drinking-water. Agriculture also absorbs large quantities of water — roughly two-thirds of all fresh water that is used world-wide.

'Over the last few decades, we have not been growing food in ways that will allow us even to maintain, let alone increase, crop yields in the future', says Engelman. 'Food production depends on good soil and fresh water, and we are losing far too much of both.'

Strategies for Achieving — and Sustaining — Food Security

Noting the seriousness of natural resource trends world-wide, the PAI study identifies a three-parts strategy for putting food production on a sustainable path while increasing total output. This strategy focuses on:

- enhancing the capacity of farmers to grow more and better-quality food;
- encouraging the restoration and preservation of the natural resource-base; and
- supporting the ongoing decline in rates of population growth by improving health, education, and economic opportunities.

'New high-yield seed strains, crops that resist salt and drought, and farming techniques that conserve both soil and water, are among the improvements that can help to ensure the sustainability and increase the productivity of agriculture', says Engelman. 'However, farmers will need information and other kinds of help to make this happen.'

Achieving the goals spelled out in the Programme of Action endorsed at the International Conference on Population and Development is equally important, according to PAI. This Programme calls for universal primary education, access to family planning, and other basic reproductive health services, by no later than AD 2015.

'Access to family planning and education, supports and reinforces the decline in desired family size that is already under way', says LeRoy. 'At the same time, it moves us closer to a stable world population and, consequently, helps ease the pressure on farmers to produce more food in the short term without regard to the more distant future.'

'If we can move away from the relentless search for improved yields, we will be better able to conserve and restore soils and water supplies for tomorrow's use', says Engelman. 'A long-term strategy integrating agricultural development and population policies would make possible a world in which ending hunger and conserving resources are not at odds with each other.'

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Environmental Problems Foreseeable in the Year 2020

Ours being an institute for future studies, it is central to our theme to relate to environmental problems — both the ones we speculate on today and especially the ones we are going to have to relate to in 5, 10, or 25 years. This connection between environment and future studies is reflected in a number of institutes for future studies in many countries, which are all characterized by focusing almost exclusively on the aspect of environment when thinking about the future. The Copenhagen Institute for Future Studies (CIFS) does not belong to this category, as we seek to throw light on the future as broadly and multidisciplinarily as the subject — the future — invites us to do. The environment is a significant but not a dominant factor in our choice of topics.

In December 1994 CIFS prepared a report about environmental problems in the future. The aim of the report was partly to mark our conclusion of 25 years' environmental debate in Denmark, and partly to try to describe a number of relationships which will surely, to some extent at least, determine the future environmental debate. The report included a description of future forms of regulation, consumer attitudes, work environment, etc. In connection with the report, questionnaires were sent to a number of institutes for future studies, which all belong to the Active Futures Network — a global Network consisting of institutes for future studies established by CIFS. All the institutes work with problems relating to the environment.

Among the questions we asked were: which problems were currently seen as most urgent locally and globally, whether the environmental movement has any future, and if there are to be new movements, which of them would seem most likely to replace the environmental movement. All these questions were, not surprisingly, answered differently according to the home country and other circumstances of the respondent.

Results of Questionnaire

Finally we asked the institutes: which environmental problems would be most pressing, seen in 25 years perspective. We had expected the answers to this question to look more alike than the answers to the other questions. However, this was not at all the case, as can be seen from the following rough grouping of the answers received:

Hyper-consumerism.
Food shortages due largely to environmental abuses.
Super-cities.
The deterioration of water supplies.
The spreading and accumulation of persistent chemicals.
World population growth.
Increasing energy demand.
Global warming.
The stratospheric ozone shield.
Spreading of infectious diseases.
Destruction of oceans.

It is interesting to note that almost no respondents gave the same answers, apart from a number of answers indicating human population growth as the largest problem. This indicates that we have difficulties in specifying what is most serious, and in which areas we should especially concentrate in the coming years. Quite simply, *we lack consensus and knowledge about the environmental issue.*

A number of the answers indicate continuous human population growth as being the most serious problem seen in 25 years' perspective. This may be partly due to the population conference held in Cairo in 1994, which has contributed very much to the focusing on the population question. What is especially noteworthy is probably that it is a problem, which it is going to be immensely difficult to deal with effectively. The demographic inertia is consi-

derable, and even if all countries introduced a two-children-per-family policy, the global population would continue to increase by several thousand million people before it could stabilize. Furthermore, this is a problem which is only indirectly relevant to the industrialized countries in general, and which therefore will be relatively difficult to make heard in those countries, although most of the developing countries are working with the problem.

A number of the already-known problems — 'greenhouse' effect, stratospheric ozone shield problem, energy consumption, and chemicals in local surroundings — are estimated to present considerable problems also in the 25 years' perspective. Thus, today's problems cannot be solved right away.

Room for Bad Surprises

There is reason to call attention to some of the surprises in the above list. If a general conclusion is to be drawn about the long-term environmental problems, it is that we are still so ignorant about Nature's relations that there is plenty of room for unpleasant surprises. Much in the same way as asbestos problems, CFC-gas influence on the stratospheric ozone shield and the carbon dioxide emission's consequences for the climate, came earlier as unpleasant surprises.

In the above list two possible surprises should be pointed out. First, the problem of contagious diseases, which with increased travelling ease and activity will be able to spread much faster than before. The lung plague in India — which turned out to be more of a media event than anything else — is perhaps an omen of new contagious diseases in the future. Second, the destruction of the oceans. Our knowledge about the oceans and their life is very limited. We know very little about how we affect the oceans today. Will we see the Gulf Stream turn in 25 years? Neither of the two surprises have been properly realized. But alertness towards surprises, which inevitably are going to turn up, should not be reduced.

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Conserving Farmland Wildlife*

Introduction

Farming is Europe's dominant land-use, so we would expect farmland to be the home of a large part of our natural heritage of plants, animals, and their chosen or at least adequate habitats. For some 8,000 years it was. The hugely diverse flora and fauna that are native to the eastern European steppes and forests soon spread into the new environment created by the earliest farmers. There the biota thrived in a diverse landscape of crops, pastures, and fallows, often divided by sheltering hedgerows and fertilized and nurtured by human hands.

Europe's cereal fields alone are estimated to have been the home of some 700 species of higher plants, about 3,600 species of insects, and up to 400 species of spiders — constituting the basis of a food-chain for many birds and small mammals, and in turn of larger carnivores. To these figures we can add the almost innumerable species to be found in other farmed habitats: pastures, hill grazings, managed woodlands, and wetlands. In all its varied forms, Europe's farmland harboured a rich if bewildering diversity of life-forms.

Much of this has now gone. In the incredibly short time of 50 years since the intensification of farming began, larger fields, crop and farm specialization, faster machinery, and devastating pesticides, have destroyed more farmland plants and animals than scientists have been able to estimate. No country in Europe has been spared. There is none that has not witnessed the extinction of many species at least nationally, and catastrophic declines in the populations of most of those remaining. Only in a few favoured 'protected areas' have governments and Nature conservation bodies preserved a little of the best. In the rest of the countryside there has been wildlife destruction on an unprecedented scale.

All this was driven, of course, by the need to feed an expanding and increasingly demanding human population, which was largely made possible by improvements in agricultural technology. The final twist, in the European Union at any rate, is that for the last 20 critical years the change was fuelled by a system of farm subsidies which rewarded food production above all else — with no room, at least on farmland, for any thought of Nature conservation. The recent reform of the Common Agricultural Policy has begun to address this particular problem, but with uncertain effect so far. The current fear is that the high productivity–high-intensity approach to farming that has been so damaging to Nature in western Europe, is now being adopted by the less developed countries of the east, where less-intensive farming has continued until very recently and valuable farmland wildlife could still be saved.

Still Time to Save Much?

The urgent need in all this is to find out how we can continue to produce the food which we need while recognizing the unique wildlife value of farmland and managing it with Nature conservation in mind. For effective action, clear practical guidance will be needed by both politicians and farmers throughout Europe. Here we think of the Allerton Research and Educational Trust (ARET). This UK organization owns and manages a 300-ha farm in the East Midlands of England. There is nothing particularly special about the farmland; the soil is of moderate quality and the climate broadly typical of northern Europe. ARET's farm is a mixed enterprise, being 70% arable and 30% grazing — a blend which will be familiar to many of Europe's farmers. What is unique about this farm is the *care with which it is being managed.*

The aim of ARET is to research the compatibility of profitable agriculture and practical Nature conservation. Since 1992, farming has been carried out with the aim of maximizing all possible benefits for wildlife, while not compromising the efficiency of food production. This attempt to solve an apparent conflict has been possible because the cropping pattern, the use of pesticides, the management of the set-aside areas, and the conservation of the field boundaries, woods, ponds, and streams, have all been based on more than 50 years of research by another UK body, The Game Conservancy Trust.

* Adapted from *Naturopa Environment Features* 94-4, pp. 1–4.