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Macro-level analysis of food supply chain dynamics and diversity

National report – Belgium

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BELGIUM

SUS-CHAIN WP2 National Report (deliverable 8.5)

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1 General description of evolution of FSCs in Belgium – the historical perspective

Until the Middle Ages, the evolutions in Belgian farm structure were limited as fulfilment of the own needs was the main objective. Especially cereals were grown and animals were held to produce meat, milk, eggs, and draught power… The first Green Revolution (late Middle Ages) was the first evolution and was characterised by market-orientation, higher profits and yields and import of cereals. Monoculture occurred for the first time in the middle of the nineteenth century as reaction to the increasing demand in the cities, but this phenomenon was very local and limited in time (Niesten *et al.*, 2003).

Excessive import of cheap cereals caused in 1880 a large agricultural crisis. As a result, many farmers decided to start with specialised stockbreeding. The national production was at that moment not protected by policy and so the crisis also led to reorganisation and new types of collaboration such as cooperatives (Niesten *et al.*, 2003). A few years later (1890), the Farmers' Union was founded in order to answer the problems of that period. It was not the first farmers' association, but became the biggest and most influential Belgian agricultural union (Van Molle, 1990).

The importance of several crops such as cereals and flour crops diminished between 19880 and 1910 while cattle breeding became more important. At the same time, the productivity of agriculture rose and at the consumer level, there were increasing sales as a result of larger budgets (Niesten *et al.*, 2003).

The First World War had severe consequences on the agricultural sector with mainly the collapse of the livestock. New breeding techniques and genetic refinement allowed a successful recovery and by 1930 the number of cows reached its old level. Industrial production started at the same time and especially the landless chicken production (Niesten *et al.*, 2003). In that period, the size and influence of the Farmers' Union also increased thanks to the rising sales of raw materials, more deposit money and bloom of the assurances (Verhulst & Bublot, 1980).

A new crises and the Second World War had again terrible effects on the Belgian population and the agricultural production. Agriculture was re-oriented towards crops for human consumption while the area of feed crops declined, less animal feed was imported and rye was used in bread. The huge deficits during the war led to a policy change afterwards. Self-support became the main objective and this was for example realised by intensive farming.

European collaboration and the mechanisation of agriculture originated in the fifties. At the same time, expenses for food represented a decreasing part of the budget and the economy was now mainly driven by the supply-side. For the food industry, it was a period of industrialisation and new, more specialised, actors entered the food supply chain. The number of (rather small) abattoirs increased rapidly and a lot of new, small transformation companies occur. The first Belgian supermarket opened its doors in 1958 and was a few years later followed by the first hypermarket. With their large scale and standard production, these shops could offer a broad and affordable supply. As in the rest of the world, the Belgian agricultural production increased, but investments were needed because of the small and still declining acreage. The poultry industry for example was mainly based on the egg production, but the broilers had a growing importance (Niesten *et al.*, 2003).

The European collaboration was in 1968 further elaborated with the introduction of the Common Agricultural Policy, concerning a common market and price polity. Besides the political changes, organisational changes were noticed with a trend towards vertical integration of the chain; an example were for instance the contracts between farmers, feed company and abattoir. Slaughterhouses were being now installed in production centres instead of consumption centres,

the abattoirs specialised in a certain kind of animals and the sector was confronted with increasing integration and the rationalisation.
From 1980 on, the consumers became more demanding concerning his food and this feeling is enlarged by the agricultural crises. New demands were food safety, environmental issues and animal welfare. The individualism of farmers was tested as the government intervention considers agriculture as a regular economic sector and this problem was faced with continuous integration and collaboration. Other evolutions were a higher productivity by the repulsion of stragglers, a sore scaling-up and investments in modernisation. The farmers were confronted with the increasing demands of the consumers via guides, prescriptions and hallmarks required by the other actors in the food supply chain. There were of course also consequences for the processing companies such as a trend towards concentration, scaling-up and internationalisation (Goedseels *et al.*, 1995; Niesten *et al.*, 2003).

2 General configuration of FSCs in Belgium

2.1 Main food supply chains

Traditional Belgian FSCs are mainly organised on a national level, but there are also international contacts due to import and export and the participation of foreign companies in the chain. The basic structure of the supply chain is similar for all sectors (supply companies ⇨ agriculture ⇨ processing ⇨ distribution ⇨ consumer), but every sector has its own characteristics and these will be discussed in the description of the individual sectors.

Fertilizers, seeds and pesticides in crop production and feed and veterinary services in animal production are common inputs for agriculture, but machinery, equipment and infrastructure are also basic needs. Table 1 gives an overview of the value of inputs used in the Belgian agriculture (Van Hecke & Schrooten, 2003). Feed is the most important input, followed by fertilizers. Products such as pesticides, medicines, services and all other products are grouped in the category 'others'. The majority (almost 80%) of the € 3.929 million intermediary application is used in Flanders. This illustrates the difference between the intensive Flemish and more extensive Walloon agriculture.

Table 1. Inputs (million €) used in Belgian, Flemish and Walloon agriculture

	Belgium	Flanders	Wallonia
Feed	1.873	1.583	290
Fertilizer	249	146	103
Energy	370	299	71
Others	1.437	1.026	411
Total	622.31	447.609	875

Source: Van Hecke & Schrooten (2003)

The next link in the FSC is the agricultural sector and this is characterised by a continuous concentration and scaling-up, as shown in Table 2. The number of farmers decreased drastically in the period 1960-2002, but at the same time the average farm size increased. This decrease of the number of farmers continued in recent years, with for example 16% in the period 1997-2002, while the total acreage increased slightly (+1%) in the same period (NIS, 2003).

Table 2. Evolution of the agricultural surface (ha), the number of farmers and the average size of the farms (ha) (1960-2002)

	1960	1970	1980	1990	2000	2001	2002
Surface (ha)	1.659.671	1.540.306	1.418.120	1.357.366	1.394.083	1.390.191	1.392.691
Farmers	264.342	184.005	113.883	87.180	61.926	59.091	56.912
Average size (ha)	6,3	8,4	12,5	15,6	22,5	23,5	24,5

Source: Goedseels et al. (1995), NIS (2003)

The consumers are situated at the other side of the FSC and buy their products in general from the distribution sector. In this sector, supermarkets and large retailers (which have the biggest market share), small and medium sized retail shops, local small shops (such as butcheries,

vegetable and fruit shop) or direct marketing (farm sales, farmers' markets, etc.) can be distinguished. Table 3 shows the evolution of the number of food stores (whether or not with self-service) in the period 1980-2001. The decreasing number of food stores illustrates a growing concentration at this level of the FSC. It is striking that at the same time the number of food stores with self-service remained constant what a disappearance implies of the local small shops. Another trend is the increasing power of the retailers in recent years. Almost all big retailers have now elaborated their own manuals and codes of practices e.g. the code of good agricultural practices of Eurep, an association of European retailers. The farmers have to follow these prescriptions, note all actions in a register and have to be certified. In many cases this does not lead to a higher price, but it's an compulsory to maintain the traditional outlets (Vuylsteke *et al.*, 2003a).

Table 3. Evolution of the number of food stores and food stores with self-service (1980-2001)

	Food stores (number)	Food stores with self-service
1980	18.400	4.313
1985	15.600	4.638
1990	13.786	4.653
1995	12.952	4.759
2000	9.891	4.639
2001 of which:	9.192	4.477
F1	515	
F2 I	740	
F2 NI	1.043	
F3	6.894	

With F1: integrated companies, F2 I: chain stores, F2 NI: independent supermarkets and F3: other food stores
Source: www.fedis.be

The suppliers to the retailers differ according to the respective sector and the product. Auctions are e.g. a common institution to market fruits and vegetables, while animals pass through the slaughterhouse and cutting unit. The processing industry is also present in many chains, for example with the production of frozen vegetables and ham.

The entire agro-food-complex represents 3,4% of the Gross National Product (GNP). If agriculture is not included, the food industry realises a GNP of € 5,6 billion or 2,2% of the GNP. When it comes to foreign trade, the agro-industrial business has an export value of € 20,2 billion and an import value of € 17,6 billion. The relative importance in the total foreign trade is respectively 9,8% and 9,2% for the export and import. The food industry employed in 1999 87.833 persons and 115.749 people worked in the specialised retail sector (independent of their scale). If farmers and supply services are included, the total deployment of the agro-food-complex concerns 321.674 persons or 8,4% of the active Belgian population. The consumers spent € 19,4 billion at the purchase of food and drinks or 15,1% of their total expenditures. The most important products are drinks (24%), meat (23%), cereal products (15%) and dairy products and eggs (9%). The evolution of received and purchase prices is given in Figure 1. The prices paid to the farmers decreased steadily in the nineties but are now increasing again, while the prices paid by the consumers almost increased continuously. Generally, it can be concluded that the price paid to

the producer influences less the formation of the final price to consumer (Centrum voor Landbouweconomie, 2002)

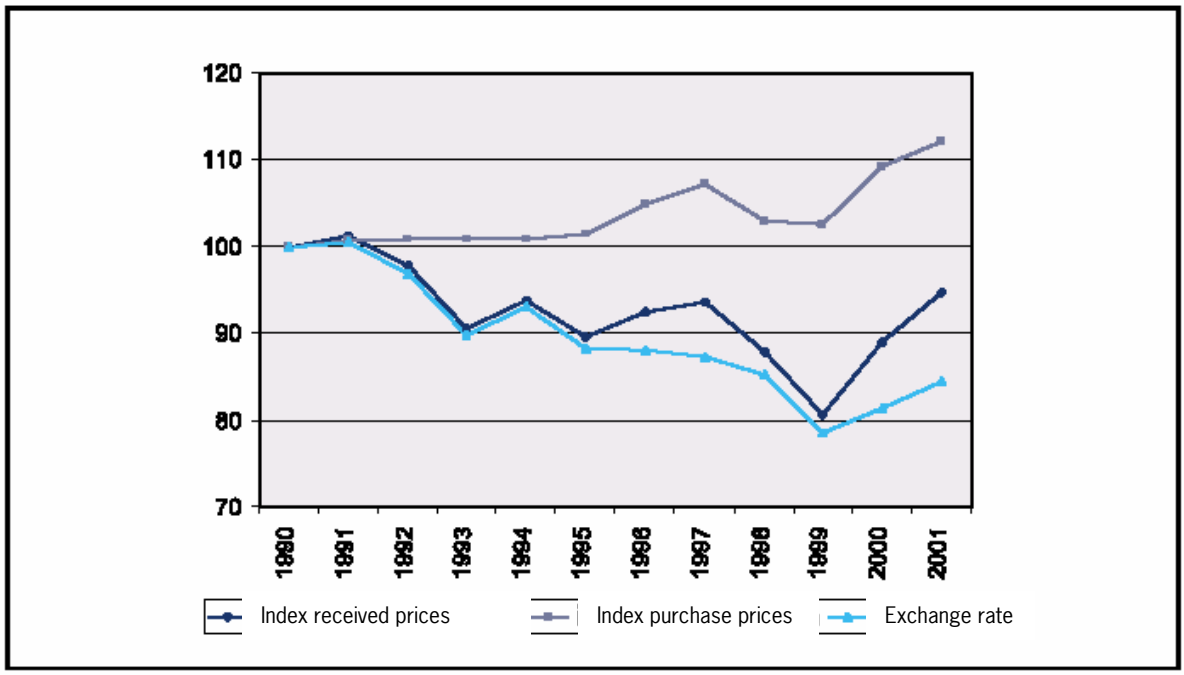

Figure 1. Evolution of the prices in Belgium in index (1990 = 100%) (Source: ALT, 2003)

A development in both traditional and alternative FSCs is that most of them are nowadays characterised by a certificate, label or hallmark. The food crises and changes in legislation lead to increased exigencies concerning food safety, labelling and traceability so that every FSC elaborated its own prescriptions and manuals. Vegetables, cereals and sugar beets fold to the processing industry for example have to be certified for the ICQM system or the farmer cannot sign a contract. These developments can mainly be interpreted as a way to be in order with their due diligence defence. Initiatives are in some cases also founded by the farmers and the sector as a whole (for example Integral Quality Milk), but that doesn't imply that it will remain a voluntary initiative. The label for integrated fruit production started e.g. as a farmers' initiative, but is now generalized and almost the standard production method. This implies higher production costs for the farmer, but the buyer does in many cases not reward these. The tendency towards certification will even be accelerated by a new law on auto-control and traceability, but the consequences for the farmers and the production practices are not yet clear (Carels *et al.*, 2001; Mormont & Van Huylenbroeck, 2001; Vuylsteke *et al.*, 2003b).

2.2 Development of alternatives

The occurrence of alternative food supply chains is rather limited. Initiatives are linked to organic farming, other quality specifications or shorting of the chain. In the following paragraphs, Belgian organic agriculture, fair trade products and farm gate processing and sales will be discussed.

2.2.1 Organic production

The main characteristics of the organic sector are given in Table 4. The number of farms and the total surface destined for organic production grew steadily during recent years. There were in 2002 710 organic farms in Belgium and these were mainly involved in arable farming. If both

regions are compared, it is observed that more than 84% of the surface is in Wallonia. Another observation is the negative growth of the sector in Flanders in 2002, especially for fruit production. This is related to several problems that will be discussed in the next paragraphs.
A part of the agricultural production is destined for the processing sector and there are in Belgium 857 companies recognised for organic processing and import. This number increased considerably in 2002 as a group of 200 bakeries entered the production of organic bread. In the retail sector, 85 organic outlets are recognised and these are mainly situated in Flanders. This number is however heavily underestimated as recognition is not compulsory. In reality, there are probably about 500 stores that sell organic products, from small health food shops to big retailers (www.bioforum.be). The entire FSC of fresh organic products has a market share of 2,1% in comparison with the total amount of fresh food (Ministerie van landbouw en visserij, 2003).

Table 4. Description of organic agriculture in Belgium, Flanders and Wallonia (1999-2002)

	1999	2000	2001	2002	% growth 01/02
Belgium					
Farms	586	666	694	710	2,3
Arable farming and grass (ha)	17.895	19.628	21.648	24.134	11,5
Vegetables (ha)	365	383	435	443	1,9
Fruit (ha)	255	254	328	297	-9,4
Total surface (ha)	**18.515**	**20.265**	**22.410**	**24.874**	**11,0**
Average farm size (ha)	31,60	30,43	32,29	35,03	8,50
Flanders					
Farms	172	231	253	251	-0,8
Arable farming and grass (ha)	2.238	2.904	3.470	3.376	-2,7
Vegetables (ha)	290	304	322	318	-1,1
Fruit (ha)	195	185	235	185	-21,3
Total surface (ha)	**2.723**	**3.393**	**4.026**	**3.879**	**-3,7**
Average farm size (ha)	15,83	14,69	15,91	15,45	-2,90
Wallonia					
Farms	414	435	441	459	4,1
Arable farming and grass (ha)	15.657	16.724	18.178	20.758	14,2
Vegetables (ha)	75	79	113	125	10,6
Fruit (ha)	60	69	93	112	20,8
Total surface (ha)	**15.792**	**16.872**	**18.384**	**20.995**	**14,2**
Average farm size (ha)	38,14	38,79	41,69	45,74	9,70

Source: Blivo (2003).

All actors in the chain are obliged to follow the prescriptions of organic production and trading stipulated by the European legislation on organic production. The Belgian law confirms this text, but the text on animal production is on some issues more severe than the general text, e.g. by banning all fish flower. Next to the recognition for organic products, all actors have the opportunity to obtain the hallmark *Biogarantie*. This is generally done by processors and retailers that are in direct contact with the consumers as an identifying mark, but it is not a common practice for farmers.
The organic sector distinguishes itself from the traditional agricultural FSCs by the organisation of the different institutions. These are all grouped under the umbrella 'Bioforum' instead of per sector. Bioforum represents the entire sector in consultations with the government and is responsible for the coordination of the *Biogarantie* hallmark. It consists, among others, of a

farmers' organisation, consumer organisation, control organisations, extension services, organisations representing processors and small retailers… (Van Huylenbroeck *et al.*, 2001)

Organic agriculture is an important policy issue of the Flemish government and the objective is to reach 10% of the total agricultural acreage by 2010. Different measures to do this are described in the 'Action plan for organic agriculture' (Ministerie van landbouw en visserij, 2003). Examples are the subsidies to organic farmers, but there are also steps taken to resolve same major bottlenecks in the chain. These elements are certainly necessary as organic production represents at this moment only 0,63% of the total agricultural surface but in fact, the demand for organic products is bigger then the supply. Important problems are the small scale of the organic farms, the disintegration of the sector and the insufficient transparency of the market. For this reason, several retailers buy mainly foreign products without paying attention to the conflict with the idea of sustainability. The Belgian organic production faces also a severe concurrence because of the strong growth of the sector in other European countries while they can benefit from lower distribution casts and advantages of scale. A general problem is the insufficient organisation and infrastructure of the FSC, which is a threshold for interested farmers. There are at this moment two chain managers working at the development of supply chains, improving contact between actors, cooperation between farmers and stimulating SFSCs. A new growth of the sector, becoming more stable and capable of setting off market fluctuations is necessary evolutions to overcome the present problems (Ameloot *et al.,* 2003; Ministerie van landbouw en visserij, 2003; Vilt, 2003a).
Another point of action is the presence of organic meals in social catering and food services. Universities, companies and administrations are examples where it should be possible to introduce organic meals. The offer of organic out of home consumption is at this moment rather limited whereas the consumers spends 30% of his budget spent on the out of home market. The main bottlenecks are the price of organic products, the distribution, the supply of the products and finally the control and certification. The present European legislation is furthermore not adapted to the usage of organic products in restaurants and social catering as it is very difficult to work solely or separated with organic products and so get certified. In practice, it is observed that certain restaurants use e.g. organic vegetables because of their good quality without mentioning it on the menu. This is an opportunity for organic producers if they can persuade local restaurateurs of the quality of their products (Peeters, 2003).

2.2.2 Fair trade products

The umbrella Fine defines fair trade as a trade partnership based on dialogue, transparency and respect, which strives for more justice in the international trade. Fair trade contributes to sustainable development through offering better trading conditions and securing the rights of producers and workers especially in the south.[1] There are 6 main actors in the Belgian fair trade sector: *Fair trade Organisatie*, *Max Havelaar*, *Maya trading*, *Oxfam Magasins du Monde*, *Oxfam wereldwinkels* and *Weltladen*. Besides the labels and hallmarks exploited by these organisations, there occur other (inter)national initiatives that want to improve social, economical and ecological abuses.

Table 5 gives an overview of these labels and hallmarks in Belgium.

[1] www.koopfairtrade.be

Table 5. Overview of the labels and hallmarks that occur in the Belgian fair trade sector

Name	Product	Criteria
Max Havelaar	coffee, chocolate, bananas…	fair trade, social and ecological norms
Fair trade / Made in dignity	clothes, jewellery, toys…	fair trade, social and ecological norms
FSC (Forest Stewardship Council)	wood	sustainable forestry
MSC (Marine Stewardship Council)	fish	sustainable fisheries
Biogarantie	agricultural products	organic production
Eco-label	consumer products	ecological production

Source: De Standaard (2003).

Fair trade products were in the past only sold by the different organisations mentioned above, but are nowadays available in supermarkets (including big retailers such as Carrefour and Delhaize), bulk consumption organisations such as schools and coffee roasters and finally organic shops (Bioplanet, Bioshop).

The turnover of fair trade products in Belgium has doubled in the period 1996 – 2000 and this can be explained in several manners. The ethical awareness of consumers is for example higher than ever, but there was also a strategy change 2 years ago. At that moment, it was decided to aim for a broader public with the fair trade products, e.g. by selling them in supermarkets. An important observation was that the introduction of the products in supermarkets did not lead to decreased sales in the specialised stores (*Wereldwinkels*).
The market share of fair trade coffee (the most important product in Belgium) was in this way pushed to 1%. In 2002, 3.000 tons of fair trade food (good for € 11.615.735) was sold in the Oxfam Wereldwinkels and this was an increase with 24% in comparison with the previous year. A recent marketing study showed that the sales of fair trade products would benefit from the elaboration of one uniform hallmark in replacement of the actual labels and the improvement of the ethical and pure image towards the consumers.
One way to make the consumer more familiar with the concept of fair trade products is the organisation of an annual "Week of the fair trade". This was organised for the second time in 2003. The main objective of this week is promotion and this is especially done through the mass media such as newspapers and a website. In this promotion, it is highlighted that all conditions to shop fair trade are fulfilled: a broad assortment, available in the supermarket, a high quality and the price is comparable or a little bit higher than for traditional products.

2.2.3 On-farm processing and sales

A third alternative is the direct contact between producer and consumer with direct sales on the farm. This type of sales was studied and inventoried in 2002 under the authority of the Flemish government. Farm products were hereby defined as fresh or processed products, produced or grown by farmers in main or second profession. The processing is done according to traditional methods with self-produced ingredients, but collaboration with colleagues is also a possibility. Farm products must meet the legislative prescriptions, but the authorities are also working on a law concerning these products. The text will comprise a definition and furthermore protect and guarantee the terms 'farm product' and 'recognised outlet of farm products' (Willems, 2003).

The inventory showed that there were in 2002 1.535 Flemish on-farm producers. About 70% of them (1.082 farmers) filled out a company card and this showed that there is a joined turnover of

€ 166 million, which was an increase of 14% in comparison with the previous year. Table 6 gives an overview of the distribution of the farms over the different product groups with more then one answer possible. The reader has to bear in mind that this inventory is however only a random indication of the real situation.

Table 6. Number of farms that sell farm products according to the product group

Product type	Number of farms
Dairy products	518
Eggs	127
Meat	110
Fruit	188
Vegetables	174
Arable products	318
Others (wine, flowers, honey, bread,…)	131

These direct sales are for many small farmers a real necessity as this can stabilize or even increase the farm income, but most of them enjoy also the contact with the consumers. Other characteristics of the farm gate sales are that this is a permanent activity for 75% of the farmers, 40% of the shops is open every day and in 10% of the cases it concerns organic products. Consumers are believed to buy in farm gate shops because of the origin of the product, the production according to traditional methods and the difference with conventional produce. After the development of the legislation concerning farm products, the Flanders' Agricultural Marketing Board will start a marketing plan for regional products and support the producers of regional and farm products (Administratie land- en tuinbouw, 2003; Vilt, 2003b; Willems, 2003).

3 Overview of the regulatory and policy environment and institutional setting in Belgium

The Belgian and European agricultural sectors in general have been faced with several food crises and scares over the past two decades. This influenced not only the consumer perception of food and agriculture, but also led to reactions from the government and all actors in the different FSCs. The European and national government elaborated for example new measures to improve food safety such as traceability, monitoring and product liability. To guarantee traceability for example, Belgium elaborated the Sanitel system in animal production even before the European government made it obligatory. Sanitel implies that every animal (cows) or every group of animals (pigs and chicken) has a unique number that has to be transferred with every action in the FSC.
Nowadays, a new law describing the rules for self-regulation, traceability and recognition of the actors is expected in Belgium. This legislation will give more responsibility to the respective chains, while the government remains responsible for the control on the control. An important condition of this law is that the guides have to be written for an entire sector or the respective chains. Farmers who decide not to participate in an initiative will have to pay the government for the performed control (Vuylsteke *et al.,* 2003a).
Other elements of dynamism on the European level are the stimulation of rural development through several programs as will be discussed in the next paragraphs and organic production.

The Belgian institutional setting bas changed seriously during the past five years with the regionalisation of ministry of agriculture, but this will be discussed more extensively in the paragraph concerning the political drivers of change. The result is however that agricultural policy is a regional competence, while public health and food safety remain national issues and the Federal Agency for the Safety of the food chain took over the national control duties of the disappeared federal ministry.

The policy objectives of the Flemish government are well reflected by three texts: the first gives a vision of the future of sustainable agriculture and the other two give an action plan (and an update) for organic agriculture.
The text on the future of sustainable agriculture (Reheul *et al.,* 2003) describes the actual context and characteristics of the Flemish agriculture in relation to sustainability. The importance of the economical value of the agro-business-complex, the impact on the environment and the social pressure on farms are hereby stressed. The authors give an overview of four methods to improve the economical sustainability of agriculture: scaling-up, de-specialisation, broadening of the activities and accelerated innovation. Improvement ecological and sociological sustainability can happen in several ways and differs from farm to farm. This is however a very complex process which is influenced by several factors such as globalisation, European agricultural policy, pressure of regulations, demographical changes and technological progress. The authors of this text think that there are two possibilities to improve the sustainability of the Flemish agriculture: firstly through collaboration and secondly through the practices on farm level.
There are, next to this view on the future of sustainable agriculture, also policy measures available. The government has e.g. elaborated codes for good agricultural practices regarding nutrients, pesticides and the environment. Farmers can (thanks to the program for rural development that will discussed in the next paragraphs) furthermore get subsidies for the use of mechanical weed control in the production in open air, the growing of a number of cover crops after arable crops, for environmental-friendly ornamental plant growing. There are also a number

of demonstration projects for sustainable agriculture and farmers can make us of extension services if they have financial problems or want to broaden their activities.

The text on organic production[2] states clearly that the Flemish government wants to stimulate an accelerated conversion towards organic farming. It is therefore prepared to change the legislation in order to give organic agriculture the best chances. Other measures are the support to organic agriculture, the aid to improve the market share of organic products and finally assistance to increase the knowledge on production practices. The government initiated several measures to realise these objectives. It concerns mainly the subsidies for conversion to organic farming, but there are also funds available for farmers that want to make a farm conversion plan , for the organisation of extension and an extra subsidy for conversion to organic sow farming.
Because of the changing market and organic sector, an update of this text was published[3]. It evaluates the objectives and results of the first text. There are again eighteen areas of action defined. New elements hereby are the stimulation of contacts between actors within the sector, the follow-up and implementation of the European legislation and the follow-up and support of international activities concerning organic agriculture.

There are also two programs that have the intension to improve rural development and which are related (a consequence) of European programs on sustainable agriculture and rural development: the program for rural development in Flanders (2000-2006) and the Flemish Leader + program (2000-2006). The objectives of the first are:

- Support the economic viability of Flemish farms by improving diversification and spreading of risks and develop the multifunctional role
- Support quality production methods that are environmental, animal and social sound
- The accelerated development of broadened activities, organic farming and the market of farm products
- The involvement of farmers in the development of nature within the agricultural structure and in other delimited areas
- Further elaboration of a sustainable forestry policy
- Promotion of the economic importance of the Flemish rural areas by diversification of the rural economics
- Promotion of the joint use function of rural areas for the Flemish society
- Promotion of the viability of regional centres
- Integration of vulnerable groups of inhabitants on the Flemish countryside in the developments of the countryside
- Conversion to sustainable water management

These objectives are realised by subsidising investments in agriculture, establishment in agriculture, education, advanced resignation, farms in depressed areas en areas with specific environmental limitations, environmental measures in agriculture, the improvement of processing and sale of agricultural and horticultural products, forestry, the adjustment and development of the countryside: towards an integrated rural policy in Flanders and finally the adjustment and development of the countryside: support of the sale of quality products.
The plan totally concerns 727.667 million euro and about 25% of the amount comes from EOGFL co-financing. These measures seem to have some effects as the media[4] write that agriculture become greener since 2000 as the countryside stewardship had an increasing success. The surface of pools has multiplied by twelve, the number of wooded banks by ten and the surface of hedges by seven. The environmental-friendly managed field margins finally multiplied by five.

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[2] Actieplan Biologische Landbouw. See: http://www2.vlaanderen.be/ned/sites/landbouw/index.html
[3] Actieplan Biologische Landbouw II. See: http://www2.vlaanderen.be/ned/sites/landbouw/index.html
[4] www.tv1.be/tt, www.standaard.be

The Flemish Leader+ program[5] has four main objectives:

- Sustainable development of the rural territories
- Recovery, preservation and development of the characteristics of the rural areas
- Development of sustainable agriculture and
- Improving the economic importance of the rural areas by improving the diversification of the economic activities.

The actions of this program cover four domains: area-linked integrated strategies for rural development with an experimental character, collaboration between rural areas, creation of networks and management, control, evaluation and technical support. The total cost of the project is € 9.368.100 and the European and Flemish government each pay 46% of that amount.

It was already shown in the past paragraphs that there is a clear relationship between the Belgian and European agriculture, but one cannot ignore that there is also an influence from agriculture on world level. These elements will be discussed in paragraph 5 on the PEST-framework.

[5] Communautair initiatief voor plattelandsontwikkeling 'LEADER+'. Programma voor Vlaanderen – Periode 2000-2006. See: http://www2.vlaanderen.be/ned/sites/landbouw/index.html

4 Sector by sector summary of FSCs in Belgium

4.1 Dairy

4.1.1 Structure and indications of the chain

The Belgian dairy sector is one of the most regulated and structured agricultural sectors, as will be described in the following paragraphs. The traditional structure of the food supply chain in this sector is given in Figure 2.

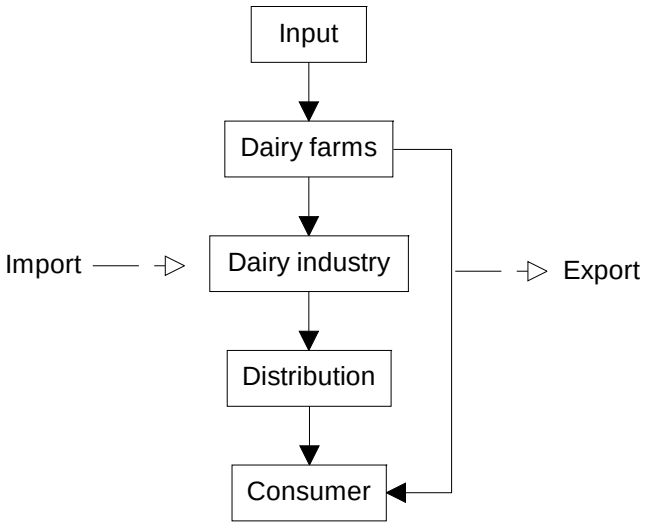

Figure 2. Structure of the dairy supply chain (Source: Bedrijfskolom Melk,2001)

The inputs needed in dairy production are feed, machinery and material and veterinary services. As these elements are also inputs for other agricultural sectors (e.g. beef and pork production), it is almost impossible to estimate their economic importance for dairy production alone.

In 2002, the National Institute for Statistics (NIS, 2003) counted 576.709 dairy cows in Belgium. In 2001, there were 17.421 Belgian dairy farms with an average quota of 176.715 litres. This is comparable with the European average quota of 176.030 litres, but the Belgian growth is smaller in comparison with countries such as France, Germany and the Netherlands (Bedrijfskolom melk, 2001; BCZ, 2002).
Most farmers (15.866) sell their milk to the dairy industry and it concerns an average amount of 185.164 litres per year. The average price in 2001 was € 30,96 for 100 litre (for 36 gram fat) and is determined by the level of fat and proteins. In reality the gap between the observed percentage and the official reference percentage increased in 2001 to 3,93 gram fat per litre (BCZ, 2002).

Concentration, cooperation and internationalisation are the keywords in the dairy industry. The sector consists of the production of dairy products and ice cream, NACE 15.510 and 15.520 respectively. In 2001, some 7.200 people worked in this sector of which 75% in the production of dairy products (CRB, 2002b). Table 7 gives an overview of some economic characteristics of the dairy processing industry and distribution (Bedrijfskolom melk, 2001).
The distribution of dairy products has also changed in the past fifty years. The majority of these products are nowadays sold by hyper- and supermarkets as milkmen and dairy shops

disappeared due to inefficiency (Niesten *et al.*, 2003). The total value of the milk production in 2000 was estimated at € 960 million (Bedrijfskolom Melk, 2003).

Table 7. Characteristics of the dairy processing and distribution industry

	Dairy products	Ice cream
Turnover (€)		
• processing industry	108.170	6.495
• distribution	80.591	6.118
% added value/turnover		
• processing industry	12,23	28,47
• distribution	5,75	17,05

Source: Bedrijfskolom melk (2001)

4.1.2 Institutions, organisational forms and governance

The Belgian dairy sector is traditionally characterised by a far-reaching regulation that is influenced by the European legislation and the implication of quota. The Belgian quota counts for ca. 3.310.431 tons of which only 4,2% is sold or processed at the farm. This national quota is divided in personal quota per farmer and if he surpasses this amount, a charge (115% of the basic price) must be paid. The transfer of quota is very limited and is organised by a National Quota Fund.

Legislation in this sector is mainly based on the European Directive 92/46/EEG which lays down the health rules for the production and marketing of raw milk, heat-treated milk and milk-based products. The resulting national legislation has three main pillars: animal health, recognition of the actors in the chain and quality of the milk. The Federal Agency for the safety of the food chain is responsible for the control of the farms. For determination of the milk quality, six parameters are defined: the amount of germs and cells, the amount of residues from antibiotics and antiseptics, the freezing point and the visible purity. Although the government is normally responsible for the determination of the quality, this was consigned to recognised committees for the milk quality. If the parameters cross the references, penalty points are given and each penalty point leads to price deduction of € 0,62 per 100 litre. The sales and production of milk and derived products on the farm is described in a more recent law (Vuylsteke *et al.*, 2003a).

The main organisations in this sector are the diverse milk committees, *VRV* (Vlaamse Rundvee Vereniging), *BCZ* (Belgische confederatie van de zuivelindustrie), *BDF* (Belgian Dairytrade Federation) and *NAVEMHA* (Nationaal verbond van Melkhandelaars).

There are besides these organisations in the dairy sector also other organisations that are active for all agricultural products. It concerns the four big farmers' associations *(Boerenbond, Algemeen Boerensyndicaat, Vlaams Agrarisch Centrum* and *Fédération Wallonne de l'Agriculture), Bemefa* (the association of the feed producers), *Fedis* (the federation of the distributors), *Fevia* (the federation of the rood industry) and the Flanders' agricultural marketing board *(Vlam).*

4.1.3 Dynamism in the sector

The Belgian dairy sector is in many cases a pioneer. It is thus important to study this sector as occurring trends are often copied in other sectors.

The most recent evolution is the start of the 'Integral Quality Management for milk'-initiative in 2000. This is a quality and food safety assurance system for both milk production and milk

transport that is controlled by an independent accredited organism. In the near future, prescriptions for the dairy industry and distribution will be elaborated to certify the entire chain. At the start of the initiative, the farmers who applied got a once-only premium and a higher price. At this moment, about 90% of the Flemish milk is IQM-certified, but the problem is that the bigger dairy companies see this as a conformity certificate necessary to deliver the milk. This can create problems for non-participating farmers as they will in the future hardly find any outlet for their milk.

The sale of organic milk was in the previous years rather problematic and large amounts of organic milk were sold as conventional. Although it's easier to sell milk to the dairy factory, some organic dairy farmers in Flanders opted to found their own cooperation. *Biomelk Vlaanderen* was established in February 2003 and represents 23 organic farmers with a combined production of almost 6 million litres of organic milk per year. The aim is to organise the cooperative processing and marketing of milk and dairy products. At the start of the cooperative, only a small part of the milk was sold as organic, the remaining part passed through the common channels. For the participants it is clear that it will never be possible to process all the milk organically, but the goal is to bring 85 till 90% of the milk on the organic market by which an added value of € 6-8 per 100 litres is realised. The organic milk is processed into 4 types of cheese that are commercialised under the cooperation's name to avoid competition with non-Flemish organic products. The production of light cheese gives a residual of cream and this is turned into butter by a processor. A side effect is that the increased supply possibilities can stimulate interested dairy farmers to converse to organic production as sales were an important limiting factors for organic milk (de Jong, 2003).

4.1.4 Judgement of sustainability, transparency and rural development

The dairy sector is as well-structured sector with a limited number of actors because of the tendency towards concentration. This doesn't only promote the transparency in the chain, but it implies also a reinforced position of the market-middlemen. This leaves the question what to do with small farms that can't and farmers who doesn't want to follow rather obligatory initiatives. If an initiative as IQM indeed becomes obligatory, it isn't imaginary that the tendency of scaling-up and the disappearance of small farms will be enforced.

Economic and social sustainability and rural development are elements that are in general more favourable in cases of short supply chains and direct selling. For the farmer, these are possibilities to increase the farm-income, but there is also more contact between farmers and consumers. These small-scale initiatives also contribute to rural development.
Prescriptions for ecological sustainability occur in the IQM-initiative, but this element is also positively evaluated by Reheul *et al.* (2003) if there is a controlled fertilization of the crops. These authors also think that the dairy sector is one of the sectors with a high economical sustainability. Sustainability can however be improved by optimising the feed production on the farm and improving the quality of the open space.

4.1.5 Bottlenecks to the further development

A major challenge for the future in this sector is the anticipation on the disappearance of the quota and the price intervention. Big exploitations that already produce in a sustainable and environmental friendly way should be able to compete with the prices on the world market, but smaller farmers will need to find ways to generate an added value on their farms through diversification (Reheul *et al.*, 2003).
A real bottleneck for the development of alternative chains and production is the concentration of the processing industry. These companies are not interested in niche products and products with

a specific quality. This was mainly the reason for the foundation of *Biomelk Vlaanderen*. As the processors were not interested to organise a separate collection of the organic milk, the dairy farmers were forced to search an alternative outlet for their milk. The Belgian processors furthermore do not create a distinct profile for themselves with products with a high added value and typical Belgian products; they produce bulk products for an anonymous market in many cases coming from other European countries against dumping prices. For the Belgian dairy farmers, it is a challenge to conquer a place on the national market with homegrown quality products whether these are organic or conventional products.

4.2 Beef

4.2.1 Structure and indications of the chain

The organisation of the meat chain in general is pictured in Figure 3. These general structure is rather similar for all types of meat, but they all have their own particular elements. Cattle dealers for example have in this sector a more important role in comparison with the pork sector.

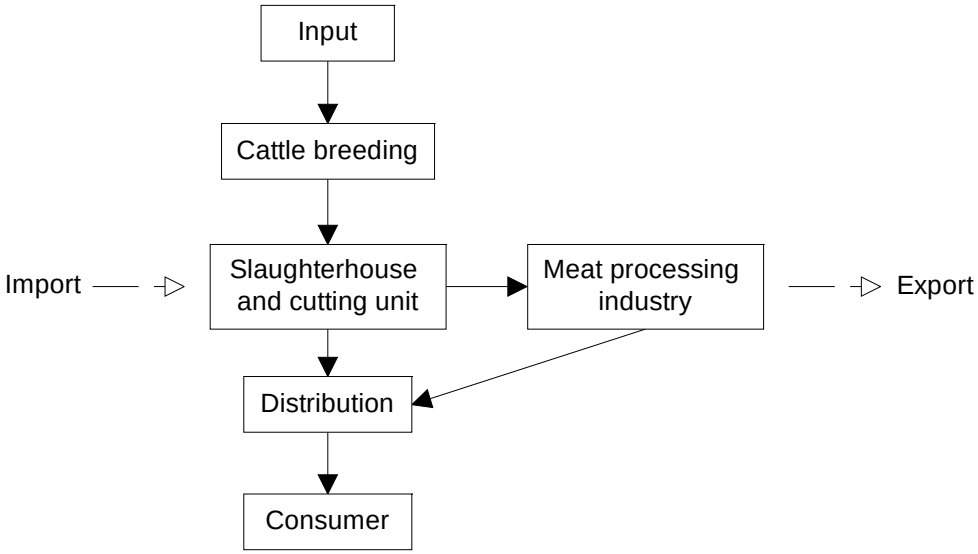

Figure 3. Structure of the beef supply chain (Source: Bedrijfskolom Vlees, 2001)

The inputs in the meat chain are similar with those in the dairy sector: feed, machinery and material and veterinary services. It is very difficult to determine what the importance of this sector is for dairy, meat and eggs separately, but animal production spends about € 3,89 billion at the purchase of inputs. In Table 8 an overview is given of the characteristics of the entire feed production (Bedrijfskolom vlees, 2001; CRB, 2002a&b).

Table 8. Characteristics of the entire feed production

	1999	2000	2001
Personnel	1254	1249	1273
Investments (x1.000 €)	2159	2390	2555
Turnover (million €)	45079	38889	55663

Source: CRB (2002 a&b)

In 2001, there were 2,4 million cows for the production of meat and this evenly spread over Flanders and Wallonia. This is ca. 4,9% of the European cattle stock and Belgian White and Blue is by far the most important race. The cattle are held on ca. 38.400 farms of which 20.000 are specialised in beef and veal production. There were in 2001 580.000 cows and 238.250 calves slaughtered and this resulted in 238.250 tons of beef and 46.750 tons of veal. The total production of beef and veal is over € 993 million worth and € 780 million comes from beef production (www.rundvlees.be).
The link between production and the sale of animals is among others realised by livestock markets, cooperative sale and direct purchase by the slaughterhouse, but there are hardly any data available on their size and importance.

Slaughterhouses, in some cases combined with cutting units, can be found at the next level of the supply chain and there are two types: public and private slaughterhouses .
The data on the processing and distribution of the different kinds of meat are also very limited. For this reason, the indicators will be discussed for the entire meat production and these are displayed in Table 9. It concerns slaughterhouses, poultry abattoirs and the production of meat products and canned meat. Concerning the personnel, most people (48%) work in companies that produce fresh meat products and cans, followed by fresh meat (29%) and fresh poultry (19%). Meat processing seems to be mainly a Flemish activity as 82% of the personnel works in Flanders. The meat-processing sector consists of a large number of companies, mainly small exploitations with family nature. There are in Belgium 2 EU-recognises abattoirs that only slaughter cows, but there are also 46 slaughterhouses that do also other animals (Bedrijfskolom vlees, 2001; Derden *et al.*, 2003).

Consumers buy their meat in the supermarket (41%) or in the butchers' shop (35%). The importance of the small retailers is specific for the meat sector (www.rundvlees.be). The distribution sector employed 15.692 people in 1999 and realised a turnover of € 7,9 billion. The needed investments are comparable with the processing industry, that is 147,4 million euro (Bedrijfskolom vlees, 2001).

Table 9. Characteristics of the Belgian meat processing industry

	1999	2000	2001
Personnel (units)	14.371	14.102	13.916
Investments (x1.000 €)	78.249	70.656	93.874
Turnover (million €)	2.037	2.246	2.586

Source: CRB (2002a&b)

4.2.2 Institutions, organisational forms and governance

The tracing system 'Sanitel' was at first started in this sector as it was thought necessary to be able to trace products back to the farm after the food crises. This system was at first unique in Europe but since September 2000, labelling is obligatory in the entire European Union. The qualified authority in this matter is the "Interprofessional association for Belgian meat" and this association is also responsible for the classification of the carcasses in the slaughterhouses. Beef has to be labelled to mention e.g. the official number of the animal, the number of recognition of the abattoir, the date of slaughtering **…**
As all other farmers, beef producers need to have a recognition and an identification number of the Manure Bank. The other actors in the chain (slaughterhouses, transport companies,…) have also to be recognised to perform their activities. Other important issues are the Manure Action Plan, regulations on animal health and welfare and the sanitary statutes of the animals. The slaughterhouses and cutting units have to elaborate the basic steps of HACCP and law describes

the waste streams. Classification of the carcasses is done by the European SEUROP-system, which also determines the price that farmers receive for their animals and it's not an exception in Belgium that only carcasses of the S-class are accepted.
The CONSUM-program (Contaminant Surveillance System) covers the entire meat supply chain. Its objective is to control all links in the chain if there are contaminating elements present in the products. The monitoring is done by sampling and afterwards the levels of PCB's, dioxins, aflatoxins and heavy metals are determined.

Specific organisations in this sector are again *VRV* (the association of cattle breeders), *NVS* (Nationaal verbond van Slachthuizen en Vleesuitsnijderijen; the union of abattoirs and cutting units), *BIVEX* (Beroepsverenigingen van de Internationale Vlees- en veehandel, de Belgische Exportslachthuizen en -uitsnijderijen; an association which represents the international meat and cattle trade and the exporting slaughterhouses and cutting units) and finally *FENAVIAN* (Nationale Federatie der Fabrikanten van vleeswaren en vleesconserven who represents producers of meat products and canned meat).
A new organisation that concerns the entire animal production is the non-profit organisation *DP21* (Dierlijke productie in de 21ste eeuw, animal production in the 21st century). Its main objective is the improvement of the communication between the different stakeholders in the sector of animal production. This is done by the development of three scenarios for the future and the support of education for the sector of animal production. The scenarios are characterised by two variables: the situation on the world market and the framework of interests, but they all have in common that the number of animals held will decrease drastically.

4.2.3 Dynamism in the sector

Beef production is, as all other sectors, confronted with a number of initiatives for standardisation and normalisation. Some of these initiatives are foreign (e.g. the Dutch IKB system), but there are also several national and regional initiatives. Examples are private labels such as Meritus (that has a market share of 15%), but the market-middlemen (such as the retailers) elaborated also prescriptions and control systems to guarantee product quality and safety towards the consumers. Organic beef production is of course another possibility. The Walloon government elaborated in 1989 the conditions to participate in the initiative 'Label de Qualité Wallon', but at his moment the juridical base has disappeared. The resulting labels however such as Blanc Bleu Fermier still exist.
Statistics show that there is a market for labelled meat. Especially after the recurrent crises, more labelled meat is sold (Vlam, 2003; Vuylsteke *et al.*, 2003a).

There are in the beef sector also certain tendencies towards other breeds. A majority (almost 85%) of the cows destined for meat production in Belgium are Belgian White and Blue. This breed is very well meated but gives also very tender and lean meat, but there are ethical concerns because of the high rate of Caesareans (especially for organic production) and the flavour could also be better. Carrefour for example has contacts with some farmers to deliver meat of the race 'West Flanders red' in order to restore this traditional breed. Other occurring breeds are Limousin, Charolais and Blonde d'Aquitaine.

The tendency towards normalisation and standardisation isn't isolated to primary production, but there are also initiatives elaborated for other links in the chain. Examples are the code for Good Manufacturing Practices (GMP) for the producers of compound feed, a code for Good Veterinary Practices (GVP) and manuals for slaughterhouses and meat processing companies. These initiatives aren't specific for the beef sector, but apply also for pork and sheep production.

Because of the past crises and food scares in this sector, many farmers searched ways to create added value through direct sales with a farm butcher's shop or through informal sales to relatives, neighbours and acquaintances.

4.2.4 Judgement of sustainability, transparency and rural development

The meat sector is generally more complicated then the dairy sector for example because of the various ways to sell the animals and the meat. It is for the actors now possible to gain insight on the diverse paths and possibilities of sale through the individual identification of the animals. This system however did not necessarily increase the confidence of and the transparency for the consumers and they have in general little confidence in the governmental control.

When it comes to improving sustainability, there are still several possibilities open. Examples are the conversion to organic farming, direct selling, feed production on the farm and many others (Reheul *et al.*, 2003). At this moment, the usage of alternative breeds seems to be another possibility to improve some elements of sustainable production.

4.2.5 Bottlenecks to the further development

In the actual setting, it will be very difficult for the exploitations to compete with the price on the world market. The challenge for sustainable production is however not on the world market but on the national or local market. To gain or maintain the consumer confidence seems to be of bigger interest. Possibilities are the stimulation of organic production as conversion is thought to be feasible for farms with a lot of fields.
As the dairy sector, beef producers are confronted with a shortage of small and regional processing units such as slaughterhouses and meatpacking industry. This puts a hold on the development of alternatives and the growth of the organic sector.

4.3 Sheep

The organisation of the supply channel for lamb and mutton is very comparable with the one for beef, with the exception of the processing industry. The biggest difference between those two sectors is their size. The importance of the Belgian sheep farming is very limited and is in most cases an extensive side-activity on the farm or a hobby. The number of animals and farmers are for the past two years are given in Table 10. About 64% of the animals and 63% of the farmers are situated in the Flemish part of the country and in total, the Belgium sheep sector represents 0,1% of the total European production. Furthermore, literature shows that the Belgian sheep breeding is regionally concentrated and an average farmer has 10 to 20 ewes (NIS, 2003).

Table 10. Number of sheep, sheep holders and their evolution in Belgium

	2001	2002	Evolution
Sheep	156.132	146426	-0,06%
Farmers holding sheep	4484	4246	-0,05%

Source: NIS (2003)

There is very little information on the other levels in the chain and the amount of meat that is produced every year.

As in other sectors, the trend towards standardisation and hallmarks can also be noticed. Pastorale is a hallmark for lamb that is only sold in certain periods of the year and in selected shops.

The importance of this sector lays mainly in the possibility for alternative production. Sheep and goats are two types of production that are very suited for organic agriculture.

4.4 Pork

4.4.1 Structure and indications of the chain

The structure of the supply chain for pork is very similar to the one for beef, but there are also some other supply chains to the abattoirs. Pigs are sold on the farm, pig markets, auctions or cooperative sales, contracts and short FSCs. Integration occurs more frequently in this sector. The integrators are food companies that apply different kinds of integration, going from delivery of the piglets and feed till financing of the farm and purchase of the pigs. It is difficult to get a real estimation of the importance of these vertical relationships as farmers often don't want to discuss the way in which their animals are sold. Contractual relationships are not in all cases formalised and are often just oral agreements.

Pig farming is the most important sector of the Belgian and Flemish agriculture, but it encounters also loads of social criticism because of the manure problems and animal welfare.

Table 11 gives an overview of recent samples and counts of the number of pigs in Belgium. This sector is mainly situated in the Flemish part of the country with almost 95% of the amount of pigs. The distribution of the farmers holding pigs is a little less explicit with 87% of the 9.163 farmers in Flanders. But even within Flanders, there is important difference between the regions. Almost 46% of the Belgian pigs are raised in one province (West-Flanders). Four types of farms can be distinguished in this sector: sow farms, closed mixed farms (raising of their own piglets), open mixed farms (piglets are occasionally bought and raised) and farms that only fatten the animals. In 2000, 11.091.000 pigs were slaughtered and this resulted in 1.040.009 tons of meat. The production value undergoes a cyclic movement according to the price. In the period 1999 until 2001, the production value evolved from € 954 million, over € 1,38 billion to € 1,64 billion (NIS, 2003; Van Hecke & Schrooten, 2003).

Table 11. Number of pigs in Belgium

	Sample 15/11/2001	Count 01/05/2002	Sample 15/11/2002	Count 01/05/2003
Piglets < 20 kg	1.749.896	1.836.013	1.788.944	1.760.976
Pigs 20-50 kg	1.421.449	1.456.353	1.366.718	1.346.989
Store pigs with a weight of				2.761.157
• 50 - 80 kg	1.585.208	1.519.226	1.520.740	
• 80 – 110 kg	1.246.206	1.148.265	1.162.136	
• 110 kg and more	88.264	89.098	81.827	
Breeding pigs	684.208	686.467	679.793	656.361
Total pig stock	6.775.231	6.735.422	6.600.158	6.525.485

Source: NIS (2003)

4.4.2 Institutions, organisational forms and governance

The institutions in the pork sector are quite comparable with those described in the beef sector. Elements such as animal health and welfare, recognition of the actors and identification of the animals are comparable with that sector. There are however also specific elements for pork production such as the law on infrastructure.

The most problematic issues in this sector are however environmental issues. An important number of these pig breeders have no fields or not enough fields to bring their manure on. To limit the pollution with nitrate and phosphate (as stipulated in the nitrate directive 91/676/EEG), the Flemish government elaborated the first Manure Action Plan (MAP I). This hadn't the expected results and was replaced by MAP II. The plan consists of three pillars: tackling the source, expert fertilization and manure processing which have to diminish the manure surpluses with respectively 25%, 25% and 50%. The Manure Bank is responsible for the realization of this decree.

The Flemish Parliament approved in 2001 the "Buyout decree" and this can be seen as an instrument fitting in the first pillar of the latest MAP, tackling the source. By means of an implementing order of the Flemish Government in 2001, 2002 and 2003, three successive rounds of buy out are organised. The first and second are only open for pigs and for the last one cattle and poultry holders could also apply. For each round, a budget of € 25.000.000 was available and this was doubled in 2002 because of the extra indication of vulnerable areas. The premium for stopping comes to € 389,70 per sow or boar and € 117,50 per pig heavier than 20 kg. The results of the two first round are given in

Table 12. Because of budgetary limits, only 506 requests could be handle while the other 243 requests get a chance in the second round along with the new applications.

The organisations working in this sector are also very similar to the beef sector. Specific organisations for pig holders are *VEVA* (Vereniging van Varkenshouders; the association of pig holders) and *BVBA* (Landbond van de Belgische Varkensstamboeken; an organisation that keeps the herdbooks in this sector up-to-date).

Table 12. Overview of the results from the Buyout Decree in the first two rounds

	Farms (number)	Pigs (number)	Sows (number)	P_2O_5 (mln kg)	N (mln kg)	Budget (mln €)
First round	749	226.106	17.225	1,5	3,4	33,3
Second round	211	48.886	8.700	0,4	0,8	9,1
Total	960	274.992	25.925	1,9	4,2	42,4

Source: Deuninck (XXX)

4.4.3 Dynamism in the sector

The dynamics are also quite comparable in the entire meat sector. So, the basic text of § 4.2.3 stays the same, but other names have to be added. The pork label that is comparable with Meritus for example is Certus (with a market share of 10%) and Porc Fermier is the equivalent of Blanc Bleu Fermier. There are of course also other hallmarks and initiatives such as Porc Qualité Ardennes, Porc Fleuri d'Ardennes. As vertical integration and contracts are so important in this sector, there are of course also many prescriptions required by the buyer.

The Buyout Decree is a specific element in this sector but its effects still have to be studied in detail. This policy measure can possibly enforce the concentration in the sector if mainly small farms sign in.

The number of pig breeds hold in Belgium is rather limited and most slaughtered pigs are hybrids in order to combine, as good as possible, taste and leanness. Another on-going discussion is the stress negativity of the animals.

4.4.4 Judgement of sustainability, transparency and rural development

The transparency of this sector is a little bit higher in comparison with beef production due to vertical integration and the occurrence of big actors in the chain. This transparency is however almost invisible for the consumer and the consumer confidence regarding pork production is rather low.

Environmental sustainability is a big problem in this sector because of the limited possibilities for manure processing. This will certainly need to be enhanced to meet environmental measures and the government already elaborated several initiatives as described higher.
The number of animals already decreased as a consequence of the Buyout Decree, but the sector still has good perspectives because of the existing knowledge. Especially average sized and well-

structured farms that have closed system or take part in a closed system will be able to continue their activities. Elements that still can be improved are the traceability and the quality of the meat (Reheul *et al.*, 2003). Small farms will need to search alternative production methods, take part in initiatives for diversification or consider a conversion to organic production.

4.4.5 Bottlenecks to the further development

The most important bottleneck for further development is certainly the environmental issues that weigh on the sector. The Manure Action Plan and the Nitrate Directive had already important consequences for the sector, but it's expected that there will be increasing constraints on the pork production. Animal welfare is another element that can hamper this sector in the future.

As discussed in the previous paragraphs, the concentration in the processing industry combined with the high percentage of vertical relationships or even integrations make it difficult to develop sustainable alternatives. The development of small initiatives is e.g. limited by norms such as HACCP and hygiene regulations.

It is certain that there will be less pig holders in the future, but the remaining farmers will need to adopt their practices and farm size to be able to compete with the world market. The question remains however if competition with the world market will allow a more sustainable production and sustainable development of the sector in general. Important challenges are the conquest of a spot on the regional market and to reach a more ecological sound (more extensive) production and so make the sector more social acceptable.

4.5 Poultry

4.5.1 Structure and indications of the chain

The structure of the poultry supply chain can be compared with the structure of other meat supply chains, but bas however also its own characteristics. An overview of this FSC is given in Figure 4.

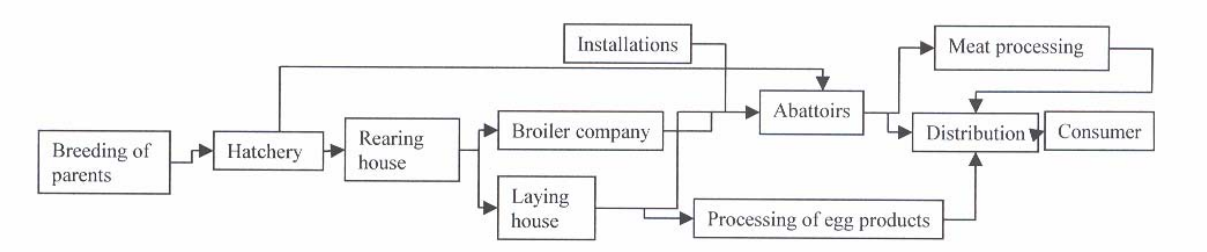

Figure 4. Structure of the poultry supply chain (Source: Derden *et al.*, 2003)

Table 13 shows the number of broilers in the period 1997-2003. These are however figures at May 15th and the actual number of broiler raised per year is a multiple of this amount. A large decrease can be noticed for the last year and this was mainly a consequence of the epidemic of

Avian Influenza, but the sector also suffers from severe concurrence with countries such as Brazil and Thailand.
Poultry production is, like pig farming, a mainly Flemish activity with 87% of the animals in this region and the following text will only describe the sector in Flanders. In Flanders there are more then 940 farms that produce broilers with a total of 21 million animals per round and 7 rounds per year. So this comes to 170 million broilers that are yearly fattened in Flanders. The sector is also very concentrated and this in the provinces West-Flanders and Antwerp with respectively 36 and 29 percent of the poultry stock. The Flemish poultry production realises a production value of € 263 million and this is 87% of the national value. In 2000, Belgium poultry farmers produced 290.949 tong of carcass weight and the degree of self-supply was in that year 156,74% (NIS, 2003; Van Hecke & Schrooten, 2003; www.vlam.be).

Table 13. Number of broilers in Belgium in the period 1997-2003

	1997	1998	1999	2000	2001	2002	2003
Broilers (x1.000)	22.303	22.936	24.202	24.498	24.256	23.850	16.546

Source: NIS (2003)

4.5.2 Institutions, organisational forms and governance

The main legislative issues that were described for pork and beef production also apply for this sector. Vertical co-ordination is even more important in comparison with the pork sector with the incidence of contracts and vertical integration. The feed sector, hatcheries, poultry slaughterhouses and egg packing stations are the partners of the breeding, laying hens and broiler exploitations.

In this sector, there is a very light form of Common Market Organisation. There are no interventions but the export to third countries can be subsidised.

Where the organisations were quite similar for the beef and pork sector, this is not the case for the poultry sector. The primary producers are, next to the traditional farmers' associations, represented by *VEPEK* (Verbond van Pluimvee, Eieren en Konijn) and the *Landsbond van Bedrijfspluimveehouders en Konijnenhouders.* Other organisations in this sector are *VIP* (Vereniging van Industriële Pluimveeslachterijen in België; an association of the industrial poultry slaughterhouses) and *NVP* (Nationaal Verbond van Pluimveeslachthuizen; the national union of poultry slaughterhouses).

4.5.3 Dynamism in the sector

Animal welfare is also in this sector a hot topic and the discussion on future housing is going on. It is a certainty that batteries will be forbidden in the next years, but the alternative is not yet certain. The enriched cages are a possibility, but there is still a long way to go to reconcile the economic issues of the sector (that has to stay viable) and the ethical issues of animal right organisations.

When it comes to standardisation, the Dutch IKB-initiative was commonly followed in Belgium. Since 2002, there is also a Belgian initiative that is called *Belplume*. This is a system for integral chain management and all levels in the chain can get a recognition.

4.5.4 Judgement of sustainability, transparency and rural development

The judgement of this sector is very comparable with the pork sector as the same problems and structures are encountered. Examples are the tendency towards vertical integration, but also the highly intensive production. These issues limit the possibilities of sustainable production and need to improve in the future.
Animal welfare is being discussed at the moment and it is already clear that the minimal surface per animal will increase in the future. This will not only influence the number of animals can be held per stable, but this will also affect the concurrence position with for example the United States of America.

4.5.5 Bottlenecks for further development

The bottlenecks encountered in poultry production are very similar to the situation for pork production.
The importance of vertical coordination and integration can be a limiting factor for the development of sustainable initiatives and alternatives. It is very hard for a farmer to quit a system that guarantees a certain minimum income for a more risky alternative.
A returning problem is the position on the world market, but for this sector the problem is even broader. Due to the import of Brazilian and Thai chicken meat, Belgian farmers must firstly defend their position on the national market before they can even think of the possibility to compete on the world market. It is however thought, as for the other meat sectors, that concurrence with world market benefits will have negative consequences for sustainable production.

4.6 Fruit and vegetables

4.6.1 Structure and indications of the chain

The structure of the supply chain for fruits and vegetables is pictured in Figure 5. The main inputs for this sector are seeds, pesticides and fertilizers. It's very difficult to calculate their economic importance as these inputs are also used in arable farming. At the moment, energy is at discussion as production factor in the glasshouse horticulture because of concurrence with southern countries and environmental issues (burning of fossil fuels) (Bedrijfskolom tuinbouw, 2001).

The Belgian horticulture had in 2001 a production value of € 1,55 billion of which 49% originating from vegetables and 20% from fruits. The remaining 31% originates from ornamental plant cultivation, but this sector won't be incorporated in this study.
Within the vegetable production, four groups are identified (the production value and the most important vegetables are given between brackets): fresh vegetables in open-air (€ 0,19 billion; chicory, leek, carrot and cauliflower), fresh vegetables under glass (€ 0,32 billion; tomatoes, salad, peppers and cucumbers), vegetables for industrial processing (€ 0,19 billion; green peas, beans, cauliflower and sprouts) and mushrooms (€ 0,06 billion).
The fruit sector is mainly determined by the production of apples (€ 0,12 billion), strawberries (€ 0,09 billion) and pears (€ 0,08 billion) (Bedrijfskolom tuinbouw, 2001).

The surface of different types of fruit and vegetables production is given in Table 14.

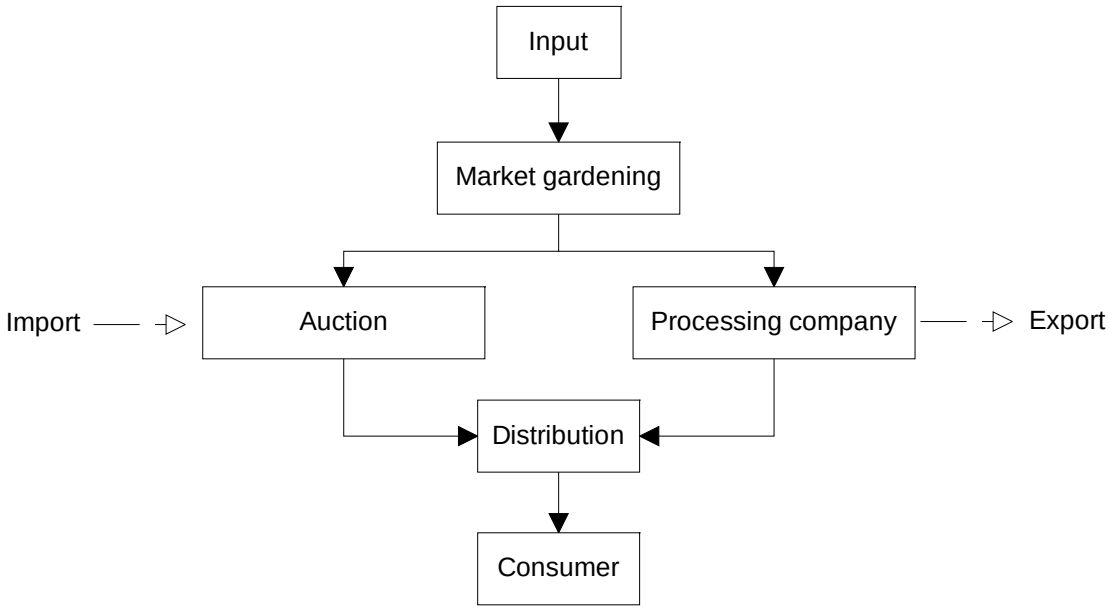

Figure 5. Structure of the fruit and vegetable supply chain (Source: Bedrijfskolom Tuinbouw, 2001)

Table 14. Characteristics of the fruit and vegetable growing in Belgium (1998-2001)

	1998	1999	2000	2001	2002
Vegetables in open air	49.292	50.423	48.228	48.691	50.687
• For industrial processing	27.144	27.649	28.502	-	-
• Fresh vegetables	22.148	22.774	19.726	-	-
Vegetables under glass	3.565	3.501	3.242	3.252	3.087
Fruit in open air	17.198	17.376	17.224	17.322	17.626
• Orchard	16.002	16.161	16.042	16.100	16.316
• Other fruits	1.196	1.215	1.182	1.222	1.310
Fruit under glass	209	232	218	249	255

Source: VBT. Jaarverslagen 1999-2001; NIS, 2003.

There are in Belgium 15 recognised producer organisation of which 6 in Flanders: *LAVA* (a collaboration of 7 horticultural auctions), *HABO* (2 fruit auctions), *BND* (supply to industry), VOC (5 mushroom growers), *Rijke Oogst* (supply to industry) and *Greenbow* (2 cooperatives: *Greenpartners* for cultivation under glass and *Atalanta* for organic producers). The main activity of Lava is the commercialisation of fresh fruit and vegetables. Auctions of LAVA and HABO are united in the Association of Belgian horticultural auctions *(VBT).* This organisation realised in 2001 a turnover of € 0,64 billion and this mainly (64%) through vegetables.

The fruits and vegetables processing industry knew a growing importance in recent years. Its main characteristics are shown in

Table 15. This sector is very concentrated and almost all producers of frozen vegetables are located in West-Flanders. Production of canned vegetables occurs also in Belgium, but 80% of the

production is exported. The last and smallest sub-sector is the production of juices and other preparations such as cider (Administratie land- en tuinbouw, 2003; Bedrijfskolom tuinbouw, 2001).

Table 15. Characteristics of the fruits and vegetables processing industry (1998-2001)

	1998	1999	2000	2001
Employment	4.611	4.769	4.665	4.599
Turn-over (million €)	1.407	1.420	1.587	1.711
Investments (1000 €)	70.742	63.741	87.779	77.460

Source: CRB, 2002a & CRB, 2002b

Supermarkets are the most important marketing channel for fruits and vegetables as they sell 75% of the total volume and receive over 70% of the spending on fruits and vegetables. Within the specialised retailing, the wholesalers realise a turnover of € 3,22 billion and employ more then 3.000 persons. The retail trade employ a similar number of persons, but the turnover is a lot lower, € 0,35 billion.
Consumption of fruits and vegetables increased during the past ten years and fruits (including wine) take the largest part of the budget spent on horticultural products. The increased spending on vegetables during the last five years is partly due to the higher prices and a shift towards more expensive vegetables, but the amount stayed the same. For fruits however, there was a increase in the amount bought, an increase in average price and also a shift towards more expensive fruits (Bedrijfskolom tuinbouw, 2001).

4.6.2 Institutions, organisational forms and governance

The European governance with the Common Market Organisation mainly drives the Belgian governance in this sector. Producer organisations have hereby an important role as they have to realise the organisation of a decentralised market. Other objectives of these organisations are the improvement of the quality and the stabilisation of the market. In comparison with the rest of Europe, the Belgian producer organisations are rather large and take the second position after the Netherlands. Ca. 70% of the horticultural production is sold via the producer organisations (Bedrijfskolom tuinbouw, 2001).
The European government determines the minimal quality of the products, but the national authorities realise the controls. Furthermore, there are also systematic controls on the respect of residue limits and for green vegetables a pre-harvest control to determine the presence of residues is obligatory. If the residue limits are not respected, the field cannot be harvested (Bedrijfskolom tuinbouw, 2001).
There were in 2001 interventions for glasshouse tomatoes, cauliflowers, apples and pears, but they didn't exceed the limit of 20%. The producer organisations have also the authorisation to provide individually a regulation for minimum prices and especially with charity (VBT, 2002).
Besides regulation, the government is also involved in the elaboration of prescriptions for two production methods: organic production of fruits and vegetables and integrated production of seed fruits. In both cases, the prescriptions are published by law and the government assigns the certification bodies. Growers can obtain a premium if they participate in this initiatives as mentioned in § 3 (Bedrijfskolom tuinbouw, 2001).

The preceding sectors discussed animal production, but 'fruits and vegetables' is the first example of plant production. Several organisations are however the same for both animal and plant production. It concerns the farmers' organisations (Boerenbond, Algemeen Boerensyndicaat, Vlaams Agrarisch Centrum and Fédération Wallonne d'Agriculture), but the organisations for the processing industry and retail sector are also the same (Fedis, Fevia, Unizo and Vlam).
Specific organisations in this sector are *BFO* (Belgische Fruittelers Organisatie; the Belgian organisation of fruit growers), *LAVA* (Logistieke en Administratieve Veilingsassociatie; an association of auctions) and *VBT* (Verbond van Belgische Tuinbouwveilingen; the union of Belgian horticultural auctions).

4.6.3 Dynamism in the sector

There are several on-going dynamics in this sector, which are very often linked to the way in which the products are sold.
VBT elaborated a logo and prescriptions for an environmental-friendly production of fruits and vegetables. Elements that are included in these prescriptions are for example the use of biological agents, fertilisation, hygiene, environment, and appropriate races… This initiative includes several hallmarks such as *Eburon* and *Haspengoud*, but the most important is *Flandria*. Together these initiatives represent for example 80% of the fresh tomatoes, cucumbers, peppers, apples and pears sold at the auctions that are member of VBT. Almost all (90%) producers of tomatoes in trusses take part in *Flandria*. Although participation in this initiative isn't obligatory, the producers know that their commercial chances are very limited of the don't take part (Bedrijfskolom tuinbouw, 2001).

Another option for producers of fresh vegetables and fruits are the two initiatives described by the government: organic and integrated production. Organic production was already described in the chapter on the Belgian food supply chains and the institutional setting, but this is of course not exclusively for fruit and vegetable production. A stagnation of the organic production was expected for 2002, but in Flanders, the sector was confronted with a negative growth. This was mainly caused by the organic fruit production that encountered a decrease in area of 21 %, especially in the standard trees. This concerns mainly small plots that have to be certified individually. In many cases, the growers can't create enough added value with organic production to compensate these control casts and decide to return to traditional production (Blivo, 2003).
Integrated fruit production is recognised by the government since 1996 and since 1999 there is a premium of € 250 per hectare for growers who are recognised for this initiatives and this for a period of five years. In practice, it showed that the costs were lower then estimated and so the premium system was adapted. The premium depends now on the year of recognition and diminishes also during the years of participation. In 2000 there was almost 6000 ha of integrated fruit production in Belgium (Carels *et al.*, 2001).

The relation between producers and processing companies is traditionally described in contracts, but since the growing season 2000 the growers have to follow a quality manual and get certified. If they don't participate in this initiative or they loose the certification, for one reason or another, they can't sign contracts with Belgian processing company. The content of the manual is similar to the legal requirements, but the audits are more frequent and a more accurate registration of operations is needed. Elements that need to be improved to get certified are in many cases elements that are described by law such as the arrangement of the premises where pesticides are kept. The government almost never controls this and so the certification initiatives take over the job of the government. This will be enforced by the expected legislation on traceability and self-control.

Since 1997, there is also an initiative that was founded by several European retailer companies, EurepGap. This is mainly a code for good agricultural practices, but the documents also describe the minimal quality specifications for the products. Exactly as for the processing industry, this becomes an obligation for growers who want to sell their produce to distributors. The main difference is that the exigencies seem to be more demanding since the rights of the employees and hygiene are also described (Bedrijfskolom tuinbouw, 2001).

Fruit and vegetable production is an important sector for the organic sectors since these crops can be grown on relatively small surfaces. Dynamism towards the sales of these products is especially noticed in the organic sector with initiatives such as farm gate sales and SFSCs (vegetable subscriptions, farmers' markets and sales to restaurants). Consumers tend to be very sensitive to the ecological aspects of the production as it concerns fresh produce and are so more often prepared to par a higher price for organic fruits and vegetables.

4.6.4 Judgement of sustainability, transparency and rural development

The fruit sector passes a though time concerning the economical aspects, but the ecological elements also need to be improved, according to Reheul *et al.* (2003). Initiatives for integrated and environmental-friendly production were already elaborated, but there are still a high number of treatments necessary for disease control as the fungi mutate rapidly.
The production of small fruits such as strawberries and blackberries encounters also some problems with the ecological sustainability but can especially lead to social and economic sustainability. These types of production are very suited to do as a second profession and it is a possibility for diversification through direct selling. Production under glass has in some cases better ecological characteristics, but then a much more expensive infrastructure is needed.

Vegetable growing in open air is confronted with environmental issues concerning nutrients and pesticides, but the social sustainability can also be under pressure when labour-intensive crops are grown. The family and neighbours come to help on the inevitable peaks of labour such as the harvest and this is reinforced because several crops are now grown all year long. Very few workers are found willing to do these type of heavy work and so the pressure is on the members of the family.
Production under glass is much more environmental-friendly and certainly in the cases where a system for recirculation is available and the emission is limited. Glasshouses however disturb the landscape and there is a huge amount of energy needed (Reheul *et al.*, 2003).

Both vegetable and fruit growing have a problem with monoculture; only organic farms have a more diversified crop rotation. This sector has also some problems with social sustainability. Foreign workers are often not correctly remunerated and in certain cases the conditions of employment are not respected.

4.6.5 Bottlenecks to the further development

The fruit sector will need to invest permanently in research on issues such as diseases, production techniques and methods. A solution could be to improve the genetic characteristics of the fruit trees through genetic improvement but this a long and very complicated process (Reheul *et al.*, 2003).

An important element for the future is the one of the labour. Many farmers complain that they don't find enough workers and if they have found someone, many papers and forms have to be filled out.

A last issue is the fact that the superior quality of labelled products is often not sufficiently communicated towards the consumers. Fruit coming from integrated production for example is often the standard in supermarkets, but this is not an element of distinction. It becomes the minimum requirement that does not get a higher price.

4.7 Cereals

4.7.1 Structure and indications of the chain

Although the production of cereals is in some respects comparable with the production of fruits and vegetables, this isn't the case for the structure of the food supply chain. For this reason, an overview of the structure is given in Figure 6.

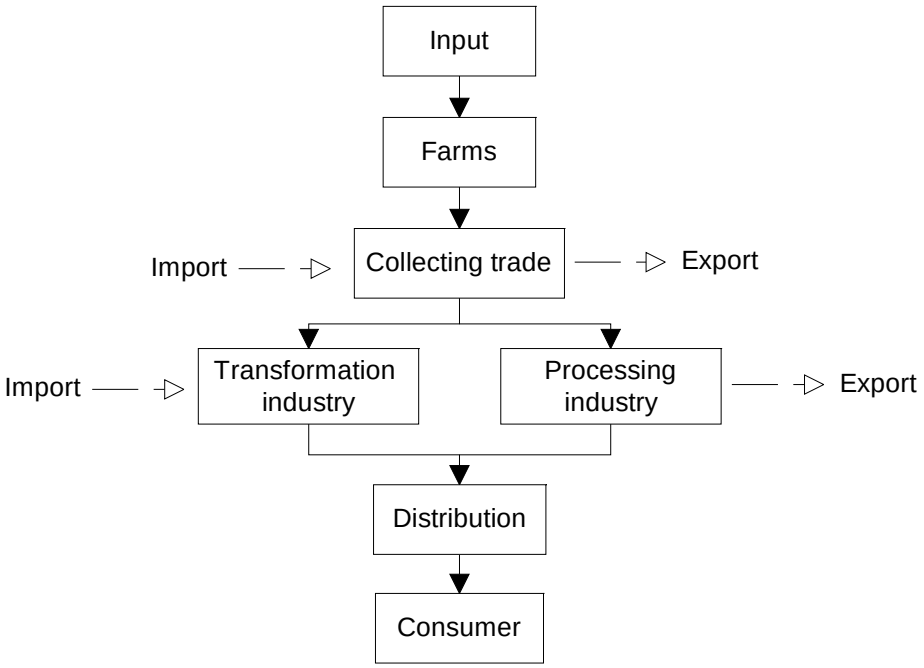

Figure 6. Structure of the cereal supply chain (Source: Bedrijfskolom Akkerbouw, 2001)

The mentioned similarity between cereal and horticultural production is mainly due to the input factors needed: seeds (or young plants or seed-potatoes), fertilizer and pesticides. The scale of production is however totally different since cereal production concerns larger surfaces and 61% of the surface is situated in Wallonia. In

Table 16 the surface, yield and production are given for the total cereal production and the two most important cereals, winter wheat and winter barley (NIS, 2003).

Table 16. Characteristics of the cereal production

	2001	2002	2003	2002/2001
Surface (ha)	286.878	310.496	308.942	+7,7%
• Wheat	166.304	190.861	184.318	+10,8%
• Barley	36.565	38.605	27.750	24,1%
Yield (100 kg grains/ha)	64,8	67,3	-	-
• Wheat	82,7	84,0	85,2	+3,01%

• Barley	81,2	80,1	68,1	-
Production (ton grains)	2.358.547	2.639.302	-	+11,9%
• Wheat	1.374.955	1.603.111	1.570.389	+14,2%
• Barley	296.857	309.316	188.977	-57,1%

Source: NIS (2003)

To draw and characterise the flows of cereals, cereal equivalents are calculated. All mentioned numbers in the following paragraphs are 1000-ton cereal equivalents, but will be called simply equivalents.
In the growing season 1999-2000, 2.128 equivalents were produced or stored and 5.005 equivalents were imported. The biggest share of the cereals go the wholesale business and only 182 equivalents are used at the farm mainly to feed the animals, but also as seed and for human consumption. After calculating the trade of cereals, 4.343 equivalents are used on the Belgian market as seed (35), feed (2.494), industry (710) and human consumption (1.104) (Bedrijfskolom akkerbouw, 2001).

4.7.2 Institutions, organisational forms and governance

Since 1962, there is a Common Market Organisations for cereals and this offered the growers a price and sales guarantee and protected the internal cereal market. This led to major surpluses and was changed drastically in 1993 with a decrease of the price with 29% and a limitation on the area. New price drops followed with Agenda 2000 and now the farmers get an income support per ha cereals and taking into account the regional yields. In 2001 and 2002, the premium amounted to € 318 till 424 per hectare in Flanders. The average wheat price in 2000 was € 0,11 per kg.

There is only one organisation that is specific for this sector. *SYNAGRA* (Nationaal syndicaat van de handel in granen en andere landbouwproducten) represents the companies involved in the trade of cereals and other agricultural products and an other organisation is *OVPG* (Overlegplatform voor de verwerking van plantaardige grondstoffen; Concertation Platform for the processing of arable crops).

4.7.3 Dynamism in the sector

The initiative 'Integrated Chain Quality Management (ICQM)' was elaborated by the Concertation Platform for the processing of arable crops (CPPC) and started in 2003. Because arable crops are often cultivated in rotation, all crops (beets, potatoes, vegetables, cereals, maize and chicory) are taken into account and all stakeholders (agriculture, industry, consumers and public authorities) are involved. The ICQM system wants to guarantee a sustainable industrial column that complies with the severe requirements of the consumer with regard to quality, safety and environment and this is realised by an automatic control system. The main instruments are a documented production process (identification and registration), guarantees of safety and quality according to the HACCP procedures and this subject to external certification. At farm level the ICQM system comprises a systematic monitoring of all inputs, identification of producer and cultivation or land, the chronological registration of activities using cultivation cards, product cards for each crop based on hazard analysis and the development of codes of good agricultural practice. At processing level, it concerns the elaboration of systematic monitoring of additives and auxiliary materials, product cards based on the HACCP analysis, the elaboration of codes of good practice for the production process and supplementary quality assurance systems such as ISO (Fevia, 2003; Subel, 2003).

There are almost no alternatives developed for this standard type of production. Organic cereal production is very limited and is in general used on the own farm as feed for the animals.

4.7.4 Judgement of sustainability, transparency and rural development

The government has taken a first step towards more sustainable arable production with the codes of good agricultural practices for nutrients, pesticides and environment, but many steps still have to be taken. The actual production uses high amounts of expensive chemicals such as fertilizers and pesticides and this needs to be limited in the future. The farmers should also by stimulated by the government to have broader crop rotations and to search alternative productions and production techniques to create a surplus value (Reheul *et al.*, 2003). The question remains to what extent these possibilities are used in practice. Farmers can also get a premium for mechanical weed control, but this is not generally known by the farmers and in many cases not a feasible alternative for the pesticide treatments.

4.7.5 Bottlenecks to the further development

The description of the cereal sector showed that these products are in most cases not destined (directly) for human consumption and this explains also the low interest of the consumer in this sector. There is however an on-going process of standardisation. As in other sectors, the risk exists that certain farmers will loose their outlets if they don't want or can't participate in the ICQM-initiative.
There is also a high uncertainty on the upcoming changes in European agricultural policy and the consequences for the farmers and their income.

4.8 Potatoes

4.8.1 Structure and indications of the chain

The structure of the food supply chain is quite similar with that for cereals, but it has also its own particularities and for this reason, the flow chart is given in Figure 7. The importance of the several levels is indicated in 1.000 ton potato equivalents. The inputs aren't pictured in this schedule, but these are again comparable with other arable and horticultural crops. The production of seed-potatoes (2,8%) is rather low in comparison with the early potatoes (16,6%), Bintje (62,6%) and other cultivated varieties (17,9%) and this seed-potatoes are mainly destined for countries in the Mediterranean area. Table 17 gives an overview of the surface, yield and production of the Belgian potato production. The figures show that the surface decreased in the past three years, but in 2003 the yield and production were also lower.

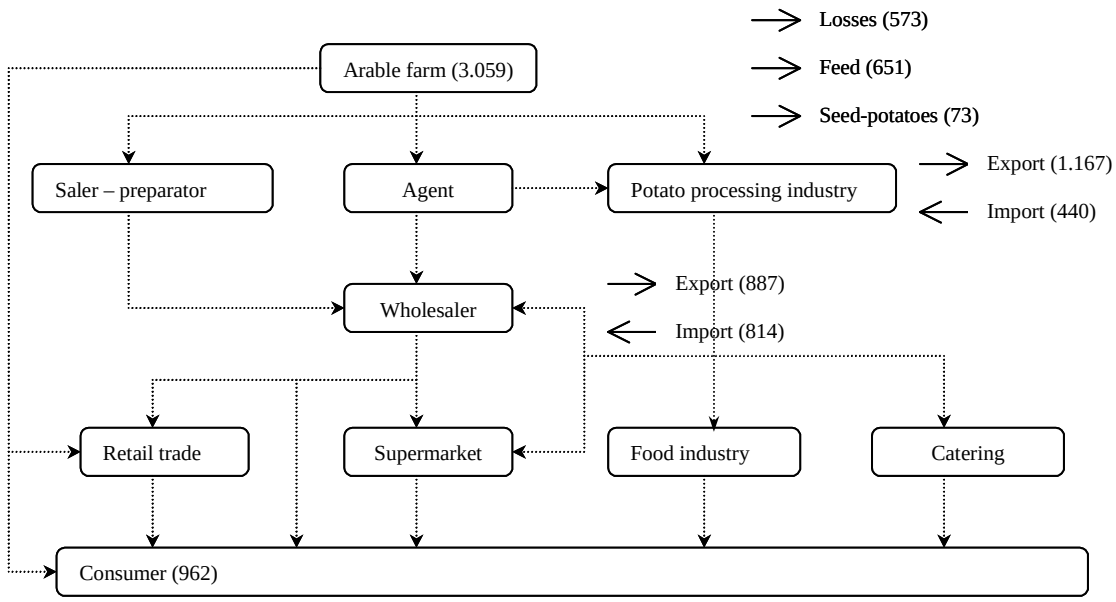

Figure 7. Structure of the potato supply chain with indications of the main streams in 1.000 potato equivalents (Source: Bedrijfskolom Akkerbouw, 2001)

Table 17. Characteristics of the Belgian potato production

	2001	2002	2002/2001
Surface (ha)	62.157	61.699	-0,7%
Yield (100 kg/ha)	364,8	412,4	+13,1%
Production (ton)	2.564.265	2.909.038	+13,4%

Source: NIS (2003)

4.8.2 Institutions, organisational forms and governance

There is no Common Market Organisation for potatoes but the interactions between supply and demand determine the market. Several actors (producers, traders and processors) try to diminish uncertainty by the signing of contracts and transactions on the potato forward market. Another consequence is that the cultivated surface can change from year to year with extremes of 45.000 and 65.000 ha. Potato growers have to bear in mind that the price for potatoes is also highly variable and functions of the total surface, variable yield per ha and a rather inelastic demand (Bedrijfskolom akkerbouw, 2001).

Despite the yearly changes, a growing surface can be found since the eighties; although a decreasing trend is noticed in recent years. This observation is linked with the growing potato processing industry. Actually, over one million ton potatoes are processed or about 40% of the entire production. With the expansion of the processing industry, the contracts and the growing of seed-potatoes more important.

The organisations that are active in the potato sector are in general very comparable with the entire arable production. Only *Belgapom* has to be added and this is an organisation that represents all actors in potato processing and trading.

4.8.3 Dynamism in the sector

As mentioned above, contracts gained importance in this sector and this is formalised by the ICQM initiative that was already mentioned in § 4.7.3. The processing industry gets at the same time a growing power over the other links in the chain, but especially over the farmers.

There are furthermore very little alternatives concerning for example environmental-friendly production such as *Flandria* (see paragraph on vegetables) and *Terra Nostra*, a Walloon initiative that claims to reduce the usage of pesticides and fertilizers with 30 to 40%. Organic potato growing does exist in Belgium, but vegetable growers for the fresh market mainly do this.

4.8.4 Judgement of sustainability, transparency and rural development

The main findings of sustainability, transparency and rural development for cereals are also applicable of potato growing.

One issue that arises only in potato growing is the choice of the race and its resistance to diseases, especially potato blight. Bintje is the most grown race in Belgium, but there are other races that are far more disease-resistant and require less pesticide treatments.

4.8.5 Bottlenecks to the further development

For the main future bottlenecks can again be referred to arable production in general with the danger of conformity certificates, the increasing power of the retail and processing sectors and the uncertainty about the evolutions in the European agricultural policy.

Limiting factors for organic potato production and arable production in general are firstly the labour intensive production methods and secondly the lack of processing possibilities for all arable products.

4.9 Sugar

4.9.1 Structure and indications of the chain

The structure of the sugar sector is rather simple and is given in Figure 8. Sugar beets are grown with the aid of inputs (seeds, pesticides, fertilizers and labour). When harvested, the beets go to the processing industry, which gives two outputs: sugar for consumption and industrial use and treacle that is an input for the fermentation industry.

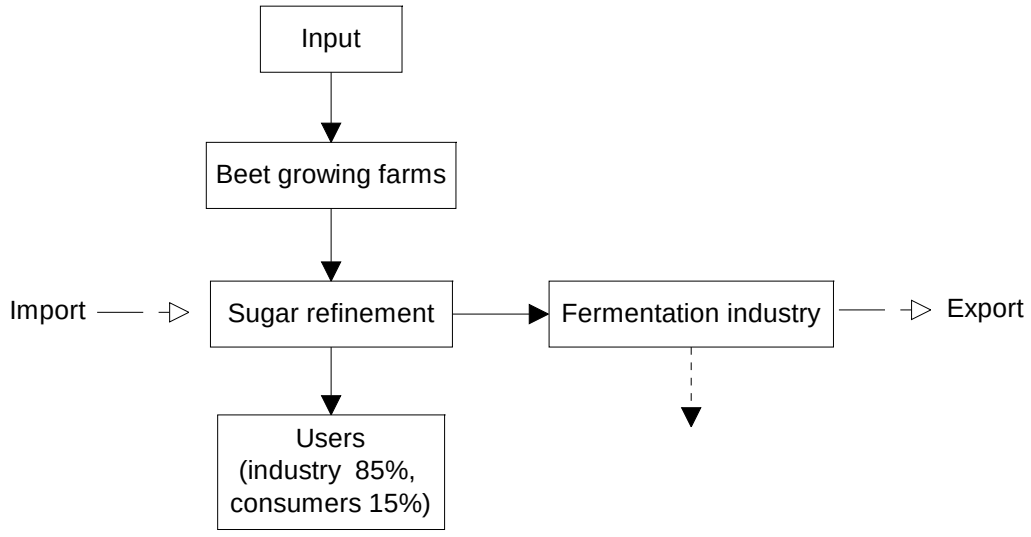

Figure 8. Structure of the sugar supply chain (Source: **www.subel.be**)

In Table 18, some indications on the yearly production are shown for Belgium and the European Union of 15 countries. After a decline in the previous year, the area recovered a little bit with 96.457 ha in 2002. Beets are mainly (62%) grown in the Walloon part of the country and they represent 4,9% of the total Belgian agricultural production (NIS, 2003). A Flemish field gives on average 64 tons of beets and the sugar factory can extract ca. 10 tons of sugar out of these beets (Van Hecke & Schrooten, 2003).

Table 18. Characteristics of the Belgian and European sugar (beet) production (1997-2001)

	1997/98	1998/99	1999/00	2000/01
Area beets (1000 ha)				
• Belgium	102	98	104	95
• EU-15	2050	2002	1961	1822
Yield beets (tons/ha)				
• Belgium	9,98	8,10	10,50	9,30
• EU-15	8,52	8,04	8,97	8,65
Production of sugar (1000 tons)				
• Belgium	1018	794	1092	917
• EU-15	17764	16396	17922	16119

Source: Europese Commissie (2002).

The Belgian beet-processing industry exists of four groups. The biggest Belgian group is *Tiense suikerraffinaderij nv* and this is a daughter of the German group *Südzucker*. It concerns four factories in the Eastern part of Belgium and two rasping exploitations. *Suikergroep* has two factories in Moerbeke and Frasnes. The *group Warcoing* (family Crahay) owns the factory in Veurne and 50% of the *Sucrerie de Fontenoy*. The other half of this factory is owned by the family Couplet. Table 19 shows an overview of the characteristics of the different groups and factories (Financieel Economische Tijd, 2003a & b; Subel, 2003).

Table 19. Volumetric and value characteristics of the four Belgian sugar companies in 2000

	Suikerfabriek van Veurne	Sucrerie de Fontenoy	Tiense suiker-raffinaderij	Suikergroep
Capacity (beets/day)	7.000	6.700	51.800	18.500
Turnover (x1.000 €)	47.368	43.644	477.570	123.701
Added value (x1.000 €)	19.830	12.214	171.185	42.850
Personnel (in numbers)	103	86	779	317
Factories (in numbers)	1	1	4	2
Quota max (tons)	59.673	52.410	540.512	146.563
Production (tons)	67.202	600.233	648.372	165.933
Beet surface (ha)	7.488	6.240	69.428	18.814

Source: Subel (2003).

4.9.2 Institutions, organisational forms and governance

The main regulations encountered in this sector are linked with the CAP regulations and the Common Market Organisation (CMO) Sugar. The goal was to realise one price for sugar and this by the elaboration of a consolidation mechanism based on arrangement of import, production and export. A system of quota was elaborated for this sector. Belgium disposes of an A-quota of 694.905,5 tons and a B-quota of 144.906,1 or a maximum quota of 819.811,6 tons. Sugar produced under these quota enjoys an intervention guarantee if minimal quality standards are met. If the quantity exceeds the quota, the intervention system isn't valid and there's an obligation to export this production outside the European Union. In Belgium, interprofessional agreements between the producers of sugar (SUBEL) and beet growers (CBB) are signed to realise the production quota. The producers decide how much beets they want to contract and even before the sowing of the beets, the farmers obtain individual rights of delivery. The arrangements enclose prescriptions concerning the period of delivery, the transport and quality of the beets, the side products of the sugar production and the price. The CMO Sugar regulates the price until June, 30th 2006. The basic price for beets is € 47,67 per ton, € 46,72 per ton for 'A' beets and € 28,84 per ton for 'B' quality. The intervention price for sugar is € 631,9 per ton sugar. Beside the national arrangements, there are also regional agreements on the level of the three beet areas of the country (Haspengouw, Henegouwen en Vlaanderen). These concern more practical definitions such as the regional delivery rights and are realised by mixed committees (farmers and producer) and coordination committees (representatives of beet growers in a region).

There are again little differences between the organisations in this sector and the other arable sectors. The specific actors were already mentioned in the previous paragraph. It concerns *SUBEL* (the organisation of the Belgian sugar producers) and *CBB* (the confederation of Belgian beet planters).

4.9.3 Dynamism in the sector

The Belgian sugar sector has changed regularly in the recent past and is still evolving. There is a general trend towards concentration as a consequence of the abolition if the strict market regulation in June 2006. It is believed that only big groups will survive in the new situation and therefore there is a need of scaling-up, diversification and internationalisation.
At this moment, the sugar industry in the Eastern part of Belgium is fairly concentrated. *Tiense Suikerraffinaderij* is the only group that is active in this region and moreover, it is already part of a very big group on the European level (*Südzucker*).
The other three groups are situated in the Western part of the country and this situation is thought to be unfeasible. For this reason, the *group Warcoing* wants to sell all his activities in the sugar sector, preferably to *Suikergroep*, and focus on the production of inulin out of chicory. *Suikergroep* agrees that concentration is necessary, but opted also for internationalisation as they bought the Australian company *Bundaberg*. This firm produces yearly 850.000 tons or the same amount as the Belgian production quota (Financieel Economische Tijd, 2003a and b).

Sugar beets can also be grown following the manual ICQM that was described in §4.7.3 on the dynamics in the cereal sector. There are no sustainable alternatives at all.

4.9.4 Judgement of sustainability, transparency and rural development

The sugar sector has a rather transparent structure due to limited number of actors in the further levels (processing industry and retailers) in the chain. The relation between farmers and the buyers of the beets are also quite clear as it concerns in general formalised contracts.

This transparency is not always that clear for the consumer and they often do not link sugar with agriculture and arable production. The consumer is hence very little concerned about the way in which sugar is produced.

Sugar beets are also a arable crop and the same remarks on sustainability as for cereals and potatoes are applicable. As for economic sustainability, the future will show with the consequences are of the concentration process. Sugar beets grown by farmers that have a quota can guarantee the farmer a good and rather stable income. If they however produce C-sugar, they have to compete with the world market and then the price is considerable lower.

4.9.5 Bottlenecks to the further development

The concentration process is going on in this sector and this can also have some consequences for the farmers. At this moment, it isn't yet clear what will happen, but concentration is certainly a limiting element in the development of alternatives. It concerns big, international companies and they concentrate niche products, such as organic sugar production, in one establishment and not in every country. There is little consumer consciousness for this sector.

5 Drivers of change in FSCs in Belgium

5.1 Political factors

There are two main political factors that can be determined as drivers of change: the federalisation of the Ministry of Agriculture and the encountered crises. Both of them triggered subsequently several other events and mechanisms.

- Federalisation and regionalisation

Traditionally, the agro-food sector had to comply with the legislation and control of the Ministry of Agriculture and the Ministry of Public Health. In 2000, the Federal Agency for the Safety of the Food Chain was founded and placed under the authority of the Minister of Public Health. Its main objective is to make one single food authority responsible for integrating and coordinating the control of the entire food chain in order to put an end to the fragmentation of competencies. This authority has also to facilitate the detection of problems and health risks and take adequate measures so as to guarantee the quality of the food and the protection of the consumers' health. Another objective was improved monitoring to restore and strengthen consumer confidence in food products, both at home and abroad. The Agency got in this process all control responsibilities from the Ministry of Agriculture.

At the same time, the Ministry of Agriculture was regionalized. All agricultural legislation is now the competency of the regional ministries. In Flanders, it concerns the Ministry of Agriculture and Environment and in Wallonia there is a separate Ministry of Agriculture. The consequence of this decision is that agricultural legislation and political objectives can differ in both parts of the country. Food safety however stays a national issue and is governed by the Ministry of Public Health, but rural development plans (in casu the implementation of the second pillar measures of EU) is regionalized.

- Crises and food scares

It is generally known that the Belgian agriculture (as in many other European countries) encountered several crises. These were mainly a consequence of diseases (mad cow disease, swine fever) and contaminations (dioxins, PCB's), but resulted in far-reaching evolutions.
A first consequence was a drastically decline of the consumers' confidence in food. The consumption of meat decreased dramatically in the period of the mad cow crisis. The increased interest of consumers for higher quality and food safety initiated new initiatives both from the government and the market-middlemen. The reaction of the government was one of change in the monitoring of the food chain (traceability, food safety …) with more emphasis on autocontrol systems (see also previous paragraph on the Federal Agency for Food Safety). This enforced the supply chains to react with the elaboration of manuals, guidelines and prescriptions and an increased trend towards standardisation and normalisation. The relative power of the included market-middlemen also changed as a consequence of this process. In many cases the elaborated initiatives became obligatory. If a farmer can not or does not want to comply with prescriptions, it is difficult for him to find still an outlet for his produce.

- Raise and fall of the green party

Shortly after the dioxin crisis (in 1999), there were elections both at national level and regional level. The crisis is believed to have an important influence on the results. The Christian Democratic party (CD&V), which took traditionally part in the in the government, lost heavily while the green party (*Agalev*) won and joined both the national as regional governments. At the Flemish level, *Agalev* could provide two ministers among which the Minister of Agriculture and Environment. The agricultural sector was faced with some more stringent environmental requirements such as a more severe manure action plan, with the definition of so called vulnerable territories. The green Minister also put more emphasis on sustainable agriculture (e.g. with an action plan for organic farming)

The new political constellation also changed the influence of the different farmers' organisations. The Farmers' Union who is the biggest association lost power because they were more linked with the CD&V. The Flemish Agricultural Centre (*VAC*) is a smaller association, representing often the more alternative (progressive) farmers and opinions. This organisation had already good contacts with politicians of *Agalev* and saw their influence growing with the presence of *Agalev* in the government.

Recently, the opposite phenomenon occurred. Sustainability of agricultural production systems is traditionally questioned by environmental organisations, but with by putting emphasis on this, the green policy came also in conflict with other groups using the countryside. On May, 11th 2003, there were in Ghent about 20.000 demonstrators to ask guarantees for a viable countryside. Not only farmers and their representatives were present, but also anglers, hunters and other countryside interest groups took part in this demonstration against a too restrictive policy for the countryside. One week later, the green party lost the national elections. Although this was not a regional election, it was an important signal for the "green" policy. *Agalev* therefore decided to change her regional Ministers. New elections at regional level are foreseen in 2004.

- Other political drivers of change

Another political factor of influence is the EU policy. With Agenda2000 more emphasis then before is put on rural development issues. Although still minor in the whole budget, the plan for rural development in Flanders put some new accents on the development of sustainable food chains with specific support categories directed to it. A problem is still the inconsistency between different political competencies making often the development of alternative food chains difficult or impossible.

Another driver of change is the situation on the world market and effects of the WTO agreements. This delimit the free trade of, amongst others, food products and this has consequences for the price and de competitiveness of the Belgian agriculture. Nowadays, there is even competition at the own market with cheap foreign products that don't necessarily comply with the same quality standards.

5.2 Economic factors

In recent years, farmers searched for ways to create added value and this resulted in the occurrence of and participation in several new initiatives, hallmarks and brands. There are several reasons for this evolution, but the increasing production costs and the pressure on the farmer's income are certainly examples. A negative price spiral can be noticed and this is enforced by retailers that have a discounter strategy.

Another element is the growing power of the retailers and the processing companies, among others as a consequence of the recent crises. A process towards standardisation and normalisation of the production started and market-middlemen also take part in this evolution. The farmers feel an enormous economic pressure to follow these prescriptions because they'll otherwise loose their outlet or get a lower price. In some occasions, the initiatives offer the farmers a higher price, but that isn't a certainty. Recent research (Vuylsteke *et al.*, 2003a) shows that farmers who can't participate in such initiatives have a very specific profile. It concerns in many cases farmers that are older, less educated, who aren't reached by extension workers and so on.

Farmers try to create added value through on-farm processing and farm gate sales, quality production and labelling and in a limited number of cases labels of origin. This practice is still very new in Flanders. These initiatives exist already a little longer in the Walloon part of the country, probably due to the closer relationship with France where this is very successful. There are in total four Belgian products, which have a Protected Designation of Origin (PDO) or Protected Geographical Indication (PGI): *Fromage de Herve, Jambon d'Ardenne, Pâté Gaumais* and *Beurre d'Ardenne.* Several traditional beers such as *Faro, Lambic, Geuze* and *Kriek* are recognised as 'Traditional Speciality Guaranteed' (TSG), but this has very little to do with the Belgian agriculture as most of the base materials are imported.

Problems such as 'food miles' don't really occur in the Belgian agro-food-sector or are not an issue. There is some interest of the organic sector about proximity of the production as big retailers by often their produce abroad while the local farmers do not have an outlet for their produce. The aspect was the main theme of the last "Week of organic agriculture" which took place in the week from 2 till 8 June, 2003.

5.3 Social factors

Several social drivers of change are also linked with the recent crises in the agricultural sector. They led for example to a stronger emphasis on food and health and on risk and trust in relation with food and agricultural production. Another phenomenon is the continuous evolution within the society to explore new types of food and food consumption such as an increased outdoor consumption, increased interest in exotic food and so on.
Besides food safety, there is also an increased consciousness of the consumer concerning the possible effects of food on his health. People are nowadays more concerned on health issues and this leads to specific demands toward products but also on the production methods (e.g. interest in methods changing the composition of food components). This specific demand certainly leads to specific actions and evolutions at the other levels in the food supply chain.
Another social driver of change is the increased demand for convenience. Ready meals, meals for the micro wav, etc are breaking trough and change completely the traditional food consumption with less market share for fresh products and an increased share of transformed products.
The important role of the consumer has to be stressed in this context as the consumer has been rather inconstant in recent years, there is a loss of consciousness concerning taste and flavour. The consumer is furthermore in many cases not prepared to pay a higher price for products that have a higher quality.

Another important issue is animal welfare. Although this is a topic appearing often in the public debate, no real consequences for consumption and buying behaviour have been proved. However, the increased interest make interest make that also with respect to animal welfare the standards

are becoming more severe. An interesting phenomenon is, and this is not only true for animal welfare but also for other issues, is that often first some voluntary initiatives are taken. One a certain standard has proven to be feasible, it become a standard for the entire sector. An example of this mechanism (but not on animal welfare) is the traceability system *Sanitel*. Traceability was first only an element of the *Meritus* initiative, but it was considered to be so valuable by the government that it is now obligatory.

There is also no doubt that social factors determine the success or failure of certain initiatives. In Flanders, the consumer has apparently less interest in regional identity (such as mentioned in the previous paragraph), while this approach has a certain success in the Walloon region.
Another factor of change is of course the increased interest of society in environmental issues. There is no doubt that the societal pressure has put this issue high on the agricultural agenda.

Another remark concerning the social drivers of change is that many producers are very reluctant to organise themselves in cooperatives. Individualism and mutual concurrence between the farmers are common practice in Belgium.

5.4 Technical factors

The only technical elements of change that can be identified in Belgium are the increasing concentration of dairies, slaughterhouses en processing companies at the one side and the vertical integration of the food supply chain at the other side. These elements are described elsewhere in the report and are not repeated here.

Risk assessment can also be taken as a technical factor and this has an increasing importance in recent years. Systems such as HACCP, BRC and ISO were elaborated to limit the risks in the food processing industry, but they have also repercussions on the farm-level. Risk assessment can only be useful in the processing industry if a safe product is used and this is realised by manuals and guides.

New communication possibilities with internet seem to have very limited repercussions till now for the food retail sector. Although it is already possible to buy online products from retailers such as Delhaize and Colruyt, these practices don't seem to break really through.

New technologies are of course also introduced in the Belgian food industry as in other countries (e.g. vacuum packaging, …) At the level of production, GMO's are an important issue. Belgium follows here the European legislation. Although some initiatives (like e.g. a big exposition on the problem of GMO food) are taken, it seems not to be a really important debate in Belgium.

6 Catalogue of FSC initiatives, including cross-sectoral initiatives in Belgium

6.1 Typology of initiatives

The catalogue contains about 120 initiatives or organisations, each of them with its own characteristics and objectives. The initiatives can be categorised in six groups:

- Short supply chains,
- New actors in the supply chain,
- Hallmarks and brands referring to specific production methods and product characteristics,
- Regional products,
- Initiatives for specific processing and
- All other initiatives.

A certain initiative can of course be part of several groups; *Westhoek hoeve producten* for example concerns regional products that are gold on the farms of the participants, but this is also a hallmark.

6.1.1 Short supply chains

The first category of initiatives concerns different examples of short supply chains. Three main groups can be identified within this category of short supply chains: farmers' markets, initiatives for direct selling and food packages. The catalogue comprises 65 initiatives that are considered to be short supply chains. Table 20 gives an overview of these initiatives.

Verhaegen (2001) defined **farmers' markets** as public markets on which only farmers sell their products directly to consumers.
They have developed in the 1980's out of a concern for the survival of small (often mixed) farms in the Flemish countryside. There was at the same time a growing distrust about food safety, the first hormone scandals occurred, and the consumer no longer knew the farmer who produced his food. Farmers were convinced of the quality of their products and by selling them directly to the consumers they wanted to pass this farm quality to the consumer by speaking out about their products, their farms, their production practices, lifestyle and so on. This added a new dimension to the quality of the products, but was influenced by the social background of farmers, their lifestyle and production system.
The cooperation between farmers had the purpose of organising the direct sale of farm products, through a public market where only farmers could sell their self produced commodities to the consumers. The formula of a public market was used in order to reach more consumers than through individual domestic selling of farm products. The collaboration between farmers has been given the form of a 'market organisation' organising the farmers' market. This includes getting permission of the local government; managing the participation by farmers; controlling that the rules of the market are followed; governing the finances i.e. collecting the market toll every farmer had to pay and paying the toll to the local government. Besides the fact that farmers accept to sell only own produced products, the main restriction involves the system of price setting. At farmers' markets, prices are negotiated before the start of the market with the arbitration of a market commissioner. Prices are determined between wholesale and retail price level. One consequence is that an individual farmer can not change the price during the market. Other rules protect 'old' members by giving them priority over new members, and further some

rather practical statements are given such as start and closing hour of the market, the assignment of places, the amount of market toll and membership fees (Verhaegen, 2001).
There are 27 different farmers' markets comprised in the catalogue of initiatives and these can be recognised as 'Boerenmarkt' or 'Marché (fermier)'. The frequency in which the farmers' markets are organised differs according to the initiative. This can be weekly, every two weeks, monthly or even once a year.

Table 20. Initiatives of the category 'Short Supply Chains'

Atalanta	Boerenmarkt Teralfene	Kollebloem-Akkerwinde
Bio Baarlaars	Boerenmarkt Tielt	La Fermière de Méan
Biobello	Boviqual	Landhuis
Bioboerenmarkt Heist-op-den-Berg	De Blauwe Spie	Les Paniers du Pays
Biogamma	De dobbel hoeve	Marché de Bastogne
Bio-Hoeve	De Haagman	Marché de Neufchateau
Boerenmarkt Antwerpen	De Hogen Akker	Marché du Gorly
Boerenmarkt Baaigem	De Jaargetijden	Marché du Gué
Boerenmarkt Beveren	De Loods	Marché du terroir de Marloie
Boerenmarkt Bornem	De Meidoorn	Marché fermier d'Ansart
Boerenmarkt Diksmuide	De Ringelwikke	Marché fermier Florenville
Boerenmarkt Gaasbeek	De Teerling	Marché fermier Orgéo
Boerenmarkt Gent-Blaisantvest	De Wassende Maan	Meetjesland Hoeveproducten
Boerenmarkt Gistel	Den Diepen Boomgaard	Produits de Qualité d'Autrefois
Boerenmarkt Kaprijke	Fenix	Theresiahoeve
Boerenmarkt Koekelare	Ferme de Winée	Veeakker
Boerenmarkt Middelkerke	Gastvrije Aarde	Vitaproject
Boerenmarkt Oostakker	Geodelgen	Voedselteams
Boerenmarkt Oudenaarde	Groupements d'achats (GAC)	Warmoezenier
Boerenmarkt Rooigem	Hageland Haspengouwse Veeboerencoöperatie	Westhoek Hoeveproducten
Boerenmarkt Sinaai	Hoevemobiel	Wijngaardhof
Boerenmarkt Sint-Amandsberg	Hof Seghers	

The second group concerns the initiatives for **direct selling of farm products**. This way of marketing was recently studied and the results were already discussed in the paragraph concerning on-farm processing and sales (§ 2.2.3). This database however does only include initiatives that group farmers who sell their products on-farm. There are in the database two clear examples of this type. Both *Westhoek hoeve producten* en *Meetjesland hoeveproducten* are founded by KVLV-Agra with funds of the respective 5b-projects. The main objective of these projects was to create, stimulate and market farm products in relation to the specific regions. The 5b-project ended in 2002, the farmers decided to continue with the initiative and a non-profit organisation is now responsible for the improvement of the quality of the farm products, but tries also to make the farm products more recognisable with a common hallmark.

The third group within the category of short FSCs concerns **food subscriptions, food packages and food teams**. The basic of all these initiatives is that the consumer commits himself to buy every week or two weeks a certain amount or package of products. It concerns in most cases an assortment of fruits and vegetables, but also potatoes and meat can be bought in this way. The products are generally produced in a sustainable way and these initiatives especially occur in the organic sector. The distribution of information on the initiatives seems however to be better

organised as a website[6] with addresses was designed as a result of the week of organic agriculture 2002 that focussed on the consumption of local products.
A first kind of initiatives is the food subscriptions or food packages. These are in general initiated by one or more farmers. The producers arrange the food packages and these can be collected at fixed time and place. *Atalanta* for example is a cooperation of 25 farmers that sells organic and sustainable products using a system of weekly packages. These packages can be collected by the consumer in more than sixty collecting points. *Foodteams* on the other hand work with a central structure initiating the local foodteams. These local foodteams exist of 10 to 15 families that engage themselves in buying farm products (dairy, fruit and vegetables, bread, meat, etc.) from local farmers. At the start of a local team, a meeting is organised in which views of consumers and farmers are exchanged and practical organisation is discussed. From then on, each month the orders for the next month are centralised and transferred to the producer(s). Every week, the products are picked up by some one of the foodteam at the delivering farm(s) and divided info the requested individual portions in the storage room of the team. On agreed times, the participating families can pick up their box with the products they ordered that week. Payments as well as communication with the farmers are centralised. It means that farmers only have to deal with one contact person, and receive only one large order, which is paid by a bank transfer or cheque. Many foodteams also become social networks with regular activities such as a farm visit or a family barbecue during which possible adjustments to increase the sustainability are discussed (Verhaegen, 2003).

6.1.2 New actors in the supply chain

The previous paragraph discussed the different possibilities of new and alternative supply chains, where the farmers play an important role. There exist however also initiatives whereby there are not necessarily farmers involved, but it certainly concerns initiatives for the marketing of sustainable products. An overview of these initiatives is given by Table 21 and their relevance for the catalogue will be described in the next paragraph.

Table 21. Initiatives concerning new actors in the food supply chains

Arpobel
Biomelk Vlaanderen
Bio-Planet
BioShop
Fruitnet
Hinkelspel

The availability of organically produced seed is a problem in the organic crop production and in ibis field *Arpobel* works. The cooperative is not only responsible for the commercialisation of organically produced potatoes, but also for the sales of organic seeds and plant potatoes to its members. Another problem in the organic sector is the supply and sales of the products and ibis is the field of activity of *Biomelk Vlaanderen, Bio-Planet* and *BioShop.* The initiative mentioned first is a cooperative of organic dairy farmers. The partners had in the past often to sell their organic milk through the conventional marketing channels as the demand for organic milk was not high enough. *Bio-planet* is an initiative of the big retailer Colruyt and is a supermarket that only sells organic food and ecological non-food products. There are two of those Bio-planets in Belgium and they also offer the consumer the possibility to make a shopping list and reservation of products online. *BioShop* is the joined name for 33 organic retail trade shops in Flanders. All the shops have a common company logo and sell mainly organic products, but also other products of there

[6] www.biodichtbijhuis.be

is no other choice. This is for example the case for several diet products. *Fruitnet* is the organisation that manages the Fruitnet label for integrated fruit production, but the organisation also coordinates demand and supply, promotes the label and supervises compliance with the code of practices.

6.1.3 Hallmarks and brands

The third group of initiatives in the catalogue encloses 23 hallmarks and brands and these are enumerated in Table 22. This list certainly doesn't represents all existing labels in Belgium, but only those that are believed to have certain elements or characteristics of sustainability. Some of the labels are hence situated in alternative or new FSCs but this is not a necessary condition.
It is striking that it concerns mainly initiatives in the meat sector (beef, pork, poultry and sheep), but there are also initiatives that contain several products groups. Examples of these cross-sectoral initiatives are *Biogarantie* as label for organic products, *Westhoek* and *Meetjesland Hoeveproducten* for farm products and *Het beste van bij ons* as a label for regional products in the Westhoek.
Most initiatives indicate a higher quality of the product or concern certain production methods like organic or integrated production. *Fine Fleur* is another type of hallmark as it promotes rather unusual and unknown vegetables such as courgettes, asparagus and crinkly lettuce. Participation of the farmers in these initiatives is generally voluntary, but some of the listed initiatives are organised by a slaughterhouse or a processing company and are obligatory. *Flandria* for example is a voluntary label for many fresh fruits and vegetables, but there is a high social pressure to participate as almost 80% of the products sold through the auctions have the label.

Table 22. Different labels and hallmarks included in the database of initiatives

Biogarantie	Meetjesland Hoeveproducten
Boeuf Ardenne	Meritus
Certus	Natuurlijk Hormonenvrij
Cobelvian – Cérévian	Pastorale
Coop'pass - Pass'por	Porc Fleuri
Coprosain	Poulet Hesbaye
Fine Fleur	Produits de Qualité d'Autrefois
Flandria	Promobel - Porc Aubel
Fruitnet	Tomabel
Het Beste van bij ons	Viande Ardennes
La Fermière de Méan	Westhoek Hoeveproducten
Le Porc des Praires d'Ardenne	

6.1.4 Regional products

It was already mentioned in past paragraphs that there are only few recognitions based on regional identity (PDG or PGI) in Belgium. A recent inventory (2002) of regional products mentions 2029 products and 1167 producers. These products are not all (closely) linked to the agricultural sector as products like chocolate, water and coffee are also encloses. This estimation is probably an underestimation as data-collecting was very difficult. The distinction between farm products and regional products is in some cases also rather unclear.
During the inventory, 16 initiatives that are involved in regional products were identified and these are given in Table 23. It mainly concerns institutions (often linked to a province) that promote all products of a certain territory such as *Lekker Limburgs* and the organisations that have the term 'streekproducten' in their name. Initiatives that really concern the farmers are *Westhoek and*

Meetjesland Hoeveproducten that were already mentioned and furthermore *Hagelandse Wijnbouwers, Viande Ardennes* and *Marché du terroir.*

Table 23. Initiatives referring to the regional origin

Agriculture Savoureuse	Stichting Streekproducten Vlaams-Brabant
Hagelandse Wijnbouwers	Streekproducten Antwerpen
Haspengouwse Streekproducten	Streekproducten provincie Antwerpen
Het Beste van Bij ons	Streekproducten provincie Limburg
Lekker Limburgs	Streekproducten provincie West-Vlaanderen
Marché du terroir de Marloie	Viande Ardennes
Meetjesland Hoeveproducten	vzw Vlaamse streekproducten
Streekproducten provincie Oost-Vlaanderen	Westhoek hoeveproducten

6.1.5 Initiatives for specific processing

The fifth group encloses 11 initiatives for the (artisan) processing of agricultural products. Table 24 enumerates the inventoried initiatives. It concerns especially the production of cheese, fruit juices and sliced cold meat. These products are often gold at the farm or through other market channels. *Het Hinkelspel* for example is a cooperative that makes different kinds of cheese. The cheese is made from raw milk delivered by associated organic farmers. The products are gold in a shop in the dairy, together with other organic products. *Freya* approaches more the traditional model of a food processing company, but is appropriate for this catalogue as it concerns fruits of integrated production, rather exceptional juices and it is mainly distributed via small retailers and health food shops.

Table 24. Initiatives for specific processing

Biomelk Vlaanderen	Geodelgen
Coprosain	Goossens
De Drie Wilgen	Hagelandse Wijnbouwers
De Goede Aarde- De natuurbakker	Hinkelspel
De Mekkerbek	Verhofstede
Freya	

6.1.6 Other initiatives

Eleven initiatives that don't fit in the previous groups are enclosed under the category 'others' and are listed in

Table 25. It concerns farmers that have a specific production method (but without hallmark) such as *Peter Suy* with his sustainable pig breeding or initiatives for social employment. *Loca Labora* for example is group of farms and institutions were people that don't find a job are employed. The activities are very diverse: nature conservation, growing of organic vegetables, arable crops and herbs, processing of the grown herbs, group lodging and a farm shop. Also in this group are an association for the guidance of farmers that want have farm gate sales *(Steunpunt Hoeveproducten),* an auction that is specialised in organic products as this is rather unique in Flanders *(Brava),* on organisation that takes several measures to improve rural development *(vzw Plattelandsontwikkeling).*

Table 25. Other initiatives included in the catalogue of initiatives

Biochamps	Nature et Progrès
Brava Peter	Suy
Coferme	Steunpunt Hoeveproducten
La voie lactèe	Terlux
Li Cramignon	vzw Plattelandsontwikkeling
Loca Labora	

6.2 Other characteristics of the initiatives in the catalogue

About 40 initiatives of the catalogue concern organic products and almost all of them are classified in the first group (alternative sales). This illustrates the problems that organic farmers have to sell their produce as was already described in §2.2. The organic farmers especially choose for the fruit and vegetable packages and these are distributed individually or via cooperation between farmers and/or other actors in the chain.
The farmers' markets represent the largest group of initiatives that are classified as 'not organic'. It is however possible that organic products are sold on these farmers' markets, but that's not always the case. The *farmers' market in Heist-op-den-Berg* is the only real organic one and was classified as organic.

There are of course much more differences between the initiatives besides their objective or type of products such as the initiator. Initiatives for improvement of the sales for example can be founded by one or more farmers, but it can also concern another link in the chain or another organisation or institution. The actual and previous plans for rural development have stressed on the improvement of outlets and this was also what happened in the case of *Westhoek and Meetjesland hoeveproducten.* With funds of the European 5b-project, both initiatives were started by the KVL V (an organisation for women in the countryside) and seen their success continued by the participating farmers. It's also obvious that initiatives for the typical processing are in most cases started by the processing partner. There is no general trend concerning the initiator of the three other types of initiatives.

It is at this moment very difficult to get a general overview on the economic importance and size of the different initiatives. This varies however from very small initiatives with only one actor involved to large ones which represent a eminent part of the traditional food supply chain.

7 Issues summary in Belgium

7.1 Institutional changes relating to FSCs and their implications

Several institutional elements are considered to have an impact on the food supply chains: the new legislation on traceability and self-control, the different programs for rural development and organic production, the structural changes in the ministries and changes within the FSC.

In the previous paragraphs it was described how the Belgian agricultural sector encountered various problems and crises in recent years and the consequences of this. An important legislative initiative is the law on self-control and trace ability. This stipulates that every sector and/or chain is responsible for the elaboration of a guide on these issues. The hypothesis is that the conditions stipulated in this guide may stimulate certain actors to search for alternatives and so boost the development of alternative FSCs.

A second stimulus for the development of sustainable FSCs is the programmes for rural development and the measures it contains for alternative outlets and creation of added-value. Initiators and farmers can get a premium or subsidy if they decide to start a new FSC. These are so also measures that can help the development and survival of small chains. Other elements supported by the Flemish program for rural development are organic, farm and regional products. The action plan for organic agriculture provided the sector with some financial support which enabled the further development of the sector. The production is however overemphasised while marketing and chain development need more attention.

A third element is the federalisation of agricultural and environmental matters to the regions. The present Flemish authorities are more concerned by environmental issues and this has inevitably consequences for agriculture.

The last element is the increasing power and concentration of the processing and trading sectors combined with a growing internationalisation. This leads to a situation in which the prices are under pressure and with a higher emphasis on standardisation and less room for diversity, regional origin, etc.

7.2 The identified areas of dynamism within FSCs

In most studies sectors, the sites of dynamism concern process of standardisation and normalisation. This tendency is also related to the recent crises and issues such as food safety, trace ability and food quality. Two types of standardisation can be distinguished: buyers' norms that mainly function as conformity certificates and hallmarks and brands. The first group illustrates the enforced position of the retail and processing companies in the chain as the prescriptions are ways to be in order with the law on responsibility. Hallmarks and brands are used to signal a certain product quality or production method to the consumers. The respective initiators are very diverse.
Some big retailers discovered the niche market of the quality products and searches local suppliers of this type of quality products. This evolution is very unilateral and not a real example of a chain approach, but it can offer opportunities. There existed in recent years a big gap between

the big and small-scale initiatives, but this is nowadays also filled up by the big retailers as they all opened local shops next to the supermarkets.

Another type of dynamism that can be observed in several sectors is the growing concentration and scaling-up of the agricultural production. This tendency will certainly continue in the forthcoming years. This concentration is in many however necessary to realise a more cost-effective production and so realise economic sustainability.
Animal welfare is also an element of dynamism. It has not a large influence on the production at the moment, but the discussion is going on and it will undoubtedly gain importance in the future. A last trend is the development of new, small-scaled initiatives to valorise product quality or regional identity.
Consumers demand for more food services such as ready meals and cut vegetables, but there is also an increase noticed of the outdoors consumptions.

7.3 The relative performance of FSCs on sustainability and transparency, and the significance of emerging initiatives on rural development

The availability of sustainable products is very limited in Belgium and when existing, often not communicated to the consumers. This is for example the case for integrated fruit production. Traceability is a hot item within the food supply chain and is almost everywhere elaborated, but is not a major element of the communication to the consumer.
Organic produce encounters several problems concerning the sales in supermarkets. Pressure is being put on the farmers to produce cheaper and they subsequently try to lower the norms. Fruit resulting from integrated production was at the start successfully sold through supermarkets, but after a couple of years the farmers do not get a price premium any more.
New initiatives are relatively unimportant when it comes to their economic size, but they are considered to be important when it comes to the survival of small enterprises and the development of quality production.

7.4 The significance of SFSCs and their potential to be scaled up

The economic importance of short supply chains as defined by this research is still rather limited, but their significance in terms of consumer confidence or in terms of pushing the political agenda toward more sustainability may not be under estimated. For individual participating farmers, SFSCs may also be an important income source as they can get a higher price for their superior quality produce. A problem is often the economic efficiency of these small scale short chains because the distribution costs are in some cases very high.
Most initiatives are small-scaled by nature and can hardly be scaled up. A certain type of consumers is attracted by these short FSCs, but this is rather limited. The farmers from their side appreciate in most cases the direct contact with the consumers and are therefore not interested in a scaling-up of the initiative.

7.5 The identification of bottlenecks and the opportunities and constraints for enhancing the performance of FSCs

The policy measures are at the same time a bottleneck and an opportunity for the performance of FSCs. A bottleneck is the fact that policy is mainly oriented towards agriculture for the world market and this cannot easily be combined with the concept of sustainability. Measures and programs aiming to enhance rural development and in the Belgian case also organic farming can also have beneficial consequences for the performance of short and alternative FSCs, cfr. farm products.
Other bottlenecks are the continuing concentration and the increase in scale in the food processing and distribution sectors and the European legislation on food and processing companies. The latter makes scaling-up in the agri-foodbusiness inevitable while small and regional processing units have no chance of survival.

7.6 Stakeholders' perceptions of, and involvement in FSCs, at a variety of scales and the extent to which different perceptions of sustainability and rural development are held by different stakeholder groups within FSCs

- Producers

The farmers are especially interested in a cost-effective company and social recognition. Sustainability is for them mainly a synonym of economic sustainability. They see themselves as guards of the countryside.

- Processing industry

The main interest of processing companies is cheap products. Rural development and sustainability are in general no concerns for them, as far it doesn't concern their own production process.

- Distribution

The retailers' aim is primarily the satisfaction of the consumers' demands and to realize profits. Sustainability issues play a role for some companies but then only on the level of their own management, e.g. the implication of energy-friendly measures in the depots. The big retailers elaborated quality hallmarks, especially for meat, as a consequence of the food crises and scares. As consumers get more interested in niche products, these are introduced in the assortment. Examples of these practices are regional, organic and fair trade products. Rural development if not a concern of the retailers and they have no specific preference for home grown products.

- Consumers

Most consumers are interested in cheap products, convenience food and the comfort of shopping. Although a growing number of people are concerned about the ecological and ethical aspects of production (e.g. fair-trade, animal welfare), this is not always shown in a changed purchase behaviour. Belgian consumers also do not seem to have a high preference for own Belgian products, even those consumers buying organic products. They see for example no difference with organic products coming from New-Zealand.

- Environmental organisations

These organisations are especially concerned about the ecological sustainability and agriculture is, according to them, a threat for that.

- Policy makers

Agricultural puts more stress on sustainability and rural development since some years, but the policy interest is limited to the production side. The others levels in the chain are not or only limited involved in these measures. The Ministry for Public Health is responsible for the FSC, but is mainly working on food safety: absence of toxic or harmful elements and hygiene.

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