e.g. the chain actor’s careful analysis of its set of opportunities. Therefore, the focus is set on the process rather than on the content: e.g. a sufficiently good process for strategy formation, rather than a good strategy. We take for granted that a good process for strategy development will result in a good strategy.
- Self determined goals: The question regarding the relevance of chain actors’ goals and competitive benchmarks is, itself, critical to the long-term performance of the chain. For the analysts and the policy makers this is also an important question. The whole chain system can, in the long run, be jeopardized if participants’ goals are not correlated to requirements in the chain context: e.g. if the chain is facing world wide competition, but its actors’ goals are not ambitious enough (e.g. they are satisfied with a sufficient profit from their activities). Whenever the chain faces short-term critical issues and chain actors’ strategic intents are not appropriate, it is likely that it will not succeed. However, dealing with critical issues is a necessary, but not sufficient condition for chain success.
- Chain actors’ perceptions are as important as reality when it comes to development issues. Perceptions are often impediments when it comes to development opportunities.
Keeping in mind these principles and the objective of the Guidelines, they exhibit two drawbacks. First, they work with a set of necessary, but not sufficient conditions for successful chain development. This comes from possible difference between the actual goals of chain actors (e.g. sufficient profit level) and the required goals (e.g. world wide competitiveness). Second, although the current development path might be beneficent for the chain, it may not be the best opportunity for its actors. The actual opportunity sought by chain actors can also be not good at all.

The current version of the Guidelines provides an assessment of the means necessary to develop the chain from a given stage into a targeted stage.

### 3.2 Structure of the Methods

The underlying methods for the presented Guidelines are structured according to the following procedure:

1. **Chain Mapping**: the aim is to obtain an overview of the major traits of the chain, including: the structure (value creating stages), the flows of products between stages, the type of players at each stage, the orientation of the chain or exposition to external competitive forces (export/import), development stage.

2. **Data Collection**: a list of “all possible” critical issues has been developed from an extensive review of the literature. Questionnaires are designed according to the relevant issues for the current and targeted development stage of the chain. Data collection is performed through interviews of selected chain actors of each value creating stage (producers, processors, distributors) with different performance levels (market leaders, new entrants, etc.). All possible issues relevant to chain development stage and its orientation are investigated.

3. **Data Screening**: with chain actors’ data at hand, issues are classified into “critical” and “not critical” one at a time. In addition, a simple grading system is proposed to characterize issues on their level of severity. Furthermore, strategic needs are identified based on the root causes for the critical issues identified.

4. **Data Validation**: A validation phase is then performed to bring together a synthetic and comprehensive view of all the chain issues. It is still possible that none of the issue is critical, but that many aspects are not satisfactory and dramatically affect together the development of the chain. The grading system mentioned above will be helpful in that specific case. For this stage experts’ opinion is indispensable.

We will now concentrate on specific aspects of the method and how concepts developed in the previous chapter (Chapter 2) are put at work.
3.3 The Theoretical Phase

As described above, the theoretical phase of the methodology serves as the basis to collect the widest range of “all possible” critical issues. Therefore, two approaches, the “Development Stage” approach and the “Value Chain” approach are used and described in detail in the following paragraphs. However, we start with a definition of critical issues.

3.3.1 Critical Issues: Definition

For the presented Guidelines, critical issues impacting the performance of agri-food value chains in transitional and developing economies are of fundamental interest. Therefore, we first need to define the term “critical issue” in the mentioned context. We have to distinguish between issues and critical issues. An issue can be defined as a barrier in the process of development and growth of a value chain. However, it is imperative to note that the sole existence of such barriers or issues is not always critical for the performance of a value chain. It is quite usual that chain actors have to overcome certain barriers (issues) to be able to enter the market or perform well on the market. Examples for such barriers are financial resources, basic market information and basic infrastructure, just to name a few.

Issues, however, become critical for the performance of a value chain if the chain actors have vast difficulties in solving them. We therefore have to bear in mind the severity of issues to be able to define whether they are critical or not for the chain performance with regard to its targeted development stage. We recommend concentrating on the following factors regarding the severity of issues as described in Figure 2.

![Figure 2: Overview of Factors defining the Severity of Issues](image)

<table>
<thead>
<tr>
<th>ISSUE, BUT NOT CRITICAL</th>
<th>HIGHLY CRITICAL ISSUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>slightly negative</td>
<td>Impact on chain</td>
</tr>
<tr>
<td></td>
<td>performance</td>
</tr>
<tr>
<td></td>
<td>highly negative</td>
</tr>
<tr>
<td>slowing down</td>
<td>Effect</td>
</tr>
<tr>
<td></td>
<td>stopping</td>
</tr>
<tr>
<td>in-expensive</td>
<td>Solution</td>
</tr>
<tr>
<td></td>
<td>costly</td>
</tr>
<tr>
<td>easy</td>
<td>Implementation of</td>
</tr>
<tr>
<td></td>
<td>Solution</td>
</tr>
<tr>
<td></td>
<td>difficult</td>
</tr>
<tr>
<td>few actors</td>
<td>Scope</td>
</tr>
<tr>
<td></td>
<td>many actors</td>
</tr>
<tr>
<td>not often</td>
<td>Frequency</td>
</tr>
<tr>
<td></td>
<td>very often</td>
</tr>
</tbody>
</table>
As shown in Figure 2, the severity of issues can be demonstrated on a qualitative scale. Issues tending rather to the left end of the scale are relatively unproblematic to overcome and thus cannot be regarded as critical. In contrast, all issues tending to the right end of the scale are relatively critical for the performance of the value chain. Thus, as highly critical can be considered those issues which have a vastly negative impact on the chain performance which are not only slowing down the development of the chain, but can go as far as to put an end to the existence of the chain. Furthermore, solutions to critical issues are relatively costly and the implementation rather difficult. Last, but not least, critical issues impact a large number of chain actors and come to light very frequently.

For the presented Guidelines – as described in Chapter 4 – a screening system is used to distinguish between issues and critical issues. In addition, a simple grading system is introduced to classify issues based on their level of severity on a qualitative basis.

### 3.3.2 Development Stage Approach

In section 3.3.1, we have defined critical issues. However, it is essential to consider that critical issues highly depend on the objectives of the chain. The objectives in turn, depend on the targeted development stage of the value chain.

Various literatures can be found on the subject, either from corporate strategy sources on industry life cycle (Porter, 1980), or from marketing sources, on product life cycles (Kotler, 2003). All coincide in the fact that there are four development stages as shown in Table 1.

For the present work, we take for granted that the development stage approach can be applied at different levels: at product level, at business level (chain actor level) as well as at chain level. At each one of these stages, the objectives for the chain and therefore, the critical issues to overcome in order to achieve those objectives are very different.

Table 1: Development Stages of a Value Chain

<table>
<thead>
<tr>
<th>Stages of Development</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BIRTH</td>
<td>Come into existence and enter the market</td>
</tr>
<tr>
<td>2. EXPANSION</td>
<td>Expand business</td>
</tr>
<tr>
<td>3. EFFICIENCY</td>
<td>Build efficiency and maximise profit</td>
</tr>
<tr>
<td>4. SELF-RENEWAL</td>
<td>Attain sustainable profitability</td>
</tr>
</tbody>
</table>

As shown in Table 1, four development stages can be distinguished:

1. The first development stage, BIRTH, also called introduction phase in literature, is when a chain/chain actor comes into existence or enters the market. The duration of the Birth stage can be short or long, depending on the chain environment.
2. The second stage of the development is the EXPANSION phase. This stage is characterised by a relatively high growth rate of the chain/chain actor in terms of sales. However, the rate of growth can differ from chain to chain and depends on the chain context.

3. The third stage of development is the EFFICIENCY phase. In literature, experts also talk about the maturity or leadership phase. The major objective of this phase is to build or improve efficiency in the value chain/chain actor's business.

4. The last stage is the SELF-RENEWAL stage. In this phase, chains/chain actors are in a declining phase and need to find new ways to continue their existence and growth in the market.

In the scope of this project, the focus will be given to the first three stages which reflect FAO’s requirements regarding value chains in transitional and developing economies. The Self-Renewal stage takes for granted a high level of chain development.

As illustrated in Table 2, the following characteristics can be used to define the development stage of a value chain.

**Table 2: Characteristics for each Stage of Chain Development**

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>BIRTH</th>
<th>EXPANSION</th>
<th>EFFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Initial establishment phase of chain</td>
<td>Chain existing - expansion of sales targeted</td>
<td>Efficiency of activities targeted</td>
</tr>
<tr>
<td>Links between chain actors</td>
<td>No/low links between the chain actors</td>
<td>Growing integration of chain actors</td>
<td>Relatively tight network between chain actors</td>
</tr>
<tr>
<td>Sales</td>
<td>Low sales related to market potential</td>
<td>Relatively rapid rise in sales</td>
<td>Peak sales</td>
</tr>
<tr>
<td>Number of Customers</td>
<td>Low number of customers related to market potential</td>
<td>Rising number of customers</td>
<td>Peak number of customers</td>
</tr>
<tr>
<td>Profits</td>
<td>Profits relatively low – might be negative</td>
<td>Rising Profits</td>
<td>Peak Profits</td>
</tr>
<tr>
<td>Investments</td>
<td>Investment in market entrance</td>
<td>Investment in market expansion</td>
<td>Investment in process to improve efficiency</td>
</tr>
</tbody>
</table>

One important indicator to determine the development stage of a value chain is the income made from sales. At BIRTH stage, business activities of the chain are just starting, so sales are low and the rate in which sales increase is also minimal. At the EXPANSION stage, sales rise more rapidly. At the EFFICIENCY stage, sales are at their peak, markets are mature. The evolution of a chain is shown in Figure 3.
However, it is worth to emphasise that defining the development stage of a value chain is not an easy task. The characteristics defined in Table 2 for each stage in our framework are very general and reflect tendencies rather than absolute facts. Furthermore, value chains do not always follow the path of BIRTH – EXPANSION – EFFICIENCY. Sometimes, value chains target efficiency building prior to expansion.

In practice, when conducting value chain analysis however, we have to consider the entire value chain consisting of single chain actors. One additional level of complexity arises when considering that single chain actors do not all have the same level of development and usually do not follow the same path and rate of development among them.

Considering this, the presented Guidelines are built in a flexible way as demonstrated in Chapter 4. The first basic question is whether a chain actor is in birth stage or not. Chain actors who wish to enter the market (existing or new chain) or those who have recently started their business activity (in an existing or new chain) are considered to be in the birth stage. For chain actors who are actively involved in an existing chain, the researcher will have the possibility to first define critical issues which are common for both stages of development: expansion and efficiency. In a following step, the researcher will have to investigate the future objectives that the chain actor is targeting; this will give the information about the development stage pursued by the chain actor. Therefore, the critical issues will be case-specific for each chain actor.

At this point, the question might arise on how to conclude from the information at chain actor level to the chain level. Bearing in mind that chain actors in contrast to the entire chain could (seemingly) have contradictory objectives, this might not be obvious. For example, while a highly scattered pattern of small-scale agricultural producers might be fighting for survival, their existence can be related to a high level of inefficiency for the entire chain. Furthermore, one might argue that the development stage of producers might be different than the one of processors and distributors respectively.

In order to cope with these issues, we would like to refer to the definition of critical issues in section 3.3.1. Besides other factors, an issue is only critical for the performance of the
entire chain if its scope impacts a high number of chain actors. Coming back to the example mentioned above, a chain will be in the birth stage if the analysis shows that most of the chain actors are in the process of getting established in the market. Even if inefficient at first sight, the chain has first to come into existence before considering investment of resources in order to achieve efficiency (Indian dairy chain, Polish pig meat chain). On the other hand, it is not surprising that some chain actors might be much further in the development stage than others. In case of shortage of delivery or failure in competitiveness by chain suppliers, those chain actors might obtain the necessary products from competing chains. The methodology used will permit to uncover the fact of uneven growth of chain actor levels as a critical issue for the chain.

Therefore, we can conclude that the development stage of the entire chain goes hand in hand with the one of most actors of the chain.

3.3.3 Value Chain Approach

Coming back to our objective to cover the widest range of “all possible” critical issues, with the development stage approach (section 3.3.2), we have defined one dimension to do so. The second dimension is based on the value chain approach which is further explained in the following paragraphs.

The concept used for this purpose is the “Value Chain System” developed by Porter (1985). This system suggests that every firm’s value chain is composed of two types of activities: the PRIMARY ACTIVITIES and the SUPPORT ACTIVITIES. The primary activities are all value creating activities; the support activities are firm-wide activities or functions providing support to the primary activities. The major purpose of all activities for a firm is to generate margin. According to the author, “margin is the difference between total value and the collective cost of performing the value of activities.” If one activity is not well performed (or does not exist), then the development process might be in danger. This remains valid at firm level (e.g. lack of marketing) as well as at chain level (e.g. poorly organised market). To tackle activities at chain level, the generic value chain concept has been modified.

As demonstrated by Porter (1985), the Value Chain System can be applied at firm level as well as at chain actor level (group of firms). For the present work, we are applying the same concept at chain level. For this purpose, we recommend to view an agri-food value chain as a firm where different activities are performed by different groups of chain actors. A generic value chain according to Porter is shown in Figure 4.
However, for applying the value chain concept at chain level in the scope of the present work, we recommend some slight modifications of the Generic Value Chain shown in Figure 4. The modified version serves as the foundation for the Guidelines and is presented in Figure 5.

**Figure 5: The Generic Value Chain - Modified**
(Source: Michael Porter, Competitive Advantage-Creating and Sustaining Superior Performance, 1985-MODIFIED)
Following is a brief description of the generic activities represented in Figure 4 & 5. Some examples are given to show the adaptability of the model to any type of chain actor. Please note that the disaggregating level of each generic activity depends very much on the type of chain actor and can be adapted accordingly. (The activities of Figure 5 are applied for the present work and are underlined in the list below).

**PRIMARY ACTIVITIES:**

- **Operations:** Activities related to transformation of inputs into final products. For agricultural producers, operations include all farming activities, such as irrigation, harvesting, primary packing etc. For processors, operations comprise all kinds of preservation methods from simple technologies (such as sun drying) to more sophisticated technologies (such as spray drying). However, for a distributor no transformation of products is involved.

- **Inbound Logistics:** All activities involved regarding logistics inside the business of one chain actor, e.g. material handling, inventory control etc.

- **Outbound Logistics:** All activities associated regarding logistics from one chain actor to the following, e.g. distribution of products (or semi-finished products) to the buyers, order processing etc.

- **Logistics:** As the major focus of our analysis is at the chain level, we concentrate mainly on outbound logistics (simply called Logistics) which comprises all logistic activities related with the product flow from one chain actor to the next one.

- **Marketing & Sales:** All activities needed to provide buyers the means to purchase products. Marketing and sales have to be considered at each step of transaction between chain actors (e.g. from agricultural producers to processors and from those to distributors). The last stage deals with selling the product of the chain to the final consumers. Marketing & Sales covers the following activities for all levels of chain actors: advertising, pricing, promotions, channel selection, positioning etc.

- **Service:** Activities to enhance or maintain value of the product after sales. The present work does not consider services because they are not of common use in the agri-food sector, particularly not in the scope of developing and transitional economies.

**SUPPORT ACTIVITIES:**

- **Firm Infrastructure:** Activities including general management, planning, financing, quality management, regulations etc.

- **Chain Infrastructure:** Activities listed under firm infrastructure are also valid at chain level, considering that a tight cooperation and coordination of chain actors requires a certain level of management. Therefore, the term “Chain Infrastructure” is more appropriate in the scope of our project than “Firm Infrastructure”. The so-called chain driver will perform such managerial tasks at chain level. For e.g. a strong retailer will be the one who gives instructions regarding quality requirements to other actors up-stream.

- **Human Resource Management:** Activities regarding recruiting, hiring, training, compensation etc. of personnel involved in the primary or support activities of a firm. Human Resource Management at chain level would comprise activities, such as sharing of personnel between a group of producers for certain activities or training groups of chain actors regarding certain quality or regulatory requirements etc.
- **Technology Development**: All types of technology, know-how or procedures required for primary or support activities at each chain actor level, e.g. manufacturing technology. At chain level, specific technology might be needed to improve interaction between the chain actors, such as communication technology for facilitating ordering procedures or transportation technology etc.

- **Procurement**: All activities associated with the function of purchasing inputs used in the firm’s value chain.

- **Relationship Management**: In the scope of value chain analysis, we recommend to focus on relationship management, rather than on procurement only. It includes not only procurement (each chain actor is a buyer for the previous and a seller for the following one), but also all other subjects related to the interaction between the chain actors, e.g. interactions might be based only on mutual understanding or on contracts. Whether the terms of contracts are kept or not would be part of Relationship Management.

Following our objective, we can bring into play the value chain approach to define the second dimension for identifying critical issues, with the development stage approach being the first one. With the activities listed in Figure 5, whether primary or secondary, we obtain a list of areas where critical issues can emerge within a chain when chain actors interact among each other.

We acknowledge that the value chain model is mainly used to optimise already existing businesses, rather than to create new ones. However, the system is also valuable for the latter. Selecting and organising a set of activities is not trivial. At this stage, we would like to underline that we consider primary and secondary activities at the same level, i.e. whether a critical issue is related with a primary activity (e.g. operations) or a secondary activity (e.g. relationship management), we do consider them with the same importance or weight.

### 3.3.4 Chain Context

In the previous section, we have defined all major areas where critical issues might appear, using a systematic approach based on the value chain concept of Porter (1985). The underlying principle for the latter is to cover all areas within the chain where issues might come into sight.

However, critical issues might also appear outside the chain, due to lack or failure in the environment where the chain is embedded. Therefore, our framework is completed with identification of major critical environmental issues at the chain level. For this purpose, we introduce the term Context. A sound environment provides the foundation in which a chain can develop and grow. As illustrated in Figure 6, a sound context requires the existence and implementation of governmental policies, the availability and accessibility of market information as well as logistical, financial and market infrastructure. Furthermore, educational institutions as well as the existence of basic technologies (e.g. telecommunication etc.) relevant for a good performance of single chain actors and a smooth interaction among them are essential. Regulations need to be in place and well implemented. In addition, their compliance has to be measured and sanctions regarding failure of compliance have to be effectively implemented.
In the scope of agri-food chains, we would like to stress the importance of food safety issues and all corresponding regulations. Many examples show that the existence of the entire chain might be in danger if only one player does not comply with food safety regulations - even if no crucial event has occurred. This becomes obvious if we take into consideration how much the behaviour of final consumers is influenced by the media (especially in industrialised countries). Even if only one player’s name might be published in the context of non-compliance with food safety regulations, consumers might go as far as to stop buying specific chain products. Thus, chain actors at all levels (producers, processors, distributors) will all be affected. With a high incidence of recent food borne diseases (e.g. BSE, Dioxin, Foot and Mouth Disease), consumer concerns regarding food safety issues have escalated in industrialised nations. Thus, ALL chain actors’ compliance with food safety issues is an important matter. Furthermore, it is essential to note that in today’s globalisation trends, food safety issues will affect not only the domestic markets, but also international trade. In order to keep up with global competition, agri-food chains of transitional and developing economies have little choice, but to meet international requirements regarding food safety.

**Figure 6: A Value Chain and its Context**

![Value Chain Diagram]

### 3.3.5 All Possible Critical Issues: Summary

Based on the three concepts described above, a list of “all possible” critical issues can be built. With the value chain approach and the chain context, we have defined all areas where critical issues possibly can emerge. However, depending on the development stage of a chain and thus the objectives the chain is targeting, the critical issues will be different. Ranking of issues related to objectives is an underlying principle of the presented methodology. This is because not all issues can be solved at once and therefore resources...
need to be efficiently allocated. At this stage of the methodology, we have defined a set of “all possible” critical issues, ranked in order of importance for each of the development stages: Birth, Existing Chains, Expansion and Efficiency. More focus is then set on the most important issues; this helps the analyst focus. The ranking of the critical issues is based on practical experience and expert opinions; they were verified and adapted according to the findings during the fieldwork.

In Figure 7, an example regarding the ranking of issues related to the targeted development stages is illustrated. A value chain focusing its activities on expansion will first need to concentrate all its efforts on the activity of Marketing & Sales. This is obvious if one considers that expansion is highly related with exploring new markets for existing products or searching new products for existing markets in order to increase sales. However, considering a chain which is focusing on achieving efficiency, the first activity to concentrate on would be operations to achieve technical efficiency. Of course, other activities will be part of efficiency building, however with a less high level of importance. Figure 7 shows that the most important source for critical issues depends on the targeted development stage (highlighted with number 1): Marketing & Sales is considered as the most important source for critical issues, when targeting expansion; Operations is considered at the most important source for critical issues, when targeting efficiency building.

Figure 7: Sources of Critical Issues depending on targeted Chain Development Stage (1: most important source for critical issue depending on targeted development stage)
3.3.6 Performance Indicators and Performance Targets

The objective of this work is to define critical issues which impact the performance of agri-food value chains. However, one might raise the question what a good performance is. For this purpose, we need to define “Performance Targets”. They can be regarded as benchmarks specified by the objective the chain is targeting. As mentioned earlier, the methodology used for the current version of the Guidelines is based on self-determined goals. The Guidelines focus on the issues that will be critical to reach chain actors’ targets. If the objectives of the chain actors are adequate, then the Guidelines’ outcomes will be sufficient. If the chain actors’ objectives are not adequate (e.g. the participants are satisfied with a sufficient profit level, but they are exposed to world wide competition), then the Guidelines’ outcomes are only necessary conditions. In both cases, the issues identified as critical are critical, however need to be completed with further aspects. A set of performance targets with view to international competition can be established by experts of the industry and incorporated in the Guidelines.

However, it is necessary to define performance indicators based on which the achievement of performance targets can be measured. Performance indicators in our methodology can be both quantitative and qualitative parameters. For instance, in order to measure competitiveness of a chain as a major performance target, the chain has to meet the demand of its customers in terms of price, quantity, quality and terms of delivery. The latter are quantitative performance indicators. However, qualitative indicators for the performance of a chain are also fundamental for our methodology. For example, “relationship management” might build a major critical issue for the performance of a chain. It comprises qualitative performance indicators, such as lack of trust and reliability which lead to reluctance of chain actors to interact with each other.

An easy way to tackle critical issues, targets and performance indicators is to rely on the appreciation of the chain’s final customers. For example, international retailers, such as Carrefour, with international procurement schemes have established targets for many productions in the agri-food sector. These include costs of production, quality assurance, product quality, volumes, terms of delivery etc. Acting mainly as chain drivers, they communicate their performance targets to the chain actors and select them also based on their compliance with those targets.

3.3.7 Outcome Theoretical Phase of Methodology

Summarising the theoretical phase of the methodology as represented in the sections above, we obtain a list of “all possible” critical issues. For each development stage, they are ranked in order to importance from C1 (Critical Issue 1) to C51 (Critical Issue 51), with

- C1 - C15 Critical Issues regarding a chain in the development stage Birth
- C16 - C27 Critical Issues common for all existing chains out of the Birth stage
- C28 – C38 Critical Issues regarding chains targeting Expansion
- C39 – C51 Critical Issues for Chains aiming to increase Efficiency.
- In addition, 14 Critical Issues are defined regarding the Context of the chain.
The complete list of “all possible” Critical Issues is represented in Annex 7. An excerpt is shown in Table 3.

### Table 3: Excerpt of Annex 7 - List of all possible Critical Issues, their Performance Indicators and Targets

<table>
<thead>
<tr>
<th>Critical Issue Number</th>
<th>Activity</th>
<th>Critical Issues Relevant to Improve Efficiency</th>
<th>Performance Indicators</th>
<th>Performance targets</th>
<th>Type</th>
<th>Implementation</th>
<th>Context</th>
</tr>
</thead>
</table>
| C40                   | Chain Infrastructure | Improve coordination and cooperation with customers to allow increased efficiency | &gt; Cooperation level of chain actors  
 &gt; Information exchange among chain actors  
 &gt; Terms of contracts | Supply matching demand in terms of quality, quantity, price and on-time delivery | Strategy  | Implementation  | Context |

As presented in Table 3, Annex 7 includes in the columns from left to right:

a. The reference number of the critical issue (C1-C51)
b. The Activity related to the value chain approach
c. A description of the critical issue related to the specific development stage
d. Quantitative and qualitative performance indicators related to the performance target
e. Performance targets for the critical issue
f. The type of the critical issue (see definition in Chapter 3.4)  
g. Context related to the critical issues - a separate table with the 14 context issues is included in Annex 7

### 3.4 The Identification Phase

The second phase of the methodology developed as foundation for value chain analysis is the so-called Identification Phase. From the theoretically built pool of “all possible” critical issues, it is now our objective to extract those critical issues which are really impacting the performance of the specific value chain under investigation.

For this purpose, we would like to introduce an analogy to the well-known concept of Hazard Analysis and Critical Control Points (HACCP). The concept and the analogy used for the identification phase of the methodology are described in detail in the following section.

### 3.4.1 Analogy of Value Chain Analysis to HACCP

Hazard Analysis Critical Control Points (HACCP) is a well-known and widely used concept in the field of food manufacturing. The HACCP concept provides a good framework on which the identification phase of critical Issues in the present work is leaned on. The analogy is demonstrated in Table 4.
Table 4: Analogy between Value Chain Analysis and HACCP

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>HAZARD ANALYSIS AND CRITICAL CONTROL POINTS (HACCP)</th>
<th>VALUE CHAIN ANALYSIS AND CRITICAL ISSUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assuring Food Safety in Food Production System</td>
<td>Assuring Performance of a Value Chain</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>Diagnosis Tool for Identification of Critical Control Points</th>
<th>Diagnosis Tool for Identification of Critical Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOURCES OF CRITICAL ISSUES</th>
<th>STRATEGY</th>
<th>IMPLEMENTATION</th>
<th>CONTEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICAL</td>
<td>All aspects regarding the strategy and plan of chain actors / chain.</td>
<td>All aspects regarding the execution of activities inside one chain actor and its transactions with other chain actors</td>
<td>All aspects regarding the environment in which the chain is located and which might be critical for the chain performance</td>
</tr>
<tr>
<td>CHEMICAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOLOGICAL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Principle 1 | Preparation of process flow diagram where possible dangers can occur | Chain mapping to show an overview of all actors, their relationships and chain context where critical issues can arise |
| Principle 2 | Identification of critical control points (CCPs) | Identification of critical issues at chain level |
| Principle 3 | Establishment of critical limits for measuring each CCP | Identification of performance indicators and performance targets for each critical issue at chain level |
| Principle 4 | Establishment of control procedures to regularly control CCPs | TBD² |
| Principle 5 | Establishment of procedures to take corrective action to achieve critical limits | Development of strategies to improve the performance of the value chain |
| Principle 6 | Establishment of efficient monitoring systems and registration of all preventive and corrective actions | TBD¹ |
| Principle 7 | Establishment of procedures to verify the HACCP system. | TBD¹ |

² TBD: To be defined (further investigation is needed)
3.4.1.1 Objective and System

As elaborated in Table 4, Value Chain Analysis show many analogies to HACCP. Both are diagnosis tools to identify critical points in a system which necessitate particular consideration to avoid failure of the system. While the intention of HACCP is to assure Food Safety, Value Chain Analysis is concerned with assuring the performance of value chains. The main feature of HACCP is its preventive characteristic built on seven basic principles. Monitoring and control procedures are established to prevent food safety issues from happening. Instead of dealing with symptoms, HACCP deals with causes of issues by controlling Critical Control Points. The system is thus based on a pro-active approach. Such a preventive system could also be implemented for value chains in order to prevent critical issues from happening, before they harm the performance of an agri-food value chain significantly. However, the establishment of a complete analogy to HACCP is subject of further investigation (Principles 4,6&7) and is not further elaborated in the present work. Nevertheless, the following parallels are derived from the HACCP system and are applied to the methodology for value chain analysis:

3.4.1.2 Sources of Critical Issues

Like Hazards, Critical Issues for a value chains can originate from three sources: Strategy, Implementation and Context. Critical issues related to strategy regard the planning of chain actors on how they operate their business and how they interact with other chain actors. Chain actors might have a good strategy, but fail in implementing it. Mostly a lack of resources (finance, information, skills, know-how etc) is the reason for failure in implementation. However, for a value chain to perform well, some basic requirements are addressed to the environment in which the chain is located (Context). In order to classify critical issues in these three groups, we introduce the term “Type” of critical issues. The Type of each critical issue is included in Annex 7. Classifying critical issues may seem at first not very useful. However, this potentially enhances the quality of the final diagnosis and policy design. It will be harder to deal with a set of heterogeneous issues than with homogenous issues. (E.g. context, resources, decision making versus only resources.)

3.4.1.3 Principle 1

In analogy to Principle 1 of HACCP, we recommend to start value chain analysis with building a broad overview of the value chain. Like a process flow diagram of a food manufacturing unit, a “chain map” will reflect an overview of all chain actors, their size, number, relationship and any further information available and desirable. In addition, mapping a chain will allow further to gain knowledge of to the chain context. This will further allow to precise the boundaries (of the chain analysis e.g. geographical area, product range of the chain etc.) related to the objectives of the research.

3.4.1.4 Principle 2

The core of the present work is to establish Guidelines for the identification of critical issues impacting the performance of a value chain. This step of the methodology is deeply related to the previously developed theoretical phase described in Chapter 3.3. Starting from the broad range of “all possible” critical issues, our objective is to define the ones really impacting the performance of the value chain. The information sought is founded on the examination of the pre-defined performance indicators and performance targets via primary data collection from chain actors depending on their development stage.
For value chain analysis, we have to distinguish two levels of analysis. The first one is concerned with data analysis at chain actor level. The outcome of the analysis will be a range of critical issues appearing for each chain actor interviewed. The second level of the analysis deals with filtering those issues which have a significant impact on the entire value chain.

At this point, the qualitative character of the methodology comes into light. It becomes obvious that it is essential to select a wide range of chain actors for the interviews with the aim to cover as many different critical issues as possible. This is why we recommend the selection of chain actors for interviews on this aspect, rather than on a statistically representative sample. In the following steps of the analysis, the impact of the identified issues on the entire chain will be further investigated and validated.

One might argue that the screening process of qualitative information could lead to differences in responses and results according to the perspective of the researcher. However, we would like to highlight that prior to any analysis, the objective of the analysis is defined, thus what exactly the researchers are looking for. Considering this fact, we can agree that the goal is unique and there is only one perspective. Furthermore, the methodology developed is standardised and focused, thus the results obtained therefore unbiased. The first phase of the analysis deals with data collection. Although qualitative data collection is mainly based on observations and collection of opinions, it is essential to note that the researchers’ task is to represent those data, not to judge them. Representation of the data can be different, but no problems will arise as long as it is clearly defined what we are looking for, thus the key aspects. The second phase of the analysis deals with data analysis through specific filtering systems. Also herefore, the researchers’ decision for answering specific questions is based on facts and does not tolerate any subjectivity for the analysis. This aspect is further demonstrated in Chapter 4.

### 3.4.1.5 Principles 3&5

In addition to the identification of critical issues, it is subject of the present work to identify strategic needs for solving those issues. For this purpose, we can use the previously defined performance indicators for measuring the achievement of the defined performance targets. In accordance to HACCP, this correlates to critical limits for measuring Critical Control Points. In the scope of value chain analysis, strategies can be defined to take corrective actions to achieve the performance targets, thus improve the overall chain performance. In addition, recognising the causes of critical issues is essential in building strategies. Based on our investigations during the fieldwork and the study of other cases, in the present methodology, we have defined four major types routed in generic causes/sources for critical issues:

- a. Failure in Context
- b. Lack of Resources
- c. Failure in Execution
- d. Failure for taking the right Decision

Failure in context is related to all issues arising in the environment of the chain. The chain context can be regarded as given and possible solutions do not lay in the hands of chain actors. Solutions are rather policy driven, e.g. implementation of regulations or establishment of an effective sanctioning system. The second major cause of critical issues could be a lack of resources, such as financial resources, but also lack of appropriate
information, know-how, skills etc. However, having the appropriate resources available does not prevent chains from failure in execution of possible solutions. For instance, an efficient interaction among chain actors might fail due to lack of trust among them. Furthermore, critical issues might be caused due the failure of chain actors to take the right decision. This aspect is rather strategy driven. Although resources might be available, the wrong decision on allocation of those resources might lead to failure. It is essential that in the decision making process, the focus is directed to customers' needs. For example, some chain actors might decide to produce a highly productive, but less tasty product. This would be definitely not the right decision if customers’ needs are driven towards better tasting products for which they would be willing to pay more. If the decision process is not built toward customers’ needs, then making the right decision will be only a matter of chance.

3.5 The Validation Phase

Keeping in mind the main purpose of improving chain development, designing adequate actions to deal with critical issues will support to do so. The objective of this last phase of the analysis is to bring together - in a comprehensive and synthetic manner - the following information:

- Chain development stage(s)
- Current chain actors’ goal(s)
- Critical issues and their type/cause
- A ranking of issues

Adding expert opinions on the current opportunity sought, on the goals (targets) and appropriate benchmarks provide a better and deeper understanding of the chain challenges. A final validation phase will bring the following essential aspects to the analysis:

Giving sense:
As in a medical diagnosis, symptoms are observed and possible causes are hypothesized. However, in a system-like entity this is not enough to establish a good diagnosis, a prognosis and therapeutic strategy. Some consistency between the “portrait of symptoms” and the hypothesized causes has to be built. Further investigations are often necessary to establish a good diagnosis and design a therapeutic strategy. A good diagnosis requires “giving sense” to all information at hand including hypotheses.

Adding:
Failure to give sense to all signs often generates a poor diagnosis and poor treatment. For example, in new product or process development a common symptom is the “lack of understanding between functions” (e.g., marketing, manufacturing, etc.). However, it will be quite exceptional to only observe this symptom. This does not fit with all possible causes. Other symptoms must be observed to complete the portrait. Further (and focused) research must be performed to obtain a consistent portrait. Thus, identified critical issues might be the most visible symptoms or causes affecting a chain, but not the only ones. Additional and focused research need be performed to fill the missing parts of the puzzle.
Interactions of multiples:
Given the systemic nature of chains, minor issues put together may be quite critical and may signal that a problem has not been correctly identified. The following example may highlight this aspect: a multistage production process has at each stage a small (1%) defect rate. At the end of the tenth stage the defect rate is 9%. If the single defect rate is 2%, the cumulative defect rate will increase to 18%.

Accurate diagnosis:
Adding sense and having a complete understanding of the system increase the chances of establishing a good diagnosis and a good prognosis. For example, consider a set of problems that can be efficiently solved by setting farmers cooperatives (e.g. sharing equipment). Given that other possible solutions are too costly, the prognosis is good, unless farmers are not willing to form groups or share equipment. Thus, unwillingness of farmers to cooperate is becoming a problem.

Goals as a critical issue:
As previously mentioned, lack of appropriate goals can itself be a critical issue. If goals are not ambitious enough, given the extension of competitive arenas, major parts of the chain can be put in danger. Potential threat from competing chains including the chain context (e.g. location in different regions) must be investigated. This issue is very critical, as demonstrated by the following example: one French stone producer has recently discovered that the new pavement in front of his factory was made of Chinese stones sold below its own production costs.

In case of doubt about the diagnosis, it can be planned to extend the sample to a greater number of chain actors. It would also be possible to directly make validate the diagnosis by chain actors. This last option has the advantage of also being able to enquire chain actors about the absence or omission of critical issues.

Critical issues remain critical; however in the international race the appropriate benchmarks and goals must be brought into the chain analysis to assess the chance of winning.
4 GUIDELINES – A PRACTICAL TOOLKIT FOR VALUE CHAIN ANALYSIS

4.1 Introduction

The presented Guidelines for value chain analysis in the agri-food sector of transitional and developing economies (hereafter Guidelines) is based on the methodology developed in Chapter 3. Chapter 4 illustrates a set of systematic techniques to address the practical implementation of value chain analysis with the focus to identify critical issues impacting the performance of the chain. The Guidelines can best be described as a “Toolkit”, with each tool being created to guide the researcher with the systematic execution of data collection and data analysis respectively. In the following sections, these tools will be further described; the link to the underlying methodology highlighted and applied examples presented. The entire “Toolkit”, consisting of five tools, is attached as Annexes to this report. The examples illustrated are excerpts of two case studies on the Polish strawberry and pig meat chain investigated during a fieldwork. The objective of the fieldwork was to verify hypothesis built during the theoretical phase of the methodology and to develop the tools for these Guidelines.

4.2 The Toolkit

Five basic tools are introduced and described in detail in the following sections. Figure 8 gives an overview of the five tools and the outcome obtained by applying each one.

Figure 8: Overview of Tools and the corresponding Outcome

<table>
<thead>
<tr>
<th>TOOL</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chain Mapping</td>
<td>Chain Structure, Context, Orientation/Exposure of the Chain (regional, national, international)</td>
</tr>
<tr>
<td>2. Interviews of Chain Actors</td>
<td>Chain Actor’s Data</td>
</tr>
<tr>
<td>3. Screening at Chain Actor Level</td>
<td>Critical Issues at Chain Actor Level</td>
</tr>
<tr>
<td>4. Screening at Chain Level</td>
<td>Critical Issues at Chain Level</td>
</tr>
<tr>
<td>5. Identification of Performance Indicators &amp; Performance Targets</td>
<td>Strategic Needs for improving Chain Performance</td>
</tr>
</tbody>
</table>
4.2.1 TOOL 1: CHAIN MAPPING

4.2.1.1 Description
A chain map consists of a graphical representation of a value chain and is a simple way to illustrate its structure, functioning and context. Chain mapping is concerned with obtaining an overview of the value chain as a whole and the environment in which it is embedded (Chain Context). It is an essential first step in performing value chain analysis in order to enable the researchers to entirely comprehend the circumstances of data gathering and data analysis and at a later point of time facilitate development of strategies to improve the chain performance.

Compared to standard chain mapping as extensively described in literature, the chain mapping described in the current Guidelines has a “lower” level of requirements. This is based on its slightly different purpose. Chain mapping, per se, is useful to determine what will be the best way to collect relevant data (see outcome 4.2.1.3).

However, prior to starting value chain analysis, it is essential for researchers to set up a basic investigation plan for conducting the analysis. A plan is necessary to define the boundaries for the analysis and thus key aspects which the researchers will be looking for. Therefore, the following points need to be considered:

- What is the major scope of the analysis? Agricultural produces are used to manufacture a variety of processed food products. Therefore, an agri-food value chain can become very branched and broad. It is essential that researchers define the scope of analysis by deciding the level of the chain to focus on: products, consumer segments etc.

- What chain and what geographical extension will be analysed? Chain mapping must be performed while keeping in mind the objective of the Guidelines to identify critical issues. The delineation of the chain under investigation must be adjusted with the early findings. For example, if a national chain is found to export substantially, then the geographic scope of the chain must be extended according to stages performed abroad and appropriate benchmarks must be set.

4.2.1.2 Procedure
Chain mapping is based on data from secondary sources. However, the investigation of data obtained for chain mapping will be highly related to the major focus of the analysis. For this purpose, we have developed a basic tool derived from the framework of Structure-Conduct-Performance Model (introduced in Chapter 2). It consists of the following elements: Basic Conditions (Supply & Demand), Market Structure, Conduct, Performance and Context. We have modified the basic five elements for purposes of chain mapping in order to provide the researcher with an exhaustive checklist of parameters to be investigated during chain mapping. However, we recommend the researchers to use this list creatively by picking the parameters according to the major focus (scope and geographical extension) of the analysis. The Guidelines for chain mapping, including the basic elements, the sources of information to be used as well as the basic structure of a chain map are shown in ANNEX1: MANUAL FOR CHAIN MAPPING.
4.2.1.3 Outcome

The major outcome of chain mapping is the basic chain structure and general information about the chain context. In essence, the outcomes of chain mapping are necessary to identify:

- Chain structure: Stages of value adding activities, number, type and size of players at each of the stages, etc.
- Types of relationship between chain actor levels: market, contract, integration, etc.
- Flow of products, information and financials
- Exposure to external competition: export / import
- Major traits
- Current and targeted development stage of the entire chain

Further elements of interest for the value chain analysis can be introduced in complementary graphs. With the information obtained, the current and targeted development stage of the chain can be estimated. In Annex 1, further indications are provided on how to perform this task.

4.2.1.4 Case in Point

Example Box 1 shows a map for the Polish strawberry chain. The chain gives information about chain actors at each level of value adding activity (production, primary processing, secondary processing, distribution). The major focus of the chain map, however, is drawn on the flow of the different types of products provided by the chain through domestic, export and import channels. Further information regarding volumes, prices, margins, relationships between chain actors etc. could be represented in the same map below or in additional complementary maps. The representation of data can also be done in a Table format as shown in Example Box 2.

---

3 Production, primary and secondary processing, distributing etc.
Example Box 1: The Strawberry Chain in Poland

**Legend:**
- Fresh straw berries - Process variety
- Fresh straw berries - Dessert variety
- Frozen straw berries
- Strawberry marmelades, jellies, yoghurts, etc.
- Imported product flows
- Domestic product flows
- Export product flows
- Value-adding activities
- Chain actors
**Example Box 2: Major Elements in the Strawberry Chain in Poland**

<table>
<thead>
<tr>
<th>Value-Adding Activities</th>
<th>Chain Actors</th>
<th>Main Firms/Groups</th>
<th>Number Of Firms/Groups</th>
<th>Products Delivered and Volumes</th>
<th>Profitability</th>
</tr>
</thead>
</table>
| Production              | Strawberry Farmers | Planted area for strawberries in 2000: 62000 ha | * 99% private farms  
* 0.3% cooperatives  
* 0.2% state farms  
Production is very atomised | Fresh strawberries - processing variety (Senga Sengana) and dessert variety (El Santa) | Variable:  
-13% in 2002.  
Calculated by Institute of Agricultural and Food Economics¹ |
| Processing              | Strawberry and other fruits & vegetables freezers | Around 100 firms in total, processing a variety of fruits. Small group of firms hold 50% of market share: Hortex, Jurwald, Zgoda, Hortimo, Xwidryn and Osmofrost. | 150 freezing plants. Most of the big processors belong to foreign capital. The share if foreign capital is around 60%. Foreign investments in freezing plants started in the early 90s. | Frozen strawberries - processing variety 70% of total strawberry production | N / A |
| Fruit concentrates producers | Small group of firms hold 80% of market share: Agrosfortuna, Stowid and Matern | N / A | Fruits concentrates |
| Jam/ jellies producers | Small group of firms hold +/-80% of market share: AgrosFortuna, Matern and Stowid | N / A | Jam/ jellies (30% is strawberry flavour) |
| Wholesale market        | Bronisze      | Few               | Fresh strawberries - dessert variety |
| Supermarkets            | Carrefour, Auchan, Leclerc, Tesco, Champion | Growing          | Fresh strawberries - dessert variety, jams/ jellies, fruits concentrates | 10-15%* |
| Open markets            | Local bazaars | N / A             | Fresh strawberries - dessert variety, jams/ jellies, fruits concentrates |

Sources (Poland):  
- Ministry of Agriculture and Rural Development  
- Institute of Agriculture and Food Economics  
- Interviews with stakeholders  
- Informal sources *

¹ Calculated by Institute of Agricultural and Food Economics.
4.2.2 TOOL 2: INTERVIEW OF CHAIN ACTORS

4.2.2.1 Description

For collection of data from primary sources, chain actors are interviewed. The questionnaires are derived from the pool of “all possible” critical issues for each development stage built during the theoretical phase of the methodology.

We would recommend focusing the analysis on the main chain actors of an agri-food value chain:

a) Primary Producers (farmers)
   b) Processors (primary or secondary)
   c) Distributors (retailers, wholesalers, middle men etc.)

For selecting the chain actors to be interviewed, we recommend to focus on the diversity and heterogeneity of the sample, rather than on its statistical representation. Based on the methodology developed, the objective at this point of the analysis is to cover the widest range of critical issues that chain actors are facing. The screening of the critical issues which impact the entire chain is subject of the following steps of the analysis. Therefore, it is important to include chain actors of small, medium and large sizes. Additionally, for each of those, we recommend, if possible, to consider chain actors who perform best and those who perform worst in the chain.

4.2.2.2 Procedure

Driven by the methodology developed in Chapter 3, the critical issues faced by the chain actors depend on their targeted development stage, hence the objectives they are pursuing. For this purpose, the following four sets of interview questionnaires have been developed to guide interviews of chain actors:

- QUESTIONNAIRE SET A: ESTABLISHMENT OF A NEW CHAIN/BUSINESS
- QUESTIONNAIRE SET B: INVESTIGATION OF EXISTING CHAIN
- QUESTIONNAIRE SET C: EXPANSION OF EXISTING CHAIN
- QUESTIONNAIRE SET D: INCREASE EFFICIENCY OF EXISTING CHAIN

Questionnaire set B is common for all chains which are out of the Birth stage, regardless of their targeted development stage. For a chain actor in Birth stage, there will be only the questionnaire set A to fill in. Thus for all chains out of Birth stage, the interview starts with the questionnaire set B. The researcher has the possibility to stop the interview at the end of set B or to continue additionally with the questionnaire sets C or D, depending on the targeted development stage of the chain actor.

In order to guide the researcher through the different sets of questionnaires, two sets of GUIDANCE QUESTIONS have been developed. They will lead the interviewer and allow a required flexibility in the analysis. The latter is demonstrated below.

---

4 Chain actors aiming to establish a new business to enter an existing chain or who wish to establish a new chain (Development Stage BIRTH).
**GUIDANCE QUESTIONS 1:**

**IS A VALUE CHAIN FOR THE KEY PRODUCT ALREADY IN PLACE IN THE COUNTRY WHERE THE ANALYSIS IS CARRIED OUT?**

- **NO**
  - **GO TO QUESTIONNAIRE SET A:** ESTABLISHMENT OF A NEW CHAIN/BUSINESS

- **YES**
  - **IN THE EXISTING VALUE CHAIN, DOES THE INTERVIEWED CHAIN ACTOR WISH TO ESTABLISH A NEW BUSINESS?**
    - **YES**
      - **GO TO QUESTIONNAIRE SET B:** INVESTIGATION OF EXISTING CHAIN
    - **NO**

**GUIDANCE QUESTIONS 2:**

**IS THE CHAIN ACTOR'S MAIN OBJECTIVE TO INCREASE ITS SALES?**

- **YES**
  - **GO TO QUESTIONNAIRE SET C:** EXPANSION OF EXISTING CHAIN

- **NO**
  - **IS THE CHAIN ACTOR'S MAIN OBJECTIVE TO BUILD EFFICIENCY?**
    - **YES**
      - **GO TO QUESTIONNAIRE SET D:** INCREASE EFFICIENCY OF EXISTING CHAIN
    - **NO**
      - **STOP**

All the questionnaires contain some projected answers which will enable the interviewer to easily identify the answer of the chain actor. In addition, some open questions are asked in order to allow the interviewer to gather relevant chain specific information. The complete set of questionnaires including guidance questions for Interviews of chain actors can be found in ANNEX 2: MANUAL FOR CHAIN ACTOR INTERVIEWS.
4.2.2.3 Outcome
Following the procedure described above, for each chain actor interviewed, the researchers will obtain one of the four sets of questionnaires completed with the answers of the chain actor:

- Questionnaire set A
- Questionnaire set B
- Questionnaire sets B+C
- Questionnaire sets B+D

4.2.2.4 Case in Point
Example Box 3 shows the first page which is common for all sets of questionnaires. It serves as a simple table to gather basic information about the interviewed chain actor. Example Box 4 illustrates some questions as extracts from the questionnaire set B for the same chain actor. (QB5: Question number 5, from Questionnaire Set B).

Example Box 3: Title Page of Interview Questionnaires

<table>
<thead>
<tr>
<th>TYPE OF CHAIN: KEY PRODUCT</th>
<th>Pig Meat Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNTRY OF ANALYSIS</td>
<td>Poland</td>
</tr>
<tr>
<td>DEVELOPMENT STAGE OF THE CHAIN (based on mapping)</td>
<td>Efficiency</td>
</tr>
<tr>
<td>DATE OF INTERVIEW</td>
<td>15.07.03</td>
</tr>
<tr>
<td>TYPE OF ACTOR IN THE CHAIN</td>
<td>Processor (Slaughterhouse) Class B2</td>
</tr>
<tr>
<td>NAME OF FARM/COMPANY</td>
<td>Jablonna</td>
</tr>
<tr>
<td>COUNTRY OF OWNERSHIP</td>
<td>Poland</td>
</tr>
<tr>
<td>SIZE OF COMPANY (number of employees, workers)</td>
<td>38</td>
</tr>
<tr>
<td>NAME OF PERSON INTERVIEWED</td>
<td>Mr. Krystof Trusiak</td>
</tr>
<tr>
<td>FUNCTION OF PERSON INTERVIEWED</td>
<td>Co-owner</td>
</tr>
<tr>
<td>LOCATION OF FARM/COMPANY</td>
<td>Jablonna Lacka</td>
</tr>
<tr>
<td>NAMES OF INTERVIEWERS</td>
<td>Hila Attaie and Jessica Salazar</td>
</tr>
<tr>
<td>ORGANISATION OF INTERVIEWERS</td>
<td>ESSEC Business School - France</td>
</tr>
</tbody>
</table>

1. KEY PRODUCT: THE MAIN PRODUCT OF INTEREST FOR VALUE CHAIN ANALYSIS
2. FOR CHAINS IN THE PROCESS OF ESTABLISHMENT, INTERVIEWS WILL BE CARRIED OUT WITH FUTURE/POTENTIAL CHAIN ACTORS
3. TYPE OF ACTOR IN THE CHAIN:
   - PRODUCER (FARMER)
   - PROCESSOR (PRIMARY OR SECONDARY)
   - DISTRIBUTOR (RETAILER)
   - MIDDLE MAN: ANY INTERMEDIARY BETWEEN MAIN CHAIN ACTORS: WHOLESALERS, EXPORTERS, COLLECTORS, ETC.
Example Box 4: Excerpts of Questionnaire Set B

Q B5. Where do you meet your customers?

- At my site
- At customer’s site [x]
- At market place
  - Local Market Place
  - Regional Market Place [x]
  - National Market Place
  - Foreign Market

Please specify market format: *Supermarkets, Hypermarkets and small stores*

Q B6. Do you face any difficulties in accessing the markets?

- No.
- Yes. Reason: Jablonna classified as B2 (in process of meeting EU requirements, in long-term), therefore, can only sell in the domestic market. Access to EU markets not possible.

Q B11. Are you satisfied with the relationship with your customers?

- Yes [x]
- No

Q B12. If you are not satisfied about the relationship with your customers, where is the main problem? Please explain.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of contract</td>
<td></td>
</tr>
<tr>
<td>Terms of payment [x]</td>
<td>Payment with long payment terms</td>
</tr>
<tr>
<td>Quality conditions for delivered product</td>
<td></td>
</tr>
<tr>
<td>Quantities to be delivered [x]</td>
<td>Short notice of customers for delivery of high quantities for promotions.</td>
</tr>
<tr>
<td>Price settlement</td>
<td></td>
</tr>
<tr>
<td>Discount to customers</td>
<td></td>
</tr>
<tr>
<td>Responsibility for delivery</td>
<td></td>
</tr>
<tr>
<td>Others, please specify: [x]</td>
<td>For promotions only special cuts in large volumes required by customer. The other parts of the carcass not always sold at the same time.</td>
</tr>
</tbody>
</table>
With chain actor data at hand, the researchers’ next mission is to identify critical issues both at actor level and at chain level. A screening process using answers to interview questions as inputs performs this mission. The outputs of the process are:

- Issues are characterised as critical or not critical
- The degree of severity and the cause for each critical issue is estimated

The two processes share a similar structure and are described below in Tool 3&4.

### 4.2.3 TOOL 3: SCREENING FOR CRITICAL ISSUES AT CHAIN ACTOR LEVEL

#### 4.2.3.1 Description

The first next step of the analysis is to screen critical issues for each chain actor with the information gathered at chain actor interviews. This step is necessary as the questions used for interviewing chain actors are only indirectly related to the underlying critical issues. The underlying technique is explained in the following paragraph.

Working from the set of “all possible” critical issues, sets of indirect questions have been developed to investigate each possible critical issue (see Tool 1). This “triangulation” technique is commonly used to limit respondent bias and to identify and estimate the value of latent variables. Our experience with similar studies shows that whenever direct questions are asked, then the respondents describe most of the possible issues as critical. This method is often used in medical diagnosis where symptoms are the inputs and the disease is the outcome. This becomes obvious if one considers a medical doctor who cannot directly ask his/her patients whether they suffer from a particular disease. Another potentially interesting feature of this method is the number of questions: the answer to a given question can be used several times but for different issues. The technique is demonstrated in the Figure 9 below. Five questions have been set to identify each one of the critical issues A and B. However, questions 1 and 3 are to be asked only once. The same answers will be taken into account when performing the analysis for identification of both issues.

#### Figure 9: Questions and Triangulation
Answers to questions relevant to a given critical issue serve as inputs into a diagnosis tool; the outcome will allow classifying issues into “critical” and “not critical”. The diagnosis tool used consists of a simple decision tree. A decision tree is itself made of a set of questions. It provides a structured tool which is easy to implement. The screening process for critical issues at chain actor level can be summarised in the following way:

1. Issue X => Set of Questions Q(X) = (Qa, Qb, Qc, Qd,...,Qn)
2. Answers to Q(X) => Decision Tree => critical/not critical

4.2.3.2 Procedure
The researcher is guided through a simple decision tree in order to identify which ones of the initially identified pool of “all possible” critical issues is faced by the chain actor interviewed. However, in order to advance through the decision tree, the researcher will have to use information from the corresponding interview questionnaires. For this purpose, a complementary document has been developed to indicate the source of information in-line with the interview questions according to the different sets of questionnaires. This will provide support to the researcher throughout the process to ensure a user-friendly implementation of the decision tree; both can be found in ANNEX 3: MANUAL FOR IDENTIFICATION OF CRITICAL ISSUES AT CHAIN ACTOR LEVEL and ANNEX 4: COMPLEMENT TO MANUAL FOR IDENTIFICATION OF CRITICAL ISSUES AT CHAIN ACTOR LEVEL.

Excerpts of both Annexes are shown under Case in Point.

The questions in ANNEX 3&4 are in order of importance from C1 – C51, according to the critical issues defined in Chapter 3 (section 3.2.7). Source of information is related to the corresponding questionnaires. For each critical issue, the researcher is asked to take note if an issue is identified as critical and continue the sequence.

4.2.3.3 Outcome
The outcome of this stage of the analysis will deliver a range of critical issues that are faced by the chain actors interviewed. Interviews will be carried out at three levels of chain actors (primary producers, processors & distributors). Therefore, the critical issues identified will be related to the chain actor level and might therefore appear several times, e.g. the same critical issue might appear at producer as well as processor level.

4.2.3.4 Case in Point
In the following Example Boxes, some extractions are shown from the analysis of the Polish pig meat chain at chain actor level. The analysis is regarding a primary meat processor (a slaughterhouse called Jablonna). As demonstrated in Example Box 5, the Guidance Questions 1 reveal that Jablonna is an existing chain actor (out of birth stage), thus we are guided to the questionnaire set B which serves as the basis for the interview of Jablonna. For screening of the critical issues out of the questionnaire, the introductory question in the decision tree (Annex 3) leads us - according to the questionnaire set used - to the related set of critical issues. This is illustrated in Example Box 6 and shows that the questionnaires and the screening process at chain actor level are correlated.
Screening critical issues, which Jablonna is facing, is based on the information gathered through the interview; the researcher now has to proceed through the decision tree from C16 to C27.

**Example Box 5: Guidance Question 1**

**Question:** Is a value chain for the key product already in place in the country where the analysis is carried out?

- **NO** → Go to Questionnaire Set A: Establishment of a New Chain/Business
- **YES** → In the existing value chain, does the interviewed chain actor wish to establish a new business?
  - **YES** → Go to Questionnaire Set B: Investigation of Existing Chain
  - **NO** → Go to Questionnaire Set A: Establishment of a New Chain/Business

**Example Box 6: Excerpt of Annex 3**

Does the chain actor want to establish a new business?

- **Yes** → Go to C16
- **No, chain already**

In Example Box 7, an excerpt of ANNEX 3 is shown related to the questionnaire set B for the chain actor, a primary meat processor, called Jablonna. In order to conclude whether the answers to the questions in the decision tree are affirmative or negative, one has to take into consideration the related answers from the interviews. For this purpose, Annex 4
guides the researcher to the corresponding source of information in the questionnaires. As illustrated in Example Box 8 (excerpt of Annex 4) – the source of information for C16 are the Questions 5 and 6 from the questionnaire set B (Q B5 and Q B6 - this is illustrated in Example Box 4 for the chain actor Jablonna). From the answers recorded during the interview, we clearly can conclude that the chain actor has only restricted access to markets. The answer to C16 is negative and we have identified a critical issue (C16) which the chain actor is facing.

Continuing in the sequence, the answers to the questions C17 and C18 are negative, thus no critical issues are appearing here. The related questions from the interviews are again indicated in Annex 4. The answers to both parts of C19 however are negative. Questions number 11 & 12 from the questionnaire Set B partly build the sources of information and are illustrated in Example Box 4. It is seen that the chain actor is not satisfied with the relationship with his customers. Further information from the questionnaire provides evidence for the negative answer of the second part. Consequently, C19 can be identified as critical for Jablonna.

The outcome of the identified critical issues from this stage of the analysis can be summarised in a table format. For the primary meat processor Jablonna, Example Box 9 demonstrates such a table. However, the analysis is not complete and serves only for demonstration purposes.
Example Box 7: Screening at Chain Actor Level (Excerpt of Annex 3)

QUESTIONNAIRE SET B: INVESTIGATION OF EXISTING CHAIN

C16) Does the chain actor face any difficulties in accessing markets?

Yes → Critical C16

No

C17) Is there a chain driver existing to set some basic rules for the chain actors?

Yes

No → Critical C17

C18) Is there a relationship established among the chain actors on supply and demand?

Yes

No → Critical C18

NO

Is the relationship between the chain actor and his customer satisfactory?

Yes

No

Does the chain actor take sufficient actions to understand and fulfil his customers’ needs?

Yes

No → Critical C19
Example Box 8: Screening at Chain Actor Level (Excerpt of Annex 4)

**QUESTIONNAIRE SET B: INVESTIGATION OF EXISTING CHAIN**

<table>
<thead>
<tr>
<th>C16) Does the chain actor face any difficulties in accessing markets?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sole existence of market places does not ensure the access of chain actors to those markets. Chain actors have to overcome some barriers to entry to achieve access to markets. Market access is essential for chain actors to reach their customers. (Source of information: Q B5, Q B6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C17) Is there a chain driver existing to set some basic rules for the chain actors?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain actors have to exist to perform the basic chain functions, which are: producing, processing (not always required) and distributing to final consumers. A chain can consist of only one chain actor who performs all functions. However, it would be ideal if interactions among chain actors are performed with some sense of organisation and not just randomly. Therefore, the existence of a chain driver who defines some rules for the chain actors is important. These rules are informal ones. However, for a good functioning of a chain, it is necessary that those rules do not only exist, but are also implemented, their compliance monitored and failure in compliance sanctioned effectively. (Source of information: Q B13, Q B14, Q B18, Q B19)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C18) Is there a relationship established among the chain actors?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A basic relationship with other chain actors is necessary to ensure recurrent supply and demand. A basic relationship between chain actors will entail a continuous flow of products (down-stream: towards the customers), information and money (up-stream: towards the suppliers) along the chain. (Source of Information: Q B4, Q B7, Q B8, Q B9, Q B23)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C19) Is the relationship between the chain actor and his customer satisfactory?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not only the existence of a relationship among the chain actors is important, but also its satisfaction for both parties, the supplier and the buyer. In a first step, we recommend to consider the relationship of each actor with his customers. There might be different issues impacting the relationship of an actor with his customers, such as: agreement on the terms of a contract (if existing), fulfilling the terms of contract in terms of quantity, quality, price and delivery on-time, etc. (Source of information: Q B9, Q B10, Q B11, Q B12). However, it is essential that each chain actor receives information about the needs and requirements of his customers on a regularly basis. This can be obtained through active search for information or through customer feedback. (Q B2, Q B15, Q B16, Q B17, Q B20).</td>
</tr>
</tbody>
</table>

Example Box 9: Critical issues identified for Polish Pig Processor (Jablonna)

<table>
<thead>
<tr>
<th>Number of Critical Issue identified</th>
<th>Critical Issue</th>
<th>Information from Questionnaire Set B</th>
</tr>
</thead>
<tbody>
<tr>
<td>C16</td>
<td>Does the chain actor face any difficulties in accessing markets?</td>
<td>Jablonna is a slaughterhouse classified as B2 (in process of meeting EU requirements in long-term) and can only access the domestic market (for a limited time!). (Source of Information: Q B6)</td>
</tr>
<tr>
<td>C19</td>
<td>Is the relationship between the chain actor and his customer satisfactory?</td>
<td>The relationship with their customers (mostly retailers) is not always satisfactory. Sometimes Jablonna fails to provide the required quantity and quality. According to the interview, the causes of this trouble are that purchasing orders are issued within a short time and that retailers’ promotions require only specific cuts. The slaughterhouse stated that it’s difficult to plan its production. (Source of Information: Q B12)</td>
</tr>
</tbody>
</table>
4.2.4 TOOL 4: SCREENING AT VALUE CHAIN LEVEL

4.2.4.1 Description
Starting point for this step of the analysis is the set of critical issues faced by chain actors which is obtained as outcome of the screening process at chain actor level by applying Tool 3. The objective now is to use an additional screening process in order to identify those issues which are relevant for the entire chain and impact the performance of the value chain as a whole. For this purpose, a simple screening process can be used which is illustrated in the Manual for Identification of Critical Issues at Chain Level. The Manual consists of a decision tree based on seven basic questions and the complement will provide guidance to the researcher to answer those questions. The researcher is guided through a consecutive range of questions which will allow him to filter the data gathered from chain actor interviews accordingly. Furthermore, it will allow classifying the impact of the critical issue on the chain, the cause of that critical issue and finally its severity by applying a simple grading system. In order to facilitate the usage of the decision tree, the corresponding complement will be helpful to ensure a user-friendly implementation. It delivers a standardised technique on which the researcher can base the analysis throughout the decision tree. Both documents can be found in ANNEX 5: MANUAL FOR IDENTIFICATION OF CRITICAL ISSUES AT CHAIN LEVEL and ANNEX 6: COMPLEMENT TO MANUAL FOR IDENTIFICATION OF CRITICAL ISSUES AT CHAIN LEVEL

4.2.4.2 Procedure
For each of the critical issues identified at chain actor level, the researcher has to answer the seven questions shown below. However, it is important that the answer to each single question is based on a systematic approach in order to eliminate any type of subjectivity. For this purpose, the researcher is guided with additional information to ensure a standardised outcome of the analysis:

Q1) Does the Critical Issue identified at chain actor level have an impact on the whole chain?
Q2) Does the Critical Issue have an impact on the profitability of the whole chain?
Q3) Does the Critical Issue have an impact on the competitiveness of the whole chain?
Q4) Is there a solution possible to the identified critical issue on the side of the chain actors (alone or in cooperation with other chain actors: horizontally or vertically)
Q5) Do the chain actors have access to the resources needed to solve the critical issue?
Q6) Can the chain actors execute the solution?
Q7) Can the chain actors take the right decision?

Q1) Critical Issues impacting the performance of single chain actors might be valid only for the chain actor interviewed or they might impact the performance of the entire chain. In order to answer the question whether a critical issue identified through interviews of chain actors will impact the entire chain, we recommend taking into account the following three aspects:

- **SCOPE**: The scope of a critical issue points out to what extent it emerges in the chain. If a critical issue is faced by a large number of chain actors, it is highly probable that it will have an impact on the entire chain. In contrast, if only few chain actors face a critical

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5 Explanations identical to ANNEX 6
issue, it will probably not impact the entire chain. However, one has to take into
consideration the size of the chain actor. If a critical issue is faced by one, but very
strong chain actor, who plays the role of a chain driver and sets rules for other actors in
the chain, it will be likely impacting the entire chain. At this stage of the analysis, the
researcher will have a restricted base of information regarding the scope of the critical
issue. This is related to the fact that the sample of chain actors selected for the
interviews is rather based on a qualitative and not quantitative choice. However, at this
stage of the analysis, the information base collected through interviews can be
regarded as adequate to answer the question. The results will be confirmed by a
validation phase at a later point of time. (See section 3.4)

- **FREQUENCY:** In addition to the scope, it is essential to consider at what frequency the
critical issue appears. A critical issue emerging on a regular and frequent basis will
have a vast impact on the chain than one which happens only from time to time. For
example, not being able to deal with unfavourable weather conditions might be a critical
issue at chain actor level. It might even have a vast scope, thus most of the chain
actors might face this issue. However, the impact on the chain will be restricted to a
minimum, everything else remaining at a satisfactory level, if it appears only
infrequently and therefore can be regarded as erratic.

- **EFFECT:** The effect of the critical issue for the entire chain has to be considered as a
third parameter. Depending on the consequences that the critical issue will entail for
the chain, one can also analyse its impact. I.e. a critical issue might be faced by many
chain actors (large scope) and might happen very often (high frequency), however if the
consequences for the entire chain are not drastic, its impact on the chain performance
can therefore be neglected. For example, unfavourable weather conditions might
appear every 2nd year in average and many chain actors might face this issue.
However, it might be the case that the quality decrease of the agricultural produce due
to the unfavourable weather conditions does not influence the income of the farmers
(neither the volumes sold nor the prices nor the total costs). Thus, the effect of the
critical issue on the chain performance is limited and therefore, its impact can be
neglected.

Q2) Once it is defined that a critical issue from chain actor level does have an impact on
the entire chain, it is it is essential that the type of the impact on the chain is characterised.
I.e. the performance of a chain might be impacted in different ways. Critical issues can
impact the profitability of the chain, its competitiveness or both. The PROFITABILITY of the
chain can be measured through the attained profit margins at each chain actor level.
Profitability of the chain is impacted if critical issues negatively impact product volumes to
be sold, market prices or total costs (manufacturing, transportation, marketing, distribution,
taxes, cost of capital). For this purpose, historical data on volumes, prices and costs (if
available) gathered through chain mapping will be useful, in addition to current data
gathered through chain actor interviews. It might happen that no quantitative data are
available. However, qualitative data will be sufficient to conclude whether profitability of the
chain will somehow be impacted or not.

Q3) On the other hand, critical issues might also impact the COMPETITIVENESS of a
value chain. The chain’s competitiveness is endangered when chain actors are not able to
satisfy their customers in terms of product quality, quantity, price and time of delivery.
Failure in competitiveness leads to the fact that potential customers of the chain no more
source their products from the chain, but from competitive ones. For example, secondary
processors will seek to acquire agricultural raw materials from competing chains, if agricultural producers within the chain are not able to deliver at competitive prices the required volumes of a certain quality standard and at the right time.

Q4) After having defined the impact of the critical issue on the chain, we have to find out where the cause for the critical issue is rooted. For this purpose, Questions Q4-Q7 will facilitate the analysis. Question 4 deals with the first step to define whether the critical issue is rooted inside or outside the chain. I.e. if the chain actors are not able to solve the identified critical issue without support from external sources (e.g. government, regulatory bodies, financial institutions etc.), then the cause for the critical issue lays in the context of the chain. However, if critical issues could be solved by the chain actors – assuming the necessary requirements are fulfilled – then the critical issue is related to one of the seven fields of activities defined in Chapter 3: Chain Infrastructure, Human Resource Management, Technology Development, Relationship Management, Operations, Logistics and Marketing & Sales. If the chain actors could accomplish a possible solution, then we need to continue the analysis (Q5-Q7) to find out whether a possible solution is doable and feasible.

Q5) Even if the chain actors could solve the critical issue by themselves, there might be several reasons which could prevent the chain actors to realise the possible solution. The first hindrance that chain actors might face is a lack of resources. Resources can be tangible (land, equipment, financial resources), or intangible (skills, information, know-how etc.). The non-availability of the resources needed is of high importance. However, it is essential to note that the accessibility to those resources is as important as their existence. For example, lack of financial resources might be a critical issue for the chain. Establishing financial institutions solves the problem only, if the chain actors can afford to lend capital from those institutions. Unaffordable interest rates or lack of credibility might prevent the chain actors to access those resources, thus the critical issue might remain un-solved. Lack of resources is much related to issues regarding the context. This is demonstrated in the decision tree in Annex 5.

Q6) Still, having the needed resources existing and accessible might not be enough for chain actors to overcome the critical issue. The next question we have to answer therefore is whether chain actors could execute possible solution assuming resources are not missing. In addition to the resources, the implementation of the solution must be feasible. This point could be further explained with the following example: chain actors might face a critical issue regarding sourcing of input materials at reasonable prices. Purchasing higher volumes would without doubt drive down the costs. However, this would require a certain level of cooperation among the chain actors. For example, establishment of producer groups could be a possible solution to the mentioned critical issue. However, the implementation of such a solution might fail due to the fact that farmers might not be willing to work in groups based on e.g. discouraging past experiences. It is essential to note that the unwillingness of farmers to work in groups is not a critical issue as such. The critical issue faced by farmers is in fact the access to affordable input material. However, the example highlights that critical issues can be classified in different groups related to their root causes. If we can identify that possible solutions are not feasible due to failure in execution of possible solutions to them, strategies can be build accordingly to improve the performance of the chain.

Q7) If the answers to the previous questions (Q1-Q6) are affirmative, then we finally have to consider whether chain actors can take the right decision. Chain actors might have the
necessary resources available to execute possible solutions to overcome the critical issue. However, if they are not able to take the right decision, the critical issue might not be solved. Chain actors might have a set of scenarios for possible solutions from which to choose. Being able to take the right decision however requires a good strategy of the actors. I.e. investment of resources into a possible solution, which can easily be executed, might not necessarily improve the chain performance. In order to improve chain performance the potential solution has to be based on a sound strategy in accordance to requirements of the target market (target customers). For example, one critical issue faced by the chain might be low income due to low selling volumes. In order to increase volumes, chain actors might invest vast resources in technology up-grade with the aim of achieving higher output volumes and thus higher income. However, this will not be the right decision if they become aware that the market for the related product is saturated and no additional volumes are required. In contrast, customers might be looking for other type of products which could easily be provided by the chain if only the chain actors could base the decisions on a sound strategy. In order to answer this question, information related to the strategy of the chain actors (road map) gathered through interviews is to be considered.

If the answer to this question is affirmative, then an issue is identified which does impact the chain. However, resources are available to permit the execution of the solution which is based on a sound strategy and favourable to the chain performance. Therefore, the issue cannot be regarded as critical.

Furthermore, a simple grading system is in place to allow the researcher to obtain a notion on the severity of the critical issue on chain performance. There are always two possible answers for each of the seven questions. The grading system is simply counting the number of answers negatively impacting the chain performance. Those answers are highlighted with a \textbf{C (= Critical)} in the decision tree. We would like to highlight that this grading system is only a qualitative measure and allows only comparing the gravity of critical issues relative to each other. However, this measure will allow the researcher at a later point of time to prioritise the critical issues and identify strategic needs necessary for improvement of the chain performance.

\section*{4.2.4.3 Outcome}

The outcome of the screening process at chain level will enable the researcher to answer the following questions:

- **DOES THE CRITICAL ISSUE IMPACT THE ENTIRE CHAIN?**
  - The critical issue might impact the performance of single chain actors, but not the performance of the entire chain. Thus, such issues will not be further analysed. The researcher will be able to narrow down the set of critical issues identified at chain actor level.
  - A critical issue identified at chain actor level might have an impact on the entire chain (its profitability and competitiveness). However, if a solution is at hand of chain actors and can easily be implemented and will improve the performance of the chain, thus there is an issue, however not regarded as critical for the chain performance.

- **WHAT IS THE IMPACT OF THAT CRITICAL ISSUE ON THE CHAIN?**
  - A critical issue can impact the performance of the value chain in different ways:
    - Competitiveness
    - Profitability
    - Competitiveness + Profitability
• WHAT IS THE CAUSE OF THE CRITICAL ISSUE?
  o The screening process will allow the researcher to categorise the critical issue based on four major causes:
    - Failure in Context
    - Lack of Resources
    - Failure in Execution of potential solutions while having the necessary resources and contextual requirements available.
    - Failure in taking the right Decision

• WHAT IS THE SEVERITY OF THE CRITICAL ISSUE?
  o Counting the indicated C letters in the decision tree will deliver a simple ranking system for the critical issues from
    - No C: Critical issue at chain actor level, but not impacting the chain
    - 1xC: Issue, but not critical for the chain
    - 2xC, 3xC, 4xC: the lower the number of C’s, the lower can be considered the severity of the critical issue

4.2.4.4 Case in Point
In the following Example Boxes, extracts of the screening process at chain level are demonstrated. The excerpts shown are parts from the analysis conducted for the Polish pig meat chain.

Starting point for screening at chain level (by applying Tool 4) is the outcome of the screening process at chain actor level (by applying Tool 3). Looking at the examples illustrated in Example Box 9, one of the critical issue identified at chain actor level was C16: “Does the chain actor face any difficulties in accessing markets?” Some processors in the Polish pig meat chain have difficulties in accessing markets according to EU standards that will be applied in Poland as of 2004. Our objective now is to find out whether this critical issue impacts the performance of the entire pig meat chain in Poland and if so, what is the major cause for it. Example Box 10 illustrates the analysis regarding C16 (Critical Issue number 16).

Q1) Does the Critical Issue identified at chain actor level have an impact on the whole chain? The answer to the first question is positive – thus restricted access of Polish pig processors to the market according to EU standards impacts the entire Polish pig meat chain. As explained above, we have to base the analysis on the following three parameters: Scope, Frequency and Effect. From chain mapping and chain actor interviews, we have the following information:

SCOPE:
The total number of primary processors is: 3720. Polish meat processors must achieve hygienic standards to ensure food safety and adequate environmental care according to EU standards. They are classified in terms of their accordance to EU standards in the following categories:

Class A: Meeting EU standards: 60 ~ 1.6%
Class B1: In the process of adaptation to EU standards: 1700 ~ 46%
Class B2: Long-term adaptation to EU standards possible: 260 ~ 7%
Class C: Not able to adapt and need to close down when Poland accesses the EU: 1700 ~ 46%

Restricted access to markets is mainly a critical issue for the processors classified in B2 and C; they cover around 53% of the total pig meat processors in Poland. Thus, we can conclude that the Scope of this issue is large. More than half of the Polish pig meat processors face this critical issue. For the ones in Class B1, meeting EU requirements means certainly an issue, however we do not consider it as critical, as they are in the course of implementing a solution.
FREQUENCY:
It is obvious that the mentioned critical issue (restricted access to markets) is not based on pure coincidence.

EFFECT:
The accession of Poland into the EU in 2004 will be a big challenge for most of the Polish pig meat processors fighting for survival. Those chain actors who will not be able to act in accordance to EU standards will be out of business. Thus, the effect on the Polish pig meat chain will be drastic as the number of chain actors facing the critical issue is high.

Q2) Does the Critical Issue have an impact on the profitability of the whole chain? The answer to Q2 is also positive – thus being restricted to the domestic market means dealing with lower prices and lower volumes. Therefore, the profitability of the chain is affected. Furthermore, the access to the domestic market will also be endangered if Polish pig meat processors are not able to upgrade their facilities according the EU requirements until 2004 latest.

Q3) Does the Critical Issue have an impact on the competitiveness of the whole chain? Also the answer to Q3 is positive – i.e. the competitiveness of Polish pig meat chain is affected. This is obvious if one considers that we have defined quantity, quality, price and time of delivery as the major drivers for competitiveness. In the case of the Polish pig meat chain, it means that the quality standards are going to be met only by 47% of the current Pig meat processors by 2004. Furthermore, we have to consider that the remaining 53% of the current Pig meat processors might be out of business if not meeting EU requirements in 2004. Thus, competitiveness of the Polish pig meat chain will suffer in terms of quality and quantity compared to other players present in the EU market.

Q4) Is there a solution possible to the identified critical issue on the side of the chain actors (alone or in cooperation with other chain actors: horizontally or vertically)? There is a solution in hand of chain actors to overcome this critical issue by upgrading their processing facilities according to EU standards. Thus, the answer to Q4 is positive.

Q5) Do the chain actors have access to the resources needed to solve the critical issue? To answer Q5, we have to consider tangible and intangible resources. Financial resources (tangible) needed are made available by the Agency for Restructuring and Modernization of the Ministry of Agriculture and Rural Development through preferential loans. In addition, chain actors need guidance regarding the EU requirements and how to upgrade their processing facilities. This kind of guidance is also provided by the state. Thus, the answer to Q5 is positive.

Q6) Can the chain actors execute the solution? However, in order to execute the solution (upgrading of facilities), Polish pig meat processors need a sound business plan as well as a high credibility to have access to preferential loans offered by the state. But most of the small processors are not able to meet the requirements for accessing the loans. Thus, the answer to Q6 is negative.

Concluding we can say that restricted access to EU markets is a critical issue for the Polish pig meat chain which will impact its profitability as well as its competitiveness as of EU accession in 2004. However there is a potential solution: upgrading processing facilities up to EU requirements. Although resources are available, many small- and medium-sized pig meat processors will not be able to access those resources and thus fail in executing the solution with a gravity level of 4xC.
Example Box 10: Screening at Chain Level (Application of Annex 5)

Q1) Does the Critical Issue identified at chain actor level have an impact on the entire chain?
   - Yes → Critical issue regarding CONTEXT / RESOURCES
   - No → NOT CRITICAL FOR CHAIN. GO TO NEXT CRITICAL ISSUE.

Q2) Does the Critical Issue have an impact on the profitability of the whole chain?
   - Yes → Critical issue regarding EXECUTION
   - No → Q3)

Q3) Does the Critical Issue have an impact on the competitiveness of the whole chain?
   - Yes → Critical issue regarding DECISION
   - No → Q4)

Q4) Is there a solution possible to the identified critical issue on the side of the chain actors (alone or in cooperation with other chain actors: horizontally or vertically)
   - Yes → Issue, but not critical
   - No → Q5)

Q5) Do the chain actors have access to the resources needed to solve the critical issue?
   - Yes → Critical issue regarding CONTEXT / RESOURCES
   - No → Q6)

Q6) Can the chain actors execute the solution?
   - Yes → Issue, but not critical
   - No → Q7)

Q7) Can the chain actors take the right decision?
   - Yes → Issue, but not critical
   - No →
Proceeding the same way as for C16 with all critical issues resulting from the screening process at chain actor level, we obtain as result all critical issues screened at chain level. The results can be illustrated in a table format. The analysis of the Polish pig meat chain is shown in Example Box 11. Critical issues are grouped for each level of chain actors in the first column. In the following three columns, the outcome of the screening process at chain actor level is presented according to the application of Annex 3. Q1-Q7 are the questions from Annex 5, as demonstrated in Example Box 10. The answers to the questions are shown in form of Y=Yes and N=No. The column “Outcome at Chain Level” shows the results of the screening process at chain level, thus critical issues impacting the performance of the entire chain and the related causes for them. In the last column, the gravity of the critical issues is shown in form of a number of Cs, varying from none to four.
### Example Box 11: Outcome Screening at Chain Level

<table>
<thead>
<tr>
<th>Number of Critical Issue</th>
<th>Critical Issues</th>
<th>Outcome Chain Actor Level</th>
<th>Questions for identification of Critical Issues at Chain Level</th>
<th>Outcome Chain Level</th>
<th>Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
</tr>
<tr>
<td>Producer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C19</td>
<td>Is the relationship between chain actor and his customers satisfactory?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C21</td>
<td>Is the chain actor able to cover his costs and make a minimum profit from his business activity?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C22</td>
<td>Does the chain actor have access to affordable financial resources?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C24</td>
<td>Does the chain actor have the skills required to manage and operate his business activity?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C25</td>
<td>Does the chain actor have the necessary parameters for operation?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C16</td>
<td>Does the chain actor face any difficulties in accessing markets?</td>
<td>YES</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>(See above)</td>
<td></td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>C23</td>
<td>Does the chain actor face difficulties in meeting the regulatory requirements of the target market?</td>
<td>YES</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>(See above)</td>
<td></td>
<td>NO</td>
<td>N</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Processor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C26</td>
<td>Does the chain actor have the necessary storage facilities?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C39</td>
<td>Does the chain actor have a basic roadmap for increasing efficiency in his business activity?</td>
<td>NO</td>
<td>N</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C40</td>
<td>Is there a good coordination existing between the chain actor and his customers?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>C41</td>
<td>Is there a good coordination existing between chain actor and his suppliers?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>C47</td>
<td>Does the chain actor have an efficient quality management system in place?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C49</td>
<td>Are there any joint projects taking place on a regular basis between chain actors to exchange knowledge?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Distributor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C19</td>
<td>(See above)</td>
<td>NO</td>
<td>N</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C23</td>
<td>(See above)</td>
<td>YES</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>C25</td>
<td>(See above)</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>C27</td>
<td>Does the chain actor have the necessary transportation means?</td>
<td>NO</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
4.2.5 TOOL 5: IDENTIFICATION OF PERFORMANCE INDICATORS AND PERFORMANCE TARGETS

4.2.5.1 Description
Applying the screening processes at chain actor and chain level as described above will permit the researcher to obtain a list of critical issues which - with a high probability - will impact the performance of the value chain. At this point, we would like to remind that the performance of the value chain is regarding its capability to achieve targeted goals to develop from one stage to another. Three stages of development build the basis for the presented Guidelines: Birth, Expansion, and Efficiency, as presented under Methodology in Chapter 3. i.e. critical issues identified at chain level are the one which will build impediments for the chain/chain actors to come into existence, expand their sales, or achieve efficiency.

The objective of the presented Guidelines is not only to draw attention to those critical issues impacting the chain performance, but also providing directions for possible strategies to improve the current situation of the value chain in regard to its targeted goals.

To be able to set up strategies in accordance with the chain’s targets, one has to look at certain performance indicators for each critical issue. Performance indicators are quantitative or qualitative measures that are key drivers in regard to the achievement of defined goals. Comparing the actual measures of those performance indicators with pre-defined performance targets will allow the researcher to ascertain the gap between those. This is an essential step required for identifying strategic needs with the aim to improve the chain performance. Tool 5 provides the means to guide the researcher through this phase of the analysis. It consists of a set of five tables for each development stage and the context of the value chain:

| BIRTH: C1 - C15 Critical Issues regarding a chain in the development stage Birth |
| EXISTING CHAIN: C16 - C27 Critical Issues common for all existing chains, out of the Birth stage |
| EXPANSION: C28 – C38 Critical Issues regarding chains targeting Expansion |
| EFFICIENCY: C39 – C51 Critical Issues for Chains aiming to build/increase Efficiency |
| CONTEXT: 14 Critical Issues are defined regarding the Context of the chain |

For each critical issues performance indicators and performance targets are defined. Furthermore, critical issues are categorised in three groups: Strategy, Implementation and Context. The foundation for this approach is explained in detail in Chapter 3 (Section 3.2.7). The complete list of “all possible” critical issues is represented as outcome of the theoretical phase of the methodology in ANNEX 7: TABLES FOR IDENTIFICATION OF PERFORMANCE INDICATORS AND PERFORMANCE TARGETS FOR CRITICAL ISSUES.

4.2.5.2 Procedure
Starting point for this stage of the analysis is the set of critical issues identified at chain level, the outcome of the screening process at chain level, by applying Tool 4. An example is illustrated in Example Box 11. The identified set of critical issues builds with
high probability obstacles for the value chain to achieve its goals. The goals are correlated with actions indispensable to achieve a certain development stage.

With this list at hand, the researcher can now apply ANNEX 7. The critical issues in ANNEX 7 are classified in ascending order for each development stage. This allows the researcher to locate easily the critical issues identified and the corresponding information on performance indicators and performance targets, the Type of the critical issue and the corresponding requirements from the chain Context.

The information gathered up to this stage of the analysis builds a first insight for a team of experts to identify certain strategic needs to improve the ability of the chain to achieve its goals and consequently improve its performance. However, it is essential to note that the single critical issues are mostly closely linked to each other. Strategies therefore, have to be built accordingly.

A sound strategy has to comprise the following five basic elements:

1) What are the areas of improvement to allow the chain to achieve its targets? (ARENA)
2) What actions/resources are needed to achieve those improvements? (VEHICLE)
3) How to achieve competitive advantage when aiming to improve chain performance? (DIFFERENTIATION)
4) In what time frame are the necessary actions to be taken to achieve the targeted improvements? (STAGING)
5) What is the economic logic behind the strategy? (ECONOMIC LOGIC)

4.2.5.3 Outcome

The presented Guidelines, still in their infancy, will only partly deliver the answers to the five questions, essential to build a sound strategy. Applying Tool 5, will allow the researcher to identify areas of improvement with the set of critical issues identified (Arena). Furthermore, it will enable the team of experts to get a notion on what actions need to be taken in order to achieve those improvements. This is possible by considering the causes for critical issues by focusing on their performance targets and defined performance indicators. However, further investigations need to be executed with regard to performance of competing chains with the aim to focus on differentiation. The fourth question regarding staging will partly be answered by the underlying methodology which is based on ranking the critical issues in order of importance related to each development stage. However, further parameters regarding the context have to be taken into consideration when setting up a staging for the implementation of a strategy. Prior to implementing any strategy, the experts have to be aware of the economic logic behind it. As this aspect is specific to each chain and its context, the presented Guidelines show limitations with regard to this.

4.2.5.4 Case in Point

In Example Box 11, a list of critical issues impacting the Polish pig meat chain is illustrated. Applying Tool 5 (Annex 7) will provide the corresponding performance indicators and performance targets. An extract is shown in Example Box 12 for critical issues C16 and C19. Example Box 13 illustrates the corresponding critical issues regarding the chain context.
**Example Box 12: Excerpt of Annex 7**

<table>
<thead>
<tr>
<th>Critical Issue Number</th>
<th>Activity</th>
<th>CRITICAL ISSUES RELEVANT FOR EXISTING CHAIN / BUSINESS</th>
<th>Performance Indicators</th>
<th>Performance targets</th>
<th>Type</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>C16</td>
<td>Marketing and Sales</td>
<td>Access to market or way (exporters, distributors, wholesalers, etc.) to reach customers</td>
<td>&gt; Market formats available&lt;br&gt; &gt; Barriers to entry to those markets</td>
<td>&gt; Markets are available to reach customer&lt;br&gt; &gt; Access is possible</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>C19</td>
<td>Relationship Management</td>
<td>Chain actor is satisfied with the relationships with his customer</td>
<td>&gt; Level of satisfaction of relationship between actors&lt;br&gt; &gt; Terms of payment&lt;br&gt; &gt; Defined responsibilities&lt;br&gt; &gt; Occurrence of hold-up problems</td>
<td>&gt; High level of satisfaction of chain actor with his customer&lt;br&gt; &gt; Low incidence of hold-up problems</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Example Box 13: EXCERPT OF ANNEX 7 (Context)**

<table>
<thead>
<tr>
<th>Number</th>
<th>Activity</th>
<th>CRITICAL ISSUES AT ENVIRONMENTAL LEVEL</th>
<th>Performance indicators</th>
<th>Performance targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Markets</td>
<td>Organised physical markets that allow:&lt;br&gt; &gt; Fair and transparent system of price determination by monitoring&lt;br&gt; &gt; Efficient product flow and storage to facilitate product handling and avoid losses&lt;br&gt; &gt; Established payment system&lt;br&gt; &gt; Effective communication of products to customers</td>
<td>&gt; Existing market formats&lt;br&gt; &gt; Conditions to enter&lt;br&gt; &gt; Price determination system&lt;br&gt; &gt; Changes in product quality during flow&lt;br&gt; &gt; Payment system&lt;br&gt; &gt; Communication system</td>
<td>&gt; Existence of market formats for the chain to meet consumers&lt;br&gt; &gt; Accessible markets&lt;br&gt; &gt; Fair price determination system&lt;br&gt; &gt; Monitored and diffused data on volumes, prices and qualities traded, and number of buyers and sellers&lt;br&gt; &gt; Good quality preservation in product flow in market&lt;br&gt; &gt; Payment system that reduce hold-up problems to minimum&lt;br&gt; &gt; Effective communication of products to customers</td>
</tr>
<tr>
<td>11</td>
<td>Regulations</td>
<td>Existence of regulations on commercial contracts</td>
<td>Basic framework on contractual responsibilities&lt;br&gt; Regulations to guarantee terms of contracts&lt;br&gt; especially terms of payment to minimise payment delays (hold-up problems)</td>
<td>All Regulations need to be&lt;br&gt; in place&lt;br&gt; implemented&lt;br&gt; their conformance monitored&lt;br&gt; sanctions implemented</td>
</tr>
</tbody>
</table>
We would like to highlight that ANNEX 7 provides information which is applicable to any agri-food chain in the corresponding development stage and is not case specific.

However, when working out strategies to improve the performance of a certain value chain, we would like to emphasize that the expert team has to focus on the relations among the set of critical issues impacting the chain and not single issues one at a time.

In case of the Polish pig meat chain – as illustrated in Example Box 11, we have analysed that pig producers (growers) face a lack of satisfaction in relationship with their customers (C19). There is a lack of good relationships between pig growers and processors. The major issue faced by producers are the long payment terms (hold-up problems), which directly affect the financial capabilities of the producers. A large number of small-scale producers exist; they do not cooperate in producer groups (associations); thus, the producers have low negotiation power against processors. The consequence of delays in payment and hold-up problems is crucial. Due to a lack of working capital, the producers are not able to invest in adequate feed, thus the quality of meat is affected (mostly too high in fat content). Also, at the level of processors, the lack of a good relationship with their customers (distributors) leads to major problems of delays in payment and hold-up problems. This in turn, will affect the ability of the processors to ensure timely payment of the producers and thus impact the whole chain. Furthermore, it was observed that Polish consumers seek for lean meats. As the Polish pig meat chain does not meet consumer requirements regarding lower fat meats, consumers prefer to switch to substitutes, such as poultry. This has not only an impact on the diminishing demand of pig meat in the domestic market, but also the ability of the Polish pig meat chain for export in other EU countries. However, this issue was not identified as critical at the distributor level. This is because pig meat is and will remain a highly important factor in the Polish domestic consumption and builds one of the most traditional chains for the Polish market.

From the Example Boxes 12 & 13, we can infer that occurrence of hold-up problems and delays in payment are related to contract regulations. Thus, the critical issue is caused by a failure in the Context. Although regulations regarding contract terms exist, their enforcement is not satisfactory. Furthermore, chain actors are reluctant in establishing vertical links (contracts) in the chain due to the often-occurring hold-up problems. This matter was investigated by many experts in the sector (Rejman, 2001). When building up strategies for improvement of the Polish pig meat chain, the team of experts has to take into account this matter. Increasing the effectiveness of regulations regarding horizontal and vertical links between chain actors would improve the relationships between them. This is very important in regard to the fact that the current production and processing in the Polish pig meat chain is much atomised. Horizontal groupings (associations) would increase the negotiation power at producing and processing level and thus contribute to stabilising prices and profitability of chain actors. In addition, the producers could share costs of purchases, transportation, technical advisory services etc. Furthermore, better vertical links would allow a better coordination of production through efficient information flow about supply and demand and required quality characteristics by final consumers.
4.3 Application of the Guidelines – Resources and Recommendations

In this chapter, we would like to give some practical recommendations based on our experience in the fieldwork. The aim is to provide the readers with a notion of resources needed to apply the presented Guidelines. However, we would like to highlight that the resources needed depend very much on the scope of the value chain analysis. When studying the following paragraphs, we would like to remind the readers that the entire work consists of two major analytical parts (Data Collection, Data Analysis = Classifying issues in “critical” and not “critical”) followed by the Validation Phase and Strategy Building (synthetic and comprehensive).

**Human Resources**

Data collection and classification do not require specific experience and can be conducted by a team of researchers who have obtained a basic training on the presented Guidelines by corresponding experts. For implementing the Guidelines, it is essential that the researchers have a sound understanding of the underlying concepts: development stages, activities and chain context. Furthermore, the researchers need to have a clear view on the objective of the Guidelines: identification of issues critical for chain development.

Depending on the time constraints and the “size” and complexity of the chain, we recommend a team of four individuals – previously trained on the subject – to conduct the first two phases: data collection and screening. The latter is a recommendation for the analysis of one chain in one country. However, before starting interviews with chain actors and institutions, we advise the project team to have a basic understanding of the chain and its context. This is essential for the interviews to be efficient and effective. The responsibilities of the four team members will be the following:

- One project leader: to make sure that project budget and agreed timings are met and to coordinate all activities involved.
- One assistant researcher: to accompany project leader for chain actor interviews. We recommend always a group of two researchers for the interviews to be able to capture all information given and complete the data collection through own observations. After each interview (or on a daily basis), we advise the two researchers to debrief their findings and exchange their opinions.
- Two additional team members: to gather and process information for mapping the chain. This will be accomplished either through investigation of existing secondary data (statistical offices, libraries, etc.) or through interviews with public institutions where experts can provide valuable information about the chain under investigation. Debriefing and processing of the information gathered is also recommended on a daily basis.

Regarding validation phase (and the design of strategies to deal with identified issues), we do believe that involvement of experts with significant expertise in the subject of agri-food chain development is indispensable. Diagnosis, strategy design are not a linear task. It requires fine-tuning, deep thinking and understanding of the subject and sometimes a good ration of creativity. The strategist must check if a potential strategy exhibits desirable properties in the specific context of the chain. Therefore, a team of experts with different area of specialisation and practical experience of agri-food chains offers the best structure to insure comprehensive, systemic and synthetic views of the chain challenges.
**Time**
The time required for a chain analysis will depend very much on the scope of the project and how many chain actors will be interviewed. In addition, the project team needs to consider the travelling time to the chain actors’ locations. The net interview time is estimated at 1 to 1.5 hours. Additionally, visits of (production) facilities are highly recommended. They will allow the interviewers to obtain a better understanding of the issues that chain actors are facing. When designing the interviews the following should be kept in mind:

- Long in-depth interviews rather than many short interviews
- Sample should be varied in terms of business size and performance of chain actors
- Include best informed, opinion leaders, and expert opinions
- Consider how present is the issue in the mind of the interviewed person: Believes vs. Real Issues

One might consider the possibility to conduct group interviews. However, we do not recommend this based on the following reasons:

- Chain actors usually pursue different stages of development and therefore face other types of issues (interview questions would be different).
- It is highly important to be present at the chain actor’s site. This enables the interviewer to obtain direct access to relevant information in an atmosphere where the chain actor feels at ease. Furthermore, we regard it as very important to visit chain actor’s facilities.
- Groups often tend to converge to a soft consensus
- Expertise is required in conducting such group interviews

Table 5 shows estimated times needed for the several steps of value chain analysis by applying the presented Guidelines. A possible sample size for data collection (to cover the widest range of critical issues faced by chain actors) would be 8-10 chain actors at each chain actor level (producers, processors, distributors), thus a total of 24 – 30 interviews for one chain. (The fieldwork was performed on a pilot scale of a total of 12 chain actor interviews and 8 interviews with institutions for two chains; the focus was mainly driven on the development of the Guidelines rather a complete analysis). The estimations in Table 5 show that a total of 30 – 46 man days are required for the sample size mentioned. However, one has to consider that the total time needed for the analysis will be shorter, based on the fact that certain activities can be carried out in parallel by the four researchers involved.
Table 5: Total estimated Time for Data Collection & Screening

<table>
<thead>
<tr>
<th>Step of analysis</th>
<th>Activity</th>
<th>Time needed per activity</th>
<th>Number of interviews</th>
<th>Total Time estimated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain mapping</td>
<td>Interviews with institutions</td>
<td>~ 1 hour</td>
<td>~ 4-5 for one chain</td>
<td>1 man day</td>
</tr>
<tr>
<td></td>
<td>Secondary data collection</td>
<td>1-2 days</td>
<td>N.A.</td>
<td>1-2 man days</td>
</tr>
<tr>
<td></td>
<td>Data analysis</td>
<td>2-4 days</td>
<td>N.A.</td>
<td>2-4 man days</td>
</tr>
<tr>
<td>Chain actor data collection</td>
<td>Designing interviews and setting up appointments with chain actors</td>
<td>0.5 hour</td>
<td>24-30 chain actors</td>
<td>~ 2 man days</td>
</tr>
<tr>
<td></td>
<td>Interview time</td>
<td>~ 1 hour</td>
<td>24-30 chain actors</td>
<td>6 - 8 man days</td>
</tr>
<tr>
<td></td>
<td>Visiting facilities</td>
<td>~ 0.5 – 1 hour</td>
<td>24-30 chain actors</td>
<td>3 - 8 man days</td>
</tr>
<tr>
<td></td>
<td>Travel time</td>
<td>~ 0.5 hours</td>
<td>24-30 chain actors</td>
<td>3 - 4 man days</td>
</tr>
<tr>
<td>Data analysis</td>
<td>Data analysis</td>
<td>½ day per interview</td>
<td></td>
<td>12 - 15 man days</td>
</tr>
</tbody>
</table>

TOTAL ESTIMATED TIME FOR DATA COLLECTION AND ANALYSIS: 30 – 44 MAN DAYS

Information
Accessibility of data has a major impact on the timing of the project. In this context, the time needed for planning of the interviews with chain actors is not to be underestimated. This might be also the case of chain mapping. In some countries, no statistical data will be available. Therefore, chain mapping will be more time consuming.

Financial Resources
The budget also depends very much on the scope of the project. The following cost factors need to be taken into account when setting the budget for the project. Some minor additional costs might arise.

- Cost for training researchers
- Cost of researchers
- Cost of experts’ time (if appropriate)
- Travelling: several regions within one country might be interesting for the investigation
- Accommodation
- Local transportation
- Translation costs (if needed)

---

6 May vary depending on the availability and accessibility of information
7 2 researchers involved
8 statistical offices, libraries, internet etc. (if information available)
9 When selecting chain actors for interviews, some notion about their size and performance to be known
10 Assuming 8-10 chain actors to be interviewed at each of the 3 chain actor levels: producers, processors, distributors
11 Within a country, several temporary locations may be selected to base the team and from which the researchers could easily travel to the chain actors; travel time to those locations is not included.
12 Screening/filtering at chain actor and chain level
13 One man day = 8 working hours per day per researcher
5 CONCLUSIONS

The objective of the present work was to develop a practical guideline for value chain analysis with the major focus on identifying critical issues impacting the performance of value chains in the agri-food sector of transitional and developing economies.

In the presented Guidelines, the performance of a agri-food value chains is evaluated with regard to its ability to progress from a current development stage into a targeted development stage. Issues critical in relation to this viewpoint therefore are different depending on the current and the targeted development stage of the chain and its actors. Sources for such critical issues can be located inner-chain (activities within chain actor's business or between chain actors when transactions occur) or outer-chain (in the chain context where support institutions play an important role).

The value added of the presented Guidelines and the underlying methodologies developed lies in its standardised and systematic approach to identify issues critical for chain development. The implementation of the Guidelines does not depend on the specific perspective of the researchers, and does not require an experienced team except for the validation phase and strategy formation. This is based on primary and secondary data collection through interactions with chain actors and support institutions and data screening for identification of critical issues. Ready to apply interview questionnaires will provide a standardised means to chain analysts to gather relevant information without any preconception. Simple analytical tools will further support a systematic filtering and identifying of critical issues from chain actors' data. The versatile character of the Guidelines (based on development stages) allows its application in a wide range of agri-food value chains in transitional and developing economies. In addition, the method developed allows the researchers to identify not only critical issues, but also potential causes for those issues. The latter will be useful for experts to identify strategic needs to improve the chain performance.

Although building a good start for value chain analysis with focus on chain development issues, we regard the presented Guidelines still in their infancy. During the development phase, the Guidelines were tested on two agri-food value chains. However, additional efforts to refine them are still required. Further refinements may come from several sources and follow different goals: Both effectiveness (outcome) and efficiency (application) can be improved by submitting the current Guidelines to practical implementation into multiple contexts and adding a learning loop. For example, the current Guidelines have been partially adjusted during the two field experiments to tackle external regulatory shocks (e.g. EU Quality Standards). Furthermore, a certain risk remains that not all possible critical issues have been considered in the theoretical phase of the methodology. For this purpose, additional concepts, theories and methods can easily be integrated.

In the following chapter some directions are shown on how to further develop the current version of the Guidelines based on some existing limitations.
6 OUTLOOK

Drawing together the major limitations of the presented Guidelines, we do not intend to simply repeat them in this Chapter, but rather to show some directions on how to further build on the current version of the Guidelines.

Performance Targets:

For evaluating the performance of a value chain, its ability to reach some predefined performance targets must be measured through assessment of performance indicators. Performance targets can be regarded as benchmarks that the chain (chain actors) is targeting. The profitability of a value chain can be measured through a variety of indicators such as sales income, profit margins, transaction costs, etc. However, competitiveness of a value chain requires a comparison of performance indicators with other competing chains in different contexts. Although the Guidelines tackle the issue of competitiveness, they do not go as far as to set strong performance targets with regard to international context. This is essential when considering that in today’s globalisation trends world wide competitiveness is a basic requirement for chain actors (not only in the agri-food sector) to survive among international suppliers.

To deal with this drawback, best practices and benchmarks have to be considered in competing chains. One possible solution to do so would be to conduct the value chain analysis simultaneously on two chains: the chain under investigation and a second chain defined as benchmark based on its satisfactory performance on worldwide markets. For example, while investigating the Polish strawberry chain, one could study at the same time the Spanish strawberry chain which is considered as a competing chain to the Polish one. The analysis of the “benchmark” chain may be carried out by applying the current Guidelines in a limited/shortened scope (if possible); it may even be limited to chain mapping in order to obtain basic information on the chain performance. However, this depends on the breadth and profundity of quantitative and qualitative data available on the “benchmark” chain. At this point, we would like to emphasize that interpretation of quantitative data gathered through secondary sources has to be performed with a high level of cautiousness. Comparing quantitative data (chain under investigation versus benchmark chain) requires a sound knowledge about the way the figures have been computed and what the underlying assumptions are.

With information from competing chains at hand, the establishment of strategies to improve the performance of the chain under investigation will be promising. The long-term goal must be “world wide competitiveness” even if the local market remains the core target for a first step.

Opportunities versus Critical Issues:

Because the approach of the presented Guidelines is mainly focused on processes (how things are done) rather than the content (what things are done), a second limitation of the Guidelines comes into light. At this point, one might argue that the Guidelines focus too
much on critical issues and neglect the identification of opportunities that might also be necessary for the development of value chains. To deal with this drawback the current version of the Guidelines must be modified as follows:

- An opportunity assessment must be performed before the application of the Guidelines to evaluate the interest of the current target and compare it to other available opportunities
- A goal assessment must be performed to estimate if appropriate goals are set

Opportunity and goal assessments are intricate, time consuming and require an expanded information set.

Looking at the field of strategic planning, we can point out a useful tool commonly applied in marketing management: SWOT analysis. It stands for analysis of a business regarding its strengths, weaknesses, opportunities and threats. According to Kotler (2003), a business has to monitor two key environmental forces: external environment (opportunity & threat analysis) and internal environment (strengths & weaknesses analysis). The outcome of the analysis will help the business formulate its goals and build strategies which further need to be translated into action plans. After implementation of those actions, feedback is indispensable in order to improve and adapt accordingly. Looking deeper into the SWOT analysis, we have to distinguish between two levels of environmental forces: macro-environment forces (demographic-economic, technological, political-legal and socio-cultural) and micro-environment actors (customers, competitors, distributors, suppliers). They both influence the capability of a business to earn profit.

The main purpose of the environmental examination is to detect new marketing opportunities. According to Kotler (2003), a marketing opportunity is defined as follows: “an area of buyer need or potential interest in which a company can perform profitability. Opportunities can take many forms and marketers have to be good at spotting them.” However, not all opportunities will lead to the same success. Furthermore, when performing opportunity assessment, one has to take into account possible threats which not all will jeopardize the business the same way. The author presents the following two matrices. It becomes obvious that a business has to target opportunities which show a high probability of success and a high attractiveness (1). However, opportunities with a low probability of success and low attractiveness (4) are not recommended to be pursued. On the other hand, threats with a high probability of occurrence and high seriousness (1) should be taken into consideration with more importance than the ones with low probability of occurrence and low seriousness (4).

<table>
<thead>
<tr>
<th>Opportunity Matrix</th>
<th>Threat Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractiveness</td>
<td>Probability of Occurrence</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Low</td>
</tr>
</tbody>
</table>

Source: Kotler 2003
The same analysis could be applied not only for single chain actor’s business, but also at chain level. Our experience with different chains shows that most of the market “opportunities” are already identified by the chain participants who are acting closer to the final consumer (distributors, retailers). Often, upstream stages (processors, agricultural producers) are not aware of these opportunities: upward communication is not adequate. These market opportunities are not all equal in terms of value and risk for the chain participants and some may be purely “opportunistic” opportunities. One most important for the long-run and potential critical issue for chain development is the lack of customer “orientation”. Participants that are customer oriented are likely to develop products that will fit with their customers’ and final consumers’ needs.

Identifying promising opportunities is one task; however, being capable to take advantage or make use of such opportunities is another task. For this purpose, we have to look into internal environmental forces, being internal strengths and weakness of the business. Also this reflection can be applied at chain level. It remains an open question to the strategists to decide whether a chain should limit itself to opportunities where it has the required strengths or whether it should target certain opportunities for which some strengths first need to be developed. For chain actors there are always an important number of “opportunities” that can be followed, considering

- “Hard technology” based opportunities
  o Manufacturing: Facilities, Equipment, Inputs, Technology, Economies of Scale, Capacity, Workforce, Technical Skills
  o Finance: Cost and Availability of Capital, Cash Flow, Financial Stability

- “Soft technology” based opportunities
  o Organisation: Leadership, Management Techniques, Dedicated Employees, Entrepreneurial Orientation, Flexibility, Responsiveness, Quality Management

Our experience shows that a lot of these opportunities are not well investigated by chain participants even in developed countries and world-class firms. Technology and market opportunity assessment is, itself, a management task, which requires specific techniques, experience, time, capital and energy. Often agri-food chain participants are technologically dependent from suppliers of hard and soft technologies. This has produced mix results.

Well balanced (between “technology” and consumer orientation), entrepreneurship often produces outstanding results. The lack of entrepreneurship spirit in a given chain can be seen as a critical issue in the long run.

**Risk Assessment and Risk Management:**

The issue of risk assessment and management is by nature complex, however critical to long-term performance of value chains. Using a standard definition risk (= uncertainty), two types of risk can be mentioned: unknown risk (e.g. emerging disease, emerging competition, etc.) and known risk (i.e. the risk is identified and will someday affect the chain, such as price fluctuations). Whether known or unknown risk can put a chain in danger. It is not a matter of development, but rather a matter of fast regression or even life.
The subject of “unknown risk” is still in its infancy and effective management methods have still to be built. It might also happen that some risks are known by some chain participants and not by the others. One good example for this would be asymmetric distribution of information. Best practices rely on prospective methods and experts. For example, an international retailer with worldwide sourcing activities has set up a team of international experts with the objectives of identifying all “possible” sources of food born diseases and epidemiological studies (analytical, prospective, operational).

The subject of “known risk” has been widely investigated; known risk (even certain risk) will always occur; it is just a matter of time. The importance of such risk for development has been well documented (e.g. under-investment, lost opportunities, disappearance). The most important issue (as illustrated in Williamson’s company-town example) is that chain participants, governments and institutions often remain over-optimistic and do not take appropriate actions. Recent crisis have generated a social demand for risk assessment and preventive measures at various levels (versus post crisis treatment). An example for this would be the emergence of food borne diseases. This has raised consumer awareness regarding food safety issues enormously. The agri-food industry therefore is highly challenged to deal with such risks through preventive actions.

Risk management on the other hand, is a matter of strategy. For example, in the case of the Polish pig meat chain, chain actors are facing a certain level of risk with Poland’s accession to the EU in 2004: challenging requirements regarding quality standards. Dealing with such a change in the environment (risk), theoretically puts back the chain to the Birth stage. Only those chain actors who are able to fulfill the new (quality) requirements will survive and the others will be out of business. One advantage of this strategy will be to achieve a certain level of concentration in the chain to increase efficiency. The socio-economic impact related with a high increase of unemployment in the sector remains an open challenge regarding risk management.

The current Guidelines do not deal very well with the risk issue. This is partly due to the reflexive nature of the method. If risk is considered an issue by chain participants, then it does appear as an important issue. Again, it will be necessary to submit the chain to external benchmarks on the issue of risk assessment and risk management. Two types of benchmarks are necessary for risk assessment: 1. Risk (i.e. uncertainty) 2. Impact. Both determine a gravity measure, as high risk with low impact is considered as negative as low risk with high impact. Considering risk management as an activity, appropriate benchmarks can be established from best practices (once identified, they can be easily incorporated in the Guidelines) or from residual risk analysis. This is however an outstanding challenge.

**Strategy Development:**

Once critical issues have been identified and a synthetic and comprehensive view of the chain system has been worked out, much work needs to be undertaken to tackle the issues. The diagnosis is set, but possible treatments and the prognosis have to be formed.

Change management is a difficult mission, even inside companies and it is expected to be harder in chains, even the simplest ones. Methods have been developed and applied inside companies. Although those methods have shown some limitations, a few key factors of success have been identified:
- The diagnosis must be clear to all chain participants and a consensus must be established on the diagnosis and the prognosis before any action plan is developed. Every one must get the idea that things are not going to change “naturally” and that it is the mission of ALL chain participants to change them.

- The success rate depends much on the involvement of the top management in the process. But there is not such a concept of “top management” at chain level. The concept of “chain pilot or driver” has been identified from the management system literature. The concept of chain strategy (similar to the concept of business strategy) must be developed. Successful developments are to be studied. A quick review of past success reports let us conclude that implementation of strategies (change management) requires a committed (chain) driver. Some examples to highlight this feature are the following: labeled poultry was imposed by government through planned development efforts; organic farming was driven by customers; the success of Beaujolais was linked to efforts of farmers groups.

- All critical issues must be tackled at once (though not at the same speed)! Due to the nature of critical issues, it will not be appropriate, but even counter-productive to remove them only one at a time. Strategic concepts are valuable; without a clear deliberate or emergent strategy for the chain (dealing only with critical issues) will generate uncertain results.

- A culture of permanent transformation or entrepreneurship must be developed.

We believe that every one interested in chain development strategy should consider investing some time and energy on either the subject of “product and process development” or of “quality insurance program” management. Both subjects have a common point with chains: systemic nature and specialized functions-stages. They also demonstrate a clear cut between the “substance” (i.e. appropriate strategies) and the change management process (i.e. implementation of the strategies).

To our opinion, built around motivation techniques three stages must be deployed:

1. Creating a state of Emergency
2. Establishing Directions
3. Maintaining Tension

We hope the outcome of the value chain analysis will contribute to the “creation of a state of emergency for chain participants”.

**Strategy Implementation (Policy Design):**

The quality of the diagnosis is essential during this stage. Several types of actions can be put in place to deal with the identified critical issues. Ideally, the sum of all actions should respond to the entire set of critical issues identified. In the contrary case, because of the limiting character of certain issues, the effectiveness would be low.

The design of a set of actions must take into account several aspects that are not possible to treat during the formation of the diagnosis. The solutions must respond at least to the following:
- Deal with the entire set of critical issues identified
- Be acceptable by the chain participants
- Easy to implement
- Be inexpensive to implement
- Etc.

For example, financing problems associated with delays in payment which limit the development of productive investment can be treated by relatively different solutions:

- Most obvious is to reduce by the legislation the times of payment (direct fight against the identified cause)
- Create a system for interest payment with state guarantee
- Create an advance system
- Access to bank or institutional loans to increase the working capital
- Increase the margin and thus restrict retention
- A mixture of these various options or other solutions can be possible

The selection of a set of solutions cannot be made by considering only the case of the value chain studied, but all transactions at the national level. The preference of chain actors for one solution compared to another is only one of the elements one has to take into account when aiming to deal with the critical issues effectively. The preferred solution(s) is not obligatorily easy to implement, inexpensive or compatible with the philosophy of the current government. However, all efforts have to be directed to the treatment of the critical issues.

When considering policy design to introduce solutions to critical issues, it seems to us incompatible to reconcile different aspects to the solutions without a certain risk of loss of effectiveness or efficiency. This becomes obvious if one compares solutions beneficial to local conditions versus those beneficial to global circumstances.

The search for solutions does not simply consist of the selection of a generic policy followed by its adjustment to the specific context of the chain. A certain amount of creativity is necessary to correctly deal with the specific problems which encounter agri-food chains in transitional and developing economies.
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Annex 7. Tables for Identification of Performance Indicators and Performance Targets for Critical Issues

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### 11 GLOSSARY

<table>
<thead>
<tr>
<th>TERMINOLOGY</th>
<th>DEFINITION</th>
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<tbody>
<tr>
<td>Business Development Cycle</td>
<td>Businesses are compared to ecological systems according to which they develop through four stages. Self-Renewal is necessary to remain competitive and puts the business back to the birth stage to recommence the development stages.</td>
</tr>
<tr>
<td></td>
<td>1. Birth</td>
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<td>2. Expansion</td>
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<tr>
<td></td>
<td>3. Leadership</td>
</tr>
<tr>
<td></td>
<td>4. Self-Renewal</td>
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<tr>
<td>“Competitive Advantage”</td>
<td>Strategic model developed by Porter in 1985, dealing with the organisational context of firms affecting firm performance. Key tool for value chain analysis: firm value chain and its underlying concepts of activities (value creating activities and supporting activities – see there).</td>
</tr>
<tr>
<td>“Competitive Strategy”</td>
<td>Strategic model developed by Porter in 1980: &quot;the Driving Industry Competition&quot;, focusing on interactions between market players and strategic positioning by describing the five forces commanding competition among businesses (firms):</td>
</tr>
<tr>
<td></td>
<td>1. Rivalry among existing firms</td>
</tr>
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<td>2. Bargaining power of suppliers</td>
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<td></td>
<td>3. Bargaining power of buyers</td>
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<tr>
<td></td>
<td>4. Threat of new entrants</td>
</tr>
<tr>
<td></td>
<td>5. Threat of substitute products or services</td>
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<tr>
<td>Chain</td>
<td>Synonym: Value Chain (see there)</td>
</tr>
<tr>
<td>Chain Actor</td>
<td>All members of a agri-food value chain actively involved in value creating activities along the chain: agricultural producers, processors, distributors (and others).</td>
</tr>
<tr>
<td>Chain Driver</td>
<td>A powerful/dominant chain actor setting up informal rules to be followed by other chain actors (e.g. specific quality standards imposed by strong retailers)</td>
</tr>
<tr>
<td>Chain Mapping</td>
<td>First step of value chain analysis with the aim to describe the chain and will provide the analysts with:</td>
</tr>
<tr>
<td></td>
<td>- A definition of the contour of the chain</td>
</tr>
<tr>
<td></td>
<td>- Chain structure – value creating activities/ basic flows / major types of players</td>
</tr>
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<td></td>
<td>- Quick assessment of chain’s current development stage and development objectives (targeted development stage)</td>
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<td></td>
<td>- Chain’s current and future orientations (e.g., local, regional, national, export regional, export world wide)</td>
</tr>
<tr>
<td></td>
<td>- International competition</td>
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14 Definition used in the presented Guidelines
<table>
<thead>
<tr>
<th>TERMINOLOGY</th>
<th>DEFINITION</th>
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<tbody>
<tr>
<td>Chain Participants</td>
<td>All members of a value chain: chain actors and support institutions</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>Ability of the chain (chain actors) to satisfy their customers’ needs in</td>
</tr>
<tr>
<td></td>
<td>terms of price, quality, quantity and terms of delivery in comparison to</td>
</tr>
<tr>
<td></td>
<td>competing chains.</td>
</tr>
<tr>
<td>Context</td>
<td>Environment in which the chain is imbedded: adequate external conditions</td>
</tr>
<tr>
<td></td>
<td>required to allow sufficient coordination of chain participants, including</td>
</tr>
<tr>
<td></td>
<td>support institutions: governmental policies, market information, logistical</td>
</tr>
<tr>
<td></td>
<td>infrastructure, financial infrastructure, market infrastructure, educational</td>
</tr>
<tr>
<td></td>
<td>institutions and basic technology.</td>
</tr>
<tr>
<td>Critical Issue</td>
<td>A concern / problem building a significant barrier for a chain (chain actor)</td>
</tr>
<tr>
<td></td>
<td>to progress from a current development stage to a targeted development stage.</td>
</tr>
<tr>
<td></td>
<td>An issue becomes critical with following features:</td>
</tr>
<tr>
<td></td>
<td>- highly negative impact on the chain development</td>
</tr>
<tr>
<td></td>
<td>- may put an end to the existence of the chain</td>
</tr>
<tr>
<td></td>
<td>- solutions are costly</td>
</tr>
<tr>
<td></td>
<td>- implementation of solutions are difficult</td>
</tr>
<tr>
<td></td>
<td>- impact a large number of chain actors</td>
</tr>
<tr>
<td></td>
<td>- appear very frequently</td>
</tr>
<tr>
<td>Decision Tree</td>
<td>Diagnosis tool: with a set of consecutive questions, causes to a number of</td>
</tr>
<tr>
<td></td>
<td>symptoms can be detected.</td>
</tr>
<tr>
<td>Development Process</td>
<td>Process of single chain actors or of entire value chain to progress from</td>
</tr>
<tr>
<td></td>
<td>one development stage to the next</td>
</tr>
<tr>
<td>Development Stage</td>
<td>Value chains in developing and transitional economies will develop through</td>
</tr>
<tr>
<td></td>
<td>the following three stages of development:</td>
</tr>
<tr>
<td></td>
<td>1. Birth: Initial establishment phase of chain actor/chain; low sales</td>
</tr>
<tr>
<td></td>
<td>related to market potential</td>
</tr>
<tr>
<td></td>
<td>2. Expansion: chain existing; expansion of sales targeted; relatively</td>
</tr>
<tr>
<td></td>
<td>rapid rise of sales</td>
</tr>
<tr>
<td></td>
<td>3. Efficiency: chain existing; efficiency of activities targeted; peak</td>
</tr>
<tr>
<td></td>
<td>sales</td>
</tr>
<tr>
<td>French Systematic Method</td>
<td>A descriptive concept of French scholars developed in the 1960s to</td>
</tr>
<tr>
<td></td>
<td>analyse value chains with major focus on physical flow of materials</td>
</tr>
<tr>
<td></td>
<td>and services needed for manufacturing of a final product.</td>
</tr>
<tr>
<td>Guidelines</td>
<td>Course of action established to identify critical issues regarding</td>
</tr>
<tr>
<td></td>
<td>performance of agri-food value chains in transitional and developing</td>
</tr>
<tr>
<td></td>
<td>economies</td>
</tr>
<tr>
<td>HACCP</td>
<td>Hazard Analysis and Critical Control Points: Diagnosis Tool for Identification of Critical Control Points with the aim to assure food safety in food production systems. The concept is modified and applied for value chain analysis.</td>
</tr>
</tbody>
</table>

15 Definition used in the presented Guidelines
<table>
<thead>
<tr>
<th>TERMINOLOGY</th>
<th>DEFINITION</th>
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<tbody>
<tr>
<td>Institutions</td>
<td>“...the humanly devised constraints that structure political, economic and social interactions. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct) and formal rules (constitutions, laws, property rights)”</td>
</tr>
<tr>
<td>Marketing Opportunity</td>
<td>“...an area of buyer need or potential interest in which a company can perform profitability…”</td>
</tr>
<tr>
<td>Margin</td>
<td>“Margin is the difference between total value and the collective cost of performing the value of activities”</td>
</tr>
<tr>
<td>Neo – Institutional Approach</td>
<td>Approach for value chain analysis developed by scholars in the 1990s and still considered at level of research. The approach differentiates two levels of institutions:</td>
</tr>
<tr>
<td></td>
<td>- Institutional environment: see Institutional Economics</td>
</tr>
<tr>
<td></td>
<td>- Institutions of governance: see Transactions</td>
</tr>
<tr>
<td>Performance Indicator</td>
<td>Qualitative or quantitative measures to assess the degree to which targeted development stages have been achieved by chain actors (chains).</td>
</tr>
<tr>
<td>Performance Target</td>
<td>Benchmarks defined to achieve targeted development stage of the chain.</td>
</tr>
<tr>
<td>Primary Activities</td>
<td>Synonym: Value Creating Activity</td>
</tr>
<tr>
<td></td>
<td>All activities directly related with value creation: producing, processing and distributing of products: Operations, Logistics, Marketing &amp; Sales</td>
</tr>
<tr>
<td>Risk</td>
<td>Uncertainty</td>
</tr>
<tr>
<td></td>
<td>Two types of risk can be distinguished:</td>
</tr>
<tr>
<td></td>
<td>- Known risks: uncertainties which are predictable (e.g. market price fluctuations etc.)</td>
</tr>
<tr>
<td></td>
<td>- Unknown risks: uncertainties that are not at all predictable (e.g. emerging disease, emerging competition etc.)</td>
</tr>
<tr>
<td>Strategic Approach</td>
<td>See - Competitive strategy</td>
</tr>
<tr>
<td></td>
<td>- Competitive advantage</td>
</tr>
<tr>
<td>Strategy Content</td>
<td>A complete strategy consists of five components:</td>
</tr>
<tr>
<td></td>
<td>1. Arena: In what markets to operate?</td>
</tr>
<tr>
<td></td>
<td>2. Vehicle: what resources are needed to achieve the implementation of the strategy?</td>
</tr>
<tr>
<td></td>
<td>3. Differentiation: What competitive advantage is to be achieved through the implementation of the action?</td>
</tr>
<tr>
<td></td>
<td>4. Staging: In what pace and sequence are those resources to be utilised?</td>
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<tr>
<td></td>
<td>5. Economic Logic: What is the economic benefit behind actions?</td>
</tr>
</tbody>
</table>

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16 Definition used in the presented Guidelines
17 Williamson 1996
18 Kotler 2003
19 Porter 1985
<table>
<thead>
<tr>
<th>TERMINOLOGY</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy Process</td>
<td>Procedure of setting up a strategy (see strategy content)</td>
</tr>
<tr>
<td>Structure-Conduct-Performance Paradigm</td>
<td>Synonym: SCP Model</td>
</tr>
<tr>
<td></td>
<td>A concept, first elaborated at Harvard in the 1930s, which identifies a set of attributes that impact the economic performance of industries imbedded in a value chain. The SCP-model emphasises the importance of the market structure on the conduct (behaviour of chain participants); conduct is a driver for the final performance of the chain. The determinants for the market structure are the basic conditions of supply and demand.</td>
</tr>
<tr>
<td>Support activity</td>
<td>All firm-wide activities or functions providing support to the primary activities: Chain Infrastructure, Human Resource Management, Technology Development, Relationship Management</td>
</tr>
<tr>
<td>SWOT Analysis</td>
<td>Analysis of a business regarding its strengths, weaknesses, opportunities and threats; external environment (opportunity &amp; threat analysis) and internal environment (strengths &amp; weaknesses analysis).</td>
</tr>
<tr>
<td>Transaction Costs</td>
<td>Costs related to the exchange of materials and information between two chain actors. &quot;The costs of carrying out a transaction by means of an exchange on the open market: marketing costs&quot; 21.</td>
</tr>
<tr>
<td></td>
<td>- Search costs for customers (discovering to whom to sell)</td>
</tr>
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<td></td>
<td>- Costs for information exchange</td>
</tr>
<tr>
<td></td>
<td>- Costs for conducting negotiations with customers and suppliers (bargaining costs)</td>
</tr>
<tr>
<td></td>
<td>- Costs related to drawing up contracts and their monitoring, etc.</td>
</tr>
<tr>
<td>Value Chain</td>
<td>&quot;Value Chains describe the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.&quot; 22</td>
</tr>
<tr>
<td>Value Chain Analysis</td>
<td>Investigation of a value chain with a clearly defined scope and focus with regard to identify issues critical for chain actors/ the chain to achieve a targeted development stage.</td>
</tr>
<tr>
<td>Value creating activity</td>
<td>See primary activity</td>
</tr>
</tbody>
</table>

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20 Definition used in the presented Guidelines
21 Coase 1998
22 Kaplinksy & Morris (2000)
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20. PROCEEDINGS OF THE 2nd INTERNATIONAL CONFERENCE ON CHAIN MANAGEMENT IN AGRI-FOOD BUSINESS. Department of Management Studies, Wageningen Agricultural University, 1996.


