

A SUSTAINABLE AGRICULTURE IN 2020

How to accommodate the needs
of Climate, Nature, Biodiversity,
Water as well as developing
countries

The environmental problems created
by agriculture can be solved
– and this can be afforded



THE DANISH ECOLOGICAL COUNCIL

Creating tomorrow's environment today

The Global

UN: The decline in numbers of plant and animal species must be stopped
(*The Biodiversity Convention*)

EU: Our wetlands shall have a good ecological condition
(*The Water Framework directive*)

Food supply crisis and population increase:
Pressure on global food production

EU: We shall protect our endangered species of animals, plants and natural habitats
(*The Habitat- and Birds Protection directive, Natura 2000*)

UN og EU: A drastic reduction of climate gas emissions is necessary
(*The Kyoto protocol and the EU Climate- and energy package*)

FAO: A new global agricultural order must be developed in order to meet the hunger problem.

Today the Danish agriculture is an industrialised agriculture. With a high and impressive degree of productivity it has enabled with an ever-decreasing number of hands to cover the supply of food for the continuously increasing population in cities - and still be able to export considerable volumes of food for foreign markets. Nevertheless, agriculture is continuously being criticised, and the general population do not understand that nearly fifty percent of the EU-budget have to be given to the support of 'pig barons and landowners' - The EU agricultural policies of agricultural support have lost its legitimacy.

Earlier, the agricultural production formed part of relatively closed ecosystems. Today, however, the ecological cycles have been broken by large inputs of fertilisers, imported feeding stuffs, energy, pesticides and medical products, combined with great losses of nutrients to the surroundings - with harmful and detrimental effects on the environment, on nature and on climate as well.

The agricultural production is not sustainable. It is the cause of a heavy strain on nature and environment.

In the 1980s the situation was at its worst. In Denmark, it has been the aim to meet these problems over more than a couple of decennia through a variety of action plans - and much has been done. The nitrogen surplus has been halved, and the climate gas emissions from agriculture have been reduced by a third. Nevertheless, the target is still far from being met, and a considerable lack of confidence is felt by the farmers due to the many and seemingly unattainable demands with which they find themselves confronted. As an example, this was expressed by the president of the Danish Agricultural Council, Mr. Peter Gæmelke, when he angrily addressed the Danish Government after its adoption of the 3rd National Aquatic Environment Plan in 2004. He did not trust the claim that the plan would adequately meet the challenges posed by the EU Water Framework directive. And - as he added - what agriculture needs is a set of clearly defined and expressed conditions for production, in order for the individual farmer to know how he should develop his production.

And, as it turned out; this is correct. In its latest evaluation, the Aquatic Environment Plan is found not at all to affect the nitrogen loss to nature. The same holds true for the climate gas emissions, and as for the pesticide usage, this has been found to increase due to already observed climate changes. Only the phosphorous surplus seems to be somewhat reduced.

The Agricultural challenges:

This lack of effects is mostly to be seen as the result of the Aquatic Environment Plan being dominated by voluntary agreements. This is illustrated by the attempt to express that farmers 'should avoid any cultivation' of all strips and zones bordering rivers and other water courses. The expression was repeated as part of the so-called set-a-side commitment, through which the Government once again made the attempt and encouraged farmers to lay out so-called buffer zones along their water courses in return for an increased allowance for their fertilising of the well-drained lands. Agricultural advisers, however, recommended farmers not to follow the request, which they found too unprofitable. The result has been, of course, that the targets of the planning were not met.

However, Danish agriculture *does* need a plan – a plan which will fully cover all the environmental requirements phrased by the surrounding society. And such plan should not just have the character of voluntary agreements. It should be based on rules and economical controls that will enable farmers to concentrate on their professional tasks, *i.e.* to maintain the cultivation of their lands, to develop their enterprises and to produce the food needed for their countrymen and for the exports as well.

Agricultural environment problems connected to nature, climate and water quality have to be dealt with as a totality.

In viewing the problems as these have developed, it becomes obvious that there are a number of common features which connect the variety of environmental questions – *i.e.* climate, nature and aquatic environment, including groundwater.

Exemplifying this, it has been the practice throughout the 20th century to reclaim lands for agricultural production by way of drainage and reclaiming vast areas of lowlands, lakes and fjord systems, *i.e.* areas of often rich natural values carrying an abundance of animal and plant species. Unfortunately, it is nutrient losses and emission of greenhouse gases which today characterise such areas.

As another example, we have during the most recent decenia witnessed an immense increase in the number of animals in Danish husbandry. New systems of handling farm yard manure has been rationalised – leading however, to an increase of greenhouse gas emissions and ammonia evaporation, at the same time, which contribute to the nutrients loading waterways and natural ecological systems.

There is a need, therefore, to consider these environmental problems as an entirety, instead of biologists just evaluating nature protection and biodiversity, while climate researchers only deal with greenhouse gases, and environmentalists limit themselves to a proper functioning of aquatic systems.

Agricultural contribution to greenhouse gases equals those of transportation

Agriculture stands for 76% of the nitrogen emission and 27% of the phosphorus emission to fresh water.

Many drinking water wells are closed, and limit values for conta-minating nutrients are exceeded in 20% of all wells.

Danish agriculture administers two thirds of the total Danish land area – hardly leaving room for wild species or natural processes.

Moorlands and simple natural ecological systems are suppressed - taken over by grasslands, nettles etc. as a result of agricultural ammonia emissions

A scenario for a sustainable Agriculture in Denmark by 2020

This is possible – and we can afford it!

Denmark has committed itself in a number of ways, not the least with targets as a partner in the European Union and also within international conventions. Some of the most important commitments are as follows:

Several of the goals mentioned in international conventions and EU-directives are to be considered targets - or rather objectives to be specified and/or quantified nationally and to be set in due relation to national conditions of individual countries. In the above examples, therefore, we have mentioned such targets which have been recommended by the Danish research community and with reference to Danish conditions.

Obviously, Denmark has its own set of targets – targets which are officially recognised,

although not necessarily expressed and converted into concrete, operational and/or financed action plans. As an example is mentioned the Danish Forest planning of 2002, which specifies that the total Danish forest area should be doubled within a 100-year period. This plan has not yet been set into enforcement. However, the Government has announced that during the spring of 2009, an action plan for 'Green Growth' will be presented whereby the variety of targets and objectives shall be combined into a common plan of sustainability.

The Danish Ecological Council, therefore, take this opportunity to present its own proposal for such a *Green Growth* plan, which in a simple scenario combines the environmental requirements into a common plan.

Goals to be achieved by or before 2020

Nature og biodiversity

- The *Habitat- and Birds Protection directive* setting targets for Natura 2000 areas.
- The *Biodiversity convention* targeting a halt to the decline in biodiversity – to be achieved by 2010, regionally as well as locally, *e. g.* by reserving 1/3 of the Danish land area to nature
- Respecting tolerable exposure levels set for natural systems – involving *e.g.*
- Reduction of Ammonia emissions by 50%.

Aquatic environment

- The *Water Framework directive* demands for 'a good ecological status' of aquatic ecosystems must be fulfilled by 2015 through
- Reduction of N-losses to the aquatic environment by 40%
- Reduction of P-losses

Climate

- 30% *reduction of greenhouse gas emissions* (measured as CO₂-equivalents) from agriculture by 2020

Pesticides

- A considerable *reduction in pesticide usage* is required – measured in total amounts of active ingredients as well as application frequencies.

Ways, means and tools

General measures

- Catch crops on further 30% of the cultivated acreage 600.000 hectares
- Organic production on 20% of cultivated acreages 400.000 hectares
- 50% reduction in ammonia emissions from pig farming by improved BAT-practices

Regional/Local measures

- Removal from / extensivisation of agricultural land use 430.000 hectares
 - Lowland soils (river valleys, buffer zones & wetlands) 290.000 hectares
 - Rising forests 100.000 hectares
 - Grasslands 40.000 hectares

Subsidising nature protection via grazing or moving 474.000 hectares

Reduction of pig production by 30 %

In the following pages, it is demonstrated in which way and to which extent this scenario will meet all the above-mentioned goals and plans; thereby indicating a way in which the variety of problems can be solved under a common heading.

All the elements of the scenario have to be considered with thought. In some cases, for instance, local conditions may be favourable to other means and/or modified measures of water- and/or nature management than those specified in the official planning, provided that the combined effect of the measures is maintained. In other cases, it may be advantageous to extend beyond the scenario proposals, e.g. by utilization of biomass for energy production.

Questions have been raised as to the costs of implementation of the Water Framework directive or reduction

of *greenhouse gases*, etc. However, we have found that economic possibilities and options are sufficient to carry out the combined measures and planning – among others via means of restructuring the EU agricultural support system, which in any case needs to be revised.





One third of the Danish land area as Nature

Agriculture is responsible for the management of 62% of the Danish land area, within which only little is left for natural processes and activities. Only few plant or animal species will be able to exist when soil is under cultivation – the biodiversity becomes low.

Furthermore, any surrounding nature may be affected by the agricultural activities. Ammonia fumes from animal husbandry are dissipating through the air, affecting and suppressing moorlands and open land vegetation, which are then succeeded e.g. by grassland and nettles, while wetlands low in nutrient are gradually ‘taken over’ by algae populations. Many small biotopes otherwise found in hedges, fences, wetlands and small lakes are today negatively influenced. They may have been damaged or they have disappeared as habitats or been invalidated as pathways and connecting corridors for migrating animals and plants.

There is an urgent need for space, for differentiation and for coherence in nature

Open, only partly cultivated areas often offer the best conditions for holding a rich variety of animal and plant species, but generally, a management of extensive grazing which may be necessary as a tool for maintaining the biodiversity is economically prohibitive.

Denmark is through its Natura 2000 areas

obliged to favour the habitats for endangered animal and plant species and to protect threatened types of ecological systems – which cover around 12 % of the land area, also including some of the most valuable types. Further, Denmark is committed to meet the requirements of the UN Biodiversity Convention and to bring the reduction in biodiversity to a halt. This requires that also some terrestrial areas which from a traditional agricultural practice may seem important will have to be managed with efforts as - or similar to - the so-called § 3-protection according to the Nature Conservation Act.

The Ecological Council scenario will give priority to the natural qualities for one third of Denmark’s land area. About 430.000 ha of agricultural land – primarily lowland-areas which earlier, i.e. before the 1900s era of land reclamation, were wet lands or only partly cultivated – has to be taken out of regular cultivation and to be reserved either for extensive grazing or for the rising of new forests. This is about a hundred percent increase compared to the present acreage of set-aside land. Such areas must then be cared for either by grazing or for bio-energy production purposes. Instead, new agricultural support measures will have to be introduced in order to make sure that it will be profitable for farmers to take care of these important tasks.

Good quality water in lakes, fjords, internal sea waters, and in groundwater

Nitrogen and phosphorus are natural constituents in all ecological processes – as nutrients they are essential for all growth. However, the increasing agricultural production including an intensive usage of fertilisers and animal feeding stuffs has resulted in a surplus of nutrients which is continuously lost to the aquatic environment, i.e. waterways, lakes, fjords, the open sea as well as the groundwater. According to the EU Water Framework directive Denmark is now obliged to protect these aquatic systems and to ensure their 'good ecological quality'. Much has already been done. Great economical efforts have been given to the development of sewage treatment plants, which reasonably efficient deals with the greater parts of nutrients from towns, including industrial areas. Comparatively, the efforts made by the agricultural sector have been considerably slower – and cheaper. In spite of this the targets of the First National Water Protection plan was achieved by 2003 calling for a 50% reduction of Danish nitrogen losses.

However, this is not enough. It is imperative that a further 40% reduction of nitrogen discharges/leaching is achieved - which in turn means that Danish agriculture has to be made responsible for an 80% reduction of the nitrogen losses still leaching from the cultivated land areas. Additionally, it has been registered in recent years that increasing amounts of phosphorus are leaching from agricultural soils. In contrast to this, the discharges of phosphorus from sewage treatment plants in towns and industries have been reduced by 93%, and a process of establishing small scale, individual treatment plants in smaller townships and scattered settlements have been initiated. It is necessary, therefore, that agriculture reduces its phosphorus surplus via reduction in feeding stuffs and in its use of fertilisers, in so far as one third of

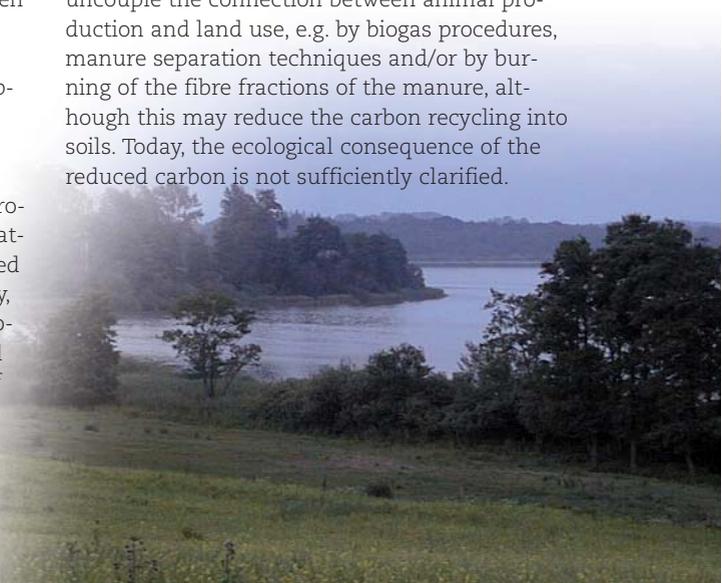
the remaining phosphorus losses are now originating from these practises.

According to the proposal of the Ecological Council, 50% of the nitrogen reduction which is necessary may be achieved by extensification of agricultural practices on lowlands and other specifically vulnerable areas of importance as groundwater resources and by rising of new forests. This will also reduce the losses of phosphorus, in so far as cultivation will then cease in the phosphorus leaching border zones along waterways and lakes.

However, this is not enough. It is imperative that a further 40% reduction of nitrogen discharges/leaching is achieved

More than 25% of the nitrogen surplus can be removed if supplementary catch crops are made obligatory during autumns on just one third of the total cultivated area. The remaining surplus may be coped with by reduction of ammonia releases from animal husbandries, by a 3-4 fold increase of the ecological growing practices and, also, a reduction of the total pig production.

The extensification of agricultural practice will, of course, result in a decrease in farm yard manure production. It is necessary, therefore, to reduce the pig production by about 30%. Newer technologies may have to be applied in order to uncouple the connection between animal production and land use, e.g. by biogas procedures, manure separation techniques and/or by burning of the fibre fractions of the manure, although this may reduce the carbon recycling into soils. Today, the ecological consequence of the reduced carbon is not sufficiently clarified.



The new challenge – reduction of greenhouse gases

Only recently, agriculture has had to focus on its emissions of greenhouse gases. Actually, agriculture have to account for close to 20% the total Danish releases (hereby also including changes in soil releases), which is approaching the situation connected to the transport sector.

It has been worse. During the 1990s the agricultural emissions of greenhouse gases contributed with 27 % of the total Danish release – the reduction being an unintended side-effect of the National Water Protection plans, which were at that time dominated by the efforts to reduce nitrogen releases.

The Ecological Council scenario will primarily reduce greenhouse gases originating from the decomposition of fertiliser chemicals and connected to losses from carbon storage in soils.

More than 50% of the agricultural contribution to climate changes is due to production and release of dinitrogen oxide (also called 'laughter gas') and to a lesser extent methane, which develops as part of handling and natural processes of fertilisers and animal manure, also including nitrogen leaching and ammonia releases.

The cultivation of low-lying organic soils results in a release of great amounts of carbon, which has been organically bound in soil humus. By reducing cultivation, the carbon losses will be diminished or avoided and new car-

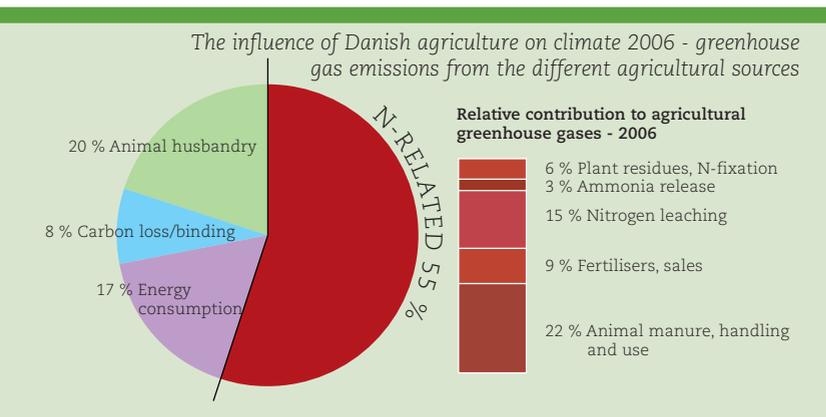
bon can be accumulated in soils, in grass and/or in new forests.

Methane is formed within the stomach and intestinal systems of animals from where it is released as the result of digestion processes. This source contributes with about 20% to the agricultural climate load, out of which two thirds come from the cattle. In the scenario suggested by the Ecological Council, therefore, it has been a matter of choice to select the pig production – and not cattle breeding – for reduction, whereby the methane reduction will only be marginal. This is due to the fact that cattle as ruminants are important for the balance of natural processes, and that they are able to metabolise roughage, which is an important constituent in crop rotation and as parts of an ecological management in agriculture.

The scenario will account for about 30% reduction of the agricultural greenhouse gases, which is in accordance with the targets set by the EU in its Climate & Energy Package as part of the global agreements. The agricultural contributions, however, may be even greater if possibilities for energy savings are fully utilised, or in case the potential for utilisation of biomass is introduced as a substitute for fossil fuels. Today, around 50% of the Danish straw production is already utilised in co-production plants, and a

great potential further exists for biogas production from farm yard manure and plant material derived from uncultivated land or from crops directly grown as biomass supply.

In the case, however, that more biomass is taken for energy purposes, it will be necessary to compensate for any losses of humus and/or of carbon contents in soils, e.g. by introduction of catch crops – which will then reduce the nitrogen losses.



Implementation costs of the scenario	Area (in ha)	Million EUR
Catch crops	600,000	41
Extensification of low-land areas	245,000	49
Buffer zones	25,000	8
Establishment of wetlands	20,000	6
New forests	100,000	66
Establishment of grasslands	40,000	19
Organic farming	400,000	39
Nature	474,000	62
Total costs of implementation		290

The costs will be paid for by integration of environmental measures into the EU agricultural policies

In 2006, Danish farmers received direct support from the EU for around 960 million EUR - out of which the major part was given to high producers. 7% of the farms received more than 96,000 EUR per producer, corresponding to about 37% of the total amount. In the other end of the scale, 40% of the farmers received less than 4,900 EUR, corresponding only to 6% of the total amount.

In parallel to this, a capitalization of the support via prices of land has taken place, in the way that those landowners who had the land at the time of appropriation have cashed the support, while lease owners and farmers who later bought the land are paying a price which covers not only the land, but also the value of the support. *Accordingly, this direct agricultural support has generally lost its legitimacy as a measure in support of the farmers.*

In contrast to this, therefore, the Rural Area policy of EU presents a better choice and offers a much broader perspective. It implies that parts of the agricultural support are transferred to development of rural areas and to nature protection and environmental purposes, provided that a 100% National co-financing is provided. During the period of 2000-2006, Denmark received an average of 109 million EUR annually – although in 2006 only 73 million EUR – out of which just above 50% were used in support of organic farming, for environmentally friendly operation of the so-called \$ 3-areas (nature protection) and for restoration of wetlands.

The Ecological Council scenario proposes that 20% of the direct EU agricultural support is

earmarked mainly for environmental purposes.

In 2006-figures this corresponds to approximately 200 million EUR + a corresponding co-financing for environment and nature development. The Copenhagen University Institute of Food and Resource Economics has estimated the yearly costs of the implementation for the scenario, and found that it would amount to the order of 290 million EUR, i.e. around 92 million EUR more than presently received in EU agricultural support – or equal to the amount presently paid by the Government in National co-financing.

Beyond this, the Danish government has during the recent 20 years offered considerable amounts in covering expenses on nature and environment, e.g. connected to water environment protection and nature restoration plans. And others have contributed as well.

These include: Danish Drinking water works who have covered significant expenses for expropriations and in support of environmental protection of vulnerable groundwater resources, while at the same time several municipalities have invested in surrounding recreation areas – all of which represent interests and contributions that expectedly will continue in future years.

In conclusion, the Danish Ecological Council finds that: **Agricultural problems connected to nature conservation, environment and climate protection issues can be solved – and the costs can be covered within the framework of EU agricultural support, including the usually practised Danish co-financing.**

The further challenges:

Reduction of pesticide usage is necessary

An implementation of this scenario will lead to a 30% reduction of the Danish land areas under normal cultivation involving a similar reduction in pesticide usage, which is the result of the extensification and the increase in organic farming. There is, however, also a need for reductions on the remaining cultivated areas as a matter of protection of biodiversity and groundwater, and, – not least, in order to ensure a considerable decrease in the pesticide residue contents in food for human consumption.

According to the present Pesticide Action plan, the frequency of applications should not exceed 1.7 times p.a. During the years before 2002 the frequency dropped to 2, but it has once again risen to about 2.5, which has been explained as a result of structural developments and climate changes involving an increased pressure from fungi and insects. It may, however, have been even more important that price levels of pesticide chemicals have decreased in recent years, thereby leaving less incentive for farmers to make reductions in their spray programmes. The result is that protection of buffer zones along streams and waterways, etc. has today only been established to a very limited extent.

There are a number of potential options for pesticide reductions which are today unexploited. Some generally straining rotation practices, as for instance when winter wheat is followed by winter wheat, are often seen resulting in more frequent pesticide sprayings. Further, today only a limited number of farmers has introduced the use of modern technologies such

as injection techniques or computerised, e.g. GPS-guided application controls, which may minimise the actual application rates. Serving the same purpose, the taxation of pesticide chemicals should be raised further, and the various techniques already mentioned should be made compulsory. It is important that pesticides are to be applied only on demand, i.e. by reference to an evaluated damage risk on the individual crops in stead of as a solely preventive measure.

Without having quantified the potential decrease in pesticide usage, there is no doubt that considerable reductions can be achieved through measures such as those mentioned – whether reductions are given in terms of quantities used or as frequency rates of application.

Demands for improved animal welfare

Also, within the sphere of animal welfare much needs to be done in the industrialised agriculture. Production takes place in still greater farm units and with an ever increasing degree of automation, leading to insufficient room and care for the individual animals. An increase in the degree of mortality and in numbers of animal health problems are occurring, which is a situation that at the same time is criticized and met by demands from consumer groups.

The Ecological Council scenario does not directly set targets for improved animal welfare. It does, however, refer to the need for a considerable development of organic farming, which does imply high welfare norms and demands for all animals to gain access to outdoor facilities. Also, a proper management and grazing of natu-

Organic agriculture

Organic farming is an important and growing part of this scenario. According to this concept, the management of soil and production of food involves a number of clear-cut advantages - for nature and environment as well as for our human health. It abandons the use of pesticides on the farming land under concern with benefits for groundwater as well as for animal life.

The natural values are increased through increased species diversity in rotational areas and individual fields. And animal welfare is improved as well.

A change to organic farming *per se* is not necessarily the solution of problems connected to loss of nutrients and emission of greenhouse gasses,

ral habitats may account for one of the most important animal welfare parameters; namely admittance to open air and roughage.

Agricultural practice in the EU

Great differences are seen among agricultural practices in the EU - between and within the individual countries. Denmark counts among those who have the most highly industrialised and the largest agricultural units. In contrast, Romania, Italy and Poland still have an average farm size of 3-7 hectares. They cultivate about 25 % of the EU agricultural areas, but account for 60 % of the total number of farm holdings.

Agricultural policies in the EU have recently been reviewed as background for a reform to take place before 2015. The reform shall embrace the vastly different conditions that exist and contribute to a continued support of the extensive farming, as it exists e.g. in mountainous regions. But it must also - as it is indicated in the present scenario - give frames for a development of a more sustainable agriculture all over in Europe.

Globalisation and agriculture in Third world countries

In many Third world countries, a much more difficult situation is witnessed for agriculture. The fertile top soil layers are mostly thin and weather conditions are far more unreliable. Agricultural research is generally not cared for and governmental - or foreign - support is seldom seen as an assurance of minimum price levels and/or acreage support. Vast differences are normally experienced between countries and regions, while at the same time productivity is mostly low. The threat from climate changes to agriculture in tropical countries is caused by energy consumption and green house gases which are produced in the industrialised parts

of the world. Also, periods of draught and increasing threats from water shortage are likely results of climate changes.

Neither in Denmark, nor in the EU, is it possible to organize agricultural policies independently from global agriculture and food policies. The EU has great imports of feeding stuffs, while at the same time it has - at least until recently - hindered the imports from developing countries of food products in case these were competing with EU's own produce. Additionally, the EU has 'dumped' its own surplus produces into the developing countries and at the same time maintained considerable incomes by placing duties on imported food.

It is a target set by the UN that the global hunger situation shall be reduced by 50 % in 2015 as compared to the 1990 level. However, in the year 2008 the number of undernourished people increased by about 40 million and nearly 1000 million are today suffering from hunger. Therefore, the UN targets will definitely not be reached - a situation for which the EU, as well as Denmark, must be held co-responsible. It is imperative that a new agricultural policy must include a strong element of efforts to ensure more productive and sustainable agriculture practices in Third world countries. This depends on far greater investments in international agriculture research and direct aid programmes must be established for the development in the poorest among the countries.

A liberalisation of commerce with agricultural products will make it possible to increase the global production, but this may pose a threat also to developing countries. A global agricultural policy must emphasize both local and regional food safety programmes and thereby offer protection against competition to the national produce from the poorest countries.

as this will require special considerations as to how the organic farming is carried out. For the questions on climate and quality of aquatic systems, the management has to be geared specifically towards the reduction of leaching and emissions. Generally, the load is smaller per hectare, but



not per tonnes of produce, as a consequence of the lower yields per ha. Therefore, efforts have been introduced, to deal specifically with the needs for organic farming to reduce its influence on climate.

Objectives and content

This booklet is part of a project, the purpose of which is to raise the environmental profile of the EU Common Agricultural Policy (CAP) and hereby strengthen the long-term development of agriculture and food production.

The booklet contains the main conclusions presented in a research based report on **Environmental integration in EU Agricultural Policy**, which has been published by the Ecological Council in January 2009. The report can be found also on The Ecological Council address: www.ecocouncil.dk.

As part of the project, a scenario on agricultural development as presented here has been developed. The Copenhagen University Institute of Food and Resource Economics has calculated the budgetary and welfare related costs of the scenario. The result is presented independently in a report from the institute:

Analysis of the Economic Consequences of Environmental measures in the Agriculture, January 2009,

which can be found on the website of the Institute as well as of the EcoCouncil.

With this project, the Ecological Council wants to contribute to the debate on a new Danish agricultural policy that has been announced by the Danish Government to be published under the heading of "Green Growth" during the spring of 2009. It is our hopes that the project will become a part of and positively influence the revision processes of the EU Agriculture policy and the development of Nature Conservation, as well as Aquatic Environment plans, Pesticide Action planning, etc.

It is the aim and the hope that the report, as well as the present booklet, may inspire politicians, administrators and experts in government, regions and municipalities in their activities connected to the variety of presented subject areas. Further, we address the agriculture and agricultural organisations, as well as NGO's, researchers, students and any other interested parties.



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