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Distribution and targeting of the CAP budget from a biodiversity perspective

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List of acronyms

AE	Agri-environment
AEM	Agri-environment measures
AWU	Annual Work Unit
CAP	Common Agriculture Policy
CAPRI	Common Agricultural Policy Regionalised Impact
CBD	Convention on Biological Diversity
CLC	Corine Land Cover
CMEF	Common Monitoring and Evaluation Framework
EAGF	European Agricultural Guarantee Fund
EAGGF	European Agriculture Guarantee and Guidance Fund
EAFRD	European Agricultural Fund for Rural Development
EAA	Economic Accounts for Agriculture
EEA	European Environment Agency
ESU	European Size Units
ETC/BD	European Topic Centre on Biological Diversity
ETC/LUSI	European Topic Centre Land Use and Spatial Information
EU	European Union
EUROSTAT	Statistical Office of the European Communities
FADN	Farm Accountancy Data Network
FSS	Farm Structure Survey
GAEC	Good Agricultural and Environmental Conditions
GDP	Gross Domestic Product
HNV	High Nature Value
IBA	Important Bird Area
IRENA	Indicator Reporting on the integration of ENvironmental concerns into Agricultural policy
JRC	Joint Research Centre
LEADER	Links between Actions for the Development of the Rural Economy
LFA	Less Favoured Areas
LU	Livestock Units
MEACAP	Impact of Environmental Agreements on the Common Agriculture Policy
NUTS	Nomenclature of Statistical Territorial Units
PBA	Prime Butterfly Area
PHAE	Prime Herbagère Agri-Environnementale
RD	Rural Development
RDP	Rural Development Programme
RDR	Rural Development Regulation
SAPARD	Special Accession Programme for Agriculture and Rural Development
SAPS	Single Area Payment Scheme
SMR	Statutory Management Requirements
SPS	Single Payment Scheme
TRDI	Transitional Rural Development Instrument
UAA	Utilized Agriculture Area
UNEP	United Nations Environmental Program
WTO	World Trade Organisation

Executive summary

Background, objective and approach

Change in agricultural land use is a major cause of the decline of biodiversity in Europe. This is characterised by widespread intensification of farming systems on better land, and abandonment or afforestation of poorer land. More traditional, low-intensity farming systems with high nature value are gradually disappearing.

In the Kyiv Resolution on Biodiversity (2003), the European Environment Ministers agreed to identify High Nature Value (HNV) farmland in Europe and to put adequate conservation measures in place to stop this trend. The European Commission has highlighted the importance of using the Common Agricultural Policy (CAP) to prevent the abandonment and intensification of HNV farmland, as a key action to halt the decline in biodiversity.

Agricultural change is driven by socio-economic and technological trends, climatic conditions, as well as the EU policy framework. The most important policy influence is the CAP, which has an EU budget of roughly 53 billion EUR per year. This is equivalent to an annual expenditure of approximately 290 EUR/ha of Utilised Agricultural Area (UAA ([1])) across the EU as a whole. This report reviews whether this considerable intervention, and the way in which it is targeted, is likely to favour the maintenance of High Nature Value farmland. As such it is a follow-up of the preliminary assessment, published by UNEP and EEA in 2004.

This report is produced in the context of wider EU debate on the future of the CAP ([2]). This debate is informed by several different and sometimes conflicting considerations, including ensuring food security in the context of a growing world population and new conditions associated with climate change; the need to adapt to the scarcity of natural resources (water in particular), and the need to preserve biological diversity. While relevant to this wider debate, the analysis presented in this document focuses on one specific question: the potential for support from CAP funds for HNV farmland as part of wider biodiversity.

Whereas farmland under intensive production also supports a certain level of biodiversity, including high nature value features, it does generally not contain significant areas of High Nature Value. As a consequence, this report does not deal with wider farming-biodiversity issues, such as conserving or improving biodiversity on intensively farmed land, nor does it look into other environmental issues, such as water and soil conservation.

The current analysis is based on an updated definition and identification of HNV farmland in Europe (Paracchini *et al.*, 2008), and combines two approaches:

- a spatial analysis at European level of the targeting of CAP payments in 2000–2006 to countries and regions ([3]) with a high share of HNV farmland;

- a case study-based assessment within selected Member States of detailed expenditure patterns across farming types and measures, and their combined influence on supporting HNV farming.

Results

CAP support per hectare of farmland under 'Pillar 1' ([4]) tends to be higher in countries and regions with relatively little HNV farmland. Rural development support under 'Pillar 2' ([5]) varies considerably between Member States with regard to the payments per hectare of farmland under agri-environment and natural handicap

([1]) UAA: Utilised Agricultural Area, as used in EUROSTAT official statistics.
([2]) See for example Presidency note 9269/09 AGRI 196 Common Agricultural Policy post-2013: What future for direct payments?
([3]) At NUTS 2 level. In some countries, the NUTS 3 classification was used, being better adjusted to the purposes of the analysis. For the regional assessment budget allocation was estimated using the CAPRI model.
([4]) Pillar 1: Originally the commodity-related subsidies, now transformed into single farm payments and consuming around 80 % of the CAP budget.
([5]) Pillar 2: Rural development expenditure, aimed at i.a. enhancing competitiveness, environmentally-friendly farming and forestry measures, training, rural tourism or local development.

areas measures. Several Member States with high proportions of HNV farmland are located at the very bottom of the expenditure axis for these measures. These patterns suggest a great divergence of policy implementation among Member States with regard to the use of measures that may support HNV farmland conservation.

The case studies illustrate the fundamental differences between the implementation of the CAP in the new and old Member States. In the EU-15 cases, Pillar 1 consumes over 85 % of total CAP expenditure, effectively dominating the overall expenditure pattern. The widespread use of a historic basis for allocating payments under the current Single Farm Payment Scheme (SPS) has largely fossilised the pre-existing funding pattern, generally favouring more intensive production systems.

With shares varying from 1.3 to 4 % of total CAP expenditure, the budget allocation for agri-environment schemes in the case study countries seems insufficient to provide substantial support to HNV farming. While other measures may contribute to supporting HNV farming (for example, investment aid and payments in natural handicap areas) there is no evidence of such measures being targeted at HNV farmland or farming systems.

In the EU-12 cases, the Pillar 1 budget is far less dominant (less than 60 % of total CAP expenditure) and distributed more evenly across different types of farmland, using flat rate area payments. These new Member States provide targeted support to semi-natural grasslands and other types of HNV farming through substantial Pillar 2 measures. Whereas Extremadura, in the period under study, had no agri-environment expenditure targeted at grazing land, the Czech Republic had almost 80 % of such land in agri-environment schemes. However, it seems that in many EU-12 Member States considerable areas of farmland are not registered for CAP support payments. This applies mainly to small farms and marginal land where HNV farming is likely to predominate.

Apart from the expenditure pattern, the design of CAP measures (both Pillar 1 and 2) is of relevance, particularly the eligibility criteria for payments. Although the concrete effects of support measures on HNV farmland were not examined in detail, it is apparent that some nationally-applied criteria are not well-adapted to HNV farmland. In the Extremadura case, for example, where there are large areas of extensively managed farmland of biodiversity value, Pillar 1 payments for suckler cows reward livestock densities well above levels that can be regarded as appropriate for maintaining HNV farmland. In Estonia, there is concern that the exclusive targeting of certain measures on Natura 2000 areas leaves large areas of undesignated HNV semi-natural grassland without targeted CAP support.

Conclusion

Overall, the analysis suggests that, despite CAP reform and decoupling of subsidies from production, the majority of funding still goes to the most productive agricultural land. Relatively little is spent in areas with a high proportion of HNV farmland and particularly Pillar 2 support measures are inconsistently applied across Member States with a view to the objective of maintaining HNV farming. The distribution of CAP support across Pillars, measures and farm systems suggests that favourable management of HNV farmland is insufficiently supported.

The net effect of total CAP support on the conservation status of HNV farmland has not been assessed, but the potentially favourable measures under Pillar 2 make up only a very small fraction of total CAP expenditure. Pillar 1 support could potentially be used in a way that provides better support for farmers with HNV systems, if eligibility criteria were changed, but at present it overall benefits more intensively used farmland under more productive farm types.

This study has addressed a number of questions that need to be reviewed for securing maximum biodiversity benefits from CAP expenditure in the context of supporting HNV farming. Nevertheless, further detailed analysis is still necessary to better understand the real links between agriculture policy support and the economic viability and environmental quality of different types of HNV farming and farmland. The analysis also needs to take into account wider social, economic and climatic trends that affect Europe's rural areas and the agricultural sector.

1 Introduction

The European Union Common Agricultural Policy (CAP) has an important influence on agricultural land use in the EU. As agriculture in Europe strongly influences the management of natural resources and biodiversity (EEA, 2005) the CAP assumes an important role in managing the environment in the EU's rural areas. This is recognised by the fact that agricultural policy spending is placed under the heading 'Preservation and management of natural resources' in the EU budget.

While recognising that the CAP has multiple objectives that go beyond biodiversity conservation, the present report sets out to assess whether the current distribution of CAP funds is likely to favour the maintenance of farmland with high nature value (HNV farmland). Given the public benefits generated by the farming systems that maintain this land and the socio-economic pressures they face to intensify or abandon production, this assessment will explore the extent to which CAP funds are likely to support the long-term economic and ecological sustainability of High Nature Value (HNV) farming systems.

The report is concerned specifically with HNV farmland (as identified by EEA and JRC), because the EU has highlighted the importance of using the CAP to prevent its abandonment and intensification as a key action to halt biodiversity decline. This report does not deal with national or regional high nature value features or wider farming-biodiversity issues, such as conserving or improving biodiversity on intensively farmed land, nor does it look into other environmental issues, such as water and soil conservation.

The focus of the report is on CAP measures that potentially can provide targeted economic support to maintain HNV farmland, in the form of payments to the relevant farming systems. CAP measures for protecting the environment from inappropriate farming actions, specifically cross-compliance requirements, are not intended to have this support function, and so are referred to only briefly. In reading this report, it has to be recognised that EU and national agricultural policies are only one factor that will influence the future shape of farming in Europe. Wider social and economic trends, climate change as well as related policies, such as EU renewable energy targets, will also be very significant but could not be discussed in any detail in this study.

2 Background and approach

2.1 The policy framework

Biodiversity in Europe has been declining for many years. A major cause of this decline is change in agricultural land use, characterised by widespread intensification of farming systems on better land, and abandonment or afforestation of poorer land. As a consequence of this process, there has been a gradual disappearance of the more traditional, low-intensity farming that is inherently rich in wildlife, which has become known as High Nature Value (HNV) farming (Baldock, Beaufoy, Bennett and Clark, 1993).

Policy responses have been formulated within the frameworks of the Convention on Biological Diversity (CBD), the pan-European Biodiversity and Landscape Strategy, the Bern Convention and the European Landscape Convention. The EU has responded with the Habitats and Birds Directives and the actions related to agriculture in the Biodiversity Action Plan. In the Sixth Environment Action Programme, the EU explicitly committed itself to halt biodiversity decline by 2010. It has recently been acknowledged that this target will not be met ([6]), although some progress has been made. Work is now ongoing at both EU and global levels on a possible vision, target and indicator framework for the period post 2010.

Conserving HNV farmland, and preventing its abandonment or intensification through CAP measures, is considered by the European Commission as a key action for achieving these targets. In the Kyiv Resolution on Biodiversity (2003), the European Environment Ministers agreed to identify high nature value farmland and to put adequate conservation measures in place.

Biodiversity trends on farmland are clearly influenced by wider agricultural policies and measures. The Common Agricultural Policy (CAP), adopted in 1962, is the main EU policy instrument influencing agricultural land use. Originally, the CAP focused on the economic and social objectives of increasing productivity, stabilising markets, and ensuring a fair standard of living for European farmers and reasonable prices for consumers. Whilst successful in these areas, the system of production-related subsidies, intervention prices and export subsidies had unanticipated side-effects, such as overproduction, eutrophication of water bodies and pollution of groundwater as well as loss of biodiversity and landscape values.

Since 1992, the CAP has undergone major reforms to address overproduction, budgetary costs and environmental issues linked to intensive farming. This led to the introduction of a wide range of rural development measures under the so-called Pillar 2 of the CAP with the Agenda 2000, to the complete or partial decoupling of subsidies from production into direct income support for nearly all crop and livestock types since 2005, and to the introduction of cross-compliance. The CAP instrument with the highest importance for environmental management, going above the baseline set up by cross-compliance requirements, is the Pillar 2 agri-environment measure that compensates farmers for their loss of income and costs when undertaking voluntary environmental protection commitments.

Currently the CAP budget amounts to around 53 EUR billion per year ([7]). This is equivalent to an annual expenditure of approximately 290 EUR/ha of Utilised Agricultural Area (UAA) across the EU as a whole ([8]). CAP expenditure, which comes under the EU's Preservation and Management of Natural Resources budget line, is mostly in the form of direct payments to farmers, with about one fifth targeted on rural development including agri-environment measures. This money, and the way in which it is targeted, can be expected to have an influence on how farming evolves, and thus on nature and

([6]) Press release IP/09/1118 of 13/07/2009: Many of Europe's most vulnerable species and habitats under threat. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/1118&format=HTML&aged=0&language=EN&guiLanguage=en.

([7]) Almost 370 billion EUR for the period 2007-13 (Decision 2008/371/EC of 29 April 2008, amending the Interinstitutional Agreement of 17 May 2006 on budgetary discipline and sound financial management as regard adjustment to the multiannual financial framework).

([8]) Total EU-27 UAA 182,103,000 ha (Agriculture in the European Union — Statistical and economic information 2007).

the sustainability of land management across the EU. It is important to ask, therefore, in what way the design and distribution of CAP payments supports the stated goals of 'management of natural resources, including biodiversity'.

This report is produced in the context of wider EU debate on the future of the CAP ([9]). The debate is informed by several different and sometimes conflicting considerations, including ensuring food security in the context of a growing world population and new conditions associated with climate change; the need to adapt to the scarcity of natural resources (water in particular), and to preserve biological diversity.

While the primary role of farming continues to be food production, farming and rural land management also perform a complex set of functions for society, including the provision of a range of environmental benefits and the maintenance of rural social fabric, especially in more marginal areas. The multiple objectives of the CAP reflect these varied functions of European farming.

This report focuses specifically, however, on the potential role of the CAP in supporting HNV farmland as part of wider biodiversity in rural areas.

2.2 High Nature Value farming

Intensification and rationalisation of agricultural land use continue today, as a result of powerful social, economic and technological drivers. It is difficult to contemplate halting agricultural intensification completely on land with high production potential. Rather, the agriculture policy response has been to introduce instruments such as cross-compliance, in an attempt to curtail the adverse environmental impacts of this process.

While all agricultural intensification probably cannot and need not be halted in the cause of environmental protection; there are strong arguments for preventing the intensification or abandonment of the remaining low-intensity, HNV farming systems. This is more likely to be achieved by ensuring the economic viability of such farming systems, and thus addressing the socio-economic drivers of intensification and abandonment in these specific cases, rather than through a policy of regulations and restrictions on farmers.

In fact the HNV farming concept emerged in the early 1990s from the recognition of these economic realities. It proposes that a strategic approach to maintaining biodiversity across the EU should include ensuring economic viability of the land uses that are inherently most favourable to wildlife, thus reducing the pressure for their intensification or abandonment (Baldock *et al.*, 1993).

Farming of this sort covers extensive areas of Europe's more marginal rural areas, and the future of many of our most valued habitats and species depends on these large areas continuing under such use (Bignal *et al.*, 1994). Biodiversity conservation goals in Europe will not be met only by protecting particular habitats or species, or designating certain areas for their management. We must also maintain the low-intensity land uses that favour the dynamics of natural processes and create opportunities for biodiversity to flourish across large, contiguous areas of land.

The semi-natural land cover that makes up a large part of HNV farmland is unique in harbouring numerous habitat types from Annex I of the Habitats Directive, ranging from hay meadows to wood pastures and heaths (see Annex 1). These habitats support communities of flora and fauna that depend on the continuation of low-intensity grazing and/or late mowing for their survival.

The trends in abundance of European butterfly species as shown in Figure 3.2 are especially illustrative of the problems faced by HNV farmland, as many butterflies are highly dependent on semi-natural grasslands. Whereas intensification is still the major threat to butterflies in lowland and generally more productive areas, they are threatened by large-scale abandonment of the remaining fragments of semi-natural farmland in more marginal areas with poor soils. These different situations require appropriate policy responses. Protection of remaining patches of semi-natural farmland and highly targeted payments for its conservation are most relevant in productive areas; while in marginal areas there is a particular need for economic support to the farming systems that continue to use and maintain semi-natural farmland on a landscape scale.

This issue has become more of a priority in recent years, with the decoupling of CAP payments, the increasing marginalisation of low-intensity farming,

([9]) See for example Presidency note 9269/09 AGRI 196 Common Agricultural Policy post-2013: What future for direct payments?

and the accession to the EU of an increasing number of countries with a large land area under HNV farming systems. In terms of the CAP and the impact of its funds on biodiversity, this potentially positive role in providing economic support to HNV farming has supplanted the concerns of the 1980s and 90s, of CAP subsidies driving intensification.

2.3 Analytical approach

In 2004, UNEP and EEA produced a first report looking at the characteristics, trends and policy challenges of High Nature Value farmland (EEA, 2004). This report continues that work by looking more closely at the distribution of CAP funds in relation to HNV farmland. The relevance of other CAP and environmental policy instruments for wider biodiversity on farmland could not be analysed here.

Targeting of CAP support on HNV farmland

In particular, this report analyses how CAP funds are distributed and aims to assess the extent to which the pattern of distribution favours, or discriminates against, the types of farming that are most positive for biodiversity. To do this, it looks at the distribution of CAP funds in relation to current estimates of the share of HNV farmland in different EU regions, and their economic situation.

The study combines two approaches:

- a spatial analysis at European level of the targeting of CAP subsidies to areas with a high share of HNV farmland;
- a case-study based assessment within selected Member States of detailed expenditure patterns across farming types and measures, and their combined influence on supporting HNV farming.

The distribution of CAP funds is analysed in relation to the proportion of HNV farmland in each Member State. The approximate extent of HNV farmland as a proportion of all farmland at Member State or regional (NUTS 2 ([10])) levels is compared with the amount of CAP funds spent in that Member State or region. This gives a basic indication of whether regions with a high proportion of HNV farmland receive more or less CAP funds than regions with a smaller proportion of HNV farmland. The analysis is undertaken for expenditure on different parts of the CAP. There are caveats applicable to this approach, as discussed later in the report.

The allocation of CAP funds to different agricultural land uses is studied for some regional cases. This approach analyses the amounts in EUR/ha that can be received by specific types of farming, for example, by high-yielding cereal land compared with pasture used at low stocking densities. CAP spending data cannot be spatially referenced at a sufficient level of detail to allow this relationship to be shown on maps. However, it is possible to calculate the approximate level of support received by different crops and land uses from spending statistics and from the rules governing the CAP payment regimes. This approach gives an idea of the CAP funds directed to farming types that are inherently rich in biodiversity (generally lower-intensity farming using semi-natural pasture), and to farming that is inherently lower in biodiversity (more intensive cropping types). Again there are caveats to be taken into account with this approach.

It is not only the relative amounts of monetary support received by different land uses that are significant. To undertake a full analysis we also need to consider the absolute amounts of CAP support in each case, the purpose of the support, and whether the EUR/ha directed towards a given HNV farm type are sufficient for maintaining its viability or whether it can be expected to decline under the existing policy scenario. It is important to consider not only the amounts of payments per hectare, but also per Annual Work Unit, since it is the return on the farm's labour that ultimately determines its viability.

These complex questions are considered in this report as far as data and resources allow. The main focus has been on the spatial analysis of data at European level, as described above. The other aspects are brought in where possible on the basis of regional and national case studies, whether carried out under the present study, or available from other sources.

The analysis focuses on the spatial distribution of CAP funds according to broad measures and packages of measures. Thus, expenditure on

([10]) In some countries, the NUTS 3 classification was used, being better adjusted to the purposes of the analysis. For further information on NUTS classification see: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/regional_statistics/nuts_classification.

Pillar 1 direct payments is considered as one major form of expenditure. As the main income support measure under the CAP, the Pillar 1 payments are particularly relevant for their potential role in supporting the economic viability of HNV farming, and thus helping to prevent abandonment and intensification. Expenditure on Pillar 2 measures is analysed as a package, but also with a focus on two specific schemes with potential to support the viability of HNV farming — the agri-environment and natural handicap areas (previously less-favoured areas) schemes. These measures come under Axis II, which includes amongst its priorities the preservation of HNV farming systems.

Relevant policy instruments outside this analysis

Within the CAP and EU environment policy there are a number of other policy instruments that are important for the management of biodiversity by farmers, e.g. the CAP cross-compliance rules, the EU protected area network Natura 2000 or national farm advisory instruments. Each of these measures has a specific and positive role to play in pursuing biodiversity goals.

For example, cross-compliance is particularly concerned with preventing environmental impacts from inappropriate farming practices. This instrument should have a positive function in protecting biodiversity on all farmland in receipt of CAP payments, including HNV farmland. However, it is less suited to encouraging the maintenance of economically disadvantaged management systems.

Potentially, farm advisory services could be targeted to support HNV farming, and the same could apply to Pillar 2 farm investment aids. In addition to EU policies, there are actions taken at national level by public and private bodies that are relevant to the issues studied in this report.

However, the present study does not evaluate the actual or potential role of this range of measures in contributing to biodiversity goals, either in the specific case of HNV farmland, or more widely. Available analytical resources and tools made it necessary to choose a specific focus, which is the broad distribution of the main CAP payments with potential to support HNV farming.

The approach taken is only one of the possible avenues for evaluating the potential influence of EU agriculture policy on the biological richness of EU farmland. We hope that it provides a useful contribution to ongoing debates on the future of EU agriculture policy.

3 The importance of farmland for European biodiversity

3.1 Historic and recent trends of farmland biodiversity

Since the end of the last ice age, Europe's natural environment has been shaped by human activities, and particularly by farming. The loss of 'naturalness' (forests, mega-fauna) caused by the rise of agriculture was compensated for, in biodiversity terms, by new, open, semi-natural habitats. Habitat diversity per area was increased by the creation of mixed farming landscapes.

The mosaic of habitats resulting from traditional farm management favoured a diversity of plant and animal species across Europe (Tubbs, 1977; Plachter, 1996; Plachter, 1998). It is estimated that 50 per cent of all species in Europe depend on agricultural habitats, including a number of endemic and threatened species (Kristensen, 2003).

Since the 1950s, however, there has been a marked decline in biodiversity across European farmland. This has arisen primarily through the industrialisation of agriculture, resulting in farm specialisation, the development of high yielding crops and livestock, intensive use of chemical inputs and mechanisation. Simplification of the landscape has occurred, replacing the multiple land use systems that predominated in the past.

These changes happened first and most intensely in the lowlands of north-west Europe on the best land, such as in southern England, northern France, northern Italy, Belgium, the Netherlands and Germany. Similar changes took place in parts of Eastern Europe, though under different socio-political circumstances. With the wider availability of technologies, and more recently the influence of market forces and public policy, the same trends have been encouraged on all but the poorest land and in the least accessible areas.

A parallel cause of agricultural biodiversity decline in recent years has been the progressive marginalisation and abandonment of low-intensity agricultural land with physical or climatic handicaps, as a result of wider socio-economic changes. Abandonment of this sort of land can have a detrimental affect on biodiversity, as many of the farmland habitats of high nature value need to be actively managed to maintain them, especially semi-natural grasslands (DLG *et al.*, 2004; IEEP, 2007a). See Annex 1 for a list and map of Natura 2000 habitats that depend on, or are associated with, extensive agricultural practices. These habitats support communities of flora and fauna that depend on the continuation of low-intensity grazing and/or late mowing for their survival. The specific regimes required by a range of Natura 2000 habitats have been published by the European Commission ([11]).

Thus it is not the abandonment of farmland in general but rather the abandonment of particular types of farmland that is a concern from the biodiversity perspective, notably land that is under low-intensity use and that includes a significant proportion of semi-natural vegetation. The characteristics of this HNV farmland are discussed further below.

Intensification and abandonment are having negative effects on many populations of wildlife across Europe, with the most vulnerable being those at the top of food chains, such as large carnivores, endemic local species with a very limited distribution, species with chronically small populations, migratory species and specialists (EEA, 2006).

The IRENA operation (indicator-based assessment of the integration of environment into EU agriculture policy ([12])) provided indicators of the negative tendencies affecting farmland biodiversity. For example, the trend in farmland birds is a barometer of change in the biodiversity of European agricultural landscapes. The IRENA indicator shows that farmland bird populations declined on average by nearly 50 % between 1980 and 2002 with the steepest decrease in the 1980s, and a smaller decline since 1990. The countries most affected by this decline are Belgium, France, the Netherlands, Sweden and the United Kingdom. There is a big

([11]) http://ec.europa.eu/environment/nature/natura2000/management/habitats/models_en.htm.
([12]) Agriculture and environment in EU-15 — the IRENA indicator report. EEA Report No 6/2005. http://www.eea.europa.eu/publications/eea_report_2005_6.

variation, however, within countries and among countries.

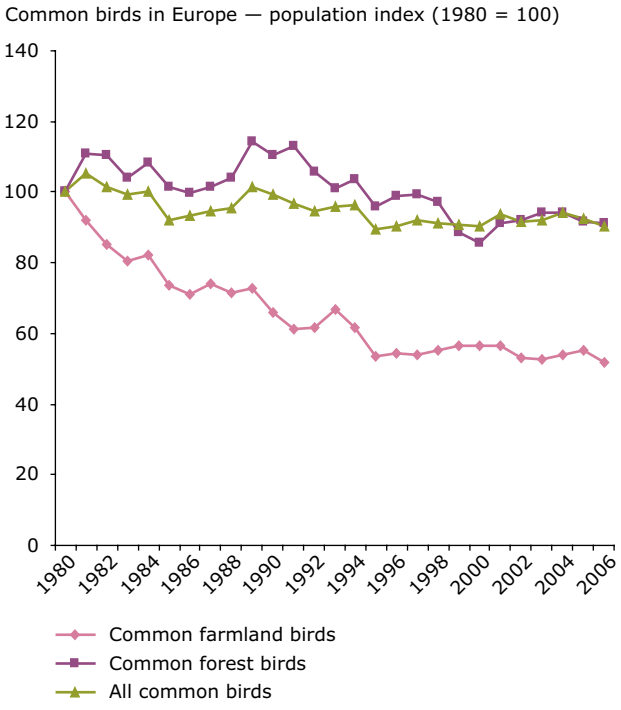
The recently published report on the progress towards the European 2010 biodiversity targets (EEA, 2009) further confirms this trend and extends it to 2006 (see Figure 3.1). Changing agricultural methods, especially increased specialisation and intensification, have driven the decline of farmland birds. The decrease in farmland bird populations levelled off in the mid 1990s, probably reflecting the introduction of set-aside areas in the EU-15, but many species remain heavily depleted.

Impacts on habitats and biodiversity were also assessed in IRENA No. 33, which analysed agricultural impacts on Important Bird Areas (IBA) and on Prime Butterfly Areas (PBA) on the basis of case studies. The indicator reports that the habitat quality of IBAs in the EU-15 is affected by agricultural intensification and/or abandonment. Intensification affects the highest share of IBAs in Spain, Greece and Italy, but France, Germany, Scotland and Portugal also have significant clusters. Intensification occurs mainly on lowland, upland and coastal sites. Abandonment mostly takes place in mountain or coastal IBAs but is less frequent than intensification.

Some 80 % of all agricultural Prime Butterfly Areas experience negative impacts from intensification, abandonment or both. In total, 43 % of all agricultural sites suffer from intensification, whereas abandonment is a significant problem in 47 %. Both impacts occur simultaneously in 10 % of sites (van Swaay and Warren, 2003). Figure 3.2 shows the negative trend in the population index of grassland butterflies since 1980.

Analysis of the butterfly habitats shows that 92 % of all target butterfly species ([13]) in Europe depend on agricultural habitats, particularly extensively managed grasslands. The population of grassland butterflies are declining severely; their populations have declined by 60 % since 1990 and there is no sign of levelling off (see Figure 3.2). Intensification is the most important threat to butterflies across

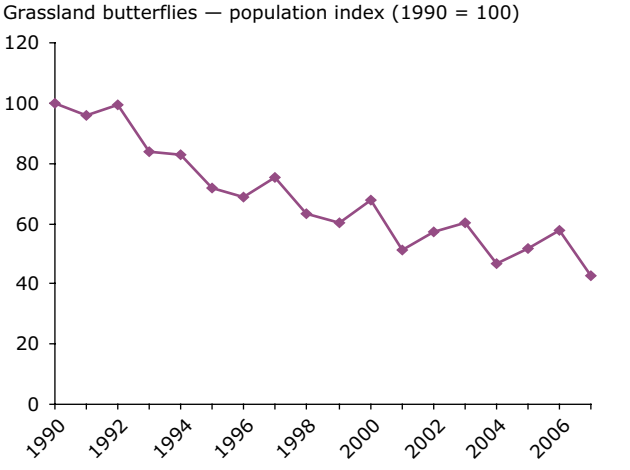
Figure 3.1 Common birds in Europe *



Note: * Country coverage: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, France, Finland, Germany, Hungary, Ireland, Italy, Latvia, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. See www.ebcc.info for more technical information on the calculation of the index.

Source: Progress towards the European 2010 biodiversity target (EEA, 2009).

Figure 3.2 Grassland butterflies



Source: Progress towards the European 2010 biodiversity target (EEA, 2009) ([14]).

([13]) Target butterfly species are the priority species for conservation in Europe, used for the identification of Prime Butterfly Areas.

([14]) Data from Butterfly Monitoring Schemes in nine countries: Belgium — Flanders (1991–2004); Estonia (since 2004); Finland (since 1999); France (since 2005); France — Doubs region (2001–2004); Germany (since 2005); Germany — Nordrhein Westfalen (since 2001); Germany — Pfalz region (Maculinea nausithous only, 1989–2002); Jersey (since 2004); Portugal (since 1998); Spain — Catalunya (since 1994); the Netherlands (since 1990); and the United Kingdom (since 1976).

the relatively flat areas of western Europe: ranging from the eastern half of the United Kingdom, over the north of France, Belgium, the Netherlands, Northern Germany and Denmark — as well as flat areas in other parts of Europe. By contrast, abandonment and lack of sustainable grazing is the chief threat in southern and eastern Europe, in mountainous areas or areas with relatively poor soils.

3.2 HNV farming and its place in EU farmland biodiversity

3.2.1 Defining HNV farming and farmland

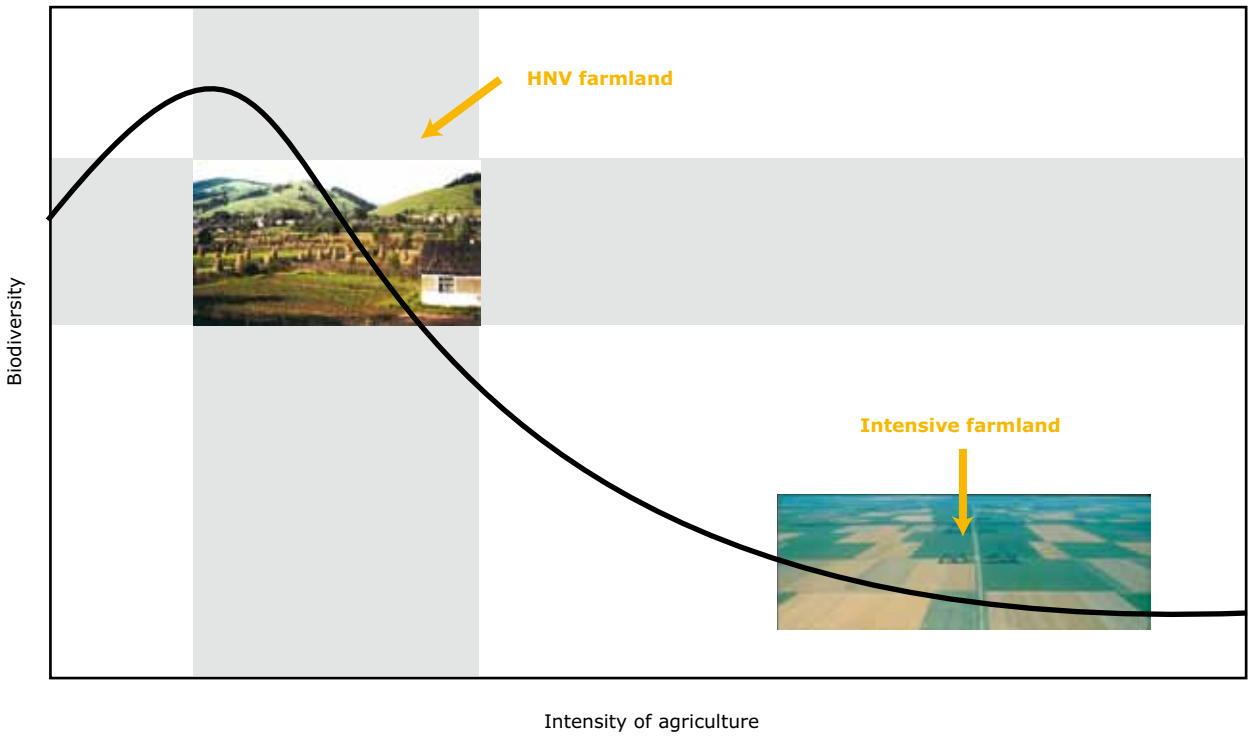
Although terms such as 'HNV farmland', 'HNV farming' and 'HNV farming types' or 'systems' are often used interchangeably, it is useful to make distinctions for the purposes of the present report:

HNV farmland refers to farmland characterised by the presence of land cover types (especially semi-natural vegetation and mosaics of low-intensity crops) which indicate that this farmland is valuable for nature conservation. The presence of populations of particular wildlife species may also provide this indication. HNV farmland may exist at different scales, from the individual parcel to an entire landscape. Work of EEA and JRC has identified three general types — see Section 3.2.2.

HNV farm types or systems refer to the farming types that use and maintain these land-cover characteristics of high conservation value. As explained above, these are low-intensity farming types by definition — agricultural intensification involves the conversion of semi-natural land cover into more high-yielding grassland and crops and is usually accompanied by a reduction in diversity of vegetation types on the farm area. Low-intensity characteristics, such as low livestock densities per hectare of forage, therefore give a good indication of HNV farming (with the exception of the more limited Type 3). The appropriate scale for identifying these characteristics is the farm holding, as average intensity values at the scale of landscapes or administrative regions are likely to hide considerable variations between farms.

The term HNV farming is used more generically to refer to the HNV farming concept and to the close link between HNV farmland and its management by HNV farm types. The reality on the farm is that the two cannot be separated.

Figure 3.3 General relationship between agricultural intensity and biodiversity



Source: High Nature Value farmland — Characteristics, trends and policy challenges (EEA, 2004).

3.2.2 Characteristics of different types of HNV farmland

This report follows a revised definition of the three types of HNV farmland as proposed by EEA and JRC in 2008 (see Paracchini *et al.*, 2008):

Type 1 — Farmland with a high proportion of semi-natural vegetation.

Type 2 — Farmland with a mosaic of low intensity agriculture and natural and structural elements, such as field margins, hedgerows, stone walls, patches of woodland or scrub, small rivers etc.

Type 3 — Farmland supporting rare species or a high proportion of European or World populations.

In areas of Type 1 HNV farmland the semi-natural vegetation may be grassland, scrub or woodland or a combination of different types, used for raising livestock. Such areas are generally very species-rich, by definition requiring extensive agriculture for their maintenance and having a well recognised conservation value.

Often semi-natural grazing is not part of the farm holding, but has some other ownership (e.g. common land), so it is important to consider not only grazing land within the Utilised Agricultural Area (UAA) when identifying HNV farmland. Some small areas of more intensive grassland and low-intensity cropping may also be present, especially for the production of forage crops. These can be an essential part of an HNV farming system, providing winter fodder for livestock, and can also contribute to biodiversity value when combined with a sufficient area of semi-natural grazing, by providing feeding opportunities for wildlife.

Type 2 HNV farmland is distinguished because small-scale variations in land use and vegetation combined with low agricultural inputs are generally associated with relatively high species richness. A small proportion of the farmed habitats within this type will be strictly semi-natural, but its management should be sufficiently extensive to allow for floristic variation. The biodiversity value of semi-natural elements combined with a diversity of land cover types is confirmed in many studies (see for example Billeter *et al.*, 2008). A mix of livestock and cropping (arable and/or permanent crops) can be expected.

Because the proportion of land under semi-natural vegetation is less and the proportion of cultivated land is greater than in Type 1, the low-intensity management of the latter, and the existence of an 'ecological infrastructure' of landscape features, are especially critical for wildlife. More intensive use of the cultivated land and the removal of features, will lead to a rapid decline in wildlife values.

Peripheral semi-natural features, such as hedges, other field-margins and trees, are often found on Type 2 HNV farmland. These provide additional habitats and will tend to increase nature value. However, their total surface area is usually small compared with the productive area, so it is the characteristics of the productive area which determine whether the farmland in question is HNV. Peripheral features alone are not sufficient.

In most of Europe, arable farming has been intensified to the point where it can no longer be described as HNV but there are some areas where this is not the case, especially in southern and eastern Europe. These areas are usually low-yielding, low-input dry land systems that retain a sizeable proportion of fallow and the presence of semi-natural vegetation, including permanent pasture and features such as field margins, headlands, patches of scrub and/or woodland. Often extensive grazing is part of the HNV land use, exploiting arable stubble and semi-natural patches (see, for example Robinson *et al.*, 2001). Such areas can be considered as Type 2 HNV farmland.

Permanent crops, particularly the most traditional fruit and nut orchards and olive groves, can be of high nature value. The key characteristics are large old trees and a semi-natural understorey, which is often grazed by livestock. The semi-natural understorey is an essential element in the biodiversity of HNV permanent crop systems, although this may not be present for all of the year, especially in southern European conditions. HNV permanent crops are not irrigated and nitrogen fertilisers, biocides or broad spectrum insecticides are either not used, or used only at very low levels. Significant semi-natural features can include field margins, headlands, patches of scrub and woodland, and dry stone walls. A grazed orchard can be considered Type 1 HNV farmland but HNV permanent crops typically occur in mosaics with other crops and semi-natural patches, which correspond with Type 2 HNV farmland.

Type 3 is characteristic of locally more intensive farming systems which do not have the characteristics of Types 1 and 2, but which sometimes support significant populations of species of conservation concern, normally bird species. This type of more intensive HNV farmland is less

widespread than the other types. Examples include the more intensive cereal steppes that continue to maintain populations of species such as Great Bustard (*Otis tarda*), whereas steppes with a mix of cropping and considerable areas of semi-natural vegetation will tend to support more species and correspond with Type 2. Productive coastal grasslands supporting populations of wetland bird species would be another Type 3 example.

These three types of HNV farmland are not intended to be precise categories with a sharp boundary between them. Rather, they should be seen as a continuum, ranging from those with a higher proportion of semi-natural vegetation and lower intensity use (Type 1) to more intensively managed farmland that still supports certain species of conservation value (Type 3).

The examples in Box 3.1 below show options for setting threshold values for HNV farmland at farm level, linked to the presence of semi-natural vegetation and livestock density. There are no clear boundaries between 'high' or 'low' nature value but biodiversity richness on farmland generally declines with increasing intensity of farming. Common to all HNV types developed under the JRC/EEA analysis is the assumption of conservation importance at European level (habitats and species listed in the EU birds and habitats Directives) ([15]). It should be noted that 'ordinary' biodiversity and high nature value areas or features defined at regional or national level are also worth preserving but could not be addressed with the analytical approach chosen in this study. Section 3.3 summarises work that has been done by EEA and JRC to identify the distribution of HNV farmland using the above criteria at the landscape scale.

3.3 Extent and location of HNV farmland in the EU

EEA and UNEP have published a preliminary map of HNV farmland (EEA, 2004), using the definition as developed by Andersen *et al.* (2003): 'Those areas in Europe where agriculture is a major (usually the dominant) land use and where that agriculture supports, or is associated with, either a high species and habitat diversity or the presence of species of European conservation concern, or both'.

As biodiversity data were not sufficiently available at European level, the Andersen *et al.* study

Box 3.1 Farm-level criteria for HNV farmland — proportion of semi-natural vegetation and intensity of use

The proportion of semi-natural vegetation on farmland is critical to its biodiversity value (see for example Le Roux *et al.*, 2008). In areas of more intensive arable cropping (grandes cultures) in France, this proportion often falls below 10 % of the UAA. In some predominantly grassland areas, the proportion of semi-natural vegetation on farmland can be over 50 %. Some ecologists regard a 20 % proportion of semi-natural vegetation as a minimum threshold for maintaining biodiversity on farmland (Le Roux *et al.*, 2008).

The proportion of semi-natural vegetation has always been considered a key indicator for identifying HNV farmland. For example, a case study of the Highlands and Islands of Scotland in a study for DG Agri (IEEP, 2007) described HNV low-intensity grassland systems in the region as having 30–70 % of the farmed area under semi-natural vegetation.

Livestock densities have also been proposed as an appropriate indicator of HNV farmland at the holding level. For example, in a case study of Basse Normandie in a study for DG Agri (IEEP, 2007), the optimal value of farm-level livestock density with regards to floristic diversity was identified as around 1 Livestock Unit per hectare. Due to the high natural productivity of grassland in the region, such a density is compatible with either no fertilisation or rather limited fertilisation (< 50 kgN/ha). Floristic composition at the parcel level will change significantly between 0 kgN/ha, with an average of around 50 species at the parcel level, and 50 kgN/ha, with an average of 25–30 species/ha.

([15]) The approach followed here builds on standardised quality criteria at European level to enable comparison across countries and analyse overall targeting of CAP expenditure. Additional quality criteria could be defined on the basis of national or regional conservation priorities, but this would only allow within-country analysis.

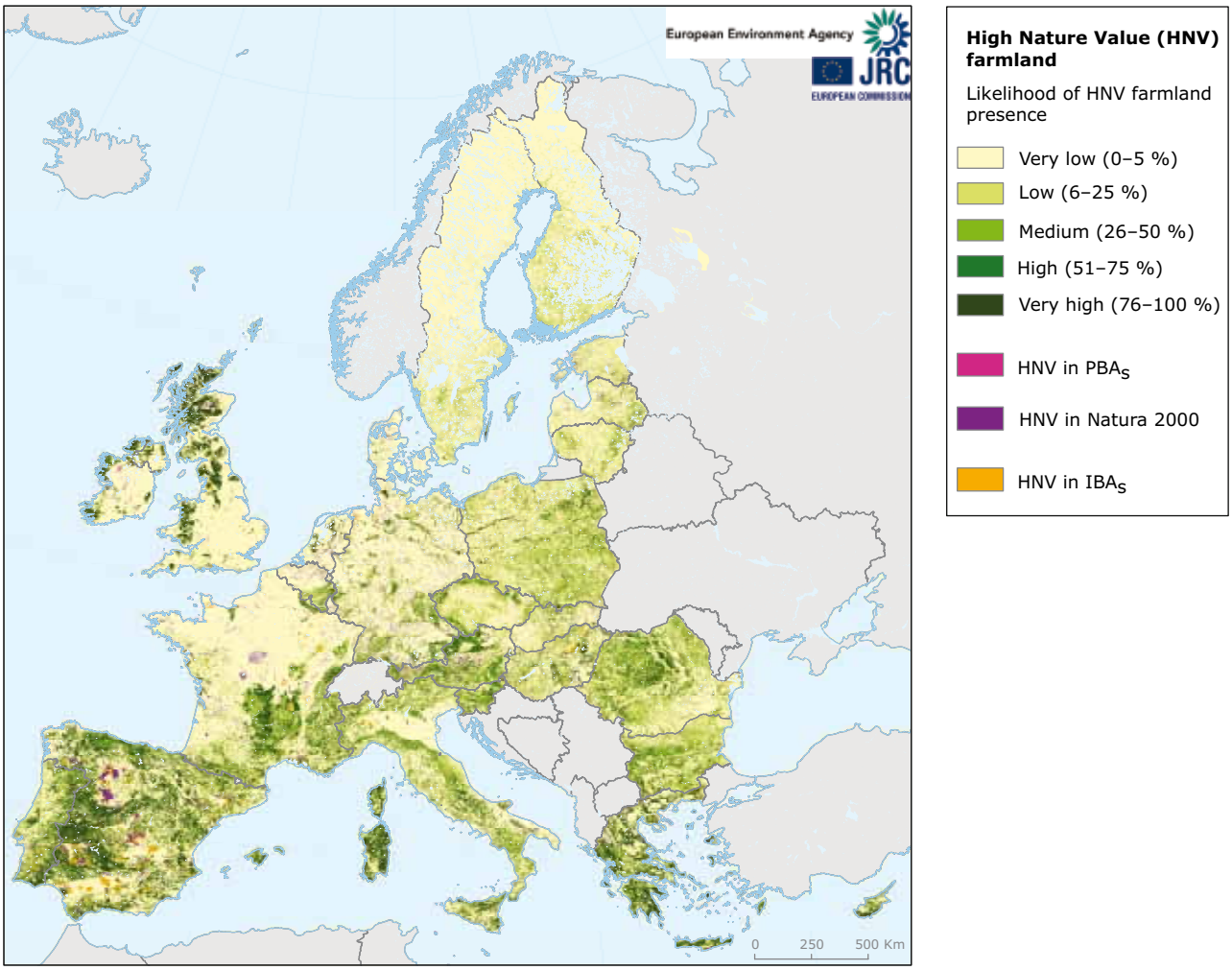
proposed two proxy approaches for identifying HNV farmland, based on land cover data (the Corine data base) and farm system data (derived from the Farm Accountancy Data Network — FADN). Currently land cover data are considered to provide the best proxy information on the distribution pattern of HNV farmland, whereas farm system data give information about the types and characteristics of the farms concerned and their estimated share of the agricultural sector. These two approaches were combined to develop an EU agri-environment indicator on HNV farmland under the IRENA operation (EEA, 2005).

In order to increase accuracy, the preliminary 2004 map was updated and refined on the basis of new land cover data, refined and regionally differentiated selection criteria, and additional biodiversity datasets. For a full presentation of the approach, see Paracchini *et al.* (2008). The resulting map is reproduced below (Map 3.1).

The methodology used to generate this map draws heavily on Corine land-cover classes (CLC) that aim to represent semi-natural vegetation associated with low-intensity livestock raising. It is therefore best suited to capturing the distribution of Type 1 HNV farmland (predominantly semi-natural vegetation). However, some of the land recorded on Corine as semi-natural vegetation and shown on the HNV map may not be actually under grazing use. This can be the case particularly with scrubby and woody vegetation types, which are expected to have been grazed in the past, but the current use of which is not apparent from images.

Type 3 HNV farmland (characterised by the presence of species of conservation concern) should

Map 3.1 Likelihood of presence of HNV farmland at EU level



Source: High Nature Value Farmland in Europe — An estimate of the distribution patterns on the basis of land cover and biodiversity data (Paracchini *et al.*, JRC-IES and EEA, 2008). http://agrienv.jrc.ec.europa.eu/activities_HNV.htm.

be quite well captured through the incorporation of data on bird and butterfly populations. However, Type 2 HNV farmland consisting of small scale mosaics, and/or with a high density of small semi-natural features, is difficult to capture through this approach.

The map should be taken as showing the likelihood of presence of HNV farmland and an estimate of its distribution at the European scale. Because of limitations in the data sources, there are several different uncertainties in the various parts of Europe. In some cases there will be overestimates, while in others the map will underestimate the HNV situation on the ground. Precise mapping will be possible only with further development of national data sets and/or by including information on farming systems and practices.

The map illustrates that HNV farmland is most strongly present in the southern and eastern regions of the EU, and in the north-west. The highest concentrations are found in the more marginal regions with predominantly poorer production conditions for farming. In fact, in many of these regions HNV farmland is the predominant land use.

Initial estimates of the share of farmland that is HNV in each of the 27 Member States are shown in Table 3.1. The calculations were made at NUTS 2 level. The area of farmed land is calculated as the total land area belonging to the CLC agricultural classes (the 11 'agricultural' classes of Corine level 3 and parts of class 3.2.1 'natural grasslands') plus identified HNV farmland outside these classes. The results for each NUTS 2 area were then summed up per Member State to derive national figures.

Using Corine to calculate the total farmed area provides a better basis for comparison than the UAA figures derived from agricultural statistics, as the same data source is thus used for calculating both the HNV farmland and the total farmland areas. As explained above, UAA statistics often exclude some types of farmland, such as common grazing, which cover large areas in some countries, and therefore contribute a significant proportion of the HNV farmland area.

As shown in column 5 of Table 3.1, the estimates of the proportion of farmland that is HNV range from less than 10 % in some Member States, to well over 50 % in several others, particularly those in southern Europe. The average value for the EU as a whole is around 30 % of farmland being considered as HNV.

Table 3.1 also shows the often poor correlation between UAA and the total farmed area estimated from Corine, with large differences apparent for many Member States. The Corine approach tends to overestimate agricultural areas ([16]). Table 3.1 provides an overview of the relationship (column 4) between the agricultural area as estimated based on CLC (column 2) and that derived from UAA (column 3) per Member State, and should guide the user in better understanding the results presented in column 5 on the area share of HNV farmland as calculated from the JRC/EEA estimates on distribution across the EU-27.

The aim of estimating HNV farmland distribution at European level according to a standardised method is primarily to gain insight into the current status, as well as enabling analysis of European trends and targeting of relevant policy instruments ([17]). This question is addressed in Chapters 6 and 7.

([16]) For further information, see Paracchini *et al.*, 2008.
([17]) However, the current JRC/EEA approach cannot be used to delimit HNV areas at regional or national level.

Table 3.1 HNV farmland — estimated shares per country

Country (*)	HNV farmland area, JRC/EEA study	Agricultural land (CLC agricultural classes + HNV areas)	Utilised agricultural area UAA (EUROSTAT)	Agriculture land CLC compared to UAA	Area share of HNV farmland
	(1)	(2)	(3)	(4)=(2)/(3)	(5)=(1)/(2)
Belgium	347 960	1 786 942	1 385 580	129 %	19 %
Bulgaria	2 509 989	6 734 217	2 729 390	247 %	37 %
Czech Republic	1 043 973	4 950 869	3 557 770	139 %	21 %
Denmark	172 267	3 446 150	2 707 690	127 %	5 %
Germany	3 162 699	21 607 362	17 127 350	126 %	15 %
Estonia	380 879	1 695 820	828 930	205 %	22 %
Ireland	1 162 594	5 777 390	4 443 970	130 %	20 %
Greece	5 349 572	9 122 263	3 583 180	255 %	59 %
Spain	18 986 960	34 038 906	26 085 390	130 %	56 %
France	7 797 145	35 311 870	27 856 320	127 %	22 %
Italy	6 127 030	18 359 587	13 062 260	141 %	33 %
Cyprus	342 045	637 043	151 500	420 %	54 %
Latvia	568 400	2 853 680	1 432 680	199 %	20 %
Lithuania	627 202	4 159 700	2 792 040	149 %	15 %
Luxembourg	12 871	142 632	127 510	112 %	9 %
Hungary	1 906 124	6 822 877	4 555 110	150 %	28 %
Netherlands	368 788	2 621 717	1 958 050	134 %	14 %
Austria	2 447 292	3 578 621	3 266 250	110 %	68 %
Poland	4 813 243	20 231 887	14 754 880	137 %	24 %
Portugal	2 900 462	5 035 890	3 736 140	135 %	58 %
Romania	4 860 372	14 433 920	13 906 700	104 %	34 %
Slovenja	591 314	754 255	485 880	155 %	78 %
Slovakia	547 582	2 485 476	2 159 900	115 %	22 %
Finland	1 330 797	2 967 068	2 215 970	134 %	45 %
Sweden	1 136 030	4 759 869	3 192 440	149 %	24 %
United Kingdom	5 165 466	19 368 468	13 174 690	147 %	27 %
Total	74 659 056	233 684 479	171 277 570	136 %	32 %

Note: * Malta not included.

Source: High Nature Value Farmland in Europe — An estimate of the distribution patterns on the basis of land cover and biodiversity data (Paracchini *et al.*, JRC-IES & EEA, 2008). http://agrienv.jrc.ec.europa.eu/activities_HNV.htm.
UAA data from EUROSTAT.

4 Socio-economic considerations of biodiversity on farmland

4.1 Why the economics of HNV farming matter for biodiversity

It is widely acknowledged that all biodiversity on farmland matters but that certain species and habitats are under particular threat. Many of these are associated with HNV farmland which can be maintained only via appropriate management. In this context it is important that the major challenges of socio-economic viability that HNV farming faces are investigated. As intensive farming expands and increases its yields with a corresponding drop in food prices, and as incomes rise in the wider economy, it becomes harder to earn a living from low-intensity farming on marginal land. Across large areas of the EU's most fragile rural landscapes HNV farming faces stark choices between abandonment and intensification.

One of the reasons that farmers are driven to intensify production is that low-intensity and more traditional farming systems generate insufficient return on labour, and thus inadequate incomes. When low-intensity farming becomes economically unviable, it is either abandoned or intensified. Intensification and abandonment are, in effect, two sides of the same coin. In the case of HNV farming, both paths will lead generally to a decline in biodiversity.

When HNV farms are abandoned, some of the land may be taken over by other farmers and managed in a similar way. However, much is left to natural succession, is directly afforested, or is converted to more intensive uses. As a result, landscapes rich in biodiversity and culture, beneficial for soil conservation and climate change, and resistant to forest fires, are being lost to scrub, dense forest or new intensive uses, such as irrigated cropping.

A key issue, therefore, is the income per labour unit generated by low-intensity farming on generally poor land, compared with other types of agriculture, and with other employment opportunities that farmers may consider, as well as climatic and biophysical conditions for farming. The net incomes associated with different types of agriculture are influenced to a significant extent by support payments received from the CAP. As discussed in later sections, the distribution of Pillar 1 payments can vary considerably when considered on a per hectare and per labour unit, with the lowest-productivity farming systems tending to be the least rewarded. Grants for afforestation and for investments in new intensive land uses, including irrigated crops, also act as incentives to farmers to give up low-intensity, low-income farming systems.

In addition, there are powerful non-policy factors affecting the situation of HNV farming, especially socio-economic and technological developments. For example, the future of extensive livestock farming systems in many marginal regions is handicapped by the unattractive socio-economic conditions for farm workers, especially shepherds.

4.2 Data on the economic situation of HNV farming

Very few hard data exist to show the income situation of HNV farming, as research has tended not to focus on this question.

One relevant piece of research is the MEACAP project ([18]), which uses the FADN ([19]) data base to analyse net incomes and CAP support for farms meeting basic characteristics associated with HNV farming. The data used relate to the CAP pre-2005, when most Pillar 1 payments were still coupled to production. Although this has changed since 2005, most of the EU-15 Member States continue to apply Pillar 1 using the historic model (as explained in Chapter 5), so that the broad distribution of payments between farms and farm types is assumed to have remained similar to that pre-2005.

The MEACAP method relies on the assumption that low-input use is an important condition for farming to have positive effects on biodiversity.

([18]) EU project SSPE-CT-2004-503604 'Impact of Environmental Agreements on the CAP' http://www.ieep.org.uk/research/MEACAP/MEACAP_Home.htm.
([19]) Farm Accountancy Data Network. For further information: http://ec.europa.eu/agriculture/analysis/fadn/index_en.htm.

Other characteristics such as land-use mosaics and presence of semi-natural vegetation cannot be derived from FADN data.

The analysis groups farms into four categories, adapting the classification developed by Andersen *et al.* (2003, p. 24). The classification is based on monetary inputs for fertiliser, pesticides and feed concentrates, and on livestock density per hectare. The four categories are:

1) HNV-min = farms that meet a relatively strict set of criteria, in other words very low livestock densities and use of inputs. The assumption is that all these farms will be HNV, but that the criteria inevitably exclude some farms that, although more intensive, also may be HNV.

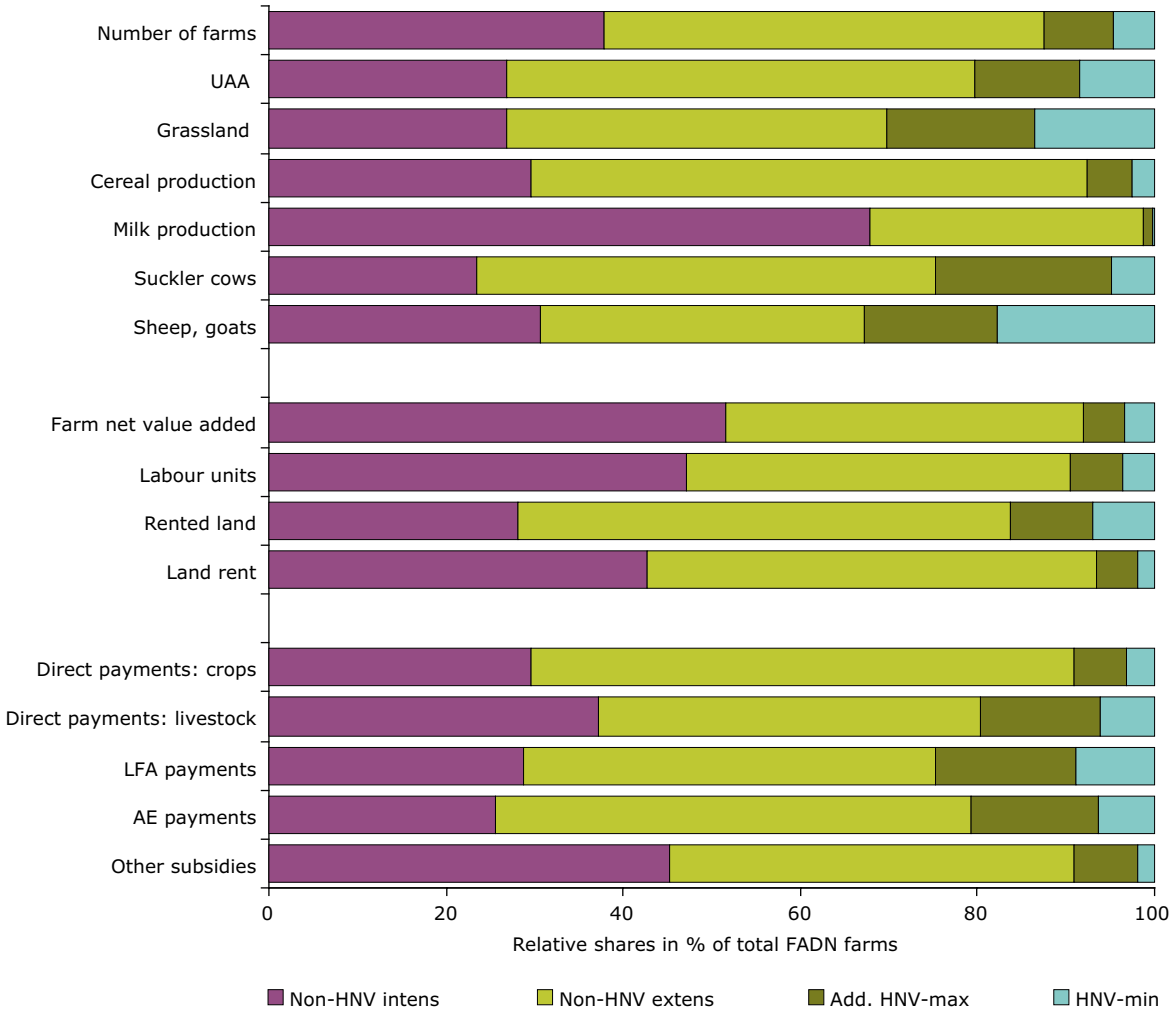
2) Add. HNV-max = by relaxing the intensity criteria, more farms are brought into the HNV set. These are termed Additional farms. The criteria used for this category aim to capture all potentially HNV farms, while inevitably also including some farms that are not HNV.

3) Non-HNV extensive = the less intensive group of non-HNV farms.

4) Non-HNV intensive = the more intensive group of non-HNV farms.

Figure 4.1 from the MEACAP study shows the proportion of HNV farms within the agricultural sector at EU-15 level as represented in FADN, for some relevant indicators. According to these

Figure 4.1 HNV farms within the agricultural sector



Source: Based on FADN data for EU-15 in the year 2003.

results, about 12.5 % of all FADN farms would be HNV farms, managing about 20 % of the Utilised Agricultural Area (UAA) represented in the FADN data.

HNV farms manage a relatively high share of the grassland in EU-15 (30 % of the total grassland area as represented in FADN). Only a very small part of cereal production (about 8 %) and milk production (< 2 %) emerge as HNV. However, a large proportion of suckler cow production and of sheep and goat production (> 25 % and 33 % of the total numbers, respectively) can be considered HNV on the basis of the assumptions made.

The FADN analysis indicates that HNV farms achieve a comparatively low net farm income (farm net value added) compared with non-HNV farms. Low land rental payments per hectare indicate that the productivity of HNV farmland is considerably below the sector average. In other words, HNV farms tend to occupy more marginal land.

Some other studies, such as Turner *et al.* (2008), show that farm types which can be expected to include a high proportion of HNV farming (i.e. low-intensity livestock farming on marginal land) often have negative net incomes even with CAP support, when family labour is costed at standard farm labour rates. In other words, the wages earned by family farm workers may be well below the legal minimum.

The economic return on labour therefore is a key issue. HNV farming will only continue if on-farm labour is sufficiently remunerated to provide a net income that is comparable to that available from other sectors of the rural economy. In many areas, HNV farming operates on a very small scale. Individual holdings cannot be expected to generate a full-time income, but even part-time farming must make economic sense if it is to have a sustainable future. In other words, the part-time activity itself must produce a positive return on labour. Any activity that does not generate a satisfactory return on the hours of labour put in by the farmer will not be continued in the longer term.

The example shown in Box 4.1 illustrates how the return on a farmer's labour may be quite unsustainable, even with current CAP support. The example is of a small sheep flock as might be kept by a part-time farmer or 'crofter'. Part-time farming of this sort is a typical land use in the Western Isles of Scotland and is often associated with HNV farmland. While the net margin of this sheep flock is negative in the absence of CAP support, the combination of Pillar 1 and LFA payments result in a return of approximately EUR 450 to pay for the farmer's own labour input, estimated at 200 hours for the year, producing an hourly remuneration of EUR 3.25. To meet the UK legal minimum wage, CAP income support would need to be double the present rate in this case.

In this context, the move towards decoupled payments is extremely relevant. Fully decoupled payments are seen increasingly as separate from the farming business by farmers and economists. As the farming activity is shown to be ever more clearly a loss-making operation, giving up this activity while continuing to receive decoupled payments will become an economically attractive option.

Box 4.1 Estimated income situation of a small sheep flock (100 ewes) in Western Isles, Scotland (assumes farm keeps same stock as in SPS reference years)

Net margin per 100 ewes	– 2150 EUR
CAP support payments (SPS + LFA), per year	+ 2600 EUR
Income to pay for farmer's labour for one year	= 450 EUR
At an estimated 200 hours per 100 ewes	= 3.25 EUR/hour
UK legal minimum wage	= 7.00 EUR/hour

Source: EFNCP, own calculations using data from Quality Meat Scotland ([20]) and SAC ([21]).

([20]) Cattle and sheep enterprise profitability in Scotland, 2008.

([21]) Farm Management Handbook 2007–2008**.**

4.3 HNV farming and CAP payments

The MEACAP study shows that, in terms of CAP support, HNV farms receive less than other farms from crop-related Pillar 1 payments due to their lower share of arable land. Direct payments for livestock are more or less proportional to the HNV share of UAA. However, for some countries this UAA calculation excludes off-farm grazing land, such as common grazing that may cover very large areas. The case studies (Chapter 7) show that low-intensity livestock farms generally receive considerably lower support per hectare and per Annual Work Unit (AWU) from Pillar 1, compared with more intensive livestock farms.

With about 25 % of Less Favoured Area (LFA) payments and about 20 % of agri-environmental (AE) payments, MEACAP suggests that HNV farms receive a slightly larger proportion of these Pillar 2 subsidies compared to the number of farms or share of UAA.

Data analyses at farm level confirm the relevance of AE and LFA payments as part of net farm income, substantially complementing Pillar 1 direct payments and other subsidies in some Member States. In Austria, Finland and Sweden, AE and LFA payments reach a high proportion of total net farm income, especially in HNV farms (50 % in Austria, 70–80 % in Sweden).

In France, Germany, Ireland and the United Kingdom, HNV farms from the FADN selection, particularly in the HNV-min group, depend considerably on AE and LFA payments. Of course this does not mean that all HNV farms necessarily receive such payments. Very low proportions of Pillar 2 payments of HNV net farm income are found in Spain, Italy and Greece.

Figure 4.2 illustrates the higher dependency of HNV farms on subsidies, compared to non-HNV farms. Subsidies in total are equivalent to, or exceed, the net farm income of HNV farms e.g. of Germany, the United Kingdom and France. Without CAP payments these HNV farms would not generate any farm income (thus the bar exceeds the 100 % line representing the total net farm income).

These farms depend not only on Pillar 2 payments, but also on the receipt of Pillar 1 direct payments, especially in the HNV-max group. While in many Member States HNV farms depend especially on livestock related Pillar 1 direct payments, in Spain they depend more on crop payments due to the fact that many extensive arable farms are HNV according to the assumptions of the analysis.

MEACAP shows that before 2005 the total amount of CAP payments per hectare UAA on the EU-15 average is lower on HNV farms compared in particular to intensive non-HNV farms. In Germany and Austria, there is no major difference in total CAP payments per hectare, but rather regarding the composition of those payments, with a higher importance of AE and LFA payments on HNV farms and lower amount of Pillar 1 payments. In other Member States, notably the United Kingdom and Spain, HNV farms and especially those in the HNV-min class receive significantly less total support per hectare.

For the FADN farms, the MEACAP analysis suggests that on average in the EU-15 the net income per labour unit including CAP payments is lower in HNV farms compared to non-HNV farms, and considerably lower in the case of HNV-min farms in France. In some Member States, net income per labour unit in HNV farms is higher than in non-HNV farms, indicating that, with the help of Pillar 2 payments, HNV farms may be economically viable in terms of labour remuneration. However, the analysis in Chapter 6 suggests that this is not the current situation for most HNV farming in most Member States (EU-25).

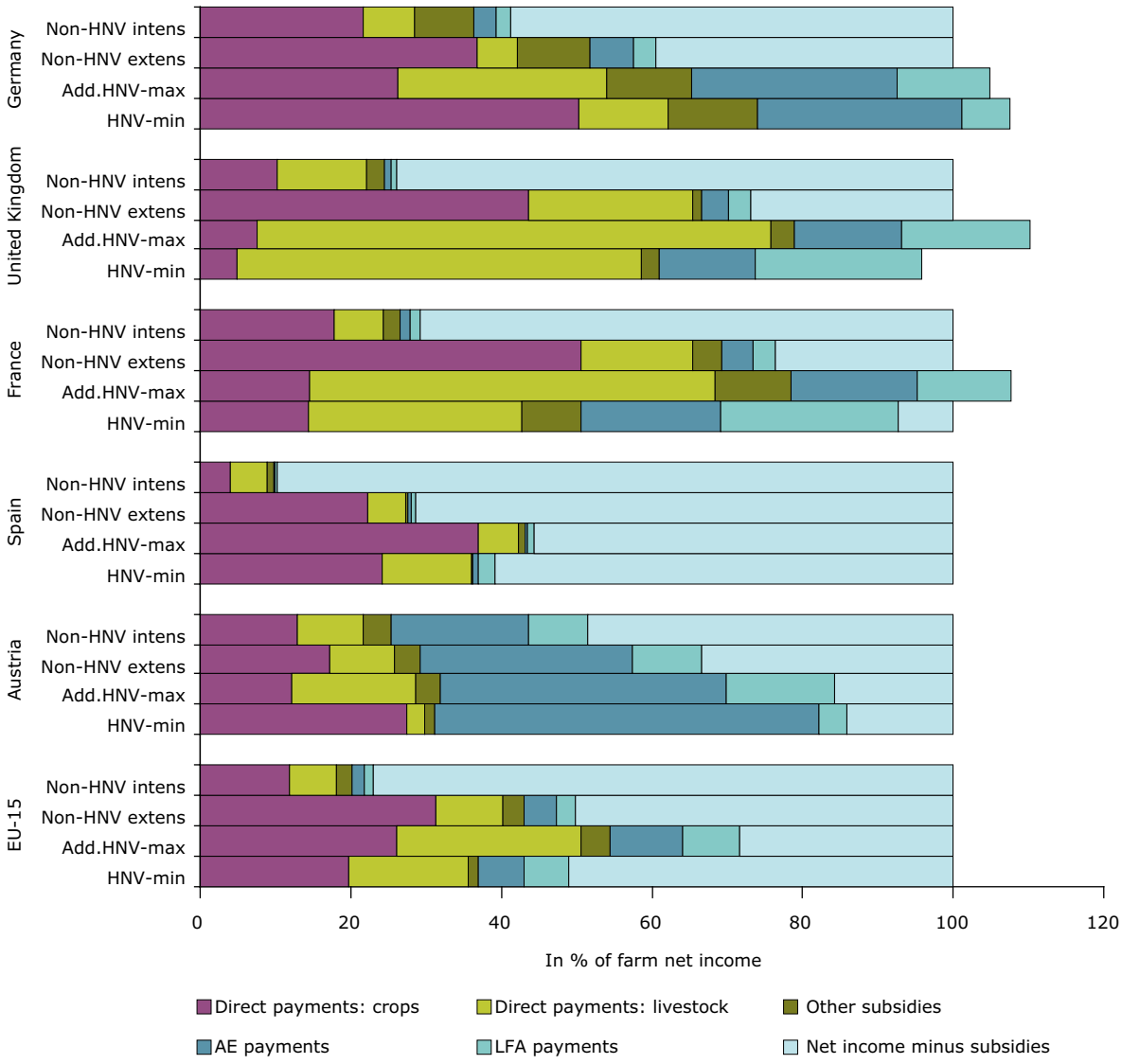
The overall picture shown by the MEACAP data and analysis is summarised in Box 4.2.

It should be noted that these results must be taken with considerable caution, due to the limited coverage of FADN data. Particularly relevant is the exclusion from FADN of the economically smaller farms. A large proportion of HNV farms can be expected to be found in this category, as is illustrated by the case study from Basse-Normandie, below.

A study of CAP payments distribution in the French Basse-Normandie region was carried out as part of the France case study (see Chapter 7). The study distinguishes those farm types that are most likely to be HNV from those that are least likely, on the basis of their agronomic characteristics, in accordance with a previous case study for the European Commission on HNV farming indicators (IEEP, 2007a).

Critical HNV criteria in Basse-Normandie were for a large proportion of the farm's forage area to be under permanent pasture, and for livestock

Figure 4.2 CAP payments as percentage of net farm income in HNV and non-HNV farms



Source: From Osterburg *et al.*, 2008.

Box 4.2 Key points on the income situation of HNV farms (EU-15, 2003) — results from the MEACAP analysis

- HNV farms have lower net incomes than non-HNV farms. In many cases, HNV farms have a negative net income if CAP support is excluded.
- HNV farms receive lower levels of support from the CAP than non-HNV farms, especially from Pillar 1.
- In some cases, the net income on HNV farms is negative even when CAP support is included. Such farms are sustained because family farm labour is costed below the legal minimum wage.
- Higher levels of support are needed if HNV farms are to be maintained. In a minority of Member States, Pillar 2 is used to provide this support (since the MEACAP study, Article 68 might also be used for this purpose).

density to be at or below about 1 LU ([22])/ha, as this generally coincides with grassland in an approximately semi-natural state and with considerably higher floristic diversity than under more intensive use.

The farm type that exhibits the clearest HNV characteristics is the non-professional type, mostly small, part-time mixed holdings with sheep. These farms have a very high proportion of permanent grassland and livestock densities average only 0.7 LU/ha. They manage 17 % of the permanent grassland in the region and have 50 % of the region's sheep (Merlot *et al.*, 2004).

Beef farms and low-intensity dairy farms based on permanent pasture generally also have HNV characteristics, although in some cases the stocking densities are higher than the optimum from a biodiversity point of view (e.g. average 1.22 LU/ha for grassland dairy).

Maize-based dairy farms, sheep farms and crop farms were considered generally not HNV, due to their lower proportion of permanent grassland and high stocking densities (> 1.6 LU/ha), and consequently low biodiversity.

Table 4.1 illustrates the estimated support received by each farm type, calculated for the holding, and also per hectare (UAA) and per Annual Work Unit (AWU). Support payments are those applicable in 2007. For the purposes of the calculation, all payments including SPS are allocated to the relevant production sectors, although in practice most are at least partially decoupled. Under Pillar 2, only the grassland premium scheme PHAE (*Prime Herbagère Agri-Environnementale* — see Chapter 7) is included. LFA support is excluded, as the eligible area in the region is very small. Agri-environment schemes other than PHAE are not included, as such schemes are hardly implemented in the region under analysis.

Potentially HNV farm types are shown in green, non-HNV types in yellow. Decoupled farm payments are included in the calculations. The calculations show that the differences between levels of support the various farm types can receive are extremely large. The most supported farm type receives 5.7 times more per AWU than the least supported, and 3.5 times more per hectare.

The most highly supported farm types, in terms of payments per hectare and per AWU, are the suckler beef and intensive arable farms. At first sight, it might appear positive from an HNV perspective that beef farms are highly supported. However, because of the livestock density thresholds used for targeting the beef premia, this support is weighted towards holdings that stock up to 1.4 LU/ha, which is significantly above the HNV optimum of 1 LU/ha for this region. The difference may appear small, but is of critical importance for the biodiversity of farmland (IEEP, 2007a). The same concern applies more widely in France (see Chapter 7) and in other Member States (IEEP, 2007b).

In the dairy sector, intensive maize-based farms receive more than double the support received by the low-intensity grass-based dairy farms, in EUR/AWU.

The farm types eligible for the lowest levels of support include two types of farm with HNV characteristics: the non-professional farms, and

Table 4.1 Estimated payments (2007) that can be received by different farm types in Basse-Normandie

	Crop payments (EUR)	Dairy payments (EUR)	Beef/sheep Premia (EUR)	PHAE (grassland premium)/ EUR)	EUR/holding	EUR/ha UAA	EUR/Annual Work Unit (AWU)
Non-professional	525	-	642	572	1 739	183	3 622
Grassland dairy	1 172	923	727	2 484	5 305	136	3 467
Beef	1 858		20 286	3 566	25 711	476	19 045
Maize dairy	12 888	1 917	968		15 773	225	7 583
Sheep	3 151		4 398		7 549	184	4 934
Crops	39 816				39 816	404	20 419

Source: EFNCP based on data in Merlot *et al*., 2004.

([22]) Livestock units.

low-intensity grassland dairy farms. Professional sheep farms (mostly intensive in this region, and therefore not HNV) also receive a relatively low level of support, reflecting the historically low level of subsidies to the sheep sector in the EU, as compared with beef (EFNCP, 2006).

More analyses of the national patterns of CAP support distribution in France are presented in Chapter 7, with broadly similar conclusions as those reached by this regional study.

5 EU Policies relevant to farmland biodiversity

This chapter looks at the EU policies that are most relevant to the conservation of biodiversity on farmland. On the one hand are the policies that set out the EU's objectives in this area (Biodiversity Strategy) and that establish specific aims and mechanisms for conserving habitats and species (Birds and Habitats Directives). On the other hand are the policies that directly affect biodiversity on farmland and that thus have the potential to drive the achievement of conservation objectives on farmland. Here the CAP has been the dominant policy until now.

5.1 Biodiversity Strategy and subsequent policy commitments

The EU has overarching biodiversity objectives relating to agriculture, and specifically to HNV farming and farmland. The Biodiversity Strategy ([23]) adopted in 1998 summarised the priorities concerning agriculture and biodiversity as shown in Box 5.1.

Point a) highlights the importance of supporting the low-intensity farming systems and practices that are essential in Europe for maintaining semi-natural habitats and preserving biodiversity. Point b) stresses the need to also reduce the negative impacts of intensive agriculture.

The Biodiversity Strategy goes on to establish amongst its objectives for agriculture:

'*To promote and support low-intensive agricultural systems, especially in high natural value areas*.'

As biodiversity has continued to decline, EU objectives have gradually become more explicit and quantified. At the Göteborg European Council of 2001, the EU governments committed themselves to 'halt the decline of biodiversity [in the EU] by 2010'. This commitment to halt biodiversity decline was reinforced by the Kyiv Resolution at the 5th Environment for Europe Ministerial Conference, May 2003.

Supporting HNV farming is recognised as a crucial plank in the campaign to halt biodiversity decline by 2010. Under the Kyiv Resolution, the European Ministers of Environment agreed more concrete targets specifically concerning HNV farmland:

Box 5.1 EU Biodiversity Strategy priorities for agriculture — bold added to wording most relevant to HNV farming

a) The maintenance and further development of farming with a view to optimising its positive impact on the conservation and sustainable use of biodiversity; recognising and supporting the role of farming communities in the creation and maintenance of semi-natural habitats: **taking into consideration the positive role of non-intensive agricultural systems for wildlife and wild plants habitats**; and optimising the positive impacts of agricultural practices and production systems on the conservation and sustainable use of biodiversity. **In particular, the maintenance of some well established traditional methods of extensive agriculture, sometimes in marginal areas, is essential to preserve the value that such areas have for biodiversity**.

b) The mitigation of negative impacts of agricultural activities on biodiversity. In particular, certain land use practices, the use of agrochemicals, the overgrazing and pollution consequences of excessive livestock intensity, monoculture, the elimination of wetlands and hedgerows, and the use of heavy machinery, has serious effects on biodiversity. Pesticides, for example, can have a negative effect on the conservation of biodiversity not only in the place where they were applied but also in other ecosystems (i.e. by pesticide run-off).

([23]) COM(1998) 42 final.

- 'By 2006, the identification, using agreed common criteria, of all high nature value areas in agricultural ecosystems in the pan European region will be complete.'

- 'By 2008, a substantial proportion of these areas will be under biodiversity-sensitive management by using appropriate mechanisms such as rural development instruments, agri-environmental programmes and organic agriculture, to *inter alia* support their economic and ecological viability.'

To-date, some progress has been made in achieving the first of these commitments. Joint work by EEA and JRC has helped to estimate the distribution of HNV farmland at the EU scale. Several EU Member States have also made progress with work at the national level. However, the lack of suitable data bases and of agreed criteria still hampers the fulfilment of the 2006 target.

Without having identified the full range of HNV farmland, it is not possible to determine whether a 'substantial proportion'of this land is under biodiversity-sensitive management or whether mechanisms such as rural development programmes are being used at a sufficient scale to achieve this goal. The role of rural development programmes in supporting the economic and ecological viability of HNV farming is addressed in more detail below.

5.2 Natura 2000

Natura 2000 is the centrepiece of EU nature and biodiversity policy. It is an EU-wide network of protected sites aiming to assure the long-term survival of Europe's most valuable and threatened species and habitats. The legal basis for the Natura 2000 network comes from the Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC). Their Annexes contain habitats and species of European importance. Based on the distribution of these species and habitats, a selection of representative sites is designated, where measures should be taken to ensure a Favourable Conservation Status for the habitats and species that have justified their selection.

A large proportion of the Natura 2000 network is under farmland, which generally can be assumed to be of High Nature Value. In many cases, this farmland will consist of semi-natural habitat types listed in Annex I of the Habitats Directive (for example, hay meadows and various sorts of land used for grazing). In other cases, it will be farmland that supports rare species, particularly from Annex I of the Birds Directive.

The indicator IRENA No. 4 indicates the proportion of Natura 2000 sites covered by targeted habitats that depend on a continuation of extensive farming practices. Results show that across the EU-27 targeted agricultural habitat types represent about 15 % of the terrestrial part of Natura 2000 sites.

Natura 2000 therefore is highly relevant to the EU's goals for the maintenance of HNV farming, especially in Member States and regions that have designated large sites under the Birds and Habitats Directives. Measures taken for the conservation of farmland habitats within these sites should make a considerable contribution to the goals for maintaining HNV farming, if implemented effectively and at a sufficient scale.

Conversely, support for HNV farming through agricultural policy can provide a vital complement to conservation objectives within the Natura 2000 network.

However, the HNV farming concept emphasises that biodiversity conservation goals in Europe will not be met only by protecting particular habitats or species, or designating certain areas for their management, such as Natura 2000 sites. We must also maintain the low-intensity land uses that favour the dynamics of natural processes and create opportunities for biodiversity to flourish across large, contiguous areas of land. Their maintenance on a large-scale provides essential scope for flora and fauna to adapt to climate change in a way that protected areas alone cannot do.

In a 2006 communication on halting biodiversity decline, the European Commission reinforced the importance of this approach, stating that:

- 'Natura 2000 and the conservation of threatened species will not be viable in the long-term without a wider terrestrial, freshwater and marine environment favourable to biodiversity. **Key actions include: optimising the use of available measures under the reformed CAP, notably to prevent intensification or abandonment of high-nature-value farmland, woodland and forest and supporting their restoration**' ([24]).

([24]) COM(2006) 216 final Communication from the Commission: Halting the loss of biodiversity by 2010 and beyond. Sustaining ecosystem services for human well–being.

In conclusion, Natura 2000 and the support to HNV farming in and beyond the ecological network are entirely complementary approaches.

5.3 Bioenergy policy and implications for farmland biodiversity

The ambitious EU bioenergy targets and associated public support at national level have created substantial extra production incentives for agriculture. This is likely to have a significant impact on a wide range of farming systems. Previous work by the EEA (2007) on the EU's agricultural bioenergy potential assumed that HNV farming should not change in extent and land use (intensity) for bioenergy production in Europe to be 'environmentally compatible'. Permanent grassland, extensive orchards, olive groves etc. were to be maintained, while harvesting of biomass for energy purposes was considered acceptable or even beneficial where it resembles traditional management approaches.

However, these assumptions are not considered achievable without a major policy effort. While certain environmental restrictions are associated with biofuel production in Europe, they are unlikely to prevent all potential negative effects of energy cropping on HNV farmland. In fact, with the experience of additional years in observing on-the-ground trends in the production of biomass for energy purposes, it becomes clear that trends observed so far give rise to serious concerns in this regard (e.g. Osterburg and Nitsch, 2007; DVL/NABU, 2007).

Considering that achieving EU biofuel and bioenergy targets for 2020 requires biomass production levels that exceed current production volumes by several hundred percent and that the global competition for biomass resources is likely to increase, a very significant impact on HNV farmland can be expected in the years to come. Given that most (bio)energy systems require large input volumes at constant flow it seems unlikely that the land use and management characteristics of low productivity HNV farming systems can be preserved if they are to substantially contribute to future bioenergy targets. However, economic and logistic factors, such as volume costs of biomass and proximity to markets, may mean that most energy cropping will be located in already intensively farmed areas.

Assuming that direct or indirect land use change is not induced, then the environmental impact of energy crops depends very much on the types of crops chosen as well as the pattern and intensity of the current land use they are replacing. The overall effect of the EU's 2020 bioenergy targets on HNV farming and farmland biodiversity in general are currently difficult to assess.

Overall, the increasing total output demands on agriculture are likely to lead to a general intensification of farming in Europe, with negative consequences for low-input and HNV farming systems. The availability of cheap by-products from biodiesel production in particular could make extensive (HNV) livestock systems even less competitive than currently. On the other hand, if planned well and supported by appropriate instruments the generation of energy from biomass could also become a new source of demand and hence income for some grassland systems that are currently abandoned. Productive wet grasslands, for example, could be integrated into biogas production systems, if suitable technologies are further developed and economic incentives are provided.

It is clear that the strong drive to increase bioenergy production will change European (and worldwide) farming. This carries significant environmental risks associated with increasing agricultural land use intensity, while some opportunities for more environmentally friendly land management also exist. No firm conclusions regarding HNV farming can be drawn at the moment but the effect of EU bioenergy policies on HNV farmland needs to be carefully monitored.

5.4 The Common Agricultural Policy (CAP)

5.4.1 Structure of the CAP

The CAP can be considered under two main components or 'Pillars', which break down as follows:

Pillar 1 with 100 % financing from the EU budget:

- Direct payments — income support payments for farmers paid through the Single Payment Scheme (SPS) or the Single Area Payment Scheme (SAPS). The clear majority of direct payments is now decoupled from production. In addition, these payments are subject to cross-compliance, which requires all recipients to observe specified environmental, food safety and animal welfare conditions.

- Market interventions — including tariffs, export subsidies, intervention purchasing and output quotas.

Pillar 2 , partially co-financed by Member States and regions:

- Rural development measures 2007–2013 — a series of measures under the European Agricultural Fund for Rural Development (EAFRD) ([25]).

The amount of funding available for the different parts of the CAP is limited by ceilings established for each Member State ([26]). The relevance for HNV farming of measures under the two Pillars is discussed below, following an overview of the contents of each Pillar.

5.4.2 Overview of Pillar 1

Recent CAP reforms have reduced the share of Pillar 1 expenditure in total CAP budget in favour of Pillar 2. However, the Pillar 1 clearly still dominates and within it, direct payments take the lion's share in the budget. Since the CAP reforms of 2003, there are several different types of Pillar 1 direct payment. The main variations are roughly described below.

SPS (Single Payment Scheme)

In the EU-15, most of the support previously provided under the main CAP regimes (arable crop area payments, livestock headage payments, olive production subsidy, etc.) is now merged in this single annual payment to farmers. The payment is not linked to actual production, hence it is called a 'decoupled' payment. Payments are calculated on the basis of the amounts received by farms from the relevant Pillar 1 regimes (e.g. arable, beef, olive oil) in reference years 2000–2002. There are two different ways of doing this: the historic model, and the regional flat-rate model.

Under the historic model, each farmer's SPS entitlement is calculated on the basis of the livestock headage or hectarage of crops farmed by that farmer in the reference years. To receive SPS payments on this basis, a farmer must be managing at least the number of hectares that justified the payments received in the reference years. In most Member States, SPS entitlement rights can be traded and claimed on different land from that which justified the support in the first place. Thus a given amount of SPS is not necessarily paid on the same land, or land under the same type of farming use, as the pre-2003 payments that originally made up this amount of SPS entitlement.

As illustrated in later Chapters, the amount of SPS paid per hectare of farmland can vary enormously, depending on the CAP regime that justified the payment in the first place. Nine of the EU-15 Member States, plus Scotland and Wales in the United Kingdom, apply the historic model of SPS entitlements. See Map 5.1.

Under the regional flat-rate model, the total amount of payments under the relevant Pillar 1 regimes paid in a given region in the reference years is converted into an average amount of entitlement per hectare of eligible farmland. In principle, all farmland thus receives the same amount of payment per hectare, although this may be differentiated so that some types of land, such as permanent grassland, receive higher or lower per-hectare payment entitlements than other types. Only Germany, Finland and England (in the United Kingdom) have applied the regional flat-rate model, in each case involving a transitional period from the historic model. Three Member States and Northern Ireland (in the United Kingdom) make SPS payments using a mix of the historic and regional flat-rate models to determine farmers' entitlements.

SAPS (Single Area Payment scheme)

The SAPS is a direct payment system, introduced specifically for the EU-12. Payments are on a flat-rate basis per hectare of farmland for each Member State, within a national budget ceiling. Supplementary payments may be made from national funds, and in some cases different rates are paid for arable land compared with permanent grassland. The EU-12 Member States must move to the SPS system by 2013 ([27]) (Health Check decision ([28])).

([25]) During 2000–2006 rural development measures were co-financed by the different sections of the former European Agriculture Guarantee and Guidance Fund (EAGGF), depending on the measure and the region classified according to the EU Cohesion policy criteria. For further information: http://ec.europa.eu/agriculture/rur/index_en.htm.
([26]) See Annex 2, for CAP budgetary allocations and expenditures 2000–2006 and 2007–2013. And Annex 3, for a review on CAP intensity payments per hectare of UAA.
([27]) Malta and Slovenia have applied the SPS since 2007.
([28]) Political agreement reached on 20 November 2008 by the EU agriculture ministers on the Health Check of the Common Agricultural Policy. For further information: http://ec.europa.eu/agriculture/healthcheck/before_after_en.pdf.

Partially coupled payments (SPS only)

Due to fears that decoupling of payments could lead to the abandonment of production in some sectors, Member States have the option to implement certain coupled payments alongside the SPS. Under Regulation 1782/2003, coupled payments can be implemented for arable crops, suckler cows, sheep and goats. With the exception of the Suckler Cow Premium (which may be 100 % coupled), not all support can be paid in the form of coupled payments; rather, support must be split between SPS and the coupled payment, with the coupled proportion constituting a maximum of 50 % of the payment for sheep and goats, and 25 % for arable crops. Under Regulation 73/2009 implementing the Health Check decisions, the option to maintain coupled payments was confirmed for suckler cows, sheep and goats only. Coupled payments also continue to exist in certain smaller sectors (e.g. tobacco), although these are being phased out.

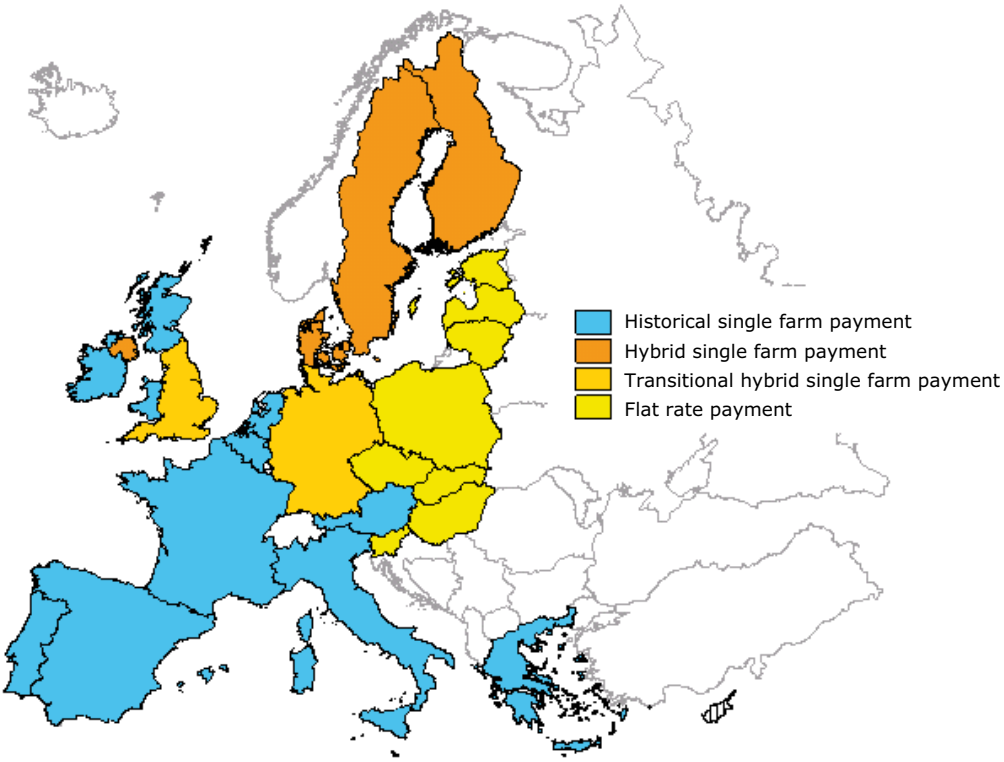
Article 69/68 targeted, recoupled payments

Under Article 69 of Regulation 1782/2003 (now replaced by Article 68 of Regulation 73/2009), Member States were able to retain by sector 10 % of their national budget ceilings for direct payments and use this money to fund measures for the environment or for improving the quality and marketing of products in that sector. These measures take the form of supplementary payments to producers within a sector who comply with certain conditions. To date, this option has been used by some Member States mainly to provide supplementary support within certain sectors, with a focus on quality of production.

The existing scheme became more flexible under the new Article 68 of Regulation 73/2009, following the 2008 Health Check decisions, as the money no longer has to be used in the same sector and the objectives are expanded, as follows:

- protecting the environment, improving the quality and marketing of products (as currently permissible under Article 69) or for animal welfare support;
- payments for disadvantages faced by specific sectors (dairy, beef, sheep and goats, and rice) in economically vulnerable or environmentally

Map 5.1 Models of SPS/SAPS implementation in EU-25



Source: Gay *et al.*, 2005.

sensitive areas as well as for economically vulnerable types of farming;

- supplements to existing entitlements in areas where land abandonment is a threat;
- support for risk assurance in the form of contributions to crop insurance premia;
- contributions to mutual funds for animal and plant diseases;
- countries operating the Single Area Payment Scheme (SAPS) system will be able to implement Article 68 schemes.

In order to comply with WTO Green Box conditions, support for a number of these purposes is limited to 3.5 % of national ceilings ([29]). This includes support for types of farming important for the protection of the environment, support to address specific disadvantages, and support for mutual funds. A number of exceptions have been agreed, however, where it can be assured that support will not be trade-distorting, most notably where Article 68 is used to fund agri-environment type measures beyond those included within Pillar 2. In these circumstances, up to 10 % of the national ceiling can be used, but these proposals will need to be formally approved by the Commission first, to check that they are WTO compliant. As with the rules for other direct payments, support provided under Article 68 is not subject to national co-financing.

To put Article 68 into a budgetary context, the resources represented by 10 % of the national ceilings for direct payments would, if used, be equivalent to between 10 % of Pillar 2 budgets in some of the new Member States, up to more than 100 % of Pillar 2 budgets in some other Member States, such as the United Kingdom and the Netherlands ([30]).

Cross-compliance

A further element of the CAP that has particular relevance for the payments under Pillar 1 is the cross-compliance rules that have been gradually strengthened over the last decade. These consist of Statutory Management Requirements (SMR) and locally-determined standards to ensure Good Agricultural and Environmental Condition (GAEC), as set out in Annexes II and III of Regulation 73/2009 ([31]).

The main focus of existing cross-compliance rules is the prevention of environmental damage from farm operations. Some GAEC rules also require the maintenance of certain types of management but these are not widely applied and cannot effectively preserve the more threatened types of agricultural biodiversity (Oppermann *et al.*, 2009). Therefore cross-compliance can only make a small contribution to maintaining the characteristics of HNV farmland.

5.4.3 Overview of Pillar 2

The concept of a second Pillar to the CAP was established in 1999 with the introduction of the Rural Development Regulation (RDR ([32])). This brought together a number of pre-existing CAP measures under one umbrella regulation. Under the RDR, Member States were required to implement measures through multi-annual rural development programmes (2000–2006) approved by the European Commission. EU funding in this programming period was from EAGGF-Guidance and EAGGF-Guarantee budgets.

The RDR subsequently became incorporated under a new European Agricultural Fund for Rural Development (EAFRD Regulation 1698/2005), as described in this section. The statistical analysis of Pillar 2 expenditure in Chapter 6 uses data from the 2000–2006 programming period under the RDR, before the introduction of the EAFRD regulation. In this earlier period, the range of measures available under RDR was largely the same as under EAFRD ([33]), including the agri-environment (AE) and Less Favoured Areas (LFA) aids (since 2007, termed 'natural handicap' measures) schemes that are included in the expenditure analysis.

([29]) http://cap2020.ieep.eu/.
([30]) http://cap2020.ieep.eu/.
([31]) Council Regulation (EC) No 73/2009 established the common rules for direct support schemes for farmers under the Common Agricultural Policy and established certain support schemes for farmers, amended Regulations (EC) No 1290/2005, (EC) No 247/2006, (EC) No 378/2007 and repealed Regulation (EC) No 1782/2003.
([32]) Council Regulation (EC) No 1257/1999 of 17 May 1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF).
([33]) Annex 4 includes a list of the Rural Development measures in both programming periods 2000–2006 and 2007–2013.

Under the EAFRD regulation, the Pillar 2 measures are organised according to three main themes, known as 'thematic axes'. These are:

Axis 1 — improving the competitiveness of the agricultural and forestry sector;

Axis 2 — improving the environment and the countryside;

Axis 3 — improving the quality of life in rural areas and encouraging diversification of the rural economy.

Member States and regions are obliged to spread their rural development funding between all three of these thematic axes and to identify and track its performance in respect of common indicators of programme results and impacts, under a Common Monitoring and Evaluation Framework (CMEF) for Pillar 2 rural development programmes ([34]).

A further requirement is that some of the funding must support projects based on experience with a fourth, more methodological 'axis' in EAFRD — the LEADER initiative. This approach to rural development involves the development and support of local, integrated territorial strategies designed and executed by local partnerships in order to address specific local problems and opportunities.

As with the RDR in the period 2000–2006, EAFRD is the most important source of EU funding with potential explicitly for promoting HNV farming (and other environmental objectives on farmland and in forests) over the course of 2007–2013. The funds are distributed according to seven-year Rural Development Programmes (RDPs), drawn up in accordance with EU guidelines by each Member State and/or region.

As with the programmes in 2000–2006, environmental objectives are only one of the range of EAFRD strategic goals, as are now set out clearly in the EC Strategy Guidelines for Rural Development programmes 2007–2013 (OJ L55/20, 2006). The other key goals include improving the competitiveness of farm and forestry businesses, promoting diversification of the rural economy and enhancement of the quality of life in rural areas. Member States are required to produce National Strategy Plans reflecting the priorities set out in the EU Strategy Guidelines.

The EU Strategy Guidelines explicitly encourage Member States to put in place measures to preserve and develop HNV farming (and forestry):

'To protect and enhance the EU's natural resources and landscapes in rural areas, the resources devoted to axis 2 should contribute to three EU-level priority areas: biodiversity and ***the preservation and development of high nature value farming*** *and forestry systems and traditional agricultural landscapes; water; and climate change'* (OJ L55/20, 2006, Emphasis added).

The objective established within EAFRD is not to delineate or designate particular areas as HNV, but rather to use rural development measures to maintain and develop HNV farming and forestry systems. This implies the targeting of support measures at farms that have the characteristics of HNV farming, as discussed in Chapter 3.

5.4.4 Relevance of Pillars 1 and 2 for HNV farming

The types of support most relevant to HNV farming can be summarised as:

- Broad economic support, in the form of direct income payments and/or investment aid, which could help to maintain or improve the viability of farms that meet basic HNV characteristics.

- Measures to protect and reward specific practices of HNV farming, and to foster adjustments to some practices, for example to promote a more ecologically-adapted grazing regime, or to favour certain species of conservation concern. A mix of horizontal and targeted zonal schemes is needed, to reflect the fact that some kinds of management are common to most HNV areas while others tend to be specific to particular geographical locations and farming cultures. As with broad economic support, this type of aid could include annual management payments and/or targeted investment aids.

In principle, a combination of existing measures from Pillars 1 and 2 would be able to provide these two types of support.

Overall, **Pillar 1** payments are intended to provide income support to farmers. There is no explicit aim to support HNV farming as distinct from farming

([34]) For further information, see: http://ec.europa.eu/agriculture/rurdev/eval/index_en.htm.

in general. There have been moves to integrate environmental concerns into the direct payment schemes, specifically through the cross-compliance mechanism. This requires all farmers receiving payments to comply with Statutory Management Requirements (SMR) and locally-determined standards to ensure Good Agricultural and Environmental Condition (GAEC), as set out in Annexes II and III of Regulation 73/2009 ([35]). However, this mechanism does not affect the relative amounts of support received by different land and farm types.

Nevertheless, Pillar 1 payments are differentiated according to a range of factors. Currently, in most EU-15 Member States they are paid at different rates depending on the actual or historic land use and farming type, and also depending on the Member State. Within certain measures (particularly the remaining coupled payments), mechanisms can be applied that serve to target the support payments exclusively to holdings that meet certain conditions. Examples include livestock density thresholds applied to the Suckler Cow Premium, and various conditions on supplementary payments offered under Article 68. Depending on their design, these mechanisms serve to steer this income support towards farms with specific characteristics.

Where fully decoupled payments are implemented on a regionalised basis, rather than using the historic model, payment levels may be differentiated by region and also according to land use, specifically in the case of permanent grassland. Potentially this approach could be applied to provide a higher level of payment to farms with a higher proportion of semi-natural grassland.

The particular relevance of Pillar 1 payments for the future of HNV farming, therefore, is that potentially these payments could be regionally differentiated (e.g. using the flat-rate approach but with average payments made more generous in these areas) or targeted by farming type (e.g. using Article 68 measures) to favour HNV farming systems, and thus to raise their income levels and relative economic viability by comparison with other areas and with current patterns of payment distribution. In practical terms, this would mean increasing the level of payment (for example, per hectare) in locations or situations where farming meets the basic HNV criteria. At the same time, it might be necessary to revise GAEC conditions for these areas in order to ensure that additional funding would not encourage inappropriate change to farm practices, as incomes are raised.

Under **Pillar 2** , there are several measures which have the potential to support the maintenance and development of HNV farming culture and practices through a more explicitly targeted approach. Under Axis 2, the Natural Handicap (NH) measure (previously LFA) has the potential to provide basic economic support to underpin the viability of HNV farming within the areas defined for the measure. This could imply the incorporation of HNV criteria into the aid eligibility rules applied by Member States. The measure is intended specifically to target the continued sustainable use of agricultural land within NH areas, so that the incorporation of some eligibility criteria reflecting sustainability considerations would seem appropriate in order to achieve this targeting. HNV criteria could be used to achieve a first level of NH aid targeting towards farms with broad HNV characteristics. This would not substitute for the need, in many cases, for agri-environmental measures to reward specific environmental practices which go beyond the reference level.

The agri-environmental measures are more appropriate for supporting particular farming practices which go beyond the reference level of GAEC as defined under cross-compliance. They support farmers who voluntarily engage in undertaking farming practices that are beneficial to the environment, through payments that cover the income foregone and costs incurred as a result of applying these practices.

The Natura 2000 measure provides financial compensation to farmers situated in Natura 2000 sites who are obliged via the site management plan to apply farming practices necessary to maintain or enhance biodiversity value. The payment calculation follows the same approach as agri-environment, covering the income foregone and costs incurred.

The potential contribution of non-productive investment support should also be considered, particularly where this is used to complement actions undertaken under the agri-environment and forest-environment measures (for example, aids to fund the creation of small wet areas such as ponds

([35]) Council Regulation (EC) No 73/2009 established the common rules for direct support schemes for farmers under the Common Agricultural Policy and established certain support schemes for farmers, amended Regulations (EC) No 1290/2005, (EC) No 247/2006, (EC) No 378/2007 and repealed Regulation (EC) No 1782/2003.

and scrapes within areas of permanent vegetation to favour wetland bird species).

Within Axis 1 and Axis 3 and 4, some measures have the potential to enhance the economic viability of HNV farming as well as to develop the skills and capacity of farmers which can have the same result, indirectly, or can directly improve the quality of their environmental management. Support for vocational training and for farmers' use of advisory services may serve to develop training in relationship to the marketing of products, better understanding of biodiversity needs or compliance with EU Regulations. Axis 1 and 3 also offer investment support to help farmers improve the viability of their businesses through modernisation or diversification, and to add value to their products, as well as support for producer groups to promote products under quality schemes. Axis 4 can support the preparation of local development strategies which could build upon the unique cultural heritage of many HNV areas. If carefully designed with biodiversity concerns in mind, all these Pillar 2 aids could make a useful contribution to the maintenance of HNV farming. At present, there is little evidence that this potential has been widely recognised or applied and indeed, some evidence to suggest that these measures may have the opposite effect, in cases where insufficient safeguards are applied to their design and delivery (BirdLife, 2009).

However, for all of these measures, some active targeting through policy is necessary to ensure that measures are designed to suit HNV farming systems, and HNV farm types participate appropriately in them. This could be pursued through a combination of pro-active advice and dissemination directed at HNV farm types, for example by a dedicated HNV farm advisory officer. Eligibility criteria can be used to give priority to HNV farm types. Effective targeting and participation in schemes by HNV farm types can be pursued through the model of Local Action Groups involving farmers, as provided for under the LEADER approach.

6 Distribution of CAP expenditure in relation to HNV farmland

6.1 Introduction to the analysis

In the analyses undertaken for the present report, expenditure under different elements of the CAP was converted to an average amount per hectare of farmland, either at Member State or NUTS 2 level.

The farmland area was calculated from the relevant Corine land-cover (CLC) classes, in order to be consistent with the approach used in estimating the area of HNV farmland (see Chapter 3). In addition, CLC brings in certain categories of land, such as common grazing, which are not counted as UAA in the FSS ([36]) statistics. These categories of land are relevant for the analysis since they often support large areas of high nature value. However, it must be also noted that the CLC approach tends to overestimate the total extent of farmland ([37]).

Average CAP expenditure per hectare of farmland in each Member State is then compared with the estimated proportion of farmland that is HNV (see Chapter 3, Table 3.1). The results are represented graphically in order to illustrate how the relationship between CAP expenditure per hectare and proportion of HNV farmland varies across the EU.

6.2 Distribution of Pillar 1 expenditure

National level

The financial reports of the CAP ([38]) provide annual information on the expenditure of the EAGGF-Guarantee section from 1999 to 2006 ([39]), for the EU-25 (Bulgaria and Romania joined the EU in 2007).

For Pillar 1 expenditure, the graphic analysis was carried out using the annual average of the years 2000–2002 in the case of the EU-15, as this is the reference period to calculate the average amount of payments for the application of the Single Payment Scheme (SPS) ([40]).

During these reference years, Pillar 1 payments were linked to specific production sectors. The analysis is, therefore, also undertaken separately for the two main groups of payments: crops and livestock. With the shift towards decoupled payments, a large proportion of expenditure no longer has a direct link to a particular crop or livestock type on the ground. Nevertheless, the starting point for current payment patterns is the reference period pre-2003; and for the purpose of the analysis it is assumed that agricultural land use has continued to follow a broadly similar pattern to that existing prior to the 2003 CAP reforms. The same applies to payment distribution, other than in the few Member States applying the flat-rate model.

In the case of the ten new Member States, the graphic analysis has been carried out using the average of payments in the 2004–2006 period (Malta, Bulgaria and Romania are not included in the analysis).

This analysis at Member State level does not allow a rigorous or detailed evaluation of Pillar 1 expenditure in relation to HNV farmland. Rather, it provides an initial and very general picture of current patterns across the EU. There is no apparent statistical relationship between the level of Pillar 1 expenditure in a Member State and the proportion of HNV farmland.

The results presented in Figure 6.1 illustrate that the EU-10 have a far lower average expenditure under Pillar 1 than the EU-15. There is also relatively little variation in average expenditure per hectare across the EU-10. Thus the EU-10 appears in a group at the bottom half of the graph. They are also grouped closely in terms of HNV farmland, with the exception of two Member States. The EU-15 Member States are far more scattered across the graph, both in terms of average Pillar 1 expenditure, and in the proportion of HNV farmland.

There tend to be higher rates of expenditure per hectare in Member States with a lower proportion of

([36]) Farm Structure Survey — Eurostat.
([37]) For further information see Paracchini *et al.*, 2008.
([38]) http://ec.europa.eu/agriculture/fin/finrep_en.htm.
([39]) From 2007 onwards, it has been replaced by the European Agricultural Guarantee Fund (EAGF).
([40]) Art. 37–38, Regulation (EC) No 1782/2003 of 29 September 2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers. Replaced by Regulation (EC) No 73/2009.

HNV farmland, and vice versa. The three Member States with the highest average Pillar 1 expenditure are amongst those with the lowest proportions of HNV farmland; while the group of Member States with the higher share of HNV farmland are towards the lower end in terms of Pillar 1 expenditure. Greece is an exception, having a high proportion of HNV farmland and a Pillar 1 expenditure that is slightly above the EU average. This is probably explained by the presence of highly supported crops such as tobacco, cotton and olives.

Overall, the scattergram shows that there is no clear link across all Member States between the level of Pillar 1 expenditure and the proportion of HNV farmland. This lack of statistical relationship is confirmed by the non-parametric chi square test (see Annex 5). However, certain patterns do emerge, with several Member States at the lower end of the Pillar 1 payments scale having amongst the highest proportions of HNV farmland, and vice versa.

This picture hides numerous variables on the ground, the most important being local variations in Pillar 1 expenditure. In fact, these variations are far larger than the differences at Member State level, as explained in Chapter 7. This means that the analysis discussed above gives no direct indication of how much Pillar 1 expenditure is directed towards HNV farmland and how much is absorbed by intensively-cropped land within any given Member State or region. It does, however, indicate that the potential for targeted 'HNV-friendly' support is rather low given the current budget allocations per country.

Regional level

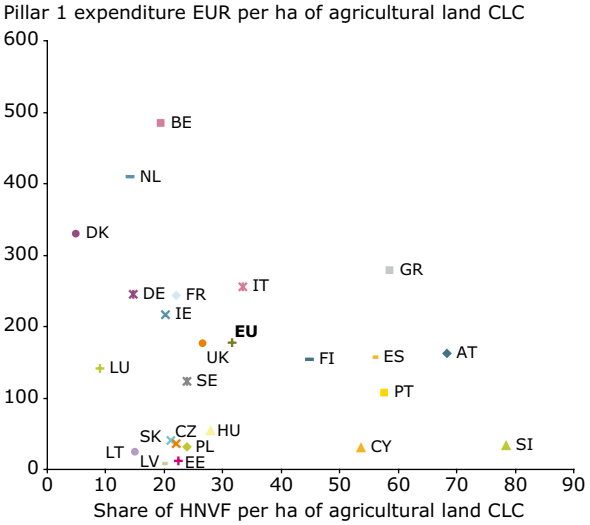
The macro analysis outlined above only provides a general overview of the distribution of Pillar 1 payments, as official budgetary information is only available at Member State level. The results of the CAPRI modelling system were used (see Box 6.1) to refine the analysis to a lower geographical level.

The aim of the analysis was to compare the regional distribution of Pillar 1 payments in the EU-15 in relation to the share of HNV farmland, based on CAP support data from the CAPRI modelling system. No comparable CAPRI data were available for the new Member States, which are not included in this analysis therefore.

The CAPRI data set available to the EEA provides detailed information on agricultural policy support at NUTS 2 level for each relevant CAP policy instrument during the years 2001–2003. This was used to construct total support levels for plant and animal production separately as well as to calculate total Pillar 1 support. These three support categories were then used to test for statistical correlation of CAP Pillar 1 support with an estimated share of HNV farmland for all EU-15 NUTS 2 regions. The results of the analysis are shown by means of larger biogeographic regions, as far as the sample size allowed for the statistical procedure on these more homogenous samples to be run from an agronomic and environmental point of view (for further details see Annex 5).

Consistent with previous work (EEA 2004), Map 6.1 shows that there is a negative relationship between Pillar 1 support and the share of HNV farmland per region. This is true for all three support categories tested and for all biogeographic regions but one ([41]). Given that CAP support under Pillar 1 is focused on the main arable crops and cattle production, and positively linked to (previous) production levels, it

Figure 6.1 Pillar 1 expenditure per ha of agricultural land CLC

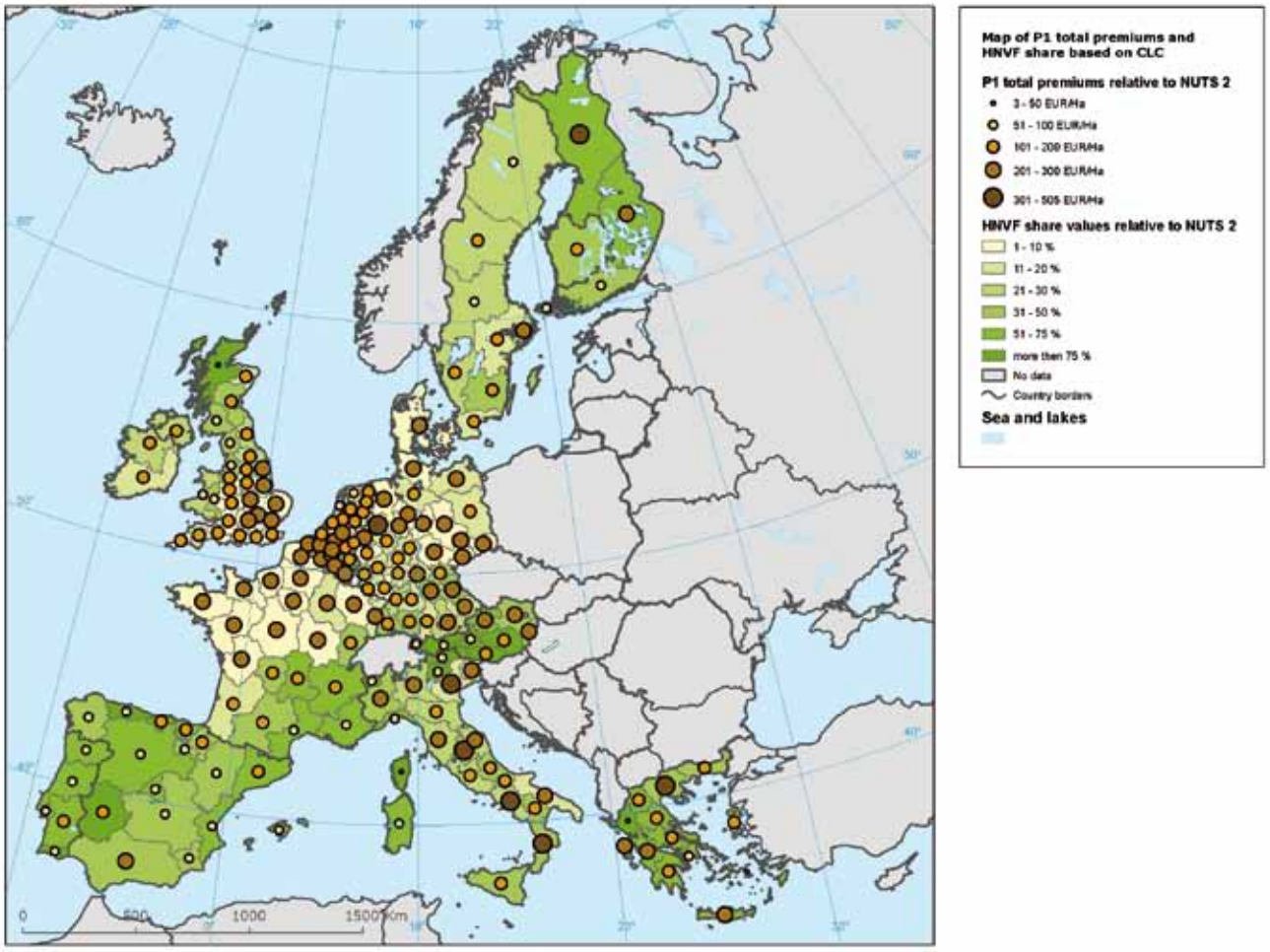


Note: EU-15 = average 2000–2002 (reference period for single payments), EU-10 = average 2004–2006.

Source: Elaborated by EEA 2008, data from CAP Financial reports years 1999 to 2006.

([41]) In the continental region there is a positive correlation between share of HNV farmland per NUTS 2 region and average per ha support for animal production. This is probably linked to targeted support for extensive cattle and sheep production systems in some countries of this bio-geographic region as the latter are a central component of HNV farming types. See Annex 5 for details.

Map 6.1 Share of HNV farmland and CAP Pillar 1 expenditure EU-15 (EUR/ha)



Source: EEA, 2009 (see Annex 5 for data and methodology).

is not surprising that regions with a higher share of HNV farmland attract lower average Pillar 1 support per hectare.

This confirms the farm income analysis based on the FADN data in Chapter 4 that showed lower income levels and Pillar 1 support for HNV farming types. Overall these results indicate that Pillar 1 payments under the CAP provide less targeted support for HNV farmland areas or HNV farming systems than to most intensive farming systems. However, more analysis with data of higher spatial resolution or linked to specific farming types is necessary to fully understand the role of Pillar 1 CAP support in keeping HNV farming viable.

6.3 Distribution of Pillar 2 expenditure

National level

Data on expenditure under Pillar 2 at national level were obtained from the 2006 and 2007 reports — Rural Development in the European Union — Statistical and Economic Information ([42]).

Three groups of budgetary data have been compiled for graphic analysis:

- Total rural development (RD) expenditure, year 2005 ([43]), as well as a yearly average of total RD expenditure in the programming period 2000–2006 ([44]). 'Expenditure' only

([42]) http://ec.europa.eu/agriculture/agrista/rurdev2007/index_en.htm.
([43]) Year 2005 appears as the last consolidated data for Agri-Environment and Less Favoured Areas in the reports consulted.
([44]) The annual average of the period has been calculated considering only those years with payments (relevant for the new Member States, with SAPARD and TRDI contributions). A comparison between this annual average and the 2005 year was also carried out; differences are not significant but particular cases might have to be considered e.g. if a country has a very low/high rate of financial execution in 2005.

Box 6.1 The CAPRI model

The name CAPRI stands for 'Common Agricultural Policy Regionalised Impact analysis' and is the acronym for an EU-wide quantitative modelling system for the agricultural sector. The name indicates the main objective of the system: assessing the effect of CAP policy instruments not only at the EU or Member State level but also at sub-national level. The model covers the EU-27, Norway and Western Balkans based on non-linear regional programming models consistently linked with a global agricultural trade model.

Technically, it is a static, partial equilibrium model consisting of four interconnected modules covering (1) regional agricultural supply for EU-27, Norway and Western Balkans, (2) global and EU markets for major primary and secondary agricultural products including bilateral trade, (3) EU markets for young animals and finally (4) premium schemes and other policy instruments of the Common Agricultural Policy (CAP).

In addition to other research, the CAPRI model is often used in agricultural policy analysis. For example, scenarios dealing with the CAP reform package titled 'Mid Term Review' were performed by the University of Bonn in 2003.

CAPRI modelling analysis is based on a common database developed at the University of Bonn. This database is currently available at the EU Joint Research Centre, as part of the CAPRI consortium, and provides a comprehensive picture of the agricultural sector for the EU-27 Member States plus the Balkans. The main data sources for the construction of CAPRI are presented in the following table:

Data items	Main sources in CAPRI
Activity levels	Land use statistics, herd size statistics, slaughtering statistics, statistics on import and export of live animals
Production	Farm and market balance statistics, crop production statistics, slaughtering statistics, statistics on import and export of live animals
Farm and market balance positions	Farm and market balance statistics
Sectoral revenues and costs	Economic Accounts for Agriculture (EAA)
Prices	Derived from production and EAA
Output coefficients	Derived from production and activity levels, engineering knowledge
Input coefficients	Different type of estimators, engineering functions
Activity specific income indicators	Derived from input and output coefficients and prices
Policy data	Various sources (Official Journal of the EU)

Source: Eurostat (http://epp.eurostat.cec.eu.int), several bio-physical econometric studies and European Commission (http://publications.eu.int/general/oj_en.html).

The CAPRI database is fairly detailed and includes algorithms for data consistency and completeness. The database is up-dated every 2 years. For further information see: http://www.capri-model.org/docs/capri_documentation.pdf#search="COCO".

refers to European funds financing rural development: EAGGF (both sections), SAPARD and TRDI. These data do not include national contributions.

- Agri-environment measures (AEM), year 2005, funded by EAGGF-Guarantee.
- Less favoured Areas (LFA) year 2005, funded by EAGGF-Guarantee.

Additionally, data of the agri-environment measures 2000–2006 were compiled at regional level for some countries ([45]).

Expenditure figures refer to euros per hectare of the total area of farmland (from the CLC classes). The figures do not refer to expenditure only on farmland participating in the measure. The one exception is the LFA measure, as explained subsequently.

([45]) NUTS 2: Czech Republic, Ireland, Spain, the Netherlands, France, Sweden, Finland, Hungary and Austria; plus some countries at NUTS 1: Belgium-Flanders and Germany and NUTS 0: Latvia, Luxembourg and Slovenia.

The analysis does not allow a rigorous or detailed evaluation of Pillar 2 expenditure in relation to HNV farmland. It provides an initial and very general picture of current patterns across the EU.

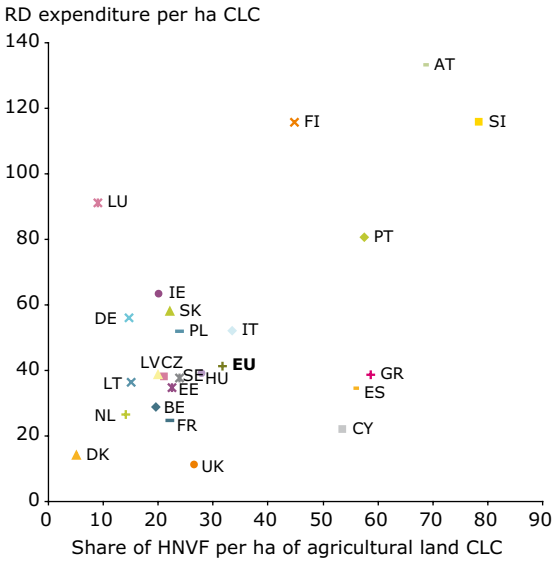
In the case of Pillar 2 , the key variable is the very different types of measure that can be implemented using these funds, ranging from measures such as agri-environment schemes to support HNV farming systems and practices, to measures that may be responsible for eliminating HNV farming; such as grassland afforestation, land consolidation and new irrigation projects. Many measures may have no relation to HNV farming, either positive or negative. This would include, for example, agri-environment schemes designed to reduce certain negative environmental impacts of intensive agriculture, or to reintroduce elements of biodiversity on intensively farmed land.

Statistical tests applied to the data presented in Figure 6.2 indicate that there is no significant positive relationship between RD expenditure and share of HNV farmland. As with the Pillar 1 analysis, this general picture hides a number of crucial variables. Even in Member States with a high RD expenditure one cannot necessarily assume that these RD funds are actually being targeted at the maintenance of HNV farmland, but at least the available RD funds reflect the distribution of HNV farmland. Whether the budgetary amounts under Pillar 2 would, in theory, be sufficient for the maintenance of the estimated extent of HNV farmland is a question that this study is not able to evaluate. This would require a thorough assessment of the socio-economic needs of HNV farming systems.

Of all the Pillar 2 measures existing in the period 2000–2006, the one with most potential to support HNV farming directly is the agri-environment measure. The pattern of agri-environment expenditure (Figure 6.3) shows some interesting differences compared with the pattern of overall RD expenditure. Overall there seems to be a positive relationship between agri-environment expenditure and share of HNV farmland but this is mainly due to the high expenditure in Austria. If this outlier is ignored, the relationship is rather weak. Member States such as Portugal, Greece and Spain, with high proportions of HNV farmland and above-average RD expenditure, rank low in terms of expenditure on AEM. Greece and Spain fall to an especially low point on this graph.

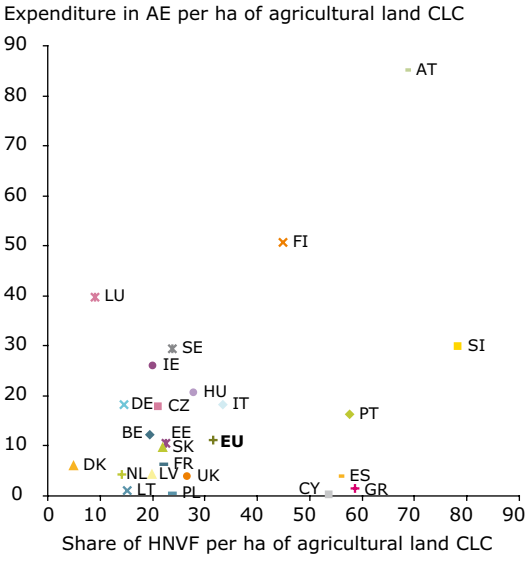
Also notable in Figure 6.3 is the relatively low level of agri-environment expenditure of a large number of other Member States, when compared with the few high spenders. Member States such as the United Kingdom, Poland and France have proportions of HNV farmland close to the EU average, and between them account for a

Figure 6.2 Expenditure on RD measures EAGGF+SAPARD+TRDI per ha, 2005



Source: Elaborated by EEA 2008, from CAPIDIM table 4.2.1.1.3.i. 'Rural Development in the European Union — Statistical and Economic Information 2007'.

Figure 6.3 Expenditure EAGGF on agri-environment measures per ha, 2005



Source: Elaborated by EEA 2008 from CAPIDIM table 4.2.1.1.10 and 4.2.1.1.11. Rural Development in the European Union — Statistical and Economic Information 2007'.

considerable area of HNV farmland, yet their expenditure on agri-environment measures per hectare of farmland is well below the EU average.

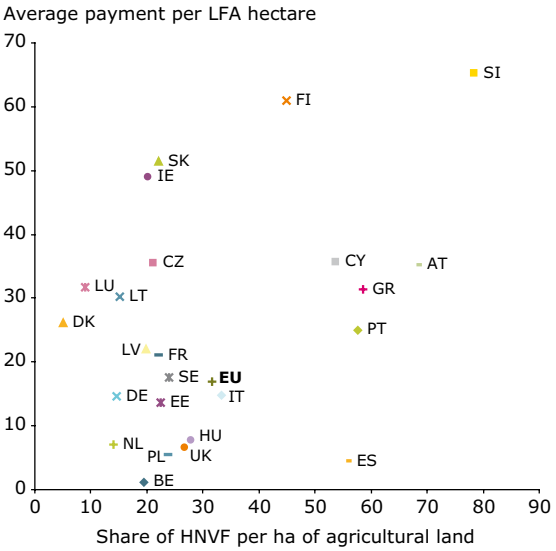
The LFA, now called 'Natural Handicap' measure is also considered of relevance for HNV farming. There is a considerable overlap between the areas designated as 'less favoured', and areas with the highest concentrations of HNV farmland. The LFA measure has the potential to provide support to HNV farming within the designated areas.

Whether this potential is fulfilled depends on the design of the measure at Member State and regional levels and specifically on the farm-level eligibility criteria that are applied, as well as the payment levels. These may have the effect of targeted support for HNV farming systems and practices within the LFA, or they may not. The available evidence suggests that in most Member States the eligibility criteria for LFA payments are not selected in a way that would target HNV farmland or farming types. An additional question, as with all measures, is whether the amount of support paid to farmers is sufficient and adequately structured to achieve significant increases in the income of HNV farm types.

Figure 6.4 shows LFA expenditure per hectare of farmland within the designated LFA. Figure 6.5 shows LFA expenditure per hectare of farmland in receipt of payment within these areas. The considerable differences between the two graphs are due to the eligibility criteria that are applied in each Member State, which determine the proportion of farmers and of farmland that actually receive LFA payments within these areas. For example, Belgium has the lowest payment level per hectare of LFA but the second highest per hectare of land receiving payment, suggesting that the eligibility criteria in this Member State exclude a large proportion of the land in the LFA area from receiving payments.

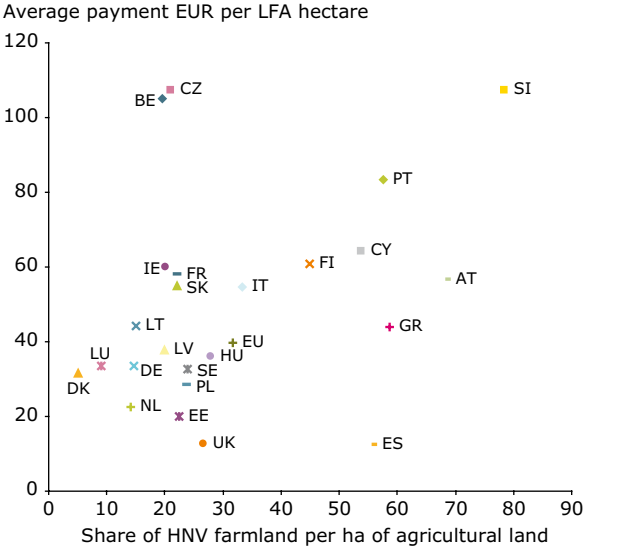
Slovenia and Finland, and to a lesser extent Austria, Portugal, Greece and Cyprus, have relatively high LFA payments coinciding with high proportions of HNV farmland. Spain is notable for having a very low payment level per hectare of LFA farmland, and also per hectare receiving payments. Spain also has one of the highest proportions of UAA designated as LFA and a high proportion of HNV farmland. This situation suggests that the LFA measure in its current implementation will have little effect in supporting HNV farming, a conclusion confirmed by other analyses (Escuela Técnica Superior de Ingenieros Agrónomos Universidad Politécnica de Madrid y Saborá Sociedad de Estudios, 2003).

Figure 6.4 Expenditure EAGGF in LFA per ha of total area designated as LFA, 2005



Source: Elaborated by EEA 2008, data from CAPIDIM table 4.1.1.8 and 4.1.1.9. Table 3.6.2.2.1 and 3.6.2.2.2 (CAP-IDIM 2005). 'Rural Development in the European Union — Statistical and Economic Information 2007' and 'An evaluation of the Less Favoured Area measure in the 25 Member States of the EU' (IEEP, 2006).

Figure 6.5 Expenditure EAGGF in LFA per ha of LFA area receiving payments, 2005



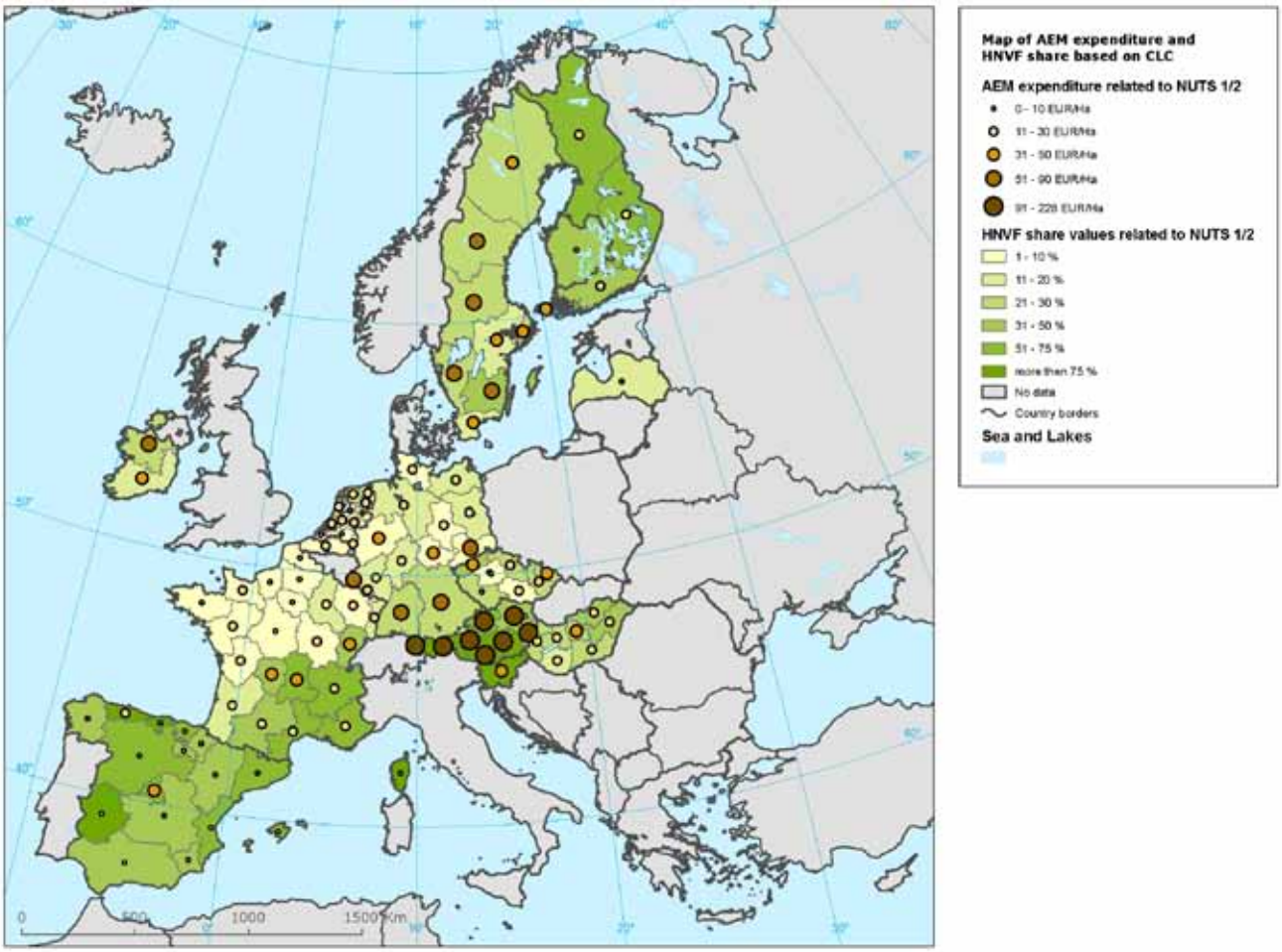
Source: Elaborated by EEA 2008, from CAPIDIM table 4.1.1.8 and 4.1.1.9. Tables 3.6.2.2.1 and 3.6.2.2.2 (CAP-IDIM 2005). 'Rural Development in the European Union — Statistical and Economic Information 2007'.

Overall, there appears to be little consistency across Member States in the way that the LFA measure is applied. A key variant is in the way that payments within the LFA are targeted on individual holdings, by means of the farm-level eligibility criteria. The measure is intended to target sustainable farming in the LFA. Against this context, one could consider introducing eligibility criteria at farm level, to provide additional support to the HNV type farms. However, the interaction of such an approach with the agri-environment measures would need to be carefully examined.

Regional level

A statistical analysis on AEM expenditure per hectare compared to the percentage of HNV farmland was carried out for a number of selected countries/regions. Data at regional level were collected from different sources, combining official sources ([46]) and data collected directly from RD management authorities and experts in Member States. Initially, the intention was that all EU-25 regions could be covered by the analysis, at least at the first geographic level beneath the national level or at RD programme level if not the same. However, data breakdown at these levels were not always available to the EEA at the time of preparing this study. Moreover, among the data collected by EEA, only those which offered sufficient reliability — in comparison to total figures at national level — were considered as suitable for the analysis. In total, 105 regions at different NUTS level, from north and south, old and new Member States were included in the analysis.

Map 6.2 Share of HNV farmland and agri-environment expenditure in selected countries and regions (EUR/ha)



Source: EEA, 2009 (see Annex 6 for details on data and methodology).

([46]) European Commission — DG Agriculture and Rural Development website http://ec.europa.eu/agriculture/rurdev/index_en.htm.

The analysis focused only on the year 2005. Firstly, because total figures for the whole period 2000–2006 were not available or directly comparable in all cases (for instance, EU-10 data only start from 2004). And secondly, according to expert views, 2005 can be considered as a good representative of a full implementation of the agri-environment measures and, in general, of the rural development measures in the 2000–2006 programming period (see Annex 6 for details).

Map 6.2 shows the distribution of agri-environment expenditure at regional level. Apart from the uneven distribution, with relatively high spending in the Austrian and Swedish regions, a positive relationship with HNV farmland distribution is not apparent. Indeed, the statistical analysis showed no significant correlation between total expenditure on agri-environment measures and the share of HNV farmland. However, the analysis of some subgroups of measures, such as organic farming, landscape and nature and genetic diversity, resulted in weak but statistically significant correlations between the expenditure and the share of HNV farmland (see Annex 6).

The implementation of agri-environment measures, sub-measures and, eventually, the individual contracts with farms, involves a high degree of variability derived from the different farming, climatic and agronomic situations that the measure is meant to address. Equally, the distribution of agri-environment schemes in the territory generally is very uneven, due to the voluntary character of the measure and to the different budget allocation across regions. Thus, the conclusions drawn from this analysis are only intended to identify relevant trends of the agri-environment schemes in relation to HNV farmland, rather than to provide a full assessment of their effect.

Further detailed data on the implementation of the agri-environment measures, at the appropriate geographical level, even at farm level, with sufficient time coverage, are clearly needed to complete this kind of analysis, in order to provide an insight of the performance of AEM in relation to the preservation of HNV farmland in Europe.

6.4 Summary and conclusions on the expenditure analysis

The results of the CAP expenditure analysis can be summarised in two main statements:

a) In the case of Pillar 1 expenditure per hectare of farmland, there are very considerable variations between Member States, and generally the relationship to HNV farmland appears to be negative at national and regional level.

b) In the case of Pillar 2 , there is enormous divergence across Member States in the level of expenditure per hectare of farmland under the AE and LFA measures. Several Member States are located at the very bottom of the expenditure axis, including Member States with high proportions of HNV farmland.

Most of the graphs show that many Member States are centred on the EU average but there are also Member States scattered at the extremes, indicating great divergence of CAP implementation across the EU. Whether the EU policy aim of maintaining HNV farming systems risks being undermined by these large variations in national implementation patterns needs to be investigated further.

From the perspective of preserving HNV farming systems three overall conclusions can be drawn from the analysis presented in this and previous chapters:

- Where the data indicate high expenditure coinciding with a high proportion of HNV at Member State level, there is potentially a positive relationship, although there is no guarantee that even agri-environment expenditure is targeted in such a way as to favour HNV farming types within the Member State.

- Where the data indicate a low expenditure coinciding with a high proportion of HNV farmland, it is clear that even under a best-case scenario, only a low level of support can be directed to HNV farming.

- In the period under analysis (2000–2006), the main Pillar 2 measures with the best potential to support HNV farming were the agri-environment and LFA schemes. Member States with a high proportion of HNV farmland and low expenditure on these schemes clearly were directing little support to HNV farming.

The analysis presented here only allows tentative conclusions. However, the approach taken does begin to provide an insight into CAP expenditure patterns in relation to HNV farmland. For future development of the approach, it would be useful to focus on the following aspects:

- Rather than analysing expenditure on entire programmes and packages of measures (e.g. Pillar 2 programmes or agri-environment), a separate analysis should be made of expenditure on measures that are clearly designed to maintain HNV farming. This is a question primarily about the design and targeting of the measures. Information in RDPs should permit an approximate distinction between measures that aim to support HNV farming, and those that do not. Expenditure on the former measures at Member State level can be compared with the proportion of HNV farmland in that Member State. The same approach can be applied to Pillar 1 measures that are targeted in this way, for example under Article 68. This would give a far more accurate picture of 'HNV-favourable expenditure' in relation to the proportion of HNV farmland, in a given Member State.

- In addition to expenditure, the potential coverage of these 'HNV favourable' measures in number of hectares can be compared with the proportion of HNV farmland. This would allow a complementary comparison between the scale of the 'HNV issue' on the ground, and the scale of the policy response, quantified in number of hectares. The intended coverage in hectares of agri-environment measures is stated in RDPs.

- The analysis should be undertaken at a more detailed geographical level to refine the more global evaluation of the relationship between CAP expenditure and the distribution of HNV farmland. However, it should be remembered that even within small regions (e.g. NUTS 4 or 5), there can be considerable differences in farming types and thus in Pillar 1 expenditure under the historic model.

- More investment also needs to be made into farm and field-level analysis. The power of an FADN-based analysis has been shown via the results of the MEACAP project in Section 4.2. However, farm payments data and other data sets can also be used as will be presented in Section 7.1. Further improvements in the detail and accessibility of such data will be necessary to fully exploit their potential for investigation of the economic situation of different types of HNV farms in different regions of the EU.

7 Analysis of the distribution of CAP expenditure within Member States

Effective targeting of funds to the benefit of HNV farming is not just a question of the global amounts spent in each Member State or region in relation to their proportion of HNV farmland. Even within regions showing a high concentration of HNV farmland, there is usually a range of farming types and situations, including intensive non-HNV agriculture. It is therefore important to know which types of farming, within a given Member State or region, are receiving the majority of CAP support.

In order to investigate the situation within Member States, this chapter draws on a series of case studies. One aspect analysed is the distribution of CAP resources across Pillar 1 and Pillar 2 at national level. The chapter also considers how CAP expenditure is distributed between different land uses and broad farming types.

There are two key aspects of CAP policies and measures that determine this distribution on the ground:

- The amount of support per hectare directed to particular land uses or production sectors. Under Pillar 1 these amounts vary enormously, both through remaining coupled payments, and where the historic model is applied to SPS calculations. Amounts paid per hectare under the agri-environment and LFA measures can also vary considerably from one Member State to another.

- Within a particular measure, mechanisms can be applied that serve to target the support payments on holdings that meet certain conditions. Examples include livestock density thresholds on the Suckler Cow Premium, eligibility criteria for LFA payments, and supplementary payments that can be made within a sector under Pillar 1 through Article 68. Depending on the farm-level eligibility criteria applied, these mechanisms may serve to steer support towards farms with HNV characteristics, or towards more intensive farms, for example.

The resulting distribution of expenditure between farms and land uses on the ground is determined in part by the design and structure of the CAP at EU level; but an increasingly important factor is the implementing decisions taken by Member States and regions.

This review begins with an analysis of expenditure distribution for each of the case-study Member States in turn, in order to give an integrated picture of the potential interaction between different CAP funding instruments. It concludes with a comparative section that draws out common and differentiating patterns between new and old Member States.

7.1 Analysis at Member State level

7.1.1 Case study method

National case studies were undertaken in four countries: the Czech Republic, Estonia, France and the Netherlands. In Spain, a regional case study was undertaken of Extremadura. A regional case study also was produced for Basse-Normandie (France), already referred to in Chapter 4.

The case studies differ in approach and methodology because of differences in the availability of data and expertise at national level. All the case studies analysed the expenditure (or allocated budgets) under the different elements of the CAP (Pillars 1 and Pillar 2), including estimates of the percentage of total CAP expenditure absorbed by each measure. In addition, analyses were undertaken of regional CAP expenditure per hectare of UAA, of CAP payment levels according to different farming land uses and according to different farming types. These analyses varied between case studies, as explained below.

The case studies for the Czech Republic, Estonia and the Netherlands analysed the geographical distribution of CAP spending (EUR/ha) and related this to the distribution of high nature value on farmland, as indicated by the presence of permanent and/or semi-natural pastures or national data sets describing the distribution of high nature value farmland. Data were aggregated at the level of NUTS 1 areas (the Czech Republic, Estonia) and postcode areas (the Netherlands).

These analyses cover Pillar 1 payments and the most relevant measures implemented under Pillar 2. The geographical distribution of the different payments, and of overall expenditure, is presented in tables and on maps. The approaches taken in the three studies are similar but not identical.

The case study for France examined the geographical distribution of CAP expenditure in 2005, at NUTS 3 level. The study also analysed the proportion of the budget absorbed by the main farming sectors, and the relative levels of support received by these. As well as expenditure per hectare, this case study considers support in terms of EUR/AWU since this is the more relevant consideration for the economy of an individual farm.

The Extremadura study analysed Pillar 1 expenditure according to the different production sectors and agricultural land uses in the region. By dividing the average annual expenditure (2000–2005) in each sector by the average number of hectares under the relevant land use (for example tobacco, cereals, sheep/cattle grazing), an estimate was made of the average CAP payments per hectare for each sector and agricultural land use. For Pillar 2, the analysis compared annual expenditure on the relevant measures with expenditure on the Pillar 1 regimes, and estimated the expenditure per hectare for schemes such as agri-environment and LFA.

7.1.2 The Netherlands

The Netherlands has a small land area, most of which is under intensive, modern and relatively competitive farming. Farming is quite homogenous and dominated by dairy production (and other intensive livestock not supported by the CAP), with some intensive cropping.

Intensification, rationalisation and lowering of ground water levels have led to a massive decrease in farmland that can be characterised as high nature value in the Netherlands. The small remaining areas of semi-natural vegetation (i.e. Type 1 HNV farmland) still existent are managed almost entirely by nature-conservation organisations rather than farmers. Some form of extensive management is usually applied, including grazing with semi-wild free-ranging cattle or herded sheep, grass cutting and burning (heather).

Type 2 HNV farmland (mosaics of low intensity) is limited to relatively small patches mostly concentrated in the peatland areas in the west and the higher sandy soil regions in the north-east and east of the country. These areas are usually still farmed, although at relatively low intensity according to Dutch standards, and usually do not correspond to Natura 2000 areas. They are characterised by a relatively high density of ditches and other landscape elements (for example tree lines, field boundaries, hedges). They are relatively rich in biodiversity, especially meadow and wintering birds and some typical vegetation. The types of meadow and wintering birds occurring in these Type 2 areas are usually similar to those occurring in Type 3 HNV farmland (see below), but the density of these birds is usually higher and the very rare species are more likely to be found here.

Type 3 HNV farmland is the largest category in the Netherlands. It includes large patches of agricultural grassland and to a lesser extent some arable agricultural lands. They are usually farmed relatively intensively, but in the Netherlands do not belong to the most intensive farmland categories. Their qualification as HNV farmland areas is based on the fact that they are important habitats for farmland birds (meadow and wintering birds) and host significant European populations.

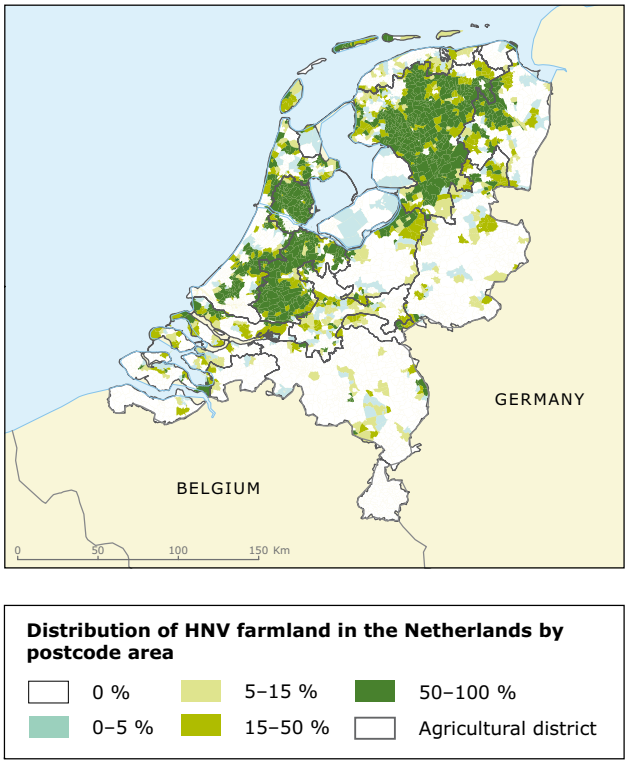
The approximate distribution of HNV farmland in the Netherlands is shown in Map 7.1.

In the Netherlands, CAP spending is heavily weighted towards Pillar 1 , which absorbs more than 90 % of total CAP expenditure. Generally, payments are allocated in proportion to farming intensity in the livestock sector (primarily dairy). On arable land, certain crops receive a high level of subsidy due to the historic design of the CAP (starch potatoes and maize).

This pattern is maintained by using the historic basis for distributing SPS, and in broad terms is not favourable to lower-intensity, HNV farming. The analysis of data in the Netherlands showed average Pillar 1 receipts per hectare range from EUR 330–520 in some districts to EUR 880–1 100 in the districts receiving most support, see Map 7.2.

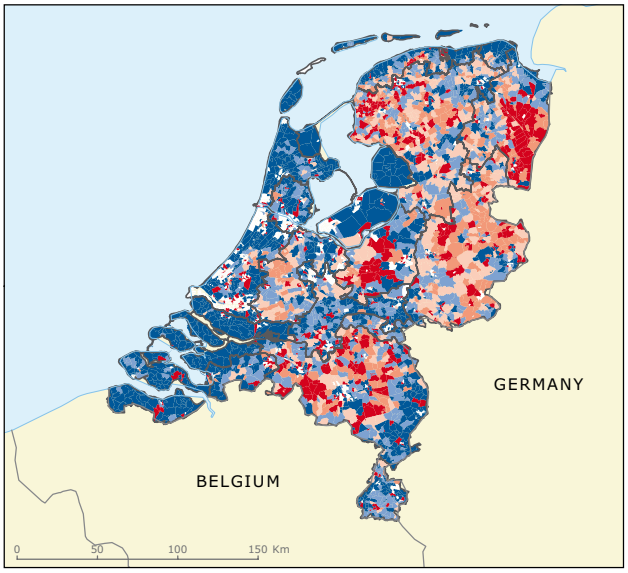
In the Netherlands, only 5 % of CAP funds are spent via Pillar 2. Less than 2 % of the UAA is under agri-environment schemes. The distribution of payments under the LFA and agri-environment

Map 7.1 Distribution of HNV farmland in the Netherlands



Source: B. Elbersen; A. van Doorn and H. Naeff, Alterra-Wageningnen (commissioned by EEA, 2007–2008).

Map 7.2 Distribution of CAP Pillar 1 expenditure in the Netherlands, by postcode area



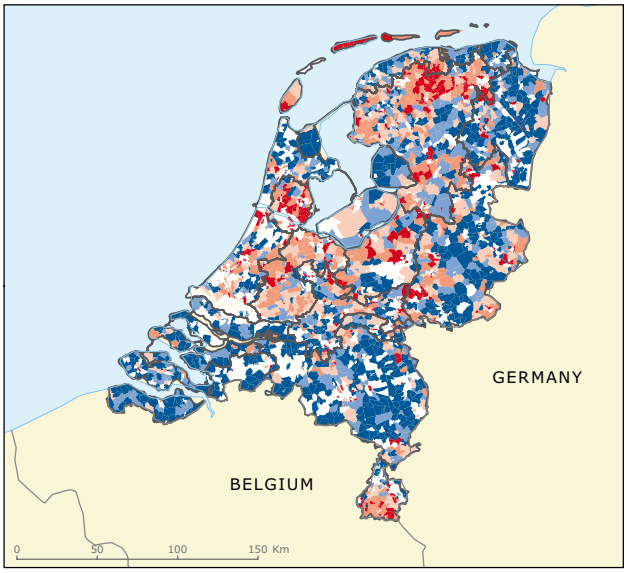
Source: B. Elbersen; A. van Doorn and H. Naeff, Alterra-Wageningnen (commissioned by EEA, 2007–2008).

schemes seems to favour low-intensity farming in some districts, but not in others. This suggests that the design of the schemes does not include mechanisms for targeting low-intensity farming systems (see Map 7.3).

Pillar 2 spending tends to be concentrated in the LFA and to a lesser extent in HNV farmland because this is where grazing livestock predominate. However, the measures are not clearly targeted on the land that is under the least intensive livestock systems, which is most likely to be HNV farmland.

Overall, in the Netherlands the great majority of spending is via Pillar 1 and benefits high-intensity farming systems, thus having a negative correlation with HNV farmland distribution. There is very little Pillar 2 expenditure, and these payments have only a weakly positive correlation with HNV farmland distribution. HNV farmland is barely targeted with relevant CAP instruments, and the maintenance of HNV farming is insufficiently addressed.

Map 7.3 Geographical distribution of agri-environment payments in the Netherlands



Geographical distribution of agri-environment payments in the Netherlands, by postcode area

- None
- ≤ 50 EUR/ha UAA
- 50–100 EUR/ha UAA
- 100–200 EUR/ha UAA
- 200–500 EUR/ha UAA
- > 500 EUR/ha UAA
- Agricultural district

Source: B. Elbersen; A. van Doorn and H. Naeff, Alterra-Wageningnen (commissioned by EEA, 2007–2008).

7.1.3 The Czech Republic

Most agricultural land (88 %) in the Czech Republic is in farms above 100 ha. The large size of the farms is a legacy of collectivisation, which replaced traditional farming. As a consequence, there is now very little HNV farmland based on traditional farm practices.

Nevertheless, there are approximately 920 000 ha of grassland, most of which is now under relatively low-intensity management. This dates particularly from the 1990s, when national support for farming ceased and farm production was strongly extensified. Land abandonment became a problem, especially for grasslands. As a policy response, farmers were supported for grassland management and further land abandonment was prevented.

In the Czech Republic, the share of Pillar 1 expenditure has increased from about 50 % to 80 % since EU accession. The distribution pattern of Pillar 1 support is very different from that in the Netherlands, Extremadura and France. This is because the SAPS is paid as a flat-rate area payment, whereas the three EU-15 Member States apply the historic basis for determining SPS payments.

Although SAPS support is not targeted in favour of HNV farming, it does not put HNV farming at a relative disadvantage either. The pattern of relative SAPS expenditure per hectare and farm structure indicators does not indicate that any specific farm type or size would benefit more from Pillar 1 payments than would other types.

In the Czech Republic, the budget for LFA and agri-environment schemes in 2004/2005 was roughly equivalent to that spent on SAPS but this has declined strongly since then. A large part of Pillar 2 is used for LFA and agri-environment schemes and these are targeted to favour grassland under low-intensity farming that is likely to be HNV farmland. Almost 80 % of grasslands benefit from agri-environment support.

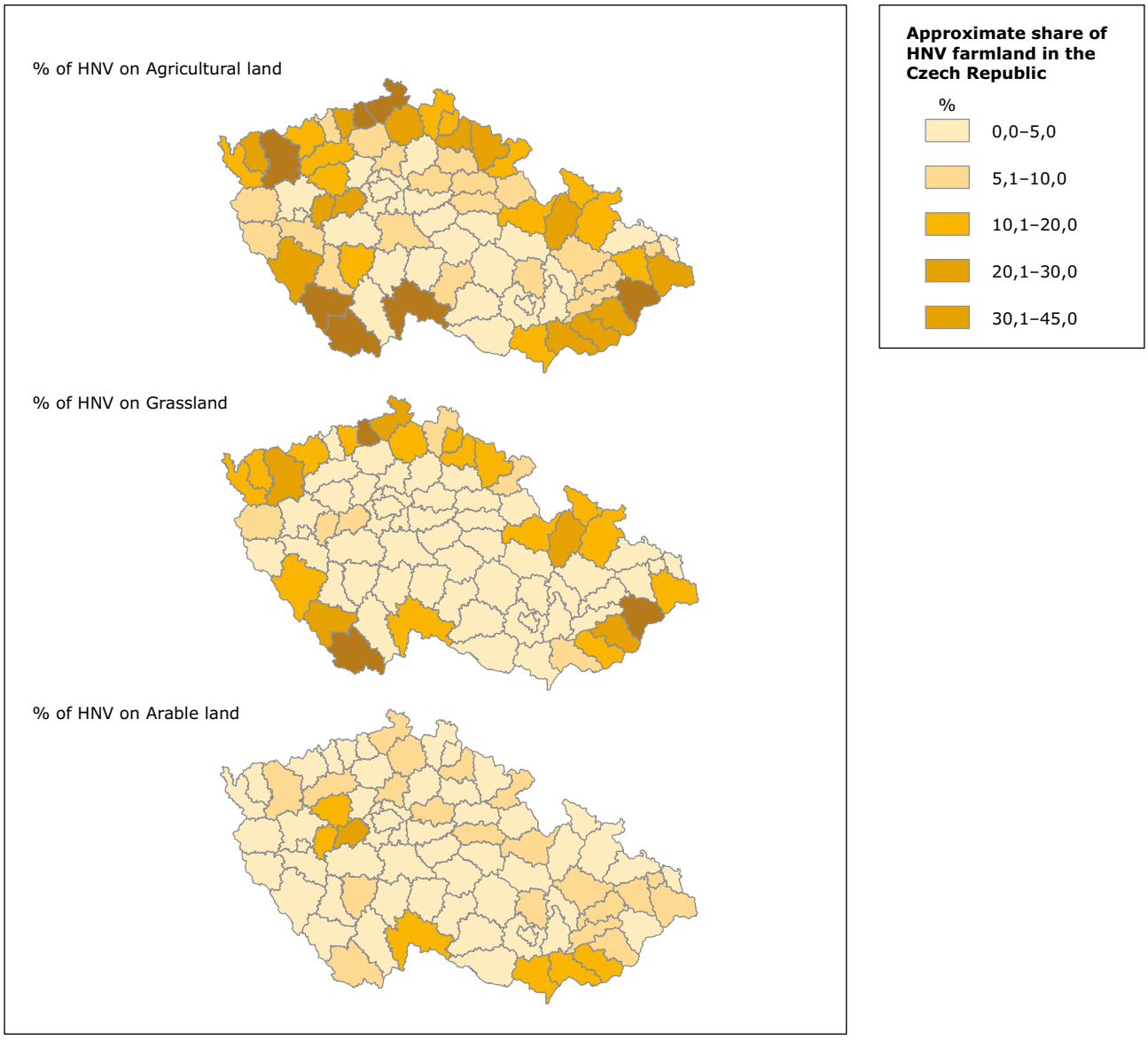
Map 7.4 shows the approximate distribution of HNV farmland in the Czech Republic. Map 7.5 shows how agri-environment schemes and LFA payments are concentrated broadly in the areas with higher proportions of HNV farmland and permanent grassland, whereas SAPS payments are quite evenly distributed across the territory. See also Figure 7.1 for a representation of payments in relation to HNV farmland. Overall, the low-intensity forage-growing regions (foothill regions along the border) are receiving higher rates of support than regions growing cereal or sugar beet, which are the most intensively managed croplands.

The agri-environment programme in the Czech Republic includes an ambitious scheme for extensive grassland management, which targets different types of grassland through sub-schemes:

- Meadows:
  - mesophile and wet meadows;
  - mountain and dry meadows;
  - long-term wet meadows and sphagnum meadows;
  - bird areas on grassland (corncrakes, waders);
  - dry steppe grasslands;
- Pastures:
  - pastures;
  - species-rich pastures.

Overall, Pillar 1 expenditure patterns in the Czech Republic are not weighted in favour of high-intensity farming systems. There is substantial expenditure through Pillar 2 measures that are well targeted at potentially HNV systems. There appears to be a generally balanced policy effort that should favour the maintenance of HNV farming, although on-the-ground data on effectiveness are lacking.

Map 7.4 Approximate share of HNV farmland in the Czech Republic



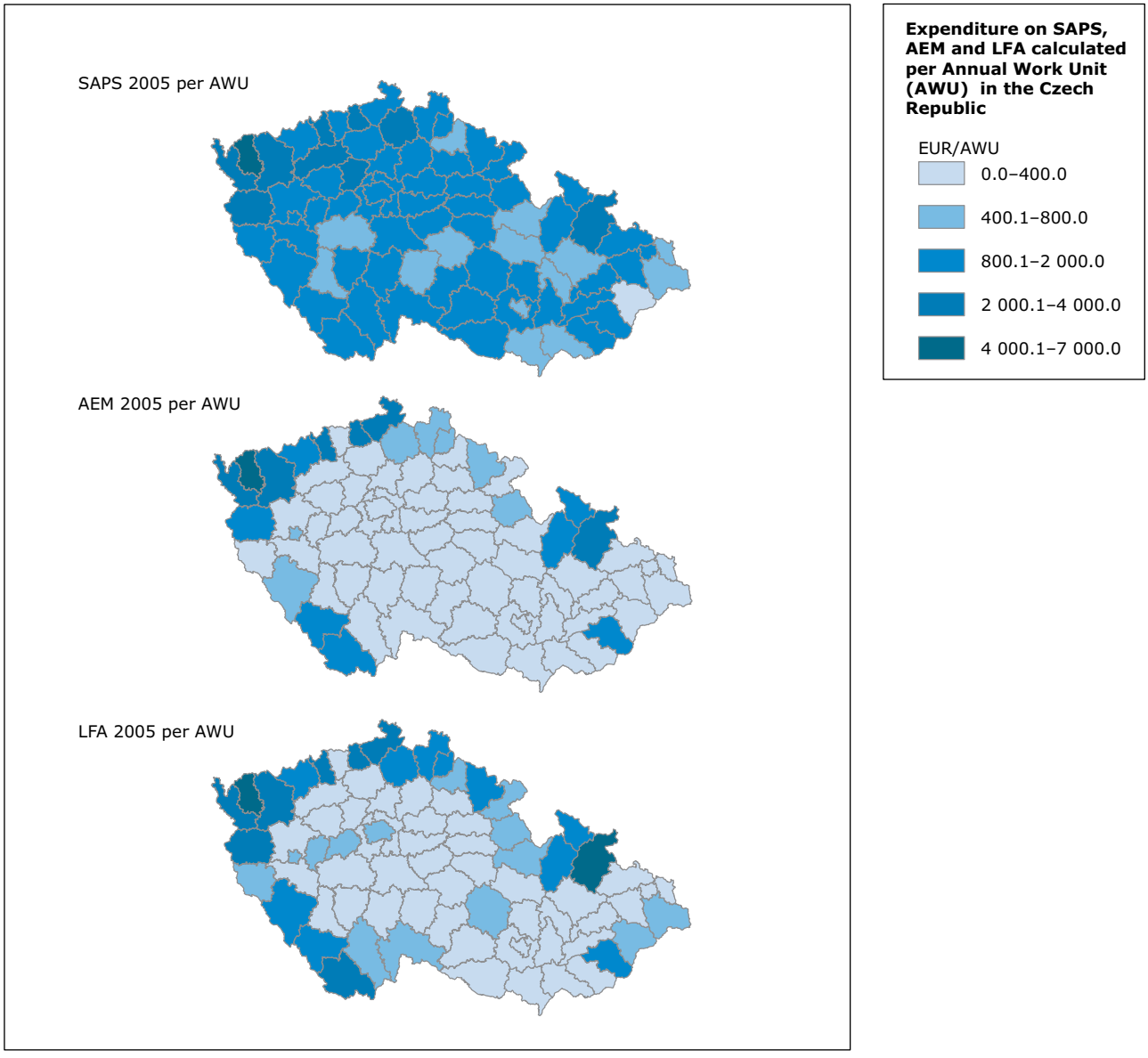
Source: Czech Paying Agency, Czech Ministry of Environment and the EEA.

Table 7.1 CAP budget distribution across main Pillar 1 and Pillar 2 measures in the Czech Republic

	(% of total)	2004	2005	2006	2007
Pillar 1	SAPS	52.5	36.3	37.9	45.8
	Top-up		33.5	31.6	34.6
	Sugar			2.3	3.1
Pillar 2	Agri-environment schemes	25.2	16.4	15.8	3.5
	LFA	22.3	13.8	12.4	13.0
	Afforestation	0.5	0.5	0.5	
	Natura 2000				0.04
Total (EUR 1 000)		432 500	721 901	825 989	761 011

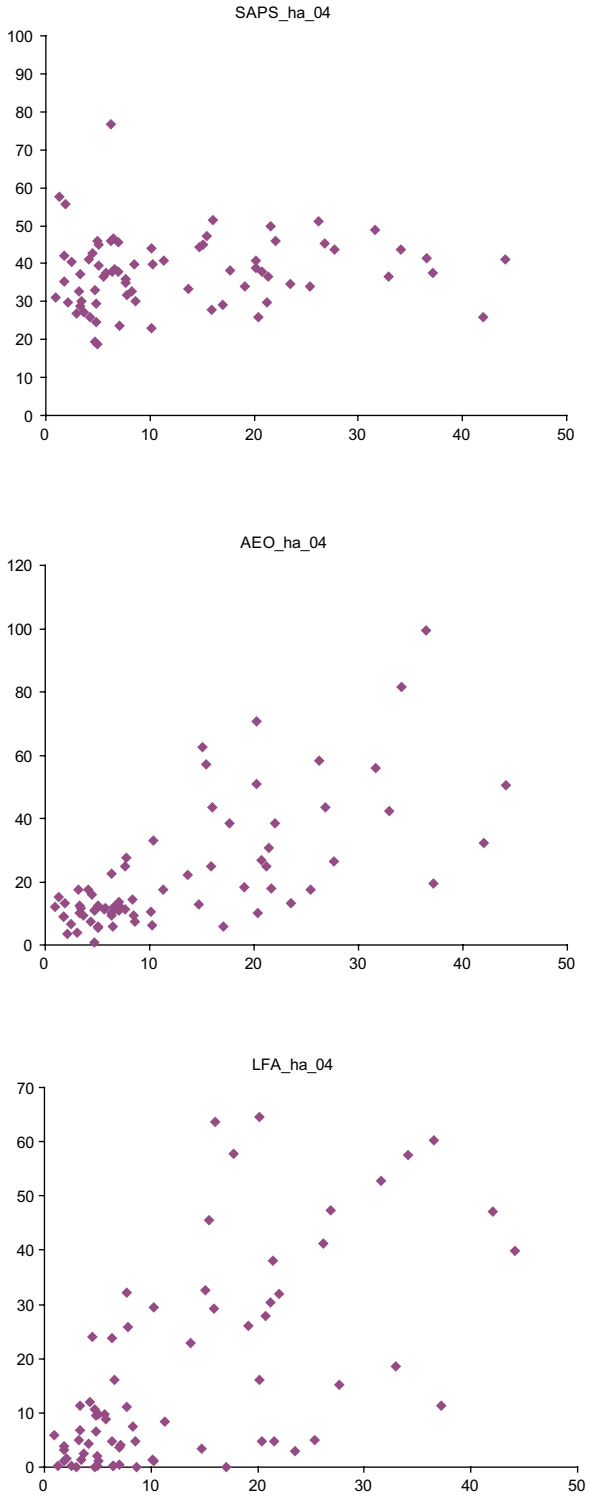
Source: Czech Paying Agency www.szif.cz.

Map 7.5 Expenditure on SAPS, AEM and LFA calculated per AWU in the Czech Republic, 2005



Source: Czech Paying Agency (payments data) and Czech Statistical Office (AWU).

Figure 7.1 Relationship of HNV farmland and CAP spending (SAPS, AEM and LFA) in the Czech Republic, 2004



Source: Czech Paying Agency (payments data); Czech Ministry of Environment and EEA/JRC (% share of HNV).

7.1.4 Estonia

According to the data of the structural survey undertaken in 2005, there are 27 747 agricultural holdings in Estonia. Around 19 000 holdings have applied for SAPS. These can be considered as active agricultural holdings.

The share of agricultural holdings smaller than 2 European size units (ESU) is relatively high, at about 76 % of holdings. Most of these farms do not earn their main income from agricultural production. However, these small holdings are often important from the nature protection point of view, as generally they involve low-intensity farming. Also, many of these holdings have continued traditional management of farmland habitats with high nature value, for example semi-natural grasslands. Therefore, the continued decrease in the number of these holdings is likely to be unfavourable to the management of important agricultural habitats.

A further 20 % of holdings are in the second smallest size group (2–6 ESU), which can be presumed to have an estimated return on sales of less than EUR 12 782 per year. The total revenue of those two smallest size groups makes up only 28.3 % of the standard gross margin. They use 36.1 % of the total agricultural land and 43.8 % of agricultural labour in annual work units.

Permanent grassland (including semi-natural grassland) forms on average 28.6 % of the total UAA. This share varies considerably depending on the county. The highest share of grasslands is found in regions with extensive agriculture: Saare (57.4 %), Lääne (50 %) and Hiiu (45 %) counties.

One of the most important characteristics of farmland biodiversity in Estonia is the high proportion of land under semi-natural habitats (wooded meadows and pastures, coastal meadows, flooded meadows, paludified meadows, alvars, etc.). Biodiversity of these habitats is considerably higher than that of other farmed land. Over recent decades, a considerable decrease in the area of meadow habitats has been caused by the disappearance of traditional agricultural methods such as mowing and moderate grazing.

Table 7.2 Overview of the SAPS and complementary national direct payments for arable crops in Estonia, 2004–2006

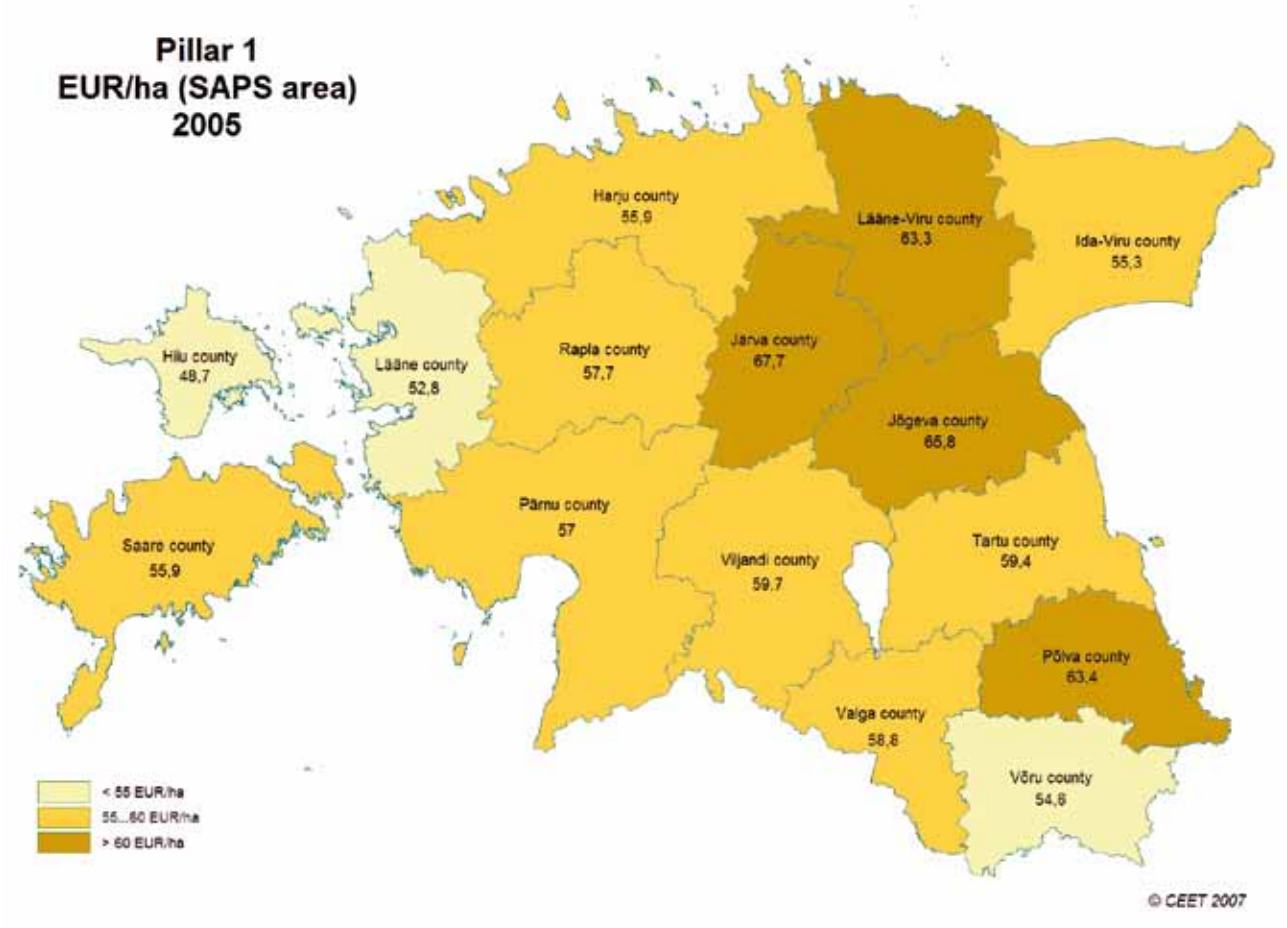
	SAPS sum (million EUR)	SAPS area (ha)	SAPS number of holdings	Complementary national direct payment for crops (million EUR)	Complementary national direct payment for crops, area (ha)	Complementary national direct payment for crops, number of holdings
2004	21.2	803 944	18 601	13.1	324 455	7 852
2005	27.6	825 043	18 693	10.3	341 685	7 409
2006	34.7	828 053	18 054	19	354 976	6 811

Source: ARIB (Estonian Agricultural Register and Information Board) http://eng.pria.ee/.

Pillar 1 payments in Estonia have evolved since 2004 (see Table 7.2), with a considerable increase in the budget and in the total area of farmland receiving payments. However, the number of holdings receiving SAPS has declined, suggesting that significant restructuring is taking place. The value of the payment increased from EUR 26.7/ha in 2004 to EUR 42.2/ha in 2006. In addition to SAPS there are considerable national supplements for crops and livestock.

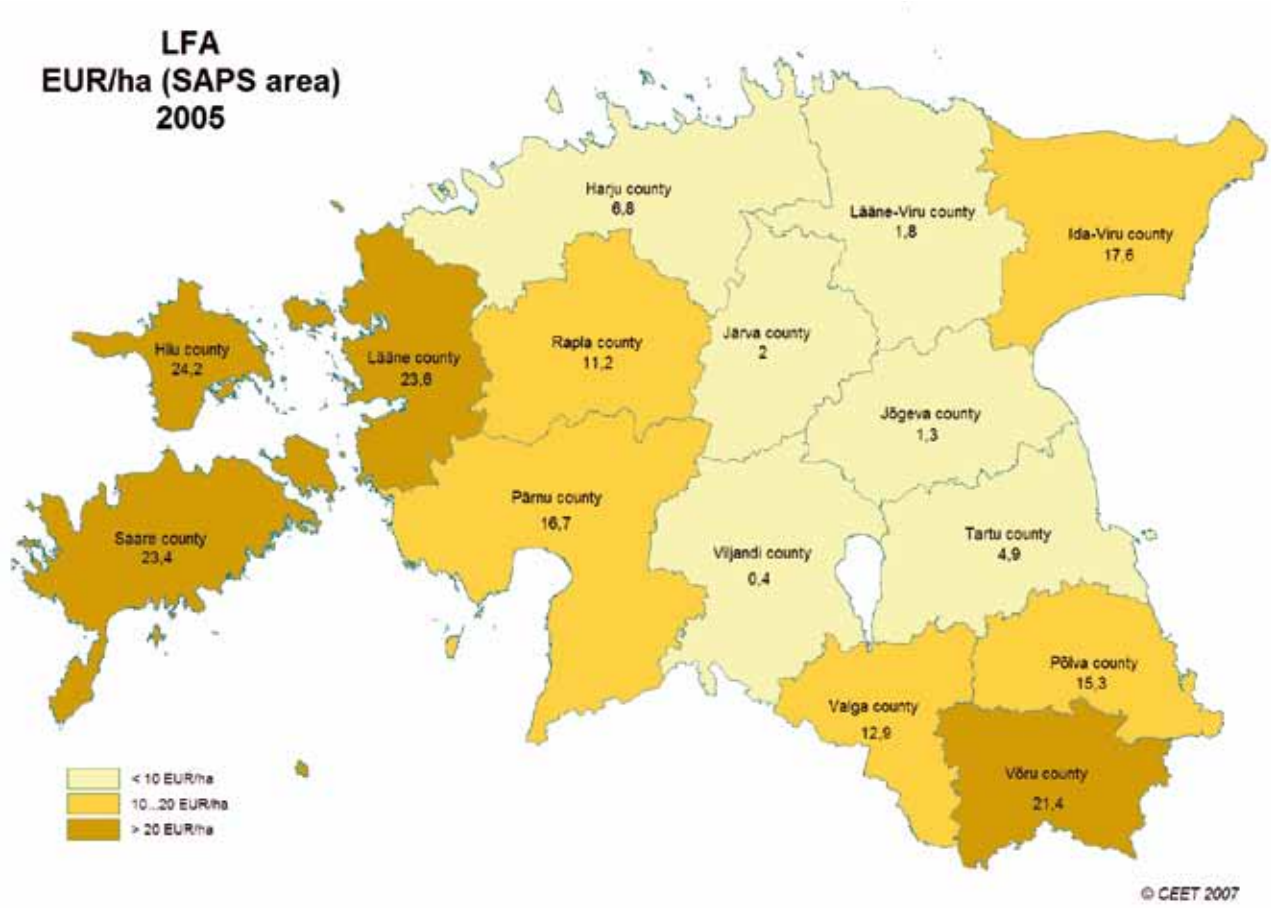
Thus even the most marginal farmland managed at very low intensity can receive Pillar 1 support at this rate under the SAPS scheme. However, the

Map 7.6 Geographic distribution of Pillar 1 payments (EUR/ha SAPS) in Estonia, 2005



Source: ARIB (Estonian Agricultural Register and Information Board) http://eng.pria.ee/.

Map 7.7 Geographic distribution of LFA support (EUR/ha SAPS) in Estonia, 2005



Source: ARIB (Estonian Agricultural Register and Information Board) http://eng.pria.ee/.

fact that almost 10 000 holdings are not claiming SAPS suggests that a proportion of farming is not being supported, most probably the smaller and more marginal holdings. This is an important policy failing from the point of view of maintaining HNV farming.

Map 7.6 provides an overview of Pillar 1 payments (SAPS plus direct payment complements) at the regional level (by counties, NUTS 4) in 2005. The payment per hectare differed between the counties, varying from 48.7 EUR/ha (SAPS area) in Hiiu county to 67.7 EUR/ha (SAPS area) in Järva county. The lowest Pillar 1 payments per hectare of SAPS area were paid in the counties (Hiiu, Võru, Lääne) with extensive agriculture and high share of permanent grasslands and Natura 2000 sites. The highest payments are in the counties with intensive agriculture (for example Järva, Jõgeva). While the payment levels differ by up to 40 % there are still smaller differences compared to those seen in EU-15 Member States applying SPS with the historic model.

In Estonia, approximately half of CAP expenditure is via Pillar 2 , and the majority of this is used for LFA and agri-environment schemes. These help increase the level of CAP expenditure on HNV grassland to the extent that such land receives at least as much support per hectare as other farmland. Total payments from Pillar 1 and Pillar 2 per hectare of land registered for SAPS range from about EUR 95 to almost EUR 140. One of the highest rates is shown in Saare county, which is notable for its large proportion of semi-natural grassland.

In 2005, 25 % of CAP expenditure was on agri-environment schemes, and 60 % of the UAA received support under the scheme. However, changes to the Pillar 2 schemes from 2008 have led to some significant restrictions.

From 2008, Pillar 2 measures for the maintenance of semi-natural grasslands have been restricted to Natura 2000 sites, thus excluding large areas from

any targeted support. Although a high proportion of the larger and most valuable habitats are located in Natura 2000 areas, habitats outside Natura 2000 areas (often smaller in size) have similarly high value from a conservation point of view. In addition, several of these areas are not registered or eligible for support from Pillar 1 , for example, because the rules exclude them due to the high density of trees (for example wooded meadows and pastures, alvars).

Also, from 2008, the eligibility criteria for organic farming support have changed, excluding some organically managed grassland from this support payment. While before the minimum stocking level per hectare of permanent grassland was 0.1 LU (organic livestock), this has increased to 0.3 LU/ha of grassland (except grassland used for green manure for two years) a threshold that cannot be met by some organic farms.

There is concern that semi-natural grassland outside Natura 2000 in Estonia will be abandoned due to the lack of Pillar 2 support. The same applies to Type 2 HNV farmland, which is not targeted for support and which is typically found on the smaller, part-time farms. The reasons for this concern are the narrow focus of Pillar 2 support schemes (for example exclusive targeting on Natura 2000 only), combined with the structural characteristics of Estonian farming, especially the large number of very small farms that seem to harbour a high proportion of HNV farmland.

Overall, the distribution of expenditure through Pillar 1 in Estonia in 2005 appears relatively evenly balanced. Although it slightly favours the more intensively farmed areas, this is to a far lesser degree than occurs in the EU-15 case studies. However, a particular concern is the large number of holdings (most likely the smaller and more marginal farms) that do not receive Pillar 1 support.

Pillar 2 expenditure more than redresses the broad geographical balance of expenditure, and results in the highest overall payment levels being received by areas with the highest proportions of HNV farmland. However, there is concern that considerable areas of HNV farmland have been excluded from Pillar 2 support from 2008 onwards as a result of policy design, such as targeting only Natura 2000 sites.

7.1.5 Extremadura (Spain)

Extremadura has relatively small areas of highly intensive agriculture, particularly irrigated arable crops such as tobacco, tomatoes, rice and maize. Intensive fruit and olive plantations have also expanded considerably in recent years.

However, much of the region is under vast areas of HNV land use, the HNV farmland map produced by JRC/EEA (Map 1 in Section 3.3) showing a particularly high concentration in Extremadura. Almost half the region is covered by grazing land, consisting of permanent grassland, scrub, forest and dehesa (farmland with an open canopy of oak trees). The great majority of these 2 million hectares are under semi-natural vegetation used for extensive grazing, and can be expected to be of high nature value.

Some 20 % of the region is under dryland crops and fallow (although data vary considerably between sources). Cereal land cultivated at low intensity and with a significant proportion of fallow and patches of semi-natural vegetation is generally of high nature value, especially for bird communities.

In Extremadura, approximately 86 % of annual EAGGF expenditure is on the Pillar 1 regimes. SPS is paid on the historic basis and payments are weighted heavily in favour of more intensive farming systems. Most of Pillar 2 expenditure in the 2000–2006 period was allocated to measures such as farm modernisation, irrigation and afforestation that do not benefit HNV farming and often work against it.

The data for 2000–2005 show certain Pillar 1 regimes directing an extraordinary proportion of EAGGF expenditure towards a few irrigated crops that covered a very small percentage of regional farmland: namely tobacco, maize (CAP arable regime), tomatoes (CAP fruit and vegetable regime) and to a lesser extent rice (see Table 7.3).

The range of support levels provided by Pillar 1 in EUR/ha is far wider in Extremadura than in any of the other case studies. At the lower end of the spectrum, low-yielding arable land is estimated to receive approximately EUR 38/ha of UAA (this

estimate allows for the fact that 50 % of an arable farm may be under fallow due to the poor soils). This is similar to the SAPS payment on eligible farmland in Estonia. Very approximately, Pillar 1 support for extensive sheep and suckler cattle in Extremadura ranges from EUR 40–150/ha, depending on the livestock type and density.

By contrast, Pillar 1 payments for tobacco production averaged nearly EUR 8 700/ha in the period 2000–2005. The next highest level of subsidy was for tomatoes grown for processing, which received support averaging just under EUR 2 000/ha. Between these extremes, a farm growing irrigated maize could receive a Pillar 1 payment of approximately EUR 600/ha, while Pillar 1 expenditure on vines was EUR 517/ha and on rice EUR 389/ha.

Table 7.3 shows the farming types most likely to be HNV highlighted in green and the approximate payment levels received per hectare.

Agri-environment schemes absorbed only 1.4 % of EAGGF-Guarantee expenditure and affected only 1.6 % of the land area, and the measures were mainly for organic and integrated fruit production. There was no expenditure targeted at semi-natural pasture in the 2000–2006 period. The LFA covers 85 % of the region, but payments are so low as to have no significant effect on farmers' decisions (Escuela Técnica Superior de Ingenieros Agrónomos, Universidad Politécnica de Madrid, y Saborá Sociedad de Estudios, 2003).

Overall, it is Pillar 1 that defines the support received by different types of farmland and this is weighted heavily in favour of the most intensive uses. Within farming sectors, such as suckler beef or cereals production, it is the most intensive systems that receive the highest payments per hectare. Decoupling of support in the most intensive farming sectors (for example tobacco, tomatoes) raises the potential for a significant redistribution of funds in the event of a shift to a flat-rate payment system for SPS.

Table 7.3 Estimated EAGGF-Guarantee expenditure/ha, Extremadura 2000–2005

Sector	EUR/ha/year	% of budget	% of total area
Pillar 1			
Tobacco	8 682	17.1	0.263
Tomatoes	1 944	6.8	0.5
Arable crops	130	19.7	22.5 ([47])
- irrigated maize 9.5 t/ha	599		
- dry land 1.2 t/ha	38		
Vines	517	7.0	2.0
Rice	389	1.6	0.6
Olives	194	8.4	6.5
- irrigated 6.5 t/ha	1 000		
- marginal 0.5 t/ha	100		
Beef/sheep/goats	101	32.3	47.5 ([48])
- beef 0.5 LU/ha	150		
- sheep 0.25 LU/ha	75		
- goats 0.25 LU/ha	37		
Pillar 2			
Measure	EUR/ha/year	% of budget	% of total area
Farmland afforestation	–	2.4	–
Agri-environment	196	1.4	1.6 ([49])
LFA	1.72	1.0	85 ([50])

Source: Beaufoy, calculations from data in Caja de Badajoz, 2006.

([47]) Estimated total area under crops eligible for support under the CAP arable regime, including fallow.
([48]) Combined area of permanent pasture and dehesa.
([49]) Total area participating in agri-environment measures in 2005. For rare breeds, 1 livestock unit (LU) estimated as equivalent to 4 ha.
([50]) Total area of holdings within LFA.

Much of the Pillar 2 expenditure is likely to be absorbed by the more dynamic farms and sectors, for example for farm modernisation. In Extremadura there were practically no measures in the 2000–2006 period designed to favour HNV farming systems or practices, or to redress the balance between the support directed at intensive crop systems and semi-natural pastures. This includes LFA and agri-environment schemes, which, with current implementation patterns, are allocated such little funding as to be largely irrelevant in the region.

7.1.6 France

The predominant types of HNV farming in France are extensive grazing systems. From a statistical point of view, such systems will be found in the grazing livestock category of farm types, using the French agricultural survey classification, and in regions with low stocking density and a high share of permanent grassland. HNV cropping systems occur only in small areas in France ([51]).

Type 2 HNV farming systems are much more difficult to define. Logically, they will be found in the category of mixed farm types, though many mixed farms will not have HNV attributes. The available statistics do not distinguish between different types of mixed farming (for example low input and high input).

In France, 87 % of CAP support was spent through Pillar 1 (2007 figures) and this support was weighted in favour of arable land in areas with higher historic yields. On livestock farms, the highest support was for land under forage maize. Average payments per hectare (at NUTS 3 level) in 2005 ranged from EUR 0–500/ha, with the highest averages concentrated in the most productive regions of the north.

Table 7.4 shows a breakdown of CAP payments in France according to very broad farm types. On a per hectare basis, Pillar 1 payments did not vary greatly between arable crop farms (EUR 313/ha), livestock farms ([52]) (EUR 248/ha) and mixed farms (EUR 305/ha). However, these figures hide the fact that a significant part of the payments received by livestock farms is in the form of support for maize cropping (since 2005 partially decoupled from production). Farm types that rely more on permanent grassland used at low livestock densities receive less support per hectare. The low level of support from Pillar 1 is especially apparent for low-intensity sheep farming, which can be expected to include a significant proportion of HNV farm types.

In the beef sector, coupled payment mechanisms existed under Pillar 1 that aimed to favour extensive production systems. Suckler cow payments (approximately 40 % of all livestock payments in 2005) by definition favour this more extensive production system, by comparison with other beef systems. In addition, under the beef special premium payment (20 % of livestock payments) a livestock density of 0.5–1 LU/ha was favoured with higher payment rates.

However, a variety of contributory factors mean that although there was some weighting towards generally extensive systems, the mechanisms did not create economic conditions to favour the lowest intensity systems that are most likely to be HNV, nor did they stimulate a move towards this end of the intensity spectrum. Firstly, calculation of the livestock density thresholds only took into account those livestock units eligible for CAP payments prior to decoupling, and therefore do not include heifers and other animals not receiving payments. Hence in many cases actual stocking rates may be somewhat higher than the thresholds specified. Also, the extra level of support directed to extensive systems through these coupled payments was insufficient to compensate for the large difference in the value of output between more intensive and less intensive systems. For the suckler cow scheme, the difference in support payments received by a farm with < 0.25 LU/ha, compared with a farm with > 1.80 LU/ha is only 127 % in favour of extensive systems, while the ratio of physical output value for intensive farms compared to extensive ones (in terms of cows/ha) is 720 %.

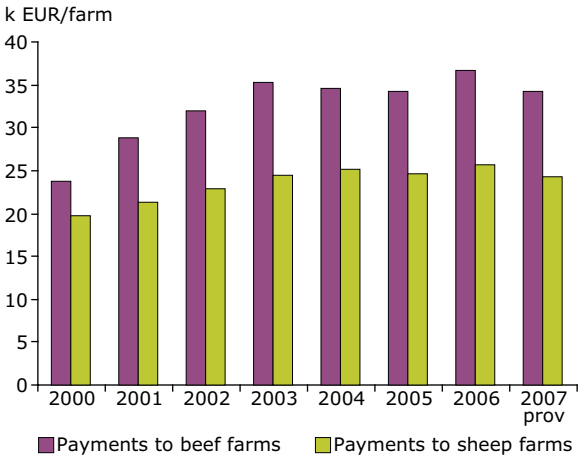
When considering the contribution of CAP support to maintaining farm viability, it is arguably more relevant to compare support levels between farms and farm types in terms of EUR/AWU, than

([51]) For a spatial distribution of HNV farming systems in France, at NUTS 5, see Pointereau *et al.* (2007).
([52]) Grazing livestock, i.e. excluding poultry and pigs.

EUR/ha, since the former measures the relative return to labour whereas the latter measures relative returns to land. On this basis, Table 7.4 shows that crop farms receive considerably more support per AWU from Pillar 1 (EUR 19 777/AWU) than livestock farms (EUR 10 115) and mixed farms (EUR 12 067). However, at 2005 prices the higher support received by crop farms did not result in higher net incomes per labour unit, compared with the other farm types. Conversely, net incomes on crop farms rose considerably in 2007 due to cereal price rises (the net margin increased by 130 % in one year, between 2006 and 2007) — see Figure 7.2. For 2008, a decrease was expected, but data were not available at the time of writing the analysis.

As shown in Figure 7.2, the trends for grazing livestock farms have been quite different from those for crop farms. Costs have grown faster than the value of gross product and CAP Pillar 1 payments. For the years up to 2007, rising prices for cereals have meant higher costs for feeding livestock. The income for the sheep sector is particularly alarming, as the sector's already relatively low income levels compared to other sectors has dropped further in recent years. It is of concern in this context that the total amount of CAP payment has increased faster for the beef sector than for the sheep sector (see Figure 7.2).

Figure 7.2 Development of (a) gross product, (b) total public payments, (c) total costs and (d) net margin per farm type [d = a + b – c], from 2000 to 2007 (provisional data for 2007)



Source: SCEES, FADNS and 'comptes nationaux par catégorie d'exploitations' — national farm accounts by farm types (French Ministry of Agriculture).

Table 7.4 France — breakdown of CAP payments per broad farm type, 2005

CAP payments	Unit	Crop systems	Grazing livestock	Mixed systems	Others (*)
Payments to farms through Pillar 1	Million EUR	2 749	2 458	1 448	285
Other payments to farms	Million EUR	348	981	347	169
Pillar 1 payment/ha	EUR/ha	313	248	305	136
other payments (mainly Pillar 2)/ha	EUR/ha	40	99	73	81
Total payments/ha	EUR/ha	353	347	378	217
Pillar 1 payment/ labour unit (AWU)	EUR/AWU	19 777	10 115	12 067	969
Other payments mainly Pillar 2/AWU	EUR/AWU	2 504	4 037	2 892	575
Total payments/AWU	EUR/AWU	22 281	14 152	14 959	1 544
% of AWU		16 %	28 %	14 %	33 %
% of UAA		32 %	36 %	17 %	8 %
% of payments		35 %	39 %	20 %	5 %
% of Pillar 1 payments		40 %	35 %	21 %	4 %
% of other payments		19 %	53 %	19 %	9 %

Note: (*) Others: wine, fruits, pigs, poultry.

Source: MAP, Comptes de l'Agriculture 2005 — own calculation EFNCP.

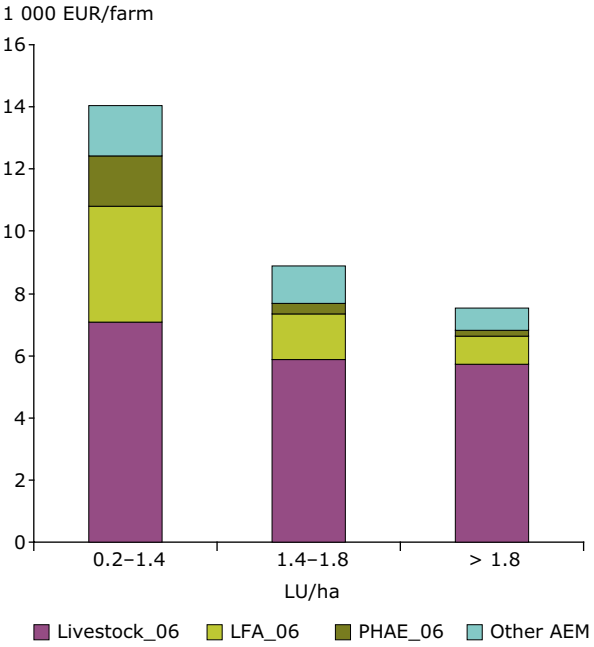
In 2003, the main Pillar 2 payments represented 16 % of total CAP payments in France. This fell to 13 % in 2007 ([53]). The most relevant schemes were the LFA scheme and the agri-environment grassland premium (Prime Herbagère Agri-Environnementale — PHAE). When added to the Pillar 1 receipts of different farming sectors and regions, these achieve some rebalancing of CAP expenditure towards grazing livestock and some areas of the country with HNV grazing systems, especially for beef production (for example Massif Central). These Pillar 2 measures favour livestock and grassland management generally but, as with the Pillar 1 mechanisms already described, they do not target the lowest-intensity end of the sector, where HNV farm types can be expected to predominate.

The LFA scheme mainly supports livestock farms (beef and sheep in all LFA + dairy farms in mountain areas only). However, the conditions are quite general, with a maximum limit of 1.4 LU/ha (with some variations across départements) which is not especially favourable to the most extensive farming systems.

Agri-environment schemes absorbed only 3.9 % of total CAP spending in France in 2003. Of the agri-environment budget, 58 % was spent on the PHAE measure, but this measure has only very general requirements and eligibility criteria and thus provides no effective targeting of HNV grasslands in particular (although HNV systems will certainly be amongst those benefiting from the scheme). In 2007, more targeted measures (mainly Natura 2000 sites) represented only 2 % of the French agri-environment budget, while other measures such as the 'rotational scheme' (mainly conceived to support diverse patterns of existing cropping systems in more productive regions) and organic farming absorb more of the budget. To some extent, these patterns reflect the fact that because agri-environment payments are based upon 'income foregone' and management costs, the payment rates per hectare can be relatively high when they are applied in productive regions and relatively low in more marginal regions.

Overall, Figure 7.3 shows how Pillar 2 support is weighted in favour of livestock farms with lower stocking densities than average, although the lowest category used in the data includes densities up to 1.4 LU/ha, which is higher than is generally found in HNV farm types. Coupled livestock payments in Pillar 1 also have a slight weighting towards farms with lower than average livestock densities. However, coupled crop payments and the SPS have the effect of shifting the overall balance of support strongly towards more intensively stocked farms.

Figure 7.3 Level and breakdown of all CAP payments (1 000 EUR/farm) according to livestock density classes, 2006



Source: Ministry of Agriculture (France), FADN 2006.

Overall, Pillar 1 expenditure has been the dominant element of CAP support in France. This is weighted strongly in favour of more intensive farming systems and areas, by comparison with the kinds of system and location associated with HNV. There is no positive correlation between Pillar 1 spending and the distribution of HNV farming across French regions and sectors. Aid mechanisms that aim to favour extensive systems are found only in the beef sector, and the criteria used are not sufficiently tight to favour HNV farming types specifically. Pillar 2 is only a small part of total CAP expenditure in France. Its pattern of expenditure goes some way to redressing the balance of total CAP resources in favour of certain regions where HNV farming is found, at a very general level, but the most financially significant measures for the environment within this Pillar are not targeted specifically to HNV farming types.

([53]) Probably as a result of the reduced Pillar 2 allocation for 2007–2013 received by France from the EU budget, compared to the 2000–2006 period.

7.2 Case study comparison

The case studies enable a closer study of the relationship between CAP spending and farming types on the ground. They also provide an insight into policy implementation and how this can affect HNV farming, favourably or otherwise. The studies also illustrate the rich diversity of situations across Europe's rural areas: a diversity that inevitably creates difficulties when it comes to the overall analysis that is the object of this study. Some of these difficulties are discussed below.

Direct and quantitative comparisons between these case studies are rarely possible, due to important differences in data availability and operational context. In most cases, the data available are from the period before 2007, so some key policy changes have not been taken into account (including the priorities in new RD programmes for 2007–2013, and the implementation of further changes to Pillar 1 following the 'Health Check').

The countries of focus for the case studies also exhibit important differences in territorial, farming and environmental characteristics. These characteristics have some influence on the way the CAP is implemented. More importantly, policy decisions taken at EU and national levels over the years have been critical in creating the current situations that are examined here.

Photo: © Elena Cebrian Calvo

Notably, patterns of CAP expenditure and use of CAP measures are fundamentally different in the new and old case-study Member States. In particular, due to the phase-in process, which will not be complete until 2013, the scale of Pillar 1 payments during the study periods was much smaller in the new Member States. Some of these differences are relevant for HNV farming, and it is clear that policy conditions in some Member States are more favourable (in offering particular support to these types of farming). In relation to HNV farming, there is apparently no consistency across the Member States in the approach to utilising CAP payments and instruments.

In the EU-15 case studies, Pillar 1 consumes over 85 % of total CAP expenditure. It is therefore the payments under Pillar 1 that determine the overall distribution of expenditure, with Pillar 2 in a minor role. An important factor influencing the distribution of Pillar 1 spending is the presence of certain highly productive farming sectors that were favoured by the historical design of this policy. The use of the historic basis for determining payments under the current Single Farm Payment Scheme (SPS) in many Member States serves to maintain the pre-existing patterns of distribution, favouring the most productive regions and farming systems to a very large extent. The Pillar 1 historic model gives an overall weighting in favour of farm types that were under intensive production during the reference years for SPS calculation, and are most likely to remain so.

Under Pillar 1 in the EU-15 mechanisms still exist that are intended to favour more extensive farming systems. Such mechanisms have existed for many years within the CAP, but currently apply mainly in the beef sector, where they favour suckler beef within certain livestock density limits. This is a farming system that can be expected to include a significant proportion of HNV farming. However, the analyses in France and Extremadura show that the current policy mechanisms fail to give priority to the lowest-intensity beef farming systems that are inherently those of most value for biodiversity. This is largely the result of the still relatively high livestock density thresholds (LU/ha) that are applied. When examined in terms of subsidy per annual work unit, the weighting of payments also appears to be insufficient to provide significant economic support to the most extensive farms.

The sheep and goat sectors are also highly relevant for HNV farming, at least as much as the suckler beef sector. For these sectors there is arguably a greater failure of the current Pillar 1 to support HNV farm types. Historically, the CAP has been recognised as offering comparatively low levels of economic support to the sheep and goat sectors by comparison with other sectors, and this relative disadvantage is carried through to SPS in the historic approach to payment entitlements. Also, in contrast to the beef sector, there has been a relative absence of EU-level Pillar 1 mechanisms specifically favouring low-intensity grazing sheep and goat farming systems as opposed to more intensive ones.

Member States have the option to use national envelopes under Article 68 to favour HNV farm types within production sectors, but this has not been done in the case-study regions/countries examined, and we suspect this is indicative of the situation more generally across the EU-15 (as of 2008). A similar option was made available under the reform of CAP support for the olive sector, in this case with national envelopes of up to 40 % of the budget for the sector, but again most Member States chose not to use this. Spain was the only exception to the general pattern, but its national envelope is less than 10 % of the CAP Pillar 1 budget for the sector and it is not well targeted at low-intensity olive production.

As a result, the crop payments that are gradually becoming absorbed into the SPS (arable, olives, tobacco etc.), and those elements that continue to be coupled to production, have a pattern of distribution that is heavily skewed towards the most intensively farmed land within the countries affected by these regimes. Payments calculated on a per hectare basis can range from less that EUR 50 to well over EUR 8 000 in the most extreme case of tobacco, which was heavily supported prior to decoupling. The French case study shows how, in the overall expenditure patterns for Pillar 1 aid, CAP arable support that favours intensive cropping, such as forage maize production, has the effect of outweighing the mechanisms that are intended to favour extensive beef production.

In other words, in the EU-15 case studies, the overall sectoral and geographical pattern of distribution of SPS and the surviving coupled payments under Pillar 1 had the effect of concentrating the majority of CAP expenditure on farmland and farm types that are least likely to include HNV farming.

In the EU-12 case studies, the Pillar 1 budget was far less dominant over the period of analysis, at less than 60 % of total CAP expenditure. Not only was a relatively smaller proportion of CAP expenditure absorbed by Pillar 1, the distribution pattern of Pillar 1 support was also very different from that in the Netherlands, Extremadura and France. This is because SAPS is paid as a flat-rate area payment.

In broad terms, the CAP expenditure pattern in the new Member States is more balanced between Pillar 1 and Pillar 2 than it is in the EU-15, and does not disadvantage low-intensity production, including HNV farming, as strongly. The current levels of SAPS support may or may not be sufficient to maintain the economic viability of HNV farms (the present study cannot address this analysis); but in these countries it seems there was a more level playing field between sectors and between farming types within sectors, in terms of the relative pattern of Pillar 1 support over the period of inquiry. Low-intensity farming was not put at a disadvantage by relatively high levels of expenditure on intensive systems, as has occurred in EU-15 Member States that have adopted the SPS historic entitlement model.

However, a particular concern revealed in the Estonia case study is that a large number of farms (nearly 10 000) are not registered for SAPS and therefore do not receive CAP support. These are mostly small, part-time farms, which in Estonia are often HNV farm types. A similar issue is apparent in Romania and Bulgaria, where large areas of grazing land have not been registered for CAP support for various reasons ([54]). In several EU-12 Member States, the area of pasture declared for CAP support is well below the area of such land indicated by Corine Land Cover categories, suggesting that there are significant areas that do not receive CAP support.

In France, the bias of Pillar 1 towards the more productive sectors and areas of the country was compensated to some extent by the pattern of expenditure under Pillar 2 schemes. However, this rebalancing was only at a crude geographical and sectoral level, and therefore should not be taken as favouring HNV farm types. Pillar 2 funds for environmental goals were spent mainly on schemes such as LFA and the main grassland

([54]) www.efncp.org/projects/hnv-bulgaria-romania/.

premium, which favour grass-based livestock farming generally, but the eligibility criteria are not specifically designed to target HNV farming. Tightly targeted measures, for example for Natura 2000 sites, may be more favourable specifically to farming that benefits biodiversity, but these measures were very marginal in terms of their relative scale of expenditure and geographical coverage, compared to the other measures in Pillar 2.

Overall, agri-environment schemes in France absorbed less than 4 % of total CAP expenditure in 2005. In Extremadura, agri-environment aids absorbed only 1.3 % of CAP expenditure and affected only 1.6 % of the land area (estimates 2000–2005). There was no expenditure targeted at semi-natural pasture in the period analysed. In the Netherlands, agri-environment schemes absorbed less than 2 % of CAP expenditure.

The proportion of total CAP funds allocated to Pillar 2 is considerably higher in the EU-12 case studies, compared with the allocation in three EU-15 Member States studied. However, this is significantly influenced by the phasing-in process for Pillar 1 aids in these countries — during the period in which the case studies were undertaken, Pillar 1 support levels were unusually low. Even more striking is the far higher proportion of total CAP expenditure that is absorbed by agri-environment schemes in the former (but note that spending patterns in some EU-15 Member States are quite different from those illustrated by the EU-15 case studies). Thus in additional to a fairly evenly balanced Pillar 1 rate of payment between more and less productive land, the case-study new Member States also provide targeted support to semi-natural grasslands and other types of HNV farming, through sometimes quite carefully delineated and yet popular Pillar 2 measures. Whereas Extremadura has no agri-environment expenditure targeted at grazing land, the Czech Republic has almost 80 % of such land in agri-environment schemes.

This is not to say that agri-environment schemes, or Pillar 2 measures generally, are perfectly designed for supporting HNV farming in the two EU-12 case-study countries. The appropriateness of schemes was not examined in detail in the present study. Some concerns were identified, however. In particular, changes to the schemes in Estonia will result in measures for maintaining semi-natural grazing land being tightly targeted on Natura 2000 sites from 2008. There is concern that large areas of semi-natural grassland outside Natura 2000 in Estonia may be abandoned due to the lack of CAP support. There are similar concerns for Type 2 HNV farmland (small-scale mosaics), which is not targeted for support and which is typically found on the smaller, part-time farms, often outside Natura 2000 sites.

In the Czech Republic, significant risks of abandonment of HNV farming were not identified. This is explained partly by the pattern of farm structures in the country: over 90 % of the land is in farms of over 50 ha. However, in some areas (for example the south-east) a considerable proportion of farms (35–55 %) are smaller than 5 ha. The detailed situation of HNV farming, and of the potential role of current policy measures in its maintenance, was not analysed.

The situation of small, part-time farms was raised as an important issue in the France case study, specifically in relation to Basse-Normandie. The majority of these small farms are HNV types, and although their total share of the regional UAA is not large, their share of the area of permanent grassland is considerable (17 %). The socio-economic sustainability of small, part-time farms is therefore an important issue for the maintenance of HNV farming in the region. This same issue is apparent on a far larger scale in some regions of eastern and southern Europe ([55]). This study has not been able to examine the issue in sufficient depth to provide a proper analysis and recommendations as to how to address it, but it can serve to raise concern and focus future research attention upon the situation of small, part-time farming.

([55]) www.efncp.org/projects/hnv-bulgaria-romania/.

8 Conclusions

8.1 Targeting of CAP support to areas with a high share of HNV farmland

In terms of spatial distribution of Pillar 1 expenditure per hectare of farmland, there are very considerable variations between Member States, but generally Pillar 1 support tends to be higher in areas with relatively little HNV farmland. This picture hides numerous variables on the ground (as revealed in Chapter 7) which mean that within any given Member State or region, the analysis gives no indication of how much Pillar 1 expenditure is directed towards HNV farmland, and how much is absorbed by intensively cropped land.

Where the data indicate high expenditure coinciding with a high proportion of HNV farmland at Member State level, there is potentially a positive relationship, although there is no guarantee that the expenditure is targeted in such a way as to favour HNV farming within the Member State. Where the data indicate a low expenditure coinciding with a high proportion of HNV farmland, it is clear that even under a best-case scenario, only a low level of support can be directed to HNV farming.

In the case of Pillar 2, there is enormous divergence across Member States in the level of expenditure per hectare of farmland under the agri-environment and LFA measures. There are several Member States at the very bottom of the expenditure axis, including Member States with high proportions of HNV farmland. Overall, there is no consistent relationship between relevant Pillar 2 expenditure and the share of HNV farmland across the EU-25 Member States.

In general, the analysis suggests that, in spite of the acknowledged environmental role of the CAP, the majority of the CAP support still goes into the most productive areas. Relatively little is spent in areas with a high proportion of HNV farmland and, in particular, the level of Pillar 2 support reveals a great divergence between Member States in their apparent strength of response to the objective of maintaining HNV farming.

8.2 Distribution and expenditure across measures and farming types

New and old Member States in the case-study analysis show fundamental differences in their patterns of CAP expenditure, and in their use of CAP measures. Some of these differences are highly relevant for HNV farming, and it is clear that policy conditions in some Member States are far more favourable to these types of farming than in some other Member States. Again, there are no consistent patterns across the Member States in the way the CAP support addresses HNV farming, although the EU-12 Member States analysed in this study showed a more balanced situation than their EU-15 counterparts.

In the EU-15 case-study countries, Pillar 1 consumes over 85 % of total CAP expenditure. It is therefore the payments under Pillar 1 that determine the overall distribution of expenditure, with Pillar 2 in a minor role. An important factor influencing the distribution of Pillar 1 spending is the presence of certain farming sectors that are highly productive and that were favoured by the historical design of this policy. The use of the historic basis for determining payments under current SPS serves to maintain the pre-existing patterns of distribution to a very large extent — in spite of significant differences between Member States (as shown in the case studies from the Netherlands, Extremadura and France).

In other words, in the EU-15 case studies, the overall targeting of SPS and the surviving coupled payments under Pillar 1 have the effect of concentrating the majority of CAP expenditure on farmland and farm types that are least likely to be HNV. Potentially, this situation might be altered via modulation under recent CAP reforms that have shifted some Pillar 1 funds into Pillar 2, but the overall pattern still remains largely the same.

In the EU-12 case studies, the Pillar 1 budget has been far less dominant, at less than 60 % of total CAP expenditure. Not only is a relatively smaller proportion of CAP expenditure absorbed by Pillar 1, the distribution pattern of Pillar 1 support is also

different in these Member States. This is because SAPS is paid as a flat-rate area payment. In broad terms, the pattern in the new Member States is more balanced, and more inherently favourable to HNV farming. However, in some EU-12 Member States it seems that considerable areas of HNV farmland are not registered for CAP support payments; this situation applies mainly in respect of small farms and marginal land areas where HNV farm types are likely to predominate.

The design of CAP measures (Pillar 1 and Pillar 2), and how this design influences the effect of measures on HNV farmland, is a critical issue. For example, in Extremadura, although extensive land uses absorb quite a large proportion of Pillar 1 expenditure, the payment mechanisms do not favour a model of farming that is in accordance with HNV characteristics. Specifically, suckler cow densities are rewarded well above the HNV optimum. In France there are similar issues for some Pillar 1 aids (related to stocking densities for livestock support), although the divergence from the optimal level is less extreme.

In the EU-15 case studies, agri-environment schemes seem insufficient to provide substantial support to HNV farming in. In the years studied, agri-environment schemes in France absorbed less than 4 % of CAP expenditure. In Extremadura, agri-environment schemes absorbed only 1.3 % of CAP expenditure and affected only 1.6 % of the land area. There was no expenditure targeted at semi-natural pasture. In the Netherlands, agri-environment schemes absorbed less than 2 % of CAP expenditure. The proportion of CAP funds allocated to agri-environment schemes in the EU-12 case studies is far higher (note that some EU-15 Member States also have more HNV-favourable spending patterns than those shown in the three case-study countries — see Chapter 7). This means that against the background of an evenly balanced Pillar 1 payment, these new Member States seem to provide more targeted support to semi-natural grasslands and other types of HNV farming through fairly extensive Pillar 2 measures. Whereas Extremadura has no agri-environment expenditure targeted at grazing land, the Czech Republic has almost 80 % of such land in agri-environment schemes. However, it should be noted that other new Member States have far less ambitious agri-environment schemes than the case-study countries in this report.

This is not to say that agri-environment schemes, or Pillar 2 generally, are perfectly designed for supporting HNV farming in the two EU-12 case study countries. The appropriateness of schemes has not been examined in detail in the present study. Some concerns have been identified: in particular, changes to the schemes in Estonia will result in measures for maintaining semi-natural grazing land being tightly targeted on Natura 2000 sites from 2008. There is concern that large areas of semi-natural grassland outside Natura 2000 in Estonia may be abandoned due to the lack of CAP support. There are similar concerns for Type 2 HNV farmland (small-scale mosaics), which is not targeted for support and which is typically found on the smaller, part-time farms, often outside Natura 2000 sites, which are commonly not registered to receive CAP payments.

Overall, the distribution of CAP support across measures and farm systems suggests that favourable management of HNV farmland is insufficiently supported. The net effect of total CAP support on the conservation status of HNV farmland has not been assessed, but the potentially favourable measures under Pillar 2 make up only a very small fraction of total CAP support. Pillar 1 support, in particular, could be used to potentially increase the returns to HNV systems, but this is generally targeted at more productive systems.

9 Final reflections

The introduction to this report highlighted the primary role of farming in food production, as well as the delivery of biomass for energy and material uses. However, farming and rural land management also perform an additional set of functions for society, including the provision of a range of environmental benefits and the maintenance of rural social fabric, especially in more marginal areas. The multiple objectives of the CAP reflect these varied functions of European farming. While the CAP has an important influence, it cannot stop wider social and economic trends that influence the evolution of intensive and extensive farming systems alike. This needs to be taken into account when reflecting on relevant policy choices.

The analysis presented here suggests that the current level of support provided is too low to ensure the maintenance of HNV farmland. Given that this maintenance is a key policy objective, the question then is, to what extent a redesign of the policy intervention and redistribution of funds would be feasible and effective. To answer this question, the support needs for HNV farm types would have to be established in terms of the land area involved and the economic needs of the farm types concerned. Secondly, the options for optimising instruments and alternative targeting approaches should be investigated. And thirdly, the robustness of the intervention options should be analysed in a long-term perspective, taking broad contextual dynamics, such as climate change, and demographic and socio-economic trends, into account.

The influence of socio-economic factors on HNV farming can be shown through analysing the high proportion of very small farms and ageing farmers in certain areas, particularly in southern and eastern Europe. What is the correct strategy here? Do they need special attention and tailored measures? Could they be made financially viable or should they be considered as a farm type bound to disappear? Answering questions like these would require an in-depth analysis of the CAP rationale, implementation and potential that goes far beyond the scope of this report. Some relevant observations and recommendations for future research can nevertheless be made.

Optimising public support for the provision of public goods is at the heart of this discussion. Rather than treating the maintenance of HNV farmland as an isolated biodiversity issue, one could develop an overarching perspective on the efficient delivery of ecosystem goods and services by agriculture in general, following the conceptual approach of the Millennium Ecosystem Assessment ([56]). Such an intervention logic would imply a stronger focus on regional differentiation and the tailoring of instruments in policy packages to promote or sustain specific ecosystem services. In other words, a differentiated approach taking regional characteristics and development perspectives into account. There is in this context a need to think about which types of farm are best prepared to generate their income from the market (i.e. more productive land and farming systems with more options), and which types are restricted by poor production conditions and a limited range of production opportunities (HNV farms generally are in this category).

The current practice of providing CAP Pillar 1 income support on a historic basis, effectively favouring more productive land that is usually under intensive farming systems, is hard to justify in this light. Even regardless of the current expenditure pattern, the decoupled payments under Pillar 1 (now the majority of CAP payments) seem to be inadequate as an incentive to encourage specific management practices, such as those required for maintenance of HNV farmland. Fully decoupled payments provide income support to farmers without binding them to a specific type of production or indeed to producing at all. The cross-compliance approach can impose limits on environmentally damaging practices but cannot really ensure active management of the type required for maintaining the characteristic qualities of HNV farmland. Decoupled payments may

([56]) http://www.millenniumassessment.org/en/index.aspx.

increase profitability of HNV farming systems, but that in itself is insufficient to guarantee continued beneficial management. The same can be said for some of the current support under Pillar 2, including the LFA expenditure in many instances. By contrast, agri-environment measures may explicitly target HNV beneficial management practices, but the financial support is based on cost incurred or income foregone, thus in principle not affecting the overall profitability of the farms concerned. In addition, by design they are not intended to support the continuation of good practices, nor do they reach farmland not enrolled in agri-environment schemes.

A redistribution of CAP support in favour of HNV farming could be pursued in a number of ways. Better targeting towards HNV systems would mean a much stronger reallocation of payments towards low-intensity farming. In terms of policy mechanisms, there are various ways to achieve this shift — which should be carefully examined — including the modification of eligibility criteria for the receipt of Pillar 1 payments, and the transfer of funds from Pillar 1 to Pillar 2 measures such as LFA and agri-environment schemes as well as appropriate flanking measures such as environmental training and advice (see Box 9.1 for an illustrative example).

For future analysis of CAP expenditure patterns in relation to HNV farming, it would be useful to focus on the following aspects:

- Rather than analysing expenditure on entire programmes and packages of measures (for example Pillar 2 programmes or agri-environment), a separate analysis should be made of expenditure on measures that are clearly designed to maintain HNV farming. This is a question primarily about the design of the measures. Information in RD programmes should permit an approximate distinction between measures that broadly support HNV farming, and those that do not. Expenditure on the former measures at Member State level can be compared with the proportion of HNV farmland in that Member State. The same approach can be applied to Pillar 1 measures that are targeted in this way, for example under Article 68. This would give a far more accurate picture of HNV-favourable expenditure in relation to the proportion of HNV farmland, in a given Member State;

- In addition to expenditure, the potential coverage of these HNV favourable measures in number of hectares can be compared with the proportion of HNV farmland. This would

Box 9.1 Options for shifting Pillar 1 expenditure towards CAP instruments favourable to HNV farming

In Extremadura, annual Pillar 1 expenditure is approximately EUR 565.29 million (average 2000–2005). If this amount were divided between the approximately 3.151 million hectares of farmland in Extremadura in the form of an annual flat-rate payment, this would amount to EUR 180/ha (cf. EU average of EUR 290/ha). For low-intensity arable cropping and olive groves, and for the lower-intensity livestock grazing systems, such a payment would represent a considerable increase in support compared with the current SPS system, at no cost to the CAP budget. There would be a corresponding reduction in support for farmers who produced tobacco, tomatoes, rice and irrigated cereals in the reference years for SPS.

A less radical change would be to apply a cap across all sectors to the amount of support payable per hectare under SPS. For example, if this were set at an arbitrary sum of EUR 1 000 it would affect only certain crops, specifically tobacco and tomatoes in this region. Following decoupling of support for these crops there appears to be no rational justification for paying the past producers more than EUR 1 000/ha, as they now have the option to leave their land uncultivated, which entails minimal costs.

The funds saved by capping support at this rate would be approximately EUR 110 million per year. This is equivalent to around 15 % of total CAP spending in Extremadura at present. If this amount were put into HNV-targeted measures under Article 68 or natural handicap areas, it could provide a EUR 50/ha payment across the 2.2 million hectares of semi-natural grazing land in the region. If appropriate environmental conditions were in place to prevent overgrazing or other damaging management of pasture systems, then such a shift, particularly if complemented by appropriate awareness-raising, training and diversification aids, could provide crucial support to the viability of important HNV farming systems in Extremadura.

allow a complementary, quantified comparison between the scale of the issue on the ground, and the scale of the policy response. The intended coverage in hectares of agri-environment measures is stated in RDPs;

- For refining the more global evaluation of the relationship between CAP expenditure and the distribution of HNV farmland, the analysis should be undertaken at a more detailed geographical level. However, it should be remembered that even within small regions (for example NUTS 4 or 5) there can still be considerable differences in farming types and thus in Pillar 1 expenditure under the historic model. Nevertheless, the more fine-grained the regional comparison the higher the explanatory power of any statistical results;

- More investment also needs to be made into farm and field-level analysis of policy impacts and needs, in HNV areas. The power of an FADN-based analysis has been shown via the results of the MEACAP project in Section 4.2. However, farm payments data and other data sets can also be used, as demonstrated in Section 7.1. Further improvements in the detail and accessibility of such data will be necessary to fully exploit their potential for investigation of the economic situation of different types of HNV farms in different regions of the EU.

Investment in the monitoring and analysis of HNV farming and farmland in Europe is, however, only a first step. It is also important to review policy options and aims regarding HNV farmland, through critical and systematic discussions. The following questions illustrate some of the issues to address:

a) Is the aim to secure the economic viability of HNV systems through better-targeted income support? If so, farm-level eligibility criteria could be a critical tool, probably together with payments targeted on HNV areas (if they can be defined). But what would be the optimal combination of measures for this purpose?

b) Is the primary aim to put more money into maintaining certain HNV management practices? If so, more money for agri-environment measures may be the most appropriate option — but certain HNV farming systems may continue to decline under this scenario.

c) Building on the existing instruments: How should Pillar 1, Article 68, agri-environment, Natura 2000 and natural handicap payments fit together? What is the potential role of each for HNV farming maintenance, when viewed in combination? What other elements of Pillar 2 could provide appropriate complementary aid to stimulate greater HNV resilience and successful adaptation to future challenges? And finally, how would such targeted policy packages relate to the rules of multilateral trade?

References

Andersen, E.; Baldock, D.; Bennett, H.; Beaufoy, G.; Bignal, E.; Brouwer, F.; Elbersen, B.; Eiden, G.; Godeschalk, F.; Jones, G.; McCracken, D. I.; Nieuwenhuizen, W.; van Eupen, M.; Hennekens, S. and Zervas, G., 2003. *Developing a high nature value indicator*. Report for the European Environment Agency, Copenhagen.

Baldock, D.; Beaufoy, G.; Bennett, G. and Clark, J., 1993. *Nature Conservation and New Directions in the Common Agricultural Policy*. Institute for European Environmental Policy (IEEP), London.

Beaufoy, G.; Baldock, D. and Clark, J., 1994. *The Nature of Farming: Low Intensity Farming Systems in Nine European Countries*. Institute for European Environmental Policy (IEEP), London.

Billeter, R.; Liira J.; Bailey, D.; Bugter, R.; Arens, P.; Augenstein, I.; Aviron, S.; Baudry, J.; Bukacek, R.; Burel, F.; Cerny, M.,; De Blust, G.; De Cock, R.; Diekötter, T.; Dietz, H.; Dirksen, J.; Dormann, C.; Durka, W.; Frenzel, M.; Hamersky, R.; Hendrickx, F., Herzog, F.; Klotz, S.; Koolstra, B.; Lausch, A.; Le Cœur, D.; Maelfait, J. P.; Opdam, P.; Roubalova, M.; Schermann, A.; Schermann, N.; Schmidt, T.; Schweiger, O.; Smulders, M. J. M.; Speelmans, M.; Simova, P.; Verboom, J.; van Wingerden, W. K. R. E.; Zobel, M. and Edwards, P. J., 2008. Indicators for biodiversity in agricultural landscapes: a pan-European study. *Journal of Applied Ecology* 2008, 45, 141–150.

Bignal, E. M.; McCracken, D.I. and Curtis, D.J. (eds.), 1994. *Nature conservation and pastoralism in Europe*. Joint Nature Conservation Committee, Peterborough.

Bignal, E. M. and McCracken, D. I., 1996. Low-intensity farming systems in the conservation of the countryside. *Journal of Applied Ecology*, 33, 413–424.

Bignal, E. M. and McCracken, D. I., 2000. The nature conservation value of European traditional farming systems. *Environmental Reviews*, 8, 149–171.

BirdLife, 2009. Could do better. How is EU Rural Development policy delivering for biodiversity? *Birdlife International*.

Caja de Badajoz, 2006. *La agricultura y la ganadería extremeñas*. Informe 2005 y análisis de una década: 1996–2005. Caja de Ahorros de Badajoz.

COM(1998) 42 final Communication of the European Commission to the Council and to the Parliament on a European Community Biodiversity Strategy.

COM(2006) 216 final Communication from the Commission halting the loss of biodiversity by 2010 — and beyond. Sustaining ecosystem services for human well–being.

Council Decision 2006/144 on Community strategic guidelines for rural development (programming period 2007 to 2013).

DVL/NABU, 2007. *Bioenergie? — Aber natürlich! Nachwachsende Rohstoffe uas der Sicht des Umwelt- und Naturschutzes*. Heft 12 der DVL-Schriftenreihe „Landschaft als Lebensraum'. Deutscher Verband für Landespflege; Fürth, Germany; www.lpv.de.

European Commission, 2008. Rural Development in the European Union: Statistical and Economic Information. Report 2008.

European Commission, 2008. *Attitudes of European citizens towards the environment*. Special Eurobarometer 295/Wave 68.2

EEA, 2004. *High nature value farmland — characteristics, trends and policy challenges*. UNEP/EEA Report No 1/2004. European Environment Agency, Copenhagen.

EEA, 2005. *Agriculture and environment in EU-15 — the IRENA indicator report*. EEA Report No 6/2005. European Environment Agency, Copenhagen.

EEA, 2006. *Integration of environment into EU agriculture policy — the IRENA indicator-based assessment report*. EEA Report No 2/2006. European Environment Agency, Copenhagen.

EEA, 2007. *Estimating the environmentally compatible bio-energy potential from agriculture*. EEA Technical Report No. 12/2007. European Environment Agency, Copenhagen.

EEA, 2009. *Progress towards the European 2010 biodiversity target*. EEA report No 4/2009. European Environment Agency, Copenhagen.

EFNCP, 2006. *Study on environmental consequences of Sheep and Goat farming and of the Sheep and Goat premium system*. Final report for DG Agriculture. Contract n° 30-CE-0042768/00-19.

Escuela Técnica Superior de Ingenieros Agrónomos U.P.M. y Saborá Sociedad de Estudios, 2003. *Evaluación Intermedia de la Medida de Indemnización Compensatoria en determinadas Zonas Desfavorecidas (periodo 2000/2003)*. Octubre 2003.

Farmer, M.; Cooper, T.; Swales, V. and Silcock, P., 2008. *Funding for Farmland Biodiversity in the EU: Gaining Evidence for the EU Budget Review A Report for the RSPB*.

Gay, S. H.; Osterburg, B.; Baldock, D.; Zdanowicz, A., 2005. *Recent evolution of the EU Common Agricultural Policy (CAP): state of play and environmental potential*. MEACAP WP6 D4b.

IEEP, 2006. *An evaluation of the Less Favoured Area measure in the 25 Member States of the European Union*. Study financed by the Commission of the European Union. Final report, November 2006.

IEEP, 2007a. *HNV Indicators for Evaluation.* Final report for DG Agriculture. Contract notice 2006-G4-04.

IEEP, 2007b. *Evaluation of the environmental impacts of CAP measures related to the beef and veal sector and the milk sector.* Final deliverable report for DG Agriculture. Specific contract notice 30-ce-0101431/00-04 implementing framework contract notice 30-ce-067379/00-89.

Kristensen, P., 2003. *EEA core set of indicators: revised version April 2003*. Technical report. European Environment Agency, Copenhagen.

Le Roux, X.; Barbault, R.; Baudry, J.; F. Burel, F.; Doussan, I.; Garnier, E.; Herzog, F.; Lavorel, S.; Lifran, R.; Roger-Estrade, J.; Sarthou, J. P. and Trommetter, M.(eds), 2008. *Agriculture et biodiversité. Valoriser les synergies*. Expertise scientifique collective, synthèse du rapport, INRA (France).

Merlot, B.; Pavie, J.; Lafont, M. and Boutin, F. 2004. *Typologie des exploitations agricoles de Basse Normandie à partir du recensement général agricole 2000*. Institut de l'élevage, coll. Références, 121 p.

Oppermann *et al.*, 2009. *Common Agricultural Policy: cross-compliance and the effects on biodiversity*. Published by IFAB (Institut für Agrarökologie und Biodiversität).

Osterburg, B. and Nitsch, H., 2007. *Energiepflanzenanbau und Wasserschutz — Zwischenergebnisse von Studie und Befragung. Presentation at UBA Workshop on „Der Einsatz nachwachsender Rohstoffe zur Energiegewinnung — neue Probleme für die Gewässer?'*. Berlin, 10 December 2007: http://www.umweltbundesamt.de/wasser-und-gewaesserschutz/index.htm.

Osterburg, B.; Nitsch, H.; Laggner, A.; Wagner S., 2008. *Analysis of policy measures for greenhouse gas abatement and compliance with the Convention on Biodiversity*. Report produced under EU project SSPE-CT-2004-503604 'Impact of Environmental Agreements on the CAP'.

Ostermann, O. P., 1998. The need for management of nature conservation sites designated under Natura 2000. *Journal of Applied Ecology* 35: 968–973.

Paracchini, M. L.; Petersen, J-E.; Hoogeveen, Y.; Bamps, C.; Burfield, I. and van Swaay, C., 2008. *High Nature Value Farmland in Europe. An Estimate of the Distribution Patterns on the Basis of Land Cover and Biodiversity Data*. European Commission Joint Research Centre, Institute for Environment and Sustainability. Office for Official Publications of the European Communities, Luxembourg, accessed through http://agrienv.jrc.it/publications/pdfs/HNV_Final_Report.pdf.

Plachter, H., 1996. *A Central European Approach for the Protection of Biodiversity*. In: Ogrin, D. (Ed) Nature conservation outside protected areas, 91-108. Conf. Proc. Ministry of Environment and Physical Planning, Ljubljana, Slovenia.

Plachter, H., 1998. *A Central European Contribution to a Pan-European Conservation Strategy*. La Cañada 10. EFNCP.

Pointereau, P.; Paracchini, M.-L.; Terres, J.-M.; Jiguet, F.; Bas, Y. and Biala, K. (2007). *Identification of High Nature Value farmland in France through statistical information and farm practice surveys*. SOLAGRO for JRC-IES (reported as EUR 22786 EN – 2007).

Pointereau, P. and Poux, X., 2007. Unpublished Case Study Report on Basse-Normandie, France. Conducted as part of 'Four Regional HNV Farming

Systems: Case Studies to Final Report for the Study on HNV Indicators for Evaluation'. Report for DG Agriculture, (Contract Notice 2006 – G4-04), IEEP, London.

Robinson, R. A.; Wilson, J. D. and Crick, H. Q. P., 2001. The Importance of Arable Habitat for Farmland Birds in Grassland Landscapes. *Journal of Applied Ecology*, 38, 1059–1069.

Swaay, C. A. M. van and Warren, M. S. (eds.), 2003. *Prime Butterfly Areas in Europe: Priority sites for conservation*. National Reference Centre, Ministry of Agriculture, Nature and Food Quality, The Netherlands.

Tubbs, C. R., 1997. A Vision for Rural Europe. *British Wildlife*, 9, 79–85.

Turner, M.; Robbins K. and Silcock, P., 2008. *Hill farming systems in south west England: economic viability and the delivery of public goods*. Exeter University.

Veen, P.; Jefferson, R.; de Smidt , J. and van der Straaten, J. (eds.), 2009. *Grasslands in Europe of high nature value*. KNNV Publishing, The Netherlands.

WWF, 2008. Reforming the CAP. *WWF Vision for Rural Europe: 2013 and beyond — a discussion paper*. World Wide Fund for Nature.

Annex 1 Revised list of habitats from Annex I of the Habitats Directive that depend on, or are associated with, extensive agricultural practices

This list was built on a review performed by the European Topic Centre for Nature Protection and Biodiversity during 2007, based on a previous proposal by Ostermann, 1998. Following further country consultation, the list of proposed habitats was reviewed again on the basis of country feedback, EEA internal discussions and some expert advice.

The table below contains the final selection by the EEA of habitats that are characteristic of HNV farmland as they generally depend on extensive farming practices. These habitats have been grouped into two categories: those that clearly fulfil the conditions to be listed, and those where doubts exist or the relationship with extensive farming practices only holds true for part of their distribution in Europe. Habitats in the latter group are marked with a ° and were not considered by the EEA/JRC in the selection of relevant Natura 2000, IBA and PBA sites.

This selection is necessarily subjective to some degree; relevant information simply does not exist for all habitats across their range in Europe. Inclusion in the first category required a clear dependence on extensive agricultural land use, and an increase in the diversity or extension of the relevant habitat type is not enough. Some habitats proposed by countries were excluded from the final list if they represent pioneer habitats (for example 2120: shifting dunes along the shoreline) or appeared to be climax habitats (for example Olea and Ceratonia forests). In addition, those habitats that still underlie a more natural dynamic (for example coastal dunes) were less likely to receive a 'full' status than those in more transformed landscapes (for example pannonic inland dunes).

Table A1.1 Revised list of habitats from Annex I of the Habitats Directive that depend on, or are associated with, extensive agricultural practices

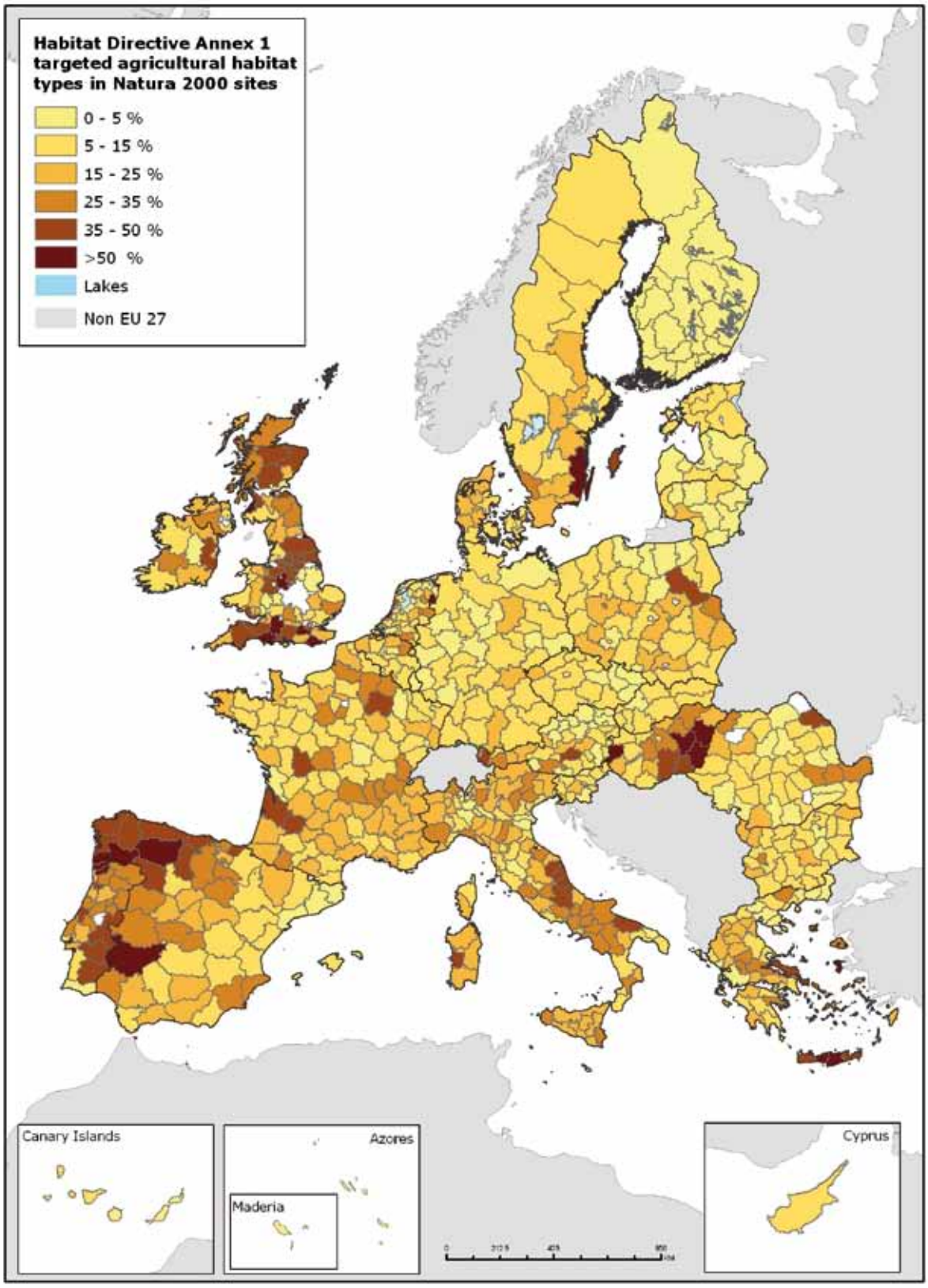
Code	Habitat name	D	Comment
1330 °	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	f	Some types only
1340	Inland salt meadows	p	
1530	Pannonic salt steppes and salt marshes	p	
1630	Boreal Baltic coastal meadows	p	
2130 °	Fixed coastal dunes with herbaceous vegetation (grey dunes)	p	At least some sub-types dependent on grazing
2140 °	Decalcified fixed dunes with Empetrum nigrum	p	
2150 °	Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	p	
2160 °	Dunes with Hippophae rhamnoides	p	
2170 °	Dunes with Salix repens ssp. argentea (*Salicion arenariae*)	p	
21A0	Machairs (*in Ireland)	f	Rotational cultivation
2310	Dry sandy heaths with *Calluna* and Genista	f	
2320	Dry sandy heaths with *Calluna* and *Empetrum nigrum*	f	
2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	f	
2340	Pannonic inland dunes	f	
4010	Northern Atlantic wet heaths with *Erica tetralix*	f	
4020	Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*	f	
4030	Dry heaths (all subtypes)	f	
4040	Dry Atlantic coastal heaths with *Erica vagans*	f	
4090	Endemic oro-Mediterranean heaths with gorse	p	
5130	*Juniperus communis* formations on heaths or calcareous grasslands	p	
5420	*Sarcopoterium spinosum phryganas*	p	
5430	Endemic phryganas of the *Euphorbio-Verbascion*	p	
6110	Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*	p	

Table A1.1 Revised list of habitats from Annex I of the Habitats Directive that depend on, or are associated with, extensive agricultural practices (cont.)

Code	Habitat name	D	Comment
6120	Xeric sand calcareous grasslands	p	
6140	Siliceous Pyrenean *Festuca eskia* grasslands	p	
6150	Siliceous alpine and boreal grasslands	p	
6160	Oro-Iberian Festuca indigesta grasslands	p	
6170	Alpine and subalpine calcareous grasslands	p	
6180	Macaronesian mesophile grasslands	p	
6190	Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)	f	
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites)	f	
6220	Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	f	
6230	Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)	f	Except in natural alpine and sub-alpine grasslands
6240	Sub-pannonic steppic grassland	f	
6250	Pannonic loess steppic grasslands	f	
6260	Pannonic sand steppes	f	
6270	Fennoscandian lowland species-rich dry to mesic grasslands	f	
6280	Nordic alvar and precambrian calcareous flatrocks	f	
62A0	Eastern sub-mediterranean dry grasslands (*Scorzoneratalia villosae*)	f	
6310	Sclerophyllous grazed forests (dehesas) with *Quercus suber* and/or *Quercus ilex*	f	
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	f	
6420	Mediterranean tall humid herb grasslands of the *Molinio-Holoschoenion*	p	
6430 °	Eutrophic tall herbs	p	Some types
6440	Alluvial meadows of river valleys of the *Cnidion dubii*	f	
6450	Northern boreal alluvial meadows	f	
6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	f	
6520	Mountain hay meadows	f	
6530	Fennoscandian wooded meadows	f	
7140 °	Transition mires and quaking bogs	p	
7230	Calcareous (and alkaline) fens	p	
8230 °	Siliceous rocky slopes with pioneer vegetation	p	
8240	Limestone pavements	p	
9070	Fennoscandian wooded pastures	f	

Notes: D = degree of habitat dependence on agricultural practices (usually extensive ones);
f = fully dependent;
p = partly dependent, the agricultural practices prolong the habitat existence or enlarge its area of distribution.

Map A1.1 Share of targeted agricultural habitat types (Annex I habitats dependent on, or associated with, extensive farming practices) within Natura 2000 sites



Source: Reporting of Member States in the framework of the Habitats Directive (92/42/EEC). Finalised in December, 2007.

Annex 2 CAP budget allocations and expenditure 2000–2006, 2007–2013

Table A2.1 Pillar 1 — 2000–2006

Million EUR	2000	2001	2002	2003	2004	2005	2006	Total
Belgium	929.230	906.551	897.863	970.312	1 023.766	978.734	870.192	6 576.647
Czech Republic	0	0	0	0	168.000	463.800	517.300	1 149.100
Denmark	1 270.534	1 078.625	1 171.353	1 173.772	1 173.326	1 178.762	1 087.950	8 134.323
Germany	4 960.256	5 170.685	6 053.749	5 044.450	5 233.837	5 699.481	5 604.889	37 767.347
Estonia	0	0	0	0	45.800	77.400	87.700	210.900
Ireland	2 252.776	2 290.048	2 304.256	1 603.325	1 479.515	1 448.776	1 344.886	12 723.581
Greece	5 322.221	6 118.195	5 785.640	2 620.456	2 651.996	2 596.747	2 858.243	27 953.499
Spain	8 586.473	8 707.135	9 307.060	5 963.685	5 803.991	5 872.725	5 975.893	50 216.962
France	1 204.221	989.925	1 052.397	9 594.442	8 549.889	9 108.914	8 865.082	39 364.870
Italy	4 273.951	4 689.616	5 019.426	4 731.593	4 407.741	4 821.061	4 873.827	32 817.214
Cyprus	0	0	0	0	22.500	58.800	50.900	132.200
Latvia	0	0	0	0	98.700	137.500	160.700	396.900
Lithuania	0	0	0	0	147.900	291.200	346.100	785.200
Luxembourg	13.923	19.922	25.922	26.444	21.363	29.086	32.838	169.498
Hungary	0	0	0	0	181.700	716.800	826.100	1 724.600
Malta	0	0	0	0	8.100	9.900	11.200	29.200
Netherlands	1 337.026	1 100.430	1 082.098	1 291.807	1 194.186	1 192.857	1 141.141	8 339.545
Austria	559.466	601.516	649.686	666.429	673.248	756.590	772.099	4 679.035
Poland	0	0	0	0	873.100	1 839.000	2 033.500	4 745.600
Portugal	519.900	684.277	593.292	697.247	630.024	712.371	714.266	4 551.377
Slovenia	0	0	0	0	84.700	127.300	142.600	354.600
Slovakia	0	0	0	0	120.900	247.500	294.000	662.400
Finland	395.132	489.411	517.551	537.436	539.141	566.009	570.783	3 615.462
Sweden	622.438	629.516	653.700	699.870	685.307	785.644	758.586	4 835.061
United Kingdom	3 906.920	4 196.633	3 494.829	3 821.025	3 835.399	4 057.748	4 052.318	27 364.872
EU-25	36 154.466	37 672.484	38 608.822	39 442.293	39 654.127	43 774.706	43 993.094	279 299.993

Source: Elaborated by the EEA, data from the European Commission, DG Agriculture and Rural Development — Financial reports, several years. Data do not include direct expenditure made by the Commission and Technical Assistance in favour of the European Commission.

Table A2.2 Pillar 2 — 2000–2006

Million EUR	2000	2001	2002	2003	2004	2005	2006	Total
Belgium	28.28	32.05	49.97	46.71	52.30	63.43	82.99	355.74
Czech Republic	0.00	12.99	4.93	40.71	32.42	67.19	53.83	212.05
Bulgaria	0.00	0.00	0.00	0.00	181.53	171.80	215.79	569.12
Denmark	34.17	36.57	49.65	47.47	45.49	48.93	77.23	339.50
Germany	833.95	1 016.74	1 155.67	1 281.55	1 430.94	1 318.12	1 461.22	8 498.18
Estonia	0.00	3.05	6.55	17.06	40.60	72.21	56.05	195.51
Ireland	356.28	329.91	340.90	348.18	382.06	386.38	416.24	2 559.94
Greece	146.78	349.42	233.66	272.73	377.36	459.01	593.72	2 432.68
Spain	395.43	1 144.79	1 090.72	1 303.86	1 261.61	1 402.58	1 561.94	8 160.93
France	507.29	644.66	696.58	926.52	955.49	999.68	1 301.27	6 031.50
Italy	951.77	681.82	698.98	979.20	1 046.95	1 155.94	1 164.76	6 679.42
Cyprus	0.00	0.00	0.00	0.00	7.48	9.25	25.12	41.85
Latvia	0.00	5.44	2.80	21.05	81.60	142.81	120.30	374.00
Lithuania	0.00	7.43	3.20	24.92	113.40	177.18	175.75	501.88
Luxembourg	6.68	9.58	11.32	16.86	16.47	16.05	12.13	89.09
Hungary	0.00	0.00	9.48	0.00	117.70	287.81	386.89	801.88
Malta	0.00	0.00	0.00	0.00	3.11	8.33	8.80	20.24
Netherlands	60.27	60.87	50.68	71.89	86.55	74.45	83.27	487.99
Austria	461.93	460.28	449.38	469.09	480.29	499.90	516.22	3 337.09
Poland	0.00	0.00	42.03	99.71	599.02	1 138.23	1 442.00	3 321.00
Portugal	280.31	263.77	401.08	438.44	555.46	431.47	466.57	2 837.09
Romania	0.00	0.00	37.54	0.00	160.71	187.20	147.19	532.64
Slovenia	0.00	1.58	0.09	5.55	63.41	77.37	124.11	272.11
Slovakia	0.00	0.00	4.56	4.82	80.35	177.39	183.50	450.62
Finland	346.25	334.49	336.49	360.14	366.44	365.49	295.19	2 404.49
Sweden	183.39	159.47	174.73	184.45	184.09	190.84	184.34	1 261.30
United Kingdom	171.23	195.11	159.18	186.98	217.00	278.02	300.97	1 508.49
EU-27	4 764.00	5 750.02	6 010.18	7 147.88	8 939.82	10 207.05	11 457.39	54 276.34

Source: Elaborated by the EEA, from Table 4.2.1.1.3.i. Rural development in the European Union — Statistical and Economic information, 2007. EU funds only (EAGGF, SAPARD, TRDI).

Table A2.3 Pillar 1 — 2007–2013

Million EUR	2007	2008	2009	2010	2011	2012	2013	Total
Heading 2. Preservation and management of natural resources	51 962	54 685	54 017	53 379	52 528	51 901	51 284	369 756
of which: market-related expenditure and direct payments	43 120	42 697	42 279	41 864	41 453	41 047	40 645	293 105

Source: Decision of 29 April 2008 amending the Interinstitutional Agreement of 17 May 2006 on budgetary discipline and sound financial management with regard to adjustment of the multiannual financial framework (2008/371/EC). Commitment appropriations (million EUR current prices). Documents available at http://ec.europa.eu/budget/index_en.htm. Data breakdown by Member State not available.

Table A2.4 Pillar 2 — 2007–2013

Million EUR	2007	2008	2009	2010	2011	2012	2013	Total
Belgium	63.991	63.958	60.238	59.684	59.268	56.995	54.477	418.610
Bulgaria	244.056	337.145	437.344	399.099	398.059	397.697	395.700	2 609.099
Czech Republic	396.623	392.639	388.036	400.933	406.641	412.672	417.962	2 815.506
Denmark	62.593	66.345	63.771	64.335	63.431	62.598	61.589	444.661
Germany	1 184.996	1 186.942	1 147.426	1 156.019	1 159.359	1 146.662	1 131.115	8 112.517
Estonia	95.608	95.569	95.697	100.929	104.639	108.913	113.303	714.659
Ireland	373.684	355.014	329.171	333.372	324.699	316.771	307.204	2 339.915
Greece	461.376	463.470	453.393	452.019	631.768	626.030	619.248	3 707.304
Spain	286.654	1 277.647	1 246.360	1 253.424	1 057.772	1 050.937	1 041.123	7 213.918
France	931.042	942.359	898.673	909.225	933.778	921.206	905.682	6 441.965
Italy	1 142.143	1 135.428	1 101.391	1 116.626	1 271.660	1 266.602	1 258.159	8 292.010
Cyprus	26.705	24.773	22.750	23.072	22.403	21.784	21.038	162.524
Latvia	152.867	147.768	142.542	147.766	148.782	150.189	151.198	1 041.114
Lithuania	260.975	248.836	236.929	244.742	248.002	250.278	253.598	1 743.360
Luxembourg	14.422	13.661	12.655	12.818	12.487	12.181	11.812	90.038
Hungary	570.812	537.526	498.635	509.252	547.604	563.305	578.710	3 805.843
Malta	12.434	11.528	10.657	10.544	10.348	10.459	10.663	76.633
Netherlands	70.537	72.638	69.791	70.515	68.707	67.782	66.550	486.521
Austria	628.155	594.710	550.452	557.558	541.671	527.869	511.057	3 911.470
Poland	1 989.718	1 932.933	1 872.740	1 866.783	1 860.574	1 857.245	1 850.046	13 230.038
Portugal	560.524	562.492	552.040	559.862	565.143	565.192	564.072	3 929.325
Romania	0.000	1 146.688	1 442.872	1 359.771	1 357.855	1 359.147	1 356.173	8 022.505
Slovenia	149.549	139.868	129.728	128.305	123.026	117.809	111.981	900.267
Slovakia	303.163	286.532	268.049	256.310	263.028	275.025	317.310	1 969.418
Finland	335.122	316.143	292.385	296.367	287.790	280.508	271.617	2 079.933
Sweden	292.134	277.225	256.996	260.397	252.976	246.761	239.159	1 825.648
United Kingdom	263.996	645.002	698.582	741.000	748.834	752.296	748.964	4 598.674
EU-27	10 873.879	13 274.839	13 279.305	13 290.726	13 470.301	13 424.913	13 369.511	90 983.475
Technical assistance	28.414	28.269	28.114	28.028	27.905	27.776	27.645	196.151
Total	10 902.293	13 303.109	13 307.418	13 318.755	13 498.207	13 452.689	13 397.156	91 179.626

Source: Multiannual Financial Framework. Pre-allocated funding for rural development under heading 2 'Natural resources' of the Financial Framework (in current prices). EU contribution only. http://ec.europa.eu/budget/index_en.htm.

Annex 3 Intensity of spending for CAP Pillar 1 and Pillar 2 per hectare of UAA

	Years 2000–2006			Years 2007–2013		
	Pillar 1	**Pillar 2**		**Pillar 1**	**Pillar 2**	
Member State	Average EUR/ ha UAA	Average EUR/ ha UAA	Ratio Pillar 1: Pillar 2	Average EUR/ ha UAA	Average EUR/ ha UAA	Ratio Pillar 1: Pillar 2
Belgium	678.07	37.07	18.29	439.00	118.00	3.72
Czech Republic	107.66	53.14	2.03	181.00	145.00	1.25
Denmark	429.17	17.92	23.95	380.00	44.00	8.64
Germany	316.72	71.26	4.44	338.00	111.00	3.05
Estonia	84.81	70.82	1.20	85.00	159.00	0.53
Ireland	430.79	86.76	4.97	318.00	146.00	2.18
Greece	1 002.40	88.22	11.36	519.00	182.00	2.85
Spain	288.63	46.93	6.15	182.00	66.00	2.76
France	203.82	31.53	6.46	302.00	57.00	5.30
Italy	368.92	75.46	4.89	303.00	187.00	1.62
Cyprus	290.87	92.09	3.16	233.00	305.00	0.76
Latvia	77.75	64.71	1.20	61.00	114.00	0.54
Lithuania	40.18	54.23	0.74	96.00	116.00	0.83
Luxembourg	187.52	100.58	1.86	287.00	408.00	0.70
Hungary	57.74	62.65	0.92	218.00	173.00	1.26
Malta	406.97	658.31	0.62	371.00	1 429.00	0.26
Netherlands	608.44	35.60	17.09	434.00	71.00	6.11
Austria	204.65	145.96	1.40	228.00	342.00	0.67
Poland	107.21	71.22	1.51	146.00	167.00	0.87
Portugal	176.70	110.48	1.60	156.00	173.00	0.90
Slovenia	243.50	179.90	1.35	210.00	341.00	0.62
Slovakia	50.35	76.68	0.66	147.00	195.00	0.75
Finland	228.18	151.75	1.50	250.00	418.00	0.60
Sweden	216.36	56.39	3.84	239.00	175.00	1.37
United Kingdom	244.99	13.60	18.02	249.00	77.00	3.23
EU-25	231.98	51.20	4.53	237.00	119.00	1.99

Source: 2000–2006 EEA own calculations; 2007–2013 Farmer *et al.*, 2008 (from CAPRI model).
Pillar 2 figures refer to total public expenditure (EU funds plus national contributions).
Data: UAA 2005, DG Agriculture and Rural Development Statistical reports, 2008.

Annex 4 CAP rural development measures

2000–2006	2007–2013
Council Regulation (EC) No 1257/1999	**Council Regulation (EC) No 1698/2005**
Co-financed by Guidance/Guarantee section of EAGGF	**Co-financed by EARDF**
Group 1: Restructuring/competitiveness • Investments in farms • Young farmers • Vocational training • Early retirement • Investments in processing/marketing • Land improvement • Reparcelling • Setting up of farm relief and farm management services • Marketing of quality agricultural products • Agricultural water resources management • Development and improvement of infrastructure related to agriculture • Restoring agricultural production potential	**Axis 1: Competitiveness** **-** *Human resources:* Vocational training and information actions Young farmers Early retirement Use of farm advisory services Setting up of farm management, relief and advisory and forestry advisory services **-** *Physical capital:* Farm/forestry investments Processing/marketing/co-operation for innovation Agricultural/forestry infrastructure Restoring agricultural production potential **-** *Quality of agricultural production and products:* Meeting standards temporary support Food quality incentive scheme Food quality promotion **-** *Transitional measures:* Semi-subsistence Setting up producer groups
Group 2: Environment/land management • Less-favoured areas and areas with environmental restrictions • Agri-environment • Afforestation of agricultural land • Other forestry • Environmental protection in connection with agriculture, forestry	**Axis 2: Land management** **-** *Sustainable use of agricultural land:* Mountain LFA Other areas with handicaps Natura 2000 agricultural areas Agri-environment/animal welfare (compulsory) Support for non-productive investments **-** *Sustainable use of forestry land:* Afforestation (agricultural/non-agricultural land) Agroforestry Natura 2000 forest areas Forest environment Restoring forestry production potential Support for non-productive investments
Group 3: Rural economy/rural communities • Basic services for the rural economy and population • Renovation and development of villages • Diversification of agricultural activities • Encouragement for tourism and craft activities • Financial engineering	**Axis 3: Wider rural development** **-** *Quality of life:* Basic services for the rural economy and population (setting up and infrastructure) Renovation and development of villages Protection and conservation of the rural heritage **-** *Economic diversification:* Diversification to non-agricultural activities Support for micro-enterprises Encouragement of tourism activities **-** *Training skills acquisition and animation:* Training and information Skills acquisition, animation and implementation
Leader + Integrated strategies for sustainable development in selected territories; strong focus on partnership and networks of exchange of experience	**Leader axis** implementing Leader approach for selected territories within the scope of the 3 thematic axes

Source: Elaborated by the EEA, based on information available at the website of DG Agriculture and Rural Development: http://ec.europa.eu/agriculture/rurdev/index_en.htm.

Annex 5 Statistical analysis CAP Pillar 1 payments

Data used in the statistical analysis:

The CAP 1 payments were obtained from the CAPRI model (Common Agricultural Policy Regionalized Impact). The CAPRI model focuses on Pillar 1 and covers the EU-25; there are no premium data for Bulgaria and Romania. The base period for calculating the Pillar 1 premium is 2001–2003.

The statistical calculation of Pillar 1 expenditures for EU-15 was based on administrative NUTS 2 units. No comparable CAPRI data were available for the new Member States, which therefore were not included in this analysis.

The areas considered for the analysis were based on the agricultural classes of the Corine Land Cover (CLC) plus the HNV farmland outside these classes.

Results of the statistical analysis: Spearman correlation of CAP Pillar 1 expenditures:

The statistical analysis to test the relationship between HNV area and the CAP 1 payment was carried out at NUTS 2 level. The non-parametric Spearman correlation was performed comparing the variables:

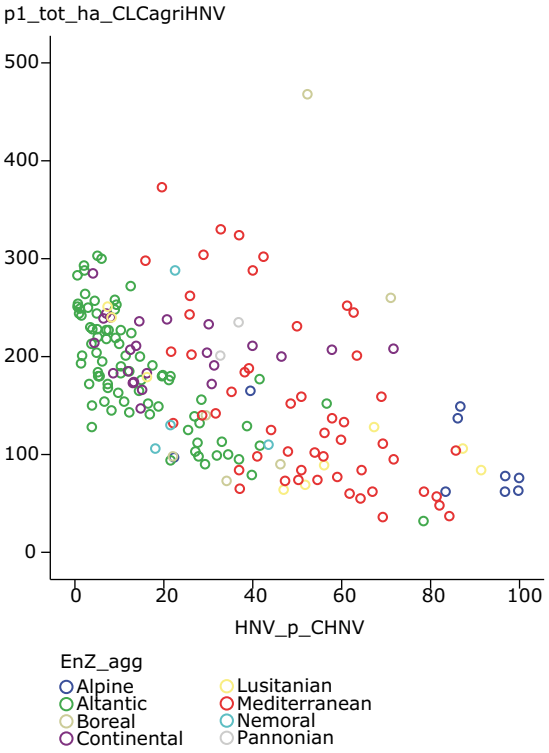
HNV (in % CLCagri + HNV) and total CAP Pillar I premiums (EUR ha/CLCagri + HNV)

HNV (in % CLCagri + HNV) and animal premiums (EUR ha/CLCagri + HNV)

HNV (in % CLCagri + HNV) and crop premiums (EUR ha/CLCagri + HNV)

The results show a significant negative correlation ($r = -0.599$; $p < 0.01$**) between Pillar 1 expenditures and the share of HNV area — the higher the share of HNV area per region, the fewer the expenditures. This negative correlation is mainly due to crop premiums ($r = -0.538$; $p < 0.01$**), whereas the animal premiums showed only a minor negative correlation ($r = -0.172$; $p < 0.05$*).

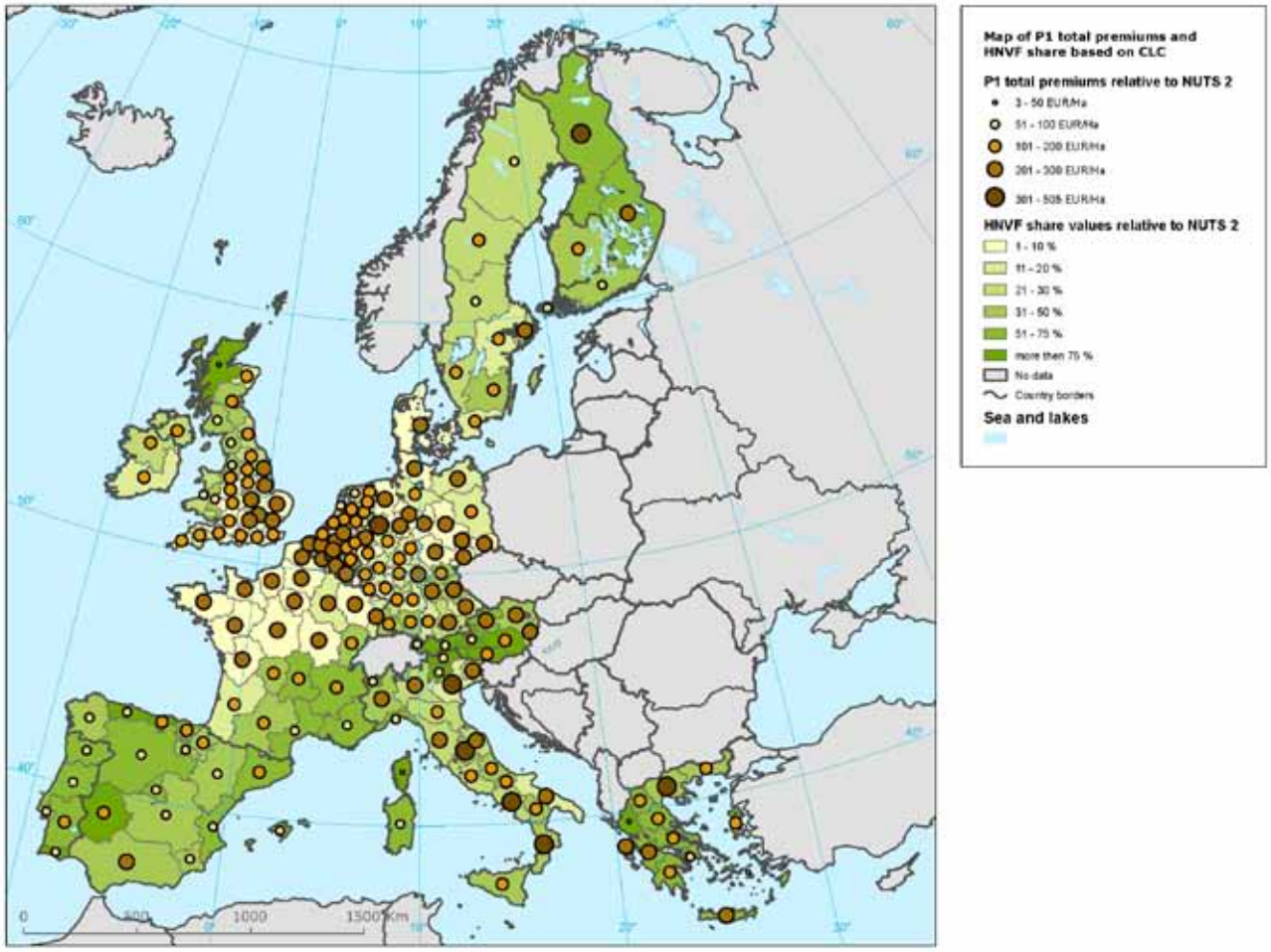
Figure A5.1 Correlation between HNV area (%) and CAP Pillar 1 expenditures (EUR/ha)



Note: Results shown by bio-geographic regions in Europe.

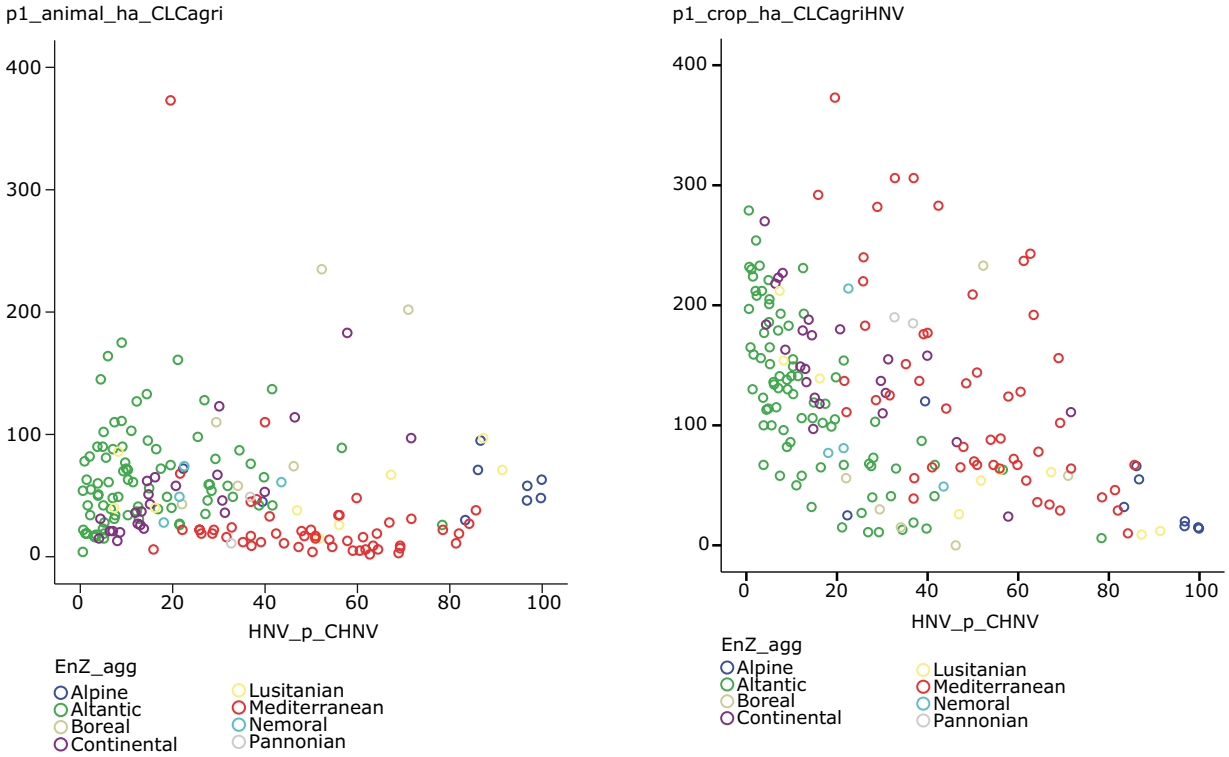
Source: Statistical analysis and graphic solutions were performed by ETC/LUSI partners, under EEA guidance, in the framework of project 2.8.1-IP2009 'Agri-environment indicators and policy analysis' and based on previous work during 2008 within project 8.2.4-IP2008 'Regional and territorial development of rural areas — data analyses and spatial assessments for evaluating the targeting of CAP payments on rural land (CAPRI data, Natura 2000, high nature value farmland)'.

Map A5.1 HNV farmland share and CAP Pillar 1 expenditure EU-15 (EUR/ha)



Source: Statistical analysis and graphic solutions were performed by ETC/LUSI partners, under EEA guidance, in the framework of project 2.8.1-IP2009 'Agri-environment indicators and policy analysis' and based on previous work during 2008 within project 8.2.4-IP2008 'Regional and territorial development of rural areas — data analyses and spatial assessments for evaluating the targeting of CAP payments on rural land (CAPRI data, Natura 2000, high nature value farmland)'.

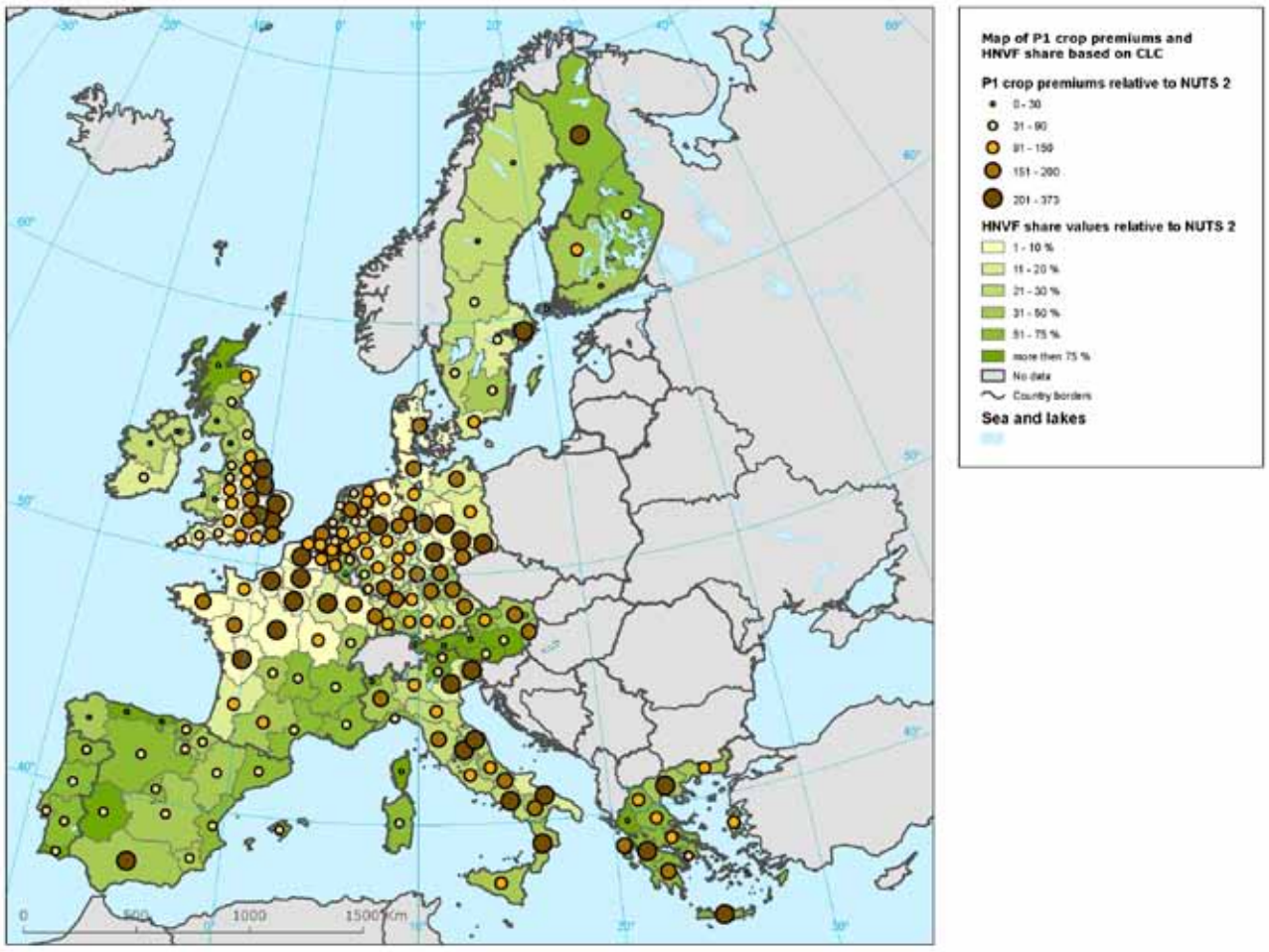
Figure A5.2 Correlation between HNV area (%) and CAP Pillar 1 livestock-support expenditures and CAP Pillar 1 crop-support expenditures (EUR/ha)



Note: Results shown by bio-geographic regions in Europe.

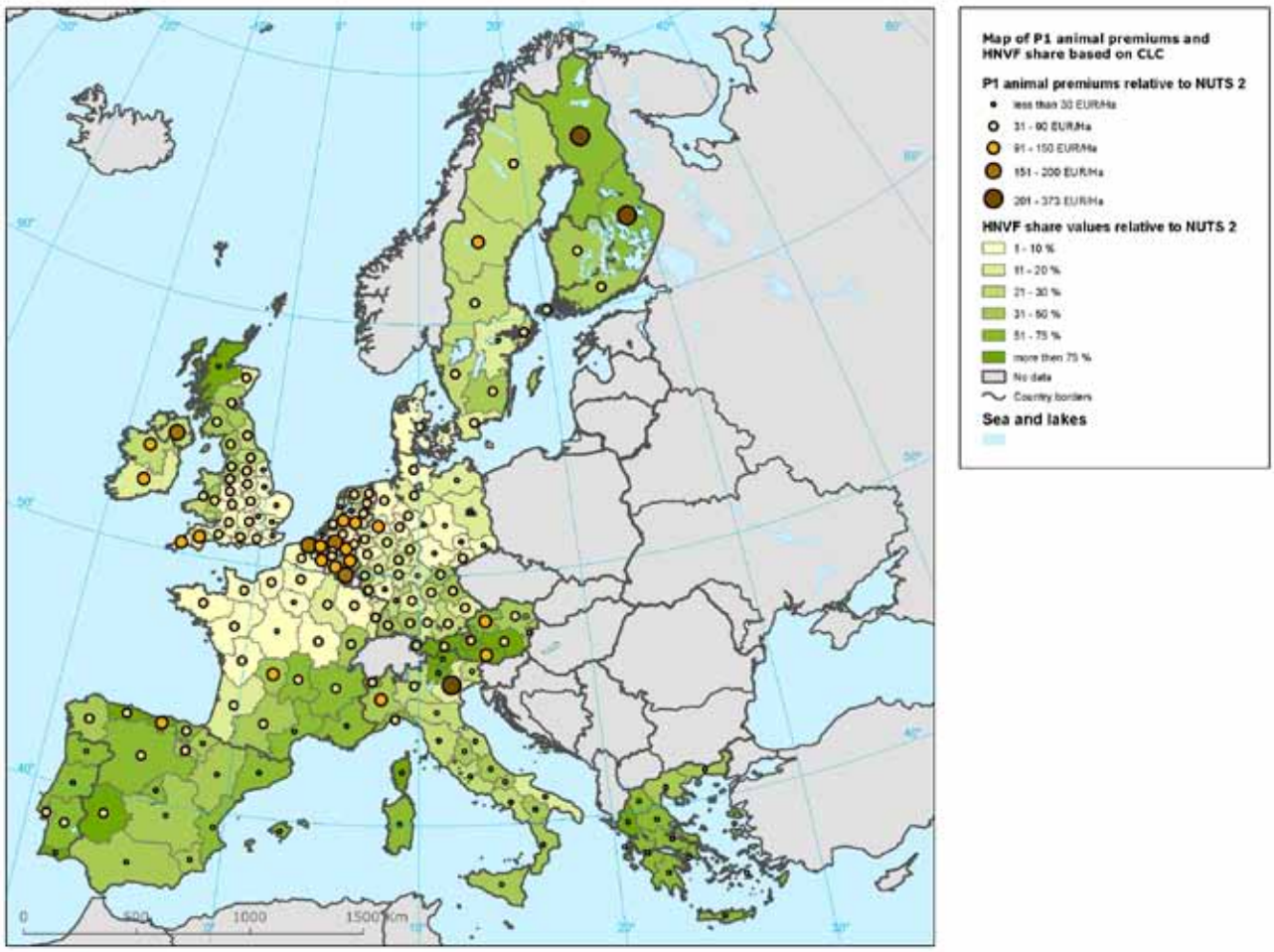
Source: Statistical analysis and graphic solutions were performed by ETC/LUSI partners, under EEA guidance, in the framework of project 2.8.1-IP2009 'Agri-environment indicators and policy analysis' and based on previous work during 2008 within project 8.2.4-IP2008 'Regional and territorial development of rural areas — data analyses and spatial assessments for evaluating the targeting of CAP payments on rural land (CAPRI data, Natura 2000, high nature value farmland)'.

Map A5.2 HNV farmland share and CAP Pillar 1 expenditure on crop support EU-15 (EUR/ha)



Source: Statistical analysis and graphic solutions were performed by ETC/LUSI partners, under EEA guidance, in the framework of project 2.8.1-IP2009 'Agri-environment indicators and policy analysis' and based on previous work during 2008 within project 8.2.4-IP2008 'Regional and territorial development of rural areas — data analyses and spatial assessments for evaluating the targeting of CAP payments on rural land (CAPRI data, Natura 2000, high nature value farmland)'.

Map A5.3 HNV farmland share and CAP Pillar 1 expenditure on livestock support EU-15 (EUR/ha)



Source: Statistical analysis and graphic solutions were performed by ETC/LUSI partners, under EEA guidance, in the framework of project 2.8.1-IP2009 'Agri-environment indicators and policy analysis' and based on previous work during 2008 within project 8.2.4-IP2008 'Regional and territorial development of rural areas — data analyses and spatial assessments for evaluating the targeting of CAP payments on rural land (CAPRI data, Natura 2000, high nature value farmland)'.

Annex 6 Statistical analysis of expenditure on agri-environment measures, in selected countries and regions

Data used in the statistical analysis:

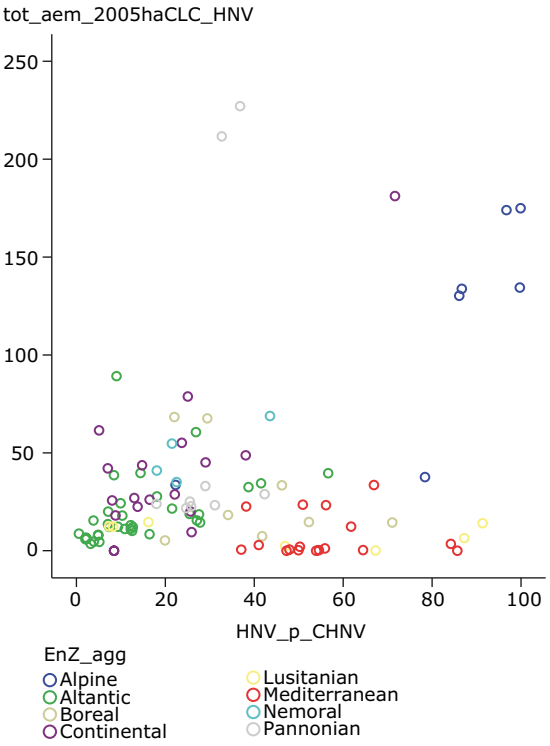
- data on expenditure on agri-environment measures (AEM) for period 2000–2006 collected by EEA, combining official sources and data compiled by management authorities and country experts;
- sub-classification of data into five groups: organic farming, input reduction, landscape and nature, genetic diversity, other measures;
- year of analysis 2005 (except for Hungary and Austria, 2006);
- the agricultural land areas used in the analysis were based on the agricultural classes of the CLC plus HNV farmland;
- country availability of expenditure data on AEM:

Table A6.1 Country availability on AEM expenditure data

Data at NUTS 2 level:	Data at NUTS 1 level:	Data at NUTS 0 level:
Czech Republic	Flanders (Belgium)	Latvia
Ireland	Germany	Luxembourg
Spain		Slovenia
Netherlands		
France		
Sweden		
Finland		
Hungary		
Austria		

Source: Elaborated by the EEA, 2009.

Figure A6.1 Correlation between HNV area (%) and AEM expenditures (EUR/ha).



Note: Results shown by bio-geographic regions in Europe.

Source: Statistical analysis and graphic solutions were performed by ETC/LUSI partners, under EEA guidance, in the framework of project 2.8.1-IP2009 'Agri-environment indicators and policy analysis' and based on previous work during 2008 within project 8.2.4-IP2008 'Regional and territorial development of rural areas- data analyses and spatial assessments for evaluating the targeting of CAP payments on rural land (CAPRI data, Natura 2000, high nature value farmland)'.

Results of the statistical analysis — Spearman correlation of AEM expenditures:

The non parametric Spearman correlation was performed comparing the following variables:

HNV (in %) and total AEM expenditures (EUR ha/CLCagriHNV)

HNV (in %) and organic agriculture expenditures (EUR ha/CLCagriHNV)

HNV (in %) and input reduction expenditures (EUR ha/CLCagriHNV)

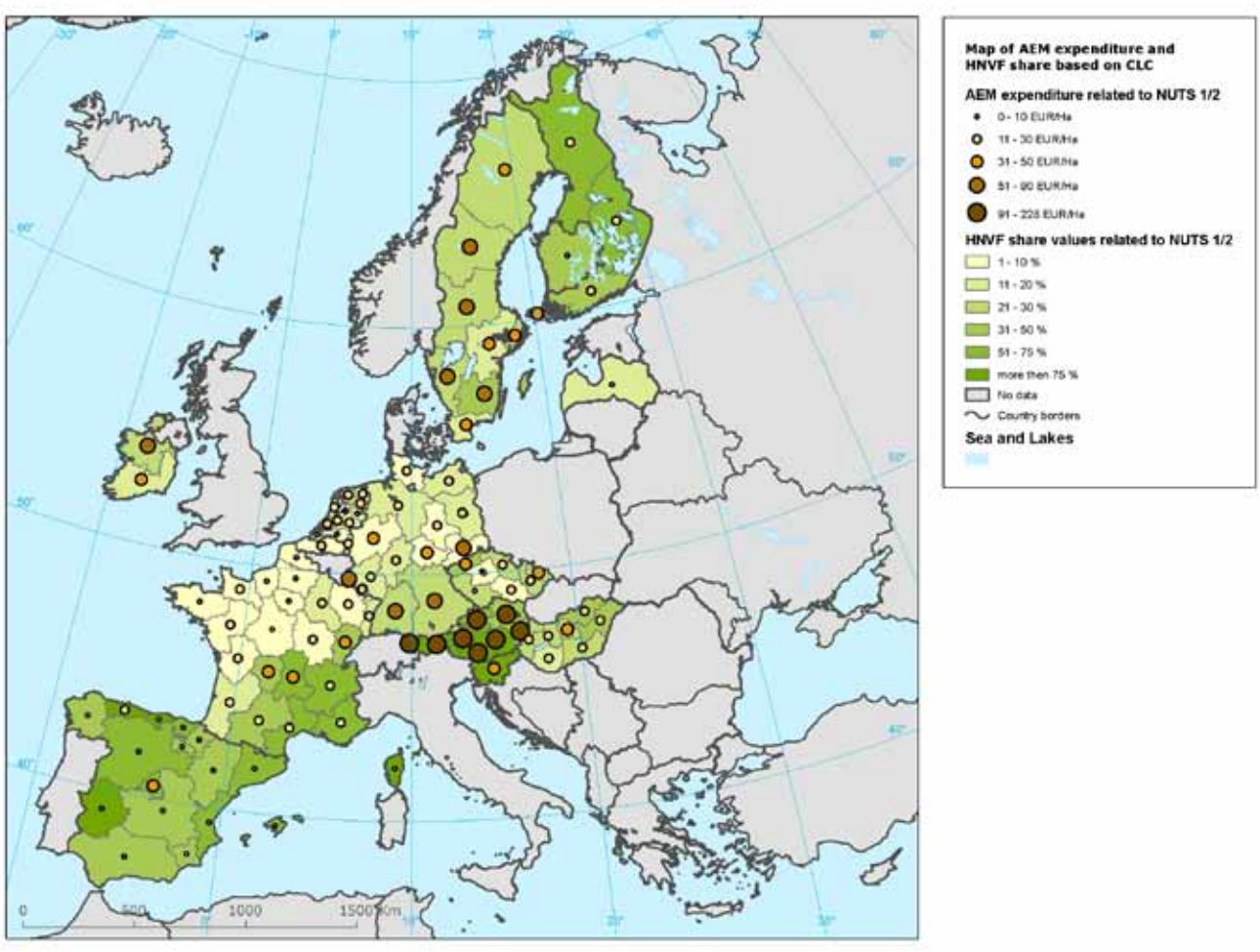
HNV (in %) and landscape and nature expenditures (EUR ha/CLCagriHNV)

HNV (in %) and genetic diversity expenditures (EUR ha/CLCagriHNV)

HNV (in %) and other AEM expenditures (EUR ha/CLCagriHNV)

The results showed a negative but statistically significant relation between other AEM measures and % HNV farmland (r = – 0.450**). On the other hand, weak (but statistically significant) positive correlations were found between the expenditure for organic farming (r = 0.207*) as well as landscape and nature (r = 0.222**) and genetic diversity (r = 0.249**) and the share of HNV farmland. In summary, this leads to no significant correlation (r = – 0.132) between total AEM expenditures and the share of HNV area.

Map A6.1 HNVF share and agri-environment expenditure in selected countries and regions (EUR/ha)



Source: Statistical analysis and graphic solutions were performed by ETC/LUSI partners, under EEA guidance, in the framework of project 2.8.1-IP2009 'Agri-environment indicators and policy analysis' and based on previous work during 2008 within project 8.2.4-IP2008 'Regional and territorial development of rural areas- data analyses and spatial assessments for evaluating the targeting of CAP payments on rural land (CAPRI data, Natura 2000, high nature value farmland)'.

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