



Protecting nature in rural areas outside Natura 2000 - The role of agriculture

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1. Summary

Many valuable natural areas across Europe are not currently part of Natura 2000 (the European network of special areas of conservation and special protection areas, set up in 1992 by an EU Directive on the conservation of natural habitats and of wild fauna and flora).

These areas can be national nature reserves, forests, etc, and are essential for the survival of many (threatened) species, but many are extensively used for agricultural production, especially in Central and Eastern Europe.

Europe is party to several conservation strategies, for instance the Natura 2000 network, the EMERALD network, RAMSAR agreements, the Biosphere approach, the Johannesburg 2002 summit and, last but not least, the Pan-European Biodiversity and Landscape Strategy. The ecological network approach of Natura 2000 will not be enough to protect nature in Europe on its own, because the network has still to be completed and because the existing network does not cover all relevant biodiversities. The quality of the network depends on the general state of the environment outside its boundaries.

The main pressures on nature values in the rural areas outside Natura 2000 are intensification of land use and marginalisation.

Land with favourable farming conditions tends to be under intensive use. To increase the productivity of farmland nutrient levels are raised and obstacles to 'efficient' management are removed. This normally leads to a dramatic change of biodiversity values, not only at the scale of habitats and species, but also at landscape scale.

Agricultural marginalisation is a process driven by a combination of social, economic, political and environmental factors, by which, in certain areas, farming ceases to be viable. When farmers stop producing, land is abandoned and habitats, species and landscapes dependent on agricultural activities are threatened with disappearance.

The risk of these two tendencies is especially relevant for Central and Eastern Europe, which still contains large agricultural areas with high nature values (HNV). A strict *acquis communautaire* is likely to jeopardise farming viability and nature values on farmland in Accession Countries, because payments for the maintenance of nature values are not permitted at large scale. Without such payments, many of the HNV farming systems are likely to disappear.

The negative impacts of intensification and land abandonment can best be limited by changing the driving forces behind them. Ideally, agricultural policies, rural policies, international trade policies, multinational companies and knowledge development institutes should integrate their nature conservation concerns. The Natura 2000 policies are intended to be combined with agricultural policies and structural funds. Regional Development Plans should be used to make sure that these policies and funds include biodiversity and landscape requirements. This must be done with great urgency, starting before accession, otherwise vast areas with high nature values in Central and Eastern Europe will be lost.

Farming strategies are important for the way land is used, and therefore different strategies and their effects on nature values can be taken as a starting point when integrating nature values into policies. Eight different farming strategies have been defined, of which four have high nature values, being characterised by high environmental quality land management and positive attitudes to nature. It is important to promote these HNV types of farming strategies and restrict the negative influences of other strategies. The emphasis on promoting HNV must be on those that are economically viable long-term. This requires that farmers

open to innovative approaches in environmental-friendly farming must be supported with sufficient rural development support to continue their innovations. Farmers who adhere to traditional strategies and labour-intensive production, and who are less flexible towards change, should be stimulated to ensure their economic survival with Less Favoured Area support and agri-environmental measures, while training their successors in environmentally-friendly farming innovations. Those farmers that base their systems on existing regulations and support programmes should be given better incentives for HNV farming measurements. Negative effects from other land use systems in areas of high nature values are difficult to counter with cross-compliance requirements related to support payments, because these farming systems are often less dependent on payments. Therefore, the main focus in those situations should be on environmental compliance through farm audits as well as enforcement of environmental law.

2. Introduction

In 1992, a European network of special areas of conservation and special protection areas was set up by the EU Directive on the conservation of natural habitats and of wild fauna and flora). This network is called Natura 2000.

Natura 2000 is a solid foundation for the protection of nature in an area covering about 15% of the surface of Europe. In the past years, enormous efforts by the European Commission, Member States and NGOs have been made to put life into this network and to make it a conservation success. Some challenges still remain, for example the question of financing or the integration of Natura 2000 into other Community policies.

However, as biodiversity degradation continues, it is time to re-focus our concerns. What happens in areas that are not part of Natura 2000? What are the consequences for nature conservation? And how does this relate to Natura 2000?

The focus in this report will be on the protection and development of nature in rural areas outside Natura 2000, mainly concentrated on the agricultural sector. Based on analysis of the driving forces of biodiversity decline it develops a vision for nature conservation inside and outside Natura 2000. And, finally, what policy recommendations can be made?

To capture a broad European picture, experts from the UK, The Netherlands, Austria and the Czech Republic have drawn together their experience. This was used as a basis for discussion at European level in the Biodiversity Working Group of the European Environmental Bureau (EEB), which resulted in this report.

This report emphasises the role of agriculture for nature outside Natura 2000. The EEB Biodiversity Working Group will focus on other sectors in future publications.

3. Nature conservation strategies in Europe

This chapter deals with different conservation strategies inside and outside Natura 2000.

3.1 HIGH NATURE VALUES IN EUROPE

Many areas in Europe, although not part of Natura 2000, still have high nature values. Extensive production areas and nature reserves not part of Natura 2000 are essential for the survival of many (threatened) species, and remain important for their nature values. This report will focus on their nature values related to biodiversity and landscape.

Low-intensity farming systems throughout Europe have great importance, especially for the more common species which inhabit the wider countryside outside protected areas. Many of the habitats listed as priorities for conservation in the EU Habitats Directive consist of semi-natural vegetation usually managed by low-intensity forms of agriculture. Examples in Northern Europe are the grazing, mainly by sheep and cattle, of alpine pasture, heather moorland and semi-natural grassland. Hay meadows, often rich in botanical interest, have become rare. In Southern Europe, a range of more shrubby habitats, such as maquis and garrigue, are affected. In the Spanish dehesas and Portuguese montados large areas are devoted to a form of wood pasture with a scattered cover of trees, rich in fauna and flora. Dry, low-intensity arable land in the Mediterranean countries still includes a sizeable proportion of fallow, and the stubble is often grazed by sheep. The mainly arable steppes are a habitat of crucial importance for many birds. Permanent crops such as olives, orchards and vines are under traditional management (Beaufoy, Baldock and Clark 1995).

In Central and Eastern Europe large agricultural areas with HNV exist. HNV pastoral systems that make a significant contribution towards maintaining biological diversity on agricultural land are still common in the Carpathians, Hungary and Poland. The Carpathians contain 7 million ha of semi-natural grassland

habitats (eg calcareous grasslands, high poloniny meadows), and Hungary has 500,000 ha of puszta (alkaline, salt-rich grasslands). In Poland there are approximately 2 million ha of semi-improved and unimproved grasslands (Huband 2003). The case of the Czech Republic further illustrates this.

High nature value grasslands in the Czech Republic

In the Czech Republic most of the valuable habitats within agricultural land are grasslands. The total grasslands area is 961,000 ha, of which more than 60,000 ha is protected (the designation is not yet complete). The Czech Republic applies stricter criteria to determine what is valuable than those commonly used in Western Europe. In valuable grasslands protected species like orchids, for example, would be designated. There are between 200,000 and 500,000 ha of HNV grasslands in the Czech Republic, according to common Western European criteria, and between 200,000 and 400,000 ha of grasslands improved 20 years ago and extensively managed for 13 years (meaning on average 30-40 kg of nitrogen per hectare). In most second and third category grasslands Natura 2000 habitats can be found.

3.2 CONSERVATION STRATEGIES IN EUROPE

There are two main approaches for nature protection in Europe. One is based on the network principle, whereby corridors and stepping stones of suitable habitats between the protected areas ensure mobility of species. The other approach is to strive towards higher environmental conditions for all the land. With Natura 2000 the focus is on the network approach. There are other, partly diverging nature protection models like the EMERALD Network, RAMSAR, the Pan European Ecological Network as mentioned in the Kiev resolution of 2003 or the Biosphere approach.

The main EU legislation for nature protection is based on the Bird and Habitats Directives. These directives are the basis for Natura 2000, and offer legislation on species protection instead of area-based protection, defined in Article 12 of the Habitats Directive.

Article 3 Habitats Directive

Where they consider it necessary, Member States shall endeavour to improve the ecological coherence of Natura 2000 by maintaining, and where appropriate developing, features of the landscape which are of major importance for wild fauna and flora, as referred to in Article 10.

Article 10 Habitats Directive

Member States shall endeavour, where they consider it necessary, in their land-use planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are major importance for wild fauna and flora.

Articles 3 and 10 of the Habitats Directive refer to development and maintenance of landscape features (outside the network) to improve the ecological coherence of the network. Such features are those which, by virtue of their linear and continuous structure (such as rivers with banks or traditional systems for marking field boundaries) or their function as stepping stones (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species.

The Johannesburg 2002 Summit also made reference to nature protection, by specifying the role of biodiversity in ecological coherence, although the pan-European Biodiversity and Landscape Strategy seems to be more effective than the Johannesburg Summit.

Johannesburg summit 2002

IV. Protecting and managing the natural resource base of economic and social development

42. Biodiversity, which plays a critical role in overall sustainable development and poverty eradication, is essential to our planet, human well-being and to the livelihood and cultural integrity of people. However, biodiversity is currently being lost at unprecedented rates due to human activities; this trend can only be reversed if the local people benefit from the conservation and sustainable use of biological diversity, in particular in countries of origin of genetic resources, in accordance with Article 15 of the Convention on Biological Diversity. The Convention is the key instrument for the conservation and sustainable use of biological diversity and the fair and equitable sharing of benefits arising from use of genetic resources. A more efficient and coherent implementation of the three objectives of the Convention and the achievement by 2010 of a significant reduction in the current rate of loss of biological diversity will require the provision of new and additional financial and technical resources to developing countries, and includes actions at all levels: (...)

(g) To effectively conserve and sustainably use biodiversity, promote and support initiatives for hot spot areas and other areas essential for biodiversity and promote the development of national and regional ecological networks and corridors.

3.3 IS A NETWORK APPROACH SUFFICIENT TO PROTECT NATURE IN EUROPE?

Natura 2000 is essential for protecting many of the endangered species and habitats in Europe. However, for a number of reasons this network approach may not be sufficient to ensure nature protection in Europe.

Firstly, the quality of Natura 2000 depends on the general state of the environment outside Natura 2000 areas. Key factors are water, nutrient load and degree

of acidity (pH value). In small-scale protected areas these factors may be heavily influenced by other land-users (e.g. intensive farming systems). In those circumstances co-operation with surrounding land-users is badly needed to protect the values in the protected area.

Secondly, there are objects of high nature value that are not recognised and therefore not sufficiently protected within Natura 2000. This is the case for agriculturally managed habitats such as mountain hay meadows as well as alluvial meadows of river valleys. Furthermore, some important habitats not covered by Natura 2000, like species-rich wet meadows, need further protection, as they are already endangered in EU member states but still frequent in accession countries. Eutrophic humid grasslands (Emerald classification) could be present in up to 50% of total grassland area in the Czech Republic.

Thirdly, typical regional landscape elements outside Natura 2000 contribute to biodiversity in rich agricultural landscapes. Drystone walls, field margins, verges, small woods, hedgerows or rocky outcrops in the agricultural landscape are important features in terms of landscape characteristics as well as in terms of biodiversity. These biotopes, together with nutrient-poor sites, represent the most threatened habitats in many cultural landscapes.

Many of the high nature values found on agricultural land are the result of functioning low-intensity farming systems. In those areas the habitats and species should not necessarily be the starting point for conservation, but for an understanding (and then maintenance) of the entire production system. For example pastoral farming systems create a mosaic in scales of spatial and temporal diversity of vegetation structure through interactions of grazing and associated management practices within the environment. That mosaic consists of different scale levels: within the vegetation patch, among vegetation patches, within a farm and among farms (landscape level) (Huband 2003).

The fourth argument for conservation effort outside Natura 2000 is the scale in which biodiversity changes could occur without proper protection. In Central and Eastern Europe the transformation of biodiversity-rich meadows into forest is taking place at a large scale. In the Czech Republic alone hundreds of thousands of hectares are at stake. The Czech population does not want large-scale (spontaneous) afforestation. Landscapes will completely change and species that are now common will become rare. Moreover, there is no market for additional wood production.

A fifth argument is that the current network of Natura 2000 has not developed itself as a true network. Corridors and stepping stones are often not included as protected areas. Article 10 of the Habitats Directive offers possibilities for Member States to develop these in order to improve the network, but this is not mandatory.

The five arguments show that the network approach on its own is not enough to protect nature in rural areas.

4. Nature values outside Natura 2000

In this chapter we describe how the general environmental conditions of rural areas outside Natura 2000 can be improved. Farmers play an important role in these areas and therefore different farming strategies and their effects on nature values are taken as a starting point.

4.1 INTRODUCTION

As of March 2002, an area of 436,887 km² was designated as valuable habitat under the Habitat Directive (14,192 Flora Fauna Habitat sites), ranging between 5.8% of the surface of Belgium to 22.9% of that of Spain. The conservation benefits of high nature value farming inside the Natura 2000 network are well documented. For example, in Austria 14 habitats (Annex I/ FFH-Dir.) and 65 species of animals and plants (Annex II/FFH and Birds-Directive) depend on agricultural land use.

4.2 FARMING STRATEGIES AND NATURE VALUES

As farmers can be considered a highly diverse group of individuals, their environmental quality and attitudes, economic situation and therefore their responses to agricultural policy signals can differ significantly. The provision of high nature values needs to take various farming strategies into account.

Recent research from Austria identified four (out of eight) farming strategies of high nature values being characterised by high environmental quality land management and positive attitudes to nature (Wrbka et al. 2002). These farming strategies can be characterised by the following features:

- **Traditionalist:** 'long proved' management is preferred to increasing yields, little flexibility, outdated machinery, cultivation of labour-intensive/ little productive areas due to tradition, proportion of support above average, profit margin below average. This is the most widespread farming strategy in Austria.

- **Support optimiser:** management is aligned to specifications and regulations of support programmes (eg de-stocking, 'set aside'), mostly above average size with extensive management, provides high nature values if the incentives are high enough, tendency to give up labour-intensive areas, proportion of support above average, profit margin below average. Seems to be a product of the Common Agricultural Policy, did not exist in Austria before their accession to the European Union.
- **Idealist:** agriculture as leisure activity and for self-fulfilment, size of farm below average, cultivation of few productive and labour-intensive areas, proportion of support above average, income below average. One of the least represented farming strategies.
- **Innovator:** highly flexible, willing to co-operate with other farmers, innovative concepts eg organic methods, seminars on farm, school on farm; intensities of management linked to product quality/ consumer demands, proportion of support below average, profit margin above average. This farming strategy is estimated to have a much smaller proportion of adherents but shows strong take-up. Innovators represent the entrepreneurs within the farming system and are the only HNV farming style that is highly economically successful at present.

Other farming styles offer only little improvement or represent negative attitudes to maintaining and enhancing natural values:

- **Yield optimisers** are orientated towards achieving optimal yields and world markets, managing as efficiently as possible, landscape is seen primarily as the place of production, labour-intensive and/or less productive areas are abandoned, proportion of support is below average, profit margin above average. So far they only represent a small but rapidly growing group in Austria.
- For the **amongst-other-things farmer** lack of time is a characteristic feature. He promotes segregation by a tendency to give up labour-intensive areas while intensifying fields which can be easily cultivated, and changes to labour-intensive production, eg from milk to nursing cattle. If nature protection can

be maintained in accordance with time-saving management it is practiced, but not otherwise. Their number is increasing but not as rapidly as innovators or yield optimisers.

- The **forced farmer** is an 'involuntary' farmer without partners, where there is a lack of jobs in the region, they are too old to find another job, or have no successor. Agriculture is regarded as a burden, but necessary to earn a living. He promotes segregation by ceasing cultivation of weak-yield/ labour-intensive areas. His proportion of support is above average, the profit margin below average. The number of forced farmers is decreasing.
- The **social farm** is mostly managed by women with partners not interested in agriculture any longer. Agriculture is seen as a possibility of combining a job and family needs. The proportion of support is often above average, with profit margins below average. Segregation through set-aside of labour intensive areas occurs. Their number is increasing.

4.3 MAIN PRESSURES ON NATURE VALUE IN RURAL AREAS

Outside Natura 2000, rural areas are mainly exposed to two tendencies affecting their nature value: intensification and marginalisation. Intensive, industrialised farming systems can threaten the environment. Marginalisation is a problem for areas where land-uses survive that not only are compatible with strict environmental requirements, but that also make an important contribution to the maintenance of valued semi-natural habitats and species, as well as controlling fire-risks, conserving soil and producing distinctive products for a minimum input of fossil energy. The tendencies of intensification and marginalisation can be found at the same time in the same regions but at different farms. But generally one of the two tendencies prevail in a certain region.

Regions with highly productive agriculture cover almost 40% of the utilised agricultural area (UAA) in the EU-12 and about 20% of agricultural holdings. They cover most of the northwestern part of the EU, excluding Ireland and some other parts of the EU.

Regions of medium farming productivity cover 10% of the total UUA and account for about 10% of farm holdings. This group covers large areas of Germany and parts of France.

Areas most susceptible to marginalisation, and therefore the risk of land abandonment, can be found in extensive farming regions and small-scale farming regions:

- Regions dominated by extensive farming cover about 30% of UAA and 15% of agricultural holdings. They cover most of Spain, large areas in southern France, parts of the UK, Ireland and Italy.
- Regions where small-scale farming dominates account for 15% of UUA, and more than half of all holdings in the EU-12. They cover most of Portugal, Italy and Spain (Baldock, Beaufoy, Brouwer and Godeschalk 1996).

4.4 AGRICULTURAL INTENSIFICATION

Agricultural intensification can be described as a process towards decreasing the cost price of production per unit of agricultural product. Production costs are a function of the factor costs: labour, land and capital. Where labour and land are relatively scarce (and prices high) a capital-intensive agriculture will develop (eg The Netherlands). Where capital and land are relatively scarce a labour-intensive agriculture will develop (eg India). Where capital and labour are relatively scarce a form of agriculture will develop using a lot of land (eg Argentina and Central and Eastern Europe). Obviously, each of these three directions has different impacts on the environment, nature and on social structures in the countryside. Each of these directions can fail to be competitive at the (world) market. The result of failure could be abandonment.

4.4.1 What happens to nature when agriculture is intensified?

Land use intensification can be the result of segregation processes in agriculture. Intensification usually goes together with abandonment (see also Chapter 3.3).

Farmland with favourable conditions for agricultural production tends to be intensified. To increase productivity of farmland nutrient levels are raised and obstacles to efficient management are removed. This mostly goes hand in hand with simplifications in crop rotation, merging adjacent fields for a more effective use of the agricultural machinery and thus removal of landscape elements.

Example of level of intensification in Austria

From 1960 until 1997 the number of farmers decreased by roughly 50% while yield levels increased constantly. In the same period, about 17% of agricultural land was taken out of production.

Land use intensification can occur on different scales and normally leads to a dramatic change of biodiversity values at different scale levels (habitat and landscape levels):

- At habitat level when the field is managed in a more intensive way. There is scientific proof for species decrease in the field itself in the course of more intensive land management, both for grassland and arable land. Small biotopes, such as linear features like hedgerows, field margins, verges, or remnant of semi-natural habitats, are negatively affected indirectly when herbicides, pesticides or manure are transported from adjacent fields. Eutrophication as well as selection due to pesticide effects will lead to dramatic changes of species composition and decline in species numbers.
- At landscape level even more significant is the removal of linear features. These linear features are important habitats for many species in agricultural landscapes. Studies show that land-use intensification is the major threat to landscape complexity and diversity.
- In grassland ecosystems biodiversity significantly declines the more often and earlier the grass is cut. Austrian research demonstrates the negative correlation between silage use and grassland biodiversity.
- Removal of old orchards or the transformation into fruit plantations destroys important habitats for many bird or small mammal species bound to old trees. In the course of land use intensification these old trees are often

removed because either there is no use for the fruit or too much handwork is needed to harvest them. Not only is biodiversity changing but also the landscape character, as typical old landscape elements vanish.

Indirect effects of land use intensifications are side effects resulting from agricultural road construction, cutting small woodland patterns or least productive HNV sites.

An example from The Netherlands illustrates the possible change of farm structure and agricultural practices as a result of the Commission CAP reform proposals of January 2003. Dairy farmers who have the opportunity will scale up their quota, land and animals. At dairy farms with more than, say, 200 milk cows the cattle will stay inside all year long because walking distances to the meadows will be too long. Trampling damage will negatively affect grassland yields, which will hit the habitats of, for example, the black-tailed godwit, in two ways. Firstly, there will be less food for the godwits from cow manure. Secondly, the decreased structure of grassland will result from pasture and decreasing feed habitat for adult birds. Because quota and land are costly, dairy farmers will further intensify milk production per cow and per hectare in order to reduce costs per kilogram of milk. This could imply bigger parcels of land and bigger mowing machines. For the black-tailed godwit the risk is that farmers will rapidly mow all the grass for silage which would severely reduce the opportunities of refuge and food for the young birds. If mowing starts early, breeding will be disturbed (Verschuur, Guldmond and van der Weijden, 2003).

4.4.2 What drives agricultural intensification?

The main driving forces behind intensification are agricultural policies and the world market. Other important driving forces are the power structure in the food chain and the knowledge system.

The main objective of the Common Agricultural Policy, as it was designed in the 1960s, was to enhance food production. The market measures for cereals, milk

and beef included guaranteed prices and protection from competition from the world market. Farmers could maximise their income by increasing their production. More production per hectare and per animal was the desired result. The policy was very successful and in the 1980s the EU reached self-sufficiency in almost all its agricultural sectors.

At this point the negative impacts of intensification became apparent. The most important were the financial consequences. The surpluses had to be sold with export subsidies on the world market. Also reported were negative impacts on the environment, nature and landscape and the countryside. Surpluses in the EU and the world market created their own dynamic of decreasing product prices and further intensification. Some of the policy measures designed in the 1980s and the 1990s aggravated intensification. Two examples:

1. Since the dairy quota (established in 1984) was made transferable in The Netherlands, the average milk production per cow sharply increased.
2. Since the 1992 MacSharry reforms in the cereal, beef and sheep sectors, direct income payments have been linked to hectares and number of animals. In Wales this incentive meant overgrazing for ewe premia.

A second factor that drives intensification is liberalisation of agricultural markets with the objective of developing an open market for agricultural products within the liberalised area. To begin with, in the 1960s the European Community established one liberalised market for agricultural products. This internal market became gradually bigger when the European Community grew from 6 to 15 Member States, and in time may have more than 27 Member States. At a global scale the same tendency happened in the General Agreement on Tariffs and Trade. In 1993 a first Agreement on Agriculture was signed, and this liberalisation process continues in the Doha round of the World Trade Organisation (WTO). As a result, farmers anywhere in the world increasingly competed with each other, and those producing at the lowest cost eventually got the highest share of the market.

A third factor that drives intensification, linked to liberalisation, is the power structure in the food chain. Farmers are usually price takers. Downstream sectors such as food processors and retailers can to a large extent dictate the quality and the price of agricultural products. Many market leaders in the downstream sectors are multinational companies, able to pick up the fruits of a liberalised market because it puts them in a strong bargaining position towards farmers. As long as they do not incorporate conservation concerns in their purchase strategies they will be one of the drivers of intensification.

For all forms of agricultural intensification (capital intensive, labour intensive or land intensive) key enabling factors are the knowledge of the farmer combined with technology development (eg genetic modification in capital intensive forms).

4.5 LAND ABANDONMENT

We define land abandonment as the end-result of agricultural marginalisation. Agricultural marginalisation is considered to be a process, driven by a combination of social, economic, political and environmental factors, by which in certain areas farming ceases to be viable under an existing land use and socio-economic structure (Baldock, Beaufoy, Brouwer and Godeschalk 1996).

4.5.1 What happens when land is abandoned?

The risk of land abandonment was assessed using indicators related to biophysical conditions for agriculture, agricultural land utilisation, farm income, farm structure and rural and regional development. In regions with land abandonment you can expect relatively low crop yields per hectare, a decreased use of agricultural land, reduced farm income per family work unit, lower standard gross margins per hectare, relatively low agricultural area per farm and a higher share of farm-holders of 55 years and older (Baldock, Beaufoy, Brouwer and Godeschalk 1996).

Economically unviable full-time farms tend to be changed to part-time farms and later abandoned. Figures from Austria illustrate this trend. Between 1995 and 1999, most farms in Austria that were abandoned were part-time farms.

Several HNV farming strategies especially support optimising farmers but also traditionalists, who often do not have a successor. If these farm owners retire, their least productive sites (which are mostly those sites with the highest nature values) tend to be either abandoned and afforested or, if subject to AE support, rented out and managed by support optimisers. The more productive sites seem mostly to go to yield maximisers or to other traditionalists.

Natural processes after land abandonment depend highly on the accompanying factors. Already drastic extensification in site management ('hidden abandonment') in low productive areas may lead to a significant decrease in biodiversity and a loss of typical, regionally differentiated landscape character.

- Land abandonment and succession processes in intensively managed agricultural landscapes with a low proportion of high nature values (like coarse grasslands or nutrient poor soil conditions) is likely to lead to an increase in nature value. Alternatively, if land abandonment takes place on low production crop fields with a rich vegetal flora, an important feature of biodiversity is destroyed.
- Land abandonment and succession processes in grassland ecosystems are likely to lead to a dramatic change in the species composition. Depending on site conditions the kind and speed of undirected succession will vary strongly, but generally a few species will start to dominate (eg invasive grasses, certain shrub or tree species), so that species diversity decreases in turn.

If, for instance, wet grassland areas are abandoned (because of labour intensive management requirements) neophytes but also native species as *Filipendula ulmaria*, *Urtica dioica*, *Juncus effusus* or *Molinia caerulea* will start to dominate.

This is also the case in nutrient poor and dry grassland habitats, especially in the pannonian or hercynian regions, but also in alpine areas. Some biodiversity succession processes can last for decades until biodiversity-rich woodlands develop.

In the Czech Republic abandonment started with the decline of cattle and sheep herds during the 1990s (cattle went down from 3.5 to 1.6 million animals). The dominant succession mechanism of declining grassland habitats is overgrowth by shrubs and trees. Rare species are not usually competitive and disappear quickly when shrubs and trees start to grow on grassland. The process could have different speeds, depending on climatic conditions. Most threatened grasslands are in areas having sources of tree seeds in its proximity.

Figure 1: Protected pasture on which grazing ceased four years ago where plant biodiversity has already been lost because of overgrowth by more competitive plants and shrubs. The site is surrounded by a large forest area (see signs warning that this is protected pasture).



Complete abandonment and subsequent changes in land use in intensively managed areas may also lead to an increase in biodiversity:

- In landscapes with a very low proportion of linear features or other ecologically valuable habitats, abandoned land (set aside) can play a vital role for maintaining or even increasing biodiversity on a landscape level. Fallow areas of different ages and at different stages are important features in such landscapes to birds and small mammals, and many arthropods bound to these habitats. Their abundance is highly correlated with the proportion of fallow land. Such landscapes are usually affected by the process of land intensification, and the introduction of fallow land has to be encouraged here.
- Site adapted afforestation in poorly forested areas may lead to an increase in landscape and bio-diversity.

4.5.2 What drives land abandonment?

There are several factors influencing marginalisation that also enable or disable appropriate actions to stop decreases in biodiversity because of land abandonment.

- Environmental factors (eg soil, climate, water supply, slope) can limit the agricultural potential of an area.
- Geographic location (eg distance from markets and sources of supply) may disadvantage farming by poor access to supplies and markets.
- Agricultural structures (including the structures of land ownership) can greatly affect the viability of farms.
- Social factors (eg attitudes to farming, age structure of farmers, social, educational and welfare facilities).
- Economic factors (eg competition from other agricultural areas, market prices) are key for farm viability.
- Policy factors (eg trade policy, agricultural policies) play a fundamental role in determining whether farms and agricultural areas are marginal (Baldock, Beaufoy, Brouwer and Godeschalk 1996).

Elaborating on the political factor, the accession negotiations of candidate countries are of vital importance. In the Czech Republic land abandonment was avoided by paying farmers for maintenance of grasslands (cut the grassland). The Czech Republic (and most of the other Central and Eastern European Countries (CEECs) had a hard time explaining the need for payment for a grass-cutting scheme under the agri-environmental measures, because the uptake of such a scheme would be huge. The European Commission regards these payments as production support.¹ The consequence could be that although the Czech Republic wants to conserve its grasslands, a remuneration rule in EU rural development regulation forbids it.

Political factors also play a role at a lower level. In the Czech Republic nature conservation policies are generally very strict² and state administrations in Protected Landscape Areas try to enforce it. But farmers cannot fulfil the protection requirements without jeopardising the viability of their farm. There is a lack of positive incentives, such as financial support for conservation measures. Again, back to EU level, this implies that in nature protection areas the level of good farming practice is so high that no agri-environment schemes can be applied there. Thus, in the areas where agri-environment payments are mostly needed, nature protection laws inhibit conservation payments.

¹ *For agri-environmental schemes accurate payment levels for farmers should be calculated. The whole concept is based on an assumption that the farmer is undertaking actions going beyond his usual practice (like grass cutting). Concerning grasslands endangered by land abandonment in Central and Eastern Europe the actual action to prevent loss of habitat is to simply cut and remove the grass, which seems like an additional cost if the grass is not used for animal production (in many cases). And here the conceptual difficulty arises. No Candidate Country so far (early 2003) succeeded in discussions with the European Commission in claiming that large areas were only supported for cutting the grass (maintaining the habitats). The EC saw this as potential production support which creates distortions in the market. A solution might have been through Regulation 1257/99, which offers the possibility of taking costs into account which intended to avoid land abandonment, but so far this has not been accepted by the EC during negotiations with CEE countries.*

² *This is common in Central and Eastern Europe because nature conservation officers in an authoritarian society could produce any law regardless of the situation on the ground.*

4.5.3 High risk for land abandonment in Central and Eastern Europe

Elaborating on the previous paragraph, the question here is whether there is enough political will to change legal frameworks and incentive structures for nature protection. The rules for nature protection in Central and Eastern Europe at local level can be very demanding and strict.

Strict conservation rules jeopardise the viability of farming in some areas with the effect that nature values deteriorate when farmers stop farming. A strict *acquis communautaire* is likely to jeopardise farming viability and nature values on farmland in Accession Countries, because payments for maintenance of nature values are not allowed at a large scale. The accession negotiations are therefore crucial for nature values in Central and Eastern Europe.

In the Czech Republic power is still concentrated at the level of the state. Farmers are not well organised and the state easily disregards their interests. In some areas nature conservation NGOs are developing and trying to bridge gaps between the interests of farmers and the conservation agencies of the state. They have to build bridges between farmers who are suspicious about nature conservation and uncooperative state officials. As a result more or less rigid land management deals are made at local level between Protected Landscape Areas administrations and farmers. The result can be that two neighbouring protected areas will have different land managements and different levels of abandonment.

The lessons to be learned from this example are that designing policies is one thing, but implementation of those policies on the ground is another. The policy culture characterised by a lack of participation could cause significant difficulties to Natura 2000 implementation process, relying to a large extent on participation of land-owners.

For the EU this means that the nature conservation objectives of a country must dominate the discussion instead of strict regulation, so countries will have more flexibility with which to work towards the objectives. There should be a balance

between the *acquis communautaire* and the goals of a country. The policy instruments proposed by the European Commission are a policy mix of market policies (decoupled payments including LFA payments), cross-compliance, food quality and regional labels, agri-environment policies, investment aid and early retirement schemes and rural development initiatives.

4.5.4 What to do with land abandonment if nature values are low?

Generally speaking, the assessment of abandonment is not only a matter of biodiversity data, but also a matter of social valuation. Landscapes also differ by their social functions as well as their land use history. Therefore, land use options for abandoned land should depend on the ecological as well as social needs of the region. In many cases the continuation of farm management is the most desirable and efficient option, especially in regions where forestry use already prevails.

In regions with monotonous farm structures or low nature value, abandoned land could be used as an opportunity to enhance landscape (and biological) diversity. Abandoned land in productive regions could be used for afforestation. Abandoned land near urban conglomerates could contribute to 'riverside stripes' or to protect water sources.

Evidence shows that at present this option has hardly been used. For instance, while abandoned alpine areas tend to be afforested (and thus reducing biodiversity as forests are a dominant habitat anyway), abandoned areas near urban conglomerates tend to be used for other purposes, like golf courses or industrial sites.

5 Vision for nature conservation in Europe

The previous chapters have shown that both approaches have to be pursued: continue building the network of Natura 2000 and continue to improve the general environmental conditions of the rural areas around Natura 2000. The EU Natura 2000 ecological network is a very important step to the implementation of the Biodiversity Convention. However, it is only a step, which needs to be carefully linked to others, covering wider biodiversity protection at genetic, species and habitat level, and land use systems. The ecological network concept needs to be established on the ground right across Europe involving all stakeholders.

Vision for nature conservation

We see our future EU as achieving a sustainable use and protection of nature in and outside Natura 2000, with an informed community, proud of their biodiversity. The EU of our vision will allocate sufficient means to the maintenance and restoration of nature, the environment and cultural heritage. Many of the connections between Natura 2000 sites will be quite clear and be cared for and enhanced.

For rural areas and agriculture, the subject of this paper, we see a return to the positive role that farmers played in the past in forming the landscape. Landscape features are important in terms of landscape characteristics as well as in terms of biodiversity. It is a vision of a rural society where farmers and other land users have the information and can afford to use and manage in an ecologically sound manner, which retains low intensity production systems and traditional plant varieties and animal breeds.

5.1 NETWORK APPROACH TO BE COMBINED WITH STRATEGIES OUTSIDE THE NETWORK

More than 40% of threatened species in Europe are dependent on extensively used agricultural landscape systems. Being mainly dedicated to natural ecosystems, Natura 2000 sites cover only a limited percentage of ecosystems of high biodiversity value. For example, biodiversity-rich agricultural landscapes represent roughly 25% of Natura 2000 areas in Austria and 10% of the total agricultural area of Austria.

In order to cover biodiversity related to agricultural systems, a combined approach inside and outside Natura 2000 sites is needed. As land use changes are the major threats to biodiversity in agricultural landscapes, it is essential to develop concepts based on an integrated nature conservation approach. Segregation processes in agriculture, by an intensification of land use on favourable conditions and land abandonment of less favourable sites, are ongoing and will go on even more vigorously if no strategy is provided for the ecological development of the 'common' agricultural landscapes.

Genetic diversity considerations deliver further arguments for an integrated nature conservation approach. Recent research indicates that the dormancy of seed banks in grassland ecosystems is not as long as had been previously believed. Managing grassland ecosystems is the only way to maintain these habitat types. The dormancy of arable seed banks is higher than in grassland ecosystems, but if soil disturbance changes these species will vanish quite fast, whereas in grassland ecosystems the diminishing of species is slower (Grime J.P. 2001). The Czech case provides an additional argument for policy integration. The high number of valuable areas will require high budgets to maintain them. However, the budgets available under the rural development programmes in the EU are limited. As a consequence governments might choose to reduce the scale of designated areas under Natura 2000.

Central and Eastern European countries cannot use agri-environmental schemes to prevent loss of valuable grassland habitats, because these are not so scarce as in the territory of the EU-15. Agri-environment schemes will be more suitable in case valuable habitats are nearly lost in process of structural adjustments in agriculture.³

Efforts should be undertaken to combine strategies for nature conservation such as Natura 2000 with agricultural policies (like LFA and agri-environmental measure) and structural funds.

There is great urgency for such action because Central and Eastern European countries will soon (in 2004) enter the European Union. Farmers in the new Member States will be exposed to current CAP (eg direct aid) and to different prices. Accession to the EU will create pressure on farmers to start structural adjustments and to increase intensification. In this process a lot of valuable habitats could be lost. Gradual (hidden) abandonment may be the biggest problem in Western Europe, but intensification and real abandonment will be most problematic in the new Member States. Policies which should bring incentives to prevent such losses will not be in place and will not be integrated at the same time. The low recognition of this issue by new Member States and incentives to start work on easier EU policies first (eg direct aid) could cause delays in the integration process.

³ *In Central and Eastern Europe nature protection is traditionally strictly zonal, which excludes those areas from agri-environmental schemes. EU rural development regulation (1257/99 Article 16) put a ceiling on the proportion of national territory designated as a protected area. In the Czech Republic this proportion could be 20% or more. LFA payments could prevent land abandonment to some extent. But LFA payments are for a different purpose (to compensate unfavourable conditions, not low productivity of particular species-rich habitat) and would not be enough to prevent site deterioration by abandonment.*

Structural Funds should take nature conservation into account, not only by defining specific nature objectives, but also by coupling funding to nature and environmental conditions (Cross Compliance for Structural Funds). Another approach is that 20-30% of projects in Objectives 1 and 2 (2000-06) must be environmentally beneficial. For example, funding can be used for the restoration of grasslands. Also, environmental NGOs should be involved in Monitoring, Management and Project Selection Committees for all Objective 1 and Objective 2 projects.

In practice there are several tools that combine strategies inside and outside Natura 2000. First, existing legislation about bringing nature conservation into strategies outside Natura 2000 can be used. For example, Articles 3, 10 and 12 of the Habitats Directive, the Johannesburg Summit and the 6th Environmental Action Plan support this approach. Second, Regional Development Plans can be used as tools to combine the different strategies on regional level. biodiversity and landscape requirements can and should become part of these plans.

5.2 ENCOUNTERING LAND ABANDONMENT

'Candidates for abandonment' describe farming strategies with low dynamics, little capability to develop or to respond to market and policy developments, combined with a very low share of income coming from the markets (for example, traditionalists and forced farmers in marginal areas).

For regions that are vulnerable to abandonment the environmental handicaps and other disadvantages of the geographical location cannot be changed. In a liberalised European market economic factors will be very difficult to influence. If viable farming is to be maintained in these areas the only factors that may be influenced are agricultural structures, social factors and policy factors.

These factors become more concrete when they are applied to pastoralists:

- Agricultural structures (eg landownership, level of training and farm advice) could be improved.
- Social vulnerability of pastoralists could be addressed by improvement of rural infrastructure (eg schools and medical services), capacity building (eg formation of associations to promote pastoralists' interests), conflict resolution (of transhumance in particular) and awareness raising of the benefits that HNV pastoralists deliver to raise their social status (Huband 2003).
- Politically, pastoral systems should be recognised for their conservation benefits and supported through LFA schemes and agri-environment measures. At present they are often excluded from support.

In general, land abandonment could best be encountered by changing the same forces that drive intensification because they are two sides of the same coin. Agricultural policies, international trade policies, multinational companies and knowledge development institutes should all integrate nature conservation concerns. Of particular interest for regions vulnerable to marginalisation are the market prices. A stabilisation mechanism is very important. Other key issues are payments for services above the statutory baseline, support for organic farming and regional production and consumption under labels such as 'Appellation d'Origine Controlee (AOC)', and last but not least, strong support for marginal regions where agriculture has a function in the up-keep of the countryside and nature conservation (LFA payments).

In the food chain the key issues are food quality and regional labels and environmental awareness.

With regard to the knowledge system key issues are support and advisory systems, integrity of life and diversification of land-use and cross-sectoral co-operation (eg nature conservation, water sector, health sector, social welfare sector, tourism and recreation sector, real estate sector).

5.3 ENCOUNTERING AGRICULTURAL INTENSIFICATION

The negative impacts of intensification (on nature) can best be limited by changing the driving forces behind it. Ideally, agricultural policies, rural policies, international trade policies, multinational companies and knowledge development institutes all integrate nature conservation concerns. This supports the approach of integration as specified in the 6th Environmental Action Plan of the European Commission. Meanwhile, as long as such integration has not been properly implemented, environmental policies are essential to reduce and counter the effects of intensification. For example, proper implementation of the Nitrates Directive has significant effects on the quality of the environment.

Regarding agricultural policies, the key issues are recoupling of payments to farmers from agricultural production⁴ to environmental objectives. Regarding rural development and nature conservation, the key issues are input taxes (pesticides, nitrogen), payments for services above the statutory baseline, support for organic farming and regional production and consumption under labels such as 'Appellation d'Origine Contrôlée (AOC)'.

Regarding international trade policies the key issues are export subsidies, import restrictions and production support. Concrete proposals could phase out export subsidies, establish the principle that a country or group of countries have the right to produce enough food for their own population and to use import restrictions for that purpose, establish the principle that product prices reflect the costs of production at the statutory baseline and possibilities to restrict imports produced below internationally agreed baselines (eg in Multilateral Environmental Agreements) and below statutory baselines of the exporting country, rules on decoupled payments above the statutory baselines, rules to differentiate in the market based on regional labels (AOC).

⁴ *Policy signals giving production incentives (eg through maintaining certain animal premia or the silage maize premia) and supporting optimising strategies may lead to intensification/ ploughing up of grassland.*

Regarding the food chain key issues are socially responsible conduct, benchmarking between supermarkets based on sustainability indicators, sustainability of food chains, consumption taxes (Value Added Tax, excise), environmental awareness.

Regarding knowledge development institutes the key issues are sustainability indicators, design conditions, integrity of life, diversification of land-use and cross-sectoral co-operation (eg nature conservation, water sector, health sector, social welfare sector, tourism and recreation sector, real estate sector).

5.4 LAND USE SYSTEMS APPROACH

This report argues for starting a debate on pan-European level about the species and habitat conservation approach vs. a farming systems approach. In other words, there should be less emphasis on species and habitat types, but more on land use systems that are favourable to them. Recent research on HNV farming (eg Huband 2003, Wrbka et al. 2002) argues for an increased emphasis on promoting certain farming systems.

Chapter 4.2 discussed eight different farming strategies and their effects on high nature values. In order to maintain and enhance a general extensive level of farming embedding Natura 2000 sites, the specific strategies HNV farmers pursue should be considered. To identify those farming styles that contribute most to the achievement of nature values could add further refinement to the territorial approach of Natura 2000.

Subsequently, agriculture support should be targeted to promoting HNV farming types that are economically viable in the long term. This requires:

- enhancement of rural development support for innovative strategies. Environment-friendly 'innovative farming' has a key role for rural development, with its own highly dynamic activities, often acting as 'seeds' for rural development. In doing this they not only secure their own future but also that of co-operating surrounding farmers, for instance traditionalists, eg by deliv-

ering agricultural products to the innovative farmers who then do the processing and marketing for all of them.

Supporting a farm through area payments is much less efficient and also accepted than support for 'process measures', such as environment-friendly investments, marketing, co-operation and innovation in the field of environmentally-friendly products. Another interesting support measure would be the provision of risk capital.

Secondly, as innovative farmers focus on products and markets they tend to be responsive to agri-environment measures that promote environmentally-friendly production methods (eg organic production, breeding of rare animal and plant breeds, high animal welfare standards).

- shifting present support mechanisms for traditionalist farming strategies towards training and co-operation. Traditionalist farming strategies count on long-proved management to increase yields on their fields which are normally cultivated labour-intensively. LFA and agri-environment money preserve their farming strategies at best, but without incentives to develop further and make these farms economically viable long term and less dependent on external support.

If the traditionalist has a successor, training him, eg through farm advisory services, could stimulate a transition to other farming strategies, eg the innovative strategy. Alternatively, support for traditionalists to co-operate with innovators would be very useful.

- giving clear incentives to support optimising strategies for high nature value. 'Support optimisers' focus on increasing profits by aligning their management to specifications and regulations of support programmes. As they are mostly large extensive farms they are responsive to area-based payments. HNV farming would be promoted therefore by offering significant agri-environment support, rewarding farmers for traditional management and stewardship of the countryside.

Competing policy signals need to be avoided, for example in the case of pillar 1 support versus support from pillar 2 (obligatory set-aside without environmental conditions vs. environmental set-aside, energy crops on set-aside land etc) and within rural development schemes (afforestation of dry meadows instead of mowing/ herding).

Agricultural support also needs to encounter negative developments by:

- supporting 'amongst-other-things-farmers' through farm advisory service. Lack of time is the main characteristic feature of this kind of farming approach, looking for ways to reduce labour-intensive production. Therefore the advisory service should focus on developing time-efficient and sustainable management systems, like pastoralism instead of mowing, common stables or integrated meadow management.

Another option for them is to co-operate with innovative farmers in the region, as for traditionalists, where the innovative farmer takes on the labour-intensive tasks of marketing. As they are generally quite dynamic some may even develop to full-time innovative farmers themselves.

- ensuring environmental compliance by 'yield optimisers' through farm audits as well as enforcement of environmental law followed by sanctions further than cross-compliance. Yield optimisers are oriented towards achieving optimal yields and world markets, whereby land is primarily seen as place of production. As yield optimisers tend to have a negative attitude towards nature conservation and at the same time are least dependent from support (esp. the poultry, pig sector), agricultural policies cannot use money as an incentive.

It seems possible that these farms can be involved in highly specialised nature conservation projects, as long as they are at least income-neutral. One recent example in Austria (species conservation measures for the great bustard) shows that through intensive dialogue and small steps certain conservation objectives may be reached.

6. Recommendations

The vision of the previous chapter defined several key issues that must be addressed to protect nature in rural areas outside Natura 2000:

- The network approach alone is not enough to preserve biodiversity and valuable landscapes in Europe. A combined approach is needed with strategies outside Natura 2000.
- Conservation of nature values outside Natura 2000 is especially urgent for Central and Eastern European countries. The outcome of the accession negotiations are of crucial importance for the nature values.
- Intensification of land use should be encountered.
- Abandonment of agricultural land with high nature values should be avoided.
- There must be an increased emphasis on promotion of land use systems that favour high nature values.

Therefore we recommend the following:

- Combine the network approach with strategies outside the ecological network of Natura 2000.
- Continue to complete and optimise the network of Natura 2000 by developing stepping stones and corridors for species migration and distribution outside the designated Natura 2000 areas.
- Combine Natura 2000 policies with agricultural policies and structural funds.
- Create criteria and/or cross-compliance for structural funds with nature and environmental requirements.
- Make use of Regional Development Plans for this combined approach.
- Take actions with great urgency, starting before accession, otherwise vast areas with high nature values in Central and Eastern Europe will be lost.

To avoid land abandonment, it is necessary to:

- ensure support for marginal regions where agriculture has a function to keep high nature values through LFA payments, agri-environment payments, investments in economic diversification, education and training).

It should be possible to encounter intensification of land use by:

- integrating nature conservation in the CAP across the EU, not only for Natura 2000 areas.
- promoting extensification in rural development programmes in regions/areas where intensification negatively affects on high nature values.
- including environmental costs of intensive production in prices, for example by using input taxes (pesticides, nitrogen).

Eight different farming strategies and their land use systems were defined in this paper. Four of them support high nature values, others can threaten them. Land use systems that favour high nature values such as low intensity farming systems should be promoted by:

- enhancing Rural Development support for farmers with environmentally-friendly 'innovative strategies'.
- shifting present support mechanisms for 'traditionalist farming strategies' towards training and co-operation.
- giving clear incentives for high nature value to 'support optimising strategies'.
- countering negative effects from other land use systems on areas of high nature values:
- supporting 'amongst-other-things-farmers' through advisory services.
- ensuring environmental compliance by 'yield optimisers' through farm audits as well as enforcement of environmental law.

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