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Methodology for assessing Mercosur agri-systems capacity to trade

EUMERCOPOL WORKING PAPER (WP4-D9)

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The global economy has been undergoing fast-paced transformations during recent years. In some sectors, globalization has forced companies, regions and countries to assess their capacity to trade. There is a consensus that successful integration into the world markets requires both policies that favours trade and competitive firms exporting on foreign markets (Lecomte, 2001). Being competitive becomes a basic condition for survival and/or take advantage of increasing international trade flow. In this context, new theoretical concepts and policies that seek to understand the determinants of competitiveness and increase capacity to trade have gained ground.

This paper provides a methodological approach to carry out an assessment of the capacity to trade of selected agri-systems of Mercosur countries. It strongly relies on the concept of agri-system and competitiveness. The methodology will be used to build up 3 sub analyses that are fully integrated:

- a. An agri-system analysis with a trade perspective, fed by key explanatory themes, explaining systems' capacity to trade.
- b. SWOT (Strengths, Weaknesses, Opportunities and Threats) analyse of Mercosur agri-systems, identifying the 4 SWOT themes, including/linked to the above analysis.
- c. Analysis of the these agri-systems capacity to fill possible future export opportunities, following EU policy trade changes, starting from the SWOT analysis and focusing on qualitative indications of policies, investment areas and other needs.

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This paper is divided into 6 main sections. In Sections 1 and 2, a short discussion on competitiveness and agri-systems is presented. The objective of these sections is setting up the conceptual framework and shows the importance of competitiveness as a key reference to evaluate capacity to trade. Section 3 presents the full set of agri-systems which will be undertaken in this research. Sections 4, 5 and 6 are devoted to SWOT analysis. In particular, they show how a set of information, including information on drivers of competitiveness, can be used as a guide to carry out a SWOT analysis of an agri-system.

1 The systemic approach to the analysis

In the agribusiness, new forms of organization and participation in the market have gained global importance for public and private agents. Particularly, agriculture becomes an integrated part of a broader production system, that comprises others industrial sectors and infra-structure.

According to its classic definition, a system is made up of two different aspects: a set of elements and a network of functional relationships, which work together to reach an objective. These elements interact through dynamic links that involve the exchange of stimuli, information or other non-specific factors. The interdependence of the elements is recognized and stressed in the systemic approach. Moreover, the general aspect of this perspective allows for analysis of many issues, making it possible, in theory, a better understanding of the factors that affect global performance criteria. These factors can be part of any component of the system. For instance, problems of quality in food products that may be observed by consumers at the counters of supermarkets may well have been caused by inadequate storing or even by inadequate manufacturing processes.

The systemic focus of the product is guided by five key concepts (Staats, 1997):

(1) **verticality** – the conditions (economic, productive, social, etc.) in a element of a production system (also referred as link in a production chain) are probably strongly influenced by conditions found in another element of the system, located above or below;

(2) **demand driven** – the demand conditions generate information that determines the vertical flow of products and services. These conditions bring unique dynamics to a production system;

(3) **coordination within channels** – the relationships (governance structure) established by supply channels, including alternative forms of coordination, such as contracts, spot market, etc., are particularly important determinants of the system efficiency;

(4) **competition between (among) channels** – a system may involve more than one supply or distribution channels (for example, different channels for international and domestic markets), leaving it up to the systemic analysis to understand the competition between (among) the channels and to examine how other channels may be created or modified to improve the economic performance of the system;

(5) **leverage** – systemic analysis aims to identify key points in the production-distribution-consumption sequence where actions may be taken to enhance the efficiency of a large number of participants. This synergy effect may come not only from technical, management and logistic operations, but also from public policies that have been developed in the institutional environment.

In summary, the systemic approach provides part of the theoretical framework required in order to understand the way in which agri-industrial systems work. It also suggests variables that can affect the performance of these same systems.

One source of criticism of the agri-system approach rests on the difficulty in establishing limits (borders) to the system. There is no unique solution to this problem. Nonetheless, it seems there is a consensus that the borders that define the agri-system to be investigated should be set according to the objective of the research and the available research fund.

Also, the theory of industrial organization and the new institutional economics provide theoretical tools of utmost importance to take into account issues of coordination, redistribution of responsibilities, the new trends in consumption, etc.

2 Competitiveness and agri-systems

The scope of analysis of the competitiveness of agribusinesses should, undoubtedly, comprise, beyond agricultural and livestock production *per se*, all inputs of these activities (such as animal health inputs, fertilizers, machinery, equipment, etc), processing and distribution. Also, it should be considered crucial aspects related to the institutional environment of the agri-system. The systemic focus, implicit in the notion of the agri-system, provides part of the theoretical framework required in order to carry out the analysis.

Studies on competitiveness of agri-systems should take into account the verticality of the economic system. Also, competitiveness of a given agri-system cannot be taken as the sum of the individual competitiveness of its agents. There are gains in terms of coordination, normally revealed in contractual arrangements that are set up according to the conditions of the markets. These gains should be taken into account in the analysis of the agri-system competitiveness. Thus, the methodological and conceptual model of competitiveness analysis in agri-systems should, necessarily, take into account the potential gain that comes from efficient coordination of the agents.

The combined impact of several factors would bring, as a result, a certain condition of competitiveness. These factors are taken as drivers of competitiveness, and are closely related to the efficiency and efficacy of agri-systems. The drivers can be understood as explanatory of capacity to trade. They explain the competitive position of the system in the market and its ability to sustain trade.

3 Agri-systems of the research

Ten agri-systems will be object of analysis in six Mercosur countries, comprising a total of 29 country agri-systems (Figure 1). A preliminary list was set in the research project (Annex 1 of EUMERCOPOL), for which EC policy experts were consulted. After additional research (at the start of the project) the list of agri-systems was refined on the basis of EUMERCOPOL partners' expertise, taking the following

criteria: the importance of the agri-systems products for trade flow between Mercosur and EC, intra-region trade, and potential trade flow.

Figure 1. Agri-systems to be studied in the project

	BRAZIL	ARGEN	URUG.	PARAG.	BOLIVIA	CHILE
SUGAR						
WHEAT						
MAIZ						
RICE						
SOYBEANS						
BOV. MEAT						
CHICKEN						
DAIRY PROD.						
APPLES						
ORANGE						

One or more products for each agri-system have been chosen in order to set the borders and the links to be studied:

- Sugarcane (sugar and ethanol)
- Wheat (grain)
- Maize (grain)
- Rice (with husks), white rice first processing)
- Soybeans (grain, soybean oil, soybean animal feed)
- Bovine (livestock, frozen beef, cuts)
- Chicken (livestock, fresh/frozen/salted, cuts and whole)
- Dairy (milk powder)
- Apples (table, juice)
- Orange juice (concentrated and frozen juice, pasteurized)

These products were also chosen on the basis of EUMERCOPOL partners' expertise, taking the same criteria that were use to chose the agri-systems. The list of agri-system and products was validate in São Carlos meeting by all WP4 partners, and in a final meeting in Brussels, where EUMERCOPOL took the advantage of EC officers attendance and contributions.

Thus, it must be stressed that the full set of products of an agri-system will not be considered in this research, but only those that were considered the most important ones. Also, the full agri-system will not be taken into analysis with the same level of importance. The research focus is on the agri-system critical parts, a critical sub-system, for building up capacity to trade. In EUMERCOPOL, it was assumed that investigations would be mainly concerned with the first links of a productive chain (production of inputs, farming and first processing). For some agri-systems (see Figure 1), the analysis focuses mainly on farming (e.g. wheat) while, for others, the analysis comprises first processing (e.g. bovine meat and milk). For soybeans (grain, soybean oil, soybean animal feed), the critical sub-system comprises farm production, trading/processing companies and infrastructure. In this case, the industry of manufactured inputs will not be analysed, although availability and supply conditions of those inputs will be taken into consideration in the SWOT analysis. In all cases, the researcher can use information from other parts of the agri-system (e.g. distribution, final consumer, etc) to explain aspects of critical parts.

4 SWOT analysis

SWOT is a planning tool that will be used in this study to identify the major factors affecting capacity to trade.² The agri-system will be accessed, considering its strengths (what an agri-system can do) and weaknesses (what an agri-system cannot do) in addition to opportunities (potential favourable conditions for an agri-system) and threats (potential unfavourable conditions for an agri-system). The role of SWOT analysis is to take information from the environmental analysis and separate it into current influences (strengths and weaknesses) and potential future developments (opportunities and threats). SWOT analysis determines whether the information indicates something that will assist an agri-system in being successful in an environment of increasing trade flow, or if it indicates obstacles that must be

² The SWOT analysis has been largely used for firms' strategic planning. However, there are many cases in which SWOT has been adapted for sector analysis and policy recommendations (e.g. British Columbia, 2004; Penang State Government, 2002)

overcome or minimized. The intention is to provide information base to support policy recommendations in a scenario of increasing trade flow, with opportunities and threats to Mercosur agri-system.

Opportunities and threats come from external environment, such as a trade agreement between Mercosur and EU, new competitors and increasing non-tariff barriers, while strengths and weaknesses come from an internal appraisal of the agri-system factors, such as technology, food safety standard and governance.

TOWS matrixes will be built, in which opportunities and threats are paired with strengths and weaknesses (Figure 2). The analysis starts with the listing of opportunities, threats, strengths and weaknesses. The TOWS matrix will indicate policies from four conceptual alternatives. In practice, some policies overlap or may be pursued in concert. The focus of the analysis is on the interactions of four set of variables combination:

1. The WT Policies. The aim of WT policies is to minimize both weaknesses and threats.
2. The WO Policies. WO polices attempts to minimize the weaknesses and to maximize opportunities. External opportunities may be identified, but the agri-system has weaknesses which prevent it from taking advantage of these opportunities.
3. The ST Policies. These policies are based on the strengths of the agri-system that can deal with threats in the environment. The aim is to maximize strengths while minimizing threats.
4. The SO Policies. SO policies aim to maximize both strengths and opportunities. An agri-system in this position can lead from strengths, taking advantage of the market for its products.

This framework can become a complex process when many factors are being identified. The matrix, shown in Figure 3, can be used to identify combinations of relationships that may become the basis for policies suggestions. In Figure 3, a '+' indicates a match between the strengths of the agri-system and external opportunities, while a '0' indicates a weak or nonexistent relationship.

Similar tables can be used for analysing the other three policies boxes (WO, ST, and WT) shown in Figure 2.

Figure 2. TOWS matrix

Internal Factors → External Factors ↓	Strengths: <i>List of strengths</i>	Weaknesses: <i>List of weaknesses</i>
Opportunities: <i>List of opportunities</i>	SO Policies: <i>List of SO Policies</i>	WO Policies: <i>List of WO Policies</i>
Threats: <i>List of threats</i>	ST Policies: <i>List of ST Policies</i>	WT Policies: <i>List of WT Policies</i>

Figure 3. Interaction matrix

Strengths → Opportunities ↓	1	2	3	4	5	6	7	8	9	10
1	+	+	+	0	0	0	+	+	+	0
2	0	+	+	0	+	0	0	+	+	+
3	+	0	+	0	0	0	0	0	0	0
4	+	+	0	0	0	+	0	0	0	0

5 Information for SWOT analysis

The SWOT of Mercosur agri-systems analysis will come out from three major set of information:

- a. Indicators of the agri-system recent evolution in terms of production and domestic consumption (see Section 5.1). This set of information seek to identify the total amount of products being offered, the importance of the agri-system in meeting domestic demand, the production of surpluses that can be exported, the importance of the agri-system for the agricultural sector of the country, as well as the most important production regions in each country.
- b. Indicators of the agri-system recent evolution in terms of international trade, including the agri-system international market-share (see Section 5.1). The latter is an indicator of revealed competitiveness,

which will be measured by the participation of a country's exports in the total global exports. The objective of this analysis is to identify the importance of the agri-system of each country in the global production, in the flow of international trade and in the trade balance of the country. Also, it will be identified the main players (countries) in trade flow of the agri-system products (destination and origin of exports). Competitors (as a threat) can be identified from this analysis.

- c. Drivers of competitiveness (see Section 5.2) for each Mercosur country agri-system.
- d. WP5 scenarios, which will indicate opportunities and threats of a possible trade agreement between Mercosur and EU. It is expected that WP5 simulations indicate opportunities and threats for Mercosur agri-systems in an increasing trade flow.

In Section 6, a hypothetical example of TOWS matrix for an agri-system is presented.

5.1 Domestic and international markets

An overview of the agri-system recent evolution in terms of production, domestic consumption, and international trade will be made in order to identify:

- the total amount of products being offered,
- the importance of the agri-system in meeting domestic demand,
- the production of surpluses that can be exported,
- the importance of the agri-system for the agricultural sector of the country,
- the most important production regions in each country,
- the agri-system international market-share (an indicator of revealed competitiveness)
- the importance of the agri-system of each country in the global production,
- the flow of international trade and in the trade balance of the country,
- main players (countries, competitors) in trade flow of the agri-system products (destination and origin of exports).

Indicators of production and domestic consumption are:

- Domestic production – quality and value of production of the agri-system's relevant products.
- Domestic consumption – quantity of domestic consumption of relevant products.
- Domestic consumption/domestic production – domestic consumption share of domestic production of relevant products.
- Regional production – identification of the country's most important production regions and their shares on total production.
- Value of domestic production/agricultural GDP – commodities shares of agricultural GDP

Indicators of international trade are:

- World consumption – total quantity of world consumption.
- Domestic production/world production – country agri-system share of world production of relevant products (quantity).
- Agri-system exports/world exports – country agri-system share of world exports of relevant products (quantity).
- Production of main countries – production of the most important countries and their share of world production.
- Destination of exports – identification of main destinations (import countries) of the agri-system exports and their share of total agri-system exportation.
- Origin of imports – identification of main supplier (export countries) of the agri-system imports and their share of total agri-system imports.
- Agri-system exportation/agricultural exportation – agri-system relevant products share of total agricultural exportation value.
- Agri-system importation/agricultural importation – agri-system relevant products share of total agricultural importation value.
- Agri-system exportation/country total exportation – agri-system relevant products share of total country exportation value.

SWOT examples from this analysis are:

- Strengths: large international market-share, high share of the agri-system products in the country agricultural GDP, high share in the agricultural/total exportation large domestic market.
- Weaknesses: small player in the international market, low importance for agricultural GDP and for the country exportation income, high dependence on international market, high dependence on few export destinations.
- Opportunities: Emerging import markets (eg. Asia countries).
- Threats: Emerging competitors.

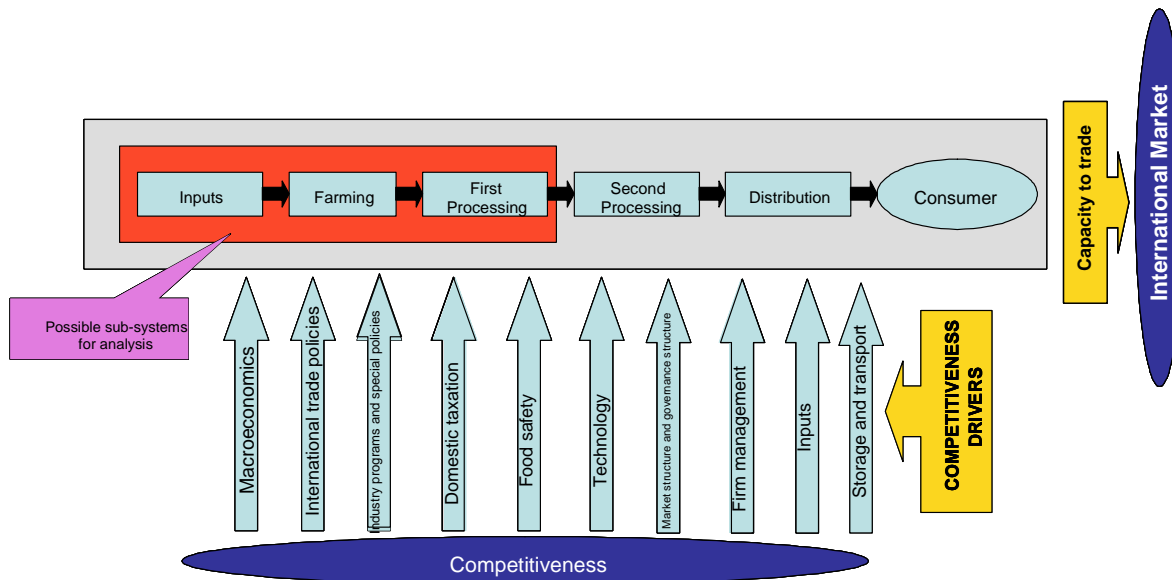
5.2 Drivers of competitiveness

The competitiveness drivers come from the theoretical framework suggested in Sections 1 and 2. Taking the economic, organizational and technological environments, ten drivers of competitiveness can be set: Macroeconomics, International trade policies, Industry programs and special policies, Domestic taxation, Food safety and inspection services, Technology, Market structure and governance structure, Firm management, Inputs, and Storage and transport (see Figure 4). These drivers will guide the SWOT analysis and reports structure. Drivers are described bellow.

5.2.1 Macroeconomics

The set of variables from macroeconomics consists of indicators of competitiveness, as well as descriptive variables from the economic environment of each agri-system. Interest rates, exchange rates and inflation are variables of the monetary and exchange rate policies of a country. These policies are important factors in determining growth of a country's GDP and its own domestic market. Size and growth of domestic market can allow for economies of scale, increasing an agri-system competitiveness. Interest rate and exchange rate directly affect the competitiveness of agri-systems, as changes in these variables cause changes in relative prices, with an impact on firms' costs and revenues.

Figure 4. Drivers of competitiveness in an agri-system



Macroeconomics indicators:

- Interest rate – treasure bill rate, monetary policy
- Exchange rate – nominal and real exchange rate, exchange rate policy
- Inflation – consumer price index, monetary policy
- GDP and GDP growth rate – last 10 years evolution
- Agricultural GDP and its growth rate – last 10 years evolution

SWOT examples from this driver:

- Strengths: low interest rate, devaluated exchange rate.
- Weaknesses: high interest rate, valuated exchange rate.
- Opportunity: stabilization of the economy
- Threat: economic instability

5.2.2 International trade policies

The variables of this indicator determine threats and opportunities created by a country's international trade policies and by its trade partners. For most agri-chain products, there are many tariff and non-tariff barriers that hamper access to important markets. A country agrisystem can be highly competitive in terms of production costs, quality, product diversification, and other aspects of

competitiveness. Trade agreements, whether bilateral or between (among) economic blocs, open doors to new trade flows and make room for market share growth. However, firms may find difficulties in getting access to markets because protectionism. The agreements can be made on the basis of decreasing tariff-barriers while non-tariff barriers are increasing. This is the case of increasing demand on issues such as sanitary and phytosanitary policies, environmental protection, and social issues (e.g. human rights, child labour, slave labour).

In particular, the links between trade and labour and environmental standards are very much alive in debates on international trade. Social clauses exist in a number of bilateral, plurilateral and regional trading agreements. On one hand, developing countries are concerned that labour and environmental standards could be used as a form of protectionism. On the other hand, countries with good governance, fiscal discipline and social safety nets can generally benefit from increasing international trade flow. Thus national laws and policies are crucial to reaping the opportunities offered by trade.

International trade policies indicators:

- Tariff barriers – Ad valorem tariffs for 5 main world import countries, EU, and 3 main destinations of the agri-system exportation of relevant products.
- Non-tariff barriers – description (price control, quantity control, sanitary and phytosanitary controls, environmental issues, social issues, human rights, child labour)
- Trade agreements – description (preferences, etc.)

SWOT examples from this driver:

- Strengths: compliance with tariff and non-tariff barriers (demands on environmental and labour issues), good national legislation on labour and environmental protection, ecolabelling and third party certification programs.
- Weaknesses: non-compliance with tariff and non-tariff barriers, lack of capacity to enforce environmental/labour legislation.

- Opportunities: increasing exportation to EU due trade agreement, increasing exportation to other markets.
- Threats: increasing non-tariff barriers (sanitary and phytosanitary, environment, labour).

5.2.3 Industry programs and special policies

The negative impact of the variables of the macroeconomic environment, such as high interest rates, can be compensated by government sector policies. For instance, firms may have access to financial resources under special conditions (credit, investment funds, etc.) that are offered by a State agency. Firms can get low-cost financial resources to adopt innovations, expand their range of new products, obtain economies of scale and increase productivity. Programs and policies can affect both agricultural/livestock production at farm level and processing firms.

Industry programs and special policies indicators:

- Programs and policies resource allocation and effective disbursement
- Relevant information on programs and policies – special credit conditions, non bank credits, private funds, investment funds, etc.

SWOT examples from this driver:

- Strengths: existence of special credit program, other sector programs.
- Weaknesses: lack of compensatory sector policies
- Threats: government budget crises and consequent shortening of funds

5.2.4 Domestic taxation

Country's fiscal system is an important factor in determining the competitiveness of an agri-system. High level of taxation decreases competitiveness, if suitable policy instruments do not exist to compensate firms for high taxes. Both cumulative taxation at intermediary stages of production and export levies have impact on cost of final products. These taxes triggers changes in relative prices and restrain competitiveness. In many countries, the fiscal system

may allow for special regimes and tax exemption for export products, thus granting competitiveness.

Domestic taxation indicators:

- Taxes and levies – identification of taxes along the production and distribution system and their impact on the final cost.

SWOT examples from this driver:

- Strengths: existence of sector tax exemptions, country low taxation.
- Weaknesses: high taxation impacts final cost
- Threats: expected increasing taxation

5.2.5 Food safety

Food safety has become a crucial issue for firms and agri-systems that are competing in dynamic markets. Sanitary and phytosanitary barriers has grown significantly, preventing agri-systems from participating on the international market if they fail to meet the standards established in international trade agreements and/or fail to comply with the legislation of importing countries. Participation in the international market depends on a domestic legislation that keeps up with increasing level of requirements of the international market, as well as an inspection service that ensures compliance with the legislation. An efficient inspection service enforces legislation and fosters investment, which, in turn, increases competitiveness.

Food safety issues:

- Food safety legislation – description of the food safety legislation, considering its compliance with international standards.
- Inspection service – description of the inspection service, its structure and effectiveness.

SWOT examples from this driver:

- Strengths: domestic food safety legislation complies with international standards, good laboratory infra-structure for certification testing, efficient inspection service.
- Weaknesses: out-of-date food safety legislation, lack of reliable infra-structure for certification, deficient inspection service.

- Threats: disease out-breaks.

5.2.6 Technology

Technological standards and capacity of developing and adopting innovations are crucial factors for maintaining sustained competitiveness in agri-systems. Generation and diffusion of key technologies is important to reduce cost, increase productivity, increase quality of products, add value to products, meet consumers' needs, etc. The set of indicators of the technology driver can be split into three groups. The first group comprises indicators of technology diffusion. It is important to identify key technologies in each agri-system, and the level of diffusion of these technologies at both processing industry and farm. The second group comprises indicators of the level of public and private support to R&D and diffusion of a key technologies. The third group comprises indicators of yields.

Technology indicators:

- Diffusion of key technologies – identification of agri-system's key technologies (from interviews with specialists); diffusion is measured by the percentage of the number of adopters on total number of farms or processing firms.
- Yields – farm level yields (per area, per animal, per tree, etc)
- Public and private R&D and other indicators – number of research centers, public and private support, number of patents, number of PhDs, budgetary resources.

SWOT examples from this driver:

- Strengths: good public research centres, large companies investment in technology, high diffusion of key technologies (in farm and/or processing), farm production high yields, processing plants adopt updated technologies.
- Weaknesses: lack of public and private research, low diffusion of key technologies (in farm and/or processing), low yields, processing plants using obsolete technologies, limited technology transfer.

5.2.7 Market structure and governance structure

Market structure and governance structure are important determinants of competitiveness. Competition and cooperation between (among) the agents of a agri-system, both vertically as well as horizontally, affects prices, supply, production efficiency, economies of scale, adoption and diffusion of innovations, etc. Firms may coordinate governance structures (vertical integration, spot market, contractual arrangements, etc.) in order to manage their network of suppliers, to reduce transaction costs, facilitate traceability and create conditions that increase systemic competitiveness.

Horizontal coordination is also a determinant of competitiveness. The state and/or agri-system's agents can create organizations that play a crucial role in establishing or fostering public and private sector policies.

Market structure and governance structure indicators:

- Number of firms in the market – number of farms, processing firms, trading companies
- Level of concentration – rural (participation of small, medium and large farms in total production; processing (CR-2, CR-4, Herfindahl-Hirshiman index)
- Number of processing plant units – number and capacity of production
- Average size of processing units – average processing capacity of the units and, if possible distribution of the number of units according to capacity.
- Average size of farms – Average size of farms and/or plots, average number of animals/trees per farm/category of farms, scale of production of the units and indication of economies of scale.
- Product differentiation – number of different products, share of each product in the total agri-system's exports.
- Agri-system main governance structures – description of the main governance structures, such as vertical integration, spot market, contracts, etc.

- Sector organizations – identification of representative sector organizations and their roles in public and private policies.

SWOT examples from this driver:

- Strengths: large firms' economies of scale, sector representative organizations (effective industry associations), good institutional support from government, vertical integration, good system of contracts (good backward linkages), spot market rules well, traceability is already adopted.
- Weaknesses: small firms' diseconomies of scale (small scale farming, small scale processing plants), lack of sector organizations, transactions are based on spot markets, lack of incentives to introduce traceability, processing firms lack capacity for diversification (improving value added).

5.2.8 Firm management

Firm's ability to respond to market changes is strongly influenced by adoption of key management tools. First of all, it is necessary to identify which main management tools have a strong impact on the competitiveness of firms in each agri-system. Generally, these tools enable firms to control and monitor their production and financial processes, find out bottlenecks, take decisions, build up strategies, reduce costs, etc. Secondly, it is also important to identify the level of diffusion of these tools at different segment of an agri-system.

Firm management indicators:

- Diffusion of key managerial tools – identification of key managerial tools (rural and processing, eg. ISO, certification, HACCP), identification of the level of diffusion of these tools (qualitative evaluation)

SWOT examples from this driver:

- Strengths: farmers' entrepreneurial management, widespread adoption of HACCP, farmers control for cost, ISO certification.
- Weaknesses: farmers' lack of entrepreneurial management, lack of ISO certification, low diffusion of HACCP.

5.2.9 Inputs

The availability and costs of the main inputs directly affect competitiveness of agri-systems. The inputs driver comprises a set of indicators of availability, level of dependence on the foreign suppliers, and prices of main inputs (land, labour and capital inputs). While prices of land and rural labour may be the same for all agri-systems in a given country, labour price at processing units and prices of input and capital goods may vary according to agri-system. Critical inputs, their availability and constraints should be identified.

Inputs indicators:

- Domestic production and consumption of farm inputs
- Imports and exports of farm inputs
- Price paid by farmers – main inputs, rural labour prices, processing labour prices, land price
- Availability of labour for future expansion
- Farm total cost of production – farm total cost of production and cost structure
- Final commodity cost – cost FOB of the commodity (farm cost, costs from farm to port – freights, ports costs, etc.)

SWOT examples from this driver:

- Strengths: availability of cheap inputs (land, labour, fertilizer), availability of land to expand production, low production cost (farm and processing), low logistic cost, availability of strategic inputs.
- Weaknesses: shortness of land, lack of skilled labour, high transportation cost, high production cost, dependence of importation of strategic inputs.
- Threats: competition for available land (soybeans X cattle raising).

5.2.10 Storage and transport

The storage and transport driver is used for assessment of the country agri-system infrastructure. Deficient transport and storage infrastructure increases post-harvest cost, hence reducing competitiveness. High transportation and storage costs may take firms out of market, although production cost is low, either at farm

level or at processing units. Storage deficiency may also reduce the bargaining power of farmers, who will then have to face low prices in the harvest.

Storage and transport indicators:

- National storage capacity – quantity of products that can be stored in national storage facilities.
- Transport and domestic port costs to main ports – qualitative analyse of the state and availability of port and transport infra-structure, cost of freights and port expenses.

SWOT examples from this driver:

- Strengths: reliable storage and transport facilities, good port infra-structure, good roads or railways, good private storage system.
- Weaknesses: lack of storage and transport facilities, high freight cost, high cost of port services.

6 An example of SWOT analysis

A hypothetical example of a SWOT matrix is presented in Figure 5. This example is based on the indicators presented above. In four boxes of the figure, there are qualitative indications of policies and areas of investment, which are crucial to reaping opportunities and lessening threats offered by trade:

1. The WT Policies. Privatization of roads (WT policy 2) intends to stimulate private investment to overcome both lack of transport infra-structure (weakness) and shortened government budget (threat of macroeconomic instability).
2. The WO Policies. An agri-system can lose the opportunity of an increasing demand (opportunities 1 and 2), given that farms are not able to attend product quality standards (weakness 7), as diffusion of proper technology is low (weakness 6). The extension system can be improved by cooperative arrangements between governmental R&D system and processing firms. Processing firms will set new contracts with farmers, offering incentives (eg. premium prices) to those who adopt the new technology (weakness 5). Government can also offer taxes exemptions (weakness 4) to stimulate private investments. Thus,

WO policies 2 and 3 are suggested, allowing to increase farm yields (weakness 2) and farm product quality (weakness 7), by speeding up diffusion of new technology (weakness 6).

3. The ST Policies. Increasing non-tariff barriers are expected (threat 3). Some of these barriers are designed to meet legitimate policy goal, while others are used deliberately to distort trade. Non-tariff barriers can be challenged but the process is complex and time-consuming. In order to overcome legitimate non-tariff barrier, R&D system (strength 6) can develop new technologies (eg. a new quality control system). In order to overcome illegitimate non-tariff barrier (eg. countervailing duties), government capacity to negotiate and/or settle disputes under WTO rules should be strengthened (strength 1).
4. The SO Policies. In order to increase production, and take advantage of increasing demand (opportunities 1 and 2) farmers and processing firms have access to low cost credit from a current government program (strength 3). Extra funds would be necessary in the face of these opportunities, thus the program should be enlarged (SO policies 1 and 2).

Figure 5. Example of a SWOT matrix.

<p>Internal Factors →</p> <p>External Factors ↓</p>	<p>Strengths:</p> <ol style="list-style-type: none"> 1. Good institutional support from government 2. Large international market-share 3. Availability of low cost credit program 4. Large firms providing financial resources and economies of scale 5. Availability of cheap land in new production region 6. Good R&D system 7. Low farm production cost 	<p>Weaknesses:</p> <ol style="list-style-type: none"> 1. Lack of good governmental inspection service 2. In farm production low yields 3. Lack of transportation infrastructure 4. Domestic excessive taxation 5. Inadequate governance 6. Low diffusion of farm technology 7. Low quality farm products
<p>Opportunities:</p> <ol style="list-style-type: none"> 1. Increasing exportation due to Mercosur-EU trade agreement 2. Emerging markets (eg. Asia countries) 	<p>SO Policies:</p> <ol style="list-style-type: none"> 1. Increase credit availability to expand farm production (O1, O2, S1, S3, S4, S5, S7) 2. Increase credit availability to expand processing industry capacity (O1, O2, S1, S3, S4, S5). 	<p>WO Policies:</p> <ol style="list-style-type: none"> 1. Partial privatization of the inspection service (O1, O2, W1) 2. Improve extension system for technology transfer to farms (O1, O2, W2, W5, W6, W7) 3. Introduction of incentives for farmers who adopt new technology (O1, O2, W2, W5, W4, W6, W7) 4. Privatization of roads (O1, O2, W3)
<p>Threats:</p> <ol style="list-style-type: none"> 1. New competitors 2. Macroeconomic instability 3. Increasing non tariff barriers 4. Competition of substitute products 	<p>ST Policies:</p> <ol style="list-style-type: none"> 1. Support to develop niche markets thorough quality products (T1, T4, S1, S6) 2. Special credit to prevent financial resource shortage (T2, S3). 3. Strengthen negotiation capacity in WTO (T3, S2, S6) 4. Support to R&D (T1, T3, T4, S1, S4, S6) 	<p>WT Policies:</p> <ol style="list-style-type: none"> 1. Improve the extension system to diffuse technology of high quality products (T1, T4, W2, W6, W7) 2. Privatization of roads (T2, W3) 3. Partial privatization of the inspection service (T2, W1)

7 Data collection

The proposed approach is characterized by two main elements: an optimized use of information from secondary sources and use of information from semi-structured interviews with “key agents” of the agri-system.

Considering the objectives of the study and operational constraints, a method of quick appraisal will be adopted. It is a pragmatic approach in which statistic rigor is reduced to favour of operational efficiency. Its association to the systemic approach has been used in many studies of agri-systems in developing countries (Morris, 1995; Holtzman, 1993; Silva & Batalha, 2000).

EUMERCOPOL partners combines expertise in agri-systems analysis of their respective countries. Particularly, on the basis of primary and secondary data, they have clear capacity to analyse each driver of competitiveness, and indicate strength and/or weakness under scenarios that show opportunities and threats.

Ten work groups were created, one for each agri-system. Each agri-system work group is formed by one researcher of each country in which the agri-system will be assessed. This arrangement aims to assure that methodological procedures will be the same among countries and agri-systems, and the results will be consistent. Moreover, it aims to sustain comparability among agri-systems and countries.

WP4 coordinators will propose a general structure for agri-systems reports in which the SWOT analysis will be presented. However, each agri-system work group will be able to adjust this general structure to fit into agri-system special features. In addition, each agri-system work group will adapt the general list of drivers.

Agri-system work groups should use a common set of tools for data collection. Some of the drivers will be provided by ECLAC (Economic Commission for Latin America and the Caribbean). This data should be harmonized among the different countries. Info-gap matrix will guide researchers on collection of data that will not be provided by ECLAD. Some of these data can be collected from secondary sources while other will be collected from interviews with agri-system key agents (primary data).

Each agri-system work group will devise questionnaires for collection of primary data. A common questionnaire for data collection can provide the same type of information among agri-systems and countries, allowing consistent analyses and some level of comparability. These semi-structured and qualitative

questionnaires will be applied to key agents. They must comprise SWOT themes in order to take the respondent view into analysis. Key agents can confirm or not the research view of SWOT themes, and/or bring their own opinion. WP4 leaders will provide a basic structure of questionnaire to the workgroups, which should be adapted according to each agri-system characteristics.

A workshop will be held in 2006 October. At this researchers will present a first draft of the reporters. The objectives are: (a) attune the interpretation and application of SWOT matrices; (b) interchange of impressions and policy suggestions; (c) presentations of agri-systems' SWOT analysis; and (d) attune the 29 SWOT outcomes on Mercosur level for the final report. Participants of this workshop are: all Mercosur researchers, EUMERCOPOL coordination and member of the steering committee, and WP5 coordinator.

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