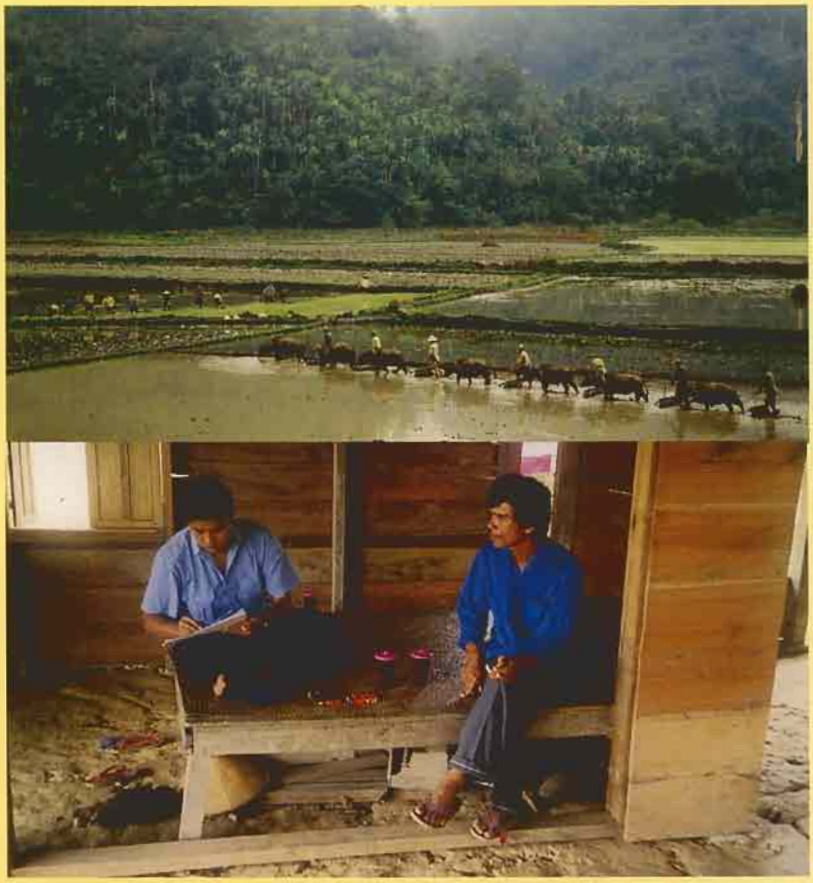
CGPRT NO. 39

Actor-Led Change for Efficient AgriFood Systems

Handbook of the Participatory Actor-Based CADIAC Approach



CGPRT Centre
Regional Co-ordination Center for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific

CIRAD
International Cooperation Centre of Agricultural Research for Development

The CGPRT Centre

The Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) was established in 1981 as a subsidiary body of UN/ESCAP.

Objectives

In co-operation with ESCAP member countries, the Centre will initiate and promote research, training and dissemination of information on socio-economic and related aspects of CGPRT crops in Asia and the Pacific. In its activities, the Centre aims to serve the needs of institutions concerned with planning, research, extension and development in relation to CGPRT crop production, marketing and use.

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(Continued on inside back cover)

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Foreword

Over the course of the last decade, the role of the state in developing countries has been questioned, challenged and reduced. However, the private sector, and primarily small and medium-scale agricultural enterprises and agro-industrial units, have been unable to avail themselves of the means to confront the technical, economic, and social changes affecting, to an ever increasing extent, their daily activities as a result of globalisation of the economy. At the same time, the resources, functions, and power of agricultural public sector entities that were once able to intervene by means of policies, such as price fixing, incentives, subsidies or licences, have been noticeably reduced.

In this context, there is a need to extend those instruments that aim to allow public bodies and private organisations to play a central role in the transformation of agrifood systems. The approach presented here fits these objectives. It was first applied in more than twenty case studies in Central America over the course of four years of working with public and private institutions. Further application was conducted in South America, Africa and recently in Southeast Asia, within a framework of cooperation between the UN ESCAP CGPRT Centre and the CIRAD-AMIS, ECOPOL Programme.

This method relies on the participation of actors in directing the evolution of agrifood systems, including both identifying problems as well as elaborating policies and implementing decisions through concrete actions.

This book is intended as a practical handbook for scientists, analysts, and students working on the definition and implementation of policy changes that contribute to real economic and social agriculture-based development. The objective is to promote competitive and sustainable agrifood systems that broadly benefit society.

We thank the Inter-American Institute for Cooperation in Agriculture and the French Ministry of Foreign Affairs for making this work possible.

Haruo Inagaki
Director
CGPRT Centre

Vincent Dollé
Director
CIRAD-AMIS

Introduction to the Cadiac Approach

Background

The future of agrifood systems in developing countries is linked to the general evolution of the world economy, in particular to liberalisation and internal deregulation as well as regional integration. Agriculture, which must be understood here in a broader sense as the set of productive on-farm activities such as crop growing, tree planting, animal raising and related activities, can no longer be considered as a separate and autonomous sector that is detached from the rest of the economy. It is closely linked to other sectors of production and service.

These links derive from the opening up of regions through the development of road and communication infrastructure; from the establishment of monetary relations that reduce the non-trade part of the rural economy; from technical innovation, which, combined with financial deregulation, favours and establishes links amongst all the sectors in the economy; from the signing of commercial agreements and from the evolution of the world economy, which make the traditional borders between nations penetrable; from the growing mobilisation of production factors, the use of which arises today from the comparison of numerous possibilities, amongst which agriculture constitutes only one of the conceivable choices.

The trans-nationalisation of economies, a characteristic of the 1990s, is as visible in the scheme of world exports of goods and services as it is in the scheme of direct foreign investments. This movement particularly concerns the agrifood industry, one of the most important sectors in international trade.

The tools for analysing and understanding agriculture have to be adapted to this new reality. Firstly, although agriculture remains the basis for human food production and its principal source of raw materials, agriculture-related industrial and commercial structures (agro industries and agribusiness) today increasingly model agriculture in a new way. Next, the diversity of agriculture in itself must be acknowledged as this is where large sub-sectors and actors exist in their own right, thereby justifying the creation of specific tools of analysis.

An understanding of the evolution of agriculture can no longer be based on partial production analysis. It is vital to adopt systemic approaches, with due consideration of the relationship between components existing within a whole that has a global consistency.

The concept of an agrifood system that covers the totality of the flow of goods and services competing to satisfy food needs in a given geographic space and the network of interdependencies between actors – enterprises, financial institutions, public bodies, consumers – generating this flow, is one of these approaches. The ever more influential role that industry and mass retailing have progressively assumed in regard to agricultural production justifies the perception of “agriculture” in terms of agrifood/agroindustrial economics. This approach broadens the traditional perception, which is centred around primary production, and allows for an understanding of the complexity of agrifood systems and the environment in which such systems exist. It relies on the commodity-chain concept to elaborate a characterisation of the structure and functioning of these systems.

Yet, the sole application of an analysis tool such as the commodity-chain analysis may be inadequate to achieve policies, measures, and actions that contribute to improving the competitiveness of agriculture. In terms of policies, few pure analytical efforts lead to socio-

economic changes, if they are not accompanied by the dynamics of social action. In the same vein, in the absence of an appropriate framework of analysis and quality information, the process of consensus building may produce sterile results.

Consideration of the actors in the two components of the "commodity-chain analysis and action-oriented dialogue" approach, (CADIAC: in Spanish, *enfoque de anáisis de CAdena y DIálogo para la ACcción*), is an essential condition to promoting more competitive agrifood systems without adverse impact on humans and their environment. Contributions by actors must be seen as a means of making sure that the changes toward greater competitiveness produce effects in the entire system and ensuring that benefits do not become concentrated in the hands of a select few. Improvement of the socio-economic situation of all the actors should lead to conditions favourable to protection of the environment and rational use of natural resources. The relationship between economic uncertainty and short-term individual interest or exploitation of cheap natural resources – such as the exploitation of water – would thus be eliminated or considerably reduced.

The Cadiac approach is a framework conceived to respond to the professional and technical needs of the private and public sectors in providing analysis and advice on the efficiency of agrifood systems. It covers the production, analysis, and interpretation of information, discussion and validation of that information, and proposal of initiatives for actions, policies, and decision-making.

This book is divided into two sections. The first section is a presentation of the Cadiac approach, its objectives and characteristics, followed by a description of the mechanisms necessary to promote dialogue between actors and the implementation of proposals. Concepts and methods aimed at characterising agrifood/agroindustrial systems and then formulating concrete proposals are detailed in the second section.

Conceptual framework of the Cadiac method

The Cadiac approach is a multidisciplinary method where social interaction concepts derived from institutional economics combine with systemic research concepts to form an integrated tool. The first part of this handbook is devoted to action-oriented dialogue, the second part to commodity-chain analysis. However, dialogue is present at the commodity-chain analysis phase, and the action-oriented dialogue phase is not independent of the analysis. This section discusses the concepts and briefly introduces both parts.

Three great tendencies influence world and domestic agriculture: the free evolution of negotiations and international and national trade, the weakening of direct intervention by the state in the economy and the loss of power of institutions linked to agriculture and producers.

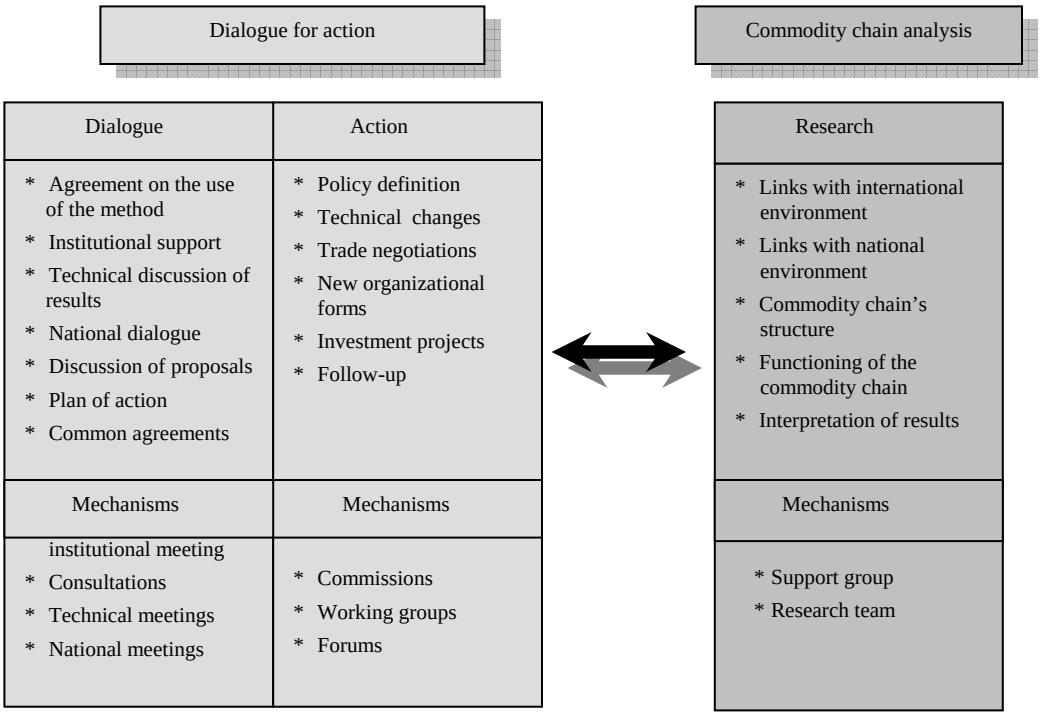
This triple phenomenon has important implications in the socio-economic context of developing countries whose capacity for negotiation and for management of change is limited. Nonetheless, developing countries can establish modes of functioning that are more flexible, participative, and dynamic in order to compensate for their reduced specific influence. It is on this basis - which recognises the questioning of state intervention and that such intervention must be substituted with mechanisms for participation and instruments in harmony with the democratic functioning of a civil society - that the Cadiac approach has been developed.

The method is structured in two parts (Figure 1). The commodity-chain analysis is a participatory research process. The method aims to characterise the strengths and weaknesses of agrifood systems. The outputs of this part are a series of information and documents to be

discussed through the action-oriented dialogue mechanisms set up for this purpose. The outputs of these discussions are in turn incorporated in the research results.

The objective of this dialogue and consensus building process between actors is to define and adopt changes needed to achieve greater competitiveness. The actors themselves formulate proposals, and definite agreements are made to implement those proposals.

Figure 1 Components of the Cadiac approach.



In concrete terms, throughout the commodity-chain analysis, before and during the research work, sustained dialogue between the actors is needed, for example, to discuss work objectives, to identify the contributions of each actor, to define agreements, and to ensure continuous follow up of the results. In fact, even if this part does emphasise research, the first steps on the road to dialogue are already accomplished, since research enables exchanges between actors, which represents an indispensable precondition for the success of the action-oriented dialogue phase**.**

Furthermore, during the action-oriented dialogue phase, observations and contributions permit the research results to be evaluated and lead to modifications in the documents developed in the commodity-chain analysis phase.

Action-oriented dialogue

Although market law is currently presented in theory as the pre-eminent force regulating the functioning of the world economics, observation of the real world and lessons from the history of agricultural development in western countries teach us that non-market interactions also occur (that is when prices do not rule the decisions of economic actors). The

transformation of agriculture in developing countries is currently considered by many as a matter of privatisation and liberalisation, so that market forces will prevail and allow for an efficient redistribution of productive assets and benefits. This assumption however is not true, given the fact that economic deregulation never occurs in a neutral environment where economic agents have equal chances to benefit from the new situation; it occurs in institutional environments where individual or group interests may take advantage over other collective interests leading to socially undesirable effects.

Interaction between actors is seen as an effective way of controlling or reducing market failures that often arise during transitions to more open, deregulated economic functioning. The action-oriented dialogue in the Cadiac approach, combined with research, is an attempt to ensure, as much as possible, that expected benefits are shared among the actors concerned on a win-win basis.

The dialogue phase starts before research activities. The establishment of agreements between different parties involved is a precondition for the analysis. During the analysis, representatives of the organisations within the chain and the public sector evaluate the work carried out and proceed to a constructive review of the facts, the results, and the proposals; the objective being to avoid bias and incoherencies and to carry out an accurate representation of the commodity chain. To that end, technical meetings are organised and necessary modifications incorporated.

Policy debate follows these reviews. A national forum open to the actors in the commodity chain aims at forging a common vision of the future of the sector that is acceptable to most actors, identifying the possible avenues to that future, defining a plan of action for both the public and private sectors and the mechanisms that make this plan feasible.

On the basis of agreements reached, what remains is to implement policy and entrepreneurial actions and orientations aimed at improving the competitiveness of the commodity chain. This step includes the search for sources of financing, the realisation of investment projects, the definition of general or sector-based measures favourable to the changes required, the responsibility for which lies with governments and a civil society. This implies, therefore, a broadening of the dialogue to include actors not directly linked to the commodity chain, but whose role may be important for its evolution, such as sponsors, financial institutions, international cooperation bodies or other public bodies and private organisations of the country.

Commodity chain analysis

In the context of the Cadiac approach, the definition of an agrifood system corresponds to that established by Malassis in 1979: “the totality of activities contributing to the formation and distribution of agrifood products, and by consequence, to the accomplishment of the function of the human nutrition in a given society”. It should be noted that in 1957 Davis and Goldberg defined a very similar concept, that of “agribusiness” as the , “…sum total of all operations linked to the development and the distribution of farm inputs: farm production operations, storage, processing, and distribution of farm products and goods derived from these products”. In the Cadiac approach, the agrifood system concept is applied to specific products, such as beef or rice. For agricultural products whose final destination, once transformed, is not human consumption, such as rubber or tobacco, the term agro-industrial commodity chain will be used.

Defining the commodity chain

In light of the above, a commodity chain is defined primarily according to three dimensions: the product, geographical space, and the period of the analysis.

With regard to the product, it is essential to define whether what is being referred to is one good or a group of goods (tubers for example). If one is referring to a group of goods, then very distinct products with different uses, and with specific histories come into play. However, according to the objectives of the research and the type of product studied, it may be necessary to collect data on both the agricultural product and as well as the transformed product.

Another element that defines the limits of the system is the manner in which by-products are to be treated. Research on the beef system, for instance, would normally cover all farming production activities, the marketing of live cattle, slaughtering, butchery, the distribution, processing and the marketing of the meat. In research terms, there is a choice as to how to treat by-products; they can be treated as mere secondary factors contributing to cost recovery or as objects of analysis in their own right, for example, the industrialisation and marketing of leather.

As regards geographic space, the approach can be applied at the national or regional level, according to the size of the country and the agrifood system. In small Central American and African countries, and in Laos, and Cambodia, its use is easy at the national level. In Brazil, India or Indonesia, one region may represent a geographic space whose particular characteristics justify more specific analysis.

In terms of the period of analysis, data must be collected over periods from one to ten years, depending on the product and the nature of the information. As such, institutional changes that have affected the evolution of the system must be analysed over long periods, while the data and costs of production are linked to briefer periods of time.

The concept of a "commodity chain" is used to represent an economic reality in all its dimensions. It can be applied to many sectors of the economy. In the case of agriculture, it enables the traditional reductive vision of primary production to be surpassed. It also allows us to take into consideration the complexity of existing interactions; all the actors involved in primary production, processing, transport, marketing, distribution, and consumption are linked in the same analytical process. These activities constitute basic activities of every agrifood system. Furthermore, the actors and activities, particularly support activities, such as the provision of inputs and services that contribute to its functioning, are also taken into consideration.

The analysis of a commodity chain therefore rests on a systematic conceptual framework and ensures an up-to-date representation of new forms and articulations in agriculture. Many definitions exist, which, though not mutually contradictory, highlight the different aspects of the systems: products, actors, mechanisms, etc. All of the following definitions have shared terms that allow us to define, in a general manner, a commodity chain as a set of actors and activities in relation to a specific product in a given space:

- Malassis 1992: "The concept of a commodity chain refers to a product or a group of products that are related or whose use is related, whether they be complementary or substitutable. An identified commodity chain makes it possible to mark out firms, institutions, operations, the dimensions and capacities of negotiations, technologies and production relationships, the role of quantities and the balance of power in the determination of prices, etc."

- Chevalier and Toledano 1978: “A commodity chain is an articulated set of integrated economic activities; consecutive integration into articulations in terms of markets, technology, and capital.”
- Duruflé et al. 1988: “More precisely, by production commodity chain one means a set of economic agents that directly participate in the production, then processing, and transportation to market of the realisation of the one same agricultural product.”
- Montigaud 1992: “By commodity chain we mean the set of activities that are broadly interwoven and vertically linked by the fact that they have in common one product (or very closely related products) and of which the final intention is to satisfy the consumer.”

Interest in the concept

When the concept of chain is applied to one segment of the economic reality that defines a product and its transformations, for example corn, this is a commodity chain. This concept can be applied to other activities, such as urban transport, final goods for which one can analyse all the levels that work towards meeting demand.

This concept can also be used for analysing specific problems such as fertilisation, credit, technical assistance, all considered as a system of interactions between actors (producers/providers, intermediaries, users). It offers, thus, a complementary approach to the product-based agrifood systems analysis.

Using the concept of a commodity chain as an instrument of knowledge springs from the idea that, through its application and with clearly defined objectives, one is able to obtain a relatively reliable representation of the reality one wishes to comprehend. This is a technique of organising information aimed at a complete understanding of actors, exchange flows, and relationships, and hence appropriate for analysing at once the situation of an agrifood system, the challenges with which it is confronted, and the possibilities for its evolution.

The objective of the research is to identify the technical, economic, and organisational strengths and weaknesses of the commodity chain and to enable the emergence of proposals aimed at improving its competitiveness in a sustainable and equitable manner. This involves a complete diagnosis of the commodity chain by applying the analysis methods presented in detail in the second part of this book. However, its success depends also on prior organisational work, based on preliminary consultations with interested public and private institutions and entities. This aspect is explained and illustrated by examples in the following section.

Domain and conditions of application

There is broad potential for application of the Cadiac approach. Its use is recommended when responding to a question or when resolving a well-defined problem whose implications have global dimensions and whose impact goes beyond its point of origin. The themes that lend themselves to the application of this approach are generally linked to strategic-type choices: developing new productive activities; evaluating the competitiveness of a commodity chain; defining strategies for production, processing, and marketing; searching for strategic alliances; defining and proposing investment projects; evaluating the impact of projects, policies, and the definition of policies.

On the whole, success in applying the Cadiac method relies on previous agreements between the various parties determining the future of the commodity chain. Such agreements must confirm the necessity of the analysis work and ensure committed participation in the organisation and follow up of the analysis work.

Part I
Action-Oriented Dialogue

Information provided through the analysis of the commodity chain is necessary for decision-making, but usually not sufficient to bring effective changes. There must be mechanisms for dialogue and consultation to establish a strong connection, recognised by the actors, between analysis and action. Without this bridge between research and decision-making, which is built up through dialogue and consultation, the actors will find it difficult to take over the results of the analysis and transform them into actions and policy decisions. Dialogue and consultation, in the concept of the Cadiac approach, are designed to bring about a process of change beneficial to all the actors.

This part comprises three sections. The issue of consultation between actors as a key element to improving economic efficiency or, put another way, as a source of competitiveness, is developed in the first section. The main dialogue and consultation mechanisms are thereafter presented in detail. In the last section, three examples illustrate their implementation and the results obtained.

Consultation, a source of competitiveness

In developing countries, the economic situation of agrifood/agroindustrial systems is frequently characterised by: significant technological backwardness in the majority of enterprises; poor use of resources; limited capacity; small segments that are highly concentrated, technically strong, and commercially aggressive, which control large volumes and generate significant margins, and that regulate the systems by the power they have over the formation of prices and the establishment of rules; and institutional vacuums produced by more or less well conceived reforms and which affect the functioning of the systems.

Other weak points are related to the absence of global strategies caused by the lack of knowledge of global, regional or domestic conditions as regards products and competition. All of these elements affect the competitiveness of enterprises and commodity chains, both globally and at all levels, and also implementation of the process of sustainable development.

For greater competitiveness, considered as the process leading to greater efficiency in the use of resources and sustainable economic and social development, understanding between actors is fundamental. In many countries, the absence of agreements – due to weak socio-economic consensus and the lack of experience in the creation of entities and mechanisms leading to the promotion of real dialogue between social actors – is one restriction in the transformation of commodity chains.

Furthering action-oriented dialogue often implies radical transformations in the ways of thinking and decision-making of the leaders and populations, and may not therefore be achieved in the short term. It often implies the changing of current institutions. All action intended to change the behaviours of the actors should, however, be a priority, because doing so may allow opportunities to be identified in the framework of liberalisation of the economy and world trade. Countries that do not attempt to do so run the risk of suffering great disadvantage, in the sense

that, without social dialogue, their efforts to promote changes may be followed by disappointing results, or results that may be contrary to expectations.

Mechanisms for consultation

One argument often put forward is that, because of factors involving conflict in the relationships between the different groups of actors, establishing processes of dialogue or consultation is utopian, or still cannot provide effective outcomes. The application of the Cadiac method demonstrates that such processes are viable and may play a key role as the impetus for necessary transformations.

The mechanisms for dialogue and consultation used in the Cadiac approach present two main characteristics. First of all, they involve the actors in a manner that is global, non-selective, and which serves, therefore, as a meeting point between all the actors of the commodity chain. Next, these mechanisms do not correspond exclusively to the action-oriented dialogue phase. They are equally indispensable to developing the analysis of the commodity chain.

The *raison d'être* of such mechanisms is the creation of a "chain of actors" whose actions contribute to the implementation of desirable changes, and to the reverberation of their effects on all levels, and hence better redistribution of profits, i.e., more equitable development.

The sequence of the mechanisms for participation of the actors, presented below, is summarised in Table 1. They are presented and discussed in the light of experience in more than 20 cases. However, this sequential presentation is not a recipe that has to be applied strictly in all cases. Each institutional setting is different even in the same country and, therefore, will require some adaptation of these mechanisms or even invention of new ones. However, the underlying principles behind these are that equal chances must be given to all actors for access to information, access to negotiation, and access to decision-making, both for technical and policy decision.

Preliminary consultation

To successfully analyse commodity chains using the Cadiac method, one must first of all start with a process of consultation. Consultation will permit the actors to achieve a consensus as to the method's application and it will also be a means of verifying whether the key factors for the method's success are present.

The initiative for realising a work of this nature is not the monopoly of one particular actor. It may spring from the government's interest, from one of the organisations in the commodity chain or from other entities. In Central America for instance, the initiative of IICA and the French co-operation agency was later taken over by the governments and then by the actors themselves.

Table 1 Summary of activities and mechanisms in the Cadiac method.

☐ **Phase**	**Action-oriented Dialogue**	**Analysis of the Commodity Chain**		**Action-oriented Dialogue**		
☐ **Action**	**Identification of actors' interests**	**Research and information systematisation (stage 1 to 4)**	**Interpretation of results (stage 5)**	**Technical workshop**	**National workshop**	**Follow up and implementation**
☐ **Responsibility**	• Government • Private organisations • Other	• Support group • Technical team	• Support Group • Technical team	• Professional organisations • Other institutions, public and private • Technical team	• Ministries and state institutions • Professional associations • Banks, donors • Technical team	• Actors of the commodity chain and ministries • Banks, donors. • Research and technical assistance bodies
☐ **Activities**	• Institutional consultations • Public-private meeting • Evaluation of feasibility • (operational, technical, financial)	• Research information • Data generation • Interviews • Field surveys • Discussion of results	• Identification of competitiveness problems • Scenarios and simulations • Calculation of indicators • Propositions for change	• Technical comments and correction of research outcomes • Validation of results	• Consensus on the problems of the commodity chain • Identifying measures and actions • Shared vision of the future • Updating	• Concrete measures and actions • Investment projects • Technical changes
☐ **Results**	• Agreement for the analysis of the commodity chain • Work program and deadline • Commitments from interested organisations (support group, technical team)	• Basic information presenting the structure, functioning of the commodity chain and how it relates to the national and international contexts	• Document for discussion including information from stages 1 to 5 • Model for simulation of changes	• Validated document for discussion • Workshop synthesis document • Synthesis document for the national workshop.	• Programme of policy measures and concrete actions • Workshop synthesis document • Reference document for implementation and follow up	• The indicators of the commodity chain show improvements

First mechanism: institutional consultations

Direct contact is established with decision-makers in charge of public and private bodies. This may involve government or private authorities, such as the ministries of agriculture, economy, trade, private organisations, producer associations, co-operatives, manufacturer associations, national and regional chambers, federations and other types of organisations, national and private banks, universities and schools, research centres, agencies for technology transfer, technical cooperation and for financing, bilateral or multilateral, etc. Such contact is normally established by those authorities who, in principle, wish to apply the method.

There are two objectives to this series of consultations: to identify who are the stakeholders or the actors and to evaluate the interests of all the organisations concerned. This will be the basis of a proposal for a preliminary consultation meeting, which will form the second dialogue device. The persons to be consulted, at this point, are managers empowered to make decisions on the organisation of a preliminary meeting and high-level officials (directors of analysis units, study departments). During these consultations, the method and expected outcomes to be gained are briefly presented.

Second mechanism: meeting with official bodies in the commodity chain

This preliminary consultation meeting has two objectives: to better inform the parties about the Cadiac method, its substance, its relevance to the commodity chain as sector of the national economy, and to evaluate the real interests of the participants.

The decision whether or not to put into practice this method will be made according to agreements and commitments obtained in the meeting, particularly as regards operational, technical, and financial feasibility as stated below.

Operational feasibility. Operational feasibility is linked to the commitments made by the participants. It is not enough to obtain informal agreements. The responsibilities and deadlines must be clearly established. The participants must not only bring real support, such as facilitating access to the field, contact to key persons, and access to data, but also commit themselves to participate in the discussion and analysis of the results, and in the organisation of meetings and workshops. The establishment of a formal inter-institutional support group is almost always a pre-requisite for guaranteeing a sustainable investigation and analysis process.

Technical feasibility. Technical feasibility is linked to the availability and the reliability of the existing data and statistics, which influences the volume of new information to be produced during the research. It is, therefore, necessary to evaluate the contributions that the organisations or individual actors will be able to make, with precise commitments and deadlines. In particular, the full or time-sharing participation of different institutions in the activities of the research team will make research results more likely to be accepted and used by the participating organisations. The availability of qualified personnel to form the research group must also be assessed.

Financial feasibility. Financial feasibility is linked to the availability of financial resources necessary for operational costs such as the collection and processing of data, travel costs, provisions, surveys as well as the costs involved in organising the consultation meetings and the follow up. This is a key point since a financial commitment, even limited, from participating organisations is both a proof of their interests and an indication that results may have a chance

to be used. On average, the cash cost of conducting a six-months commodity chain analysis varies from US$ 5,000 to 10, 000, according to the local cost of manpower (see Fourth Mechanism: Technical Team), and the facilities provided by the participating organisations.

Third mechanism: the support group

The main tasks and functions of the support group are:

- to become familiar with the Cadiac analysis methods and to ensure that the technical team uses them correctly;
- to provide continuous support to the technical team (contacts, information, financing, logistics), complying with commitments made during the preliminary consultation;
- to guarantee that the schedule of activities and deadlines is respected for the submission of preliminary results and final outcomes;
- to review and make comments on the results and the related documents for discussion and to propose new inputs;
- to ensure that the documents conform to the terms of the analysis as established in the preliminary consultation.

This support group is made up of representatives of all the actors concerned. It is an *ad hoc*, non-permanent group with a co-ordinator selected jointly by the different parties. The support group coordinator has a key role to play in the dynamics of inter-institutional interactions and therefore must be fully dedicated to the completion of the agreements reached in the inter-institutional meetings.

Fourth mechanism: technical team

The study of a commodity chain is complex and multidisciplinary in nature. It includes an analysis of technical, sociological, policy, and organisational issues. It is therefore necessary to take care that the required human resources are available for this work. Two options have been tested with the CADIAC approach, but in both cases the constitution of a specific research group, called here the technical team is needed. This team, may play one of two different roles.

In the first option, the most desirable one, the team itself conducts the research work and elaborates the analysis of the system. In this case, the team has to include at least two or three people under the supervision of a team leader. The team members will devote a large part of their time, ideally all their time, to developing the research. This option is recommended each time there is a competent analyst from the concerned institutions who is willing and accepted to take the leadership.

In the second option, an external consultant may be hired to conduct the research work, in the absence of qualified internal human resources. The technical team takes on the functions of advising the person in charge of the research. The head of the research should be an analyst with a multidisciplinary background, for example an agronomist specialising in agricultural economics or an agricultural economist.

In both cases, the team should be made up of members of the participating bodies. Postgraduate university students may also be involved. The co-ordinator or person in charge of the research should be professionally recognised and accepted by the authorities in the commodity chain. He/she should maintain a close relationship with the co-ordinator of the support group. His/her activities and responsibilities are:

- to locate and collect the necessary data in accordance with the method - research reports, publications, databases, partially analysed data, expert opinion, etc.;
- to generate other data through surveys, interviews, and work meetings;

- to organize all information as indicated in the analysis method;
- to elaborate preliminary and final versions of the documents for technical discussion. These documents run through all the information corresponding to stages 1 to 5.
- to present the results/outcomes in technical workshops;
- to incorporate comments, suggestions, and outcomes of the workshop and produce a synthesis document that will be given to the participants in preparation for the national workshop. This document will go over the main points of the research work and will rely fundamentally on the work of stage 5 and on the contributions of the technical workshop;
- to elaborate a reference document based on the outcomes of the national workshop and the synthesis which will be the action plan for the evolution of the commodity chain.

Fifth mechanism: the technical workshop

A technical discussion of the research results precedes the policy dialogue. Experience shows that it is easier to bring together the different actors for a technical discussion, which carries few political connotations or personal interests that could bias a first debate. Usually, the technical workshops prove effective in improving the quality of the analysis work and in favouring consultation.

The goal of the technical workshop is to produce a technical document that is both valid and able to generate national debate on the situation of the commodity chain. It is convened by high-level representatives from participating bodies and involves the support group and the technical team. Moreover, it is advisable to also invite professionals capable of making significant contributions. The workshop's organisation is fundamental to getting the most from participation. Some rules, based on experience, have been established as follows:

- The participants must get the document subject to discussion at least ten working days prior to the workshop.
- There must be no more than thirty participants.
- The participants must do preliminary reading of the document and prepare their observations and suggestions before the workshop.
- After the document has been presented by the technical team, the major issues selected are analysed by work groups.
- Each work group is made up of six to ten people, with one leader and one spokesperson.
- In each group, all of the actors in the commodity chain must be represented.
- The outcomes of the work of the groups are discussed in a full session.
- The full session is recorded.
- A neutral moderator, accepted and authorised by all the parties directs the debates and facilitates the full sessions.

The person in charge of the research writes up a report of the event and incorporates the outcomes of the workshop into the document subject to discussion. Two kinds of outcomes may appear: information or data provided by the participants for inclusion in the document and identification of insufficient or erroneous data demanding further research. At the same time, support contributed by the participants to complete the data should also be defined.

Sixth mechanism: the national workshop

This workshop is organized after the completion of the research synthesis document, the characteristics of which are presented in stage 5. This document serves as the support for

conducting the national workshop, with two objectives: to discuss the proposals contained in this document, and to define a national plan of priority actions to guide the development of the commodity chain. All participating public and private organisations are invited, and in particular those managers entrusted to negotiate and to make decisions. The invitation will be enlarged to include other authorities, in particular financial and development aid institutions.

This workshop is convened jointly by the public sector and the private sector. Some rules of organisation, based on experience, have been established as follows:

- The participants must get the document subject to discussion at least ten working days prior to the workshop.
- There must be no more than eighty participants.
- After the document has been presented by the technical team, the major issues selected are analysed by work groups.
- Each work group is made up of six to ten people, with one leader and one spokesperson.
- In each of the groups, all of the actors in the commodity chain must be represented.
- The outcomes of the work of the groups are discussed in a full session.
- The full session is recorded.
- A neutral moderator, accepted by all the parties and authorised to direct the debates, facilitates the full sessions.

The person in charge of the research carries out two tasks: the drafting of a report of the event and the elaboration, based on the synthesis, of a "reference document" comprising the outcomes of the workshop.

Seventh mechanism: the follow-up group

Responsibility for implementing the priority actions identified in the national workshop falls back with the government and the private actors. For the proposals and agreements established by the government and the these actors in the 'reference document" to be put into application, it will be necessary to act on two levels.

Policy level. This is a matter of clearly defining the state policy in support of the commodity chain and general and specific measures favouring the necessary changes already identified. Moreover, a permanent link between the public and private sectors should be established to monitor policy orientation and to carry out the necessary adjustments in accordance with the conjuncture and major trends. Experience shows that the establishment of an inter-institutional coordination mechanism is almost always included in the policy agenda of changes in the commodity chain. The gradual process of repeated interactions between the stakeholders in the commodity chain, and the circulation of objective information and its open discussion are two patterns of the Cadiac approach that make such an institutional change likely to happen.

Technical-financing level. Complementing the definition of policy measures and changes needed, the elaboration of investment projects to improve the technologies and economic efficiency is a key issue. This implies searching for sources of financing. Concrete proposals will be the product of the priority actions agreed upon. This is why the participation of financial and aid development organisations is necessary during the national workshop. Actually, these workshops play a role in establishing or re-establishing the confidence of investors. Visible

public consensus on actions to be implemented is likely to guarantee a higher probability of success and therefore make proposals more enticing for investment.

Developing a mechanism for follow up is, thus, essential. Such a mechanism may fundamentally take two forms.

If there is already a governing body that is representative of all the actors of the commodity chain, is it advisable that this body takes on the work of following up the actions. But if this body is not capable of doing so, a previous resolution will be required to redefine its functions and identity. This decision is necessary if such an authority does not represent the system as a whole, if it does not have adequate resources for an adjusted functioning, or if its managers focus on promoting the interests of certain groups without a global vision.

The other possibility, which may originate from the national workshops, is a specific mechanism dedicated to follow up. It may take the form of a commission or an *ad hoc* group formed by the decision-makers representing the commodity chain and who participated in the workshop. Their specific task is to guide the process of putting into application decisions made and therefore to propose and to promote investment projects, technical and organisational changes, data and information updating, and additional research.

This mechanism may also function only temporarily until the creation or the restructuring of a permanent organisation representative of the interests of the commodity chain.

Action-oriented dialogue in application

The following three examples illustrate different aspects of action-oriented dialogue. These examples are not intended as ready-to-use models, but they do show the outcomes gained and lessons that can be learnt. The objective is to facilitate the work of those who utilise this approach. The three case studies are presented using the same frame of discussion: the context, organisation, results and lessons.

The first case concerns how work was organised for the analysis of the coffee commodity chain in Salvador. The second deals with the dynamics of the national workshop in the context of the study on the beef chain in Costa Rica. The third refers to the establishment of a permanent mechanism for consultation in the public and private sectors to support development of analyses of agrifood systems using the Cadiac approach, also in Costa Rica.

The coffee commodity chain in Salvador: an example of preliminary consultation

Context. With a view to analysing the competitiveness of coffee growing in Central America, IICA made contact in Salvador with organisations potentially interested in using the Cadiac method. During the first consultation, two interviews were organised, one with the head of the Coffee Council of Salvador (Consejo Salvadoreño del Café) and the head of its Economic Studies Department, the other with the director general of the Procafé organisation (Promotores de Café) and the person in charge of economic studies.

Both managers agreed to convene a preliminary meeting with a view to establishing agreements and commitments. A letter of invitation, co-signed by the CSC, Procafé and IICA, was therefore sent out to the organisations of the Salvadorian coffee sector and closely-related public sector institutions.

Organisation. The agenda for the meeting was laid down as follows:

- introduction by the co-signatories of the invitation;
- description of El Salvador's coffee chain problems;
- debate in which the organisations (firstly CSC and Procafé) explain their perception of the coffee sector problems and the commitments they were ready to make.

In relation with the last point, CSC and Procafé indicated their willingness to support the research and the process of consultation.

Results. The institutions present recognised the potential usefulness of the approach and expressed their interest to develop the analysis of El Salvador's coffee chain and made a formal commitment (Appendix 1). Two groups, one support group and one technical team, were formed (Appendix 2). Most of their members were selected at the first meeting. The terms of reference for the work of the groups were defined and a work schedule was established.

The analysis of the commodity chain was completed in 1995 with the participation of the support group and the technical team. In line with the Cadiac approach, the analysis became the subject of discussion in a technical workshop.

Lessons. This preliminary consultation on El Salvador's coffee chain is an interesting case that highlights certain particular aspects.

Firstly, the importance of the preliminary contacts made with the CSC and Procafé must be mentioned given that these organisations were the key actors whose support enabled the entire sector to be mobilised. However, a preliminary meeting for consultation can be difficult to organise without a previously-established process of bringing together certain of the organisations. The final work proposal must correspond to a need and be translated into concrete engagements.

Secondly, the presentation of the method and all its implications, not only in terms of research, but also action-oriented dialogue, is essential. Presenting the method enables a better understanding of what is entailed and will show that this approach, whose objectives are adaptable to the needs of the public or private organisations**,** is not "just another study on an already over-diagnosed sector".

Finally, the participation of all authorities is paramount, and equally essential is obtaining agreements and concrete commitments. A meeting cannot just be devoted to giving out information only to be followed up by another meeting to establish agreements. The presence of all the actors, an event difficult to reproduce, must be fully exploited. The commitment of CSC and Procafé that was obtained prior to the preliminary meeting through earlier consultation contributed most to the creation of mutual commitments. Other organisations noted their involvement and offers and, in turn, were induced to positively consider making their own commitments.

The beef chain in Costa Rica: an example of a national workshop

Context. The study of the beef chain in Costa Rica started off as an initiative of IICA and the French cooperation agency with the recruitment of a consultant, who was given the responsibility of putting into application the commodity-chain analysis method as a pilot case. A basic document was produced in 1993. However, this document was not really based on a consultation process between the actors as it should have according to the Cadiac approach, and it did not represent a useful input for promoting a more efficient beef sector. With the creation

of the National Consultative Commission for Agroproductive Systems (SIAGRO) and because of the rise of political stakes linked to beef production in the country, the work resumed and was updated to permit proper interactions between the actors.

Numerous sources of information were used to update the first analysis, amongst others the technical workshops organised for that purpose. After integrating these contributions, a national workshop allowed ample consultation between the actors and led to the realisation of a specific work programme.

Organisation. The Minister of Agriculture and Animal Husbandry and fifty-seven representatives of the entire beef sector participated in the national workshop (Appendix 3).

After an introduction by the Minister and the IICA Director, the head of the research presented the difficulties and perspectives of the sector. The participants were then gathered in work groups. In the activities programme (Appendix 4), most time was devoted to group work. The four groups, of around 15 people, were formed according to the registration forms completed at the entry to the meeting hall. The organisers were thus able to form groups bringing together those representing all levels of the commodity chain, but carefully avoided putting together in the same group individuals having personal conflicts. The organisers, staff of IICA, participated in the work of the groups as resource people.

At the close of the group work, each spokesperson had fifteen minutes to present the conclusions of the group and to respond to possible requests for clarification. Then, a full meeting permitted the participants to go deeper into the different themes dealt with and to better understand the reports of each group during a general consultation debate on the actions proposed.

After a summary of conclusions by the moderator, the Minister indicated a series of actions that he was going to support.

Results. The organisational pattern of this event and the effective representation of all the actors of the commodity chain allowed very satisfying results to be obtained. The main problems, possible actions, and those responsible for such actions were identified. For instance, two major themes can be noted amongst the main conclusions of the workshop: the necessity of an organisation that represents the interests of the entire sector, and the necessity to elaborate a plan of action in order to reduce distortions in the domestic market.

An abstract of the conclusions of the workshop on the analysis of Costa Rica's beef sector was elaborated by IICA. *Hatos, productos cárnicos y mercados: la economía de la carne bovina en Costa Rica* presents the results of the research and the stakes for the sector according to the actors, as expressed during the national workshop.

The Minister organised another workshop one month later to enable a group representing the entire commodity chain to go deeper into the points raised and make concrete proposals. In this second workshop, the issues were refined and resulted in three proposals, based on the studies that the Minister had commissioned from another group of consultants.

Thus, a bill would have to stipulate the creation of the Corporación de Fomento Ganadero, an organisation representing the private sector. This bill included organisational aspects – nature, objectives, functions and activities – and financial aspects – contributions from its members and the State and a percentage levied on the value of the animals slaughtered in the industrial and rural abattoirs.

A system of valuing the quality of the meat would be established by classifying the carcasses according to quality.

Eventually, the distortions of the market would be eliminated by liberalising the prices, linking prices to quality, by integration of production to marketing, and by the promotion of consumption.

Lessons. Disorganisation and discord were two "traditional" characteristics of the beef sector in Costa Rica, as numerous participants of the national workshop indicated. In addition, there was a sector of conflicts with interests varying greatly according to the actors involved in production, industry, and commerce on the one hand, and according to the type of producer (feeders, breeders) or the regions of production on the other hand.

In this context, the beef chain represents a typical case of a sector in conflict, for which it is interesting to analyse the impact of the national policy workshop.

As a first lesson, a large part of the success of the national workshop comes back to how it was organised and to the control exercised as it progressed, particularly in avoiding direct opposition. A synthesised presentation of the research results is the first beneficial factor, because of its neutral and objective aspect. Besides, during the formation of the groups, the choice of the participants was made in such a way as to avoid bringing together those representing strongly antagonistic organisations or interests. Furthermore, the presence of all the actors reduced the biases. The moderator contributed to maintaining the dialogue.

Secondly, however, a one-day-discussion is obviously inadequate to allow all the concrete responses and solutions. Other dialogue opportunities must be programmed, preferably following only a short delay after the first workshop so as not to lose the dynamism of interaction. In this sense, the decision of the Minister to call another workshop one month later to launch work of a more concrete nature about specific proposals was a determining factor.

As a third lesson, the willingness on the part of the actors themselves to follow up the agreements and to put them into application must be highlighted. The Cadiac approach enables the conditions for this to occur. Nonetheless, it is essential that the actors accept the process of consultation and admit that points of view may differ, without this necessarily leading to an insoluble and irrevocable situation of conflict.

Developing dialogue for change: the example of SIAGRO, the national commission on agroproductive systems in Costa Rica

Context. The process of structural adjustment launched in the mid-eighties presupposed a progressive reduction of state intervention through the reduction of subsidies and price and trade controls in Costa Rica's agricultural sector. The sector's authorities lost partial control of agricultural policy to other actors, such as the ministries of finance and foreign trade which, through their role in the formulation of economic and trade policies, defined de facto agricultural policy.

As such, the reduction of protection, which goes along with the process of moving towards openness, left the entire agricultural sector exposed to external competition, without the necessary adjustment being made to improve the sector's competitiveness.

The idea of creating a commission originated from within the Consejo Nacional de Produccion (CNP)[1], the National Production Council. IICA echoed the same idea and a meeting was organised to present to future members the commodity-chain analysis approach and the

[1] CNP is a, para-statal body, devoted for years to agricultural support and stabilising agricultural prices. Its role is changing to enable the body to adapt to the new economic model that advocates opening up and reducing state intervention in allocating resources.

action-oriented dialogue that was going to provide the basis of the work of the consultative commission. SIAGRO, with its inter-institutional nature, was created as a forum for collaboration designed to provide technical and institutional elements facilitating decision-making for the modernisation of agrifood sytems.

For different reasons, some mentioned below and others related to changes in government priorities in 1998, SIAGRO ended in 1999, after four years of activities. However, different sectors keep an interest in the development of the work that SIAGRO was conducting (fisheries and oil palm sectors, for instance).

Organisation. The objective of the commission is to co-ordinate agreed actions between the private sector and the public sector relative to the definition of priorities, the preparation of studies, follow up, approval, and the spreading and elaboration of recommendations in relation to agroproduction commodity chains. In this sense, numerous functions were entrusted to the commission (Appendix 5).

The commission intervened on the basis of fortnightly two-hour meetings whose agenda was to endorse the report of the previous session, to debate the themes presented by its technical secretariat and to define actions and corresponding responsibilities.

Results. The participation of the SIAGRO, formerly called Comisión Consultiva Nacional sobre Sistemas Agroproductivos, and renamed Comisión Nacional sobre Sistemas Agroproductivos, in follow up to technical and national studies and workshops revealed its capacity to reinforce public and private consultation (Appendix 6) and to stimulate competitiveness. It was also able to influence agricultural policy. Certain of the members had the opportunity to exert influence over decision-makers, as was the case in the beef sector. Nonetheless, it is worth noting some weaknesses to see how to overcome them.

Firstly, the composition of the commission was not ideal with weak representation of the private sector and over-representation of the public sector. Such a situation could tend to give this mechanism the image of a government forum.

The absence of a formal nomination of representatives and substitutes is another weak point; rotating participation from within the same organisation leads to a loss of information and continuity and weakens effectiveness. This problem was, however, debated during a meeting and a formal nomination process was adopted.

Certain members did not integrate themselves into the commission. They behaved passively and failed to contribute what was expected from the bodies they were representing. This equally applies to the managers of these organisations resulting in limited implementation and significance of the proposals coming from the commission.

The necessary follow up to the policy actions and measures brought about through the research and dialogue work could not be performed, even though this was one of SIAGRO's objectives. A significant extra effort would be necessary on the part of its technical secretariat. But its three members, despite some logistics and secretarial work provided by the CNP, are not able to devote sufficient time to the work.

Lessons. This experience provides several important lessons. Firstly, this type of mechanism must be legalised to guarantee that it represents the different agents and public and private bodies, and to enable active participation. Legalisation must be evaluated after a few months of functioning, during which its effectiveness will be analysed.

Secondly, it is crucial to disseminate the results of completed studies in order to make known the work achieved by such commissions and to acknowledge their actions and their legitimacy and, at the same time, to stimulate and motivate their members. Public information by means of mass communication such as newspapers or radio is a necessary activity to be included as early as possible while establishing such mechanisms.

The experience of Costa Rica also shows the importance of complementary mechanisms that are capable of supporting the process and ensuring follow up. In this case, national programmes have been established, in which the managers of those programmes are acting as a link between the public sector and the private sector. Their function is to stimulate joint actions to improve the competitiveness of the agrifood systems, while offsetting the various limitations of the technical secretariat. Such complementation cannot however be effective unless there are close relationships between the agencies involved. It was in response to this that sub-commissions of SIAGRO were created, with the participation of the director of the corresponding programme in order to ensure adequate follow up.

Part II
Analysis of the Commodity Chain

This section endeavours to characterise the economic and social importance of the commodity chain and the influence of the international, regional, and national environment, the structure, functioning, and dynamics of the system taking into consideration the actors involved and how they relate to each other, those who produce, transport, transform, sell or consume the product and its by-products, and those who provide the inputs and services.

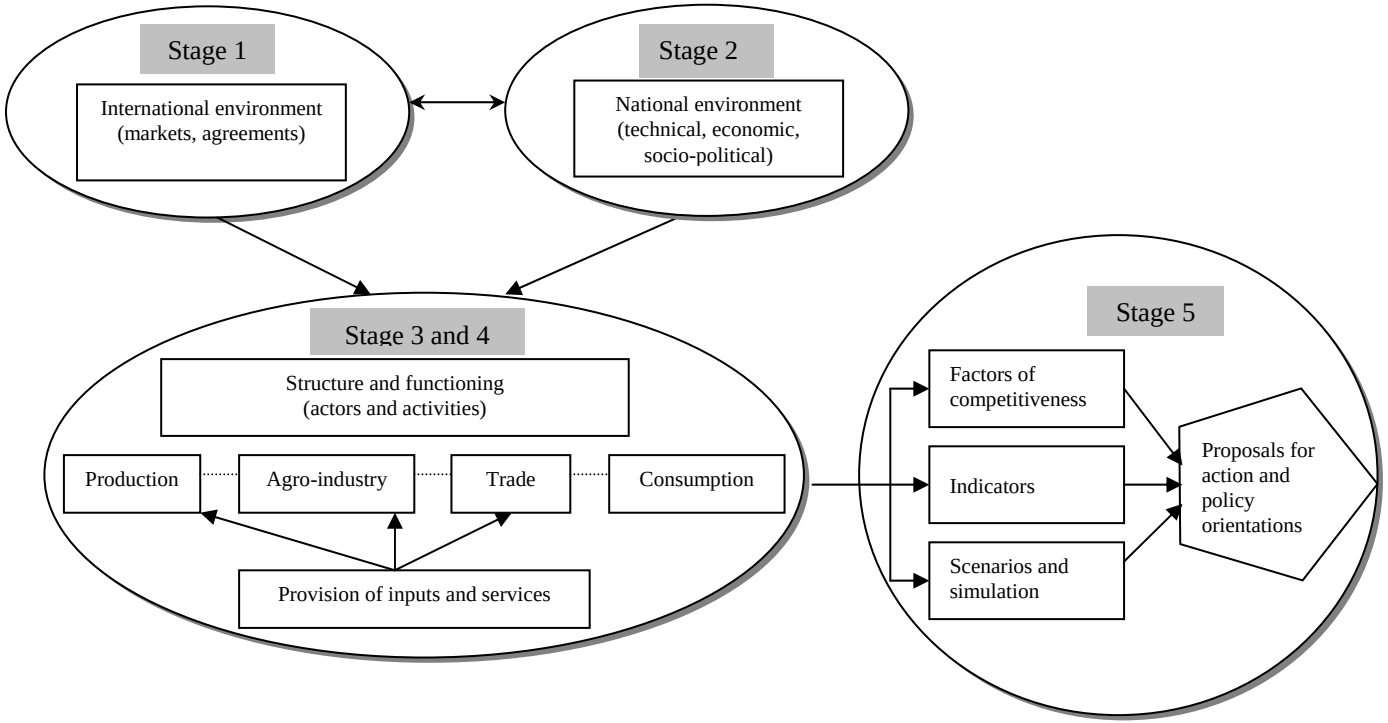
The result is a complete and level-by-level analysis of the factors of competitiveness within the commodity chain in relation to the domestic economy and to world exchanges. Main strengths and weaknesses are highlighted to enable proposals benefiting the actors in the commodity chain to be put forward.

The research work is divided into five distinct stages (Figure 2), the objective of such a sequential presentation being to facilitate analysis, and particularly to simplify the fieldwork of researchers. In reality, an agrifood system is a network of relationships and links between activities and actors that cannot be dissociated. In Stages 1 to 4, these activities and actors are characterised, and this information is articulately and coherently tied together in stage 5.

The research originates from proposals elaborated in the action-oriented dialogue phase. The five stages correspond to specific issues: relationship to the international economy, relationship to the national economy, the structure of the commodity chain, the functioning of the commodity chain, and interpretation of results.

The work of collecting the basic information necessary for completing the analysis of a commodity chain is carried out over the course of the first four stages. The fifth stage makes up the purely analytical section of the research and is realised based on information and data collated in the preceding stages.

Figure 2 Stages of commodity chain analysis.



Stage 1: Relationship to the International Economy

The nature and organisation of international trade affect the development of agrifood systems. Defining the influence of the international environment on a commodity chain is a necessary precondition to defending its interests in domestic and international markets.

The nature of the relationships that a country maintains with the rest of the world is a key factor to competitiveness. Understanding the nature of such relationships involves gathering and synthesising information about the external markets, which may be divided into two broad categories. The first corresponds to international trade, the second to trade partners, if the country is a signatory to a regional integration agreement or another preferential trade treaty.

Two angles of analysis have been adopted here: the potentialities that external markets represent on the one hand, and the risk that world competition constitutes for the domestic market on the other. Their respective importance depends on the type of commodity chain analysed. As such, for a non-traditional export product, the national market will, in principle, be less relevant and the analysis will essentially revolve around external markets. In the analysis of traditional staples in Asia, such as most of the coarse grains, pulses, roots and tuber crops in Asia, domestic markets are often a priority focus.

In this section, the information relates to the final good produced. Nonetheless, data on the raw materials and other products and by-products may be of equal necessity. In the case of rice for example, even if the final product is white rice, information must be provided on paddy rice and its by-products.

All of the elements of information may be regrouped into two fields; the world market and the integration agreements.

Characteristics and functioning of the world market

Trade flows

Principally, this involves not only identifying relevant markets, which are made up of regions or countries that are mainly importers, but also major competitors, in other words exporting countries. The period of ten years, adopted for the series of data on international commerce (Tables 2-4), allows global changes to be taken into account and put into perspective. Nonetheless, the most adequate period will be determined according to the particular nature of the world market and the product studied.

Table 2 World production: volumes and share of main producing countries over the last ten years.

Country	Year 1		Year 2		…	Year 10	
	Tons	%	Tons	%	…	Tons	%
Country A							
Country B							
Country X*							
Other countries							
Total		100		100	…		100

* As of this point, X will refer to the country whose commodity chain is analyzed.

Table 3 World exports: volumes and share of main exporting countries over the last ten years.

Country	Year 1		Year 2		…	Year 10	
	Tons	%	Tons	%	…	Tons	%
Country A							
Country B							
Country X							
Other countries							
Total		100		100	…		100

Table 4 World import: volume and share of main importing countries over the last ten years.

Country	Year 1		Year 2		…	Year 10	
	Tons	%	Tons	%	…	Tons	%
Country A							
Country B							
Commodity chain							
Countries							
Other countries							
Total		100		100	…		100

Furthermore, in order to have at ones disposal quantitative elements on the evolution of the world market, it is necessary to present data on the relative weight of world trade, in relation to total production, on the evolution of world stocks and on price variations (Tables 5-7). It may also be useful to establish a seasonal index as a means of obtaining a more precise indication of the evolution of prices over time.

Table 5 Estimation of traded world production over the last ten years.

	Country A	Country B	Country X	Network Countries	Other Countries	Total
Average in the first five years						
Exports in tons (x)						
Production in tons (p)						
Export rate (x/p)						
Average in the next five years						
Exports in tons (x)						
Production in tons (p)						
Export rate (x/p)						

Table 6 Monthly movement of world reserves, in tons, over the last ten years.

Month	Year 1	Year 2	…	Year 10
January				
February				
:				
December				

Table 7 Monthly movement of international prices in the main markets, in US dollars per ton, during the last ten years.

Month	Year 1	Year 2	…	Year 10
January				
February				
:				
December				

In the case of an export product, quantifying traded volumes will help identify the principal destination countries (Table 8). It is important to complete the data with a table detailing the main competitors in these markets (Table 9). By doing the same in the case of imports, the major supplier countries and their relative influence will become clear.

Table 8 Country X's annual export to main buyer countries during the last ten years.

Export	Year 1	Year 2	...	Year 10
Exports to country A				
Volume				
Value*				
%**				
Exports to country N				
Volume				
Value*				
%**				
Other exports				
Volume				
Value*				
%**				
Total				
Volume				
Value*				

* FOB (free on board) value.

** According to the research priorities, the percentage (%) of imports from each country may be calculated using either volume or value or by using volume and value.

Table 9 Main competitor countries in the market of the principal importing countries over the last five years.

	Main Importing Countries					
	Country A			Country N		
Year	Origin of Imports	Value	%	Origin of Imports	Value	%
Year 1						
	Country X			Country X		
	Competitor N			Competitor N		
	Total		100	Total		100
Year 5						
	Country X			Country X		
	Competitor N			Competitor N		
	Total		100	Total		100

Table 10 Main sources of country X's imports , in volume and in FOB value, over the last ten years.

Year	Main Supplier Countries							
	Country A			Country N			Total Imports	
	Volume	Value *	% **	Volume	Value *	% **	Volume	Value
Year 1								
:								
:								
Year 10								

* FOB (free on board) value.

** According the research priorities, the percentage (%) of imports from each country may be calculated using either volume or value or by using volume and value.

On the basis of the above tables, drawing up graphs that facilitate the analysis of market trends and perspectives is worthwhile. This analysis can be reinforced by other secondary investigations, in order to integrate perspectives or forecasts for coming years. International data bases, such as those of FAO (Food and Agriculture Organisation of the United Nations) and the World Bank, or regional data bases such as ADB (Asian Development Bank) or ESCAP (Economic and Social Commission for Asia and the Pacific), IDB (Inter-American Development Bank), IICA (Instituto Interamericano de Cooperación para la Agricultura), and those of national institutions such as CIRAD or USDA (United States Department of Agriculture), are sources of information and analyses on prices, reserves, and world commerce.

Trade organisation

The trading of agrifood products, supply, demand, prices, stocks, the structure and functioning of markets are strongly related to the regulatory framework within which the actors evolve and develop their own strategies. This framework may be formal, such as commercial agreements, or informal, such as the tacit division of markets amongst multinationals.

The regulatory framework and commitments made according to the terms of international or other agreements must therefore be indicated. One must distinguish between the different agreements that affect global exchanges and their implications: multilateral in nature, whether general, such as the GATT (General Agreement on Tariffs and Trade) or specific, such as the Dairy Agreement; within trade blocs such as the ASEAN Free Trade Area, NAFTA, the North American Free Trade Agreement, Mercosur, the common market of Southern Latin America, SACU (Southern African Customs Union), SADC (Southern African Development Council), CEDEAO (Economic Community of West African States); and bilateral (Table 11).

Furthermore, it is necessary to include data about support and protection policies benefiting the principal producer countries and to detail the implications of such policies (Table 12).

It is equally important to detail the private actors of international trade – national and international companies, cartels etc. – their influence on exchanges and prices, as well as their involvement in the dynamics of global trade and the development of the commodity chain (Table 13).

Table 11 Regulatory framework , commitments made by main producers and exporters and their implications.

Countries or Bloc	Regulatory Framework and Commitments					Implications for Country X
	Uruguay Round	Integration Agreement	Bilateral Agreement	International Agreement by Product	Other Agreement	
Country A						
Country N						
Bloc A						
Bloc N						

Table 12 Support and protection policies of main producers and exporters and implications.

Countries or Bloc	Support and Protection Policies			Implications for Country X
	For Production	For Exports	Import Barriers (tariff and non-tariff)	
Country A				
Country N				
Bloc A				
Bloc N				

Table 13 The role of international companies and implications.

Theme	Description	Implications
Structure of international market Indicate the type of competition: alliance, oligopoly, monopoly, etc.		
International prices Indicate the role of the companies in formation of prices: competition, cartel, dumping, etc.		
Flow management Indicate how the multinational companies manage their stocks, sales and purchases		
Other		

In addition, data relating to commitments made by a country following trade negotiations must be synthesised - in the framework of the WTO, GATT, the Uruguay Round, and agreements by product (Table 14).

Table 14 Country X's commitments.

	WTO/GATT		Uruguay Round			
Theme	General Commitments	Specific Agreement, by country	General Commitments	Specific Agreement, by country	Agreement by product	Other Agreement
Customs policy						
Contingents and quotas						
Prices policy						
Subsidies and incentives						
Norms of origin						
Safeguards						
Technical control (sanitary)						
Market access						
Others						

Integration agreements

If the country is a signatory to a trade integration agreement or another type of preferential agreement, details must be provided of the commitments made in relation to the commodity chain and to what extent these commitments are met, not only within the trade zone but also with the rest of the world. This information is presented in Table 15.

Table 15 Framework of rules and conditions in the case of trade integration agreements.

	Country X	Country A	Country N
☐ **Trade terms between the member countries and other countries**			
Raw material * Final good • current tax • tariffs agreed (indicate the tax reduction program) • how customs tariffs are applied * Significant inputs in the costs • current tax • tariffs agreed (indicate the tax reduction program)			
Processed product * Final good • current tax • tariffs agreed (indicate the tax reduction program) • how customs tariffs are applied * Significant inputs in the costs • current tax • tariffs agreed (indicate the tax reduction program			
☐ **Interregional trade terms and per-product agreements**			
Exports from country X to other member countries • Raw material Indicate restrictions against exports to other member countries (restrictions, in the form of customs or not, unilateral, that limit the agreement terms) • Processed product Indicate restrictions against exports to other member countries (restriction, in the form of customs or not, unilateral, that limit the agreement terms)			
Exports to country X • Raw material Indicate restrictions against exports to the commodity chain country for other member countries (restrictions, in the form of customs or not, unilateral, that limit agreements terms • Processed product Indicate restrictions against exports to the commodity chain country for other member countries (restrictions, in the form of customs or not, unilateral, that limit agreement terms)			

Table 16 synthesises estimations of price competitiveness for trading partners, such as the prices of the inputs and services that weigh the most heavily on the costs of production and processing, margins, and the selling price. These data are produced from sources easily available from other countries and do not need to be systematically constructed for the research.

Table 16 Elements for comparing competitiveness between agreement member countries.

Category	Country A	Country B	….	Country N
☐ Imported input				
• For production				
- CIF price *				
Input a				
Input n				
- retail price				
Input a				
Input n				
• For industry				
- CIF price *				
Input a				
Input n				
- retail price				
Input a				
Input n				
☐ Primary production, per hectare				
• Yield				
• Production costs				
• Farm-gate price				
• Profitability				
☐ Industrial production, per ton				
• Return on process (%)				
• Processing costs				
• Ex factory sales price				
☐ Other relevant factors				
• Daily salary				
- Minimum salary				
- Effective salary				
• Market interest rate for agricultural activities				
• Annual inflation (%)				
• Prices of main fuels				

* CIF price = costs, insurance, freight.

Lastly, data must be collected that will permit the importation of agricultural and transformed products from trade partners and third countries to be calculated and simulated.

These simulations are developed in Stage 5 (see Tables 57-59). They take into account the costs of sea, land or air transport, insurance, unloading, customs charges, margins, as well as exchange rates.

Stage 2: Relationship to the National Economy

Economic activities not only develop in an international environment with which they hold numerous interactions, but also in a socio-political, technical, and economically specific context that is specific to a country and its institutions. The national economy benefits from a commodity chain's contribution, while at the same time influencing its structure, functioning, and dynamics. There are four aspects to be highlighted: the economic and social significance of the commodity chain, the scope of policies, the institutions linked to the commodity chain, and physical infrastructure.

Economic and social significance of the commodity chain

An assessment of the economic and social significance of a commodity chain requires that a certain number of indicators be explained and calculated. These indicators define not only the commodity chain's contribution to the creation of income and employment, but also its importance in terms of consumption and household food expenses. Contributions to the generation of foreign exchange, food self-sufficiency, the substitution of imports, and the diversification of production are also assessed. The information in Tables 17-19 details the commodity chain's contribution to the national economy – the first two in relation to agricultural and industrial gross domestic product and the third in relation to added value by unit of product.

Table 17 Contribution of the commodity to the agricultural gross domestic product (GDP).

Gross Domestic Product	Year 1	Year 2	…….	Year 10
☐ Current prices				
• GDP of country X				
• Agricultural GDP of country X				
• Contribution of the commodity to agricultural GDP (value)				
• Agricultural GDP/GDP of country X (%)				
• Contribution of the commodity to agricultural GDP (%)				
☐ Constant prices				
• GDP of country X				
• Agricultural GDP of country X				
• Contribution of the commodity to agricultural GDP (value)				
• Agricultural GDP/GDP (%)				
• Contribution of the commodity to agricultural GDP (%)				

Table 18 Contribution of the commodity chain to the industrial gross domestic product (GDP).

Gross Domestic Product	Year 1	Year 2	…….	Year 10
☐ Current prices				
• GDP of country X				
• Industrial GDP of country X				
• Contribution of the commodity to industrial GDP (value)				
• Industrial GDP/GDP %)				
• Contribution of the commodity to industrial GDP (%)				
☐ Constant prices				
• GDP of country X				
• Industrial GDP of country X				
• Contribution of the commodity to industrial GDP (value)				
• Industrial GDP/GDP (%)				
• Contribution of the commodity to industrial GDP (%)				

Table 19 Estimation of the commodity's added value (agricultural + industrial) per unit produced, in percentage per year.

Year	Added Value	Gross Value of Production	Commodity's Contribution (k)* to GDP (%)	Purchases (w)** Coming from other Activities or Imports
1				
2				
…				
10				

* k = added value/gross value.
** w = (100-k).

As regards employment, the necessary qualitative and quantitative data – number of permanent and temporary workers, type of work (qualified or not), number of employers (farmers, manufacturers, traders), number of dependants (family of the operators) – is synthesised in a table that covers a period of at least one year (Table 20). According to the availability of information, preparing a table showing job growth during the last few years is also recommended.

In the case of basic products (grains, meats, etc.), their importance in the daily diet will be looked at in terms of spending and nutritional contribution, as indicated in Table 21, as well as the contribution of the system of national distribution (Table 22). For export products, the product's gross contribution to exports and its contribution to the net generation of foreign exchange must be measured. For this last point, net exports and the foreign exchange implicitly saved by import substitution in that part of production consumed domestically is to be calculated. The same approach would be used in the case of a domestically-consumed importable product (Table 23).

Table 20 Annual figures for the commodity chain's contribution to job creation.

Item	Primary Production	Agro-Industry	Trade	Total
☐ Type of employment				
• Entrepreneurs				
• Permanent workers *				
• Temporary workers **				
Total				
☐ Dependents				
• Of entrepreneurs				
• Of permanent workers				
• Of temporary workers				
Total				
☐ Type of work ***				
• Not qualified				
• Qualified				

* In equivalent persons engaged exclusively in the activity. Calculated in terms of time dedicated by the worker to activities related to the commodity.

** In equivalent permanent employment. Calculated by dividing the total number of 8-hour days by the number of working days in the country.

*** In equivalent persons engaged exclusively in the activity and according to the definition of temporary employment. Qualified employment requires an apprenticeship or technical or academic education.

Table 21 Relative weight of the commodity in food expenses and in the nutrient and energy supply.

Item	Year 1	…	Year 10
☐ Monthly family expenditure * (in local currency)			
– Food **, Da			
– Commodity **, Dp			
– Indicator, Dp/Da (%)			
☐ Contribution to protein and calories (daily consumption per inhabitant)			
• Protein			
- Daily consumption, Pc			
- Commodity consumption, Pp			
- Indicator, Pp/Pc (%)			
• Calories			
- Daily consumption, Cc			
- Commodity consumption, Cp			
- Indicator, Cp/Cc (%)			

* Monthly average or representative months.

** Provided by organizations that calculate the consumer price index.

Table 22 Commodity stocks and utilization figures: estimation of visible consumption per inhabitant in tons.

DATA	Year 1	…	Year 10
• Initial stock			
• Gross Production			
• Net Production *			
• Imports			
• Exports			
• Final Inventory			
☐ Visible consumption (initial stock + net production + imports-exports-final inventory)			
☐ Supply (initial stock + net production + imports)			
☐ Utilization (visible consumption + exports)			
☐ Population			
☐ Consumption per inhabitant (visible consumption / population)			

* Defined according to the commodity: for grains, it is obtained by transforming "moist and dirty" grains into "dry and clean" grains. In certain cases, distinguishing gross production from net production is unnecessary.

Table 23 Contribution of the product to exports and trade balance.

Item	Year 1	…	Year 10
☐ Commodity share of total exports			
Commodity exports X (US$, FOB)			
Total exports Xt (US$, FOB)			
Percentage X/Xt (%)			
☐ Estimation of net effect on trade balance in US$			
Additional data needed • Imports for producing the quantities exported – Direct Imports [1], Id – Indirect Imports [2], Ii • Value of the part of the product that is consumed in the country at international price [3] C (US$)			
Effect of net exports • Total of net exports, Xn Xn = X – (Id + Ii) (US$)			
• Net exports (national component) [4], Cn Cn = Xn/X (%)			
Effect of import subtitution [5] Sm = C x Cn (US$)			
Total Net Effect En = Xn + Sm (US$)			

1. Imports of inputs and capital goods carried out by firms. For capital goods, this is depreciation.
2. This is an estimation of the value of the imported components of domestically-produced inputs and services that are consumed in the commodity chain.
3. Obtained by multiplying the quantity consumed in the country by the CIF price of import, where one part of the product is consumed locally.
4. Estimation of the national component per unit produced. The national component relates to the part of the product's value that is locally created, and not from imported production factors.
5. In the case where a part of the product is locally consumed, the net foreign exchange equivalent saving is calculated by multiplying imports by the national component. If a country proceeds to import, we can also calculate the potential foreign exchange saving that the development of domestic production could create. This is obtained by multiplying the CIF value of imports by the national component.

General data on agricultural production and its evolution – surface under cultivation, production volume, and income to the country – are also combined in this section, as is data broken down by region of production (Tables 24 and 25). All the same, global data on agro-industrial processing and its evolution, such as the number of processing units, volumes transformed and returns (Table 26), should be provided.

Table 24 Global data on agricultural production.

Data	Year 1	….	Year 10
Cultivated area (ha)			
Gross production (t)			
Net production (t)			
Yield (t/ha)			
(net production/area cultivated)			

Table 25 Regional data of agricultural production.

Data	Year 1	…	Year 10
☐ Cultivated area (ha)			
Region A			
Region C			
☐ Gross production (t)			
Region A			
Region C			
☐ Net production (t)			
Region A			
Region C			
☐ Yield (t/ha)			
(net production/area cultivated)			
Region A			
Region C			

Table 26 Global data on agro-industrial processing.

Data	Year 1	…	Year 10
Number of plants			
Processing capacity (t)			
Raw Material transformed (t)			
Utilization rate of the installed capacity (%)			
(raw material transformed/processing capacity)			
Production (t)			
Average output (%)			
(production/raw material transformed)			

The scope of policies

The word “policy” encompasses here all governmental, institutional, and legal measures taken by a country to orient the operation of the commodity chain. In essence, there are two types of policies: general policies, which affect the entire economic sphere, for example exchange rates; and specific policies, directed to specific sectors of the national economy, for example rice export subsidies. Table 27 should underline the different policies, their recent evolution, the current situation, foreseeable changes and their implications. In each case,

general policies and the specific measures should be differentiated. Commercial policies, tariffs and para-tariff instruments are treated in the previous section in the framework of the country's negotiations and commitments.

Table 27 Policies and their implications for the commodity chain.

Domain	Evolution and Implications	Current Situation	Anticipated Changes and Implications	Influence of Different Actors	Positive or Negative Effects for the Different Actors
Monetary policy					
Financial policy					
Rural development					
Industrial development					
Science and technology					
Price policy					
Support for investment					
Support for exports					
Other					

* Over a period allowing for fundamental changes in policy-related matters to be seen.

Institutions linked to the commodity chain

The institutional framework is represented by the full range of public and private sector entities and organisations linked directly or indirectly to the commodity chain by the function they fulfill and by the pattern of interactions between these entities. It includes also how decisions regarding the functioning of the commodity chain are taken and by whom. Most countries in Asia, west and southern Africa, like Latin America and the Caribbean, are experiencing considerable change as regards the function of their public institutions, both qualitatively as well as quantitatively. As these changes also affect private organisations and producer associations, their implications cannot therefore be neglected. The institutional framework analysis is conducted by means of a rapid evaluation of these public institutions and private or mixed organisations, according to five criteria: the evolution of their role during the last few years; the current functions (human, economic, financial) and the resources available to carry out these functions effectively; their effect on the development of the system; the current institutional changes and the foreseeable implications; and the positive or negative consequences for the various actors (Table 28).

Public bodies

Public bodies usually include the various ministries: agriculture, industry, rural development, the economy, trade, science and technology, etc. The relevant entities in these institutions should also be identified. For example, the unit or department determining policy, market, and information analysis within the Ministry of Agriculture. Public banks, particularly those departments responsible for credit schemes and determining lending terms to actors, national research or technology centres, and centres for trade promotion should also be included.

Private organisations

For the private sector various types of organisations must be considered: co-operatives, associations of producers, manufacturers, traders, exporters, input importers, the diverse chambers, federations, offices representing various professions, private banks, research, consulting, and extension centres.

Mixed and other bodies

Certain bodies may be mixed, i.e., both public and private, because of their mode of functioning or their sources of funding. This is the case of parastatal and some non-government organisations. The role that international bodies may play should also be given equal mention.

Table 28 Organisations.

Organisation	Evolution of its Role over Preceding Years	Functions and Resources	Incidence in the Development of the Commodity Chain	Future Role and Implications	Positive or Negative Effects for the Different Actors
☐ Public bodies • • • •					
☐ Private organisations • • • •					
☐ Mixed and other organisations • • • •					

Physical infrastructure

The factors that influence the competitiveness of commodity chains and enterprises that form them can be divided into two categories. On the one side are endogenous factors, which the actors are able to master, at least in part, such as technology and costs. On the other are exogenous factors, which actors are unable to modify and which make up part of the context in which commodity chains develop.

Physical infrastructure – i.e., transportation conditions (land and sea routes, ports, airports), the sources of energy (electricity networks, fuels), communications (telephone and radio networks), production services (refrigeration network), information systems, etc., – is part of this last category. After identifying the principal elements relevant to infrastructure, their geographic spread throughout the country must be determined, that is, whether or not they cover the whole range of enterprises in the system. The positive and negative aspects of each type of adjustment/development (quality, costs, etc.) must be clarified as indicated in Table 29.

Table 29 Physical infrastructure.

Type of Infrastructure	Geographic Coverage of the Commodity Chain	Quality	Observations
☐ Transport Land routes Sea routes Ports Airports			
☐ Energy Electricity network Fuels			
☐ Communications Telephone network Fax, radio, etc.			
☐ Information system (prices and markets)			
☐ Other Water Refrigeration network, etc.			

Stage 3: Structure of the Commodity Chain

In order to characterise a commodity chain, one proceeds by identifying the actors and activities, which are what define its structure, and by identifying their technical and socio-economic relationships, which define the functioning of the commodity chain. The aim of characterising the commodity chain is to know more precisely the strengths and the weaknesses of each of the parts and the whole of the commodity chain, in order to direct its evolution toward greater competitiveness in a sustainable and equitable framework. Articulating all the data relating to its structure (Stage 3) and functioning (Stage 4), in addition to Stages 1 and 2, will guide the interpretation of the results (Stage 5) to a complete evaluation of the commodity chain.

The technical and economic characterisation of the actors directly involved in a commodity chain is achieved by identifying homogenous groups of actors. This will allow an understanding of how international and national contexts influence the different groups on the one hand, and define specific actions for greater competitiveness on the other. In this way, biases and errors of interpretation inherent in analyses of competitiveness based on national averages are limited.

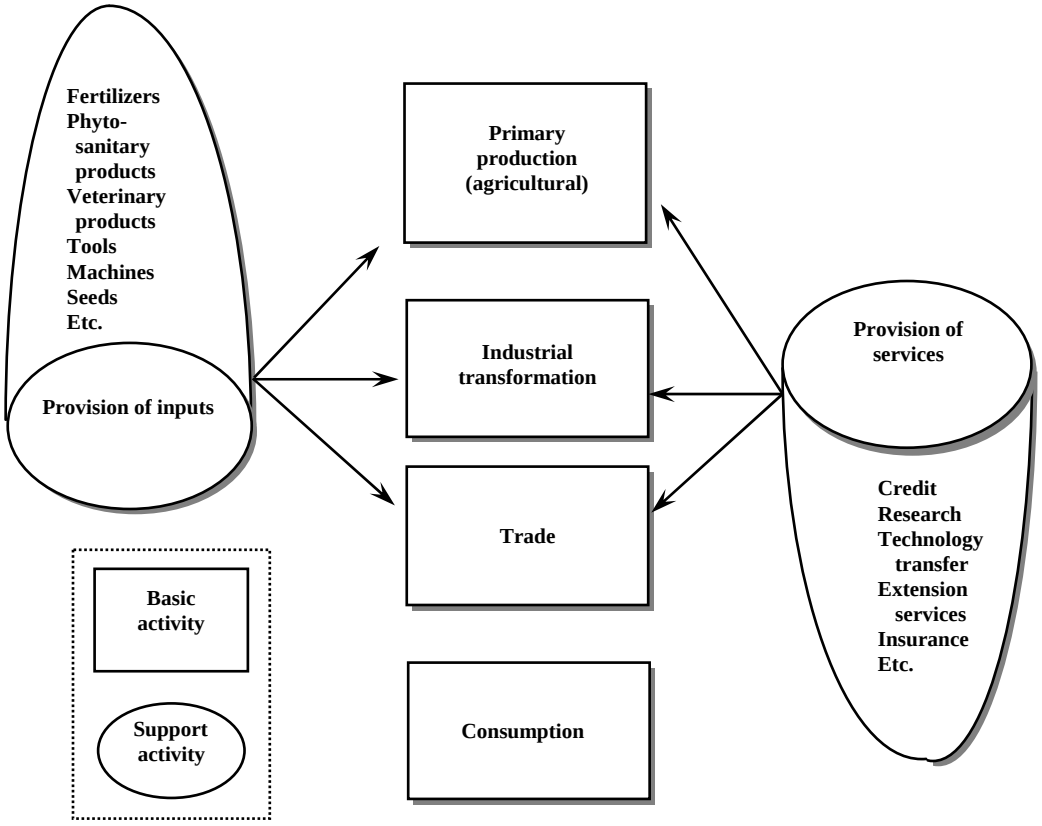
Characterising actors

The characterisation should allow for a faithful representation of actors in categories. This requires a three-stage process: identification of activities and actors, typology of actors into homogenous categories, and quantification based on measurements and indicators. During the research work, the three stages are combined.

Identification of activities and actors

A commodity chain is made up of two broad categories of activities: basic activities or steps – primary production, processing, marketing and consumption – and support activities, such as supplying inputs and other services that apply to the entire system (Figure 3). Identifying these activities is a necessary, but thereafter insufficient, first task. The different technical stages of the product must also be determined and its mobilisation in space taken into account. For the potato chain, for example, the basic activities are production, marketing, processing, and consumption (Figure 4). The technical stages are soil preparation, sowing, cultivation (fertilisation, crop protection, etc.), harvesting, sorting, washing, transportation, peeling, cutting, slicing, cooking, draining, freezing, seasoning, packing, and distribution. In this case, the product that leaves the farm may go the route of industry or may be directly marketed fresh.

Figure 3 Basic activities and support activities.



A functional analysis of the system should then be developed that links each basic activity and the technical stages to the respective actors and the corresponding products. In the case of palm oil, one such basic activity will be primary production with harvesting being one example of a technical stage. The product of harvesting will be fruit in clusters, and the actors will be the producers – individuals or co-operatives – and the processing factories with their own plantations (Table 30).

Typology of actors

Identifying basic activities and actors is followed by the typology, i.e., establishing homogenous categories within each level. These categories must facilitate the analysis by reducing the variability and heterogeneity inherent in the real world, without using approaches founded on large aggregates and national averages that frequently lean toward abstract and unreal representations. The categories are based on a combination of different criteria, such as the importance of the product in the farm economy, geographic localisation, the type of organisation, altitude, and the corresponding indicators; for example the criterion “altitude”, could include as indicators “high (above 1,300 m)”, “average (between 500 and 1,300 meters)” and “low (below 500 meters)”.

Figure 4 Technical steps in the potato system.

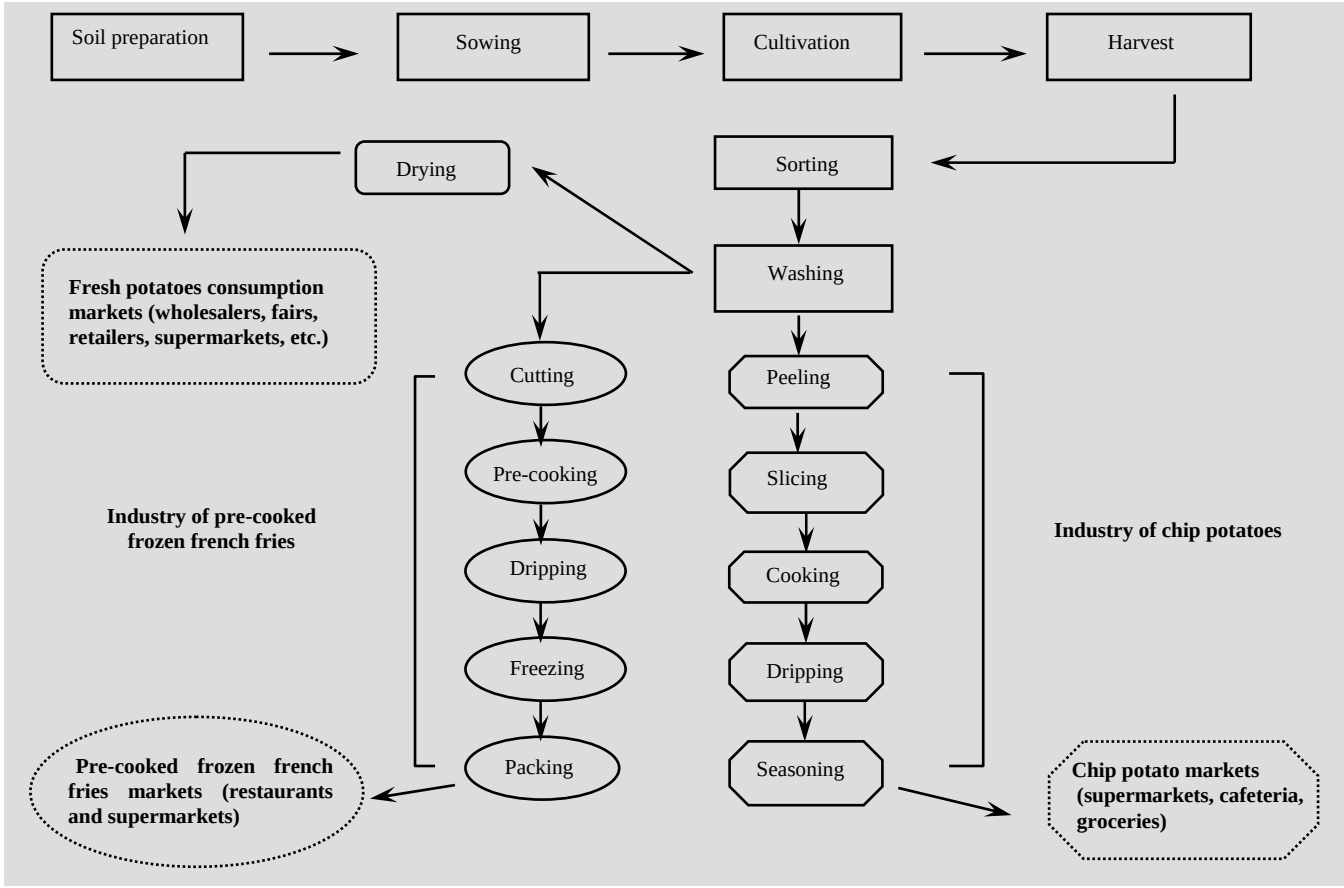


Table 30 Functional analysis: the case of palm oil.

Basic and Support Activities	Technical Steps	Actors	Products
☐ Input and service supply	• Input production	• Local plants	• Pesticides, fertilizers, tools
	• Input import	• Importers	
	• Input trade	• Cooperatives, plants	
	•	• Traders	
	• Provision of services	• Cooperatives, development banks, traders, government	• Capital, technical assistance, insurance
☐ Primary production	• Culture, crop	• Producers, enterprises agro-industrial, cooperatives	• Fruit bunches
	• Transport to the farm		
☐ Crude oil processing	• Transport to factory	• Producers, transporters, factories	• Fruit bunches
	• Picking, pressing	• Factories	• Pressed fruits
	• Extraction	• Extraction plant	• Raw crude oil
☐ Clear oil processing			• Crude oil
			• Raw clear oil
	• Transport to factory	• Plants, transporters	
☐ Oilcake and kernel oil processing	• Clarification	• Clarifying plant	• Fibers and nuts
			• Dry nuts
	• Defiberization, drying, sorting	• Plants	
		• Exporters, plants	• Palm kernel oil
	• Transport or export of palm kernels t		• Cakes
☐ Refined oil processing		• Oil extraction plants	• Refind oil
	• Oil extraction		• By-products
☐ Distribution	• Degommage, refining, etc	• Refining plant	
			• Refined oil in barrels, oilcakes, by-products
	• Transport to wholesalers and wholesale trade	• Traders, cooperatives, supermarkets	• Oil in bottles, by-products
	• Transport to retailers and sales	• Supermarkets, retailers, wholesalers, transporters	• Refined oil in barrels, in tanks, by-products
☐ Consumption	• Transport to other processing plants and industries	• Transporters, refining plants	

Quantification

Quantification consists of evaluating each category on the basis of a set of common data, such as relative contribution in the total population of producers and in production, technical and economic efficiency (income, associated costs and margins).

The respective influence of each category in the commodity chain can thus be estimated as can the associated problems and the possibilities of improving the specific situation. In particular, from data obtained from fieldwork or by analyses from other sources, it is possible to build up cost structures representative of the real situation for each group of actors. One case of agricultural production is presented in Table 34.

Characterising the commodity chain

The process of characterisation is applied here as an example to a typical commodity chain that is made up of four basic identified activities conforming to the method of characterising the actors – primary production, industrial transformation, marketing, and consumption – and two support activities – the supply of inputs and the provision of services.

Primary production and the producers

Typology of producers. In order to obtain distinct categories, each representing one homogenous group with its own technical and economic outcomes, the criteria that will differentiate producers must be defined. The criteria may relate to natural conditions, technology, the importance of the product to the farm, the farm location, the farm size, the organisation of production, the degree of vertical integration, etc (Table 24). Generally, three to four elements suffice as principal criteria, since their combination will define the categories. The other criteria simply refine these categories.

If good statistical sources exist, data-analysis methods can be used, whether factorial or in principal components, to construct the categories. Where there are insufficient recent and reliable data, one method, presented in this document, can be applied in order to quickly prepare the typology of the actors (refer to “A Method for Characterising Actors” page 70).

The outcomes of the typology are presented in the form of a table that sums up the characteristics of each group. The relative importance of each of these groups should also be stated, and the number of producers and the volumes of production.

Table 32 corresponds to research carried out on the rice commodity chain and Table 33 to the milk commodity chain, both in Costa Rica.

In Table 32, there are two main criteria that allowed the categories of rice producers to be defined: the cultivation technique - irrigated or pluvial - and the size of the farm holding. Within each type of cultivation technique, the second criteria determined three sub categories, and in total six types of farm holding, which are presented in columns. Additional criteria (other criteria) form the lines of the table and allow the characterisation of each type of producer to be completed.

Table 31 Example of criteria for characterizing producers.

Criteria	Observations and Comments
• Natural conditions: altitude, climate, soil type, diseases	Natural conditions define production zones and the utilization of technology
• Technological conditions: mechanization, water control, improved seeds, pesticides, fertilizers, natural resources	Use of technology and natural resources (type, intensity, quality)
• Importance of the commodity in the farm economy	Single activity (mono-cropping, specialization) or multiple activities, agriculture or non-agriculture (mixed farming, mixed cropping, farm processing, other activities)
• Geographical situation	Distance from inputs supply centers, consumption markets and processing places; factors that affect transportation and selling prices
• Integration	Vertical (participation in industrial processing activities or trade)
• Farm size	May allow economies of scale; Often associated with the techniques used
• Access to credit	May determine the type of technology used
• Employment and availability of labour	Combination of family labour and permanent or temporary workers
• Tenure system and the use of soil	Ownership, tenancy, mixed forms, Associative, communal, collective, individual
• Destination of products	Industrial, human or animal consumption, domestic market or for export, sales to processing industry or to consumer
• Use of insurance	May become a determining factor in production decisions and the choice of type of technique
• Management capacity	Level of knowledge, experience, available information, technical assistance received
• Type of organization	Individual farm, cooperative, communal organization, associative, etc.

Table 32 Characterising rice producers in Costa Rica.

☐ Main criteria	Irrigated cultivation			Rain-fed cultivation		
• Cultivation technique • Farm size in hectares	< 20 Category 1	>20 - < 100 Category 2	>100 Category 3	< 50 Category 4	> 50 - < 200 Category 5	>200 Category 6
☐ Other criteria						
• Type of organisation	Organised	Organised	Non-organised	Organised	Non-organised	Non-organised
• Irrigation system						
- with static water level	88%	65%	65%			
- with variable water level	12%	35%	35%			
• Type of irrigation	by gravity	by gravity	by gravity and pumping			
• Geographic situation	Cañas, Bagaces	Cañas	Cañas, Bagaces, Liberia	Brunca, Pacífico Central, Chorotega	Entire country	Brunca, Chorotega
• Integration with the industry	No	No	40%	No	No	40%
• Equipment						
- owned	85%	50%	90%		60%	100%
- hired	15%	50%	10%	100%	40%	
• Sources of financing	Bank, Agrarian Fund	Bank, Rice mills	Bank, Self-financing	Bank, Rice mills, Agrarian Fund, European Union	Bank, Rice mills, Input suppliers	Bank, Rice mills, Input suppliers
• Insurance	Optional	Optional	Optional	Compulsory?	Compulsory?	Compulsory?
☐ Relative importance of each category						
• Distribution of producers (%)	8	2	1.5	60.5	10	18
• Part in national production (%)	3.5	3.5	17	21	20	35

Table 33 Characterisation of dairy farm holdings in Costa Rica.

☐ Main criteria	Categories									
• Type of dairy processing and destination of milk	Mechanical, Industrial processing						Manual Non industrial processing					
• Altitude (m)	high	medium		low			high	medium		low		
	>1300	500 to 1100		< 400			>2000	400 to 800		< 400		
• Zone		wet	dry	wet	dry			wet	dry	wet	dry	
• Type of cattle	milk production			mixed, milk and meat			milk production			mixed, milk and meat		
☐ Other criteria												
• Location												
• Breed												
• Area under pasture												
• Natural pasture (variety)												
• Cultivated pasture (variety)												
• Number of milking per day												
• Kilos of concentrate per lactating cow per day												
• Other fodder (name)												
• Artificial insemination, y/n												
• Labour force, y/n												
• Production (kilos of milk per animal per year)												
☐ Relative importance of each category												
• Distribution of producers (%)												
• Share in production (%)												

Table 34 Example of agricultural production costs by category of producer: the case of mechanised rice cultivation, in local currency.

Item	Unit of Measure	Category 1				Category n			
		Quantity Applied	Unit Price	Cost per Hectare	Percentage of Total Costs	Quantity Applied	Unit Price	Cost per Hectare	Percentage of Total Costs
☐ Labour									
• Preliminary weeding	hours/ha								
• Water management	hours/ha								
☐ Mechanised Labour *									
• Deep ploughing	rounds/ha								
• Harrowing	rounds/ha								
• Seeding	rounds/ha								
• 1st application of fertiliser	kg/ha								
• 1st application of insecticide	l/ha								
• 1st application of herbicide	l/ha								
• 2nd application of insecticide	l/ha								
• 2nd application of fertiliser	kg/ha								
• 2nd application of herbicide	l/ha								
• 3rd application of fertiliser	kg/ha								
• 3rd application of insecticide	l/ha								
• 4th application of insecticide	l/ha								
• 1st application of fungicide	l/ha								
• 2nd application of fungicide	l/ha								
• Harvest	kg/ha								
☐ Materials									
• Seeds	kg/ha								
• Fertilization at seeding	kg/ha								
• Nitrogenous fertilizer	kg/ha								
• Granulated insecticide	kg/ha								

Continued …….

Table 34 (cont.) Example of agricultural production costs by category of producer: the case of mechanised rice cultivation, in local currency.

Item	Unit of Measure	Category 1				Category n			
		Quantity Applied	Unit Price	Cost per Hectare	Percentage of Total Costs	Quantity Applied	Unit Price	Cost per Hectare	Percentage of Total Cost
• Pyrethroid insecticide	l/ha								
• Organo-phosphate insecticide	l/ha								
• Pre-emergent herbicide	l/ha								
• Propanil herbicide	l/ha								
• Hormonal herbicide	l/ha								
• Organo-phosphate fungicide	l/ha								
• Carbamate fungicide	l/ha								
☐ Other production costs									
• Yield insurance	premium/ha								
• Inputs transported to the farm	kg/ha								
• Depreciation									
– Pick-up									
– Workers' housing									
– Toolshed									
• Maintenance	kg/ha								
• Transport to selling place									
☐ Management and sales costs									
• Farm manager	hours/ha								
• Accountant	hours/ha								
• Electricity, telephone, etc									
• Fuel for pick-up	l/ha								
☐ Financial costs									
• Interests									
• Stamps and commissions									

* In this item, the input application units correspond to the way the service is billed by the companies, in the "Materials" Item, the units correspond to the quantities applied.

Quantification. Field data collection is carried out by surveys of farms that are representative of each of the categories defined. The objective of these surveys is to enable a technical and economic evaluation of each category. The data to be collected and presented are: the units of measurement and the quantities applied, inputs, services, unit prices, and the costs per hectare, as illustrated by Table 34 in the case of mechanised rice; the structure of costs per main category, total costs, costs per unit produced, sales prices, margins and the productivity of the factors (Table 35).

Table 35 Production costs, selling price, margin and productivity by category of producer, in local currency and US dollars.

Item	Unit	Category 1	Category n
		Amount %	Amount %
☐ Total cost per hectare			
• Local currency	LC/ha	100	100
• US$	US$ /ha	100	100
☐ Costs per ton			
• Cost in local currency	LC/t		
• Cost in US dollars	US$/t		
☐ Income (« returned to farm »)			
• Selling price per ton			
– In local currency	LC/t		
– In US dollars	US$/t		
• Income per hectare			
– In local currency	LC/ha		
– In US dollars	US$/ha		
☐ Gross margin			
• Per hectare			
– In local currency	LC/ha		
– In US dollars	US$/ha		
• Per ton			
– In local currency	LC/t		
– In US dollars	US$/t		
☐ Relative margin			
• Gross margin / total cost (%)			
☐ Physical productivity *			
– Of labour (w)	T/day		
– Of capital	T/LC		
– Of soil (yield)	T/ha		
☐ Productivity in value **			
– Of labour	LC/w		
– Of capital	LC/LC		
– Of soil	LC/ha		
– Of all factors ***	LC/LC		

* Labour productivity = quantity of product obtained per day of work; Capital productivity = quantity of product obtained over a given period/value of capital used for obtaining it, in local currency; Soil productivity = quantity of product obtained over a given period/quantity of soil used to obtain it, in hectares. This indicator corresponds to agriculture yields.

** Labour productivity = added value/day of work; Capital productivity = added value/capital value used to get it, in local currency; Soil productivity = added value/quantity of soil used to get it, in hectares.

*** All factors productivity = added value/total value of factors used (capital + work + soil).

Viability of the systems of production. All information on the techniques that contribute to sustainable use of natural resources (soil conservation, integrated pest management, organic fertilisers, etc.), whether used by certain categories of producers or potentially applicable in

certain cases, must be highlighted and incorporated in this phase, which characterises primary production.

Those items directly associated with durability, and their effects on technical and economic outcomes, such as yields, costs and income, will therefore be made apparent from the cost structure. Costs and margins by category of producer can be compared. This information will be useful for elaborating propositions aimed at improving the competitiveness of the commodity chain in a sustainable manner (Stage 5).

The comparison of margins and costs should not therefore be the sole criterion in decision-making. Before certain decisions are adopted, other factors must be taken into consideration, in particular, the consequences for the environment and for future generations.

Agro-industrial processing and manufacturers

The agro-industrial phase corresponds to the full range of activities involving the processing of an agricultural product. The terms “agricultural product”, “raw material” and “primary product” are used interchangeably to denote a product resulting from agricultural or primary production and destined for processing. The product can be transformed at the farm level (in the case of handicraft processes) or at a factory, which may or may not be owned by the producer (vertical integration).

The manner in which to tackle the study of marketing between production and processing– for the beef chain: cattle raising, cattle trading at the farm level, at fairs, at public markets, etc. – is presented further in the section on marketing and traders. In the case of fresh products marketed directly, without industrial processing, refer directly to that section (page 62).

Table 30, used in the functional analysis already mentioned, and Figure 4 representing the processing of a product, allow us to define exactly what this agro-industrial phase is made up of, in other words, to identify the technical stages and the actors.

Typology of Industries. The same procedure for developing the typology of producers is used to develop a typology of manufacturers. The criteria that differentiate agents must be identified and combined to define distinct categories each representing a homogenous group. This requires criteria such as technology used, type of enterprise, size, location, type of organisation (Table 36).

The main criteria are those that define the categories, while the other criteria allow the categories to be refined. The outcomes are presented in table form summarising the specifics of each category and their relative importance in regard to the number of enterprises and production volume. The case of milk in Costa Rica is presented in Table 37.

Quantification. For each category defined, field data are collected through surveys on the representative enterprises. The objective of these surveys is to allow a technical and economic evaluation of each of the categories. The data that need to be gathered and presented are: the cost of processing, such as presented in Table 38 on the rice commodity chain in Costa Rica, including the structure of costs by major items, total costs, costs by unit produced, sales prices, and margins (Table 39).

Table 36 Example of criteria to characterize industrial processing.

Criteria	Observations and Comments
• Type of firm	Family, company, small, medium, large, national, multinational
• Type of processing	Industrial, craft
• Type of organization	Cooperative, associative, corporation, private, public, etc
• Origin of investments	National capital, foreign capital, joint-venture, public
• Capacity	Installed capacity for the different technical processing steps and quantity that is actually processed
• Technology	Characteristic of technology, modernity, adequacy to country's conditions, impact on environment
• Membership in a professional organization	Can give access to advantages that have repercussions over economic results
• Supply arrangements for raw material	Reception in plant or farm, contracts (terms or payment, quality price), advance on harvest, etc
• Destination of elaborated product	Domestic consumption or export, final or intermediary good
• Location	Distance of primary material production zones, consumption centers, accessibility according to geo-climatic conditions
• Integration of production	upstream (incorporation of production and supply of raw material activities, supply in industrial inputs) and downstream (incorporation of trade activities of processed product)
• Other	

It should be noted that two blocks emerge in Table 38. In the first block appear details of the cost calculation for the raw material and the data on industrial yields. This corresponds to the processing of a fresh product into an elaborated product at a factory. In the same way, income from by-products is deducted from the initial cost of the raw material. In the second block are all the costs including those of the raw material.

Viability of the processes of agro-industrial processing. All information on the techniques that contribute to lasting utilisation of natural resources (water, energy savings, recycling, decontamination and management of wastes, etc.) – whether techniques are in use in the country, applied in certain processing units or potentially applicable – must be highlighted and incorporated into this phase which characterises agro-industrial processing.

An analysis of invested resources and profitability will provide comparisons between existing categories. This information will improve the propositions presented to reinforce the competitiveness of the commodity chain in a lasting manner.

Table 37 Characterisation of the milk industry in Costa Rica.

☐ Main criteria • Preservation technique • Type of transformation • Type of organization	Pasteurisation									Without Pasteurisation *
	Industrial							Cottage		Cottage
	Cooperative				Company			Small Enterprise	Family	Family
Identity	1	2	3	4	5	6	7	Cottage cheese maker	Family cheese maker	Raw farm cheese maker of cheese at the farm
☐ Other criteria										
• Supply	mixed	mixed	receipt at factory	reception at factory	mixed	reception at factory	reception at factory	Collection	Own production	Own production
• Level	national	national	Regional	national	national	national	national	national	regional	regional
• Destination	domestic market 87%, export 13%	domestic market	domestic market	domestic market, export	domestic market, export	domestic market, export	domestic market, export	domestic market	domestic market	domestic market
• Number of milk suppliers	1500	100	160	210	350	50	5	2500		25000
• Milk reception agreement or contract	yes	yes	yes	yes	no	no	no	variable		
• Specialisation	milk, cheese, ice-cream, cream, other	milk, cheese, ice-cream, cream, other	milk	cheese, other	milk, cheese, ice-cream, cream, other	cheese, ice-cream, other	cheese, ice-cream, other	cheese, other	cheese, other	cheese, other
☐ Relative importance of each category										
• Number of enterprises	1	1	1	1	1	1	1	200		25000
• Percentage of market in equivalent milk.	45%	2%	3%	4%	7%	1%		8%		30%

* Raw milk preservation is ensured by the making of cheese.

Table 38 Industrialisation costs, by type of enterprise, in tons and local currency.

Item	Calculation of Costs	Enterprise A	Enterprise N
☐ Cost of raw material			
• Price of raw material	P		
• Loss factor (humidity, impurities, etc.)	m (%)C=p/(1-m)		
• Real costs of raw material			
• Value of by-products	S		
• Net cost of raw material	Cn=C-S		
• Raw material return to elaborated product	r (%)		
1. COST OF PROCESSED MATERIAL	Ct = Cn/r		
☐ Cost of industrialisation			
• Direct labour			
• General indirect and manufacturing labour			
2. COST OF LABOUR			
• Maintenance and repairs			
• Electric and fuel energy			
• Equipment and building insurance			
• Materials and supplies			
• Various costs			
• Depreciation			
3. MAINTENANCE COSTS			
• Drying costs			
• Processing costs			
• Packaging costs			
• Fumigation and conservation costs			
• Raw material insurance			
4.MANUFACTURING COSTS			
• Administrative costs			
• Sales costs			
• Financing costs			
5. GENERAL COSTS			
6. TOTAL COST OF INDUSTRIALISATION	2 + 3 + 4 + 5		
TOTAL COSTS: raw material + industrialisation	1 + 6		

Table 39 Summary of industrial transformation costs and calculation of utility margins over the costs per ton.

Item	Enterprise A	Enterprise B	Enterprise N
☐ Cost of raw material			
☐ Industrialization costs • Manpower • Maintenance charges • Manufacturing costs • General expenses			
☐ Total costs (cost of primary material + industrialization cost) • In local currency • In US dollars			
☐ Selling price • In local currency • In US dollars			
☐ Gross margin • In local currency • In US dollars			
☐ Relative margin (%)			

Marketing and traders

The marketing of agrifood and agro-industrial products rests on specific functions, such as pre-marketing (which groups all activities contributing to the preparation of the product), transportation, stocking, distribution, and finally sales. By definition a marketing agent fulfills at least one of these functions in between production and consumption. There is a distinction between non-transformed fresh products where the agents serve as a link between producers and consumption markets, and transformed products, where there is a primary marketing segment between the farm and the agro-industrial firm and a secondary marketing segment between the agro-industrial firm and the consumption market.

However, these two situations may frequently coexist in the same system. As such, fresh milk may be sold to the consumer either directly at the farm, or through door-to-door sales by the milkman or indirectly by an industrial dairy company (Table 37). Such a case is analysed in detail in Stage 4, with the introduction of the circuit concept.

One agent may fulfil many functions. As such, a producer may package and sell his products at fairs or on the farm; or an agro-industrial enterprise may set up and use its own distribution and sales network.

Identification of traders. The traders form a group of economic agents whose characteristics are much less variable than farmers' characteristics throughout the world. The profiles of the major types of marketing agents hereafter are intended to facilitate their identification.

Rural collectors. Rural collectors ensure the link between the farm and urban and rural markets or between the farm and agro-industrial processing factories, depending on the type of product. Some may themselves also be producers. They frequently manage the transportation of

products, purchases, and sales. They tend to specialise by region and by category of product and to establish upstream (with producers) and downstream (mainly with urban wholesalers) fixed client relations. They often work with the financial resources provided by urban wholesalers, carriers or processing factories.

Rural collectors on the whole originate from the place of production and have broad links with producers – as family, neighbours, and friends. They have at their disposal the best local information on prices offered and quantities required, which places them in a strong position in relation to the producers. They therefore secure the purchase of the harvest and can be present at the appropriate moment to transport the product to market. However, they may provide inputs for production, so that farmers prefer to sell to their traditional collectors rather than to other intermediaries.

Generally, these operators do not receive much technical assistance, training, insurance, or financing, which may limit their effectiveness. Lacking support, numerous collectors work in small volumes and limited product ranges, according to the season and their zone of action. Due to the limited volume of their operations and the risk involved in their work, they usually subsist on relatively high profit margins per unit of marketed product.

Carriers. The main function of carriers is the transfer of products from production zones to centres of stocking, processing or marketing. They are characterised by the markets and operators they serve, the type and frequency of the transport used and the tariffs applied.

In less developed marketing systems, carriers may often simultaneously fulfill collection and distribution functions.

Wholesalers. Wholesalers are categorised by the large volumes they manage. Situated between collectors and retailers or between agro-industrial farms and retailers, they may fulfill many functions, such as financing rural producers and collectors, transportation, stocking, financing of and delivery to retailers. These agents may be differentiated by the type of product and the width of the product range they manage, as well as by the form of ownership of the enterprise and its upstream and downstream vertical integration. In general, the less the marketing system is developed the more there are independent wholesalers and family enterprises, with limited product ranges and low integration. This is mainly the case for wholesalers of food products (fruits, vegetables, root and tuber crops, basic grains) that also operate as retailers.

Retailers. The group that takes in the largest number of trade operators is retailers. At first two categories may be broadly distinguished: traditional and modern (Table 40). Traditional retailers include grocers, itinerant salespeople, and the owners or the tenants of stalls in public markets. Modern retailers mainly include supermarkets and specialised shops.

Integrated companies. When the raw material is processed, other operators may play a part in the marketing. These are agro-industrial companies or enterprises: oil millers, sugar refineries, dairy firms, abattoirs, etc.

When these agents become integrated upstream, they do so with the objective of ensuring regular supply or ensuring control over the prices of the raw material, either as a result of their own collection and transportation system or through a network of rural collectors and carriers responsible for forwarding the product to the factory.

When industries fulfill the function of the transportation, distribution, and marketing of the transformed products, they pursue upstream vertical integration to secure parts of the consumer market, to control prices and to increase profits thanks to the commercial margins. Integration may include wholesale distribution up to sales to retailers and sometimes even to consumers.

Table 40 Principal characteristics of traditional and modern retailers.

Characteristics	Traditional Retailers *	Modern Retailers **
• Range of products	Limited	Complete
• Sales volumes	Low	High
• Organisation	Independent, dispersed and not organized	Generally integrated horizontally and/or vertically
• Personnel	No specialized personnel employed	Specialised personnel
• Unitary Margin	High	Low
• Management Capacity	Limited access to technical assistance, to finance and to innovation Limited growth	Access to formal sources of technical assistance and financing, which allows growth
• Product conservation system	Rare or non-existant	Use of modern system of refrigeration and storage

* Grocery, street seller, public market stalls.
** Supermarkets, specialized chain network.

Typology and quantification

Generally, three main criteria characterise traders in a typical commodity chain. The first concerns the localisation of agents in marketing the commodity. There are three possibilities: localisation in the segment of trade between the farm and industry, localisation in the segment of trade between industry and the retailer, and localisation in the segment of retail trading.

The second criterion is the ownership of the product; the agent offers the service of mobilisation of the product without being its owner or the agent buys the product for resale.

The third relates to vertical integration: whether the manufacturer produces his own raw material or it purchases it straight from the field.

A second group of criteria allows the categories obtained to be refined. For example, geographic coverage, management capacity, the type of organisation, the application of norms of quality, and the presentation of the product (Table 41).

Depending on the case, some of these criteria may also serve as main criteria.
Combining the three main criteria results in the ten groups indicated in Table 42:

- for the farm-to-industry segment, producers-collectors, independent collectors, carriers, and integrated companies;
- for the manufacturer-to-retailer segment, wholesalers, integrated companies that share wholesale and retail trading and carriers;
- for retail trading, supermarkets, specialised shops, grocers, itinerant salespeople, and public market stalls.

Table 41 Example criteria to elaborate a typology of traders.

Criteria	Explanation
☐ Principal criteria	
• Place in the system	In the marketing segment between the farm and the plant
	In the marketing segment between the plant and retailer
	Retail business
• Product ownership	The agent offers service of moving the products without being owner or buys the product and sells it back.
• Vertical integration	The agent produces what he sells (farmer selling at factory gate) or uses the product purchased (factory that buys at field place)
☐ Other criteria	
• Geographic coverage and volume handled	Operation scale (local, regional, national, international)
• Management capacity	Level of knowledge, information, education
• Type of organisation	Individual agent, cooperative, etc.
• Other	

The same table will also indicate the importance of each category in terms of volume and number of operators. Likewise, commercial margins will be apparent. Table 42 serves as a reference for the analysis of the functioning of the commodity chain, as will be seen in Stage 4.

This traders' typology corresponds to a generic case. Depending on the characteristics of the system being analysed, it will be necessary to further divide the categories into more specific sub-categories. Where this is the case, it is recommended that one identify the categories that are key as much for their influence in determining prices as the volumes manipulated or the number of operators involved, and concentrate the analysis on these categories.

Consumption and consumers

The analysis of consumption, which affects the development perspectives and the evolution of the sector as a whole, is part of the process of characterising the commodity chain. This is why all forms of consumption of the product must first be identified, from direct consumption – in the case of a edible fresh products – to the consumption of transformed goods – elaborated products for domestic or the export market. In fact, the development of the food agro-industry implies a multiplication of the uses of agricultural products, and thereby of the final-consumption markets. Depending on the product, these are human, animal or industrial consumption.

It is therefore a matter of analysing the characteristics of national and international (in the case of exports) demand, and how demand evolves and its prospects, while taking into specific account the four factors that have a direct and strong effect on demand: changes in consumption patterns, demographic growth and the structure of the population, the development of the agri-food industry, and the evolution of income.

Table 42 Characterisation of traders.

☐ Main criteria										
Marketing segment	from the farm to plant				from plant to retailer				retail trading	
Product ownership	Yes			No	Yes			No	Yes	
Vertical integration	With production	With processing	No	No	With wholesaling	With retailing	No	No	Yes	No
	Producers-collectors	Integrated plants	Collectors	Carriers	Integrated plants	Integrated plants	Wholesalers	Carriers	Supermarkets, specialised shops	Groceries, street sellers, public market stalls
☐ Other criteria										
• Geographic coverage										
• Management capacity										
• Type of organisation										
• Other										
☐ Importance of each category										
• Volumes handled in tons (%)										
• Number of agents										
☐ Marketing margins										
• Gross margin										
• Net margin *										

* If it is possible to obtain the operational costs.

Identifying consumer categories must allow differentiation of markets according to distinct perspectives, for example, products destined for the middle classes, which in certain countries have strong potential for growth, staple and mass consumption products and typical luxury products for those groups in society with significant spending power. For instance, for products of mass consumption (staple cereals and grains, and tubers), the perspectives greatly depend on the evolution of purchasing power, demographic trends, and changes in consumption patterns. As an example of such changes, which affect the types of consumption of the middle and upper classes, one may cite the effect of favourable or unfavourable campaigns on vegetable and animal fats, the promotion of healthy products (environment friendly) or ethical products (small farmer promotion).

This analysis rests in part on the tables elaborated in Stages 1 and 2. However, substitution products, including details of the origin, quality, quantities, prices, and use, should be added.

Support activities: inputs and services

Support activities contribute to the development of the commodity chain by supplying inputs – seeds, machines, tools, treatments and fertilisers to name a few – and by the provision of services for production and processing – credit, insurance, technical assistance, research and extension, for example. What is needed here is not a study as in depth as the analysis of basic activities, but more fundamental data and certain elements of typology and quantification about the inputs and services presented in a manner that enables their importance and their effect on the competitiveness of the commodity chain to be understood.

Provision of inputs. To be taken into consideration above all are those inputs whose influence on production costs and competitiveness is the most significant, distinguishing between inputs for agricultural production and those for processing. Imported inputs must be differentiated from those that are locally produced (Table 43). A simple typology of the enterprises that provide the inputs may, therefore, be elaborated on the basis of the following criteria: the activity (importation of ready-to-use products, importation in bulk and local packaging, importation of raw material and local processing, manufactured locally from local raw materials), the type of enterprise (international, co-operative, association, private enterprise, public enterprise, etc), the type of clients and the market parts.

The type of clients must be indicated in relation to the preceding typologies as well as the part of sales they represent.

For each input identified, the reference data on sales prices (factory, wholesaler, retailer, delivered to the producer or the factory), the margins and the relationships between enterprises that distribute these inputs and their clients must be elaborated. Tables 44 and 45 indicate how to systemise the information necessary to make a comparative analysis.

Table 43 Characterisation of input supplying companies.

Characteristics	Input A		Input N	
	Enterprise 1	Enterprise n	Enterprise 1	Enterprise n
☐ Activity • Importation of ready-to-use products • Importation in bulk and local packaging • Importation of raw material and local formulation • Processing from local raw material • Other (explain)				
☐ Type of enterprise • Transnational • Co-operative • Association • Other (explain)				
☐ Type of clients (to refer to previous typologies)				

Table 44 Annual supply in input produced locally and used for agricultural production, in local currency.

Item	Enterprise 1	Enterprise n
☐ Percentage of national production, per enterprise (%)		
☐ Price • Factory price • Retail price • Producer price		
☐ Utility • Wholesaler • Retailer		
☐ Type of relationship accompanying the transaction • Nature (cash sale, with or without a contract, verbal agreement, etc.) • Bargaining power in price determination • Form of presentation of the product • Dates of delivery • Price discrimination (rebates, etc.)		

Note: Similar tables will be established for inputs used in the industrial-processing phase.

Table 45 Annual supply in input N imported and used for primary production, in local currency.

Item	Enterprise 1	Enterprise n
☐ Part of national imports, by enterprise (%)		
☐ Price • CIF cost of importation • Retail price • Producer price		
☐ Utility • Wholesaler • Retailer		
☐ Type of relationship accompanying the transaction • Nature of cash sale, with or without a contract, verbal agreement, etc.) • Bargaining power in price determination • Form of presentation of the product • Dates of delivery • Price discrimination (rebates, etc.)		

Note: Similar tables will be established for inputs imported and used in the industrial-transformation phase.

Provision of services. To be identified first of all are those services with the greatest influence on the production costs of the different categories of producers and manufacturers, such as credit, energy, technical assistance, insurance, as well as the nature of suppliers (private, public).

Basic information concerning costs, the conditions and quality of the service, possible price discrimination, the nature and origin of such discrimination, and its effects for the various categories of users, as well as the nature of the relationships between the suppliers and users. Tables 46 and 47 indicate how to systemise the information necessary for a comparative analysis.

In certain cases, it will be useful to specifically mention the enterprises, particularly where any one enterprise gains a dominant position in the market or exercises growing influence over the formation of prices of both inputs and services. This is a situation frequently seen in countries where structural and institutional reform is more advanced.

Table 46 Characteristics of service flows to primary production.

Item	Credit		Transport		Insurance		Technical Assistance		Other	
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
• Cost, conditions, quality										
• Price differential by category of producer										
• Relationship between client and supplier										

Table 47 Characterisation of service flows to industry.

Concept	Credit		Transport		Insurance		Technical Assistance		Other	
	Public	Private	Public	Private	Public	Private	Public	Private	Pubic	Private
• Cost, conditions, quality • Price differential by category of producer • Relationship between client and supplier										

A method for characterising actors

The method below enables the identification of criteria to characterise the actors of a commodity chain in homogenous categories, without having to resort to the drawn-out and costly process of census survey, when there is a lack of ready-to-use data for the elaboration of the typologies.

One of the advantages of the method lies in being able to rapidly obtain an initial characterisation of the actors involved, in the form of a pre-typology. This is only a pre-typology in the sense that this representation is not yet validated by statistical analysis or by the operators concerned.

The pre-typology gains legitimacy and is accepted after confirmation through field surveys and validation by the actors themselves.

The pre-typology

For an integral analysis of the situation of a commodity chain confronted with competition and of the effect of change – opening up of trade, liberalisation, modernisation, privatisation, etc. – one must be able to identify who the actors are and to characterise them in terms of their capacity to adapt, including their room to manoeuvre, itself directly linked to economic and social parameters such as costs, trade margins, and power of negotiation.

But the situation for each commodity chain is different. This constitutes a difficulty for the analysis of actors' situations since each commodity chain is made of specific actors.

The following is a method used for establishing relevant criteria, usually linked to technical and economic performance and applying them to define various categories of actors.

The method comprises seven steps for each basic activity identified (Stage 3).

- Step1 : establish a list of all criteria enabling actors to be differentiated.

- Step 2 : prioritise the criteria according to the distinguishing feature.

- Step 3: select the three or four main criteria that will define the categories and keep additional criteria that will serve to qualify them. Eliminate the non-relevant criteria.

- Step 4: form categories of economic agents by combining the main criteria one after the other, analysing if each new criterion combined with those preceding it contributes to reinforcing existing categories or introduces new divisions. Then,

revise the list of categories and eliminate, if necessary, those that are of no significance (of little importance in terms of volume or number of operators) keeping only those that are really of use, for instance if they present an interesting potential for the evolution of the commodity chain.

- Step 5: summarise the work in a table presenting the categories obtained once the characterisation is considered satisfactory.

- Step 6: refine each category with the help of the additional criteria so that the largest possible number of elements is available in order to identify representative farm households during the validation stage which follows.

- Step 7: for each category, proceed to estimate the following variables: number of agents and percentage, and volume of activity and percentage.

From the pre-typology to the final typology

The pre-typology will have to be checked through fieldwork based on a representative sample of the categories identified. This work responds to three objectives: recording the data specified in Stage 3, verifying the preliminary estimations obtained in step 7 of the pre-typology, and ensuring the validity of the pre-typology.

The technical workshops mentioned in the first part of this book also allow for the results obtained after the fieldwork to be validated. The product is a final typology that is representative of the situation of the commodity chain.

Organising the work

To properly carry out the process of characterisation, work meetings are organised with people selected for their knowledge of the activity: with experts in the greater sense of the word, i.e., the actors themselves, producers, traders, manufacturers, local authorities, with public and private sectors, scientists, analysts and extension workers.

Participants may therefore be actors from the commodity chain or individual agents with extensive experience. The group of participants should not exceed ten to a dozen people, otherwise applying the method will become difficult.

Ideally, the work should be carried out in a two full days meeting to allow enough time for discussion and consensus. However, due to the participation of people from different institutions and places, this is not always possible. The program presented below corresponds to a one-day meeting.

Work meeting program

□ Introduction

- explain to the participants the objective and the process of the Cadiac method (10 minutes)
- Present how the work meeting is organised (5 minutes)

□ First session

- Establish the list of criteria that allow the actors to be differentiated (30 minutes)
- Discuss the criteria, eliminate those that are not relevant (30 minutes)
- Classify the criteria, main and additional (30 minutes)

☐ Second session
- Define categories of actors based on the main criteria (90 minutes)
- Estimate the number of agents and their percentage distribution, the volume of activities and the percentage distribution (30 minutes)

☐ Third session
- Qualify the categories using the additional criteria (90 minutes)

☐ Final session
- Condense the results in table form (60 minutes)

Stage 4: Functioning of the Commodity Chain

The main procedures intended to characterise the structure of the commodity chain – i.e., identification, typology, and quantification of activities and the actors that make up the commodity chain – have been defined in Stage 3. This section is devoted to an analysis of the overall functioning of the commodity chain through the study of the network of the technical and economic relationships between actors and between activities. The objective is to understand the logic or strategies of the actors, the specific relationships that become established in the commodity chain and the rules that affect exchanges.

Identification of the main circuits

The concept of a circuit should be seen as representing the route that a product follows between two well defined poles, a route made up of a series of actors and the specific relationships between those actors. In the case of agri-food commodity chains, these poles are production and consumption. Figure 5 presents the example of the rice commodity chain in Panama. This commodity chain is made up of three principal circuits: one cottage circuit and two manufacturer circuits, one with trading of white rice by wholesalers, the other with direct sales to supermarkets. Four criteria allow the circuits of a commodity chain to be identified: their size, their degree of integration, the type of processing and, finally, the destination of production.

Size

The importance of a commodity chain depends on the number of successive operators. The shortest circuit integrates two types of agents: the producer and the consumer. Long circuits may successively involve more than six different operators.

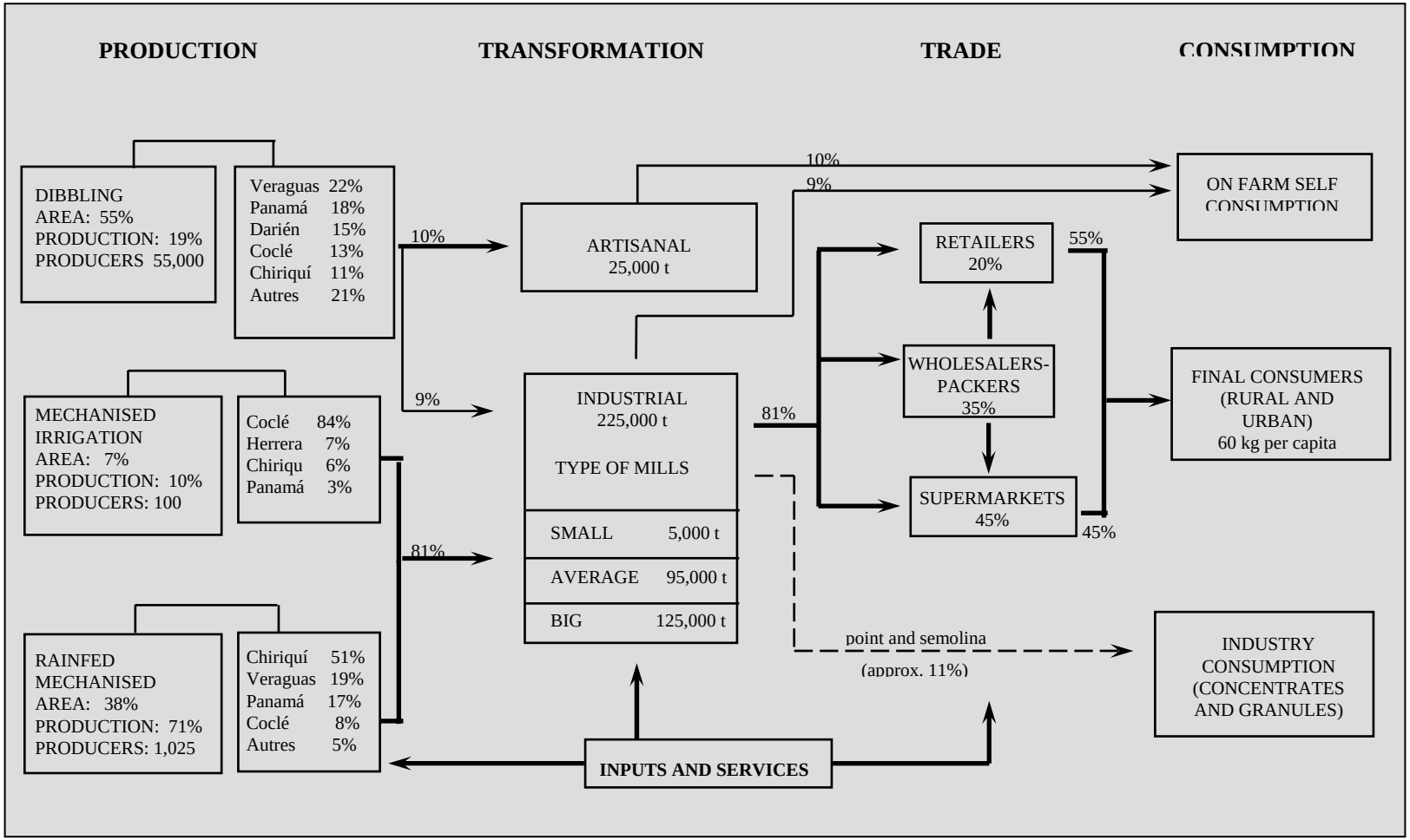
Degree of integration

The degree of integration is not totally independent of the preceding criterion, nonetheless it does allow for a better understanding of the sequencing of activities. In this way, a few independent agents may be involved without the circuit being short. It is possible for the same actor to be at once producer, carrier, manufacturer, wholesaler, and exporter. This is the case, in particular, for sugarcane and pineapple in Central America, cotton in Western Africa, and rubber in Vietnam.

Type of processing

The products may or may not undergo a process of transformation. Certain products, such as potatoes, vegetables, and fresh milk, are not transformed. Where transformation is present, standardised operations executed by means of mechanical equipment (industrial circuit) must be distinguished from non-standardised operations relying on know-how (cottage industry circuit).

Figure 5 Main circuits of the Panama rice commodity chain.



Destination of production

This is a matter of identifying the place of consumption: domestic market – the farm, local, regional or national – or export market.

On the basis of criteria gained from experts or specialists, numerous circuits are identifiable due to the large number and the diversity of operators. To more easily understand the functioning of a commodity chain, it is necessary to select and study the principal circuits. The selection criterion is that portion of production that each represents, from farm production to consumption. This criterion allows the relative importance of each circuit to be defined.

Characterisation of circuits

The characterisation of circuits rests on two elements: an understanding of the logic and strategies of actors on the one part, and the identification of the relationships between actors on the other.

Logic and strategies

The dominant logic or strategy of each category is identified based on information built up in Stage 3 for the characterisation of actors – the criteria used to form the categories and technical and economic data to which they correspond. In other words, actors' rationales will be assessed: why do they do what they do?

For those aspects linked to producers' logic, it is advisable to make particular note of whether priority is given to income, or to self-sufficiency, diversification, the minimisation of risks, or the maximisation of the profitability of investment.

The strategies of manufacturers may be characterised as domestic market orientation, promotion of exports, diversification, specialisation, and market niche research.

Examples of producers' logic and manufacturers' strategies are presented in Tables 48 and 49. In this type of table, those facts that corroborate producers' logic should be indicated in the corresponding section. If a number reasons are associated with one category of actors, the indications should be made apparent in each corresponding part of the table.

Knowledge of these reasons and strategies will contribute to interpreting the competitiveness of the commodity chain and will equally help to make viable solutions to improve the efficiency of each group. For instance, producers using the logic of maximisation of income may be reluctant to adopt techniques for preservation of natural resources, the effects of which could reduce their margins in the short term. Also, some possible solutions could demand that some actors change part of their behaviour and thus modify their logic.

Table 48 Producers' rationale.

Category	Obvious Reasoning				
	Income maximisation	Self-sufficiency	Risk minimisation	Return to investment maximisation	Other
• Category 1					
• Category n					

Table 49 Strategies of actors in industrial processing.

	Apparent Strategies					
Type of Enterprise	Focus on internal market	Focus on export	Specialisation	Diversification	Market niches	Other
Type 1						
Type n						

Relationships between actors

Identifying logic and strategies is important to understanding the relationships between actors, which enables a better approach to the functioning of a commodity chain in its entirety, as a system of relationships. It is in accordance with these relationships that a product flows from the farm to the consumer.

Matrices, in which each cell indicates whether or not transactions exist between two actors, should be elaborated. Where there is transaction, its characteristics must be defined, particularly the quantities of the product traded, the prices and the type of relationship accompanying the transaction.

The type of relationship refers to the nature of the agreement, formal, such as a contract, or informal, such as verbal agreements. Who determines the form of the presentation of the product, the volumes and the dates of delivery? Who has what power of negotiation in determining purchase and selling prices, and for what reasons?

At least four matrices, or tables, need to be elaborated in order to collect the appropriate data. The information is provided by the producers, manufacturers, and traders involved. The first table deals with the relationship between the producers and operators who purchase the raw material (Table 50). The second corresponds to the relationship between these same operators and the manufacturers (Table 51). The third is related to the relationship between the manufacturers and the wholesalers (Table 52). The last deals with the relationship between wholesalers and retailers (Table 53).

Table 50 Identification of relationships between producers and traders of raw materials.

	Category of Trader				
Category of Producer	Independent collector	Farmer collector*	Carrier	Integrated factory, buyer of raw material **	Other
• Category 1 - volume - sales price - relationship					
• Category n - volume - sales price - relationship					

* Product sold to industry at “factory-gate”.

** Purchases “at field-side” for supply.

Table 51 Identification of relationships between traders of raw materials and industries.

Category of Trader	Industry Type		
	Type 1	. . . . .	Type n
• Independent collector - volume - sales price - relationship			
• Farmer collector * - volume - sales price - relationship -			
• Carrier - volume - sales price - relationship			
• Integrated factory, purchase of raw material** - volume - sales price - relationship			
• Other - volume - sales price - relationship			

* Product sold to industry at "factory gate".
** Purchase "field-side" for supply.

Table 52 Identification of relationships between industries and wholesalers.

Industry Type	Category of Wholesaler				
	Wholesaler	Integrated factory and wholesale*	Integrated factory and retail	Carrier	Other
• Type 1 - volume - sales price - relationship					
• Type n - volume - sales price - relationship					

* Sold "at wholesaler gate".

Table 53 Identification of relationships between wholesalers and retailers.

Category of Wholesalers	Category of Retailer					
	Supermarket	Specialised shop	Grocery	Street sellers	Public market stall	Other
• Wholesaler - volume - sales price - relationship						
• Integrated Factory to wholesale - volume - sales price - relationship						
• Other - volume - sales price - relationship						

Table 54 presents a hypothetical characterisation of the principal circuits of a commodity chain, integrating information from the previous Stage 3, Structure of the Commodity Chain, and Tables 50 to 53. This table shows the principal circuits, and the share of each in production. The cell "other" represents circuits of minor importance, the percentage of which in the total trade is calculated by deducting the percentages of the other circuits from the total. From left to right, the manner in which the product is transacted from one actor to another is described: from producers to traders of raw material, then to manufacturers, before reaching consumers. Finally, for each transaction purchase and selling prices and the corresponding gross margins must be indicated.

These last data, which are associated with those obtained on the relationships between actors, (Tables 50 to 53) help in understanding the mechanisms of price formation; when combined with the understanding of the logic of the actors (Tables 48 and 49), they lead to a complete overview of the functioning of the commodity chain.

Dynamics and regulation

What is at stake is acquiring a global and dynamic understanding of the functioning of the commodity chain by comprehending its current situation and the origin of that situation, i.e., historical factors. To this end, it is necessary to sort out the forces that affect or have affected the commodity chain, as well as the way decisions influencing the future of the commodity chain are made.

These factors may be as much internal – such as technological changes, new forms of co-operation – as external – tariff reduction, new trade rules, etc. The most powerful actors and the game rules in force, whether formal or informal, should also be clearly shown.

Table 54 Characterisation of marketing circuits and unit margins, in local currency.

	Circuit A	Circuit B	Circuit C	Circuit N	Other
• Share of production transported	10%	18%	23%		
☐ Producer					
• Type	Category 1 Category 2	Category (farmer collector)	Category 1 Category 2 Category 3		
☐ Trading at the farm					
• Type	Transporter	Farmer collector	Integrated factory, purchases of raw material		
• Average purchase price		No trade			
• Average sales price			No trade		
• Gross margin	%	% [1]	% [2]		
☐ Industry					
• Type	Type 2 factory, integrated to trade	Type 3	Type 1		
• Average sales price					
• Gross margin	(%) [3]	No trade [4]	No trade [4]		
☐ Wholesale trading					
• Type	Wholesaler	Wholesaler	Wholesaler		
• Average sales price					
• Gross margin	%	%	%		
☐ Retail Trading					
• Type	Retailer	Retailer	Retailer		
• Average sales price to consumer					
• Gross margin	%	%	%		

[1]Related to the differential between the field-side price and factory gate price; [2]Related to the differential between the purchase price and the price of raw material at the factory gate; [3]Related to the differential between the ex-factory price and the price at the wholesaler's gate; [4]There is no marketing margin because this type of enterprise sells ex factory.

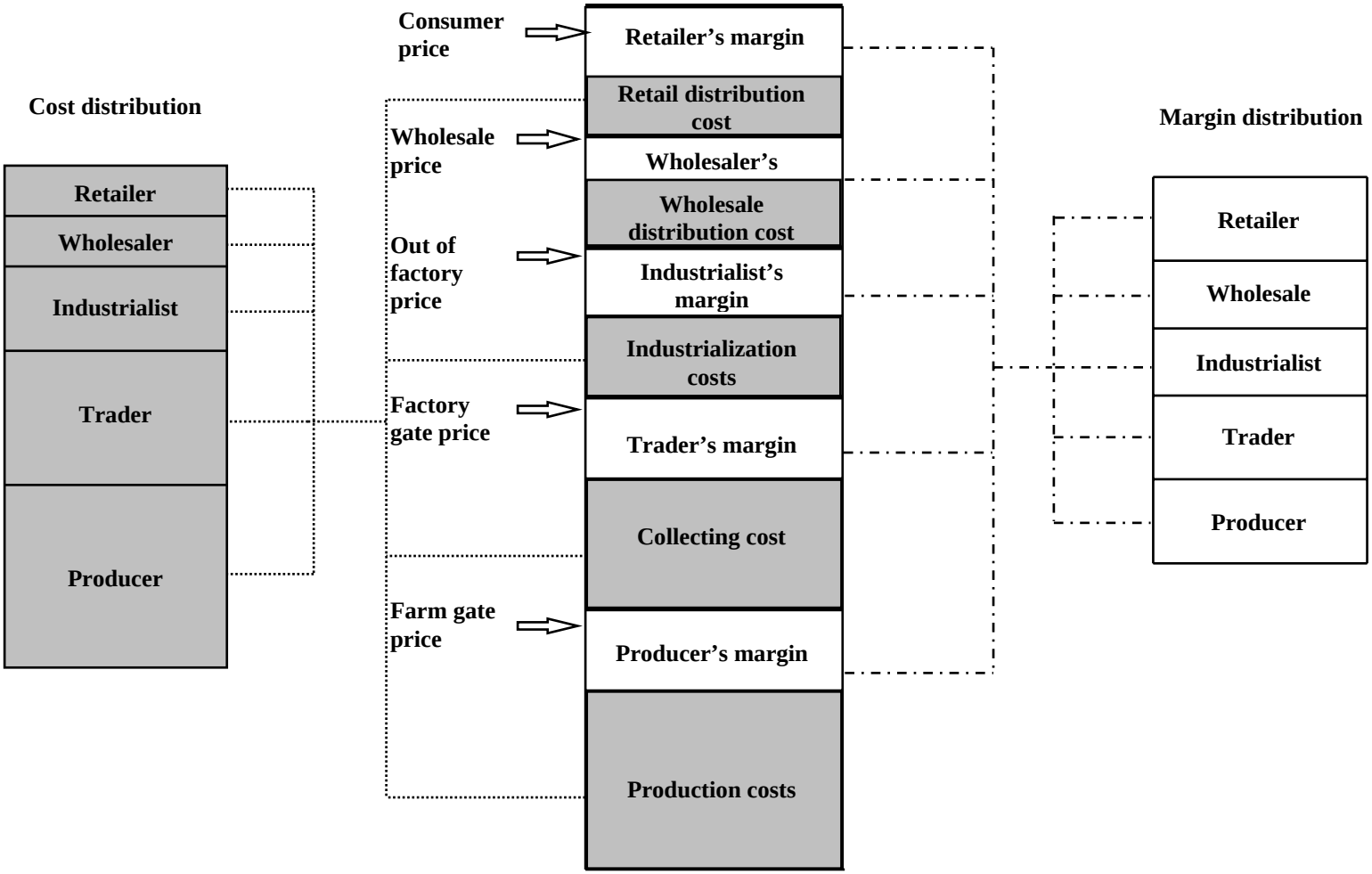
The current situation

The data shown in Table 54 should be used to better understand which are the main actors and which rules apply to the system being studied in its current form.

To do so, the analysis of price formation and the distribution of costs and margins for each principal circuit should be utilised as well as the functional framework of Stage 2 that defines the role of each enterprise or institution of the system.

Figure 6, which complements Table 54, corresponds to the schema of the main circuit of a commodity chain. The central column represents the structure of the consumer price; the costs incurred, the prices received and the net margins are detailed for each type of actor. All data are expressed in absolute terms. In the left column, all costs of the middle column are superimposed and added up, also in absolute terms, but the share of the total cost incurred is also indicated for each type of actor. The right-hand column, corresponding to the margins, is constructed in the same way.

Figue 6 Price formation, cost and margin distribution along one main circuit.



Forming columns in this manner, by combining the absolute dimension of costs and margins and their relative weight, highlights the necessity to establish comparisons, at least as concerns the following factors:

- total costs in relation to total net margins generated in each circuit;
- total costs and margins of a circuit in relation to the total of costs and margins of other circuits;
- the part of costs and margins for each type of actor in relation to the other actors in the same circuit;
- the parts of costs and margins of each actor of a circuit in relation to those of other circuits.

Such comparisons assist in the interpretation of the economic power of the different types of actors, if one supposes that those that correspond to the lowest costs and the most significant margins are those that probably have the largest influence over the economic functioning of the commodity chain and transaction modalities. This will obviously need to be compared with information collected on the relationships between actors and data on the organisations studied in the functional framework.

Historic factors

In order to reinforce knowledge of the functioning of the commodity chain, long-term data that enables the identification of changes must be used. Only those data that explicitly show the current functioning should be brought out. Thus, only the principal occurrences revealing the powers of different protagonists within the commodity chain and its environment will be noted.

In general, the required minimum time scale is ten years, though it may sometimes be relevant to go further back in time, because changes in the mode of regulation may take place over longer periods. A simple and useful representation of such changes can be made using a chronological table such as Table 55.

Table 55 Historical factors that have affected the commodity chain.

Event	Date of Occurrence	Actors Involved	Impact
•			
•			
•			
•			
•			
•			
•			
•			
•			

Stage 5: Interpreting the Results

This synthesis must be concise without being a mere summary of the previous stages. In fact, it must lead to an integral diagnosis of the situation of the commodity chain, elements of judgement that facilitate decision-making, and transformation proposals. The necessary information is spread through the analysis; the synthesis enables it to be concentrated and articulated in a coherent global framework.

The objective of this stage is to identify the factors that define the degree of competitiveness of the commodity chain, not only by level and by type of actor but also as a whole. It is also to lead to proposals – concrete actions and measures – for greater competitiveness in an equitable and viable framework, and to measure the potential impact of these changes by means of scenarios and simulations.

This synthesis contributes to ensure that the actors are, on the basis of the information obtained and mechanisms of dialogue adopted, in position to make appropriate decisions and, as such, of participating in the elaboration of their own competitiveness.

The interpretation of the results is primarily carried out by comparing the situations of the different categories of actors by level; the determining factors of economic performance are identified, more global data on the context in which the commodity chain develops is supplemented and proposals for improvement are indicated. This interpretation relies on simulations deriving from the elaboration of scenarios for change.

Then, the entire system is worked on, articulating the data of each level, which enables the generation of specific and complete proposals, which should rely on the results of previous simulations and scenarios.

Finally, a global reflection based on an analysis of the current situation, the implications of scenarios considered and of measures proposed will be promoted. This reflection will take into account the effects – positive or negative, in the short, medium, and long terms – on the welfare of the social actors, on their contribution to the country's socio-economic development and on the management of natural resources.

Concepts for interpreting the results

The key concept used here to interpret the data and results obtained during previous research is that of competitiveness[1]. Competitiveness is always put forward by private actors and policy makers, by international institutions and economists when it comes to transforming agri-food and agri-industrial systems. Nonetheless, in practice, this concept is very often reduced to price comparisons, which are the basis of biased conclusions on comparative advantages, which in turn induce measures and policies tending in the short term to benefit small groups of actors that are technically advanced, politically influential, and economically well endowed. Such a narrow concept leads to the growing marginalisation of a large part of the rural and peri-urban population, to the unsustainable use of natural resources, and to the promotion of economic systems with high social costs.

[1] Similar analyses may be conducted with the Cadiac approach putting, for instance, more emphasis on other concepts such as sustainability, poverty alleviation, or equity in the commodity chains.

The growing importance of concerns for the environment and for equitable development calls for a global analysis of competitiveness and in the definition of actions to be implemented. Such an integrated approach should replace conventional economic valuations of the efficiency of agri-food systems.

The synthesis phase of the Cadiac method must enable such a reflection to be advanced. It rests on competitiveness as being the capacity to be present in the markets in a lasting manner.

Competitiveness is a complex and relative phenomenon. One of the main tasks is to identify the determining factors in each commodity chain (sources of competitiveness). These factors may influence, directly or indirectly, costs. To be differentiated also are sources of competitiveness that actors themselves dominate and those that they do not control. In the same way, those actors that have the capacity to implement changes or actions increasing competitiveness must also be identified.

Moreover, the analysis of the sources of competitiveness enables one to integrate into the study of competitiveness an evaluation of the system's economic performance and prospects, the distribution of surpluses among the different groups of actors and the effect on economic performance of proposals leading to more lasting use of natural resources.

Guide to elaborating the synthesis

The synthesis must be elaborated on the basis of the main circuits identified in order to avoid being stuck with an impossible task, particularly given the manifold circuits. The identification of these circuits (Table 54, Figures 5 and 6) is, therefore, in itself already an important effort at synthesis.

There is no unique procedure, nor recipe showing how to undertake the work. It is the logical and ordered combination of collected data that will be the determining factor. It is possible, for example, to start with the context and its influence on the activities of the commodity chain (structure) or to start with the structure then progressively incorporate the elements of the context and elements relating to the functioning of the commodity chain. As for the basic activities, there is no formula showing at which level to start.

The most important thing, whatever the sequence adopted, is to be able to identify actions or changes intended to improve the competitiveness of each level of the commodity chain in its entirety in accordance with the principal circuits.

On the basis of previous research, we may recommend a series of steps when elaborating this synthesis. The sequence starts with the main factors determining the competitiveness of primary production and is followed by the marketing of the inputs and the product; the influence of the world and regional context is then added and the viability of the changes identified is examined. Simulations of their implementation and their effects go along with the elaboration of indicators aimed at backing up the analysis and at offering elements of comparison between the different categories of producers.

A similar sequence is applied to the industrial-processing phase, a phase that is linked to primary production by the prices that firms pay for raw materials. This separation into two sequences is justified by the existence, in reality, of separate markets for agricultural products and for elaborated products – for example, raw oil and cooking oil or live cattle, carcasses and cut meat. Separate analyses are therefore necessary.

In the last part of the synthesis, the results from the agricultural, industrial, and commercial phases are integrated and the competitiveness of the commodity chain in its entirety is analysed. In summary, the analysis follows a seventeen-step sequence. None of the steps is independent, rather each is linked to the other.

Steps 1 to 8 are devoted to an analysis of the competitiveness of actors in primary production while steps 9 to 16 are devoted to an analysis of the competitiveness of actors in the industrial phase. Finally, step 17 presents an appraisal of the economic performance of the commodity chain.

For each step, the objective is pointed out. Then the key elements of the synthesis to be taken into consideration or to be explained are indicated, as well as the related tables where the corresponding information or data is located. Finally a "How to act" section corresponds to foreseeable actions, in accordance with the analysis.

Competitiveness of actors in primary production

Step 1. Factors determining production costs

Objective

The objectives are (i) to determine the main factors influencing the economic situation of the identified categories of producers, and (ii) to compare the results and elaborate proposals for each category. Factors related to the marketing of inputs and the provision of services are dealt with in step 2.

Refer to Tables 30 to 35 and 48.

To be taken into account or explained

The differences between the categories of producers in terms of effectiveness (physical yield per hectare), total costs per hectare, sales price and profitability per hectare; the cost items (sources of competitiveness) differing the most. As such, higher yields per hectare do not necessarily imply greater per hectare profitability, because of the cost of obtaining these yields.

- The main reasons why the costs differ:
  - the effect of technical factors on the different cost structures (quantity of inputs applied according to the technology),
  - the price the different groups of producers pay for inputs and services,
  - the effect of costs incurred following the adoption of techniques aimed at sustainable use of natural resources.
- The possibilities for introducing technological changes, according to new technologies or technologies used elsewhere and the situation of each category of producers.
- The factors that may affect the competitiveness of production, such as management capacity, geographic situation, and the state of infrastructure.

How to act

- For greater competitiveness through technical changes:
  - prioritise technical changes by category of producer,
  - diversification and intensification,
  - the difficulties, opportunities, and viability of these changes.

- For greater competitiveness based on non-technical factors:
  - training,
  - investments,
  - relocation,
  - conversion (to other crops),
  - development and transfer of technology.
- For greater sustainable use of natural resources:
  - type of technology,
  - the difficulties and viability of changes,
  - training,
  - investments.

Step 2. Impact of input marketing and provision of services

Objective

The objective is to complete the analysis of step 1 by evaluating the mechanisms by which the prices of inputs and services are determined.

Refer to Tables 15, 16, 28, 34, 35 and 43 to 46.

To be taken in account or explained

The mechanisms by which sales prices are determined and the provision of inputs and services:

- the mechanisms for marketing inputs (monopolistic practices such as price discrimination),
- the degree of transparency of markets,
- the quality of inputs and services,
- input customs tariffs in force and tax alleviation programmes,
- the state's capacity for control as regards input prices.

How to act

- To improve the profitability at the level of producers, prioritise measures intended to reduce the prices of inputs and services in particular:
  - state intervention toward greater transparency of markets;
  - legislative changes in order to make the determination of the prices of inputs and services more transparent;
  - better organisation of producers (direct importation, bulk purchases to reduce prices);
  - the reduction of customs tariffs against inputs.

Besides prices paid by producers for inputs, the sales price of the product is another element strongly affecting the profitability and competitiveness of producers. Such prices are frequently determined by the type of relationship established between producers and buyers, this being the object of step 3.

Step 3. Relationships between producers and buyers

Objective

The objective is to evaluate the influence of the relationship between producers and buyers of raw materials (traders and manufacturers) on the competitiveness of producers.

Refer to Tables 41, 42, 50 and 51.

To be taken into account and explained

- The differences in sales prices by category of producer and the explanation for such differences: distance from centres of processing, product quality, and lack of transparency and information on the setting of prices.
- The mechanisms of purchase and sales price formation and the influence of different actors.
- Where they exist, and the mechanisms causing producer price distortions; indicate their impact on profitability and competitiveness.

How to act

- For greater efficiency of the commodity chain in terms of price formation:
  - strategies that will improve producers' negotiation potential, such as the grouping together of production and sales, integration with the processing phase and the establishment of contracts that define the terms of negotiations,
  - intervention by the state to promote transparent marketing mechanisms,
  - actions or investments to improve the quality of the product.

Step 4. Influence of the world context

Objective

The objective is to integrate information about the world context as a factor influencing the competitiveness of local primary production and decision making.

Refer to Tables 2 to 14.

To be taken into account or explained

- The main competitors of the country and their influence on prices and trade in the product by means of support policies, customs tariffs, and prices and volumes, unfair practices, and the signing of trade agreements between nations or by product.
- World market trends as regards international trade of the product; imports and exports, prices, reserves.
- The country's commitments in the context of the WTO, GATT (General Agreement on Tariffs and Trade), commercial agreements with third countries, agreements with international bodies such as the World Bank, the IMF (International Monetary Fund), particularly customs tariffs and tax-alleviation programmes.
- Changes in international prices as regards domestic prices, taking into account current and future customs tariffs.

How to act

- To improve the negotiation potential and competitiveness of the country:
  - basic facts for forming judgements, policies, decisions and strategies for trade negotiations and the participation of the country in the international market;
  - modification of customs tariffs.

Step 5. Influence of the regional commercial environment and other agreements

Objective

The objective is to integrate information on the environment formed by the trading partners, as a factor affecting the competitiveness of primary production.

Refer to Tables 15 and 16.

To be taken into account or explained

- The factors influencing the competitiveness of the country in the face of its trading partners; input prices, production costs, returns, sales prices.
- Commitments made:
  - tariffs imposed by third countries,
  - interregional or bilateral terms of trade,
  - other commitments.
- Price changes at the regional level, or in other preferential markets, as regards domestic prices, taking into account current and future customs tariffs.

How to act

- To improve the negotiation potential of the country in relation to its trading partners and to reinforce negotiated trading spaces; basic facts for forming judgements, policies, decisions and strategies for trade negotiations and the participation of the country in the regional market.

Towards step 6

At this point, the changes that are necessary to improve the competitiveness of the producers are identified. The viability of the changes must now be considered. This will depend fundamentally on the individual action of actors, in particular, their propensity for or resistance to change, their economic potential, professional organisation, and the power of private associations, and also public policies and the role that the institutions of the state will play.

Step 6. Feasibility of the changes: the role of public institutions and private organisations

Objective

The objective is to take account of the role of the state and private organisations in the implementation of actions identified during previous steps.

Refer to Tables 27, 28, 29 and 48.

To be taken into account or explained

- The capacity of the institutions of the state to encourage the changes identified, and their will to do so.
- Fiscal policy, trade policies, credit, prices and investment policies, rural development, science and technology policies, tax, and infrastructure development policy.

- The compatibility between such policies and the actions identified in the previous steps to improve competitiveness. Analysing what is and is not viable in the current context.
- Producers' capacity for organisation, either current or potential, to promote such actions.

How to act

- To facilitate the changes:
  - intervention by the authorities in order that decisions be made and that corresponding instruments be put in place,
  - proposals for reorientation of the role of public institutions in order that they be able to act according to new needs,
  - proposal for reorientation of public policies and investments,
  - decisions, which professional organisations should make, for example, the joint purchase of raw materials,
  - a reorganisation of such organisations (role, representativeness, mandates, etc.) or the creation of new organisations.

Towards step 7

Throughout steps 1 to 6, actions that will lead to greater competitiveness of primary production, by way of changes – technical or not, prices of input and services, or even in marketing relationships and in current policies – were clarified.

The following step consists of simulating the implementation of these changes and their impact on the competitiveness of the different categories of producers. This is a fundamental step and allows the priority of changes to be defined and dialogue and decision making to be better sustained.

Coherent and viable scenarios must be elaborated ensuring the compatibility between anticipated changes for the same scenario, and the feasibility of the changes, resting on the results from step 6.

The construction logic of these scenarios is presented in the following chapter in Stage 5 (Simulations, page 99). Essentially, this involves:

- the construction of different scenarios for each category of actor by modification of variables such as technology and associated returns, customs tariffs on inputs, the prices of services, and producer prices. Moreover, one must calculate the effect of these changes on production costs, income and margins by realising the corresponding simulations. These calculations lead to estimations of the possibility of modifying competitiveness within a commodity chain,
- comparison of previous results against the current prices of trading partners and competing countries. Such calculations allow the competitiveness of domestic production before and after the changes simulated at the regional and world level to be compared.

Step 7. Elaboration of scenarios and simulations for primary production

Objective

Starting with the actions identified in the course of steps 1 to 6, the objective is to extract the sources of competitiveness that may be modified, in order to bring out realistic scenarios stemming from their combination.

Refer to steps 1 to 6 and to the chapter dealing with simulations (page 99).

To be taken into account or explained

- Different scenarios by type of producer and simulation of changes in:
  - techniques that increase productivity or permit greater respect for natural resources with calculation of yields and corresponding benefits,
  - the prices of inputs and services,
  - the producer prices,
  - macro-economic variables (exchange rates, interest rates),
  - the variables affecting trade, such as customs tariffs for inputs and products.
- Comparison with the sales prices of trading partners.
- Comparison with the prices of competitors according to the different customs tariffs.

How to act

- In order to support decision making on the basis of priority actions, according to anticipated effects, make proposals for changes in:
  - techniques,
  - the prices of inputs and services and prices to producers,
  - the macro economy,
  - customs tariffs on inputs and the product,
  - others.

Towards step 8

The process of analysis for decision making rests moreover on a series of indicators that allow for a comparison of the profitability and efficiency of different categories of producers and for an evaluation of their situation. In order to calculate them, the policy analysis matrix (PAM) can be used to compare the relationship between cost structures, margins, and income at market prices (with distortion) and economic shadow-prices (without distortion).

When adapting the PAM matrix to the Cadiac method, the calculation of the indicators is made by establishing, on the one hand, the relationship between the initial costs and income situation at market price and the situation of such costs and income at economic price, and on the other hand, the situation of costs and income for each scenario elaborated at market price and the situation at economic prices. A synthesis of the calculation of the interpretation of the indicators is presented in the chapter in Stage 5 dealing with the indicators (Indicators, page 107).

The indicators of protection, i.e., the nominal protection coefficient of the agricultural good and the effective protection coefficient, show the degree of protection or absence of protection for the domestic production.

The indicators of subsidy, i.e., the equivalent of subsidies to the producer and social subsidies to the producer, show if the local producers receive subsidies from the government, consumers or other agents.

Competitiveness indicators, these being the private costs and the cost of domestic resources, show if production is profitable firstly at market price, and secondly after elimination of distortions.

Step 8. Indicators of support for decision making

Objective

To generate indicators for each scenario elaborated in step 7.

Refer to the chapter dealing with the indicators (page 107)

To be taken into account or explained

- The calculation of the indicators for the initial costs and income situation and for each simulation realised in step 7:
  - indicators of protection,
  - indicators of subsidisation,
  - indicators of competitiveness.
- Comparisons and discussions of values obtained.

How to act

- To support decision making on the basis of the values of the indicators, maintain or modify the actions identified in step 7.

Note that the structure of agricultural production costs, which serve as the basis for the analysis, correspond to annual crops. In the case of perennial crops, the organisation of information about costs will need to be adapted, as will the elaboration of the model allowing the simulations and the basis for computation of relevant indicators. The differences mainly originate from the fact that, in the case of perennial crops, input needs per hectare as well as yields and hence economic returns vary according to the age of the plantation. A method for this type of calculation is presented in the chapter dealing with perennial production costs (perennial crop production costs, page 115).

Competitiveness of the actors in the industrial phase

The same analysis sequence applies for the industrial processing phase. It is important to bear in mind that, in one circuit, the prices of products leaving the farm and which are used as raw materials by industries constitute the connection between the agricultural and industrial phases.

In step 15, which corresponds to “Elaborating the industrial processing scenarios and simulations”, the different prices of the raw materials that result from simulations made for the primary production stage (step 7) are incorporated.

Step 9. Factors determining industrial processing costs

Objective

The objectives are (i) to determine the principal factors that influence the economic situation of the identified categories of manufacturers, and (ii) to compare the results and elaborate proposals according to the specific situation of each of the categories. Factors relating to the marketing of inputs and the provision of services are dealt with in step 10.

Refer to Tables 30 to 35 and 48.

To be taken into account or explained

- The differences between manufacturers, in terms of physical yields, total costs by unit, sales price and profitability; the most contrasted cost items (sources of competitiveness) according to the categories of manufacturers.
- The differences in the items, detailing:
  - the effect of technical factors on the different cost structures (quantity of inputs according to technology),
  - the price paid by the different groups of manufacturers for the inputs, services, and the raw material (the transformed agricultural product),
  - the costs induced by the adoption of techniques aiming at a sustainable use of natural resources and respecting the environment.
- The possibilities of technical change, according to new techniques or techniques used elsewhere and the situation of each type of manufacturer.
- Other factors able to affect competitiveness: management capacity, geographic situation, investment in infrastructure, etc.

How to act

- For greater competitiveness through technical changes; priority technical changes by categories of manufacturers; difficulties, opportunities, viability of such changes.
- For greater competitiveness of actors through other changes:
  - training,
  - investment, better commercial use of by-products,
  - relocation**,**
  - horizontal integration,
  - resizing of factories.
- For greater sustainable use of natural resources:
  - type of technology,
  - difficulty and viability of these changes,
  - training,
  - investment.

Step 10. Impact of inputs marketing and provision of services

Objective

The objective is to complete the previous analysis by evaluating the mechanisms by which the prices of inputs and services are determined.

Refer to Tables 15, 16, 28, 38, 39, 44, 45 and 47.

To be taken into account or explained

- The mechanisms by which sales prices and the provision of inputs and services are determined:
  - the marketing mechanisms for inputs (monopolistic practices such as price discrimination),
  - the degree of transparency of the markets,
  - the quality of the inputs and services,
  - current input customs tariffs and tax alleviation programmes,

- the state's capacity for control of the prices of inputs.

How to act

- To improve the profitability at the manufacturer level, priority measures intended to reduce the prices of inputs and services, particularly:
  - state intervention for greater market transparency,
  - legislative changes in order to make the determination of the prices of inputs and services more transparent,
  - direct participation of manufacturers in the importation of inputs,
  - reduction of customs tariffs on inputs.

Step 11. Relationships between manufacturers and traders

Objective

The objective is to evaluate the influence of the relationship between manufacturers and traders on the competitiveness of manufacturers, whether this is a matter of the relationship between manufacturers and traders of raw material or of the relationship between manufacturers and those who channel the transformed product to the consumer.

Refer to Tables 41, 42, 50 and 51.

To be taken into account or explained

- The differences in the purchase prices by category of manufacturer and the causes for such differences: distance from centres of supply, quality of product, lack of transparency and information on price setting.
- The differences in sales prices by category of manufacturer and the causes for such differences: distance from centres of supply, quality of the product, lack of transparency and information on price setting.
- The mechanisms involved in the formation of purchase and sales prices and the influence of different actors.
- Where present, the mechanisms causing manufacturer price distortion (purchases of raw material and sales of transformed products) and their impact on profitability and competitiveness.

How to act

- For greater efficiency of the commodity chain in terms of price formation:
  - manufacturers' strategies to improve their negotiation potential, such as upstream integration (production or purchase of raw materials), downstream integration (distribution of the transformed product), agreements that define the terms of negotiations,
  - intervention by the state to promote transparent marketing mechanisms,
  - actions or investments to improve the quality and presentation of the product.

Step 12. Influence of the world context

Objective

The objective is to integrate information about the world context such as factors influencing the competitiveness of industrial processing and decision making.

Refer to Tables 2 to 14.

To be taken into account or explained

- The principle competitors of the country and their influence on prices and world trading of the transformed product by way of support policies, customs tariffs, prices and volumes, unfair practices, the signing of trading agreements between nations or by product.
- World market trends in terms of trading in the product: imports and exports, prices, reserves.
- The country's commitments in the context of the WTO, GATT, trading agreements with third countries, agreements with international bodies such as the World Bank, the IMF, particularly customs tariffs and tax alleviation programmes.
- Changes in international prices compared to domestic prices taking into account current and future customs tariffs.

How to act

- To improve the negotiating potential and competitiveness of the country:
  - basic factors for judgement, policies, decisions, and strategies for trade negotiations and the country's participation in the international market,
  - modification of customs tariffs.

Step 13. Influence of the regional commercial environment and other agreements.

Objective

The objective is to integrate the information on the environment formed by the trading partners as a factor influencing the competitiveness of the transformed product.

Refer to Tables 15 and 16.

To be taken into account or explained

- The factors that influence the competitiveness of the country in respect of its trading partners: input prices, production costs, returns, and sales price.
- Commitments made:
  - tariffs imposed on third countries,
  - intra-regional or bilateral trade terms,
  - other commitments.
- Price changes at the regional level or in other preferential markets, in respect of domestic prices, taking into account current and future customs tariffs.

How to act

- To improve the negotiation potential of the country with respect to its trading partners and to strengthen negotiated trading areas: factors for judgement, policies, decisions

and strategies for trade negotiations and the participation of the country in the regional market.

Step 14. Feasibility of changes: the role of public institutions and private organisations

Objective

The objective is to take account of the role of the state and private organisations in the implementation of the actions identified in the previous steps.

- Refer to Tables 27 to 29 and 48.

To be taken into account or explained

- The capacity of the institutions of the state to encourage the identified changes and their willingness to do so.
- Fiscal policy, trade policies, credit, prices and investment policies, rural development, science and technology policies, tax, and infrastructure development policy.
- the compatibility between such policies and the actions identified in the previous steps to improve competitiveness. Analysing what is and is not viable in the current context.
- Manufacturers' capacity, current or potential, for the organisation to promote such actions.

How to act

- To facilitate changes:
  - in intervention by the authorities in order that decisions be made and that corresponding instruments be put in place,
  - proposals to reorient the role of public institutions in order that they be able to act according to new needs,
  - proposals for reorientation of public policies and investments,
  - decisions, that professional organisations should take, such as resizing processing/transformation schemes,
  - the reorganisation of such organisations (role, representativeness, mandates, etc.) and the creation of new organisations.

Step 15. Elaboration of scenarios and simulations for industrial processing

Objective

The objective is, starting with the actions identified in the course of steps 9 to 14, and in step 7 for sales prices of the agricultural product, to draw out the sources of competitiveness that may be modified in order to bring out realistic scenarios stemming from their combination.

Refer to steps 7 to 9 and 14 and the chapter dealing with the simulations (page 99).

To be taken into account or explained

- Different scenarios by type of manufacturer and simulations of changes in:
  - techniques, that increase productivity or allow for greater respect of natural resources, with calculations of yields and corresponding benefits,
  - the prices of inputs and services,
  - the purchase price of agricultural raw material, sales prices of the transformed product,

  - macro-economic variables (exchange rates, interest rates),
  - the variables affecting trade, such as customs tariffs on inputs and the final product,
  - the capacity for transformation (resizing of factories),
  - others.
- Comparison with the sales prices of trading partners.
- Comparison with the prices of competitors according to customs tariffs.

How to act

- To support decision making on the basis of priority actions, according to anticipated effects, to make proposals for changes in:
  - techniques,
  - the prices of inputs and services and prices to producers, the purchase prices of raw material, and the sales prices of the transformed product,
  - the macro economy,
  - customs tariffs on inputs and the product,
  - the capacity for industrial transformation,
  - others.

Step 16. Indicators of support for decision making

Objective

To generate indicators for each scenario elaborated in step 15.

Refer to the chapter that deals with the indicators (page 107).

To be taken into account or explained

- The calculation of indicators for the initial situation of costs and income and for each simulation realised in step 15:
  - indicators of protection,
  - indicators of subsidisation,
  - indicators of competitiveness.
- Comparisons of the values obtained.

How to act

- To support decision making on the basis of the values of the indicators, to maintain or modify the actions identified in step 15.

Economic performance of a commodity chain

The actions identified for each level must now be articulated in a coherent manner in order to elaborate a global strategy. Certain of these solutions are not necessarily viable for complete development of the commodity chain. Therefore, proceed to an analysis that combines such actions, in order to define a viable strategy for the whole and with the consensus of all actors.

For example, in the case of the beef commodity chain in Costa Rica, very low productivity indices were found in the numerous production systems, in addition to an unutilised installed capacity in the industrial stage, a sub-optimal use of by-products, and prices to consumers that were both very variable and bore no relationship to the quality of the beef. Propositions aiming to increase competitiveness had therefore to integrate these elements.

Simple techniques to improve the productivity indices, without significant investment on the part of the beef farmers, make it possible to profit from the installed capacity; this would be beneficial to the beef industry, particularly because of better use of by-products and the introduction of a system of classification of carcasses and payment for quality. This would have consequences for butchers and consumers on the one hand, and manufacturers on the other, if a legal framework of regulation were created to ensure the control of hygiene and quality.

To facilitate such a synthesis on the competitiveness of the commodity chain in its entirety, step 17 specifies those elements to be taken into consideration and the reference tables. Table 66 is valuable in that it presents the results of simulations that have been realised and integrated in all the circuits.

Step 17. Articulating the options for change

Objective

The objective is to articulate all the options for change and policy options established in the previous steps with the key factors emerging from the analysis of the economic and social importance of the commodity chain and its dynamics. The objective is to elaborate harmonised scenarios for the commodity chain and to visualise the potential effects of such scenarios.

Refer to Tables 7, 13, 17 to 26, 54, 55 and 66, and to the chapter dealing with the indicators (page 107).

To be taken into account or explained

- The options for change for the commodity chain in its entirety, taking into consideration the principal circuits and harmonising the actions proposed in the previous steps for each level.
- The comparisons must be realised by circuit, before and after the simulations, in terms of:
  - technical and economic results,
  - distribution of added value, indicating the margins that the different types of actors would obtain,
  - the outcomes of implementing techniques or policies leading to viable use of natural resources.
- How these options fit into in the framework of the recent evolution of the commodity chain, its current economic and social importance and how they would affect its contribution to national development.

How to act

To define changes for the commodity chain in its entirety.

- Articulate the actions identified in steps 7, 8, 15 and 16

Stage 5: Simulations

The synthesis part of the research – i.e. stage 5, which deals with the interpretation of the results – must be fed by scenarios of possible changes as regards investments, technologies, and policies. It is equally necessary to prepare a calculation model that will allow the effects on the competitiveness of the different categories of producers and manufacturers to be quantified should those changes be implemented.

The main circuits, which represent the various routes the product follows from primary production to final consumption (stage 4), constitute the basis of the simulations. In effect they allow the relationships established between the different categories of producers and manufacturers to be clearly identified, in particular traded volumes and the purchase and sales prices.

Simulations should be carried out for both agricultural and industrial production. Output tables will make the effects of the changes in each scenario obvious. The tables are prepared after construction of the calculation model.

For the agricultural production phase, this involves observing changes brought to the efficiency and the competitiveness of the different categories of producers, but still without making a connection with the industries processing the product.

In most commodity chains, two well-defined markets coexist: the market of raw materials produced by farms and the market of transformed products. It is therefore necessary to compare the domestic producer prices, before and after the simulations, against prices prevailing amongst trading partners and in the world market.

The second phase corresponds to industrial processing. The different circuits of the commodity chain that make it possible to link different producer types and the downstream factories through marketed output are then taken into account.

Here again, the effects on efficiency and competitiveness of implementation of the possible changes must be measured; however the analysis will be applied to different types of manufacturers.

It can be observed that in the case of processing industries, the simulated price of raw materials for farms is converted into variables to be taken into consideration in the simulations of this phase. Then, comparisons can be made of the domestic prices for the transformed product, before and after the simulations, with the prices prevailing amongst trading partners and in the world market.

Agricultural production

Table 56 shows how to present production costs for each category of producer and the results of the simulations for each of the scenarios. The variables that can be modified are: techniques, including changes to achieve sound use of natural resources, and the corresponding yields, customs tariffs for inputs, inputs prices, services prices, wages, interest rates, exchange rates, and purchase prices to producers.

Modifying these variables brings out new production costs or new profitability rates, that will be compared to the initial situation for the same category of actors. Comparisons can also be made between categories before and after the simulations.

Table 56 Calculation of sales prices of agricultural products at the farm and at the factory gate according to different scenarios, in local currency per ton.

Item	Category of Producers 1			Category of Producers n		
	Initial situation	Scenarios		Initial situation	Scenarios	
		A 1	N1		An	Nn
• Labour						
• Mechanised work						
• Materials						
• Other production costs						
• Administrative and sales charges						
• Financial charges						
☐ Total cost per hectare						
☐ Yield (tons per hectare)						
☐ Cost per ton						
☐ Producer p						
☐ Margin						
• absolute						
• percentage						
☐ Cost of transport to the factory						
☐ Price at the factory gate						

In addition to these comparisons of the internal competitiveness of the commodity chain, the competitiveness of domestic production is also compared against that of the trading partners. Table 57 calculates a hypothetical import price of a product coming from these countries and presents several options in relation to the different (free-on-board) FOB prices.

The FOB prices should be sufficiently representative and take into account the short and long term in order to avoid mistaken conclusions that could lead to equally mistaken decisions.

If one starts from the hypothesis that there is free trade between the countries (trading agreements) and therefore an absence of customs tariffs on imports of the product, the variables to be modified are the FOB price and the exchange rate.

Table 57 Calculation of the factory gate agricultural product import price from trading partners, without import tax, in local currency per ton.

Item	Options according to FOB Price		
	a	. . .	x
• FOB price* (US$)			
• Insurance and transport (US$)			
• Exchange rate (local currency/US$)			
• CIF price **			
• Transport costs to the factory			
☐ Importation price at factory gate			

*FOB: free on board; ** CIF: cost, insurance, freight.

Table 58 shows how to present comparisons of actual and simulated domestic and import prices of the product originating from partner trading countries at the factory gate.

Table 58 Comparison at factory gate between the price of locally produced raw material and imported raw material from trading partner country, in local currency per ton.

Item	Category of Producers 1			Category of Producers n		
	Initial situation	Scenarios		Initial situation	Scenarios	
		A 1	N 1		A n	N n
☐ Produced locally						
☐ Imported						
• Option a						
• Option …						
• Option x						

Table 59 presents the calculation steps in order to compare import prices for the product from third countries and domestic prices at the factory gate. As before, various FOB price options are indicated. Three variables may be modified: the FOB price, import taxes, and exchange rates.

Table 59 Calculation at factory gate of the raw material import price from third countries, in local currency per ton.

Concept	Options according to FOB Price		
	a	. . . .	x
• FOB price (US$)			
• Insurance and transport (US$)			
• CIF Price (US$)			
• Exchange rate (local currency/US$)			
• Import tax (%)			
• CIF price plus tax			
• Transport cost to the factory			
☐ Import price at factory gate			

Table 60 shows how to present comparisons between domestic prices, actual and simulated, and third-country import prices. The comparison is made for a product at the factory gate. Where an export product is involved, sales would be simulated and domestic FOB prices would be compared with other international FOB prices.

Table 60 Comparison at factory gate between the price of locally produced raw material and imported raw material from third countries, in local currency per ton.

Item	Category of Producers 1			Category of Producers n		
	Initial situation	Scenarios		Initial situation	Scenarios	
		A 1	N 1		A n	N n
☐ Produced locally						
☐ Imported						
• Option a						
• Option …						
• Option x						

Industrial production and marketing

The same types of calculations apply to the industrial phase and marketing.

Table 61 shows how to present the initial situation of processing costs (raw material included) for each type of industry and the outcomes of the simulations for each scenario. The modifiable variables include: technical variables, including changes aimed at sound use of natural resources, and returns associated with the processing of gross raw material into transformed product, customs tariffs for inputs, input prices, the prices of services, wages, interest rates, exchange rates, purchase prices to producers, the installed processing capacity, and the cost of raw material.

The cost of raw material is one particularly important variable that links the agricultural and industrial phases and therefore allows simulations to be articulated according to the circuits.

Modifying the variables according to the established scenarios creates new values for costs and profitability, which may be used for comparison with the initial situation for the same type of factory. Additionally, comparisons should be made before and after the simulations between the different categories.

Table 61 Calculation of sales prices of the processed product according to different scenarios, in local currency per ton.

Item	Factory Type 1			Factory Type n		
	Initial situation	Scenarios		Initial situation	Scenarios	
		A 1	N 1		A n	N n
• Cost of raw material *						
• Cost of labour						
• Manufacturing costs						
• Other production costs						
☐ Total costs of industrialisation						
☐ Ex factory price						
• Industrial margin						
- absolute						
- relative						
☐ Wholesale price						
• Wholesaler's margin						
- absolute						
- relative						
☐ Price to the consumer						
• Retailer's margin						
- absolute						
- relative						

* Delivered at factory gate + losses and output coefficient.

Table 62 Calculation of import wholesaler-delivered price of processed produce from trading partners, without import tax, in local currency per ton.

Category	Options according to FOB Price		
	a	. . . .	x
• FOB price (US$)			
• Insurance and transport (US$)			
• CIF price (US$)			
• Exchange rate (local currency/US$)			
• CIF price			
• Cost of transport to wholesaler			
☐ Wholesaler-delivered Import price			

Table 63 Comparison between the wholesaler-delivered price of locally-processed product and the import price from trading-partner countries, in local currency per ton.

Item	Category of Producers 1			Category of Producers n		
	Initial situation	Scenarios		Initial situation	Scenarios	
		A'1	N'1		A'n	N'n
☐ Produced locally						
☐ Imported						
• Option a						
• Option …						
• Option x						

Table 64 Calculation of the import price of wholesaler-delivered processed product from third countries, in local currency per ton.

Category	Options according to FOB Price		
	a	. . . .	x
• FOB price (US$)			
• Insurance and transport (US$)			
• CIF Price (US$)			
• Exchange rate (local money /US$)			
• Import tax (%)			
• CIF Price plus tax			
• Transport cost to wholesaler			
☐ Factory-delivered import price			

Table 65 Comparison between the wholesaler-delivered price of locally-produced processed product and the import price from third countries, in local currency per ton.

Item	Category of Producers 1			Category of Producers n		
	Initial situation	Scenarios		Initial situation	Scenarios	
		A'1	N'1		A'n	N'n
☐ Local produce						
☐ Imported						
• Option a						
• Option …						
• Option x						

Integration of the options for change in the circuits

Combining the information in Table 56, on agricultural production costs and sales prices to industry, and Table 61, on industrialisation costs and the prices in the different marketing

circuits, makes it possible to prepare cost, income, and margin tables by circuits. These tables may be as detailed as required, in terms of cost items, absolute and relative margins, purchase and sales prices between agents, throughout the whole circuit, as much for the current situation as for the scenarios under consideration.

Table 61, which links up the different categories of producers with the different sorts of factories, is the key that enables this to be articulated.

In all cases, for the preparation of these tables by circuit, the analyst will have to make certain decisions. For example, if two categories of agricultural producers, 1 and 2, whose costs and margins are very different, deliver their production to the same type of factory and as such constitute a specific circuit, it could be appropriate to present the circuit in two columns: one articulating the costs of producers 1 with those of the factory, and the other articulating the costs of producers 2 with those of the factory. This is worth doing where the goal of the analysis of the agrifood commodity chain is that the distribution of costs, margins and prices between the different groups of actors be represented as best as possible; to compute the average of these two categories would seriously affect this fundamental objective.

In the same way, the tables by circuit should make obvious the distribution of costs and income between the different actors in the commodity chain. Table 66 is dedicated to presenting the case of a specific circuit.

The comparisons between the domestic and international prices are presented for an imported good. For an export good, the international price of reference is estimated by subtracting from the FOB price all the freight-related costs and margins of the product at the place of loading.

Table 66 Costs, income and margin distribution of between the actors of the commodity chain according to the scenarios, in local currency (LC) by ton.

Level of the commodity chain	Current Situation						Scenario N					
	Distribution between actors by ton of final product						Distribution between actors by ton of final product					
	Costs		Income		Margins		Costs		Income		Income	
	LC/t	%	LC/t	%	LC/t	%	LC/t	%	LC/t	%	LC/t	%
☐ Farmer												
• Production cost												
• Sales price (income)												
• Margin over cost												
☐ Manufacturer												
• Cost of transformation												
• Sales price (income)												
• Margin over cost												
☐ Wholesaler												
• Operational costs												
• Sales price (income)												
• Margin over cost												
☐ Retailer												
• Operational costs												
• Sales price (income)												
• Margin												
☐ Total												

Stage 5: Indicators

The purpose of calculating indicators of protection, subsidies, and competitiveness is to compare the relative situation of the different categories of actors in the same commodity chain and their situation when confronted with foreign competition.

Calculating the indicators is made easy if use is made of the matrix that analyses policies, MAP, which was developed in 1989 by Erik Monke and Scott R. Pearson of the universities of Arizona and Standford (Table 67). MAP has been widely used to evaluate agricultural competitiveness in Latin America, Mexico, and Africa. It is generally used in an aggregate form, i.e. by region and type of technology.

In the framework of the Cadiac approach, the indicators are calculated for the different circuits of the commodity chain. The objective is to observe the impact of the distortions on the different levels.

Using the MAP, we construct matrices of income, costs, and margins at market prices and economic (efficiency or shadow) prices, i.e., without distortions, by eliminating subsidies and taxes.

The calculations are made using the basic equation a – b – c = d, where a = total income; b = costs of tradable inputs; c = costs of domestic factors; d = margins.

If the calculations are made per hectare, a = the quantity of product multiplied by the price; b = the quantity of inputs directly or indirectly tradable multiplied by the price.

Table 67 Policy analysis matrix (MAP).

		Production Costs		
Item	Total Income	Tradable Inputs	Internal Factors	Margin
Market price	a	b	c	d
Efficiency price	e	f	g	h
Effects of price	i	j	k	l

Directly tradable inputs are those that are obtainable on international markets, such as fertilisers, pesticides, fuels, lubricants, seeds, and spare parts.

Indirectly tradable inputs are represented by the tradable part of certain factors of production, for instance, fuels used in transport services paid by the producer. The salary part of this service is transferred to the category of domestic factors.

For domestic factors – labour, land, water, credit, electricity – no international contribution exists and as such, and they may not be made the object of international marketing.

The MAP results from the above equation and definitions and enables the indicators to be calculated.

Indicators of protection

The nominal protection coefficient

The nominal protection coefficient, Npc (Npc = a/e), is the quotient of the domestic price of a product, without customs tariffs, divided by its price in the international market,

converted into local currency and calculated at the same place. The calculations may therefore be made at the farm, factory or wholesale level according to the needs of the research. This coefficient indicates if and to what extent national policies protect local producers from foreign producers. A result higher than 1, i.e., a domestic price higher than the international price, signifies that domestic production is protected. Such is the case where import customs tariffs exist or non-tariff measures are in place that limit the entry of the product into national territory.

The effective protection coefficient

The effective protection coefficient, Epc = (a – b)/(e – f), is the quotient of the added value of a good at market prices divided by its added value at efficiency prices; the distortions affecting the tradable inputs are thus eliminated. Epc = Vap/Vae, where Vap = added value to market price and Vae = added value to efficiency price.

If the result is higher than 1, this indicates that the domestic factors of production (land, labour, capital) receive remuneration higher than they would receive if those distortions affecting the final product and the tradable inputs were eliminated. As before, this is possible because of customs tariffs or non-tariff measures. This coefficient, which takes into account not only the prices of the good but also those of the inputs, provides a more complete measure of the structure of protection.

Indicators of subsidies

Subsidies are considered as transfers caused by price differentials between domestic and international markets, and transfers originating from public spending.

Subsidy-to-producer equivalent

The subsidy-to-producer equivalent, Spe, is the quotient of the net policy transfer (I) divided by the total income at market price (a): Spe = (d - h)/a = I/a.

Social subsidies to producers

In an open trade situation, social subsidies to producers, Ssp, show what proportion of the producer's gross income should be supported to ensure the preservation of income at market price: Ssp = (d – h)/e = I/e.

Indicators of competitiveness

Profitability at market price

The ratio c/(a – b), Rpm, where (a – b) is the added value at market price, measures the profitability at market price, i.e., the capacity of the system to pay for domestic factors (domestic resources). Given that added value in the MAP matrix is defined as the costs of domestic factors plus the margin, a coefficient lower than 1 signifies that the production of the good generates an added value that allows such factors to be paid for and for profits to be produced. Production is therefore profitable at market prices (real price).

The cost of domestic resources

The cost of domestic resources corresponds to the ratio Crd = g/(e – f), where (e – f) is the added value at efficiency price.

This relationship is similar to the previous one, but valued at efficiency price, i.e., after elimination of the distortions. It is often considered as a measure of the comparative advantage. A coefficient lower than 1 signals that the production of the good generates an added value that allows for domestic factors to be paid for and for profits to be produced, even after elimination of the distortions. Another way of interpreting this result is to say that the value of the domestic resources utilised for the production of the good is lower than that of the foreign currency saved that would have been spent to procure the good from abroad.

Calculation elements

Obtaining these indicators demands that production costs be organised in a way that differs with that presented in Tables 34 and 38. The fundamental objective of these tables was to establish the actual profitability of farms and industrial enterprises. To determine the degrees of protection and competitiveness, the costs of tradable inputs and those of domestic factors need to be differentiated in order to construct a policy analysis matrix (MAP).

Step 1

A table must firstly be elaborated that lists tradable inputs at market prices, both directly and indirectly tradable inputs (Table 68). Their total value will correspond to the letter b of the MAP.

The directly tradable inputs are more easily identified than the those that are indirectly tradable. It is advisable to refer to the definition and apply it to their contribution to the formation of added value. Numerous inputs and services generally contain tradable elements and non-tradable (domestic) factors. The task of the analyst is to separate them and adapt them in the corresponding tables.

Step 2

Prepare a second table (Table 69) with the cost of domestic factors (wages, location of land, financial costs, etc.) at market prices and at efficiency price. To be included is the domestic component of the indirectly tradable inputs that were referred to in step 1. The value will correspond to the letter c in the MAP matrix.

Step 3

Another table, similar to Table 68 in its makeup, will contain the efficiency prices of tradable goods and inputs. To do this, exclude from the calculations all the factors responsible for any distortion of prices (customs tariffs, subsidies, etc.) and adjust the exchange and interest rates to their real values (shadow price). The total will correspond to the letter f in the MAP.

Step 4

In the same way, a table similar to Table 69 containing the efficiency prices of the domestic factors utilised (including the domestic elements of indirectly tradable inputs) will allow information corresponding to the letter g in the MAP matrix to be obtained.

Step 5

Complete the matrix with the known values for income (a) and margins (d) at market prices, obtained in Table 35.

Step 6

At efficiency price, total income (e) would correspond to the price that the manufacturer would be prepared to pay for an imported good of equal quality, bought at the place producers sell (farm gate**,** factory gate, etc., according to the case). The margins (h) would be obtained by subtracting costs (f and g) and income (e).

If the agricultural production costs of rice were to be calculated according to the indications shown in Table 34, the structure would have to be adapted to the specifics of the MAP as shown in Table 68.

Table 68 Costs of tradable inputs.

Cost item	Unit of measure	Category 1			Category n		
		Quantity	Unit Price	Cost per hectare	Quantity	Unit Price	Cost per hectare
☐ Directly tradable inputs							
• Certified seeds	kg/ha						
• Complete fertiliser	kg/ha						
• Nitrogenous fertilising	kg/ha						
• Organophosphate fungicide	l/ha						
• Carbamate fungicide	l/ha						
• Pre-emergent herbicide	l/ha						
• Propanil	l/ha						
• Hormonal herbicide	l/ha						
• Granulated insecticide	kg/ha						
• Pyrethroids	l/ha						
• Organophosphate insecticide	l/ha						
• Diesel (pick-up)	l/ha						
☐ Indirectly tradable inputs*							
• Aerial application of insecticide	%/ha						
• Aerial application of herbicide	%/ha						
• Aerial application of phosphorous insecticide	%/ha						
• Aerial application of insecticide and fungicide	%/ha						
• Aerial application of fungicide	%/ha						

* Includes only the tradable elements of inputs and services presented in the form of coefficients. The internal components are indicated in Table 69.

Continued ……

Table 68 Costs of tradable inputs (continued).

Cost item	Unit of measure	Category 1			Category n		
		Quantity	Unit Price	Cost per hectare	Quantity	Unit Price	Cost per hectare
(Indirectly tradable inputs*)							
• Harvest	%/ha						
• Transport of input	%/ha						
• Transport of grain	%/ha						
• Deep ploughing	%/ha						
• Harrowing	%/ha						
• Seeding, fertilisation, application of granulated insecticide	%/ha						
• 2nd application of fertiliser	%/ha						
• 3rd application of fertiliser	%/ha						
• Pick-up repairs	%/ha						
• Repairs to employee housing	%/ha						
• Repairs of toolshed	%/ha						
• Depreciation of pick-up	%/ha						
• Depreciation of employees housing	%/ha						
• Depreciation of toolshed	%/ha						
• Laser levelling							

* Includes only the tradable elements of inputs and services presented in the form of coefficients. The internal components are indicated in Table 69.

Table 69 Costs of internal factors.

Cost item	Unit of measure	Category 1			Category n		
		Quantity	Unit Price	Cost per hectare	Quantity	Unit Price	Cost per hectare
☐ Costs of internal factors							
• Hand labour							
- preliminary weeding	hours/ha						
- water management	hours/ha						
• Maintenance Labour	hours/ha						
• Management and sales costs							
- manager salary	hours/ha						
- accounting service	hours/ha						
- electricity, telephone, etc	%/ha						
- social expenses	%/ha						
• Irrigation tariff							
- maintenance	%/ha						
- investment recovery	%/ha						
• Financial costs							
• Bank formalisation							
- bank commission	%/ha						
- legal stamps	%/ha						
• Crop insurance	%/ha						
• Mechanised work	%/ha						
- deep ploughing	%/ha						

The structure used in the tables for cost calculation at market price (components *b* and *c* of the MAP) will be repeated for costs calculation at efficiency price (*f* and *g*).

Continued…….

Table 69 Costs of internal factors (continued).

Cost item	Unit of measure	Category 1			Category n		
		Quantity	Unit Price	Cost per hectare	Quantity	Unit Price	Cost per hectare
(Mechanised work)							
- light ploughing	%/ha						
- Seeding, fertilisation, application of granulated insecticide	%/ha						
• 2nd application of fertiliser	%/ha						
• 3re application of fertiliser	%/ha						
• Aerial service							
- application of insecticide	%/ha						
- application of herbicide	%/ha						
- application of organophosphate insecticide	%/ha						
- application of insecticide and fungicide	%/ha						
- application of fungicide	%/ha						
• Services							
- harvest	%/ha						
- transport of input	%/ha						
• Transport of grain	%/ha						
• Laser levelling							

The structure used in the tables for cost calculation at market price (components *b* and *c* of the MAP) will be repeated for costs calculation at efficiency price (*f* and *g*).

Stage 5: Perennial Crop Production Costs

Work on perennial crops will be a little different to that carried out on annual crops given that the input needs as well as the yields vary according to the age of the plantation. Two cases are possible in the course of the analysis of a commodity chain: in the first case, the entire plantation is of the same age and replanting is quasi nonexistent or rare; in the second case, the plantation is divided into parcels with different ages

Case 1: Plantations of the same age

The costs of production for each year for the rest of the life span of the crop must be calculated. Table 70 is a typical table for the n category of producers who produce one crop whose profitable economic life is six years. All years are indicated, but in reality only the cropping years to come are relevant for the analysis.

Table 70 Agricultural production cost structure per hectare for producers category n, in local currency.

Item	Year					
	1	2	3	4	5	6
• Labour						
• Mechanised work						
• Materials						
• Other production costs						
• Administrative and sales charges						
• Financial costs						
☐ Cost per hectare						
☐ Production per hectare						
☐ Price per ton						
☐ Income						
☐ Margin						

If, for example, the crop is in its fourth year, for that year and the two following years, actualise to their current value – using a discounting factor – each of the cost categories, the income and margins by hectare. The result is a table such as Table 71. This exercise allows for an actualised estimation of the global profitability of the crop.

As regards simulations of technical changes, policy changes and the calculation of the indicators of protection, subsidies and competitiveness, it is recommended that the model present the results both for all the remaining years as well as for the year being studied (years 4, 5, and 6 in the first case and year 4 in the second).

In order to establish a relationship in the circuits and to follow the route of the product to the consumer, the analysis will be centred around the current year, year 4.

Table 71 Actualised value of agricultural production cost structure per hectare for producers categorey n, in local currency.

Item	Actualised Values for Years 4, 5 and 6*
• Labour	
• Mechanised work	
• Materials	
• Other production costs	
• management and sales charges	
• Financial costs	
☐ Cost per hectare	
☐ Production per hectare	
☐ Price per ton	
☐ Income	
☐ Margin	

Case 2: Age-segmented plantations

Calculate first of all the costs corresponding to each age segment, then add them up to obtain total cost for the plantation. Finally, calculate the costs, income and margins by hectare and by ton for each segment and for the plantation. Table 72 illustrates the above.

The analysis is pursued by linking the results to the other levels of the commodity chain and proceeding to the simulations and the calculations of the indicators starting from the weighted average costs and income by hectare.

It should be noted that the age of the plantations may be one criterion in characterising farms.

Table 72 Agricultural production cost structure by hectare per parcel, according to age, for producers category n.

Item	Parcels				Total	Income and Costs per hectare (local currency)
	1	2	. . .	6		
• Labour						
• Mechanised work						
• Materials						
• Other production costs						
• Management and sales charges						
• Financial costs						
☐ Total cost						
☐ Area						
☐ Cost per hectare						
☐ Production (tons)						
☐ Production per hectare						
☐ Cost per ton						
☐ Price per ton						
☐ Income per hectare						
☐ Margin per hectare						
☐ Margin per ton						

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Appendix 1: Preliminary Consultation in the Analysis of the Coffee Chain in El Salvador

Participating institutions and main agreements reached

Consejo Salvadoreño del Café, CSC
(Salvadoran Coffee Council)

Facilitates access to information, identifies producers, manufacturers, and exporters for interviews and surveys, conducts discussions of strategies and problems; participates in the support group and the technical group.

- Present: general manager, head of the department of studies and statistics, economist.

Universidad Centroamericano José Simeón Cañas, UCA

Participates in analysis, studies the approach; agrees to integrate students into the technical teams and to participate in the support group.

- Present: assistant vice rector of research.

United States Agency for International Development, USAID

Manages two projects that contribute indirectly to this work by supporting the Oficina de Análisa de Política Agrícola (OAPA), the bureau of agricultural policy analysis and Promotores de Café (Procafé); supports an organic coffee project that was able to be integrated into the analysis; proposes the participation of one person to the support group.

- Present: project manager.

Union de Cooperativas de la Reforma Agraria: Productores, Beneficiadores Y Exportadores de Café, UCRAPROBEX
(Union of Co-operatives for Agrarian Reform: coffee production, transformation, and exportation)

Participates in the support group; gives access to information; facilitates contacts with members.

- Present: president of the supervisory council, secretary of the supervisory council.

Promotores de Café, Procafé

Contributes to the formation of the support group and technical group; facilitates the fieldwork; gives access to information.

- Present: general manager, technology transfer manager, technology transfer advisor, economist.

Ministerio de Agricultura Y Ganadería, Direccíon General de Economía Agricola, DGEA

(Ministry of Agriculture and Animal Farming, Directorate General of Agricultural Economics)

Provides information on the problems of the commodity chain based on previous work; two technicians of the DGEA and OAPA (Oficina de Analísa de Politíca Agrícola) are part of the support group.

Unión de Cooperativeas Cafetaleras de El Salvador, Ucafes

Participates in the support group; facilitates contracts and access to co-operatives.

- Present: general manager.

Asociación Cafetalera de El Salvador, ASC

Names a participant for the support group.

- Present: president of the government council, first assessor.

Instituto Interamericano de Cooperación para la Agricultura, IICA

Makes available a student agronomist engineer from France; contributes the methodologies, resources and a follow-up methodology; joins the support group.

- Present: representative of the agency for technical cooperation of the IICA in Salvador, specialist in socio-economic policy, commerce and investment.

Appendix 2: Support Group and Technical Team for the Analysis of the Coffee Commodity Chain in Salvador

Participating bodies

Support group

- Consejo Salvadoreño del Café, CSC
- Unión de Cooperativas de la Reforma Agraria: Productores, Beneficiadores y Exportadores de Café, Ucraprobex
- United State Agency for International Development, USAID
- Ministerio de Agricultura Y Ganadería, - MAG-DGEA, MAG-OAPA (Direccíon General de Analísa de Politíca Agricola)
- Unión de Cooperativeas Cafetaleras de El Salvador, Ucafes
- Instituto Interamericano de Cooperación para la Agricultura, IICA
- Promotores de Café, Procafé
- Universidad Centroamericana José Simeón Cañas, UCA
- Asociación Cafetalera de El Salvador, ASC

Technical team

- 1 Ph.D. Student (CIRAD, Ecole nationale supérieure agronomique de Montpellier)
- 2 economists (CSC)
- 1 economist (Procafé)
- 1 student (UCA)

Appendix 3: Participants to the National Beef Workshop in Costa Rica

Private Sector

Producers

- Federación de Cámaras de Ganaderos de Costa Rica

(Federation of Cattle Farmers of Costa Rica)
10 people, including the president

- Federación Costaricense de Criadores de Ganado

(Costa Rican Federation of breeders)
2 people, including the president

- Cámara de Ganaderos de Guanacaste

(Chamber of Cattle Farmers of Guanacasta)
4 people, including the president

- Cámara de Ganaderos Unidos del Sur

(Chamber of United Cattle Farmers of the South
2 people, including the president

- Cámara de Ganaderos de San Carlos

Chamber of Cattle Farmers of San Carlos
2 people, including the president

- Cámara de Ganaderos de Tilarán

Chamber of Cattle Farmers of Tilarán
2 people, including the president

- Cámara de Ganaderos de Guanacaste

Chamber of Cattle Farmers of Guanacaste
The president

- Cámara de Productores de Leche

(Chamber of milk producers)
3 people, including the president

Manufacturers

- El Arreo

2 people

- ECCSA

1 person

- CISA

1 person

- Coopemontecillos

3 people, including the general manager

- Abattoir del Valle

The general manager

Traders

- Camara Nacional de Expendedores de Carne

(National Chamber of Beef Retailers)
The president

- Mas x Menos Supermarkets

The general manager

- Retama Hermanos

1 person

- Perifericos Supermarkets

1 person

- Automercado Supermarkets

1 person

- Asociacion de Subastas Ganaderas de Costa Rica

(Association of cattle auction fairs of Costa Rica)
2 people, including the president

- Corfoga

The executive director

Public Sector

- Consejo Nacional de Produccion

(National Council of Production)
The executive president

- Ministerio de Agricultura y Ganadaria

(Ministry of Agriculture and Animal Husbandry)
6 people, including the minister and vice minister

- Banco Nacional de Costa Rica

(National Bank of Costa Rica)
2 people, including the director general

- Escuela Centroamericana de Ganaderia

(Central American School of Cattle Farming)

The Director

- Ministerio de Economia, Industria y Comercio

(Ministry of the Economy, Industry, and Trade)
1 person

Others

- CCNSA, Comisión Consultiva Nacional sobre Sistemas Agroproductivos (National Consultative Commission on Agroproductive Systems)

5 people

- IICA, Instituto Interamericano de Cooperación para la Agricultura

4 people (work group leaders)

- FAO, Food and Agricultural Organisation of the United Nations

1 person

- CORECA, Consejo Regional de Cooperación Agrícola de Centroamerica, Méexico y República Dominicana

(Agricultural Cooperation Regional Council for Central America, Mexico, Dominican Republic Secretary

Participation: 62 people, including the Minister of Agriculture and Animal Husbandry and four leaders of the IICA.

Appendix 4: Programme of the National Beef Workshop of Costa Rica

8.00. Registration

8.30. First session

Representatives of the Agency for Cooperation of the IICA of Costa Rica
Executive President of the National Council of Production (CNP)
Minister of Agriculture and Animal Raising

9.00 Presentation of the analysis of the beef chain
Head of research

9.45 Break

10.00 Definition of the work method
Moderator

10.15 Group-work session
Objective: to analyse the problems, propose solutions, define follow-up actions, indicate those in charge.

13.00 Lunch

14.00 Continue group work

16.00 Full session: presentation of the groups' work
Spokespeople
Moderator

17.30 Main conclusions
Moderator

18.00 Closing
Representative of the IICA
Minster of Agriculture and Animal Raising

Appendix 5: SIAGRO, the National Commission on Agroproductive Systems, in Costa Rica

a. Members.

- Ministry of Agriculture and Animal Husbandry (MAG)
- Ministry of Economics, Industry and Trade (MEIC)
- Ministry of Foreign Trade (COMEX)
- Promoter of Foreign Trade (PROCOMER)
- National Production Council (CNP)
- Agrarian Development Institute (IDA)
- National Chamber of Agriculture and Agro Industry (CNAA)
- Costa Rican Chamber of Food Industry (CACIA)
- National Union of Small Farmers (UPANACIONAL)
- National System of Agricultural Research and Technology Transfer (SNITTA)
- Executive Secretary for Agricultural Sector Planning (SEPSA)

Functions

- To define priority sectors for the commodity-chain analysis in accordance with the national economic and production policy.
- To promote adequate conditions for the coordination of and agreement on technical, operational and administrative actions to be implemented by the actors for the necessary transformation of the agroproductive systems
- To manage the physical, human, and financial resources needed to elaborate studies and projects in respect of agroproductive systems
- To communicate and inform about the results, recommendations and proposals derived from the commodity chain, and file with the competent authorities of the public and private sectors the related recommendations
- To provide guidance and follow up to ensure the satisfactory progress of the processes and events that take place along with the application of the commodity chain analysis.

Tasks of the Technical Secretariat

- To prepare the terms of reference for commodity-chain studies and to present these to the commission.
- To propose the programmes for the commission meetings.
- To set up and maintain a register of actions and meetings.
- To bring members of the commission together at ordinary and extraordinary meetings.
- To prepare and distribute all documentation needed for the meetings.
- To ensure the follow up of agreements adopted by the commission.
- To plan periodic meetings for the authorities of member institutions of the commission.

Appendix 6: SIAGRO Member Organisations

Public sector

Ministry of Agriculture and Animal Husbandry (MAG)
- Minister's Adviser
- National Programs Co-ordinator
- Agricultural Planning Executive Secretary

National Production Council (CNP)
- Marketing Direction
- Agri-Business Development Direction
- Policy Analysis Unit (in charge of SIAGRO Secretariat)

Ministry of Economy, Industry and Trade (MEIC)
- Domestic trade Direction

Ministry of International Trade
- International Negotiations Direction

Centre for the Promotion of Exports and Investments (CENPRO)
- Exports Promotion Direction

Private sector

National Union of Small and Medium Agricultural Farms (UPANACIONAL)
- National Direction

National Chamber of Agriculture and Agro-Industry (CNAA)
- Adviser

Costa Rican Chamber of Food Industry (CACIA)
- Executive Direction

International cooperation

Inter-American Institute for Co-operation in Agriculture (IICA)
- Policy Concentration Area
- Technical Co-operation Agency in Costa Rica

United Nations Food and Agriculture Organisation (FAO)
- Direction of Programmes

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This series is published by the CGPRT Centre, Bogor. For further information, please contact: Publication Section CGPRT Centre, Jl. Merdeka 145, Bogor 16111, Indonesia

CGPRT CENTRE
Publication Section

Editor: Douglas R. Stoltz

Production: Agustina Mardyanti
S. Tayanih (Yayan)

Distribution: Fetty Prihastini

Printer: SMK. Grafika Desa Putera

French version
Repères
Filières et dialogue pour l'action
La méthode Cadiac
CIRAD 1998

Spanish version
Cadiac, Cadenas y Diálogo para la Acción
Enfogue participativo para el desarrollo
de la competitividad de los sistemas agroalimentarios
San José, Costa Rica, IICA, 1996