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BASF Facing Agri-Food and Environmental Challenges

The BASF case study shows how the future of agri-food and environmental challenges can be considered by the main stakeholders (corporations, farmers, consumer groups, etc.) over a long period (3 years). This innovative approach was initiated by one the former directors of BASF France, Bernard Lafourcade with methodological advice from Michel Godet (Cnam), and Pierre Chapuy (Gerpa). Of particular technical interest here was the use of the Mactor method. [1]

The Full Futures Process from Upstream to Downstream

Agricultural products occupy a significant rank among BASF's many sectors. In fact agricultural products represent over 15% of the BASF Group's overall activities. BASF manufactures ammoniac-based fertilizers, phytosanitary products utilised to protect crops, and food additives, including vitamins used in animal feed.

Within the European context, BASF's priority market is the French agricultural sector. The BASF Group currently leads the French market, which comes second to the American market worldwide. As a result, the agricultural products division at BASF France enjoys a certain independence and defines its own strategy.

Upheaval in the French agricultural sector in the early 1990s, caused by a redrafted joint agricultural policy and the shift from GATT agreements to the new World Trade Organisation led BASF France to rethink its strategy, especially product merchandising.

Relations between BASF and farmers follow the pattern of a traditional merchandising infrastructure – agricultural cooperatives, retailers and wholesalers – and require joint initiatives to supply the market better. Eager to consolidate its position on the French market, BASF sought to strengthen relations with the operations managers or officers of distribution companies in a lasting way. This step marked a break from the past when the focus was on purchasing managers.

Instead of offering some form of incentive travel (a common practice in this sector) and instead of drafting the umpteenth quality pledge, BASF decided to offer these small-to-medium-size business managers, who are usually caught up in day-to-day matters, an opportunity to reflect upon the future and the stakes which would determine their commercial success or failure.

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1. This case study was prepared as a report, published in full as a Lips Working Paper (n° 11) and developed in the article "Scenarios and Actors' Strategies: The Case of the Agri-Foodstuff Sector" by Bernard Lafourcade and Pierre Chapuy in *Technological Forecasting and Social Change*, vol. 65, n° 1, September 2000.

A Participatory Futures-Thinking Exercise

Initially, a two-day seminar for training and futures exercises was offered to distribution managers. They were asked to consider as a group (suppliers and clients) the factors of both change and inertia that would affect the sector from 1997 to the year 2005, plus any pre-conceived notions on these two topics. After this exploratory phase, yet still within a workshop setting, participants identified the measures they would need to take to control some of the major stakes identified during the previous phase.

After the two-day event, participants had made enough progress to realise how effective this type of futures exercise can be. Yet they remained aware of the need to develop several themes, all of crucial importance for their own future. They also asked that the futures-thinking process continue under the auspices of BASF.

A summary of the two-day meeting was written up 1) to enable participants to repeat the process or something comparable in their own company and 2) to highlight priority topics for futures-thinking exercises. On the basis of these topics, working groups were set up including BASF operations executives and managers attending voluntarily from BASF client companies. This last group made up over 80% of the audience at the preliminary seminar in Venice.

Six meetings were scheduled over the following year so that each topic could be explored. The schedule allowed for the use of futures techniques (environmental scenario building, actor analysis, analysis of competence trees, etc.) in order to investigate possible futures in the agricultural channel, [1] winning strategies for distributors and, lastly, common goals on which both distributors and suppliers would do well to agree.

As part of the wrap-up stage, a seminar was held in Lisbon, in June 1996. Most of the participants from the Venice seminar attended as well as some important clients whose awareness of the exercise and its results was considered appropriate.

After the first phase, participants wanted to continue the collective thinking process by integrating new partners and by focusing on other major themes. As a result, the topics listed below were studied over the following two years:

– changes in the distribution profession;

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1. Channel, sector, channel, chain, stream... depending on the context any one of these three words may be used to translate the French word *filière*. Sector is broader whereas chain reflects the interrelatedness of the actors, or stakeholders. Channel evokes the flow of goods and services. For the broadest, general sense, the *food* or *agri-food industry* has been used.

– impact of new environmental demands on the profession within the agricultural channel;

– consumer expectations in food security and how these influence future behavior of players in the sector.

A steering committee made up of volunteers from the sector carried out most of the studies. The topics were presented during seminars which brought together approximately fifty distributors each time. The research or results were then published in different formats in different collections, *Futuribles International* and the Lips Working Papers and also in the journal *Technological Forecasting and Social Change*. Professor Michel Godet and the Gerpa consulting team provided the steering committee with methodological support.

The past three years of futures-thinking exercises, led by BASF Agriculture with the participation of its clients, may be broken down into three phases according to the following four principles:

1) choose procedures that will specifically answer distribution questions;

2) use methods adapted to the time and means available;

3) select simple, concrete, appropriable tools that encourage reflection and group expertise;

4) enlarge the circle of individuals involved gradually as the themes develop.

The Future: What Stakes? Which Actors? What Are the Key Questions?

This particular process stemmed from BASF's openness to using Strategic Prospective methods and tools to answer the questions really asked by real agricultural distributors, who are also BASF Agriculture France's clients.

Three main questions came out of the studies based on the intial seminar which had brought together forty-odd managers from agricultural distribution firms in the Spring of 1995. The following three questions led to the first phase (1995-1996):

– what are the possible medium-term developments (horizon line 2005) in terms of farmers' expectations? *(N.B. these are the direct customers of agricultural distributors)*;

– given these expectations, what skills can distributors offer and in which areas should they develop?;

– more generally, what are the stakes for agricultural distribution in the ten-year period (1995-2005)? who are the main players on the field and what important conflicts can we expect?

After the first phase, the distributors wanted to consider the environmental factor and how both consumers' and citizens' demands related to environmental issues are evolving. Throughout the first phase during

the spring of 1996, Mad Cow Disease [1] stole the spotlight from the environment and food safety in the collective thinking exercise.

The second phase included a futures-thinking exercise with the year 2010 as a horizon line. This phase was designed to enable participants to understand in detail how the environment [2] interacted with the various components of the agricultural sector in order to anticipate what would be at stake in this sector and to suggest possible medium-term answers.

Future visions developed during this phase also enabled the group to build three contrastive scenarios according to major issues.

Once again, the importance of food safety and the demands of actors downstream (agri-food, or agro-alimentary, industries and retail commercial distribution, especially mass distribution) in the agricultural channel became evident. Hence during the third phase in 1998, the steering committee decided to focus on actor analysis for the issues of food safety and the environment.

Methods Adapted to the Time and Means Available

The studies and methods chosen enabled participants to find answers to the questions raised within four to five group or steering committee meetings over five or six months of work. Whereas the initial two-day seminar used the workshop format so that forty agricultural distribution managers could all participate. After this seminar, thirty managers agreed to continue working as a group for four days staggered over six months.

The Delphi technique, based on three rounds of surveys, and the Régnier Abacus, based on a color-coded voting system, were used in the second futures-thinking phase. Some fifty agricultural distribution managers and forty BASF technical-marketing staff members were thus able to participate. The second phase was led by the steering committee which included fifteen people who met for four half-days over six months.

In the third phase, fifteen actors in the agricultural and agri-food sector spent four days carrying out actor anaysis on the topic of food safety.

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1. The Mad Cow frenzy was not an environmental problem as such. It was the problem of a dysfunctional industrial channel and its control. Nevertheless, the Mad Cow Crisis revealed with particular clarity the notion of risk associated with agricultural and agri-food channels: food safety, conservation of the "environmentalized" production chains.

2. In terms of the struggle against pollution and harmful substances, nature conservation and protection of natural resources, preservation and enhancement of quality of life.

Simple and Appropriable Tools Reflect Group Expertise

The methodological procedures – especially the tools used – enabled groups of managers in distribution firms to work as a group by exchanging opinions, sharing information within a common framework and encouraging reflection through their professional expertise and that of other actors in the sector.

These thirty agricultural distribution managers built competence trees for their own companies according to type. The participants then profiled different types of farmers or growers, and detailed their expectations for technical areas, services or financing.

During phase 2, approximately 100 managers were polled. They gave their vision of the limits and opportunities created by the environment within their sector and of the development of these limits in the future. They also described the policies and courses of action that they envisaged adopting to meet the challenges on the horizon.

Similarly, professionals in the agricultural and agri-food sectors identified the food safety "battlefields". They also pinpointed the most important actors involved and the goals each one was pursuing. They created two synoptic tables that represent the influence capacity of the actors among themselves and the positions of the actors on each of the goals (see two matrices: actors/actors and actors/goals).

Lastly, after each of the three phases, forty-odd distribution managers and a few other participants (internal or external in terms of agriculture) attended a wrap-up seminar. This occasion enabled participants to present results plus test and complete the data. Joint working sesions have also helped group members to pinpoint pertinent areas for action in terms of relevence according to the stakes already identified.

Enlarging the Circle Downstream

Although futures thinking began with only agricultural distribution managers (co-ops and companies) and BASF Agriculture staff attending seminars, it gradually spread within the sector so that:

– a greater number (up to 100) of agricultural distribution managers could take part using the combined Delphi-Abacus technique during the second phase;

– farmers could be integrated as of the second phase;

– representatives from agri-food industrial groups (downstream) could join the steering committee during the third phase.

Fuller discussions were also held upstream, and representatives of several actors from outside the agricultural sector (e.g. consumer groups, public authorities, mass distributors...) were invited to react and participate during the wrap-up seminars.

The Future of the Agricultural Channel by BASF and Its Clients: the Three Stages of Futures-Thinking

Phase 1 (*) : BASF and Its Distributors: A Shared Future (1995-1996)
– Identify ongoing changes and the stakes implied for agricultural distribution, e.g., technical factors, economics, and training.
Clientele
– 3 working groups made up of distribution managers; 4 one-day meetings over six months.
Tools
– Understand the current demands of farmers and anticipate their future needs: *morphological analysis.*
– *Analyse the distributor's profession, strengths and weaknesses: construct competence trees* (both future and present) of the distributors' offering.
– Detail the main battlefields of the future, inventory the goals of the actors involved, and understand alliances and opposing interests: *analysis of the actors' game* inside and outside the agricultural channel.

Phase 2: Agriculture and environment with the horizon line 2010, "futures consultation" (1997)
– Understand the interfaces between agriculture and the environment now and in the past.
– Anticipate changes to the horizon 2010, reflect on measures that distribution can take.
Clientele
– A panel of a hundred-odd distribution managers (response rate 48 to 58%).
– An internal panel of 40 technical-sales representatives at BASF.
– A steering committee that unites distributors and farmers and experts at the wrap-up seminar.
Tools
– *Delphi-Régnier Abacus:* a Delphi questionnaire over three rounds (past, present, future) staggered over 5 months (votes and explanations), plus and efficient voting mechanism: the Régnier Abacus.
– A *morphological analysis* to construct *contrasted scenarios* of the relationship between agriculture and the environment, horizon line 2010.

Phase 3: Food Security and Environment, Analysis of the Actors (1998)
– Identify the battlefields related to food safety and the environment.
– Understand the manoeuvres of all the actors involved, analyse the forces active in the situation, pick out major conflicts, and identify necessary or possible alliances.
Clientele
• A Futures-Thinking Group including industrial suppliers, distributors and farmers that expanded to include downstream players, e.g. independent farmers.
• The other actors: mass distributors, public authorities and consumer associations brought together by:
– agreements as to fostering thought;
– the wrap-up seminar to comment, criticise, complete the data.
Tools
Actor analysis (stakes, battlefields, actors present, goals pursued) using the Mactor method.

(*) Proceeded by a seminar that brought together some 40 managers.

Environmental Issues (Horizon 2010)

As a result of Phase 1, environmental restrictions were pinpointed as one of the major threats in the agricultural sector. The regulatory agencies, e.g. Brussels, ministries, various boards or lobbies, and the agricultural sector itself, all of whom are in favor of the development of environmental demands, do indeed seem to be the most powerful actors.

Now more than ever, distributors must focus specifically on the environment. Of course the entire agricultural channel must pay attention, given that the environment, if not previously ignored, has only recently became an issue for many. Given the "recentness" of the issue, futures techniques were chosen accordingly.

The second futures-thinking phase for BASF and its clients ran from October 1996 to May 1997. Their objectives were the following:

– identify the main aspects of development for the medium term in the environment as a field;

– evaluate potential consequences for the agricultural sector;

– envisage possible measures to be taken.

In order to include a large number of distributors in this phase, the Delphi-Régnier Abacus was used. It combines the Delphi format in which a panel of experts answer and mail in a questionnaire with the Régnier Abacus, an expert consulting technique in which votes are color-coded and debated.

Later, on the basis of this analysis, which was complemented by contributions from experts and debates during the wrap-up seminar, three scenarios related to "agriculture and the environment, horizon line 2010" were generated. They present three possible interfaces between the agricultural sector and the environment, according to future visions of the profession.

Two Expert Panels

A hundred general managers of distribution firms (cooperative or commercial) considered representative of the diversity of French agriculture comprised the first panel. Categories included: major grain growers, specialized farmers, intensive or extensive breeders, arboriculturalists, vintners, and mixed-crop farmers... to name a few. The questionnaire was sent to a named addressee and the follow-up process handled by BASF's sales representatives/commercial agents in the various regions. The rate of return was high: 55%, 48% and 58% for the first, second and third rounds. [1]

The second panel comprised forty BASF Agriculture commercial technicians. They answered the same questionnaire, however, this

1. Some seventy percent of the managers polled answered at least one of the three rounds. Slightly more than thirty percent answered all three.

internal consultation allowed the company to develop the thinking process within its own walls, thus improving mutual understanding of the problems and enhancing the possibility of dialogue between BASF and its clients. [1]

The two panels were polled three times on a series of 22 questions presented as statements, for a total of 66 subjects consulted. [2] Ideas covered the past, present and future of the interface between agriculture and the environment, as well as the actions to be implemented. It was also requested that participants explain their choice briefly so that the problem-statement of the two populations surveyed could be elaborated.

Questions were developed for the second and third rounds on the basis of the previous round. The following five themes were highlighted:

– general, social, economic and environmental context;

– overall development of the agricultural channel, and subsequent impact on interfaces with the environment;

– restrictions related to the environment imposed on the channel;

– external actors and their roles or actions in terms of the enviroment;

– behavior and any measures related to the environment within the sector.

Future Visions of Agricultural Distribution

The medium- or long-term visions held by agricultural distribution managers reveal a certain degree of consensus in their votes and explanations. As the following examples illustrate:

– by the horizon line 2010, distributors expect (read hope for) a return in public trust in agriculture. They also believe that accountability (trackability) will play a vital role in regaining the public's confidence;

– overall they do not believe that reinforced environmental restrictions by the year 2010 could challenge the paths and trend-based growth of agriculture; however, they believe in limiting the most harmful forms of restrictions;

– they do think that environmental restrictions will have a major impact on agricultural trades or professions by the year 2010 (e.g. generalization of expenses, statements of requirements, or bids tendered, subcontracting/contractualization, safety goals, etc.).

Through the futures-thinking process, it became obvious that the year 2010 held several major areas of uncertainty in which develop-

1. For this panel response rates obviously reached almost 100 percent.

2. For the second and third rounds, questions took into account previous answers.

ment of the system remains open and the distributors' opinions diverge on the following aspects:

– societal agreement to pay for environmental quality;

– importance and clout of the environment in international trade legislation, especially in WTO regulations;

– development of specific areas of technology in the sector and the possibility that the technology will be implemented and accepted (especially in terms of genetically manipulated food processing).

This uncertainty also affects the behaviour of actors in the sector. Questions may be raised as to:

– the sectorial capacity to develop agriculture that remains intensive and productive but is much cleaner than it is today;

– the sectorial capacity to act as a coordinated unit in environmental measures and actions – obviously this implies significant and coordinated effort in terms of training and developing skills at the local level.

Building "Agriculture/Environment" Scenarios with the Year 2010 as a Horizon

On the basis of participants' visions of the future (either consensus or dissension) morphological analysis was used to draft full scenarios about relations between the agricultural sector and the environment up to the year 2010. Eight building blocks laid the foundation of these scenarios including major arbitration cases involving the economy, social demand, and environmental restrictions, e.g., regulation, commercial skill, demand, and their impact on agriculture, and farmers' taking the environment into account, possibly in their choice of agricultural techniques.

Three scenarios followed: the first is dark; the second, rosy; the third, considered trend-based by many.

– 2010 "conflictual relations" between "agriculture" and the "environment": the relations remain conflictual. Public trust in the sector did not come back, partly because the agricultural sector did not become sufficiently committed to environmental protection, e.g. water and chemical use. Also the sector failed to respond to public concerns about food safety;

– 2010 "rise of logical agriculture" ("integrated farming"): the profession and entire agricultural channel became strictly committed to taking back the environment and meeting society's expectations. The consumer's and citizen's confidence did return. This confidence is based primarily on contractualisation which became commonplace throughout the channel, and on professionalism among those active in the sector plus pertinent, broadly shared information;

– 2010, "plurality and discomfort": Through the efforts of a large segment of the sector, consumers were reassured, however their trust remains shaky. The environment is still perceived as a growing

restriction by the majority in the channel. Some are still uneasy about any improvement in terms of the environment.

The first scenario looks black, while the second seems rosy. The third scenario, according to current dynamics, might be considered the trend-based scenario.

Mobilize Actors on Environmental Challenges

The BASF-client futures process was carried out in a very decentralized way. Several dozen distribution managers as well as BASF employees took part, thus the group could build and refine reference points and ideas which favored integrating the environment into their commercial activities. The Delphi-Abacus method further contributed to the collective learning process. Indeed, often questionnaire answers were developed during real working meetings at the distributors'.

The questions were ordered so that participants were surveyed in a manner conducive to "prospective" and strategy. The following questions exemplify this approach:

– What can happen in the future? Why would the system develop in one way or another?

– What could the impact be on my own activities?

– What could I do to prepare for expected developments or to anticpate them?

– What could I do to make the system head in a direction beneficial to me?

Results of the exercises, especially the scenarios for 2010, were presented several times to general meetings of cooperative or commerical groups, to boards of directors, or to technical/financial staff at training seminars. These presentations further contributed to making actors aware of the importance of the environment among the actors.

Mactor Analysis Applied to Food Safety

Given the tremendous impact of food safety issues and links with environmental problems, e.g. chemicals, pollution, new technology like genetic manipulation, the steering committee decided at the third phase (1997-8) to continue with agricultural distributors on the theme "food safety and the environment".

The objectives were the following:

– analyse the stakes, short and long term, in food safety and the environment plus pinpoint the consequences in terms of either demands or opportunities for the sector;

– know well the downstream situation in both food safety and the environment;

– make downstream segments aware of the upstream situation;
– find possible short-term action to take in conjunction with downstream actors.

The thinking exercises revolved around actor analysis, using the Mactor method.

Make the Entire Agri-food and Agricultural Channel Think Together

Given the significant role played by actors upstream in this channel, the steering committee decided to integrate actors from the agricultural sector as well as consumers and public authorities. Two methods were used:
– interviews with some twenty people during the initial survey;
– participation of representatives from agri-food industries in the Group.

The Circle comprised some fifteen people:
– distributors (half downstream in the agri-food channel);
– farmers;
– representatives from large food industrial groups;
– BASF members.

A smaller group within BASF worked in close cooperation with the Gerpa consulting group to prepare the meetings and prepare reports in between each meeting. Professor Michel Godet supervised the process.

Other actors, such as public authorities, consumers' groups and distributors were met during the initial questionnaire stage and became involved in the process during the intitial seminar and during the debate over the results in the fall of 1998.

The Four stages of the Mactor Method

The Futures Studies Group analysed strategies regarding food safety and the environment using the Mactor method. This method is structured around several components, which are described here as four distinct stages.

The first stage seek to identify the different dimensions of the problem, e.g. the issues at stake and potential battlegrounds, the main actors, and their objectives as they engage on the battlegrounds identified.

In this case, a detailed survey was conducted among all the actors (including industrial suppliers, agricultural distributors, farmers, representatives of the agri-foodstuffs industry and the mass marketing sector plus consumers). The Futures Studies Group then analysed and summarized survey findings.

The second stage involved analysing and describing the strategies identified, in two ways:

i) identifying the direct influences exerted by the actors on each other ("actors/actors" matrix), and;

ii) describing and measuring the position of each actor in relation to each objective ("actors/objectives" matrix).

This second stage was carried out as a joint effort by the Futures Studies Group, during two meetings lasting about ten hours altogether.

In the third stage, the two matrices are fed into the Mactor software for processing. The result helps us provide a more detailed picture of the relative positions of all the actors (dominant or dominated by others), to identify the objectives for which they feel the most concern, those which are controversial or not, and to highlight the diverging and converging interests reflected in the various positions.

Results are interpreted during the fourth stage. After this, of course, the results are made available to all the actors so that they can analyse them in the light of their specific situation or their own ideas on the issues involved, and draw out conclusions for their corporate strategies.

Ten Issues, Eighteen Actors, and Twenty-One Objectives

The basic construct for this analysis of strategies on food safety and the environment was built up in two stages.

First, some fifteen interviews were conducted with representatives from all segments, from industrial suppliers upstream right through to the mass marketing industry and consumers.

Interviews were thus conducted with farmers, representatives from agricultural cooperatives (with or without downstream activities), agri-foodstuffs manufacturers, representatives from mass marketing corporations and consumer observers.

In addition, documents were compiled to ascertain and include the positions of various other parties interested in the debate on food safety and the environment (conference reports, interviews in specialised journals, etc.), together with the results of opinion polls conducted among the general public and agricultural community.

The Top Ten Issues

Using these interviews as a basis, the Futures Studies Group identified the major areas where food safety and environmental issues emerge. These areas make up the "battlefields" where the future of the food system will be played out around the theme of food safety.

Depending on which way the stakes are played out, the story of the food chain will be very different. The same issues polarize the various actors as they take up their positions on a series of objectives and as they seek to protect their interests and achieve certain results.

Although the identification of the issues at stake is not used as direct input in the Mactor procedure, this is the foundation on which the two essential components of the method are established; i.e., the list of actors and the list of objectives.

The final list of issues identified by the Futures Studies Group included the following:

1. Consumer confidence in food products.
2. Consumer arbitration/participation on food quality and safety as well as on environmental protection.
3. Relevance and quality of consumer information.
4. Changing environmental and health standards.
5. Impact of new technologies (products and processes).
6. Degree of control over the system – or leadership – exerted by the mass marketing sector.
7. Upstream/downstream integration and increasingly frequent contractual arrangements in agricultural production.
8. Distribution of costs and added value within the system.
9. Overall competitiveness of French agri-foodstuffs (including environmental protection and food safety aspects).
10. Distribution of (legal) responsibility for food safety.

Eighteen Actors

Using the list of ten main issues, together with research data from previous years and findings from the interviews conducted in the first phase, the Futures Studies Group drew up a final list of eighteen actors who were considered key actors in terms of the future of food safety.

These actors were identified and differentiated in particular through the convergence or divergence of their positions with regard to the main battlefield areas.

Two types of actors in agricultural distribution (cooperatives or commercial enterprises) were identified in this way, those with and those without activities which would therefore integrate them within downstream segments. It was considered that those with experience and responsibilities in the manufacture of processed products, and especially in marketing them directly to the public, played a different role from that of distributors who are only involved in supplying products or collecting them from farmers.

Similarly, the Futures Studies Group made a distinction between consumer associations and environmental protection associations. Although some of their concerns lie in the same areas, e.g. the use of plant protection products or pollutant discharges into water, their behavior patterns and objectives are not quite identical. In addition, they do not initially place the same emphasis on some food safety objectives.

The final list of actors identified by the Group was as follows:

1. Industrial suppliers not involved in R&D.
2. Industrial suppliers involved in R&D.
3. Agricultural distribution (supply and collection only).
4. Agricultural distribution with downstream integration in agri-foodstuffs.
5. Farmers under contract to downstream agri-foodstuffs manufacturers.
6. Independent (non-integrated) farmers.
7. Large agri-foodstuffs companies.
8. Small agri-foodstuffs companies.
9. Mass marketing (including "deep", or "hard" discount).
10. Specialized distribution and retailing.
11. Catering.
12. National agricultural organisations (including advisory bodies).
13. National government (ministries).
14. Regional authorities (devolved state authorities, local government).
15. Supranational organisations (European Union) and international organisations (WHO – World Health Organization, WTO, FAO, etc.).
16. The media.
17. Consumer associations.
18. Environmental protection associations.

It should be remembered that this list, like the list of objectives further on, was drawn up by a Futures Studies Group in which the upstream segments of the system were represented only by the agro-chemicals and agro-pharmaceuticals industries through to the agri-foodstuffs industry. Neither the mass marketing sector nor consumers were directly represented. Both lists may therefore be slightly biased.

Nevertheless, these downstream actors were fairly widely interviewed during the initial survey. Moreover, the upstream actors represented in the Forward Studies group – especially the agri-foodstuffs industrialists – are in daily contact with those not involved in the Committee's discussions and are well acquainted with their positions and strategies.

Twenty-One Objectives

As representatives of their category within the system, members of the Futures Studies Group identified objectives by describing their aims on the various "battlefields".

On the basis of this initial material (about fifty objectives identified during the workshops), the group drew up a final list of twenty-one objectives. These were the objectives that it considered were being pursued by the eighteen actors identified above, within the major issues at stake where the future of food safety will be determinated.

The wording of these objectives needed to be formalized as much as possible. Because the method involves positioning each actor accord-

ing to whether they are very much in favour, in favour, indifferent, not in favour or very much against, the objective have to be formalized as specifically as possible to allow the position of each actor to be assessed correctly.

The final list of twenty-one objectives identified by the Committee was as follows:

1. Ensure that all products supplied by the system are harmless to public health.
2. Ensure adequate transparency (good practice report, traceability).
3. Make continuous objective assessments of the "household shopping basket" to check on food safety and environmental compatibility "from table back to stable".
4. Educate and inform the public on the issues at stake in the food system, especially technological issues.
5. Protect brand name image (especially as regards product safety, "tradition" and environmental compatibility).
6. Promote the "environmental and safety" content of distributor brands.
7. Shorten supply channels (from farms to consumers).
   [Reduce the number of intermediaries (processing, transport, retail outlets, etc.) between producers and consumers. In other words, "cut out the middleman".]
8. Develop quality labelling and promote local specialities.
9. Inform public debate, even by "fostering controversies" over new technologies.
10. Restore confidence in institutions as well as in health and environmental monitoring procedures.
11. Ensure both nutritional quality and flavour in products.
12. Introduce new and rational regulations.
    [Which must be well founded scientifically as well as politically and socially applicable and economically sound.]
13. Focus on new technologies to enhance competitiveness through innovation.
14. Ensure that added value accrues to upstream segments (primary production and processing).
    [Added value to be shared in such a way as to ensure the survival of upstream segments, especially by justly rewarding their services.]
15. Reflect competitive sales prices downstream in purchase prices upstream.
    [Ensure that downstream competition or lower consumer prices are paid for by all those involved in the system.]
16. Develop contract-based arrangements between responsible partners
17. Develop integration from downstream segments (distribution).
    [For mass marketing corporations, to acquire or develop the means to integrate food production or processing with its suppliers upstream.]
18. Implement incentives and eco-taxes for the agri-foodstuffs sector.
19. Clarify the legal responsibilities of each level in the system and provide information on these responsibilities.
20. Avoid maximizing the use of the precautionary principle.
21. Maintain control over the environmental impacts of the system.

Four Main Types of Objectives

Most of the twenty-one objectives may be grouped into four main categories:

- protection of the public interest;
- internal system operation;
- information for citizens and users, and public debate;
- the "rules of the game" for the future.

Public interest objectives

Some objectives are fairly general and relate to the public or collective interest. These include objective n° 1 *[Ensure that all products supplied by the system are harmless to health]*, n° 3 *[Make continuous objective assessments of the "household shopping basket"...]*, or n° 21 *[Maintain control over the environmental impacts of the system].*

Objectives concerning internal system operation

Other objectives relate more to the way the system operates. These include competition or internal technical or economic cooperation within the system, and include n° 14 *[Ensure that added value accrues to upstream segments (primary production and processing)]*, or n° 16 *[Develop contract-based arrangements between responsible partners].*

Objectives concerning information and public debate

Several objectives involve education, information and awareness issues and public debate. Naturally they are important in confrontations between actors over the issue of food safety.

For example, objectives n° 4 *[Educate and inform the public on the issues at stake in the food supply system, especially technological issues]*, n° 9 *[Inform public debate, including by "fostering controversies" on new technologies]*, or n° 19 *[Clarify the legal and penal responsibilities of each level in the system and provide information on these responsibilities]* all belong to this group.

The fact that several objectives of this type exist demonstrates the importance given by the Forecasting Group to public awareness in strategic interplay among actors, both today and in the years to come.

Objectives likely to determine the rules of the game in the future

In the end, a number of objectives will determine how food safety "battlefields" are likely to evolve in the future. The battles taking place around these objectives and the way conflicts of interest are resolved will contribute to the laying down of new rules, which – depending on the direction taken by the system – will be more or less favourable to food safety, to maintaining control over risks to consumers, and to technical innovation.

These same objectives will affect how the future of food safety plays out.

Examples of these key objectives are n° 10 *[Restore confidence in institutions and in health and environmental monitoring procedures]*, n° 18 *[Develop incentives and eco-taxes for the agri-foodstuffs sector]* and n° 20 *[Avoid maximizing the use of the precautionary principle]*.

Two Input Matrices: "Actors/Actors"; "Actors/Objectives"

Professionals Exchanging Views to Fill In the Two Input Data Tables

How strategies on food safety and the environment are carried out will depend not only on the positions each one adopts for or against the various objectives, but also on the strengths of each actor, on the influence they have on each other and on the pressure they are capable of exerting on the system.

Two types of relationships therefore needed to be documented: the position of each actor with regard to the objectives, and the influence exerted by the actors on each other.

Two Mactor input data tables were filled in to obtain:

– the "actors/actors" matrix shows the direct influence each actor is capable of exerting on each of the others;

– the "actors/objectives" matrix shows the position (for or against) of each actor in relation to each objective.

These two matrices (see input data conventions below) were built up by the Futures Studies Group in the course of two working sessions, representing a total of about ten hours of discussion.

The discussions which took place among the members of the Futures Studies Group (upstream industrialists, agricultural distributors, agri-foodstuffs manufacturers) were extremely fruitful. All those taking part were able to explain clearly how they saw each issue, so that the discussions led all of them, as representatives of their "category", to give an accurate idea of their position regarding each of the objectives identified by the group.

By formalizing this input in table form after all the questions had been put systematically to all actors, on all topics, or objectives, the Futures Studies Group was able to build up a picture of the system and a jointly agreed "starting position".

This starting point, or common view, was reflected in the two matrices and subsequently used as input data for the Mactor processing package. This package not only provides different synoptic pictures, but also brings out various hidden parameters, which are otherwise masked by the complexities of the system (18 different actors and 21 different objectives, i.e. total of some 700 possible intersections between actors and between actors and objectives).

Conventions used to fill in the "actors/actors" matrix

The table showing the relative powers of influence of actors on each other was filled in using the following scale:

4: **"i"** is capable of jeopardizing the very existence of **"j"** is vital to the existence of **"j"**;
3: **"i"** is capable of preventing **"j"** from carrying out his missions;
2: **"i"** is capable of jeopardizing the success of projects undertaken by **"j"**;
1: **"i"** is capable of jeopardizing the management processes of **"j"** to some extent in time and space;
0: **"i"** has little influence on **"j"**.

Conventions used to fill in the "actors/objectives" matrix

The table showing positions with regard to objectives specifies:

a) agreement or disagreement on the objectives, using the following conventions:
(+) if actor **"i"** is in favour of objective **"j"**;
(–) if **"i"** is not in favour of objective **"j"**;
(0) if **"i"** has a neutral or indifferent position regarding **"j"**;
b) four different levels of agreement or disagreement, revealing the degree of priority given to each objective:
4: the objective jeopardizes the actor's very existence/is vital to the actor's existence;
3: the objective jeopardizes the fulfilment of the actor's missions/is vital to the actor's missions;
2: the objective jeopardizes the success of the actor's plans/is vital to the actor's plans;
1: the objective jeopardizes the actor's operational processes (management etc.)/ is vital to the actor's operational processes.

Highly Uneven Powers of Influence

Outline of the Methodology

The following table ("actors/actors" matrix) showing the direct influence of each actor on one another gives the total "influence" (horizontal sum of indice in the matrix) and total "dependence" (vertical sum) of each actor on the system. This makes it possible to calculate the indicators which position each actor in terms of "influence/dependence", thus showing their relative positions.

Influence may be exerted directly by one actor on another, but also indirectly through a third. These indirect influences (and dependencies) can be accounted for through a simple calculation to give a more exact picture of reciprocal influence.

Both the degree of influence and dependence of each actor and the feedback reactions that can affect them can be integrated in a single synoptic parameter expressing the balance of power. The more favourable this is to a given actor, the more power he has to influence both the way the system evolves and the other actors, and the less subject he is to the influence of others.

Actors × Actors Matrix

Actors	Suppliers with no R&D	Suppliers with R&D	Agricultural distribution with no downstream integration	Agricultural distribution with downstream integration	Integrated farmers	Non-integrated farmers	Large agri-foodstuffs Co.	Small agri-foodstuffs Co.	Mass marketing	Other distributors	Catering	Agricultural professional bodies	National authorities	Regional authorities	International organisations	Media	Consumer associations	Environmental protection associations
Suppliers with no R&D	0	2	1	1	0	1	0	0	0	0	0	1	1	1	0	1	0	0
Suppliers with R&D	2	0	2	3	1	1	0	0	0	0	0	1	1	2	1	1	1	1
Agricultural distribution with no downstream integration	3	2	0	1	2	1	0	1	0	0	0	2	0	1	0	1	0	1
Agricultural distribution with downstream integration	3	3	1	0	3	1	1	2	0	1	0	3	1	2	0	1	1	1
Integrated farmers	2	2	3	3	0	1	0	1	1	1	0	3	2	2	0	0	0	0
Non-integrated farmers	2	2	3	3	1	0	0	0	1	1	0	3	1	1	0	0	0	0
Large agri-foodstuffs Co.	3	2	3	3	3	1	0	1	3	3	3	1	2	2	2	2	1	1
Small agri-foodstuffs Co.	2	2	2	2	1	0	1	0	1	2	1	0	1	2	1	1	0	0
Mass marketing	1	1	1	3	3	1	3	4	0	2	1	1	2	2	1	2	1	1
Other distributors	0	0	1	3	1	1	1	2	1	0	0	0	1	2	0	1	0	0
Catering	0	0	0	1	0	0	2	2	0	1	0	0	0	1	0	0	0	0
Agricultural professional bodies	2	2	2	2	3	2	1	1	1	1	0	0	2	2	1	1	1	1
National authorities	3	3	3	3	4	4	3	4	3	3	3	2	0	2	2	2	1	1
Regional authorities	2	2	3	3	3	3	3	3	2	2	3	1	2	0	1	2	1	1
International organisations	3	3	3	3	4	4	3	4	2	2	3	2	3	3	0	1	1	1
Media	2	2	2	2	2	2	2	3	2	3	3	1	3	3	1	0	3	2
Consumer associations	2	2	2	2	2	2	3	2	3	2	2	1	2	2	2	2	0	1
Environmental protection associations	2	2	2	2	2	2	3	2	2	1	0	1	3	3	2	2	1	0

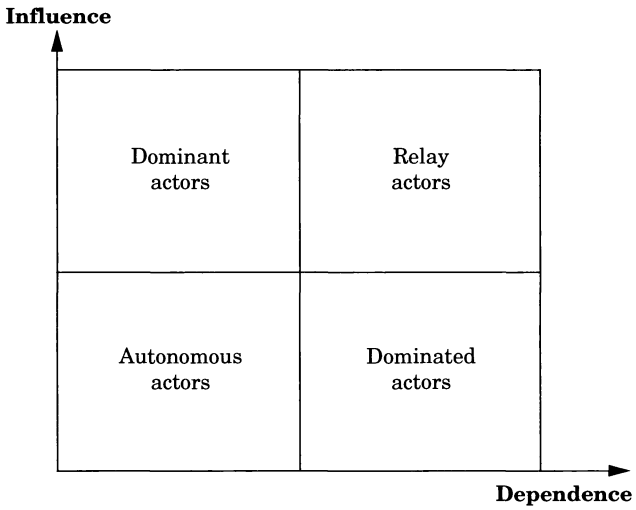
MACTOR

Actors × Objectives Matrix

Actors \ Objectives	Ensure health and safety	Ensure required transparency	Shopping basket assessments	Educate and inform the public	Protect brand name image	Promote distributor brand content	Shorten channels	Develop quality labels enhance local specialities	Inform public debate, foster controversies	Restore confidence in institutions	Ensure nutritional quality and flavour	Introduce new and rational regulations	Increase competitiveness through techn. innovation	Ensure added value upstream	Reflect downstream competitive pricing in upstream prices	Develop contracts and partenerships	Develop integration from downstream	Develop incentives and eco-taxes	Clarify legal and penal responsabilities	Avoid maximasing the use of the precautionary principle	Control environmental impacts
Suppliers with no R&D	1	−2	0	−2	0	0	0	−2	−3	2	0	−2	0	3	0	0	−1	0	−2	3	0
Suppliers with R&D	3	3	1	2	0	0	0	2	−3	3	2	3	3	3	−3	2	1	1	3	3	3
Agricultural distribution with no downstream integration	2	2	1	1	1	1	−3	2	−3	3	2	3	2	3	−3	2	−3	−2	2	3	2
Agricultural distribution with downstream integration	3	3	2	2	2	2	−3	2	−3	3	3	3	3	3	−3	3	−3	−2	3	3	2
Integrated farmers	3	3	2	1	2	1	2	3	−3	3	2	2	2	4	−4	3	−2	−3	2	3	2
Non-integrated farmers	2	1	0	1	0	0	3	3	−3	2	2	1	2	4	−4	1	−4	−3	1	3	1
Large agri-foodstuffs Co.	4	3	3	3	4	−1	−2	0	−3	3	4	3	3	4	−4	3	−3	1	3	3	2
Small agri-foodstuffs Co.	4	3	3	2	4	0	0	2	−3	3	4	3	3	4	−4	3	−3	−1	3	3	1
Mass marketing	4	3	3	2	1	3	2	3	2	2	3	2	2	0	4	3	2	0	3	−1	1
Other distributors	4	3	3	2	2	−3	2	3	0	2	3	1	1	0	4	2	0	0	3	0	1
Catering	4	2	3	1	0	0	0	1	−3	2	4	3	2	0	4	1	0	−1	3	1	1
Agricultural professional bodies	2	2	0	1	0	0	1	3	2	2	0	1	2	4	−4	2	−3	−2	0	3	2
National authorities	4	3	2	1	0	0	0	3	−3	4	1	3	1	2	1	0	0	2	2	−2	3
Regional authorities	4	3	2	1	0	0	1	3	−3	4	1	2	2	3	1	1	−1	2	2	−3	3
International organisations	4	2	0	0	0	0	0	1	−2	3	1	2	1	1	0	0	0	1	2	−2	2
Media	0	0	1	3	0	0	0	1	4	−1	0	0	0	0	0	0	0	0	2	0	0
Consumer associations	4	3	3	2	0	0	3	2	3	3	3	2	2	0	0	1	0	2	3	−3	2
Environmental protection associations	3	3	2	2	0	0	1	2	4	2	1	1	−1	0	0	0	0	3	2	−3	4

MACTOR

The following diagram shows how influence and dependence can be mapped as a diagram.



Dominant, Relay and Dominated Actors

This diagram, based directly on the input data compiled by the Futures Studies Group, shows the following:

– dominant actors, i.e. those who are capable of exerting strong pressures on the others without being subject to strong pressures themselves. These are primarily external to the system and include international organisations, the media and consumer or environmental organisations;

– relay actors, who are both highly influential and subject to strong pressures themselves: these are the other external actors (national and regional authorities) and, internally, the agricultural professional bodies, large agri-foodstuffs industries and mass marketing corporations;

– dominated actors, who have little influence on the others but are subject to strong pressures themselves. These include all upstream actors except the large agri-foodstuffs industries and distributors other than mass marketing corporations.

Only one actor, representing "catering", seems relatively autonomous (exerts little influence, but not much subject to pressure).

Which shows the indirect influence and dependence of actors on each other, is closer to the actual pattern of interplay. Here, three others have joined the group of dominant actors: national authorities, large agri-foodstuffs industries and mass marketing corporations.

Apart from the large agri-foodstuffs (AF) industries, all other actors in the upstream food economy are in a position of dependence within the system.

As both highly influential and highly dependent, the regional authorities and agricultural professional bodies (APB) are in an intermediate position. Either by virtue of their position as spokesmen for their profession at national level, or as public bodies with strong regional attachments, both play an essential role as relays in the system.

By comparing intersecting positions as represented by each pair in the analysis – such as industrialists, farmers and distributors – we can discern differences in their positions on the "playing field". Involvement in R&D (as in the case of industrial suppliers), integration with downstream segments (as in the case of agricultural distributors) and – to a lesser extent – integration within a sector of the system (farmers) increases potential influence within the system.

Relative Powers of Influence

The six influential or highly influential actors are mostly external to the system. These are the international organizations and national authorities, associations and the media, to which may be added the large agri-foodstuffs manufacturers and mass marketing corporations.

Two of the actors have average powers of influence: the agricultural professional bodies and the regional authorities.

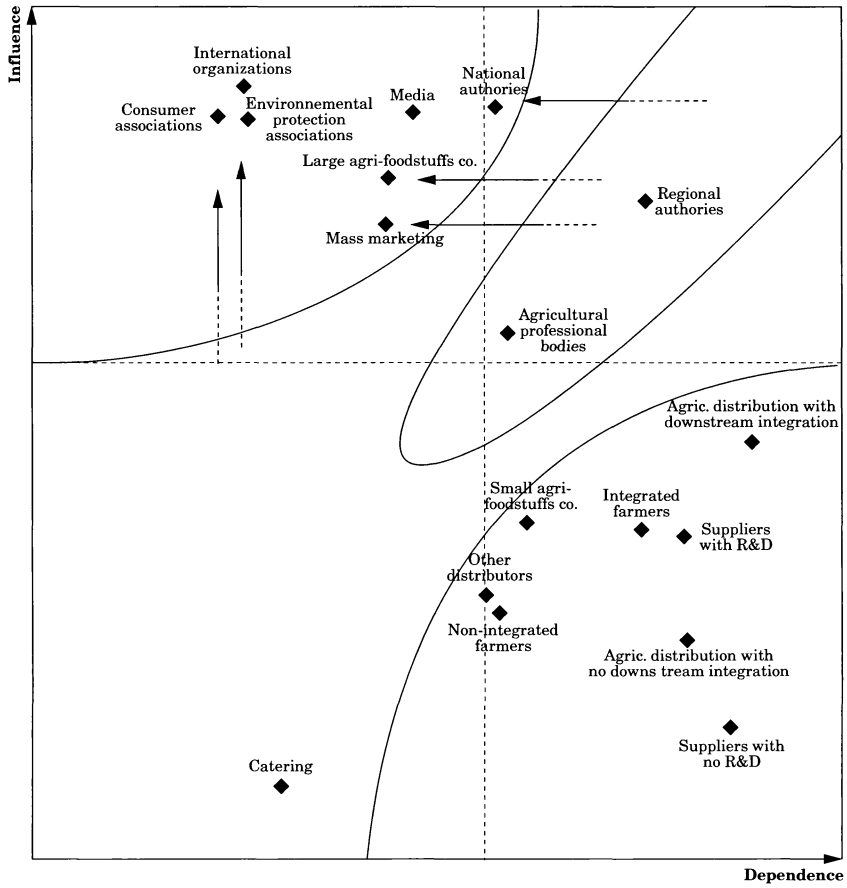
In all the others, powers of influence are moderate to low; i.e. well below 1, or even very low as in non-integrated agricultural distribution, catering, suppliers not involved in R&D.

Taking average powers of influence as equal to 1, the figure for suppliers involved in R&D is 0.48; whereas integrated farmers stand at 0.53, and agricultural distributors with downstream integration at 0.61.

Involvement in R&D (distributors), downstream integration (distributors) and – to a lesser extent – integration within a sector of the system (farmers) increases powers of influence and therefore the actor's ability to exert pressure on the system.

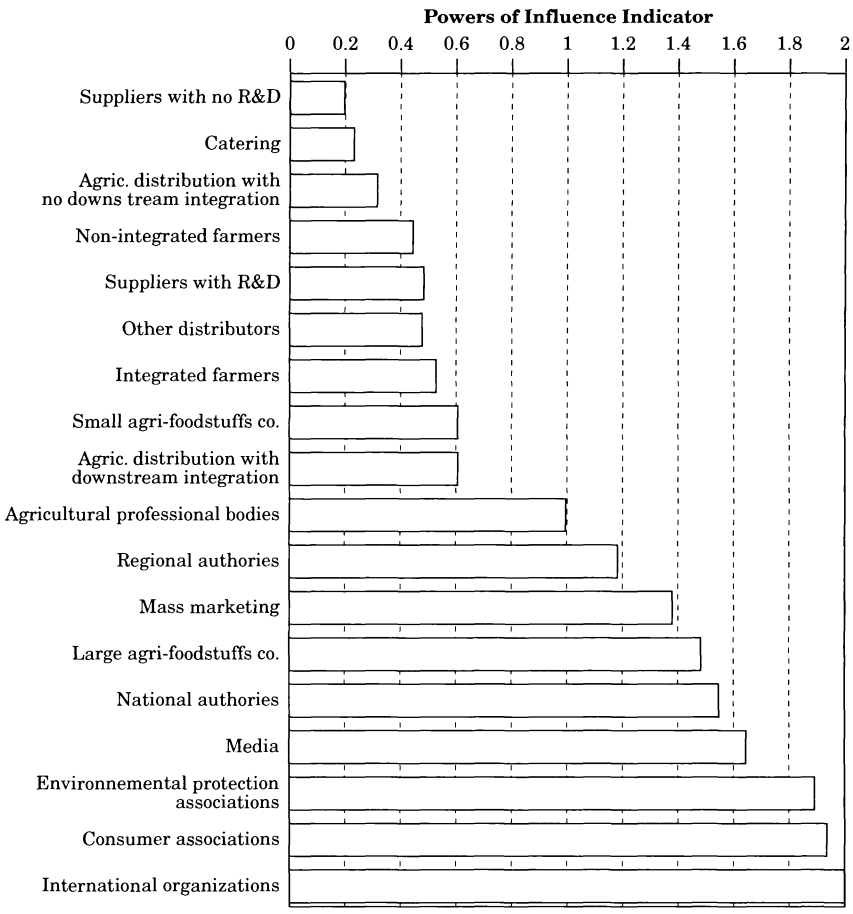
The leading distribution companies score 1.39 and the major agri-foodstuffs industries 1.49. At the top of the power of influence league, the associations stand at around 1.9 and international organisations at 2.

Relative Influence and Dependence



The arrows show the main directions in which secondary influences are exerted between actors. They show, for example, how national authorities and leading agri-foodstuffs and mass marketing corporations become part of the dominant group.

Relative Powers of Influence among Actors



Example:
Consumer associations or environmental protection organisations have practically twice as much power of influence as agricultural professional bodies and three times as much as agricultural distributors.

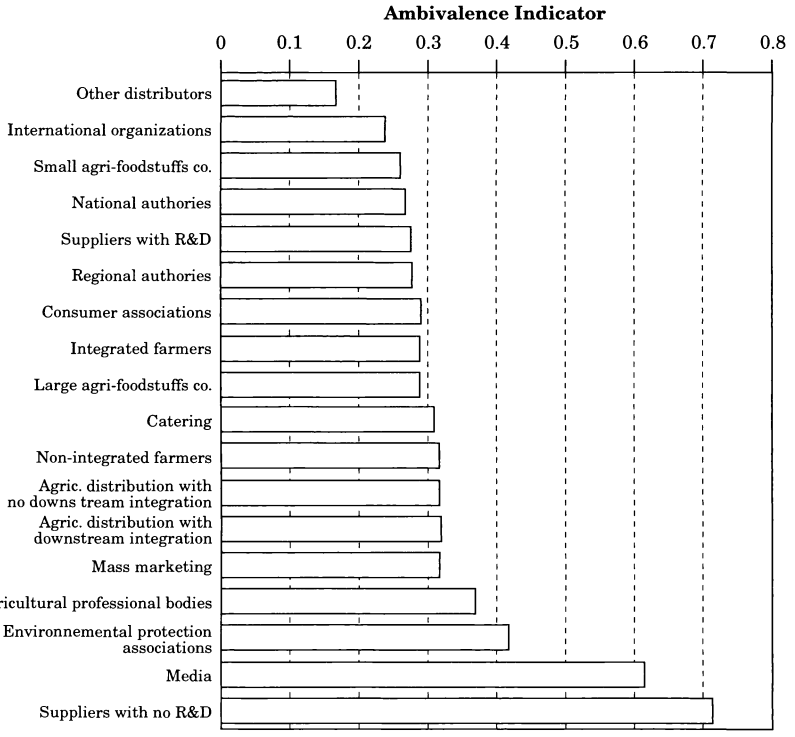
Ambivalent Positions

One actor's position may converge with another's regarding specific objectives, while diverging from the latter on a different objective. If the same actor demonstrates similar ambiguity in relation to all the others, then he may be considered as highly ambivalent, and, preferably, should not be actively sought as a partner.

Overall ambivalence among the various actors was fairly moderate, with scores ranging from 0.18 to 0.72.

The least ambivalent, and therefore the most "dependable" as allies, include distributors other than mass marketing, international organisations and the small agri-foodstuffs manufacturers. At the other end of the scale, the most ambivalent, and therefore the least dependable, are suppliers not involved in R&D, the media, and environmental protection associations.

Ambivalence Ratings



The more ambivalent an actor appears, the more caution should be exercised when considering alliances.

Legend: The ambivalence indicator - calculated here by integrating weightings by objective - may vary by convention from 0 (non ambivalent) to 1 (highly ambivalent).

Actors' Positions towards the Objectives

Outline of the Methodology

The data table ("actors/objectives" matrix) shows "valued" positions towards each objective. This reveals the extent of each actor's involvement in an objective, thus reflecting the importance they attach to each one.

The matrix of "non valued" positions (where positions towards objectives are shown only as positive, negative or neutral, regardless of degree) shows the number of actors concerned by each objective, whether they are for, against, or indifferent, and the number of objectives which concern each actor (for, against or indifferent).

In the matrix of "valued and weighted" positions, the power of influence of each actor is used to calculate a weighting for their involvement in the various objectives. This gives an idea of their degree of "commitment", or mobilization, and thus of their strength in relation to other actors.

Degrees of Commitment

Those concerned by all twenty-one objectives, and who are therefore to be reckoned with on all the battlefields, are the agricultural distributors (with or without food-processing) and the integrated farmers.

After these two groups come those highly concerned (by 18 to 20 objectives). They are the large and small agri-foodstuffs manufac-

Number of Objectives of Concern to Each Actor

21 objectives	– Agricultural distribution – Agricultural distribution with downstream integration – Integrated farmers
20 objectives	– Major agri-foodstuffs industries
19 objectives	– Small agri-foodstuffs industries – Mass marketing – Regional authorities
18 objectives	– Suppliers involved in R&D – Non integrated farmers
16 objectives	– Other types of distribution – Catering – Agricultural professional bodies – National authorities – Consumer associations
15 objectives	– Environmental protection associations
13 objectives	– International organizations
11 objectives	– Suppliers with no R&D
6 objectives	– Media

turers, mass marketing corporations, regional authorities, suppliers involved in R&D and farmers whose activities are integrated within a segment.

On the other hand, only six objectives concern the media. They are thus relatively independent in terms of the system. Obviously their stakes are elsewhere. The six objectives through which they interact with the system must be paid close attention, all the more so since they possess considerable powers of influence.

The least concerned are suppliers not involved in R&D (11 objectives) and international organisations (13 objectives). The remaining actors are still largely concerned by 15 to 16 objectives out of 21.

Objectives Involving the Largest Number of Actors

The objectives in which the largest number of actors feel involved are related to confidence, safety, controversies, and legal matters. These same objectives also have to do with informing the public: information, labelling and transparency.

Obviously, these are objectives of common interest, which are of concern not only to the technical segments, but also to the authorities at all levels, end users and associations.

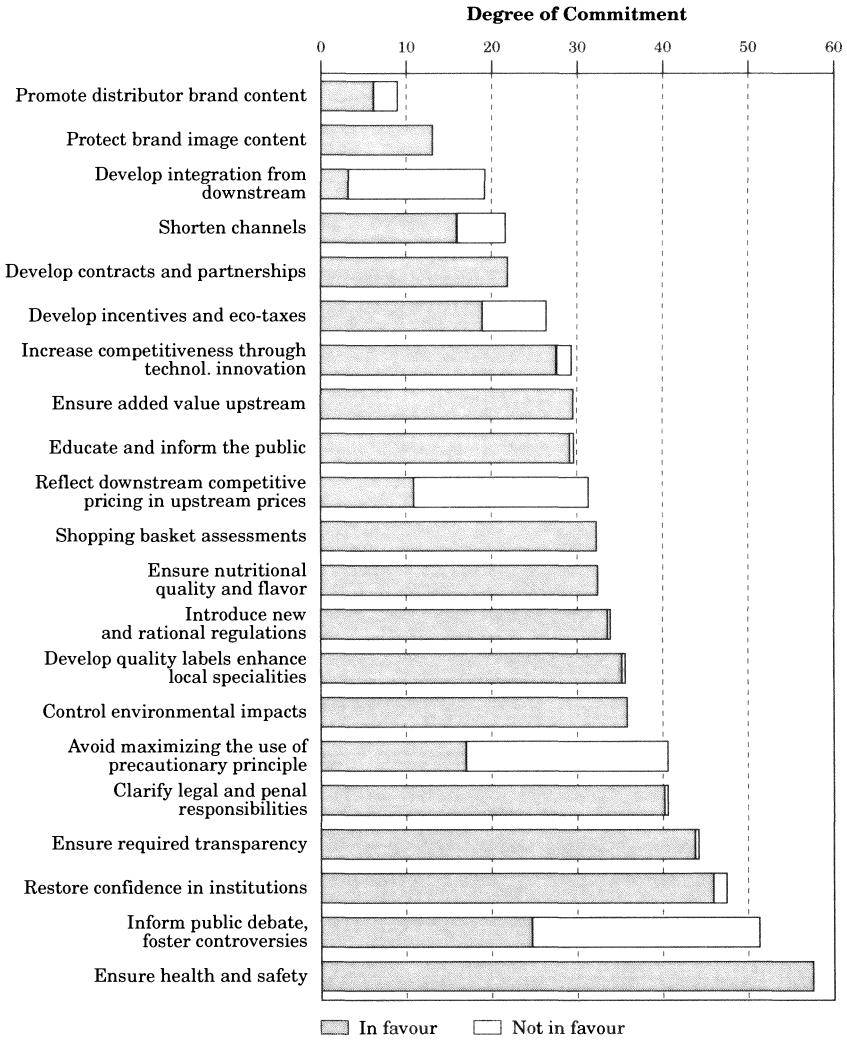
Number of Actors Concerned by Each Objective

– Restore confidence in institutions	18
– Ensure health and safety – Ensure required transparency – Educate and inform the public at large – Develop quality labels, enhance local specialities – Inform public debate, foster controversies – Introduce new and rational regulations – Clarify legal and penal responsibilities	17
– Increase competitiveness through technical innovation – Avoid maximizing the use of the precautionary principle – Control environmental impacts	16
– Ensure nutritional quality and flavour	15
– Shopping basket assessments (safety, environmental impacts) – Develop incentives and eco-taxes	14
– Reflect downstream competitive pricing in upstream prices – Develop contract and partnerships	13
– Ensure added value upstream	12
– Shorten circuits – Develop integration from downstream	11
– Protect brand name image	7
– Promote distributor brand content	6

It would therefore be possible for the sector as a whole to establish cooperation strategies for these objectives, which are of concern to a high number of actors.

However, the objectives which concern the greater number are also those which will determine how the system evolves in the years to come, e.g. introducing rational regulations, mastering the precautionary principle or developing technical innovation.

Actors' Degrees of Commitment to the 21 Objectives



This table shows degrees of commitment (taking the balance of power into account), and which objectives create divisions (relative weight of positions for and against each objective).

On the other hand, the objectives which are of less widespread concern have more to do with internal issues of a technical, economic or managerial nature. These include distributor brands and brand-name products, integration from downstream segments and developing shorter channels.

When the balance of either power or influence are brought into play, we can go further and discern relative degrees of commitment for each objective for each actor.

The objectives which summon up the greatest degree of commitment, and around which the fiercest battles are likely to be fought when they are divisive – and which, *a contrario*, will rally the strongest support when they create a consensus – are those concerning safety, controversies, confidence and transparency, closely followed by legal matters and the precautionary principle.

Many Objectives Generate Agreement, Some Are Deeply Divisive

Depending on how positions for and against the objectives are distributed, they will generate either agreement or conflict in varying degrees. In addition, the actors involved in strategies specific to these objectives will have varying powers of influence. The scale of confrontation will also depend on the number of actors and their relative powers of influence over the system.

Divergence is obvious for the following two objectives, with about as many in favour of them as against:

– introduction of eco-taxes (7 pluses – those in favour – and 7 minuses – those against);

– ensuring added value downstream (5 pluses and 8 minuses).

Five of the objectives generate even greater conflicts of interest:

– fostering controversies (5 pluses and 12 minuses);

– shorter channels (8 pluses and 3 minuses);

– avoiding maximalist use of precautionary principle (10 pluses and 6 minuses);

– promoting the safety and environmental content of distributor brands (4 pluses and 2 minuses);

– developing integration from downstream (2 pluses and 9 minuses).

The table shows that several objectives bring a large number of protagonists into play and will therefore generate marked dissent. This is particularly true of the divisive objectives which are likely to weigh heavily on the way the system evolves in the medium- to long-term, and on the major mechanisms of arbitration:

– fostering controversies (17 actors concerned);

– avoiding maximalist use of the precautionary principle (16 actors concerned);

– introducing eco-taxes (14 actors concerned).

Other objectives are obvious causes of dissent within the system, but concern comparatively fewer actors:

– developing shorter circuits;

– protecting downstream added value;

– highlighting the safety and "environment" content of distributor brands;

– developing integration from downstream.

All the other objectives generate either a high degree of agreement (with only one against and all others in favour) or complete agreement (no opponents). This is particularly true of all the objectives of general interest to society as a whole – those concerning safety, confidence, transparency or environmental impacts, for example – and of those which are internal to the system, concerning partnerships, upstream added value and branded products (but not distributor brands). It should be noted that mass distribution needs branded products when consumers ask/clamor for them. However, this consensus does not apply to distributor's brands which independent farmers or small companies, but especially the other distribution channels oppose.

Varying Powers of Influence over Divisive Objectives

When powers of influence are taken into account; i.e., the capacities of those involved in various objectives to exert pressure and thus determine the outcome of battles over divisive objectives, this can reverse the powers of reciprocal influence between actors engaged in conflict or with opposing interests.

This does indeed occur for three of the most divisive objectives:

– avoiding maximalist use of the precautionary principle;

– introducing eco-taxes;

– fostering controversies over new technologies.

Moreover, these divisive objectives, together with the direction in which conflicts are resolved, will largely determine how the system evolves in the medium- and long-term.

Will the direction taken be rather favourable to the system; i.e., a tendency to rely on innovation, on possibilities for implementing new techniques and on the public confidence, or will the balance of power encourage trends in the opposite direction, with strict application of the precautionary principle, and constant uncertainty as to the risks or social usefulness of new technologies?

In the case of the three divisive objectives that are internal to the system, the powers of influence do not tip the balance either way between degrees of commitment hence:

– those in favor of shortening circuits are in the majority;

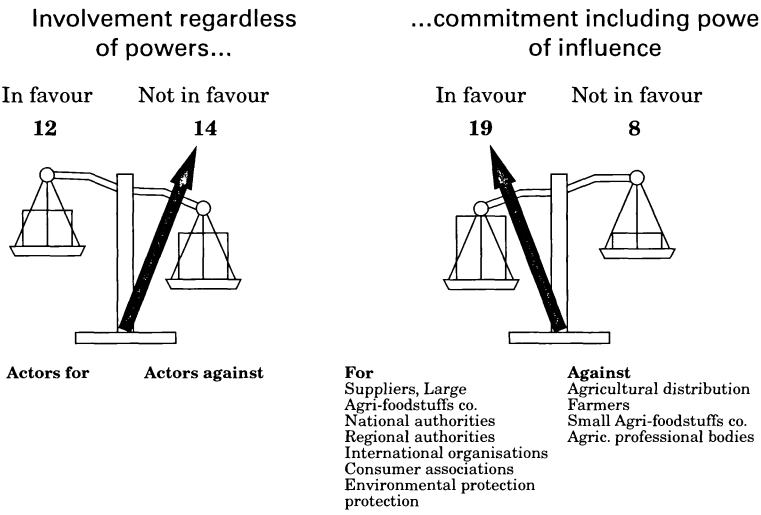
– those against reflecting competitive pricing downstream in purchase prices upstream seem to be more highly committed than those in favour;

– those in favour of integration from downstream are in the minority.

Towards Eco-Taxation

With the "eco-taxes" objective, the balance of power shifts towards those in favour of eco-taxation when degrees of commitment, where powers of influence come into play, are taken into account (+ 19 et – 8), but the situation is reversed when only involvement is considered (+ 12 and – 14).

"Developing incentives and eco-taxes in the agri-foodstuffs sector"



Those in favour (suppliers with R&D, large agri-foodstuffs manufacturers, public authorities in general and associations) outscore those against (upstream segments).

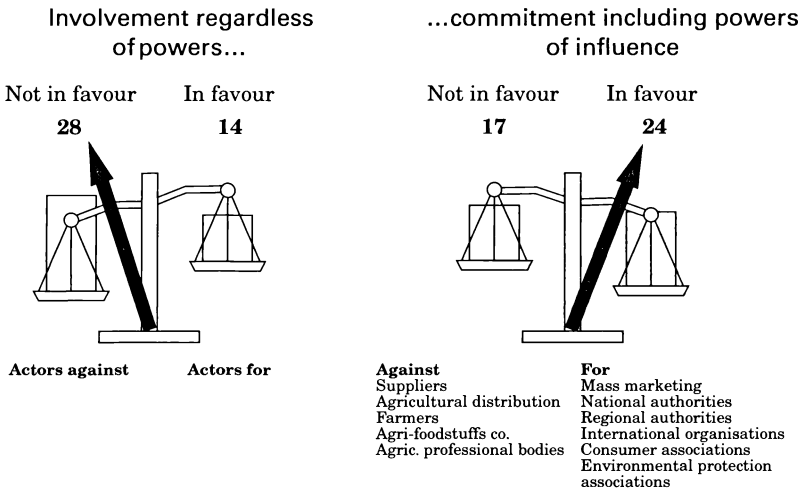
Towards Maximum Use of the Precautionary Principle

The pattern appears the same for the objective on "promoting the maximum use of the precautionary principle". This objective was originally entitled "avoiding maximum use of the precautionary principle", but was changed here to "promoting maximum use of the precautionary principle" for greater clarity. However those against were in the majority when classified by involvement (– 28, + 14), the situation is reversed when degrees of commitment (bringing powers of influence into play) are considered.

The index of commitment for those against this objective is – 17. For those in favour, who are often opposed to the introduction of new technologies, the index of commitment is + 24.

Those in favour of maximizing use of the precautionary principle are in the majority and hence defeat their opponents.

"Promoting maximum use of the precautionary principle"



Regional, national and international authorities and both types of associations outscore those against this objective (all of influence upstream segments).

Towards Permanent Controversy

In terms of "fostering controversies", the outcome (+ 15 and – 35) was more favourable to those against when involvement was considered (where bringing powers of influence are not taken into account). Bringing powers of influence into play merely results in a balanced situation, with commitment indices at + 25 and – 27.

These figures reveal a much weaker position than was previously thought among those opposing this objective.

The Three Divisive Objectives within the Sector

Three other objectives are divisive, but mainly concern issues that are internal to the system. Bringing powers of influence into play does not shift the initial balance between those in favour and those against these objectives.

Relative powers of influence as they emerge here from the interplay of strategies may be characterized as follows:

– favourable to those supporting shorter distribution circuits;

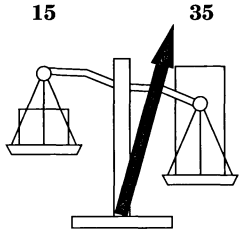
– favourable to those opposing any reflection of competitive pricing downstream in purchase prices upstream;

– unfavourable to those supporting the development of integrated activities from downstream.

"Supporting public debate, including by fostering controversies over new technologies"

Involvement regardless of powers...

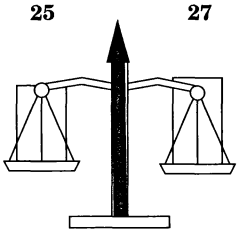
In favour **15** Not in favour **35**



Actors for **Actors against**

...commitment including powers of influence

In favour **25** Not in favour **27**



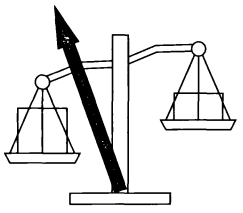
For	**Against**
Mass marketing, Media	Suppliers, Farmers
Agric. professional bodies	Agricultural distribution
Consumer associations	Agri-foodstuffs co.
Environmental protection associations	National authorities
	Regional authorities
	International organisations

Upstream segments and public authorities on the one hand, and mass marketing, APBs, the media and the associations on the other (in favour of controversy).

"Shortening distribution channels (from farmers to consumers)"

Involvement regardless of powers...

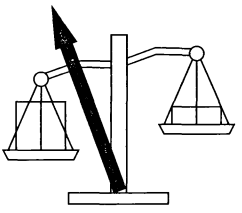
In favour **15** Not in favour **8**



Actors for **Actors against**

...commitment including powers of influence

In favour **16** Not in favour **6**



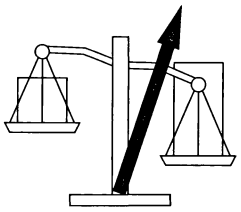
For	**Against**
Farmers	Agricultural distribution
Agric. professional bodies	Large Agri-foodstuffs co.
Mass marketing & other	
Regional authorities	
Consumer associations	
Environmental protection associations	

Those in favour (local actors) outscore those against (agricultural distribution agencies and large agri-foodstuffs manufacturers).

"Reflecting competitive downstream pricing in upstream purchase prices"

Involvement regardless of powers...

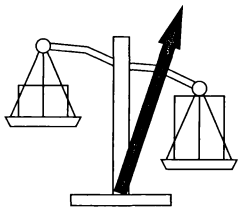
In favour **14** Not in favour **29**



Actors for **Actors against**

...commitment including powers of influence

In favour **11** Not in favour **20**



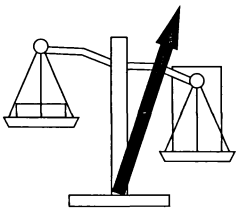
For	**Against**
Mass marketing & other Catering	Suppliers with R&D
National authorities	Agricultural distribution
Regional authorities	Farmers
	Agri-foodstuffs co.
	Agric. professional bodies

Those against (upstream) outscore downstream actors and the authorities.

"Developing integration from downstream"

Involvement regardless... of powers...

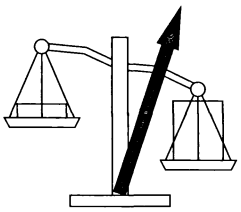
In favour **3** Not in favour **23**



Actors for **Actors against**

...commitment including powers of influence

In favour **3** Not in favour **16**



For	**Against**
Mass marketing	Agricultural distribution
	Farmers
	Agri-foodstuffs co.
	Agric. professional bodies
	Regional authorities

Those against (upstream and regional actors) outscore mass marketing.

Main Results Regarding Food Safety and the Environment

Strong Actors, Weak Actors and Four Future Battlefields

Participants from the agricultural sector walked away with the following lessons, as summarized below:

– actors upstream are dominated;
– many objectives are consensual and only a few are very conflictual;
– mass distribution plays a lynch pin role,
– four battle lines will shape the future: distribution of added value, application of the principle of precaution, implementatin of eco-taxes, scientific and technical controversies.

Actors upstream are dominated

Actors dominating the system include public authorities (international and national), associations, the media and mass distributors. Contrary to popular belief, large companies in the agri-industry branded products play a role equal in importance to that of mass distribution. As a whole, with influence on the system is largely outside the actual agricultural channel of suppliers, agricultrual distributors and farmers.

Many consensual objectives and few conflictual objectives

Overall, the actors' role in food safety and the environment reveals a large number of subjects which generate consensus, e.g. "guarantee innocuity" "clarify legal and penal liablity", "master environmental impact" and "implement new rational regulations".

In fact, the number of conflictual objectives is small and includes "development of incentives and eco-taxes, redistribution of added value, controversy, precautionary principle".

In this context, those active in the agri-food sector must avoid two parallel pitfalls: first, hushing up diverging viewpoints and talking only about commonground; second, splitting up on a conflictual goal to the detriment of converging interests.

The pivotal role of major food distributors

Given the stance adopted by major food distributors on various issues and goals, they are in a position for double-dealing since opinions converge significantly between distributors and players upstream in the market as well as with the consumer, who seems very close to distribution. The role played by distribution in changing the system will therefore be a key one. Distributors will have to make some choices in order to ensure a coherent strategic front.

The four battles of the future: distribution of added value, precautionary principle, eco-taxes and controversy

If we take into account the balance of power among the actors the most involved in the goals that create dissent potentially serious conflict in four areas arises, namely:

– the main issue of the distribution of declining added value in the sector, given the consumer's decreasing willingness to pay plus the additional costs linked to food safety and environmental conservation;

– a very favourable balance of power for those who support developing eco-taxes on the use of chemical products, water usage, etc.

– similarly, a favourable position for those who support a maximialist application of the precautionary principle. This should generate greater restrictions in technical innovations;

– an equal balance of power in terms of controversy because the food safety debate is likely to become permanent.

Let us consider then constantly renewed controversies and a permanent state of doubt, as well as a rather maximalist application of the precautionary principle, lastly, the implementation of eco-taxes and increased integration of environment-related external costs by the sector. In a mature market, the struggle for added value will only intensify.

Three Topics for Strategic Thinking

This section describes the main points arising from the comments and discussions on these findings within the Futures Studies Group on food safety and the environment.

The Future Role of Integrated Farming

Discussion focused mainly on the likely role of integrated farming in crop production, over both the medium- and long-term. On the one hand, industrial users of agricultural products, who occupy an intermediate position in the sector, must ask whether integrated farming is likely to become the dominant norm in agriculture. This would obviously have an impact on agricultural practices and techniques, and in turn, on the nature of plant protection products and fertilizers and their sales volume. On the other hand, in the area of food marketing, would distributors decide to turn integrated farming to their competitive advantage, or would it become the norm for everyone, with only a few companies benefitting from their image as pioneers in the field?

Food Safety and Environmental Issues as a Key to Common Interests

There is also the question of the different actors' responsibilities with regard to food safety and the environment. Judging by the results and the number of topics generating consensus, it would seem that food

safety and environmental protection are "pre-competitive" objectives. The fact that these objectives are supported by all the actors involved is a key to the economic future of agriculture and foodstuffs, and to long-lasting consumer confidence.

There is some doubt as to whether all the economic actors in the sector, especially in downstream activities, are fully aware of this fact. Some tend to take an immediate stance which parrots that of consumer associations – sometimes as a short-term reaction – and thus ensures favourable public opinion.

The Crucial Role of Communication

Communication and information, particularly for the general public, will therefore play a crucial role in shaping strategies on food safety and the environment. The public is often convinced that scientific knowledge on a given topic exists but remains concealed for economic or political reasons. This is the basic problem underlying the question of expert independence, or differences in expert opinion.

At present, inadequate information and communication is a fundamental problem. While food safety is improving objectively, perceptions of the food sector are increasingly negative.

The key question is therefore how to debate an issue which has not yet reached crisis proportions early enough to prevent it from ever developing into a crisis. What form should the debate take, and how should the public be encouraged to take an interest in it? There are three possible tacks to take in dealing with the public's lack of confidence: provide information, provide "science lessons" to increase public knowledge, or throw open a debate. The first two solutions have been tried, albeit unsuccessfully as measures were taken in haste, and with no attempt to anticipate results.

With regard to communication about what goes on in upstream segments, appropriate responses may include meeting controversies head-on or opening up farms and factories to public inspection. At present, communication on agriculture is often too fragmentary and many representatives of agricultural organisations are too defensive in their arguments, which tend to reflect an urge to justify past practice ("it's what we do already"). What the sector needs is to move forward and communicate differently as a coherent whole, rather than as isolated segments.

Four Avenues to Explore in Future Discussions

The Futures Studies Group felt that it would be useful to extend discussions in the four directions that were further explored by the four workshops organised during the Hendaye seminar:

– the future role of integrated agriculture and its consequences for the farming profession;

– guidelines for a charter setting out initiatives and responsibilities to be taken within the sector, regarding food safety and the environment;

– other practical initiatives for the short term, in areas that are common to all those involved in upstream activities (packaging, traceability, etc.);

– objectives and main lines of mutually agreed communication activities to be developed by the sector as a whole to target external audiences.

Summary of Discussions: Ten Key Points

Ten key points emerged from the discussions and workshops organised as part of the seminar in which the Futures Studies Group presented its findings to other members of the sector and external actors (public authorities and consumer associations). These ten points are summarized here, in no particular order of importance.

Dominant actors under pressure

Those who were not members of the Future Studies Group felt that the analysis of the influence exercised by the different actors on each other credited them with more influence than they possessed. One participant, Vincent Perrot, who heads a consumer protection group, felt that consumer associations had far less influence on the mass marketing sector than was suggested by the Group's findings. Consumers only appear to be able to act – and to put pressure on the industry – when major problems arise. Of course his impression would argue in favour of the need to anticipate problems that are likely to emerge.

Similarly, Nicole Zylbermann [1] thought that the amount of pressure brought to bear by public authorities, international organisations and consumer associations was overestimated. There is a possibility that this discrepancy in the perceptions of relative powers of influence stems from a lack of awareness of the way administrative bodies and government authorities really work. The authorities do not have absolute power, and they can be influenced, especially by the media and lobby groups. They are generally amenable to discussion and, in matters coming under their scope, they prefer to gain the best possible understanding of the interests of the different parties involved.

Exerting pressure on international organisations

The same is true for international organisations, which are not autonomous entities as the powers vested in them are those of their member governments. Anyone wanting to exert any influence on these organi-

1. Head of the health and safety department of the General Directorat for Competition, Consumer Goods, and Food Inspection, or DGCCRF.

sations has to take part in the major debates taking place within them. This means preparing material, identifying areas of common interest with other countries or governments, forging alliances, taking an active part in both formal and informal discussions, and following up the practical enforcement of all decisions in detail.

Active participation is particularly necessary in the technical and scientific discussions designed to establish a *Codex alimentarius* under the authority of the Food and Agriculure Organization (FAO). This *Codex* is being referred to more and more frequently by the World Trade Organisation (WTO) as a basis for its technical decisions, especially when disputes arise concerning the food industry.

Reversing traditional attitudes to agricultural production "from table back to stable"

Agriculture is experiencing profound changes as those involved become increasingly aware that they need to look at production from a completely different angle if they are to understand what is going on in the farming and agri-foodstuffs sectors. Farmers must realize that their job is to meet the needs of society, in other words that they have to match production to the markets associated with these needs. This means reversing traditional attitudes to agricultural production, taking downstream demand as a starting point and following through "from table back to stable" rather than the other way round.

Meeting the consumer's demand despite its contradictions and diversity

There is no single consumer profile, but rather a wide diversity of different and sometimes contradictory expectations which all must be met. The food system has to be in a position to meet many different types of demand, using organic as well as intensive methods, and by promoting integrated agriculture as well as local specialities.

Consumer perceptions of food safety and the environment are changing fast. For example, people are becoming more aware of some of the external costs or "externalities" involved in the food supply chain, particularly in the area of water use. Increasingly consumers feel that as their water bills steadily rise – as they have in France for the last few years – they are being made to pay for all the pollution for which the farmers are partly responsible.

In view of these changing attitudes among consumers, we need ways to gain a better understanding of how collective behaviour patterns and consumer sensitivity are changing. What worries consumers today is "all those chemicals in the food we eat", but a clear distinction must be made between actual risks and risks as perceived by consumers.

Consumer attitudes can be contradictory indeed, as in the case of those who have high expectations with regard to organic or "natural"

products, but completely different attitudes in other areas. A common example would be the amateur gardener who uses inorganic fertilisers and plant protection products to grow his own vegetables, [1] and whose attitudes could be summed up as "no chemicals please, except in my backyard garden".

To address these fears and contradictions, reciprocal feedback between consumers and those involved in the agri-foodstuffs system is essential, together with regular debates organised through the various channels of opinion. The associations have a key role in this respect. Opportunities have to be created to listen to people's concerns, and provide, or seek, any relevant technical or scientific information that will answer their questions.

Food safety arguments should not be a competitive advantage

According to the foodstuffs industry – and this is corroborated by the other actors – while quality is obviously a valid argument for competing agri-foodstuffs companies, marketing approaches should exercise caution with regard to food safety and environmental protection objectives, both considered "pre-competitive".

Since any market is only as safe as its products, any suspicion regarding a given product – whatever the commercial brand – is a threat to the market as a whole. Marketing arguments based on product safety are therefore entirely inappropriate, since they are liable to have direct negative effects on other products marketed by the same company or by the sector in general. Similarly, from the consumer's point of view, environmental protection is no longer a negotiable option. In a sense, these two dimensions make up the foundations for sustainable development within the sector as a whole.

Seemingly, what the sector needs are more systematic efforts to develop integrated farming, so that this form of agriculture ultimately becomes the norm for the entire profession.

The pivotal role of the mass marketing sector

There have been many debates on the relationships between mass food marketing companies and the public. This sector will play a vital role in the future of the system, partly because of its economic and commercial strength, partly because of constant close contact with consumers, but also because of the acute competition among the different mass-marketing groups.

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1. The same goes for heavy smokers or people who drink a lot of alcohol, or – in the United States – people who have no qualms about taking Viagra, despite the high risks which appear to be involved for those prone to cardiovascular diseases.

Contrary to conventional thinking in various quarters, the position of the distribution sector in the food supply chain, between the agri-foodstuffs industry and the consumer, is neither neutral nor intermediate. Survey results show that consumers see the mass marketing sector as a separate entity within the system, which is linked to the other segments of the food supply chain through the consumer's own concerns and demands.

Nevertheless, the discussions did bring out the various diverging interests involved, particularly with regard to the "appropriation" of added value, which determines how payment is made for services rendered among the different segments in the system, from farmers to mass marketing corporations.

The workshops organized during the seminar also contributed the following four points for further discussion:

Informing the public before problems emerge

The ultimate purpose of communication in this sector is to restore consumer confidence in the agricultural system. Priority actions and targets have both been identified: consumers should be given information on the means employed throughout the system to ensure food safety, and on the technical, scientific and managerial capacities used to do so. Communication activities should target the younger generations as a priority, together with teachers as opinion relays. Lastly, to prevent consumer rejection, timely information must be provided to the public on emerging technologies and their soundness (advantages and disadvantages), well before their marketing and general distribution is actually on the agenda.

Internal debate within the system — as a form of self-assessment – should take place both to evaluate past communication strategies and to analyse the reasons for their success or failure. These joint discussions should also help to improve reciprocal information networks and contents within the system, and strengthen its ability to construct consistent messages for external audiences.

The agricultural sector needs to take on more initiative and responsibility

The sector should not take action purely to meet legal requirements or expectations from downstream segments and consumers. A voluntary charter on initiatives and responsibilities should be established, which might include the following:

– the need to comply with current laws, regulations and codes of sound agricultural practice;

– encouragement to non-polluting techniques and efforts to reduce waste of all kinds;

– development of partnerships between different actors within the system, as a means of encouraging transparency, efficiency and proper observance of mutual undertakings;

– the need for communication strategies and as much transparency as possible throughout the system, in particular by implementing full traceability procedures, through to each finished product;

– commitments towards training and information for partners and other members of the sector to strengthen their involvement.

Upstream segments with enough leverage to implement practical actions in the short term

Other practical initiatives of common interest to upstream actors may be implemented in the short term, for example on traceability, certification or recycling. A short list is included:

– common reference documents could be drawn up on a partnership basis, to avoid tendencies towards over-specification from downstream segments;

– agricultural training and information on sound practices could be developed, particularly on product storage, shipping and handling, equipment adjustments and, more generally, on environmental protection techniques;

– approval criteria for agricultural distributors could be strengthened;

– more specifically, a number of immediate practical measures could be encouraged, such as rinsing out jerricans, recycling used packaging, organising visits for the general public to farm "headquarters" and head offices of upstream companies (e.g. farm visits or open house days organised jointly by farmers and members of the agri-foodstuffs industry).

Integrated agriculture will either become dominant or dormant

Clearly the big issue in the years to come will be establishing an agricultural system that guarantees food safety and environmental protection. The means to this end involve what has become known in France and other European countries as "integrated farming" *(agriculture raisonnée)*.

The working group on integrated agriculture concluded that if integrated agriculture is to succeed, the proportion of farmers adopting this method should ultimately reach 50 to 60%, but about 25% of all farmers should do so as soon as possible. This would counter any threat of marginalization or lack of recognition of the integrated approach in public opinion, and help to avoid unwanted effects, for example, on perceptions of product quality in relation to other types of agriculture.

If the integrated approach were to become widespread among farmers, the likely consequences would include the systematic use of specifications, compulsory traceability documentation, and possibly farm certification.

This shift would tend to enhance farmers' perceptions of their profession and strengthen their solidarity, as members of a group whose value is recognised by society at large. Training and information activities would be crucial to this change in perceptions. The use of specifications or certification procedures may in some cases cause prices to rise above the norm.

The countryside stewardship plans *(contrats territoriaux d'exploitation)* currently being discussed as France prepares to enact its new Agricultural Planning Law *(Loi d'Orientation Agricole)* may well encourage this type of agriculture. However, this does not mean that integrated farming should rely exclusively on such plans or programes to become established.

From Anticipation to Strategic Management Processes

Futures Research and the Sectorial Procedure

Futures-thinking exercises proved extremely valuable as a means to animate interprofessional debate or discussion in which highly competitive actors find themselves obliged to consider one another's opinions.

Indeed, at the initial meeting in Venise, we brought together fifty-odd distributors who often compete amongst themselves. However, the methods adopted not only generated a series of avenues to explore together, as a group, but also encouraged half of the participants to ask for further futures-thinking opportunities.

During later sessions, it became clear that the tools enabled us to purge preconceived notions, poll the actors present, and list future issues. Once again, we allowed each participant to tease out avenues or immediate measures to be taken according to his/ her own company.

BASF particularly appreciated the fact that a large number of companies located in all four corners of France were open to having their managers participate in this futures-thinking exercise and enrich their own files. In fact, we polled participants on their participation while consulting them on the environment through the Delphi questionnaire method.

We also measured the importance of outside input from interviews with experts, specific speeches or discussions during meetings of the steering committee, *extramuros* skills or any research, in terms of enriching files.

Lastly, when a theme surpasses that set out at the beginning of the exercise, it is particularly important to expand the circle to actors other than those intially selected. In this case, experience taught us that by opening up a circle composed primarily of distributors to include other partners (farmers, industrialists, mass distributors), we gained in power through a broader base of confrontation.

Futures-Thinking Exercises: the Strategic Utility for BASF

The initiative BASF undertook to meet its distribution partners' expectations through a futures-thinking process makes perfect sense for any corporate leader who wants to anticipate an uncertain future within the context of the global agricultural economy, the expected upset caused by EU structures and the arrival of the euro.

Given France's privileged geographical position, the French agricultural context provides the fullest range of the various aspects of European agriculture. The French scene thus serves as a point of reference for the BASF Group whether in terms of increasing productivity, enhancing the quality of agricultural production or improving agronomic procedures while integrating various ecological, environmental and economic characteristics.

The lessons learnt from this futures-thinking exercise helped BASF clarify its perception of a number of hypotheses. The company were thus able to contribute handsomely to the collective thinking process. Examples cover several fields; for instance, in terms of developing basic research, the BASF Group had decided several years previously to commit to genetic engineering as a means of improving agrochemical processes.

Reflection confirmed our position and encouraged BASF to take specific orientations. The decision to invest heavily in R&D led BASF to sign agreements with several research centres in Switzerland and Germany, in 1989. The initial thrust of the research consisted of injecting plants with genes capable of resisting chemicals, e.g. herbicides, infections or insect attacks. However, this had not been BASF's original priority.

BASF's goal is to improve its knowledge of genomes, genetic mutation and the introduction of genes into vegetables as well as come up with concrete applications that will complete the action of fertilisers and phytosanitary products on plant growth and quality.

On the basis of future needs, BASF decided to orient its research toward a more complex field. More specifically, researchers are making plant behaviour change so as to meet chronic or sporadic stress situations caused by climatic or pedological phenomena or other external factors.

Another research area involves using plants as tools capable of synthesising and creating interesting substances that will improve food products or health, intensify protein production and develop other substances such as aminoacids.

BASF has also opted to continue developing management of environmental factors, notably through intensified research on nitrification inhibitors designed to manage nitrogen better. There is also the battle against insects using "sexual confusion", a technique which helps limit reproduction.

Futures thinking has helped us not only in R&D but also more locally in making decisions and reorienting our merchandising procedures in the French agricultural context.

BASF has thus integrated the notion of a production channel. The company is committed to taking into account each crop in its marketing and commercial structures in France. This "crop" process, implemented for flower, vegetable and tree growing enables BASF to offer distributors and growers a full range of products so that the entire channel can meet new needs. The same process has just begun in the French winegrowing market.

BASF has also redefined procedures in terms of grains and industrial crops by developing the "channel approach" which goes beyond the farmer and co-op to include the processor, the regulator, and tomorrow, even the superstore or any other agri-foodstuff distributor.

While progressing through these various stages, BASF strengthened ties with its distributor-clients. The company is currently moving from a "buyer-seller" to a "actor-actor" relationship. In fact, the "channel" *(filière)* approach led us to integrate parameters from expertise garnered at different levels. The readymade solution is simply not satisfactory anymore.

Indeed, alongside its partners, BASF learnt to evaluate what will be at stake in the future. With each partner, we tried to study the best positions to take in order to meet farmers' expectations.

Of course, "conventional thinking" and "preconceived notions" die hard. As creatures of habit, we all change and break down barriers slowly.

Futures Thinking and Managing Corporate Collaboration

Beyond the initiatives mentioned, we found it necessary to take into account how BASF could appropriate the results of the procedure its collaborators had undertaken. Obviously a new strategic orientation may be acquired intellectually with little trouble; however, its implementation by the players involved requires an adapted, voluntary, managerial approach. On this point, BASF suggested that perhaps they were too optimistic and did not integrate enough corporate actors in the futures exercise.

This was the conclusion that we reached after two years of work. Although the team which made up the strategic orientation committee participated fully in the futures-thinking process at BASF France, and teased out the guidelines for a new approach at BASF, most corporate collaborators did not readily see the basic changes that this process would have on their own behaviour.

Through daily contact with their usual cohorts, both internal and external, our collaborators often remained "under the influence of the event". It should be added that the increased power of ecological

restrictions, the Mad Cow scare and the uncertainty in which famers live, contributed to this type of attitude.

The question that corporate managers and their mangement team must ask when starting a futures-thinking exercise is how and when should corporate collaborators participate. The thinking process does not stop at the highest echelon of the company instead it must be cultivated at each level of the organisation likely to set up its own managerial procedure.

The notion of a channel obliges technical teams, assigned the task of implementing a developmental program for new products, to take into account new factors which may require additional partners and lead to setting new goals. The same may be said about a team mandated to develop agri-business in the grain or any other crop sector with a clientele concerned about the future of products on the market.

Marketing teams must also integrate this new approach in drawing up their strategy. Of course many other examples may be found up and down the corporate ladder.

In fact, two years ago, the need to integrate the channel approach throughout the company led BASF to commit to a follow-up program as part of training for executives. BASF hopes to develop managerial aptitudes in each executive by accentuating management by leadership so that they will take on a project individually and ensure its implementation as an entrepreneur rather than as a mere group leader or the supervisor of old.

The futures process provides the means to develop this managerial aptitude and the individual capacity of each executive in his/her own position to anticipate future developments, identify as well as implement the appropriate responses and initiatives.

Futures thinking has become part of the BASF France way of doing business on a daily basis. Naturally the company is eager to take its research futher in order to anticipate decisions better. Consequently, in 1999, we will continue working on the theme of food safety within a Circle expanded to include mass distribution representatives. Their inclusion should help determine the impact of distribution in setting up a statement of requirements that links all actors along the agri-food channel. Hopefully, all of the Futures Studies Group's endeavors will serve to judge the performance of products or techniques better.

Furthermore, within the company, BASF has decided to improve its ability to appropriate the new marketing orientations of our collaborators. BASF will try to improve its ability to take into account the expectations and reactions of actors or stakeholders playing a role in the company and with whom it shares both the same stakes and battlefield.