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FOREWORD

From 16 to 18 September 1985 a hearing of experts organized by the European Parliament's Committee on the Environment, Public Health and Consumer Protection on the topic 'Environment and Agriculture' was held in Brussels. In preparation for this hearing a report on this topic had been drawn up by Mr Roelants du Vivier, MEP.

The following summary report of the hearing is offered as a contribution to the discussion of this subject, and more specifically in the context of reform of the European Community's Common Agricultural Policy at a time when environment policy is to be incorporated into the EEC Treaty both as a policy in its own right and as a component of other policies.

Since it has not been possible for the contributions of the experts to be reproduced verbatim, the authors of this summary report have been obliged to abridge individual contributions. Every care has however been taken to avoid distorting their content. The arrangement of the contributions in relation to specific subject areas did, however, present some difficulty inasmuch as speakers did not always adhere strictly to the terms of the questions as asked.

Since the hearing was concerned with a complex subject-matter, divergent views on the different aspects, some of them mutually incompatible, have been reproduced in the text without being specifically noted as such.

Francis ROY

Director

C O N T E N T S

I. Welcome

Mrs Beate Weber, Chairman of the Committee on the Environment, Public Health and Consumer Protection

On behalf of the European Parliament's Committee on the Environment, Public Health and Consumer Protection, I should like to wish you all a very warm welcome. I am especially pleased that so many of you have accepted our invitation to this hearing on Agriculture and the Environment. It amounts in fact to a first approach on our part to a very difficult subject, for although we repeatedly run up against the problem of agriculture and the environment in relation to particular points of detail, this is the first time we been in a position to seek a preliminary view of the problem as a whole.

We have already devoted a long preparatory period in committee, led by our rapporteur, Mr Roelants du Vivier, to this hearing. We sent you all a questionnaire which was compiled on the basis of the questions that members of the committee had raised in our preliminary discussion of this subject, and we warmly thank all those of you who have already replied in writing to those questions. Mr Roelants du Vivier has the 1200 pages of answers we received in front of him now. Our committee-secretariat and rapporteur have thus had their hands full long before this hearing could take place at all, and, as you can well imagine, the job of evaluating the information we received has been just as demanding.

Ladies and gentlemen, in the European Parliament's environment policy we have set out some important new principles and strengthened some existing ones. We consider that a good environment policy has to anticipate developments, in other words it must be one that can be incorporated in good time into all areas of policy if damage is to be prevented. For in addition to the direct impact on the environment of special measures, there are also of course very many indirect effects, including not only those resulting from European economic, energy, transport and development policies, but of course also those associated with the agricultural policy. And here a sound, all-round environment policy for the Community will unfortunately require more than just technical solutions, which are often a relatively simple matter of securing modified standards; but the fundamental requirements will be mutual understanding and political sensitivity, which are often in short supply in this Community, and of course, a sense of joint responsibility.

At this point I should like to quote from one of our experts, Mr von Weizsäcker, who writes in a recent essay that prices are easy to translate into seven official languages, but structural and environmental policy call for an appreciation of culture and natural conditions. I believe we shall see in the course of our discussion that things are not quite so simple. For that reason we have therefore called this hearing in order to secure an analysis of the present situation from the points of view of the different experts from the Member States so as to be able have the best possible basis of informed mutual understanding for a discussion of the mechanisms that will be needed to encourage favourable developments and deter unfavourable ones.

If it is European agriculture as a whole that we are now discussing then one topic in the discussion must be agriculture as a primary sector of the economy. For one question that is often asked about other sectors of the economy is also relevant here: Has stepping up production resulted in a better situation all round, or in better product quality? Is European agricultural policy socially and environmentally acceptable?

Agriculture is criticized, especially in terms of the political decision-making that underlies current agricultural policy; and there I am thinking not about the farmers but about all those who have been responsible for the decisions that have led to the present situation. The situation is characterized by an unacceptable fall in incomes in agriculture, despite - or perhaps because of - the price guarantees, and despite increases in production. A growing burden is being placed on farmers every year in the form of a prior outlay on agricultural chemicals and fertilizers - this can clearly be seen from any COPA report - while at the same time, and for that very reason, self-sufficiency in supplying the Community with agricultural products is having to be called into question. We have surplus production with sometimes horrendous destruction of agricultural products, while the production of these surpluses and the other products is placing a growing financial strain on the European Community, which is consequently reaching the limits of its financing capabilities. All this is happening in a situation in which 80% of the money spent on agriculture is ending up in the industrial and commercial sectors, and not with farmers.

The next three days should help us to clarify our responsibilities and perhaps point to a number of ways out of this difficult situation. Mr Roelants, as the committee's rapporteur, will first make a short

introductory statement. Later he will sum up the outcome of the hearing and submit it in a report to our committee that will then go to the plenary sitting of the European Parliament.

I should first like however to say a warm thank you to the European Parliament's Committee on Agriculture, represented here by its deputy chairman, Mr Mouchel, who now wishes to say a few words of greeting. For one thing that is clear to us above all is that on this subject cooperation between our two committees will be absolutely indispensable.

Mr Mouchel, deputy chairman of the Committee on Agriculture, Fisheries and Food

Thank you, Madam Chairman, for giving me this opportunity to speak as the representative of the Committee on Agriculture. Our chairman, Mr Tolman, who is unable to be present, has asked me to take his place here at this working meeting on the environment.

The Committee on Agriculture, Fisheries and Food currently has before it a draft opinion by Mrs Proley on agriculture and the environment. This opinion will be the subject of further consideration once the outcome of this hearing has become known. You are now discussing problems that are closely bound up with with the growth of production, prices policy, structural policy, and their effects on the environment, as well as the possibility of using what are sometimes known as alternative production methods. The Committee on Agriculture, Fisheries and Food has a deep interest in problems of the environment, for obvious reasons. On the other hand a general consensus now exists within the committee to the effect that the Common Agricultural Policy has achieved most of the economic objectives that were laid down for it, even although the objective of improving agricultural incomes has been achieved only very imperfectly. It is therefore important now to consider other proposed reforms that relate principally to social aspects and environment-protection from the standpoint of ecology, with a view to giving them more prominence in future, though of course without adopting any measures that might impede the ordinary course of agricultural activity.

The review of the Common Agricultural Policy, which is a fully integrated policy, is the subject of a report by Mr Tolman, the chairman of our committee. That report will be debated at the second October part-session. Among the major topics to be considered in that report will be the impact of agriculture on the environment. For that reason we for our part attach great importance to the outcome of this hearing, which will enable us to keep fully informed as to the ecological problems that are of capital importance not just to farmers, but to the 320 million inhabitants of the Community of Twelve, and to our children in succeeding generations.

That, Madam chairman, concludes the statement Mr Tolman wished to make at the opening of this meeting, and we shall naturally welcome the opportunity to intervene, with your permission of course, either through me personally or through other members of the Committee on Agriculture, in the course of this hearing.

Mr Roelants du Vivier, rapporteur

Madam Chairman, my dear colleagues, ladies and gentlemen, allow me personally to welcome the experts who are present here, some of whom I in fact know personally or whom I have got to know in the weeks leading up to this hearing. I hope that for them too this hearing will prove fruitful.

On the opening of this hearing, which I am pleased to note is common to the Committee on the Environment and the Committee on Agriculture, I I should like, if you will permit me, to take issue with the image of the farmer as the enemy of the environment. On the contrary, despite the assertions of certain environmentalists, we would all here agree, I am sure, that farmers are quite simply the best allies the environment has, that they have been for centuries, and that they want to remain so. It is only in recent years that the mad logic of the race for higher productivity, be it as a consequence of new technology, or of certain price policy and structural policy mechanisms, has meant that agriculture has, to a great extent laid itself open to the charge of being too intensive, of swallowing up budgetary appropriations, of being

destructive of jobs and of the quality of life, as well as of natural resources (in particular soil and water). The environment cannot be represented as a problem for agriculture, rather the environment is at the centre of agricultural problems as a whole, for natural resources are both the basis of agricultural development and its principal limiting factor.

I believe we must keep that constantly in mind. The same point is also sometimes made by institutions like the Commission, but it goes without saying that this point hardly emerges clearly from the Commission's green paper. I would at all events take a firm stand against the tendency to regard the environment as a kind of spare wheel, or to set it up as a substitute for a social assistance policy. To confine the agriculture/environment debate to the introduction of a few structural aids for certain so-called sensitive regions is tantamount to having a two-speed agriculture where 80 or 90% of the land would still be exposed to the indefensible logic of higher productivity at all costs.

That being said, and myself having been allowed this opportunity to put these few points on a personal basis, what will be the subsequent topics of our hearing? On the basis of the written answers received by us on time - and here I must ask some of our experts to forgive me, but some of the answers reached us at a very late stage, and we have not been able to incorporate them in the summary report distributed to you - the hearing has been subdivided on the basis of five main topics. The first of these is problems of the environment and pollution directly related to certain agricultural practices; in this connection the main interest of the debate will lie with such matters as chemical fertilizers and pesticides, as well as such practices as mechanized breeding.

Secondly - and this will be for tomorrow - we shall consider general questions of the reform of agricultural prices and structures. Of course it is clear from a reading of the documents submitted by the experts that their opinions on this subject vary, but it seems to me that two or three basic ideas do emerge, and these are what we shall try to develop. Thus on one side we have the idea that prices should be differentiated according to the volume of production, or the idea of taxing inputs like livestock-feed, or a tax on livestock-head per hectare, or again the idea of taxing surplus production, or, the other side of the coin, the idea of income supports or subsidies for certain activities.

Our third topic will be the Common Agricultural Policy and the Third World. There has of course been no shortage of voices asserting that there is very little direct connection between the CAP and the natural environment in the Third World. But it is important to locate environmental considerations in a global context, a worldwide context that asserts first and foremost the right of the peoples in the South of our planet not to die of starvation.

Our fourth topic will be a European land policy. The first part of our discussion will be concerned with the allocation of land to new crops so as to ensure biotope conservation and rural conservation. But we shall also be especially concerned with the allocation of land to the production of energy sources, and with afforestation and reafforestation.

And finally, our fifth topic will be to determine our attitude to what is called biological agriculture and/or integrated agriculture, and to consider what measures, if any, should be adopted to promote this form of agriculture.

Those are the various topics that will be considered, and I might perhaps open the debate immediately on the first topic, which will be subdivided into three parts. The first, from 3.30 p.m. until 4.30 p.m. will deal with the question of fertilizers. Then, for the next three quarters of an hour, that is from 4.30 p.m. until 5.15 p.m. we shall consider pesticides, and finally, from 5.15 p.m. until 6.00 p.m. we shall consider intensive breeding, together with other farming practices that should be discouraged, and we shall try if at all possible to keep to those time-limits.

On the subject of fertilizers, to open the first part of the discussion, some at least of the written answers that we received from our experts have been reproduced in the summary report distributed to you, in sections 1.1 B and 1.2. The main points of the discussion seem to me to be as follows: the recurrent question of the effect of nitrogen-based fertilizers on ground water, the question of whether to tax or not to tax chemical fertilizers, and if so on what tax base, and also the question of how the proceeds of any such tax should be used.

Madam Chairman, ladies and gentlemen, I believe that we are all going to have a very full plate for the next three days, and our experts are going to be in great demand - at least I hope you are going to make great demands on them - for we want this hearing to develop as a significant contribution to the thought that is now being given in the European Community, and more particularly and more specifically in its institutions, to the question of the reform of the CAP, for if one thing is certain it is that the CAP cannot continue tomorrow to be what it is today.

Mr Clinton-Davis, Member of the Commission responsible for environment protection

May I first congratulate you and your Committee on its initiative in organizing this hearing with a view to producing a report on the important problem area "Agriculture and Environment" and especially so as we see new perspectives for the C.A.P. opening up.

The future of Europe's natural environment is inextricably linked with the development of its farming sector. The agricultural practices of centuries have created many of the landscapes which we value so deeply for their beauty and their variety and which we regard as typically European, and it is the viability of farming which ensures the maintenance of this environment.

But just as farming shapes the environment, so farming itself depends on sound environmental conditions. The maintenance of soil structure and avoidance of soil erosion, the purity of air and water and the general equilibrium of ecosystems are all essential to a prosperous agriculture. And public support for stronger environmental consideration should not be underestimated; for example, the concentration of nitrates in ground water and stubble burning which creates unacceptable atmospheric hazards albeit in limited areas.

In the last few decades, farming methods have changed profoundly in some parts of the Community; the consequences for the environment have been equally profound. These changes have arisen partly in response to changes in agricultural policy and partly to far-reaching technological developments such as the introduction and increasing use of fertilisers, pesticides and herbicides and modern methods of livestock production.

In view of the serious implications of these developments it is essential that environmental aspects of agriculture, no less than economic and social considerations, should be a major factor in the development of agricultural policy, thereby reflecting the commitment of the 1985 Brussels summit that environmental policy should be an integral part of all Community policies.

It is therefore vital not to see agriculture and environment in terms of conflict but as mutually reinforcing, offering better conditions for agriculture itself. The Council of Ministers has clearly shown some recognition of this fact in its revision of the legislation on agricultural structure. The measures, which provided for farm modernisation, at both Community and national levels, now include special terms to encourage practices which are friendly to the environment, preventing the destruction of natural habitats, which regrettably has been a feature of some regions in the Community.

The role of forestry is also important in an integrated policy for agriculture and the environment. The Commission will shortly be submitting to the Council a discussion paper which will concentrate on stimulating a more productive forestry sector.

As you know, the Commission's Green paper on the agricultural policy gives a high priority to environmental issues. In particular, there are two major principles, which, if adopted, would provide a basic framework for future policy :

- Agriculture must be considered as a sector of economic activity, which like others, should be subject to appropriate public control designed to prevent the deterioration of the environment. In this context the polluter pays principle should be fully applied. In this way every encouragement would be given to combatting environmentally damaging practices at source.
- Agriculture in general also plays a role as protector of the environment, of the landscape, and of natural habitats. It thus renders services to society for which there is a real demand. Direct income support, which may be indispensable for income or market reasons, and which has the advantage of not encouraging higher production, can take account of the role of agriculture in the environment.

It is these two main principles, which to my mind, have to be transformed into appropriate detailed measures and, in order to see them implemented, I look for strong support from the European Parliament.

My colleague, Mr ANDRIESSEN, and I are now considering the submission to the Commission of detailed proposals in fulfilment of these objectives.

These will concern :

- a tighter control of the use of agrochemicals;
- a more effective control of the pollution stemming from intensive livestock rearing;
- a more systematic and appropriate assessment of agricultural investment projects at both Community and national level, and
- the introduction of financial incentives.

Turning first to Agrochemicals, we have to admit that agriculture is practically the only economic sector which intentionally releases massive quantities of chemical substances directly into the environment. This can present risks to human health, wild life and soil quality. But we are far from knowing all of them and in particular we know very little about their combined effects.

Under these conditions our aim must be to reduce progressively the use of agrochemicals to a minimum consistent with efficient agricultural production.

Clearly the existing provisions at Community level are inadequate.

As for Waste from intensive livestock production, the growth in the number of large scale enterprises of an industrial nature, which are often concentrated in particular regions, has led to high risks of water pollution, especially, as I said before, with regard to nitrates.

In certain regions of the Community drastic measures have had to be taken already. I am considering whether strict Community rules should be introduced for the sake of preventing such ecological perils as well as to harmonize competition conditions.

Agricultural investments have far-reaching environmental effects. Drainage of valuable wetlands, irrigation, land consolidation, road construction and other major changes must, therefore, be assessed, whether or not such projects receive financial support from the Community. Sofar as projects which receive Community support are concerned, the Commission services are already preparing adequate procedures.

For other projects, receiving national or no financial support, I hope that in the first place the Directive on environmental impact assessment, which the Council has finally adopted after a 5 year discussion, will be strictly and rapidly implemented by the Member States. The fact that all agricultural projects are mentioned in Annex 2 and are therefore subject to national discretion, may give rise to concern. Accordingly, I am ready to consider proposals which would tend to establish more precise criteria at Community level, although I do not underestimate the difficulty of this task.

As I have said before, the Commission has made it clear in its "Green Paper" that there is a case for completing and diversifying farmers' income via direct payments, that is payments not related to the quantity of their agricultural output. Such direct payments would make it possible to take account of activities which are environmentally sound. We will, therefore, examine in particular the case for Community contributions to the financing of environmentally-oriented countryside management contracts.

I am sure that there is a strong argument in favour of Community involvement, because many features of our environment are part of a common heritage, the conservation of which should clearly be a matter of Community solidarity. Moreover, there is also an important question of social justice involved.

Of course, the problem of direct income aids will be a central element in the discussion on the new perspectives for the C.A.P. I am sure that this will be an indispensable element in a really market-orientated price policy. If that is so, it will be important to ensure that incentives which promote and assist environmental conservation are built into the system. I will personally do my best hopefully with the support of Parliament, to move things in that direction.

What is essential, as I said earlier is to reach a consensus on the main policy priorities and then to work closely together to produce the most appropriate detailed and concrete measures to translate these priorities into practice. I sincerely hope, therefore, that the discussion of the Commission's "Green Paper" and your report will permit us to attain these objectives. I have no doubt that the debate which will take place in the European Parliament will be a extremely important step on this road.

TOPICS FOR DISCUSSION

1. The use of chemical products in agriculture

1.1 Consumption

The application of fertilizers and pesticides had remained constant or fallen slightly in the Federal Republic of Germany and Italy; in Italy there had been a reverse trend since 1980, significantly so in 1980 and 1981 and to a lesser degree thereafter. Yet consumption remained too high, since these substances were being used at levels that lay well above the real needs of the soil or of crops (SORLINI).

In the Federal Republic of Germany the consumption of pesticides had been 25,000 tonnes in 1975, 33,000 tonnes in 1979 and 32,000 tonnes in 1984. Herbicides, which could often be replaced by mechanical means, accounted for 70% of the total, with fungicides making up 25% and insecticides 5%. The constant consumption of pesticides could be traced to the fact that prognostication systems were available that told farmers when they should use these products and in what quantities. With fertilizer applications, very precise soil analysis could also be carried out enabling consumption of these substances to be reduced to a minimum (AHRENS).

In terms of land areas, pesticide consumption in some of the States referred to was broken down as follows:

Italy:	500 g per hectare per year	
Federal Republic of Germany:	40 g per hectare per year	
Canada:	15 g per hectare per year	
Sweden:	130 g per hectare per year	(SORLINI).

At least in France, the use of crop-protection products, in the case for example of cereals, had improved yields by 700 to 2000 kg per hectare. In barley production, increases of up to 1200 kg per hectare, and with maize of 1200 to 1400 kg had been achieved. With maize, crop losses as a consequence of not using pesticides could run to 3500 kg per hectare (GRIPERAY).

As regards the use of pesticides and fertilizers in relation to farm size, it was difficult to differentiate between small and large farms inasmuch as the concept of farm size was hard to define. This concept could be based on more than one aspect of farming, eg land area, fertility, soil productivity, or yield per unit of cultivated land, etc. (TAYLOR).

The use of chemicals tended rather to vary with farm type, and increased with the economic importance of the farm, in particular with the level of so-called 'standard income', whereas the use of such substances declined in the case of farms with 'combined' yields. This correlation was derived from the analysis of farming accounts and reports on German agriculture (PRIEBE).

The consumption of pesticides stood in no direct relationship to farm acreage, but to the type of crop grown and climatic conditions, which fluctuated within a region and in the course of a year. In fruit, wine and olive growing, in which smaller farms predominated, high quantities of pesticides were used. On the assumption that the use of some form of crop-protection was necessary, then a higher proportion of pesticides was required in vineyards and orchards in the Federal Republic of Germany than in Italy, Spain or the South of France. In dry years the use of insecticides predominated, in wet years that of fungicides.

Size of farm was today only of secondary importance. Yesterday's large farm counted as a small farm today. It was more important to analyze the damage that price-levels were inflicting on the environment (SWART).

1.2 Effects on soil and water

1.2.1 General effects

The soil was an active system over time that reacted to the introduction of foreign substances. The soil system could react variously to human intervention: it could retain its natural equilibrium; it could develop in a more or less natural way, subject to the effects of climate; or it could deteriorate.

In terms of scientific research, opinions still differed as to the capacity of the soil passively to absorb various kinds of residues, and as to the actual levels of toxic substances that accumulated in it over time. It was however beyond question that the accumulation of macro and micro elements led to interactions and chemical antagonisms between ions, and that these sometimes reached levels of toxicity that could endanger plant and animal species, including humans. Maximum safe levels had now been established for many of these substances. More research urgently needed to be done, however, in cooperation between European bodies and research institutes, to determine the exact origins of nitrates, phosphates and heavy metals (PREVITALI).

In this connection it would not do simply to distinguish between artificial fertilizers and natural manure. The use of animal manure in, for example, the Netherlands, which exceeded that of mineral fertilizers on account of the high output of livestock wastes, which had actually doubled in the seventies, had had serious consequences for soil fertility. Soils were in fact very sensitive to the addition of heavy metals, which were present in animal manure as well as in artificial fertilizers. At present, phosphates gave no particular cause for anxiety. The soil was however approaching the limits of its tolerance of their accumulation, and it was expected that there would be problems in the coming decade from the presence of phosphorus in some 10,000 hectares of land and the contamination of ground water by phosphates. In some countries regulations had been drawn up stipulating permitted nitrate and phosphate contents for fertilizers and restricting their use in order to ensure that the actual requirements of the soil were not exceeded. (LOGEMANN).

In England and Wales the number of recorded cases of what was classified as very severe soil contamination had risen from 952 in 1977 to 2,961 in 1984. In most cases the soil had been contaminated by organic substances (WAA).

The continuing and ill-considered use of mineral fertilizers had a damaging effect on the quantities of organic substances present in the soil. In France the level of organic substances had fallen over the previous twenty years, especially in areas of intensive single-crop farming, where it had dropped below the critical 2 mg level. At this level the vulnerability of crops to pedological and climatic conditions (excessive dryness, damp, etc) was heightened, and soil erosion was accelerated. (CINAB).

1.2.2 Microorganisms

Microorganisms in the soil could react both to an excess supply and to the absence of chemical substances. An excess supply of such substances could, for example, inhibit the potential for organic recovery of dry soils (KRAUS). The use of pesticides had dramatically curtailed the presence in the soil of fungi and moulds. These organisms played a significant part in breaking down the organic structure of, in particular cellulose and lignin. In treated soils it had been established that only five species of mould remained viable. As regards the effects of nitrogen fertilizers, extensive documentation had been produced on the basis of research in the United States and Europe demonstrating how these fertilizers caused a reduction in microorganisms by affecting certain bacteria whose presence was vital to the self-fertilization of the soil, including nitrogen-fixing microorganisms, i.e. microorganisms that could fix the nitrogen from the air in the soil. The application of 2 kg of atrazin per hectare had been enough to produce significant changes in the soil microorganisms. The effects were most noticeable some six months after the application, but could continue for over two years.

The consequences of the use of chemical products were: an ecological imbalance in the cycle of organic activity; retardation of the processes of biological breakdown of the organic substance and the natural fertilization of the soil; and in the long term, the depletion of the soil itself. (SORLINI).

Copper in particular had adverse effects on the viability of microorganisms in the soil, and it particularly affected earthworms. Caution had to be urged in the addition of copper to animal feeding-stuffs, since the chemical copper could be introduced into the soil with the animal manure used as fertilizer. This was particularly serious in single-crop areas where soil contamination was often harmful to

microorganisms and consequently to soil fertility (as in the case of potato growing in Northern Europe) - (SWART).

All forms of intervention in the growing process with a view to securing a homogeneous chemical composition of the soil led to the extinction of microbe species, particularly rare varieties. The results of many of the most optimistic studies were of little significance since they had been conducted on the most frequently occurring microorganisms. And in the case of earthworms, for example, which accounted for some 95% of all soil fauna, the studies had been confined to the most frequently occurring 25% of species only (von WEIZSACKER).

1.2.3 Nitrates and phosphates

In the United Kingdom contamination of water supplies by sewage, liquid residues from silage production and especially by nitrates represented an extremely serious problem. Numerous public water supply sources exceeded permitted European Community levels. The situation was likely to deteriorate further in the next decade, in particular in the case of nitrates, which were extremely costly to remove from the water supply (WAA).

Nitrates had been shown to originate principally in organic substances present in agricultural land, and not directly from artificial fertilizers. The quantities of organic nitrogen present in the soil were between 7,000 and 10,000 kg per hectare. The use of special agricultural techniques could help to inhibit this form of contamination by nitrates (PAYNE).

In Italy agriculture was very largely responsible for water eutrophication. Some 36% of the phosphorus present in the Adriatic was of agricultural origin, and more than half that amount again originated with artificial fertilizers and the remainder from the waste-product of cattle-raising. In ground water a nitrate content of up to 30 mg per litre had been recorded. This relatively low nitrate level in drinking water did not however safeguard the environment from the risk of contamination. Biological accumulation processes tended to ensure that the concentration of these substances in plants, in particular in vegetables like turnips, red chicory, endives and mangel-wurzels, would be higher than that present in the water-supply (SORLINI).

In Belgium it had been not only the nitrate but also the phosphate content that had led to greater or lesser eutrophication of non-forestry

water courses. The phosphates originated in urban waste water, principally from the use of detergents by households, whereas 55 to 70 % of nitrates were of agricultural origin (VAN ERMEN).

In France the concentration of nitrates in the water supply had been increasing at a rate of about 2 mg per litre according to a report by the Public Health Ministry. The levels of these substances in drinking water thus probably exceeded the 1980 level of 40 mg per litre by about 10 mg. Some 25% of the population consumed water with a high nitrate content. High nitrate levels had been recorded in vegetables, in particular turnips, lettuce, celery and mangel-wurzels. These products showed a nitrate content of more than 1,300 mg per kilogramme. These concentrations could be two or three times more damaging to human health than drinking-water with a high nitrate-content (BERTHELOT).

Because of the high water-content of the raw product, the spinach-processing industry in France had to input double the quantity of the end-product. It was the consumer who paid for the water. Doctors recommended that in view of the high nitrate content, foodstuffs for infants, in particular carrots, should be carefully selected. As a result the price of the improved, homogenized, nitrate-free product had risen steeply, and consumers were prepared to pay up to FF10,50 for 120 grammes of it. In some cases the cost could be recovered from social security (CINAB).

From 30 to 50% of animal and plant species were threatened by intensive farming making extensive use of artificial fertilizers, in particular nitrates (KIEMSTEDT).

The connection between the use of nitrates and the decline of wild fauna and flora had still not been established (AHRENS).

In the Netherlands a quarter of water-supply stations were delivering drinking water with a high nitrate content (LOGEMANN).

In the Federal Republic of Germany a continuing increase in nitrate contamination of drinking water had been recorded over the last 30 years. The decisive factor responsible had been agriculture, which was associated with the growing intensification of growing and breeding practices, especially on porous soils (KIEMSTEDT). The increase in the nitrate content of ground water could also be traced back to organic fertilization, and varied with the particular characteristics and qualities of the soil. In this connection there was a need for further scientific research (FLEISCHHAUER). In the Federal Republic of Germany

there was a proposal that a surcharge should be made on each cubic metre of drinking water used, and the proceeds redistributed among those farmers who did not use nitrates (von WEIZSÄCKER).

The science of hydrogeology had a very precise mechanism for determining the origin and level of ground water contamination, but more basic, and better coordinated, scientific research would be needed (PREVITALI).

1.3 Effects on foodstuffs

Italy's Emilia Romagna, the region with the highest number of fruit-growers, had the highest death rate from cancer among farmers. Medical research had established a correlation between these deaths and the massive use of pesticides, especially in the form of products containing mutagenic or carcinogenic substances (SORLINI).

One analysis conducted in the United Kingdom had shown that a high percentage of marketed foodstuffs was contaminated with dangerous substances. This was providing a boost for the development of a profitable market in agricultural products that were not chemically treated (GROVE-WHITE). Other experts did not take the view that pesticide residues in foodstuffs were a particularly serious or widespread problem in the United Kingdom. Research over the last 20 years had established that the levels of such residues had continued to decline (PAYNE).

1.4 Restrictions and prohibitions on the use of pesticides

In many Member States of the Community there were regulations for the selection of plant protection substances before they were allowed on the market. In the Federal Republic of Germany authorizations for pesticides were under the authority not only of the Health Ministry but also of special departments operating on the basis of exhaustive and strict product analysis. Pesticides were required to be degradable, and any that tended to resist breakdown were not allowed. Nor were those that could adversely affect living organisms present in the soil. Comparisons were made with the situation in other Member States (AHRENS).

In Italy the use of DDT (dichlorodiphenyltrichloroethane) had been legally restricted in 1980; in 1978 its use in agriculture had been prohibited; yet in 1985 traces of this chemical were still being found in areas of the Po valley (SORLINI).

In the United Kingdom Parliament had recently passed a law (the Food Environment Protection Act) to regulate the use of pesticides (CONDER).

In the United States authorization criteria were much stricter than in Europe (e.g. 2, 4, 5 T), but this had not resulted in any serious disadvantages to agriculture (von WEIZSÄCKER).

In the case of pesticides the distinction had to be made between products that were extremely damaging to the environment, such as those pesticides that were classified as making up the so-called 'dirty dozen' (12 active ingredients of certain highly toxic substances), and others that were less dangerous. There were pesticides that were resistant to microorganisms present in the soil and that could accumulate in the soil over periods of months or even years, such for example as organochloride compounds with more than three chlorine atoms per molecule (SORLINI). The use of non-biodegradable substances should be prohibited. The Commission needed to become active in this connection (SWART).

2. Enlightening the farmer and the consumer

There was very little information in the public domain on the effects of pesticides. It would be necessary to secure more comprehensive knowledge of the direct and indirect effects of these substances on agrosystems - ie on the soil, in particular the humus layer, on soil fauna and on the ecosystem. In the Federal Republic of Germany more than fifty crop-protection substances were authorized, although there was no information in the public domain on their effects on the soil. Methods of testing pesticides also needed to be improved, tolerance levels for dangerous substances needed to be fixed more precisely, and research into integrated plant-protection schemes had to be supported so as to keep the use of chemicals to a minimum (FLEISCHHAUER).

Farmers should have the best available professional support when using pesticides and fertilizers (TAYLOR). Pesticide applications should where possible be forestalled on the basis of a so-called 'soil-cure for crops' with an effort being made to ensure adequate crop nutrition through the balanced use of fertilizers. Crops were in fact linked to their parasites through a nutritional factor. A lack of nutritional components and the ill-considered application of fertilizers could lead to disequilibrium in substances, such as amino acids, that were necessary to protein synthesis, thus affecting crop protein content and so making plant organisms more vulnerable to disease. In addition, some

synthetic nitrogen and chlorine based pesticides led to a loss of chemical elements necessary to protein synthesis. Increasing the nitrogen component of rape, for example, could lead to a loss of sulphur, molybdenum, bromide and manganese. It had recently been demonstrated that together with the physiological condition of the plant, on which the development of parasites depended, applications of calcium, boron and manganese had reduced the incidence of certain harmful, disease-bearing organisms (CINAB). The consumer should be better informed as to the origins and method of production of agricultural products, in particular fruit and vegetables. The effects of pesticides could vary with growing conditions. If tomatoes were grown in glass houses, very different values could be recorded than in the case of summer tomatoes grown in open land (von WEIZSÄCKER).

3. Community agricultural policy

3.1 The impact of Community prices policy on the environment

Over the last 20 years the annual rate of increase of prices for agricultural products had shown a rising trend. Until 1975 it had been 9%, between 1975 and 1980 6%, between 1980 and 1982 it had stagnated, only to rise again, following the price increases recorded on world markets in 1982, to 10.4% in 1982-83 (PRIEBE). The Common Agricultural Policy, with its basic reliance on price supports, had encouraged farmers to intensify and specialize production, and to increase the area of land under cultivation. These phenomena had led not only to overproduction and thus to the problem of the surpluses, but were the basic reason for fundamental damage to the environment (GROVE-WHITE, TRACY, BELL, PRIEBE). They had led not only to the growing use of pesticides and fertilizers, but also to the disappearance of hedges, neglect of the clearing of new land, etc (GROVE-WHITE). This policy had also helped in particular to bring about the extinction of many varieties of species and had forced farmers in marginal regions off the land (von WEIZSÄCKER).

In the United Kingdom high prices were attributable to the scarcity of land; farmers were thus compelled to intensify production in order to secure adequate yields. Here too, in particular in poultry and pig-breeding, methods had been used that had proved environmentally damaging (BELL). An example would show how the price-level could influence the actions of farmers. In England increases in the price of vegetable oils had greatly increased the area of land put under rape (CONDER). The relationship between price-levels and the actions of farmers was highly complex. A fall in prices would not improve farm management but was appropriate as a measure designed to take some producers off the market. The fundamental problem was to determine whether the CAP could take ecological and social interests into account as well as the economic ones. Present policy measures could only stimulate production further unless the environmental aspects were also acknowledged (TAYLOR).

The ecological behaviour of farmers operating small or large farms - according to economic criteria - could not be determined on the basis of price alone. Fair prices - be it in the case of large farms that often enjoyed favourable conditions of production and benefited from guarantee arrangements for many products, or of small farms, many of which were economically and geographically handicapped (remoteness from marketing centres, etc) and that had an interest in raising their production since the overall price level was not generally favourable to such farms - represented an incentive to intensify production. Destruction of the environment was not, however, the consequence of high prices but of the absence of a prices policy differentiated on the basis of production quantities and production systems (BERTHELOT).

3.2 Structural policy - the example of the hill-farming directive

The depopulation of upland regions represented a serious danger in terms of the environment for many Member States. The Community hill-farming directive had been unequal to the task of counteracting this trend in all the Member States.

In Italy, where upland and disadvantaged regions made up a considerable part of the total land area, the directive had had only a secondary impact since it applied to farms with a cultivated area of more than 3 hectares engaged predominantly in livestock raising. These criteria were met only by a fraction of these farms as potential beneficiaries of the directive (von MEYER).

In France Community and/or French government aid to hill-farmers in 1979 averaged FF 37,000 per farm compared with an average of FF 44,500 nationally. The aids included special income-supports calculated on the basis of livestock counts, and other aids such as interest-rate rebates and social payments in favour of hill-farmers as distinct from other producers. The difference in support payments in fact worked to the advantage of lowland farmers. The income support payments to hill-farmers had moreover been ineffective as an impetus to producers to increase the area of land under cultivation or to adopt methods of production more compatible with the environment; instead, they had led to higher productivity through more intensive farming methods. In the long-term the support measures could not be combined with a restrictive budgetary policy, as the Commission proposed in its green paper. It would be essential for the scope of pricing policy to be widened to take account of the environment (BERTHELOT).

In the Federal Republic of Germany the hill-farming directive had enabled the objective of reversing rural depopulation to be partially secured, but the level of aid had been shown to be inadequate (von URFF).

In the United Kingdom implementation of the directive had not helped small farms. 54% of small farms with a cultivated area under 50 hectares were receiving an average of £600 per year, whereas 7.7% of large farms received more than £13,000 per year. This was because aid was calculated per hectare of land under cultivation (CONDER).

Caution was urged before making any definitive assessment of the results that could be achieved through Community aid in the less advantaged regions. In the United Kingdom the net incomes of farms in such areas were marginally higher that aid levels laid down by the CAP, which was

attributable to state aids granted at national level. These were also to the advantage of farmers who appeared to be in receipt of high amounts but who in fact had to support two or three families sharing the work of the farm (TAYLOR). The proposals contained in the green paper for lowering the retirement age, for continuing the present structural policy with appropriations amounting to ECU 5,000 million, and for the application of social-policy measures in conjunction with environmental criteria were disadvantaging small farmers (von WEIZSÄCKER). The reafforestation of totally abandoned upland areas represented an interesting option both from an economic and an ecological standpoint. The Community forestry sector was unable to meet the demand for wood products. Aid from the Community was required, since a comprehensive reafforestation programme presupposed a significant investment, on which a return could not be expected until some years after the original planting (SWART).

3.3 Current production methods

The disposal of liquid organic waste-matter of animal origin risked contaminating the soil with heavy metals. This had to be restricted by providing waste-matter storage facilities so that their return to the soil could be staggered (KRAUS).

In the southern Netherlands there were already national provisions to prohibit the expansion of pig-farming, but additional provisions regulating the use of organic fertilizers were still required. In the short term the addition of copper to feedingstuffs for pigs had to be prohibited, and maximum levels fixed for cadmium in cattle feed. Not too much hope could be placed in any large-scale application of technology to the processing of the waste-products of livestock farming (SWART).

In France large-scale livestock farming was regulated according to size of farm. Pig farming with less than 50 head was regulated under public health provisions at département level dating back to 1898, as amended in 1935, 1963 and 1983. Farms with a higher livestock count fell under a 1976 regulation and were required to submit a relevant declaration, obtain an authorization by decree of the local Prefect, and apply for an assessment of their impact on the environment. Breeders had to submit

documentation to the relevant government department to obtain authorization to take up livestock farming; that was followed by a public examination, an analysis by the departmental public health committee, additional checks by the relevant farming inspector and the authority responsible for the local water catchment-area. The assessment of environmental impact was based on location, type of construction, feeding methods, the effect on water supplies, and a maximum noise level of 150 decibels; in addition, the presence and volume of waste-water had to be notified in advance. The scheme was monitored by a specialist staff. The waste-product storage area had to be located at least 35 metres away from any source of water, 100 metres from buildings on the same premises, and 200 metres from neighbouring buildings. During soil treatment, the tourist season and periods of frost had to be allowed for, as did soils that showed a tendency to exceed a stipulated retention level. The area of pasture land to which wastes were applied was not to exceed 100m^3, and the minimum interval before livestock were put out to pasture was 30 days. There were also checks on the breakdown of waste-matter in the soil, on the quantities of waste-matter stored and any extension of the storage period, and on the deodorization of organic waste-matter through bacteriological action and conversion to methane operation. Cattle and poultry raising were regulated by similar provisions (GRIPERAY).

3.4 CAP reform

3.4.1 General

No fundamental mechanisms for achieving an environmental policy were proposed in the Commission's green paper. It confined itself to providing for aid for taking land out of agricultural production, in for example hill-farming regions, but without considering any measures for areas affected by intensive farming methods. In these areas two measures were called for: application of the 'polluter pays' principle, and the granting of compensation for environment-compatible activities. Ways should be sought of implementing the 'polluter pays' principle while acknowledging the possibility that income supplements for contributions to the protection of the environment might actually favour farmers already in an economically advantageous situation (von WEIZSÄCKER).

An agricultural policy to include the environmental aspect would have to be made up from a combination of various mechanisms. The damage that had been done by thirty years of market-oriented policy would not be put right simply by reducing prices, nor would doing so necessarily reflect an environment-oriented outlook. In this connection measures to supplement the basic policy would have to be found, such as prices differentiated in favour of small farms and less-advantaged regions, together with provisions to compensate farmers who engaged in environment-compatible production (von MEYER). Consumers were on the whole prepared to pay for quality. To that end, free competition had to be encouraged (CINAB), or guaranteed prices be reduced (BEUC). One instance of a correct approach to reform of the CAP was the coresponsibility levy, which still, however, needed to be enlarged and/or differentiated (PRIEBE).

3.4.2 Specific reform proposals

3.4.2.1 Taxing the use of certain chemical substances

Before any general tax was imposed on the use of chemical substances in agriculture, the effects at economic, social and ecological level would have to be carefully and specifically investigated. The value of any such measure to the environment would be limited, since it failed to take account of the differences between particular forms of agricultural production and between soils and regions, whereas the effects of nitrates were more severe in some areas than in others. Farmers were undoubtedly concerned to fertilize as efficiently as possible, and they used not only mineral but also natural fertilizers (CONRAD). A tax could work to the disadvantage of farmers and consumers alike. Farmers would have to carry a higher risk-factor; they would have to choose between two possibilities: using taxed chemical products in order to maintain yields at the same level at the expense of higher production costs, or using less nitrate fertilizer, thereby risking a fall in yields. Consumers would have to be prepared to accept higher foodstuff prices. An additional tax on nitrates would, given the variations in soils and crops grown in Europe, lead to no fundamental changes in the use of nitrate fertilizers (van ERMEN). It should also be realized that any such tax would hit farmers in the most disadvantaged regions hardest (AHRENS), regions in which the basic agricultural factors of soil

composition and climate meant that large quantities of fertilizer were required (CONRAD). Rather, preventive measures, such as education in appropriate growing methods and in the use of nitrate fertilizers in conjunction with the by-products of livestock farming and the further development of agricultural sciences in every Member State of the Community, were to be preferred to a tax.

A tax on nitrates for use in agriculture was nevertheless proposed by the environmental expert on the 'polluter pays' principle. This measure would, admittedly, double the market price of commonly used nitrate fertilizers. But the income from this tax would be returned to the farming community in the form of a flat-rate compensatory payment per unit area of land. The main purpose of the proposal was to encourage extensive production methods, which were often less environmentally damaging than the intensive methods (von MEYER). The money collected under any such tax or payable as compensation for damage under the 'polluter pays' principle - although paying financial compensation for damage to the environment was in itself undesirable from an ecological standpoint - could be used to set up consultation centres for farmers to disseminate accurate information on the real needs of the soil for fertilizers (SORLINI, CONRAD), which would have to be varied with the particular soil composition and the growing methods employed for each product (van ERMEN).

A tax on nitrate fertilizers at an appropriately high level would significantly reduce the use made of these chemicals, and this would have a favourable effect, in particular in single-crop regions; in Sweden nitrate fertilizers were taxed and the proceeds returned to the agricultural sector in another form (von MEYER).

3.4.2.2 Differential pricing

The Commission's green paper confined itself to creating 'ecological corridors' in an environmentally damaging agricultural system. Environment protection was being banished to areas of marginal agricultural activity in order to limit the effects of viable yet environmentally damaging production. It was however necessary for the costs of environmental damage to reflected in prices policy. A system of differential pricing was both possible and necessary. It would

enable a satisfactory number of jobs to be maintained, with the possibility of a long-term increase. It would be favourable to production processes requiring a high labour input compared with methods requiring the use of environmentally damaging production methods. Extending the turnover tax scheme to all the Member States would provide the necessary basis for setting up a differential pricing system.

The objections that had been heard to this system, such as excessive bureaucracy, low labour productivity, increased foodstuffs prices, with the resultant impact on the consumer and the attendant social injustices, should be rejected. In particular the second objection was refuted by the consideration that a differential prices scheme would encourage small producers to improve their viability by reducing production costs and not by increasing yields through more intensive and environmentally damaging production methods. One answer to the third objection was the social cost resulting from rural depopulation. The rise in foodstuffs prices would be offset by the fall in the social costs that the consumer had to bear as a taxpayer. The creation of more jobs would for example mean that less had to be paid out in unemployment benefit. And the consumption of better quality foods would mean a fall in the incidence of common illnesses. Nor did better quality necessarily mean higher food prices, since many agricultural products required a reduced level of processing by the food industry. It should not be forgotten that only 7 or 8% of the cost of food to the consumer was returned to the farmer. The remainder went on transport, packaging, advertising, etc (CINAB, BERTHELOT).

The introduction of a differential pricing scheme on the basis of the four criteria of farm-size, regional policy, production methods and product-quality would lead to difficulties as soon as these criteria had to be applied in combination. It would require more active intervention by government departments and would lead to administrative difficulties at the point of implementation. Price differentiation could also be achieved however through a tax on farm size, or by granting a premium to small farms, or by a combination of such methods whereby large farms would have to pay a levy from which smaller farms were exempt. It would be important for such measures to be applied in a uniform way throughout the Community to avoid distortions of competition. It could otherwise

happen that countries whose agriculture was characterized by large structural units, such as the United Kingdom, would be financing agriculture in countries with typically small-scale farms such as Italy and the Federal Republic of Germany. This problem of spreading the burden internationally could significantly hamper efforts to secure agreement at Community level. Moreover, the differential prices would have to be applied to all agricultural products - and on the basis of varying criteria - to prevent farmers from abandoning the production of particular products in favour of more profitable ones. With sugar and milk there would be no obstacles, whereas with cereals it would be more difficult, and in the cases of livestock products and protected crops it would be nearly impossible (von URFF).

The implementation of a differential pricing policy on the basis of farm size would be bound to run into numerous obstacles since it was impossible to compare farms on the basis of such a parameter. On the contrary, the primary objective should rather be that of product quality, although quality standards remained to be established (INRA). In the case of lower quality products intended predominantly for the processing industry, new marketing outlets could be opened up. A new kind of utilization was also that of conversion into energy (KRAUS). A differential pricing policy would moreover be impossible to implement at legal and administrative level. Better results would be obtained if the farming community and/or particular farmers were rewarded for the effectiveness of their contributions to safeguarding the environment and if there were differentiation on the basis of the effort they put in. If production that damaged the environment was dearer, that also could have an impact on prices (von WEIZSÄCKER). Nor would any such policy encourage farmers to abandon their entrepreneurial spirit in favour of an approach that put less emphasis on productivity. New methods had to be found that would enable environmentally damaging practices in agriculture to be discontinued and agricultural activity encouraged in certain areas. The achievement of this objective would require information exchanges at Community level (FLEISCHHAUER).

3.4.2.3 Quota system

The quota policy represented a transitional solution, since it would have an undesirable impact in the long term; in the case of cereals it

would in fact be impossible to implement (FLEISCHHAUER). It would be better to go for a policy of diversification of production by rewarding more 'useful' agricultural activities. Transfers of income from the tertiary and secondary sectors to the primary sector would have to be secured. The Community as a whole would, for example, have to protect farmers in upland regions, 'nature's gardeners', as they were known, who maintained these touristically valuable assets for the Community. For the future, an agriculture split up into three major 'divisions' could be looked forward to: in the first, a 'reasonable' diversification would represent the only possible solution; in the second, alternative production systems, and with them less intensive production methods, could be introduced, in what would amount to a structural policy scheme; and in the third, areas of land would be 'mothballed', ie they would be used neither for agricultural nor for tourist purposes (INRA).

3.4.2.4 Miscellaneous support measures for environment-compatible growing methods

From the standpoint of environment protection the effort had to be made, as set out in the green paper, to secure a restrictive, market-oriented pricing policy, to be introduced in stages. Farmers would be encouraged to hold production costs within bounds, leading to a reduction of surpluses and of environmental damage. Such a policy would have to be supplemented with income-supports, which might well be differentiated according to the environment-oriented production methods used; no such measure was however provided for in the green paper. Such an intervention scheme existed for hill farming, but was still in need of review and improvement. Criteria needed to be established for the granting of income support and for the procedures whereby regional differentiation could be specified in particular instances. In addition, possible means of financing such measures would have to be considered. In the Federal Republic of Germany implementation of the present policy was associated with high costs, accounting for two thirds of the total income of the agricultural sector. Costs could run as high as DM 700 per hectare, whereas hill-farming aid ran to DM 240 per hectare. These figures gave an approximate indication of the spread that would have to be covered by income support under a market-oriented pricing policy (PRIEBE).

A policy that provided farmers with income support as a regular and direct form of aid in recognition of their role as protectors of the environment was being successfully pursued in some parts of the United Kingdom. In the Peak District (National Park) a pilot scheme subsidized by the Community was in operation. Farmers were receiving income support related to the part they were prepared to play in protecting marshlands, or maintaining hedges and stone dykes, etc. The farmers, who worked to traditional methods and contributed to the protection of the countryside and local flora and fauna, were receiving £235 annually per hectare. The policy was a boost to economically less-favoured farmers. Similar projects might well be financed by the Community, although they would have to implemented regionally (CONDER). The Agriculture Ministry was currently planning a restructuring of subsidies granted by national departments, since under present arrangements it was the bigger and more productive farms that were deriving the greatest advantage from such measures. The possibility was also being considered of establishing a register of areas of historical and geographical interest. Provision would be made for a scheme to preserve the environment and one to promote high-quality foods. Exemptions from land transfer tax and an annual contribution to the financing of environment improvement measures were also under consideration. Commitments in relation to such land would be unaffected by any change in ownership. In areas where the countryside had been spoiled by non-natural phenomena, its original character was to be restored (DENTON-THOMPSON).

Experience of income support measures in the Netherlands had been less favourable; aid had failed to elicit sufficient interest on the part of the farming community. One reason for this might be that subsidies of this kind were only suitable for supporting types of farms and forms of production that were inappropriate to the agriculture of the future. The environment protection effort had, rather, to be incorporated into pricing policy (BERTHELOT). Allowance also had to be made for problems in connection with subsidy distribution, inasmuch as there was a danger that these were not always being directed to the correct recipients (WAA).

Differential pricing was too rudimentary as a mechanism for securing environmental and political objectives (PAYNE, CONDER). The criterion of 'farm size' was inoperable, since it did not correlate with farmers' ecological behaviour. Equally problematical was the concept of 'quality', given the variety of consumers' tastes and preferences.

Better results could be obtained through structural policy measures which could be used to promote such agricultural activities as could be seen at national or Community level to be favourable to the environment. That policy was also being applied in the United Kingdom, in accordance, moreover, with Article 19 of the directive on structures (PAYNE). Structural policy measures also had the advantage that they could be adapted to the specific needs of particular regions. Any such a policy, which would amounte, ultimately, to a planning policy, would however also require a prices policy (SWART).

Other measures of value to environment protection included the option of making changes in land use subject to prior authorization, the granting of premiums for activities favourable to the environment, such for example as soil rehabilitation, containment of erosion and reduced application of pesticides; these measures had achieved favourable results in the Federal Republic of Germany (von URFF).

In meat-producing areas of agriculture, increases in the livestock count, which had doubled in the United Kingdom alone over the previous 15 years, had been responsible for an increase in waste products damaging to the environment, and for the disposal of which, in, for example, the United Kingdom, no action had been taken. Farmers had to be encouraged to recycle the by-products of livestock farming, specifically through subsidies for the installation of recycling plant, the cost of which could not be borne by the producers alone (WAA).

3.4.3 Financial aspects

Savings in the budget could be achieved through a differentiated pricing policy on the basis of production per unit of labour, taking due account of natural costs of production and regional variations. Such a policy could be supplemented by a tax on animal-feed imports, the production of pesticides, of sulphur-based fertilizers, and a tax on the livestock-count of farms. A 1983 BEUC investigation into dairy farming in Belgium had shown that a freeze in milk prices could result in savings in the budget. The savings thus achieved could be returned to the most disadvantaged farmers in the form of supplements to compensate for loss

of income. This method would also have the effect of cutting back production, and would contribute to the solution of socio-political problems. On the basis of available figures, savings could be expected of the order of ECU 395 million, compared with the COPA proposal calling for a 5.8% increase in prices; that would mean a saving of ECU 200 million as compared with the Commission's proposed increase of 3.2% (BEUC).

4. Land use - land reparcelling

4.1 Land use

Investigation of the different soil types and their geographical distribution, together with soil preservation, were the two most important tasks that remained to be completed in this connection everywhere in Europe. European soil maps - the best-known ones at present were the FAO-UNESCO 1:5,000,000 scientific research series - should be brought completely up to date and the scale and presentation used by national cartographers should be standardized, failing which one of the three principal soil representation systems of Western countries - soil taxonomy, or the French, or FAO systems - should be definitively adopted (PREVITALI). To enable up-to-date information about soil composition to be obtained rapidly in the Community countries, remote sensing techniques should be developed (BONFANTI). If soils were to be protected, decisions would have to be taken on agricultural, forestry, urban and industrial uses of land in relation to soil composition and with all due regard to the natural properties of the soil. It would be urgently necessary to extend the experiments that had been conducted in a number of countries and to induce laggard countries, like Italy, to take action. In any comparison of notes among European countries three main themes had to be kept in mind: the campaign against the misuse of serviceable arable, forestry and pasture land for residential purposes (by the year 2000 areas of agricultural land in some of the most heavily urbanized areas of Northern Italy could well be irreversibly destroyed); the campaign against water and wind erosion (every year 2 mm of soil per hectare was carried away by the wind, which was well above a tolerable level); the campaign against contamination of the soil through the introduction of heavy metals, excessive fertilization, and acid rain.

There should be efforts to combat physical and ecological damage resulting from landslides - which were now occurring with increasing frequency in the mountainous and upland regions of Italy - as well as soil erosion, erosion through mechanical manipulation of steeply-inclined uplands, irresponsible removal of stone for building-use, deforestation - partly by means of arson - to serve the ends of tourist and sporting centres, or to secure pasture land, and inappropriate and dangerous choices of locations for the storage of urban, industrial or mineral waste-products, and for the siting of giant power stations and factories (PREVITALI).

As regards soil conservation, a register should be established at national or Community level of all available resources to enable this natural asset to be used to optimum advantage for agricultural, industrial, or urban purposes. Soil quality had to be protected indefinitely. France and other countries had establishments that monitored the physical, chemical and biological quality of the soil. The major physical problem was erosion. There were studies in progress under which criteria for the consolidation of plots of land would be drawn up (INRA). Any soil-protection programme would have to be linked to ancillary policy measures for the protection of the natural environment. It would be a matter of active protection of soil function, and the problem would have to be approached as a whole, not in terms of isolated aspects such as erosion. Soil-protection had to be seen as inseparable from the conservation of biotopes and of flora, fauna and water-courses, and be approached in conjunction with public health and the responsibilities that farmers would have to meet in order actively to protect the environment. As regards the decision on the protection measures best suited to particular areas of the Community, there was a need for a uniform system and an assessment and categorization of the relative potential of different soil types. What was needed was not a register of soil damage, but a register of soil potential and of the areas requiring protection (KIEMSTEDT). Soil fertility had to be protected in terms of considerations other than production alone; protection had to be extended to cover plants and animals living in the wild state. In particular it would be necessary to determine at Community level the damaging influences to which the soil had been subjected, and how it could be protected against contamination by heavy metals. In some areas of the Federal Republic of Germany the use of fertilizers had been responsible for introducing cadmium in concentrations of 2.5 to 3,5 g per hectare. These amounts were being absorbed by crops. But if the cadmium deposits resulting from non-agricultural activities were included, then the levels were

five to ten times higher than those that crops could normally be expected to absorb. Moreover, particular attention should be paid to the degradability of pesticides in the soil before they were released onto the market; their application should be regulated at Community level (FLEISCHHAUER). The adaptability of the soil to multiple functions had to be maintained, and its use should not be altered in a rigid, definitive way. The soil was a living and consequently highly vulnerable organism. Apart from urbanization and road building, which 'sealed off' the soil permanently, it could also be endangered by agricultural use, as for example through contamination by chemical products. Toxic substances used in industry entered the atmosphere and were returned to the soil by the rain, resulting in yet further contamination. In the southern regions of the Community erosion was the worst enemy of the soil and endangered both agricultural and forestry applications. What effects human activity was having on the soil would have to be considered in relation to preliminary studies. Standards should be fixed on the basis of ecological criteria that would guarantee soil integrity and viability; in addition, safeguard measures would be required in many areas. In agriculture, it would be necessary to regulate the application of chemical products, soil processing, and the use of machinery; levels of copper in livestock feed should be reduced, intensive methods should be stopped, and southern regions reafforested to contain erosion. In other areas atmospheric pollution by heavy metals should be reduced, the Community directive on ground water should be completed, and the Member States should pursue a consistent policy on the removal of polluting waste products and slag heaps (TASCHNER).

The problem of correct soil use should not be approached only from the standpoint of competition between particular economic sectors; account had to be taken rather - in agriculture above all - of the need to secure optimum soil utilization. The spread of intensive growing of maize, which accounted for 60% of agricultural land use in some regions of the Federal Republic of Germany, had caused environmental damage: upland areas were being eroded, since the soil was covered in vegetation only for short periods and was being contaminated by the application of certain herbicides; this phenomenon merited further investigation (KRAUS).

Soil utilization was however also a political problem. In the United Kingdom it had been an objective of regional planning policy to safeguard every inch of viable agricultural land from urbanization or other uses; these measures had sometimes not been successful in every

respect. Yet in present circumstances in Britain, if surplus production were to be restricted through prices or quotas, some 500,000 to 2 million hectares of land would have to be taken out of agricultural production. In the last 10 years the demand of urban dwellers for plots of land in the countryside had increased considerably, and this trend could be expected to continue. Moreover, increasing numbers of farmers were now prepared to practise new growing methods (reafforestation, alternative crops, new forms of plant biomass). The Community had to support the curtailment of surpluses, the freeing of land used to grow surplus products and its sowing with new crop varieties; the conception of regional planning policy would have to change, since it was not absolutely necessary to conserve every inch of agricultural land (CONDER). In the United Kingdom there was now a tendency to apply a land-use monitoring scheme and to secure expert opinions on the environmental impact. The Institute of Terrestrial Ecology had conducted research on certain local plant species that could be grown as alternative crops. This research should be continued until, at a later stage, it passed beyond the experimental stage and led to cultivation of large land areas; the Community could finance these studies. The institute also analyzed the condition of soils intended for forestry implantations; in the United Kingdom woodlands that provided refuges for birds and animals were being destroyed, while other areas - often at the cost of damage to the environment - were being reafforested. The Commission could introduce a mechanism of financial support and aid to compensate farmers for loss of value in certain areas where they practised mixed farming, thereby encouraging them to plant shrub and tree species of environmental interest in ecological terms, in particular as a means of accelerating the reproduction of rare birds or birds threatened with extinction (BELL).

In Belgium environment protection associations were demanding that integrated land development programmes like that being implemented in the south of the country should be subjected to scrutiny in terms of their compatibility with the environment, so as to forestall environmental damage (VAN ERMEN).

In Italy, in the fertile Po Basin, 25% of land allocated to agricultural production had been lost to built-up areas; whether directly, as a result of construction projects, or indirectly through incorporation of agricultural land into towns and cities, this land was being allowed to lie fallow or was being farmed to exhaustion with inappropriate methods, for the purpose sale for construction projects (BONFANTI).

4.1.1 Reafforestation

The Community was a net importer of wood, but produced surpluses in other products; there was consequently a clear case for promoting the forestry industry and extending the area of afforested land, while at the same time maintaining marginal areas of interest for other objectives such as the protection of particular natural habitats. Forestry would cause less environmental damage than agriculture, in particular if it were operated by ecological methods (SERUSIAUX). Of particular importance was reafforestation in areas that had been damaged by water and wind erosion (PREVITALI) and in regions where woodlands had suffered the effects of the acid rain phenomenon (FLEISCHHAUER). Reafforestation of areas used for intensive cereal growing would not only reduce production surpluses, but would forestall damage from erosion that was now being recorded on over 2 million hectares of land in France; this could however lead to political problems in relation to competition. On the other hand converting pasture to woodland to reduce surplus milk production would destroy the physical, chemical and biological characteristics of soils that were currently in good condition and displayed a low nitrate content (BOURGUIGNON).

Reafforestation could provide a solution from a social and environmental standpoint, but in economic terms there were limits to its usefulness. In the United Kingdom investigations by the National Conservation Council had shown that in the past 40 years half the forests of the seventeenth century had been destroyed. Some 70% of the destruction could be attributed to incorrect forestry measures, and 30% to the encroachment of agriculture. In addition, 40% of marshland had been destroyed, 30% of which was due to inappropriate reafforestation. The reafforestation programmes would create no new jobs, since there was at the same time extensive investment in labour-saving equipment; moreover, the use of chemical substances was causing environmental damage. Concern at the damage to the environment that could be done by intensive and too rapid reafforestation programmes had also been expressed at a recently organized seminar on soil conservation. This seminar had made it clear that reafforestation had led to environmental problems not only in the United Kingdom, but also in the south of Spain and Portugal through eucalyptus plantations. Economists should calculate the effective levels of savings that could be achieved through

restrictions on imports of forestry products; it would perhaps be more useful to implement trade restrictions in different agricultural and forestry sectors (CONDER). Reafforestation measures were not always the best solution, since they resulted in near-irreversible changes in the soil. Moreover, the changes that were foreseeable in the world-wide political scene, inasmuch as the political importance of third countries would increase, could mean that there would be cause to regret the reafforestation measures (BERTHELOT).

4.1.2 New crop plantings

Encouragement should be given to the growing of oil-bearing seeds, which were in short supply in the Community; soya imports were running at 20 million tonnes annually, which was equivalent to a production area of 10 million hectares, assuming a yield of 2 tonnes per hectare. In addition, the Community's dependence on the United States continued to grow. Another possibility was to consider stepping up the growing of lupins, another crop that was viable on land originally allocated to livestock raising, as in Andalusia; cotton for use in textiles could also be grown in Greece, Spain, Southern Italy and Portugal. To encourage widespread use of these crops would require a change in pricing policy to make them profitable (BERTHELOT).

4.2 Land reparcelling

Land reparcelling was an appropriate mechanism for solving farms' structural problems and for ecologically oriented improvement of the countryside (KRAUS). It was no longer, as previously, being pursued only from the point of view of mechanization of agriculture, but also to meet agricultural requirements, and to guarantee the protection of the soil against erosion. In France environment protection experts had been brought in to advise on land reparcelling. As regards the chemical constitution of the soil, the effects of heavy metal concentrations, in particular of cadmium originating with phosphates and copper, were being investigated. High cadmium concentrations had been recorded in some mines, while copper occurred predominantly in areas where sewage was used extensively as a fertilizer; there the effort was being made to reduce the concentrations found in livestock-feed by a factor of 10. The aim was to secure the fixing of a maximum level for concentrations of heavy metals in the soil and to investigate any additional sources of

soil contamination (INRA). Land reparcelling should also take social aspects into account. It would create a better living environment for farmers and help to maintain natural living conditions. It should therefore - like regional planning - be implemented by government departments (FLEISCHHAUER).

In the Federal Republic of Germany there was some legislation on land reparcelling. It was geared to the protection of the environment and nature, but the results of its implementation could only be expected in the long term. The first law, passed in the mid 70s, had been followed in 1985 by a Federal framework law for the Länder. Between 1975 and 1983 provisions governing land drainage and conversion had been enacted. They had been implemented principally in marshlands in Southern Lower Saxony; these areas were a refuge for storks, for nearly all marshlands with rare species of birds had suffered from some form of environmental damage. From the general standpoint of soil and nature conservation agricultural production methods had to be changed, even if this demand would frequently run up against the hostility of farmers. The federal government's countryside protection council had recently published a handbook on determining the compatibility of agricultural production methods and the protection of nature, with particular emphasis on land reparcelling (KIEMSTEDT).

In Italy land reparcelling was stagnating; in effect, parcels of land were being 'atomized', particularly in marginal regions. In upland and mountain regions land reparcelling was fraught with difficulty owing to the extremely scattered and fragmented nature of landholdings. Consolidation could only be achieved in large-scale farms, and was confined to the inner strips, to comply with the requirements of single-crop farming and mechanization of growing methods; this led to erosion and exhaustion of the topsoil. In Lombardy a quarter of the region was dedicated to parkland and nature reserves - on paper. Before this protection could be regulated in law, it would be helpful to have access to a planning model conforming, at least in general terms, to the relevant regulations in other Member States (BONFANTI).

5 Community agricultural policy and the Third World

5.1 Economic and structural aspects

The effects of the Common Agricultural Policy on the ecological situation in the Third World were considerable; the two factors that played a

decisive role were: trade in agricultural products and foodstuffs, and measures in the area of private or public-sector cooperation resulting in the spread of European patterns of production and consumption. Community food exports to developing countries were disrupting the natural environment of these countries significantly more than imports. Community exports represented a threefold form of competition against Third-World agricultural production. Farmers in these countries were not in a position to maintain the fertility of the soil by using appropriate fertilizers and by preserving and improving the humus layer; this phenomenon helped to widen the gap between relative yields in the two hemispheres. Large numbers of Third-World farmers had been forced to abandon their land and seek refuge in urban areas, where the influence of European consumption patterns was all the stronger. The Community was also exporting development projects to the Third World to enable it to sell such factors of production as tractors, fertilizers and pesticides of European origin. The green - or, in the case of milk, white - revolution had led to the displacement of small farmers who had not had the financial resources necessary for access to the new technologies. The point also had to be made emphatically that intensive growing methods were unsuited to Third-World agriculture. Rather, mixed-crop farming would be more likely to safeguard the environment and save large numbers of jobs in these countries (BERTHELOT).

Community exports of surplus products to the Third World had unfavourable effects on the environment in these countries. They caused long-term changes in nutritional patterns, and resulted in locally produced foodstuffs being replaced by others of Community origin. This applied predominantly to urban areas. In Africa, for example, demand for the yam, the locally produced root-vegetable, had declined in favour of cereals, which were not normally grown on the African continent. The same was true of sugar and dairy products. Rising demand for these products was compelling farmers to expand their pasture land - sometimes to excess; this was at the expense of crops that could be grown for direct human consumption. Consequently, profits were falling and rural migration towards the urban centres was steadily increasing. In the past moreover, many farmers had begun to replace local crop varieties with staple crops intended for the world market; this was the case with rice, for example. The economic impact of these new growing patterns was considerable, since farmers had become more exposed to fluctuations in market conditions and were at the mercy of the interplay of supply and demand. The environment too suffered as a consequence, since soils were becoming exhausted and erosion was on the increase (LOGEMANN).

Some European institutions and some international organizations took the view that European food-aid and aid deliveries from other industrialized nations to the Third World were a form of competition against food production in the developing countries (Report of the Court of Justice on the competitive and substitutionist effect of European food aid on the countries of Africa and Asia, 1981; Opinion of the International Committee to combat the drought in the Sahel region). In this they contradicted the position of the Commission of the European Communities which saw the problem only in terms of deliveries of supplies, without recognizing that exporting foodstuffs also meant passing on a particular pattern of agricultural activity. In ten years demand for wheat in the Sahel countries for example had risen by 134%, while demand for millet, sorghum and maize had remained constant. In 1983, 82% of aid for food production in the developing countries had been confined to just five products: palm-oil, tea, rice, coffee and sugar. This showed how much impact the transfer of a European production and processing patterns was having on agricultural products that were being produced in the developing countries and re-exported to Europe. As regards nutritional habits, it meant that the urban population, which although only a minority took the important decisions and exercised purchasing-power, preferred to purchase cheap foodstuffs - eg cereals - available on world markets instead of local products. Cereal prices policy in Senegal provided one example. In 1978-79 the Senegalese government had raised the consumer price of millet by about 5 francs; as a result supplies on the internal market had doubled. Local demand had however been insufficient to absorb growing production. Nor had the internal product been able to compete against imported products from Europe, Australia and the United States that could be purchased on the world market and were thus cheaper than the home-grown product. Nor had any form of aid been granted to enable traditional home-grown products to be processed locally (CARTON).

Exports of European Community surplus products to developing countries could represent competition against some foodstuffs but not all. Pressure of competition was strongest in the case of sugar, where the needs of Third-World countries could be covered by South-South trade relations. On the other hand Community cereals exports did not amount to competition; they helped to cover a developing country import deficit that was estimated at 100 million tonnes a year and would, according to FAO forecasts, remain unchanged until the year 2000. If the Community were to exercise restraint in its cereals exports, the advantage would accrue to exports from the United States and Canada. In the case of dairy products, some 80% of Community exports went to Third-World countries; Community exports were competing against local products only in particular cases, since the development of production in the Third World was a slow process taking place in difficult circumstances. The significance of Community food aid to the developing countries should not be underestimated; it had for example included 1.7 million tonnes of cereals, 150,000 tonnes of milk powder and 50,000 tonnes of butter-oil; food aid could also be of immense value if it were complemented by a development strategy aimed at the long-term promotion of domestic production (von URFF).

European livestock-feed imports accounted for only 0.3% of Third-World agricultural land, with the growing of tapioca in Thailand and soya in Brazil as an exception. The growing of tapioca for export did not compete against the production of foodstuffs for internal consumption. Thailand was able, with the help of its rice exports, to cover all its food-supply requirements. Tapioca was, in any event, being grown on low-fertility marginal land and was a major source of income for small farmers. On the other hand, soya growing in Brazil did compete against the production of foodstuffs. Growing this crop caused a scarcity of fertile soil to grow products that could cover internal demand for foodstuffs; in this way small farmers were being squeezed out of marginal areas. The Community also imported tropical products like fruit and oil, the production of which had a stabilizing effect on the environment in the zones of production, and the export of which brought the producer countries guaranteed profits (von URFF).

The European Community and other countries had helped to set up giant sugar factories in Costa Rica through the intermediary of the EIB and other institutions. At the same time the Community was pursuing an aggressive policy for its own sugar-beet production; it was, moreover, committed to importing a fixed quantity of sugar to comply with the terms of the Lomé agreement. It would however be more logical to conclude 'non-political' agreements between the Community and the sugar-exporting ACP countries. Under these agreements the Community would be in a position to commit itself to limiting its sugar imports within a period of 5 to 10 years, or to dispensing with them entirely; as a substitute it could grant an appropriate amount in financial aid to be used to help diversify agricultural production in the countries concerned (CARTON).

5.2 Exports of pesticides and fertilizers

5.2.1 The extent of exports

The Third World countries and the industrialized nations used different types of pesticides. Exports were predominantly of insecticides, whereas exports of herbicides were of secondary importance since the use of these substances had still not replaced manual methods. Fungicides too were exported only in small amounts, since they could only be used in special cases and for particular crop species. Costs of producing and marketing a new product were very high (DM 100 million), which meant that a product could not be developed exclusively for Third-World markets. The Bayer concern was the biggest exporter of pesticides on world markets. It exported 90% of its production; 60% of the total went to Community Member States, 15% to the United States, 5-10% to Japan, and 15-20% to the Third World, including the 'threshold' countries. Some 20,000 tonnes of these substances were being exported to developing countries, and the amounts used per hectare were highly variable (AHRENS).

In general terms it could be said of pesticide exports to the Third World that 61% of the total originated with Community undertakings. Some 7% of the annual turnover of a Community multinational (Shell) was earned from exporting three pesticides (aldrin, dieldrin and endrin) that were either prohibited or strictly controlled in the Community. The Development Fund was also helping to fund exports of some pesticides. The documentation available showed that in 1984 it had

financed the export of 40,000 litres of endrin and 60,000 kg of aldrin destined for coffee plantations in the Ivory Coast. In September 1985 eight European consumer and environment-protection organizations would launch an information campaign to draw attention to the dangers associated with these exports (BEUC).

5.2.2 Authorization criteria

The provisions regulating imports in many Third World countries were based on authorization criteria in use in the industrialized nations; many Latin American countries imported and used products that were authorized in the United States; many French-speaking countries kept to French standards (AHRENS). This offered some guarantee, even if the authorization did not always correspond to the place of manufacture. In the developing countries some products could be used that were unsuitable in the Community by reason of climatic variations as between the two hemispheres. The use for example of DDT in areas other than agriculture was held by the WHO to be extremely useful (CINAB). Its use was prohibited in the Community, but it continued to be manufactured in, for example, the Netherlands (LOGEMANN). Another major exporter of DDT was the Soviet Union, which delivered DDT to India where it was used under WHO auspices in the campaign against malaria (BERTHELOT).

National legislation in the Member States often contained no specific prohibition on products the use of which was not approved in the Community. Production for export was implicitly authorized; Italian legislation was a case in point. Production of pesticides that were highly toxic, mutagenic or carcinogenic, or that could lead to deformities, should be specifically prohibited by law (SORLINI). The Community could proceed in two ways against the illegal marketing of prohibited or toxic and dangerous pesticides in the Third World; on the one hand it could prohibit the 'double standard', ie the export of products the use of which was not authorized within the Community. Or it could associate itself with the final adoption at the FAO meeting in November 1985 of the code of conduct constituting the first attempt at international regulation of trade in pesticides. At the same time the problem of international trade in seeds would also have to be tackled (PAYNE).

5.3 Residues in products treated with pesticides

5.3.1 Imports of these products from the Third World

In the Third World 70% of pesticides were used to treat crops intended for export to industrialized countries. In the United States it had been established that many agricultural products imported from developing countries contained traces of pesticides the use of which was often unapproved; in 1981 the presence of such residues was recorded in 44% of coffee imports from third countries (BEUC). In about 20% of a year's imports of citrus fruits traces were found of pesticides banned in the USA itself, but authorized for export to the Third World (von WEIZSäCKER). No corresponding data were available for the European Community. This aspect should be investigated (BEUC).

5.3.2 The health risk

Exports of dangerous pesticides to the Third World were a threat to the environment and to human health, since these products were not only highly toxic but were often not used correctly. Pesticides normally highly resistant to degradation were accumulating in plant and animal tissue; they were able to penetrate the biological cycle, and trace amounts of toxic substances were being found in the food chain (SORLINI).

Worldwide, the death-rate attributable to the use of pesticides had risen significantly in the previous fifteen years. According to WHO, there had been 500,000 cases of poisoning annually, 9,000 of them fatal, in the early seventies; in 1980 some 750,000 cases of poisoning had been reported; deaths from poisoning numbered between 13,000 and 29,000 (BEUC). In one set of figures 5,000 deaths had been reported ; 30-40% of these had been from occupational accidents, the remainder from the abuse - or, in some cases, the deliberate use - of these products. The number of accidents could be brought down through the use of less toxic products, or of new products, the cost of which however was significantly higher than that of the outdated ones. One reason for the problems was also that developing countries sometimes showed a marked preference for particular products (AHRENS.)

5.4 Resistance to pesticides

The resistance of insects to insecticides exported from the Community had increased considerably in the previous 50 years. In 1938 only ten species of insects had shown some degree of resistance to chemical substances, whereas in 1980 it had been 402 species. Observations in cotton plantations in Central America, where insecticides had been used for the first time in the fifties and where crops had been sprayed eight times a year, had shown that over the period 1950 to 1955 three insect species had become resistant to chemical products; in 1965, when crops had been sprayed on average 28 times per growing year, a further three species had shown definite signs of resistance, and in the early seventies a further eight new insect species had become resistant, although insecticides were by then being applied no less than 40 times per season (BEUC). FAO statistics had shown 10 instances of resistance in 1960 compared with 434 instances in the period 1980 to 1985.

The resistance of living organisms to chemical products was a biological phenomenon that depended on natural selection; the way to combat this resistance was to diversify the substances applied, not to step up the dosage (AHRENS).

5.5 Measures to remedy the situation

5.5.1 Research

In many Member States strict standards and controls were applied to pesticide production. They did not however provide a sufficient guarantee. Many products had been withdrawn from internal Community and international trade when their dangerous, toxic and sometimes mutagenic and carcinogenic effects had become known. The Community could assume a pilot role in promoting studies and analyses of the toxicity of these products by establishing uniform rules. At present monitoring and certification applied almost exclusively to acute poisoning (ie the direct effect of the substance on the environment and on human beings); often they were confined to a single substance. Studies of chronic toxicity (long-term effect on the environment and human beings) and of the cumulative effect (effect of simultaneous application of different substances in the same place and over a protracted period of time) were however sporadic (PAYNE).

5.5.2 Enlightening the Third World

The countries of the Third World stood in need of permanent consultation with the objective of enlightening their populations as to the correct use of pesticides and hygienic food storage. This duty was incumbent, in particular, on the FAO and other international organizations like the WHO, as well as national governments. According to FAO estimates, an average of 30 to 50% of crops in developing countries was lost each year to infestation with harmful plant and animal organisms. After harvesting and during storage, an average of 20 to 50% of yields was lost. If production were to be raised, specialized treatment with pesticides and fertilizers, together with rational techniques of land use would be required, in which connection it should be remembered that according to FAO estimates, the area of land still available for agriculture in the countries of the Third World ran to some 200 million hectares (AHRENS).

Intensive trade between France and the French-speaking countries had resulted in the training of agricultural experts in the countries concerned. The store of knowledge of these experts was continually being increased, and this had resulted in a growing rationalization of the use of pesticides and a fall in the numbers of accidents. Third-World countries were on the whole well informed as to European legislation.

In the Netherlands no specific initiatives for improving the standards of information about pesticides had been introduced; there was no code of conduct for the industry, but only a declaration of intent or 'gentlemen's agreement' that provided for moral commitment without legal enforcement (LOGEMANN).

5.6 Encouraging internal production

The mistakes of the past of directly transferring agricultural technologies well-suited to Europe to Third-World countries had to be avoided. The ecological balance in the countries of the tropical and sub-tropical zones was much more vulnerable than in European countries, and technologies well-suited to crop-production in the Community had often proved unusable in the tropics. Technology had to be adapted to specific environmental conditions - in particular climate and soil - in the regions for which it was intended (AHRENS).

In addition to food-aid on humanitarian grounds, technical consultation was also required with the aim of helping the countries of the Third World to become self-sufficient in food supplies. A joint effort should be made with the countries concerned to research new technologies that could be adapted to local climatic and soil conditions; equally important was the need to improve the genetic stock of local plant and animal species. No cereal crop could flourish in the tropics, and dairy-farms organized on the European pattern would never produce milk in sufficient quantities. Technical evolution had to be a gradual process to avoid disrupting the balance of the environment. And direct transfers of European technology were to blame for competition between the newly introduced crop varieties and traditional local crops. The green revolution had made it possible in areas of intensive cultivation to produce potatoes at a price (Fr 3-4 per kg) well below the production price of tuber crops like yams (Fr 10-12 per kg), in respect of which no research had been conducted into ways of improving the genetic attributes, and no effort had been made to improve and consolidate growing methods, in particular in terms of plant protection and harvesting.

Improvements to the genetic attributes of plant and animal species had been responsible for some 60% of the improvement in yields in European agriculture. The developing countries were dependent on support in improving the genetic stock of local animal and plant species with the objective of making optimum use of the available biological potential. But the African continent contained the largest stock of ungulate mammals living in the wild state anywhere in the world; these livestock were not being used to meet the enormous need of the local population for protein. Friesian dairy cows had been imported into Zaire, but had yielded an average of only 3 litres of milk per day because they had been able to adapt to local conditions there only with extreme difficulty; at the same time the buffalo living wild in the Roundi Park could easily yield a tonne of animal protein per hectare. Antelope, zebra and other species were able to feed on the plant species of the African savannah, which were rich in lignin; on the other hand the need to grow suitable feed-crops for animals imported from Europe was destroying the natural soil. The use of domestic species for agricultural purposes would require research to improve their genetic attributes; such research had been conducted on only a few ungulates, such as the zebu in Mexico and Brazil (INRA).

Improvements to the genetic attributes of local plant species could open up some highly interesting prospects. Well over half the world's plant species grew in the countries of the tropical and sub-tropical zone; many plants that were now virtually unknown in Europe could be a high-yielding source of protein. At present however research into the improvement of the genetic attributes of tropical plants was confined to those species whose crop (coffee, sugar, soya) was intended primarily for export to the industrialized nations (INRA).

The syllabus of the agricultural sciences ought to be changed to enable tomorrow's Third-World experts to impart appropriate knowledge of the natural potential that existed in their countries and how it could be tapped. Direct transfers of agricultural techniques such as were applied in Europe could often lead to destruction of the natural environment in Third World countries. The full significance of that process was only brought home when it was realized that a living species was dying out somewhere on earth every ten minutes (INRA). The essential thing would be to ensure that genetic uniformity and standardization of cultivated plant species did not result. The choice of different varieties belonging to the same species could for example cause problems in the area of plant protection, and there had been cases in which several varieties of one and the same cultivated species, as for example, maize, had all proved equally vulnerable to the same pests, which had led to serious losses on harvesting (CINAB).

6. Environment-compatible production methods

6.1 Promotion of environmental awareness among farmers

The contributions farmers would be expected to make would have to be differentiated. On average 20% of agricultural land would have to be subjected to intensive nature-protection measures, whereas with the remaining 80% there would have to be a scheme of staggering according to the intensity of growing methods. This meant that differentiated measures in the area of environment-protection would be necessary, and it would have to be laid down at regional level what nature-protection measures were to be implemented. The financing mechanisms were too imprecise to secure the necessary differentiation (KIEMSTEDT).

Specifically, the following measures could be considered to encourage farmers to adopt production methods more compatible with the environment:

- a technical consultation service for farmers (von URFF, DENTON-THOMPSON, CONDER)
- application of the 'polluter pays' principle (von URFF)
- income support for activities that helped to preserve the environment (BOURGUIGNON, CONDER, von WEIZSäCKER, von URFF)
- a tax on nitrate-based fertilizers (CONRAD, PRIEBE)
- effective monitoring by government departments (CONRAD).

6.2 Alternative agriculture

6.2.1 Basic concepts

The German definition of 'alternative agriculture' covered various 'ecologically-managed' types of farming that adhered to the principle of the traditional mixed farm, with both crop-growing and livestock-raising, whereby the fertility of the soil was maintained. Pest and disease control was ensured by raising the natural resistance of crops and livestock, so that applications of chemical products could be restricted. Consequently the concept of soil fertility and product wholesomeness was of fundamental significance. It would be unrealistic for 'alternative' growing methods be introduced directly to every farm in the Community, but they did represent a model for the future development of Community agriculture. A sufficient increase in the number of farms applying 'alternative methods' to agricultural production in the Community could help to reduce the level of surpluses; yields per hectare were in fact slightly lower than yields achieved by conventional methods, and this could mean a saving in resources that could then be reinvested in agriculture (PRIEBE).

It was difficult to give a definition of alternative agriculture, since it comprised different forms of biodynamic, biological and integrated production (SORLINI). Alternative agriculture often meant widely differing production methods, some of which might well provide highly promising options for the future, while others pointed to a less clear-cut outcome. So-called 'energy farming' did not however fall within the ambit of 'alternative agriculture.

It was possible to change the intensive growing methods without reducing yields. There were many possible systems, including the so-called 'integrated' agriculture, through which damage to the environment could be reduced on the one hand while taking farmers' concern to have high yields into account on the other. Some highly promising experience had been gathered with the polders in the north-eastern Netherlands, and this should be pursued further (SWART).

6.2.2 Growing methods

There was no contradiction as between quality, economic viability and ecology. A good example was provided by a group of farms in France that practised biological growing methods and planted lupins in the course of their crop rotation. This leguminous species offered many advantages: it adapted well to a wide range of soils and climates, was highly resistant to pests, it enriched the soil with nitrogen; it delivered a high yield after only 90 days, characterized by a high protein content and low growing costs; moreover, livestock could either be pastured on lupins or the latter could be brought to them as feed. Sowing with lupins helped to maintain the productivity of the soil; imports of soya cake had moreover been reduced by two thirds, and the quality of the milk improved at the same time (4% more fat and 3% more protein). In France, biological growing was recognized by law; it had been favourably acknowledged both in terms of the impact on the environment and the quality of the product. The demand for biological products was constantly increasing. Studies conducted by the French Centre for External Trade in the Federal Republic of Germany had shown that demand for such products accounted for 8% of total demand for food products. The French Agriculture Ministry was promoting biological growing by setting up approval and monitoring centres composed of joint committees of growers, experts and consumers. Biological growing also deserved to be promoted at Community level (CINAB).

Crops that had the potential to be grown for bioethanol production should not be considered as having a place among the 'alternative' crops; they were of no value to the environment since they did nothing to alter the pattern of intensive farming and did not contribute any greater variety to crop rotation (TASCHNER).

6.2.3 Research and information

Research into biological farming should be stepped up, since this form of land use could also serve to improve the quality of the soil (BOURGUIGNON). Alternative farms deserved to be supported, since there was a significant movement in the market for biological products and an upturn was clearly in prospect. Research and financing for biological agriculture should be promoted in terms of consolidating production techniques, reducing production costs and improving the economic situation of farms - aspects that had hitherto been considered only in relation to traditional farms - together with the dissemination of information about alternative agriculture (SORLINI).

Information should above all be disseminated about alternative methods of agricultural production that could be used in what were often unfavourable growing, soil and climatic conditions in which traditional methods failed. The Community had to become active in this connection, and break down and liberalize the structures of 'commercial' support to agriculture. Making a success of an alternative farm was after all quite difficult if technical support - as, for example, in Belgium - was available only for traditional agriculture, and local agricultural associations confined farmers to an entrenched and immobile structure by acting as bankers, insurance agents, and sellers of machinery and pesticides, at the same time setting themselves up as representatives of the farmers (SERUSIAUX). The Member States had different views on the development prospects of alternative agriculture. At all events, closer cooperation among the countries of the Community on research and information would be indispensable (von WEIZSÄCKER).

6.3 Economic viability

The main objection to alternative agriculture was the low profitability of the production processes, the yields on which were below those on conventional agriculture, while labour costs were higher. The reports on German Agriculture over a three-year period gave economic data for alternative farms calculated on the same basis as that for conventional farms. Production in the alternative farms was some 25 to 50% down on that in conventional farms; producer prices were between 80 and 120% higher; the labour factor was 25% higher, and there was a labour-input

ratio of 2.5 to 1.5 in favour of the conventional farms; producer costs accounted for 73% of costs in conventional farms and ran to DM 71 per hectare for fertilizers (compared with DM 363 per hectare for traditional farms), DM 4 per hectare for pesticides (compared with DM 107), and DM 629 per hectare (compared with DM 1076) for livestock feed. The net yield per unit labour in the alternative farms, at DM 27,385, was slightly below that of conventional farms at DM 31,495, but this difference was not observed in the comparison of yields per family unit.

A low utilization of means of production was entirely compatible with the objectives of environment protection and economy. The profitability of agricultural production could be achieved not only through high productivity but also by lowering production costs. In the Federal Republic of Germany there were examples of farms employing extensive or biological growing methods that could achieve favourable economic results without resorting to pesticides and with a low consumption of fertilizers. Nor was some curtailment of production at odds with the present situation in agriculture in the Community, characterized as it was by the production of surpluses (a rate of growth of production of 2 to 3% while foodstuff consumption remained constant) and by difficulties with exports on world markets (PRIEBE).

To compare biological agriculture with conventional agriculture was like comparing the productivity of Nigerian agriculture with that of agriculture in the Netherlands. Research was in fact being concentrated principally on the improvement of conventional production techniques, whereas the system of alternative production was neglected. In Switzerland a comparison between 20 biological farms and 20 conventional farms with comparable structures had shown that in farms that used biological growing methods, yields on wheat production were 10% lower, but that the lower yields had no unfavourable effect on the farm, and fitted in well with the overall trend of a highly productive agriculture that had as one of its primary objectives the reduction of its surpluses; in terms of annual yields in livestock breeding there were no great differences between the two types of farm: SFr 2,800 for the biological farms and SFr 2,850 for the conventional farms. The yield per unit of livestock differed only slightly as between the two farm-

types. The biological farms had however required more pasture land to support each animal. Animal feed requirements had in fact been covered, without recourse to purchases of products imported from Third-World countries; these farms were moreover being run with minimal specialization, so that the fertile soils could be used for high-quality crops, while on less productive soils other crops, including feed crops, could be grown. In the biological farms milk yields were some 25% lower. Biological agriculture was in effect taking over, at the level of the individual farm, the burden that normally had to be carried by the states of the Third World.

A five-year comparative study based on INLB accounting data of an alternative farm in Sologne (France) and a 40-50 hectare conventional farm in Central France had shown that the alternative farm had input double the quantity of labour units, had consumed smaller quantities of fertilizers, and had achieved double the level of gross product overall, with higher production costs on account of the more intensive input of human labour (CINAB).

Comparisons between the yields of biological and conventional farms should be made in the first instance on the basis of product durability. The product yield should not be measured by unit area of land at the farm gate, but rather a comparison should be established between the quantities produced in agriculture and the quantities of foodstuffs consumed in households. Intensive production methods had resulted in products that could not be kept long in the fresh state. In France, studies conducted by the University of Lyons into lettuce production had revealed that only 10% of the product had reached the consumer's table; the other 90% had spoiled while being transported to central sales centres or in the course of marketing (BOURGUIGNON).

Biological agriculture meant improved product quality; it could also yield satisfactory profits under difficult growing conditions. An example of this was provided by a farm using biological methods in Sologne (France). The region was characterized by unfavourable agricultural conditions in terms of soil and climate; it had a total area of 240,000 hectares, only 60,000 of which were suitable for farming; the damp climate determined the growth cycle of crops, which lasted only a few months; much of the soil was marshy and of low fertility; the population was constantly falling, infrastructure and services were widely dispersed, the process of soil-depletion was

accelerating. These factors impeded any economic recovery in the region, yet even so the adaptation of growing methods to the natural features of the region had enabled economically favourable results to be obtained (CINAB).

6.4 Consumer prices

Biological products cost more, since production costs were some 20 to 30% higher than those of conventional products and retail sales were often confined to specialist stores (BALDOCK).

In Switzerland average prices of biological products were 10% above those of 'conventional' products (CINAB).

In the Federal Republic of Germany the price of 'alternative' wheat was higher than that of the 'conventional' product, whereas in the case of milk there was no price difference (PRIEBE). In 1984 in that country, the producer price of wheat from alternative farms had been DM 70, compared with DM 29 for the conventional product; the prices of potatoes were DM 49 and DM 19 respectively (AHRENS).

In Italy the market in biological products was differentiated, with some products being sold at a relatively low price, so that their consumption could well be a viable proposition for the mass of the population, whereas the high prices of other products restricted them to a more exclusive category of consumer, as with certain varieties of olive oil produced in special conditions and retailing at up to Lit 20,000 per litre (SORLINI).

6.5 Quality of biological products

There were some fundamental differences between the quality of biological and conventional products. Analysis had led to conflicting results since it was difficult to determine the qualitative differences between products exactly, and the results could easily be influenced. Research in Switzerland had shown that vegetables grown by alternative methods had a lower nitrate content, and that biological foodstuffs in general did not contain chemical residues. The cantonal authority in Basle had investigated a selected group of 1,300 persons continuously over three years, and had established that 10% of lettuce from third countries contained chemical residues - well above tolerance levels -

whereas in the case of home-produced lettuce the level was 5%, and in lettuce produced by biological methods no residues at all had been found (CINAB).

Analysis of apples, potatoes and lettuce in the Federal Republic of Germany had revealed no particular differences in the quality of different groups of products, since in recent years the quality of the conventionally grown product had improved considerably. There had however been clear differences in residue content, the presence of which was associated with gases given off during storage. Conventionally grown spinach and lettuce had displayed a higher nitrate content than their biologically grown equivalents. It was, however, important to realize that the levels of these substances in lettuce were higher than in other vegetables. In the Federal Republic of Germany efforts were being made to fix maximum permitted levels for nitrates (FLEISCHHAUER).

It was necessary to investigate the possibility of pollution of foodstuffs by natural substances. In humans ingestion of mycotoxins, ie substances secreted by fungi and mushrooms, could cause changes in kidney function and lead to cancers of the kidneys and liver. Tests on rats had shown that 5.5 mg of aflatoxin B_1 per kg of body-weight could cause the death of the animal (BAYER). In general, parameter norms for the inspection of quality products could be established and implemented without giving rise to undue administrative difficulties. Concrete experience had been gathered in the Federal Republic of Germany with sugar beets, hops and brewing yeasts. Payment for these products was on the basis of precise quality standards that were laid down jointly by the producers and dealers. These quality standards would have to be rigidly adhered to and strictly enforced (KRAUS).

6.6 Numbers of alternative farms

In France, the Federal Republic of Germany, the Netherlands and Switzerland, the numbers of 'alternative' farms accounted, without exception, for fewer than 1% of total farms in these countries; the group of farmers making up the minority operating under the 'biological' label was no longer a growing one. In France the situation was constant; in Switzerland the rate of increase was low; in the Federal Republic of Germany, however, the number of alternative farms was increasing, and more and more farmers were opting for this type of production (CINAB).

In France 6,000 farms had been registered as being engaged in biological agriculture, and there were probably a further 3,000 or 4,000 that had not been recorded (CINAB).

A pilot survey conducted in Italy - not intended to record any trend towards biological agriculture - had revealed that 5,260 hectares were used for alternative crops, and that 230 alternative farms existed, most of them in the North-Western Piedmont region (SORLINI).

In the Federal Republic of Germany 26,000 hectares, or 0,2% of total agricultural land, were used for alternative agriculture (AHRENS).

In the United Kingdom there were between 200 and 300 alternative farms, and numbers were slowly but surely rising. Demand for biological products, in particular wheat for breadmaking, was rising sharply (BALDOCK).

Mr Roelants du Vivier, rapporteur

Allow me first of all, Madam Chairman, to say a very warm thank you to all the experts who have devoted their time over many weeks, let us not forget, to preparing their contributions to this hearing, the last three days that we have spent together being the culmination of a much longer process. An immense quantity of information has been made available to us, extending to very broad geographical and scientific horizons, and I have tried, for better or worse, to incorporate what I hope were its key points in the documentation you received at the beginning of the week. I must again apologize to those whose contributions do not appear in that documentation, but it was unfortunately impossible to include contributions received after the deadline had expired. But all may rest assured that I have looked very careful at every written contribution, and I must say that every one of them was of a high standard and often contained new information.

As regards corrections, all I would like to add, for the benefit of the public gallery and for Mr SWART in particular, is that the exponents of the experiment with integrated agriculture in the Netherlands to whom he referred, and whom he was surprised not to find present here, were in fact invited but did not reply to the invitation.

As I wind up this three-day event, I trust you will understand that it is impossible for me to be completely neutral in trying to draw together all the information, all the different perspectives, all the various remedies that have been proposed here. The neutrality I aought to project hitherto as rapporteur is now no longer appropriate; you must now hear some of the conclusions that have hardened into convictions for the rapporteur in the course of these discussions. But first one simple fact: By encouraging intensive farming the Community has in effect given an impetus to its restructuring, especially in regions where large-scale farms have predominated from the outset. The parallel concentration and intensification of arable and stock farming quickly led to major pollution of the environment, a pollution made inevitable by the cumulative application of quantities of mineral and chemical fertilizers. It is said that there are more pigs than people in the Netherlands, and the waste-products of livestock-breeding have now become a completely new problem.

Nor is it necessary to dwell on the contamination of ground water and the extinction of numerous species of fauna and flora; we need only recall the statistic quoted by Mr BOURGUIGNON: one species is lost every ten minutes.

What conclusions and what proposals should this lead to?

From the outset it seems to me essential to support the idea that agricultural policy must take account, in the first instance, not of the product in itself but of the way in which it is produced and marketed, whether in terms of end-product quality, or of energy inputs, or of value added.

The first conclusion that I draw from this hearing is that there are too many chemicals in the soil, there are too many chemicals on our plates, there will have to be fewer chemicals in agriculture.

1) We can today no longer be satisfied with simple recommendations as to the judicious use of chemical fertilizers and pesticides, we must go much further.

2) The abuse of chemical fertilizers no longer needs to be proved; it remains to take action at various levels. Firstly, at administrative level, by strengthening legislation on the safeguarding of surface and ground water and the disposal of organic waste-matter. Then, at regulatory and legislative level, standards will have to be tightened up, in particular those governing waste-products, and this really must have the highest priority, especially in relation to levels of manuring in industrial livestock-farming. Finally, at the level of dissuasion: I believe it will be necessary to study in great detail the proposal made by many here for a tax to be levied on nitrates, though it would of course be important for it to be varied with the extent to which different crops tended to attract the use of fertilizers. And finally, at the level of incentives, the proceeds of a tax on nitrates could, for example, be redistributed to farmers under a scheme related to the area of land under cultivation.

3) Much remains to be done in the relation to pesticides. At all events I think it will be necessary to recommend prohibitions at European level, both on the manufacturing and marketing of several organo-chloride pesticides. And the relevant sanctions will have to be strengthened.

A second conclusion is that it will be necessary to fix a limit to the system of uniform guaranteed prices. In the era of the computer why continue to use a slide rule? Bureaucracy permeates the present system; it will be for us to meet the challenge of devising a more subtle approach to guaranteed prices while also reducing the ponderousness of the present administrative system. The effective management tools that are now available on the market can help to resolve this difficulty. In that context, as many experts have said, the approach set out in the Commission green paper appears simplistic. The restrictive prices policy envisaged by the Commission is accompanied by the idea of social assistance with farmers' incomes, and there it must be said, and as many have stressed, the environment can be considered as the ideal alibi. Take the case of the two 70-year old small-farmers in their mountain village who will be paid an income until the day of their death on condition that they do nothing. When they go, the aid will cease. That will in no way help to meet the widely felt need, to which many of you have given voice, to put quality back into agriculture, and these last few days have given some impetus to the idea of differentiated prices in relation to product quality. While remaining fully aware of the difficulties of implementing such a measure, I believe it might well be essential to consider the possibility of its application carefully.

We have seen that objective measures of quality can in fact be readily envisaged, and the clearest proof of that is that the wine sector, which operates on a purely subjective basis, is succeeding very well in operating prices differentiated on the basis of quality in the context of the market. Of course the kind of price difference that we expect between a Vosne-Romanée and a Hérault would not be acceptable if applied to other sectors of production, but at a more mundane level the idea merits further consideration.

The idea of a levy in sectors in surplus in the form of a kind of coresponsibility tax that would be differentiated according to the volume of production, the proceeds being distributed on a regional basis among farmers agreeing to be bound by an ecological code of conduct is another proposal that should be seriously considered.

Finally, the idea of direct remuneration for the implementation of good agricultural practices is clearly an approach that enjoys the support of many experts, including a good many of those present, and, to the extent that it can be combined with other financial guarantee mechanisms, it is one that can be followed.

Be that as it may, I do not believe it would be realistic to seek a ready-made solution to the problem of prices; at all events, prices cannot by themselves solve the problem of the damage to the environment caused by agricultural practices, but their judicious application can help to point agricultural policy in the right direction.

We next turned to the question of the Third World and the relationship between the Common Agricultural Policy, world hunger, and the environment in Third-World countries. I believe we were able to agree with the view that in many cases we have exported technologies to the Third World that have been, let us say, inappropriate, be it in terms of chemical inputs and the use of such inputs - here I am thinking in particular of pesticides - or in terms of agricultural practices or stockraising; and some of us have pointed to the case of European cows being taken all the way to Africa to produce 3 litres of milk a day.

What occupied our attention yesterday afternoon, the question of long-term crop protection and soil management, has also been an important item in this hearing, since we have, I believe, been able to define the soil as a natural resource requiring long-term management; and, of course, there are numerous possibilities open to us for discovering and implementing alternative crops, both in agriculture and in forestries. We certainly still have a long way to go in forestry research and in implementing a forestries policy in this Community. Of course, as some of us have rightly pointed out, crops must not be allocated to a particular soil indiscriminately, and it will be necessary to carry out impact studies and ensure that soil allocation takes place in an integrated regional context.

Finally, this morning we had an opportunity to discuss alternatives, we discussed biological agriculture, some of us wanted to discuss integrated agriculture, alternative agriculture, the so-called bio-dynamic agriculture, all of which may be thought of as <u>non-conventional</u> agriculture, and we agreed that it has a future. It has a future

because in relation to a number of problems arising in intensive agriculture and livestock farming it can, without being considered as a universal panacea to which we should convert tomorrow, enable us to address a number of problems: several reports have shown that, in Germany for example, biological agriculture accounts for 8% of current demand for food products, and that this can be expected to rise to 20% in 15 years. To take full advantage of this growth potential there will have to be a major marketing effort. Non-conventional agriculture is, as we have heard, sufficiently profitable to farmers, it eliminates the environmental cost, and it saves jobs, to the point where it has been explicitly recognized in certain European countries, and the case of France is interesting in that connection because biological agriculture is specifically recognized as such, there is such a thing as a biological quality label. Why not in Europe as a whole? Why not encourage untrammelled scientific research into other forms of agriculture than traditional industrial agriculture, why not finance experiments like those we have been told about in the Netherlands, why not try to find legal mechanisms to open up structures to a non-conventional agriculture? There too I believe that information must be more widely disseminated, and the offer by the delegate from the Federal Republic of Germany was interesting in that connection; I believe that information must be circulated, in particular it must get through to the Commission, and may I add that your rapporteur also is very interested in this matter.

Those, ladies and gentlemen, are the conclusions that I have draw very quickly from my first reactions to this hearing and my reading of the many documents submitted. These impressions will of course have to be refined and our conclusions recast as firm proposals, and it will be to that, the political side of the task, that we shall next have to turn.

Mrs Weber, chairman of the Committee on the Environment, Public Health and Consumer Protection

Thank you, Mr Roelants. I believe I can speak on behalf of all the members of our committee when I say that we were extremely pleased at the unexpectedly high turnout of experts and observers at this hearing - at times we had over 100 persons in this hall - and at their willingness to work together, which will, I believe, extend well beyond today's proceedings, as our rapporteur has already made clear.

Our committee as you know is called the Committee on the Environment, Public and Consumer Protection, and one thing I believe has been made particular clear by this hearing is just how closely the different areas of our terms of reference interact with each other. But you also know of course that we, as members of this committee, all have a common political responsibility, in that we are not simply concerned with this question in isolation, but are also responsible for helping to take reasoned decisions on our economy and on the lives and well-being of our fellow citizens as a whole, and cannot confine ourselves to this one area. Our committee therefore feels that it has a right to play a significant part in this debate on changes in our economy and in our agriculture. And there too it has been especially welcome to us during these three days to discover that this vitally important question of agriculture and the environment could be discussed without confrontation, but rather that there has been an awareness on all sides that changes are necessary. The situation we now face has not arisen all by itself, but is rather the outcome of political decisions and political priorities that must where possible be changed. For that, new political decisions will be necessary.

One of the most important points to have been discussed here was the question as to how far the social, environmental, health and consumer policy requirements can be combined with each other, whether in fact any such possibility exists and through what mechanisms this can be achieved.

The Commissioner, Mr Clinton Davis said that agriculture as a whole must be subject to public control, in other words that it was a problem for society as a whole and that its reform could not be left to the 'insiders'. The question then is: 'Who are the insiders?'. Is agriculture something that can only be handled by farmers? Only today it was again made clear that agriculture is by no means the preserve of rural politicians and farmers, but is a major concern of the chemicals industry, of producers of machinery and many others. So who counts as an insider in terms of agricultural policy? Consumers and those who are concerned about the natural environment are also surely entitled to a say. Change will have to be a joint responsibility, because agriculture, perhaps even more than other economic sectors, has a direct impact on quality of our environment, on the quality of our lives. It has that impact now in the present, and will continue to have it for the foreseeable future.

In our view these aspects should be more sharply reflected than hitherto in the training and education of farmers, and that is a requirement to

which all the political groups will give voice in the report that will be drawn up subsequent to this discussion. And we all of us share the view, I believe, that the urgent questions can no longer be solved through prices policy alone. It is rather hard to see what particular mechanism can be used to improve matters. Yet we must at all events determine the criteria that will allow us to point agriculture in what we can agree will be a more reasonable direction.

We are pleased that we have come to this discussion at a time when important decisions are also having to be taken in other areas. Our discussion is running in parallel with that on the Commission's green paper, which now considers the environmental aspects for the first time. Our proposals will of course also be reflected in the decision Parliament reaches on the green paper.

In conclusion, I should like particularly to say thank you to the interpreters for coping so impressively the difficult work of the last three days, and to Parliament's staff for the efforts they put into the preparatory work with the rapporteur, and again during these three days. I thank all of you for coming, and for showing your willingness to share in our decision-making by taking part in our proceedings. I hope too that you will all have a pleasant journey home, and more particularly, I hope that we shall all meet again in the near future to reaffirm our cooperation in the common interest on an important topic. Thank you very much.

List of participating MEPs

Mrs Beate Weber, committee chairman; Mrs Schleicher, deputy chairman; Mr Collins, deputy chairman; Mr Roelants du Vivier, rapporteur;

Alber, Avgerinos, Banotti, Bocklet, Cassidy, Charzat, Cornelissen, Crawley, Ducarme, Dupuy, Ewing, Eyraud, Gautier, Gredal, Guermeur, Herman, Iversen, van der Lek, Lentz-Cornette, McMillan-Scott, Marck, Martin, Mertens, Mouchel, Mühlen, Muntingh, Nielsen, Nordmann, Papoutsis, Pearce, Raftery, Remacle, Romeos, Rothe, Ryan, Saby, Schmid, Scott-Hopkins, Sherlock, Starita, Squarcialupi, Thareau, Tongue, Van Hemeldonck, Vernier, Woltjer

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