

Commodity Chain Analysis

Constructing the Commodity Chain Functional Analysis and Flow Charts





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by

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1 SUMMARY

This module illustrates how Commodity Chain Analysis (CCA) can be used starting by how to construct the commodity chain, how to develop a functional analysis and how to analyze the commodity flows (flow chart).

The module starts by an introduction on commodity chain analysis as a tool and by a comparison with the other approaches of chain analysis. It then develops a way to construct the commodity chain, to specify the concept of agents. The next step deals with the functional analysis of the commodity chain. The last part covers the commodity flow analysis.

2 INTRODUCTION

The main objective of this module is to show how to construct the commodity chain and how to start a commodity chain analysis within the framework of economic studies undertaken as background for economic policy analysis at the sectoral level. To understand the content of this module, trainers should make sure that trainees have knowledge of basic elements of micro-economics and a basic knowledge on agriculture commodity sector trade functioning.

This module belongs to a set of modules which discuss how to proceed step-by-step on commodity chain analysis. To find relevant materials in these areas, readers can follow the links included throughout this module to other EASYPol modules or other references ¹.

Objectives

This module illustrates how CCA can be used starting by how to construct the commodity chain, how to develop a functional analysis and how to analyze the commodity flows (flow chart).

This module can be used in different contexts such as:

- reference material for policy analysts in carrying out their on-the-job tasks,
- in academic courses.

¹ EASYPol hyperlinks are shown in blue, as follows :

- training paths are shown in **underlined bold font**;
- other EASYPOL modules or complementary EASYPol materials are in **underlined bold italics**;
- links to the glossary are in **bold**; and
- external links are in *italics*

Target audience

This module is intended for a wide audience, ranging from policy analysts and decision makers, to development practitioners, training institutions, and media. It is of particular relevance to senior and mid level officials and professional officers in ministries of agriculture, livestock, forestry, rural development, and cooperatives, including line departments and training institutes/units. It should also be of particular interest to senior executives of parastatals, financial institutions, and NGOs/CBOs. Suitably adapted, it may also be used as a reader in undergraduate courses in development.

Required background

No specific technical background, beyond reasonable language skills, is required for this module. However, it is anticipated that individuals with a degree in economics, and agricultural or rural development related areas, and those with several years of experience in agricultural policy analysis or development planning and implementation, at a mid to senior level position, should have little difficulty in grasping the module's content.

The trainer is strongly recommended to verify that trainees have a minimum understanding in micro-economics. If this background is weak or missing, the trainer may consider to join a glossary to the module.

3 CONCEPTUAL FRAMEWORK OF THE COMMODITY CHAIN

This module deals with the use of commodity chain analysis² within the framework of economic studies undertaken as background for economic policy analysis at the sectoral level (in particular for the agriculture and food sector), or at the global level such as predicting the impact of proposed measures on the agriculture sector.

3.1 Commodity chain analysis within value chain approaches

Different methodologies have been developed to analyse commodity chains which can be widely found in literature dealing with value chain approaches. Here below you can find a short overview of the most significant approaches found in literature.

a. The value chain

The value chain describes the activities that take place in a business and relates them to an analysis of the competitive strength of the business. Value Chain Analysis is one way of identifying which activities are best undertaken by a business and which are best provided by others ("out sourced"). What activities a business undertakes is directly linked to achieving competitive advantage.

The value chain describes the full range of activities which are required to bring a product or service from its conception, through the different phases of production

² This paper (initially translated into English by Anne M. Thomson, 1998) is based on a translation from French of FAO's Training Materials for Agricultural Planning, No. 35, *Note de méthodologie générale sur l'analyse de filière: Utilisation de l'analyse de filière pour l'analyse économique des politiques*, by Pierre Fabre, 1994.

(involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use³. Production *per se* is only one of a number of value added links. There are ranges of activities within each link of the chain. Although often depicted as a vertical chain, intra-chain linkages are most often of a two-way nature – for example, specialized design agencies not only influence the nature of the production process and marketing, but are in turn influenced by the constraints in these downstream links in the chain.

b. The Global Commodity Chain

The primary focus of the Global Commodity Chain (GCC) is to analyse the international trading system and the increasing economic integration of international production and marketing chains.

Introduced into the literature by Gereffi during the mid-1990s, the GCC concept was developed within the framework of an analysis of the political economy of development and underdevelopment, originally derived from world systems' theory and dependency theory⁴. It was developed primarily to analyse the impact of globalization on industrial commodity chains.

GCC highlighted the power relations which are embedded in value chain analyses. It has shown that many chains are characterized by a dominant party (or sometimes parties) that determines the overall character of the chain, and as lead firms become responsible for upgrading activities within individual links and coordinating interaction between the links. This is a role of 'governance', and here there is a distinction between two types of governance:

- those cases where the coordination is undertaken by buyers ('buyer-driven commodity chains') and,
- those in which producers play the key role ('producer-driven commodity chains').

c. The Commodity Chain Analysis or "approche filière"

Commodity Chain Analysis (CCA) was developed by French Research Institutions⁵ as a neutral, value-free technique applied to analyzing existing marketing chains for agricultural commodities assessing how public policies, investments and institutions affect local production systems. It consists of a quantitative analysis of inputs and outputs, prices and value added along a commodity chain through agent accounts.

For the purpose of analyzing policies, a chain is composed of a series of operations or transformations, a set of agents and a system of markets (in terms of both physical flows and their monetary equivalents), as well as the behaviour of agents as guided by their economic interests. This means that it is important for the analyst to remember from the

³ Kaplinsky R. and Morris M., *Handbook for value chain research*, IDRC, 2000, p. 113.

⁴ GCC original texts. The original discussion of dependency theory from which this originated can be found in Wallerstein 1974 and Hopkins and Wallerstein 1994.

⁵ Institut National de la Recherche Agronomique (INRA) and Centre de coopération internationale en recherche agronomique pour le développement (CIRAD).

outset that the chain of a product covers far more ground than simply its channels of commercialization.

Box 1 - Commodity Chain Analysis

The term *Commodity Chain Analysis* is used to refer to the overall group of economic agents (or the relevant activities of those agents) that contribute directly to the determination of a final product. Thus the chain encompasses the complete sequence of operations which, starting from the raw material, or an intermediate product, finishes downstream, after several stages of transformation or increases in value, at one or several final products at the level of the consumer.

More precisely, the term, chain of production, is used to mean the group of agents (or part thereof) that contribute directly to the production, then to the transformation and delivery to the final market of a single agriculture or livestock product. So, from the cultivation of sugar cane to refined sugar, or from the cultivation of cotton to the manufacture of textile articles, the commodity chain approach enables the portrayal, for traders and downwards white rice linkages of transformation and distribution which give value to the resources of a country.

Commodity chain analysis can be used to analyze policies in two important ways:

- it is a tool for setting out the complete financial accounts⁶ of the various agents along the length of the chain,
- it is an accounting framework allowing for the systematic recording of a large part of the information necessary for a proper economic analysis thus extending financial accounting analysis.

One of the objectives of the French systematic approach is to appraise the internal dynamics of the commodity chains expressed through physical flows of material and services needed to manufacture a final product. As described by Kaplinsky & Morris, 2000, French scholars built their model based on the value-added process of the US Agricultural Research and adapted it to the vertical integration of French agriculture. This approach emphasizes the inputs and outputs between firms. It also favours the interaction of dependence and dominance along a value chain.

CCA starts with chain mapping, as a first step of chain analysis to obtain an overview of the chain, the product flows, the chain actors and type of interaction between the actors.

⁶The terms "financial" and "economic" are used here in their commonly accepted definitions in the area of development studies:

- financial analysis is undertaken from the perspective of individual agents, or categories of agents (farmers, retail traders, primary assemblers); it includes the analysis of production-utilisation accounts, the profitability of investments etc.
- economic analysis is undertaken from the perspective of the overall economic system (national economy, sector or chain) or large groups of heterogeneous agents (regional studies, studies of segments of the commodity chain); it includes the analysis of consolidated accounts, of large aggregates, etc.

3.2 Commodity chain analysis as a tool to build from agent accounts towards sector value added

The dominant idea behind the economic analysis of commodity chains is to lay out the overall activities of all the participants, or agents, who contribute to the production and/or transformation of a given commodity. In order to achieve this, the economist identifies the flows which link the agents together. This involves:

- identifying the outline of the chain and the position of the various agents within it,
- developing the economic accounts corresponding to the activities of the agents involved in the chain.

Once the structure of the chain has been determined, the economist can use an effective instrument of analysis: the monetary rationale, or, in more precise terms, the accounting system. The main part of the preparatory work for the analysis thus consists of quantifying the activities observed. For this, it is useful to set up an accounting table and to systematically calculate the data contained in it.

This reduction of activities and operations to their monetary value makes this economic technique a very powerful tool of analysis, with an internal rigor apparently equal to that of mathematical logic. However, the analyst must be careful, because the technique is only as robust as the quality and interpretation of the data on which it is based, whether that be physical or monetary data.

With these qualifications, it is possible to use commodity chain analysis to produce properly quantified and significant results, calculations at new levels of aggregation, sensitivity and simulation analyses, and to interpret these results in the context of other types of economic information, in particular at the macroeconomic level.

3.3 Commodity chain analysis as a tool for economic analysis

In current practical experience, two types of economic approach can be distinguished:

- the impact approach, using actual market prices as used by agents,
- the shadow price approach which uses computed or “economic” prices, instead of market prices to estimate the economic value of goods and services.

These two approaches should be seen as complementary rather than conflicting⁷ insofar as they each illustrate a particular aspect of the same situation, depending on the economic and institutional environment. The policy decision process can only benefit from the use of both techniques⁸.

⁷As past discussions on the use of these techniques in development project analysis might suggest.

⁸ Both methods of analysis are presented in detail in the following EASYPol Modules 045 and 046 respectively:

- [Commodity Chain Analysis: Impact Analysis Using Market Prices](#)

- [Commodity Chain Analysis: Impact Analysis Using Shadow Price](#)

3.4 The analysis of agricultural and food policies

A discussion on the role and specific place of applications of CCA in the preparation and analysis of food and agriculture policies could have been included in this paper. However, a complete presentation of the framework of economic policy analysis would require the inclusion of the following points that are not covered in the present document:

- a presentation of a panoramic view of the policy analysis process and the relative economic analytical tools. This would bring together several levels of analyses, including the accounting tables used in CCA, impact analysis, calculation of parity prices (and even social prices), and partial equilibrium analysis of the markets under consideration.
- a consideration of the various methods to forecast and project the consequences of the economic policies under consideration based on the behaviour of the affected agents. This involves the difficult problem of predicting production response (for example, elasticities) and the tendencies to consume and to save, in a context which may be poorly understood in statistical terms and where the basic assumptions made in applied economic theory do not necessarily hold.
- an understanding of the decision-making environment as it develops within the study of food and agriculture policies : the relevant institutional procedures and legal structures, the functions and powers of government bodies and the effectiveness of market mechanisms.

4 CONSTRUCTING THE COMMODITY CHAIN

4.1 The concept of the economic agent

Agents and institutional sectors

The term "agent" is used to describe an economic actor, i.e. a basic unit in the economy, who undertakes an activity and makes decisions autonomously. This could consist of a physical person (farmer, trader, consumer) or a legal entity (a business, an authority, a development organisation).

It is normal to use the generic term "agent" to refer to all agents of the same type: the agent "farmer" refers to all farmers, the agent "trader" for all traders, the agent "abroad" for all economic partners located outside of the national economy.

From the point of view of exchange, an agent represents a kind of economic "territory", enclosed by a frontier. In (production) flowcharts, this is classically represented by the figure below:

AGENT

Transfers of goods, services or funds (money, economic rights of all kinds) made between agents are referred to as "flows". These exchanges can be identified by the fact

that, in some sense, they cross the boundary of the agent (either in an inward or outward direction).

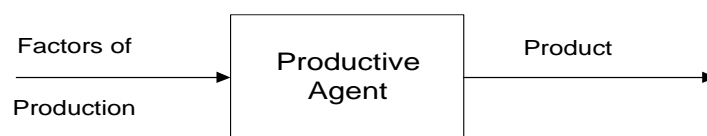
There is a great number of agents operating in the national economy. Nonetheless, it is possible to classify them on the basis of their principal activity: consumption, production of goods and services, financial operations, distribution. For the purposes of macroeconomic analysis, the system of national accounting has developed a typology of economic agents that distinguishes five institutional sectors:

- **Firms**, (including traders), which produce goods and services intended for sale;
- **Financial institutions**, which make their income through financial operations such as loans, borrowing, insurance;
- **Households**, which is the population considered solely in terms of those economic activities linked to domestic life;
- **Government**, which provides services for the community without any direct corresponding financial flow;
- **The rest of the world**, which comprises all economic agents located outside of the national territory.

Systems of national accounts can vary from country to country. Not all distinguish between financial enterprises and other firms, and may combine financial services with other types of retail service. Similarly, private non-profit making organizations are sometimes included with government and other public administration.

From the point of view of other agents in the economy, each productive agent is rather like a “black box” within which the production of goods and services takes place. The productive agent or enterprise uses factors of production to create a new product or service. This can be represented as per Figure 1 below:

Figure 1 - Productive Agents



Sometimes the more general terms ‘inputs and outputs’ are used in place of ‘factors of production and product’.

Factors of production can originate externally to the agent. In this case they must “cross the boundary” of the agent in order to be employed: this results in an economic exchange usually represented as a physical flow, input, and a corresponding monetary flow, output. They may also be of internal origin (family labour in farming, self-provision of seeds, tools and land).

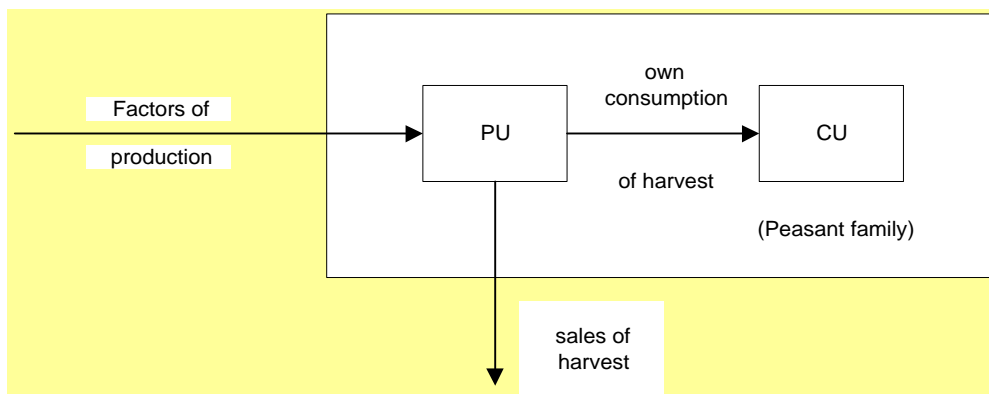
Frequently, agents produce a number of products. Research into the use of factors of production by different activities and their quantification allows an “analytical account” to be drawn up for each product.

In the same way, an agent can be engaged in several activities. For example, in the case of a development agency these could include direct production, supply of inputs and extension advice. For analytical purposes, the agent could be subdivided into theoretical functional units, each corresponding to a single activity. Common examples of this are family agricultural enterprises, regional development agencies and project management organizations.

In the case of family farms, it is useful to separate the function of production from that of family consumption. The peasant farm family is divided into a production unit (PU) and a consumption unit (CU). Any subsistence consumption of the harvest by the family itself can be represented as a transfer from the production unit to the consumption unit, as shown in Figure 2 below.

Making these simple models emphasizes the fundamental elements of economic behaviour and can help us understand peasant family behaviour. However, it is essential to merge the theoretical perspective with a socio-economic analysis to really determine the strategies and the global interests of peasants.

Figure 2 - Transfer from the production unit to the consumption unit



In the case of development agencies, activities and the corresponding flows of factors of production and outputs must also be subdivided by function, such as supply of inputs, credit, agricultural extension, processing, equipment, management.

4.2 Specification and operation of the commodity chain

The production chain is defined to include all those economic agents (or aspects of agents) that contribute directly to production, then to the transformation and marketing of a specific agriculture or livestock product. From the growing of sugar cane to the output of refined sugar, from the production of cotton to the manufacture of cotton textiles, commodity chains enable the description from beginning to end of the chain of

those transformation and distribution functions which give economic and financial value to a country's resources.

The definition of a commodity chain for an agricultural product starts with the raw material, as grown in the country and can then be divided into a system of "sub-chains", representing the different uses and processes involving the product after harvesting. The "cotton chain" is an example of a chain which divides into several final products starting from two primary products: cotton fiber and cotton seed. Another example comes from different processing systems for rice; hulling on farm or in an industrial factory can lead to different market outlets. It is also common to differentiate amongst sub-chains for livestock production, for example:

- the "government/parastatal" sub-chain, that supplies large urban conurbations and organizations through the domestic and export markets;
- the "private" sub-chain, supplying large urban conurbations, middle and small towns through the domestic and export markets;
- the "peasant" sub-chain supplying self-consumption and small local businesses through the domestic market.

In a typical agro-food commodity chain, the following elements and agents are likely to appear:

- the upstream or input supply chain: seed production, research, agro-chemical production, agricultural machinery, agricultural equipment, initial development and animal feedstuffs;
- agriculture and the livestock rearing process, which produces commodities;
- processing, wholesaling, transport and retail industries;
- packaging industries;
- non-agricultural food chains;
- industries handling the processing, transport, trade and distribution of industrial and energy products originating in agriculture;
- financial services;
- research and extension services, credit services;
- consumers;
- the catering trade.

How many of these sub-chains are included in any one piece of analysis depends both on the nature of the overall commodity chain and the respective commodity flows and on the specific questions being considered: if the analyst were primarily interested in identifying potentials for regional growth, then any sub-division of the chain should take into account the geographic location of the various agents involved; a focus on income distribution would suggest desegregation along the lines of the economic size of the agent.

a. Demarcating the boundaries of the chain

i) The identification of activities and flows between them

It is usual to start from the primary activity of agricultural production of the commodity which gives its name to the commodity chain under analysis, e.g. maize, rice, whether in the peasant or farm household. The analyst then proceeds:

- on the one hand, to follow the product downstream, through various marketing and processing channels to the final market,
- on the other hand, to identify, upstream, the principal providers of inputs and services which feed into production.

In this way the commodity can be followed through its successive transformations. As one goes downstream, the major problems arise from the precise determination of the “sub chains” linked to different processing techniques and to different products or by-products. For example, it is very difficult to separate the different elements of livestock rearing to attribute to the associated sub-chains of milk and meat production.

In general, it is logical to follow a product all the way down to the final consumer or export market. There may be occasions where, for reasons of cost, and the major objectives of the study, it would make sense to analyze an isolated segment of the chain, which stops at an intermediate level in the marketing process.

Following the chain upstream, setting the borders of the study becomes even more important. The main issue here is how far back the analyst should go to include the process of supplying agricultural inputs, such as fertilizer, phytosanitary products, and agricultural machinery. The general rule is that only agents who deal directly with the commodity (e.g. rice) should be included in the chain. Suppliers of agricultural inputs (and all the other agents supplying agents directly in the chain) are only taken into account when analysis goes beyond that of straightforward CCA, for example when looking at impact analysis.

Nonetheless, sometimes it is a matter of common sense to include essential upstream suppliers in the technical or economic accounts. This may be justified particularly when complete systems of input supplies are put in place with the sole aim of servicing the chain. For example, if the analyst were interested in examining the profitability of cotton production in a particular region, it would be appropriate to include in the chain a regional development agency set up with the sole purpose of providing services to cotton farmers in that region.

To make these kinds of demarcation decisions, it is necessary for the analyst to understand the production techniques used in the chain, particularly since a given chain may contain several technical linkages. It may be appropriate to define a technical chain which outlines the various processes the product passes through.

ii) The identification of agents in the chain

In practice, the identification of agents is part and parcel of the previous process of identifying activities and flows. How the roles and functions of these agents are identified and allocated has to be looked at very carefully. In particular, the situation of agents that perform multiple roles, as is often the case for the staff of development agencies or of industrial or export promotion boards, must be analyzed in detail, and will possibly require specific surveys. Separating out the different functions they perform is a pre-requisite for a technical analysis of the operation of the chain and, eventually, to develop the analytical accounts of each function. This may be particularly important when analyzing agriculture sector adjustment programs where the restructuring of these types of development agencies may be an important element.

Where possible, it is important to group agents into categories which are homogeneous from the point of view of economic, technical and/or socio-economic analysis: small family farms and large commercial plantations are usually treated separately as much for socio-economic reasons as for the differences in production techniques used.

Where government itself, whether at local or national level, is directly involved in the operation of the commodity chain, this too must be included within its specification.

iii) Functional analysis

Once the activities and agents in the chain have been identified, it is useful to show their interaction in a functional analysis table which includes:

- the principal functions in the chain, i.e. the stages of processing and transport, as well as any activities associated with the supply of inputs which have been included as part of the chain;
- the agents, (or aspects of agents) carrying out these functions;
- the products concerned in the chain: i.e. the principal product of the chain, in the various forms into which it is transformed throughout the chain.

Although the functional analysis table may seem a simple tool, it is indispensable, both as a construct for ensuring analytical clarity and as a useful presentation tool.

Table 1 below, for the rice commodity chain in Thailand, illustrates some of the issues discussed above. The analysts have decided to distinguish between two types of farmers, large and small, because they want to look at income distribution aspects. Again, the income distribution implications of the co-operative milling sector differ from those of the private milling sector. The markets for broken rice and white rice are different, and these are separated to allow the analysts to come to a more precise estimate of what changes in income growth in the domestic market, and the international market, will have on these different segments of the chain.

Decisions have been made to leave out certain possible elements. There is no reason to include the provision of inputs in this particular chain. It was also decided to exclude the animal feeds industry from further analysis, as it is an outlet for by-products rather

than a direct creation of demand for rice production. However the noodle industry was seen as creating a direct demand for raw rice and therefore included.

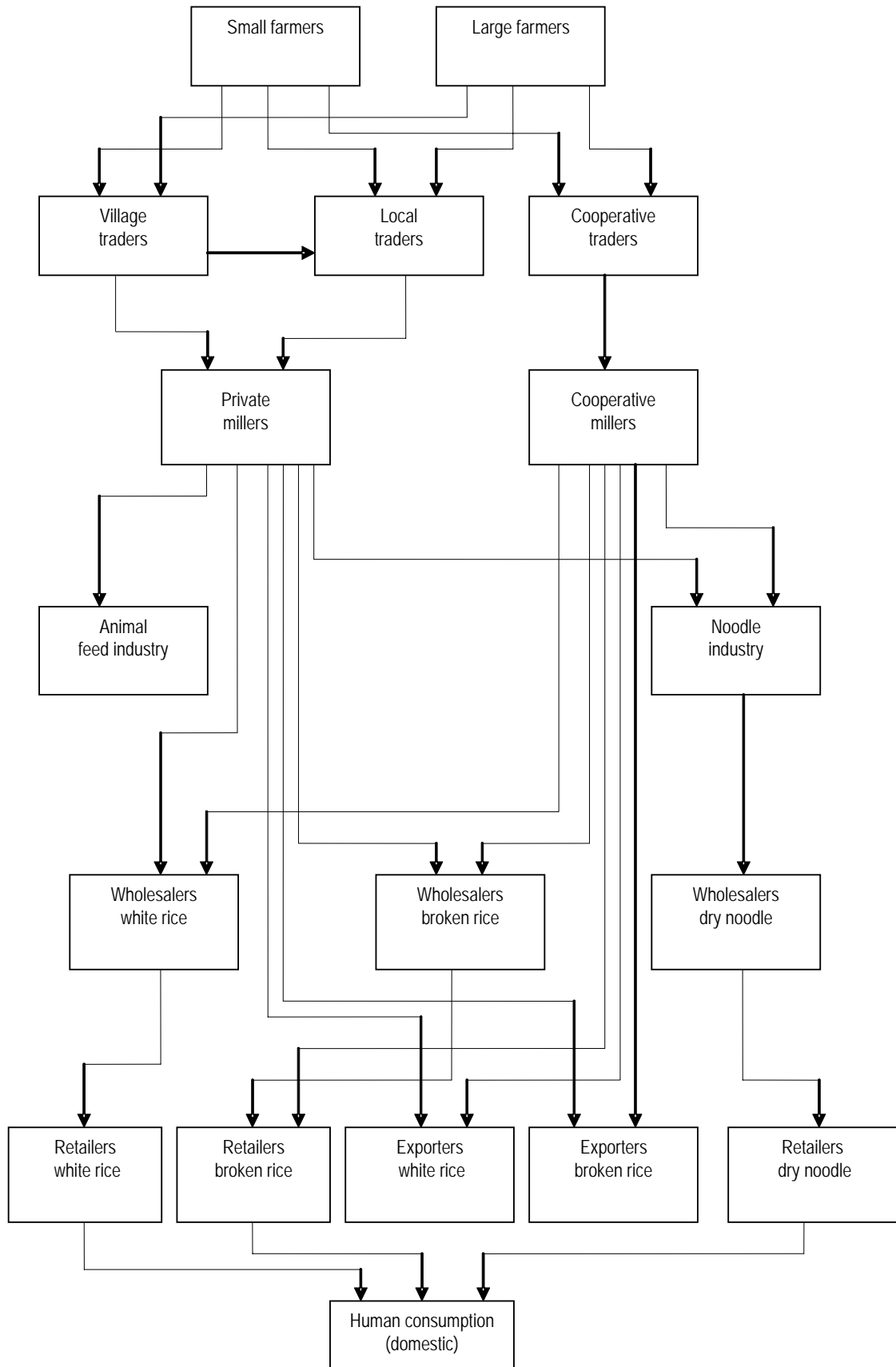
Table 1 - An example of a functional analysis table: a rice commodity chain for Thailand.

Stage of the Chain	Function	Agent	Output
Production	Cultivation	Small farmers	Rice paddy
	Cultivation	Large farmers	Rice paddy
Primary marketing	Marketing transport to mill	Village traders	Paddy delivered to private millers
		Local traders	Paddy delivered to private mills
	Co-operative traders	Paddy delivered to co-operative mills	
Millers	Milling	Private millers	<u>Delivered to wholesalers</u> white rice
		Co-operative millers	broken rice
			<u>To noodle industry</u> milled rice
			<u>To animal feed industry</u> rice bran
			<u>To exporters</u> white rice
			broken rice
Factories	Processing	Noodle industry	<u>To retailers</u> broken rice
			Noodles to wholesalers Noodles to exporters
Marketing	Marketing Transport	Wholesalers - white rice	Broken rice
		Wholesalers - broken Rice	White rice Noodles
Export	Marketing Transport	Wholesalers - noodles	
		Exporters - broken rice	Broken rice
		Exporters - white rice	White rice
Retail	Transport Final sales	Exporters - noodles	Noodles
		Retailers - white rice	Broken rice
		Retailers - broken rice	White rice
		Retailers - noodles	Noodles

iv) Creating a flowchart for a commodity chain

The information contained in a functional analysis table can also be represented in a commodity flow chart. Sometimes this is an easier way to present this information as it visually highlights the complexity of the interactions and flows between agents. It can also be a useful tool in achieving clarity in the subsequent stages of analysis, ensuring that no part of the chain is left out. The flowchart corresponding to the functional analysis table above is given below.

Figure 3 - Rice Commodity Chain in Thailand



Quantifying the physical flows

Once the flow diagram has been drawn up and the nature of the flows between the different agents clarified, the next step is to quantify these flows, both in physical and in monetary terms. This allows the analyst to assess the relative importance of the different segments or sub-chains of the chain, which in turn will allow an appropriate use of time and resources.

It is useful to draw up a matrix of the flows between agents which clarifies the nature of the product which links them. This can be done in the form of a supply utilization account (SUA), which contains a type of double entry accounting where each cell contains the volume of flows linking two agents. External agents are included in this table if imports or exports of commodities are a part of the commodity chain.

On the left hand side of the SUA, there are the commodity inflows, or supplies. On the right hand side are commodity outflows, or utilization. Care must be taken to express all commodities in terms of the same physical form, and the equivalent raw material is usually used. Thus, in the example given above, this would be in terms of paddy. The following identities must hold.

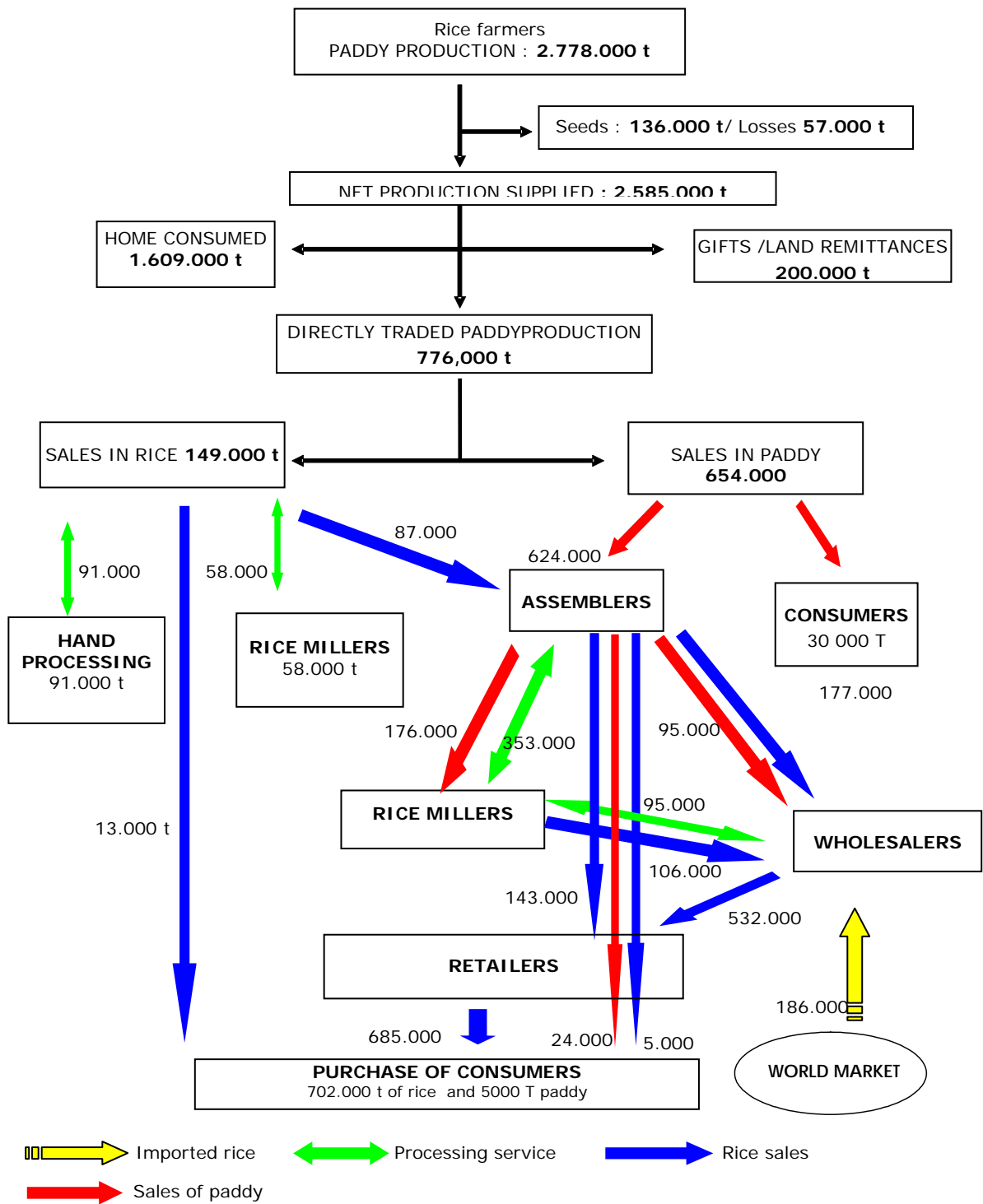
Supply = Inputs from backwards agents +/- stocks
= Corresponding output of backward agents - transport losses
+/- stocks

Utilization = Output supplied to forward agents + own consumption + wastage and losses +/- stocks

A flowchart with quantified physical flows

To some extent, a flowchart may allow to illustrate and quantify the flows exchanged between agents as in the following example. It is also possible to illustrate different types of flows on a flowchart.

Figure 4 - Physical paddy and rice flows (1999)



NB average processing ratio 66%

Source: Etude FAO/UPDR

5 CONCLUSION

The Commodity Chain Analysis (CCA) is part of wider set of different approaches of chain analysis, including also value chain, and Global Commodity Chain (GCC). They all present wide common aspects and can be associated to some extent; however CCA, which is specifically targeted to agriculture commodities, is used to build this methodological paper.

5.1 The concept of the chain

The commodity chain is a particular way of dividing and presenting the system of production. It is an analytical concept, and does not necessarily represent a type of organization that one would find in the real world, or that one would seek to promote.

The chain is the implementation of a simple explicative model of the organization of flows (of materials and finances) and of the actors involved which emphasize their interdependence and the regulatory framework within which they function⁹.

Commodity chain analysis allows the analyst to identify the relationships between the different stages of transformation in the network of agricultural or agro-food systems, whether those relationships are linear, complimentary or sequential. More fundamentally, it shows the synergies, the external effects, the co-operation, the influences and the strategic centers, the control of which ensures the dominance of certain agents; it constitutes the stage on which the strategies of the various actors are deployed.

More specifically, the commodity chain is the name given to the succession of operations and of agents which, starting upstream with a raw material, eventually emerge downstream, after several stages of transformation and increases in value, with one or more final products at consumer level. A chain is thus a series of operations (transformations) of agents and of markets, which lead to physical flows and their counterparts in monetary value.

5.2 How to use commodity chain analysis

Commodity chains can be used:

- empirically, in a technical-economic context (processing techniques for products or the chain);
- as a system of accounting in an economic context (inter-relationships between agents, sectoral linkages: calculation of technical coefficients, the effects of training);
- in the meso-economic arena (the multiplicity of actors and of strategies, of methods of organization and of regulation).

⁹ This concept implicitly gives great importance to the economic division of labour.

Commodity chain analysis incorporates a number of different types of analysis:

- **institutional analysis:** identification of the flows and of the agents at work in the existing productive system, analysis of the locations for decisions and collaboration amongst agents;
- **comparative analysis:** research in to the relative competitiveness of chains (a comparison of margins at different points in the chain) and of the strategies of actors;
- **functional analysis:** identification of bottlenecks (upstream: inputs, supply logistics; downstream: output delivery, packaging, collection, standardization and introduction of quality norms);
- **economic analysis** in the form of modelling, most importantly simulation.

Fields of application

Commodity chain analysis offers an economic simulation model, not a model of optimization. This simple framework gives commodity chain analysis a vast field of application:

- descriptive studies and monographs;
- sectoral, sub-sectoral and branch analysis;
- project analysis (ex-ante and ex-post economic evaluations);
- studies of comparative advantage and competitiveness (regional, international);
- sectoral and macroeconomic policy analysis.

6 READERS' NOTES

6.1 Time requirements

The delivery of this introductory module may be suitable for any audience of skilled staff required to be introduced to the Commodity Chain. In most cases, it may be presented in a session of about one and a half hours.

6.2 Frequently asked questions

Frequently asked questions are e.g. the following:

- Who decides what is in and out the commodity chain?
- What is the difference between the commodity chain analysis and value chain analysis?

6.3 EASYPol links

This module is a first step introduction which drives later to the next three modules:

- EASYPol Module 044: [CCA: Financial Analysis](#)
- EASYPol Module 045: [CCA: Impact Analysis Using Market Prices](#)

- EASYPol Module 046: [CCA: Impact Analysis Using Shadow Prices](#)

These modules are complemented by a set of case studies that can be used to replicate selected exercises during the lectures or in working groups. The case studies are provided with spreadsheet working frameworks for exercises.

Two case studies using the Commodity Chain Analysis are reported in the EASYPol module:

- EASYPol Module 047: [Exercise of Commodity Chain Analysis: Irrigated Rice Chain of the Niger's Office. Financial and Economic Accounts](#)
- EASYPol Module 048: [Case Study: Analysis of the Suburban Market Horticulture Sub-Chain of Bamako](#)

7 FURTHER READINGS

There is virtually no Anglophone literature which deals directly with Commodity Chain Analysis. It is however discussed in the context of constructing Policy Analysis Matrices, though there is little on financial analysis or even impact analysis.

- Aldridge, Kimberly M., 1992. *A framework for analyzing alternative institutional arrangements for the cereals market information system in Mali*, Mémoire de "Master of Science in agricultural economics" au Michigan State University, Michigan, USA, pp. 15-40.
- Audette, R., Larivière, S., Martin, F., 1994. *Analyse de filière dans le secteur agro-alimentaire: guide de réalisation d'une étude filière*, rapport préliminaire ACDI - Eco. rurale inc.
- Attaié H. and Salazar J., July 2003. *Guidelines for value chain analysis in the agri-food sector of transitional and developing economies*, ESSEC.
- Bockel, L., 1996, *Analyse de la sous-filière maraîchage péri-urbain de Bamako*, Document de formation pour la Planification Agricole, Division de l'Assistance aux Politiques (TCAS), FAO.
- Bourgeois, Robin, 1998. *La constitution des filières et les institutions quaternaires*.
- Daviron, Benoît, 1998. *Les défaillances de marché et les filières agricoles*.
- Fabre, P., 1994. *Note de méthodologie générale sur l'analyse de filière*, Document de formation pour la planification agricole n° 35, FAO ESPT.
- Hugon, Philippe, 1998. *Avantages comparatifs, compétitivité et organisation des filières*.
- Hopkins, T. K. and Wallerstein, I., 1994.
- Kaplinsky, R. and Morris, M., 2000. *Handbook for value chain research*, IDRC, p.113.
- Mauget, René, 2002. *Agri-Food Chain Analysis*, ESSEC Business School, Paris, France.
- Wallerstein, I., 1974. *The Modern World-System*, New York & London: Academic Press.

Module metadata

1. EASYPol module 043

2. Title in original language

English Commodity Chain Analysis

French Approche filière

Spanish Análisis de cadena

Other language

3. Subtitle in original language

English Constructing the Commodity Chain
Functional Analysis and Flow Charts

French Analyse fonctionnelle structuration de la filière

Spanish Análisis funcional, organización de la cadena

Other language

4. Summary

This module illustrates how Commodity Chain Analysis (CCA) can be used starting by how to construct the commodity chain, how to develop a functional analysis and how to analyze the commodity flows (flow chart).

The module starts by an introduction on commodity chain analysis as a tool; it then develops a way to construct the commodity chain to specify the concept of agents. The next step deals with the functional analysis of the commodity chain. The last part covers the commodity flow analysis.

5. Date

December 2005

6. Author(s)

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7. Module type

- Thematic overview
- Conceptual and technical materials
- Analytical tools
- Applied materials
- Complementary resources

8. Topic covered by the module

- Agriculture in the macroeconomic context
- Agricultural and sub-sectoral policies
- Agro-industry and food chain policies
- Environment and sustainability
- Institutional and organizational development
- Investment planning and policies
- Poverty and food security
- Regional integration and international trade
- Rural Development

9. Training path

[Commodity chain analysis](#)

10. Subtopics covered by the module

11. Keywords