Foresight on the oilseed competitiveness in the future

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ABSTRACT

The objective of foresight (future prospects) is to enlighten decision-makers, by exploring collectively the sphere of possible "futures" and bringing out different scenarios for the future. CETIOM has carried out such an approach in order to assess the oilseed (rapeseed and sunflower) competitiveness in France and Europe, taking into account the European and worldwide context by 2010-2015. The competition between domestic oilseeds and other sources of fats takes place at all levels of production, transformation and consumption processes. Thus, this future study has involved about 150 people from several scientific fields, economic bodies and institutions. The overall methodology used has been designed by INRA and is based on a systemic view of the various issues addressed and requires graphic representation models. Seven strategic topics were accepted at the end of this work: agriculture and its relationship with its economic environment; the role of information on fat consumption; the consideration of nutritional recommendations made by the transformation industries; the evolution of animal feeding models; the oilseeds place within production systems; the oilseeds and the environmental challenge; the impact of non-food uses as a driven force for oilseeds development. For each of these seven topics, various scenarios were drawn up as well as their consequences on oilseeds competitiveness and on the future of the economic and social sectors concerned.

Key words: foresight – future study – oilseeds – competitiveness - micro-scenario – strategy

INTRODUCTION

The evolution of our context is characterised by a rise in uncertainty and by a growing complexity of problems.

Foreseeing future evolutions is then indispensable either in order to get ready for them or in order to lead them. This is precisely the role of foresight, which consists in exploring collectively the spectrum of possible futures so as in clarifying decision-making.

The objective of this work on foresight carried out by the CETIOM about the competitiveness of oilseed in France - within the European and worldwide contexts - is to enlighten those who are responsible for decision making by means of the production of micro-scenarios of possible futures, taking the period 2010-2015 as the time horizon.

MATERIALS AND METHODS

The methodology of foresight applied is known as SYSPAHMM and was developed by INRA's DADP. This work, done between 1998 and 2002, involved around 150 people belonging to several areas and organisations directly or indirectly linked to the oilseed sector: a reference group made up of 18 people, a permanent nucleus of two people, four groups of 30 experts each, a dozen experts consulted individually and a methodology counsellor from INRA.

The first stage of the work consisted in representing the oilseed system graphically and in describing its current situation (1998-1999) through "processes" which explain its functioning and through "variables of state" that account for their characteristics. The second stage consisted in designing - starting from the processes and the variables of state - hypotheses for

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future evolution that involve all the compartments of the oilseed system. Breaking hypotheses were also imagined starting from the new processes**.** 105 hypotheses were thus retained. The third stage of the work consisted in analysing the direct influence (+, -, 0) that the hypotheses had ones over others, taken in pairs. The matrix of 10,920 cells resulting from this analysis was to undergo a mathematical treatment that highlighted groups of hypotheses (clusters) more related among themselves than to the others. Further on, within each group, the meaning of the hypotheses and their relationships suggested the theme of different possible futures around a strategic topic dimension. Driving hypotheses were selected from their ability to structure and to break the dynamics of different future patterns. Thus, each group of hypotheses led to two or more micro-scenarios depending on the different combinations of the selected driving hypotheses. The same procedure was used with each and every group of hypotheses.

RESULTS

There were seven groups of micro-scenarios worked out around the seven strategic topic dimensions.

1) Group "The agricultures and their relationships with the economic context". Five micro-scenarios were drawn up by selecting different leaderships for agriculture. Thus, in "the enterprising agriculture" the leading actor is the farmer who is considered as a business person and manager of his enterprise. In "an agriculture mastered by the great distribution and industry", the downstream sector gets the leadership. In the third micro-scenario, the crushing industry organizes the oilseed production. In the fourth one, the co-operatives and other companies which both provide supplies and collect grains structure the agro-economic activity. In the last micro-scenario of this group, the farmer organizations take the leadership on the agriculture management as well as on the development of rural spaces.

2) Group "The role of information in the consumption of lipids". The micro-scenarios differ from each other on the kind of information which determines the choice of food by the European consumers. In the first one, the nutritional information is determinant for the consumers' food spending patterns. A variant of this micro-scenario was set up by considering that human beings feed themselves according to nutritional tables and to their individual nutritional requirements. In the last one, food preferences are driven by no-nutritional factors, e.g. geographical origin of products.

3) Group "Agro-food processing industry and nutritional recommendations". Micro-scenarios are based on the degree of evolution of the lipid nutritional recommendations and their interpretation by the consumers. If these recommendations were very variable, three micro-scenarios would result: one in which the oils and the products of the agro-food industries are both nutritionally balanced; another one in which the oil industries and the agro-food industries produce supplementary goods in the area of lipid nutrition; and a third one, in which the industries produce oils by combining fat acids obtained from oils. If the nutritional recommendations do not undergo important variations, six micro-scenarios could occur: (i) the consumption of linoleic fatty acid faces a crisis; (ii) the linolenic fatty acid is considered as inescapable; (iii) there is a preference for olive oil; (iv) there is a increasing achievement of a balanced ratio between omega 6/omega 3 sources as well as for the suggested level of oleic fatty acid; (v) the rapeseed oil becomes dominant; (vi) the soybean oil becomes dominant.

4) Group "The evolution of animal feeding models". Micro-scenarios differ on the protein content in the sources used to feed livestock. In the first micro-scenario, the main source of protein is the soybean meal; in the second one, industrial amino-acids are widely used to achieve feed balances and to reduce the imports of soybean. In the third one, new animal feeding models using only domestic protein sources (oilseeds, grain legumes, forage, etc.) are designed.

5) Group "The oilseeds within the European production systems". Micro-scenarios differ on the technical innovations in cropping systems (yield, resistance to diseases, etc.) achieved and on the acreage changes that such innovations would bring. The five micro-scenarios correspond to various combinations of acreage for rapeseed, sunflower, grain legumes, wheat, etc.

6) Group "Oilseeds facing the challenge of the environment". The environmental issues have been considered as a major concern for society and are thus present in all micro-scenarios. They differ on the liberalisation, or not, of the world agriculture, and on the

development, or not, of a European policy which favours a territorial and sustainable agriculture. The three micro-scenarios worked out are: (i) oilseeds development within the framework of a sustainable agriculture; (ii) in the absence of a policy favourable to a sustainable agriculture and in the presence of taxes on environmental pollution, the ecological advantage of oilseeds becomes an economic advantage; (iii) oilseeds within the context of a liberal agriculture.

7) Group "The impact of non-food uses in the development of oilseeds". The four micro-scenarios worked out differ due to the development of the use of non-food products manufactured from vegetable oils. In three of them, the non-food use of vegetable oils increase within the European Union through several factors: environmental policy, energy policy, image. In the last micro-scenario, the use of vegetable oils for non-food consumption declines in favour of animal fats and other new sources of energy.

DISCUSSION

The seven strategic topic dimensions around which the micro-scenarios have been built are not a predetermined entrance, but the outcome of analysing the influences among the hypotheses. Each strategic dimension focuses on a specific question, but the hypotheses that lie in its heart involve almost every compartment of the oilseed system. Thus, the micro-scenarios allow focalisation on one problem, without losing sight of the relationships with the oilseed system as a whole. Micro-scenarios are a major outcome of this foresight, but they are not the only one. As a matter of fact, the construction of a systemic vision of the oilseed system (graphic representation as well as static and dynamic description) becomes an outcome by itself and requires a synthesis of both several written (publications or grey literature) and oral pieces of information rarely put to work as a whole.

The micro-scenarios lend themselves to analysing different tensions within the oilseed system, such as the confrontation between economic and social actors about agriculture; the effects of both quantitative and qualitative changes in oilseed production; the consequences of potential animal feeding changes on the farming systems; the challenge to establish a direct relationship between the characteristics of oilseed production and those of the consumers' demands.

CONCLUSION

Starting from the idea that the future is not predetermined and that it could be driven to some extent, the micro-scenarios describe various possible futures that decision makers may wish to promote or to avoid. Thus, through an adequate method, the micro-scenarios are a tool for helping in decision and for orienting general policies as well as for producing strategies.

Following a systemic approach, this work analyses and relates processes which take place in the different sectors of the oilseed system. Thus, agricultural issues are addressed in relation to other dimensions, such as industry, distribution, consumption, investigation, etc. This is a key point for decision making because it makes us aware of the impacts which decision making in a sector may have on the whole oilseed system.

CETIOM, INRA as well as other institutions are currently using the results of this foresight for managing their research programmes.

BIBLIOGRAPHY

Sebillotte C., Ruck L., Messéan A., 2002: Prospective compétitivité des oléagineux dans l'avenir. Cetiom, Paris.

Sebillotte M., Sebillotte C., 2002: Recherche finalisée, organisations et prospective : la méthode prospective SYSPAHMM (Système, Processus, Agrégats d'Hypothèses, Micro et Macroscénarios). OCL, Paris.

Simon H., 1991: Sciences des systèmes, Sciences de l'artificiel. Paris, Dunod. Traduction française de The Sciences of the artificial, 1969-1981, Massachusetts Institute of Technology, USA.