Summary

Today, the information systems Belgium disposes of are little satisfactory as decision support instrument or as evaluation instrument of policies for sustainable development. Efforts which have been undertaken on different levels were realised independently. There is a need for the evaluation and decision processes to be able to rely on global and coherent information systems, which reflect the different aspects of development in a global approach.This need for information exists as much on a local as on an international level, as much on a policy-making level as on the level of individuals.

Without losing sight of their limitations, indicators accomplish various functions in the policy process. First, they quantify information, which, accompanied by more detailed analyses, helps policy-makers in their choice of prior issues, in the policies needed to be pursued and in the evaluation of policies already pursued. Secondly, they simplify information. Indicators summarize complex statistical information, but they also give a simplified representation of certain interrelations between economic, social, environmental and institutional spheres. In this way, policy-makers gain a holistic perspective of the problems they deal with and are encouraged to integrate sustainable development objectives in their management in the long run. Thirdly, indicators improve communication. Indicators simplify the communication process by which the information is transmitted to different users and therefore have to be established in function of the needs, expectations and capacities of the users.

With a regular and standardized character, indicators allow an evaluation in time of the realised progress. In this way, they can play an important role in informing the public (alerting and sensitizing, improved comprehension of the consequences of actions undertaken on the individual or collective level). This is of major importance to the extent that an awareness process forms a *conditio sine qua non* for the implication and participation of the public to the establishment of strategies for sustainable development. This communication, if succeeded, can promote certain attitudes or choices needed to direct society towards more sustainable production and consumption patterns.

In most cases, the sets of sustainable development indicators want to give a global indication, a kind of instrument panel reflecting the more or less sustainable character on a local, national or supranational scale. Following these approaches, indicators are organised in function of “issues” that are prior in terms of sustainable development (pollution, health, habitat, poverty, education, etc.). These initiatives usually do not involve sectoral indicators. Impacts different sectoral activities can have on sustainable development are difficult to trace when starting from these sets, considering the relative desaggregation of the information and, on the other hand, the diversity and sometimes indirect character of the impact. In a way, one can say that thematic as well as sectoral indicators follow complementary objectives: the former enable global performances of a country or a region to be evaluated in the perspective of sustainable development, whereas the latter stimulate a better integration of sustainable development concerns in sectoral policies.

Considering the growing human population and the accompanied growing need of food, fibers, fodder crops and raw materials, the global agricultural sector faces a difficult assignment. This problem has to be dealt with in spite of less acres agricultural land and a reduced supply of fossil fuels. Scientific and educational environments are looking for a more input-efficient and sustainable food production system exerting a less negative influence on the environment. In many definitions, three dimensions of the concept of sustainable agriculture are present: economic, ecological and social sustainability. Economic sustainability implies that agriculture should be viable in economic terms and should be able to cover costs in the long term. Today, many agriculturers, especially within the European Union, are dependant on measures protecting the market to guarantee their economic survival (through tariffs on imports or other price supporting mechanisms or through subsidies to inputs). Ecological sustainability refers to the interactions between agriculture and natural resources. Social sustainability implies an equitable distribution of costs and profits between generations and between the different societal communities, among whom the farmers.

This does not imply that a general sustainable agriculture concept would be summarized. The optimal synergy between economic and ecological sustainability is the main key of the different viewpoints. Their practical implementation and definition needs the use and establishment of indicators. Sustainable agriculture indicators are able to address problems, state and progress towards stated goals.

There is a need for a detailed and structured approach, a frame of mind to study sustainable agriculture indicators in a uniform way, instead of a series of case studies. The methodological framework used in this project combines a top-down approach (indicators derived from general principles linked with the concept of sustainable agriculture, an analysis of the existing situation in terms of agriculture in Belgium and a study of international literature concerning methodological frameworks and already developed indicators of sustainable agriculture) with a bottom-up approach (taking account of the different actors who are relevant in the field of sustainable agriculture).

The indicators are structured within the Pressure-State-Response (P-S-R) framework of the OECD and the Driving Force-State-Response model of the Commission on Sustainable Devolopment. Driving Forces quantify the processes, activities and practices that have a beneficial or adverse impact on sustainable development. In this way, the quantity and quality of natural resources is changed (state). International, national and sectoral society reacts to these human-induced changes through environmental, social and economic policies (response).

Application of the DF/P-S-R framework to the agricultural sector leads to a set of questions, including:

- What is causing environmental conditions in agriculture to change (beneficial or harmful impact of agricultural activities on the environment) (driving force)?
- What effect is this having on the state or the condition of the environment in agriculture (state)?
- What actions are being taken to respond to changes in the state of the environment in agriculture by society groups (farmers, consumers, etc.) and policy makers (response)?

These questions are situated in the environmental field, but socio-economic questions also need to be asked, such as:

- How does environmental relations affect the economic conditions of the agricultural sector?
- What is the evolution of the agricultural sector with respect to the number of farmers, the area cultured, etc.?
- To what extent farms are dependent on market protection for their economic viability, via import tariffs or other price-supporting mechanisms or via input subsidies?

The identification of prior themes on the base of which indicators for sustainable agriculture in Belgium need to be developed, results from a combination of working methods. On the one hand, a survey was addressed to different actors active in the field of agriculture, sustainable development or indicators (federal and regional administrations, scientific environments, interest groups), in order to select prior themes. On the other hand, a study was done of the articles concerning the agricultural sector that appeared in the Flemish press in the period January 1998 – December 1999. This press survey gives an indication of topical themes vivid in the public opinion.

Based on national and international literature, existing experience of ECOLAS in the agricultural field as well as the prior core elements of the Belgian agricultural sector, a preliminary list was set up of 121 indicators of sustainable agriculture. This list was reduced following certain selection criteria. First, the indicators have to represent core problems within the Belgian agricultural sector, such as they are revealed in the study of prior themes. The indicators need to be relevant, for they are able to evaluate progress or regress in relation to a sustainable agriculture and they can support existing actions and programs. Furthermore, the indicators need to be sensitive to changes in the environment or in the socio-economic conditions that the indicator characterises. The scientific validity and measurability of the indicators is also important, in a way that well funded concepts are used that are subject to a certain consensus.

Data needed for the application of the indicators need to be readily available or accessible at a reasonable cost-benefit analysis, reliable and updated on a regular basis. The indicators need to be clear and comprehensible, which improves the communicative quality. In order to interpret the indicators correctly, they better be tested to reference values (existing standards or goals on a national/regional/communitary scale, critical values, etc.).

The selection of 22 indicators was also based on interviews with different actors active in the field of agriculture, sustainable development or indicators (federal and regional administrations, scientific environments, interest groups). Certain relevant indicators were admitted, although data are not yet disposed of within a reasonable cost-benefit relation. These indicators can stimulate the development of data sources and standardised measuring methods, in order to assure the application of these indicators in the future.

The themes within which indicators were developed, are food security, food quality, genetic modification, subsidy regime, importation/exportation, financial situation of the farm/job satisfaction (2), employment, education of the farmer, social perspectives of the farmer, position of the farmer in the production chain (2), organic farming (3), pesticides, contribution of agriculture to environmental problems on a small scale, erosion of the soil, manure problem, landscape aspects, acidification and animal well-being. Nine indicators are of the state-type, seven of the driving force-type and six of the response-type. Eleven indicators reveal mainly environmental aspects, nine reveal economic aspects and two reveal social aspects. The indicators within the subsidy regime theme, reveal not only economic but also institutional aspects (table).

The Commission on Sustainable Development structures the application of its indicators following methodological sheets containing information concerning the concept, importance, measures and information sources in order to simplify the collection of data as well as analyses. In the light of a possible harmonisation in the future, the structure of the methodological sheets of the CSD was chosen for the application of the selected indicators for sustainable agriculture in Belgium. The following pages give an overview of the 22 selected indicators and their values after application.

A general conclusion on the sustainability of the Belgian agricultural sector would give little indication, considering the complexity of the themes concerned. The selected indicators point at the still non-sustainable situation of the agricultural sector in its socio-economic, environmental and institutional context. On the other hand, the tendency within the indicators suggests the changes going on in the sector in order to build a more sustainable future.

Overview of the results concerning the application of Indicators of Sustainable Agriculture in Belgium

Theme/Indicator	Measuring unit	Target value	Value (starting year)	Value (end year)
Food security				
Ratio of the balances of trade of animal fodders in relation to animal products	%	100%	450% (1994)	247% (1997)
Food quality – Public Health				
Excess of the public health standards for agricultural products	%	0%	3,18% (1995)	3,64% (1997)
Subsidy regime				
Share of the direct income support in the price and market policy	%	as large as possible	17% (1995)	34% (1998)
Genetic modification				
Number of admission requests for the use of Genetically Modified Organisms	-	n.a.	-	135 (1999)
Importation/exportation				
Self-supporting rate of Belgium for animal and vegetable products	%	n.a.	A: 173% and V: 144% (1994)	A: 167% and V: 172% (1997)
Financial situation of the farm/job satisfaction				
Real index of the mean farm income of the independant farmer	(1993 = 100)	n.a.	98,9 (1994)	109,37 (1997)
Yearly labour income per labour unit in relation to the yearly income in a different sector	%	as large as possible	72,48 (1994)	81,05 (1997)
Employment				
Number of persons employed in the agricultural sector in fully employed labour units (L.U.)	L.U.	n.a.	115.571 (1980)	76.016 (1997)

Theme/Indicator	Measuring Unit	Target value	Value (starting year)	Value (end year)
Education of the farmer				
Mean education profile of the starting farmer	code	n.a.	5 – higher sec. agric. (1995)	2 - B-course or equivalent (1998)
Social perspectives of the farmer				
Number of persons choosing their profession in the agricultural sector / Number of farmers wishing to make use of the Early Retirement Regulation	-	as large as possible	0,7 (1995)	2,0 (1998)
Position of the farmer in the production chain				
Share of the employment in the agricultural sector in relation to total employment per industrial column	%	as large as possible	see indicator	see indicator
Share of the turnover in the agricultural sector in relation to total turnover per industrial column	%	as large as possible	see indicator	see indicator
Organic farming				
Share of the organic farm land in the total farm land - Share of the organic animal production in the total livestock	%	as large as possible	0,07% (1987) – 0,04% (1997)	0,84% (1998) – 0,09% (1998)
Market share of the big department stores for organic products	%	as large as possible	-	65% (1998)
Yearly premium for organic production in relation to the lesser income of the organic farmer	%	as large as possible	-	see indicator
Pesticides				
Sum of the yearly distribution equivalents per pesticide for agricultural use	S_{eq}	as little as possible	5.784.136.204 (1979)	12.196.894.452 (1998)

Theme/Indicator	Measuring unit	Target value	Value (starting year)	Value (end year)
Contribution of agriculture to environmental problems on a small scale				
Share of complaints concerning odour resulting from agricultural activities	%	0%	24% (1979)	16% (1997)
Erosion/Condensation of the soil				
Number of farms enjoying subsidies for green cover with grass or rye	-	as large as possible	-	-
Manure problem				
Total manure excess per region, per year	kg	n.a.	see indicator	see indicator
Landscape aspects				
Acres of farm land per region for which a management agreement is closed	ha	as large as possible	-	-
Acidification				
Mean deposition by the farmer of NO_x, SO_2 and NH_3 in number of acidification equivalents per acre per year	A_{eq}	as little as possible	4.996 (1990)	4.122 (1997)
Animal well-being				
Mean living space per animal in m²	m²	n.a.	see indicator	see indicator