EUROPEAN EVALUATION HELPDESK FOR RURAL DEVELOPMENT

European Commission

WORKING DOCUMENT

PRACTICES TO IDENTIFY, MONITOR AND ASSESS HNV FARMING IN RDPS 2014-2020

NOVEMBER 2016

Recommended citation:

EUROPEAN COMMISSION – Directorate-General for Agriculture and Rural Development – Unit E.4 (2016): Working Document Practices to identify, monitor and assess HNV farming in RDPs 2014-2020.

The Evaluation Helpdesk is responsible for the evaluation function within the European Network for Rural Development (ENRD) by providing guidance on the evaluation of RDPs and policies falling under the remit and guidance of DG AGRI's Unit E.4 'Evaluation and studies' of the European Commission (EC). In order to improve the evaluation of EU rural development policy the Evaluation Helpdesk supports all evaluation stakeholders, in particular DG AGRI, national authorities, RDP managing authorities and evaluators, through the development and dissemination of appropriate methodologies and tools; the collection and exchange of good practices; capacity building, and communicating with network members on evaluation related topics.

Additional information about the activities of European Evaluation Helpdesk for Rural Development is available on the Internet through the Europa server (http://enrd.ec.europa.eu).

WORKING DOCUMENT

PRACTICES TO IDENTIFY, MONITOR AND ASSESS HNV FARMING IN RDPS 2014-2020

NOVEMBER 2016

CONTENT

TABLES AND FIGURES

FOREWORD

In the 2007-2013 programming period HNV farming was for the 'first time enshrined in the European legislative framework as a requirement linked to a policy instrument'. In the 2014-2020 period the Common Monitoring and Evaluation Framework (CMEF) has been extended to cover the whole CAP. Within this frame, HNV farming is included now not only as an impact indicator, but also as a context indicator used in drawing up the territorial analyses around which RDP strategies are based. This means that as well as being used in the evaluation of each individual RDP, it will also be used in evaluating the impact of all CAP instruments at the EU level.

Nevertheless, HNV farming is the only CAP impact indicator for which there is no common methodology explicitly provided at the EU level. Each Member State can use data and methodologies appropriate to their specific situation. This flexible system allows Member States or regions to make use of the most sophisticated data series, collection methods available, and take into account different farming systems and physical, natural and administrative specificities.

In order to explore the Member States's approaches on HNV farming in the new programming period the European Evaluation Heldpesk for Rural Development has (1) carried out an HNV survey in May-July 2016 and (2) organised an HNV Good Practice Workshop in June 2016 which provided a platform for representatives of DG Agri, Member States and HNV practitioners to discuss examples of good practices in identifying, monitoring and assessing HNV farming.

This working document aims to:

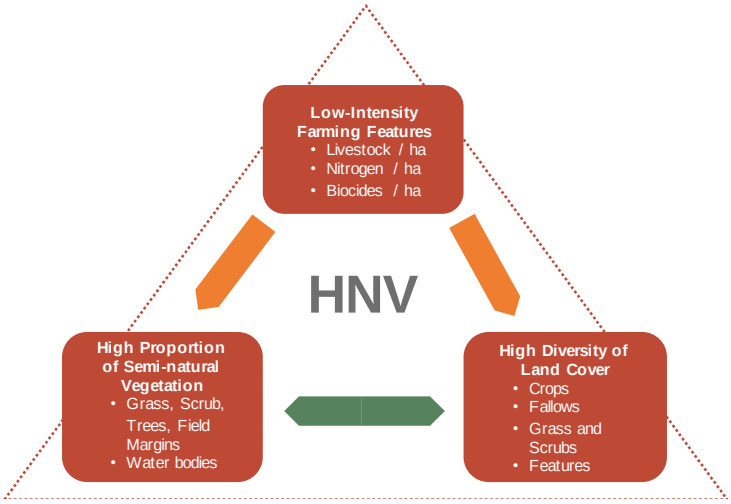
- **Provide an introduction to the concept of HNV farming** and its latest development in the period 2014-2020 (see chapter 2);
- **take stock of approaches used by Member States** for identifying, monitoring and assessing HNV farming (extent and quality) as reflected by the available HNV survey answers (see chapter 3.1);
- **provide examples of practical approaches** for identifying, monitoring and measuring HNV farming as discussed during the good practice workshop in Bonn (see chapter 3.2);
- **Provide preliminary conclusions and recommendations** (see chapter 4).

The working document has been drafted by a team of experts from the European Evaluation Helpdesk for Rural Development (Gerald Schwarz, Žymantas Morkvėnas, Bill Slee, Vincenzo Angrisani and Hannes Wimmer) and revised by representatives of DG Agriculture and Rural Development in order to ensure its coherence within the EU Policy framework.

1 INTRODUCTION

The concept of High Nature Value farming

The concept of High Nature Value (HNV) farming has been emerging as a policy consideration within the EU for some time. The term 'High Nature Value farming' was first used in the early 1990s and a large body of literature has since been written about what constitutes HNV farmland (e.g. Baldock et al, 1993; Bignal and McCracken, 1996, Cooper et al, 2007). HNV farmland results from a combination of land use and farming systems, meaning the causality between certain types of farming activity and corresponding environmental outcomes. In fact, some "natural value", related to high levels of biodiversity or the presence of certain species and habitats, is dependent on certain types of farming activated. The dominant feature of HNV farming is low-intensity management, with a significant presence of semi-natural vegetation, in particular extensive grassland. Diversity of land cover, including features such as ponds, hedges, woodland is also a characteristic. Semi-natural farmland offers fundamental 'green infrastructure' for wildlife and therefore is central to the preservation and sustainability of ecological networks.



A broad classification of HNV farmland into three types was first proposed in 2003 (Andersen et al, 2003), with subsequent modifications (Paracchini et al, 2006): These three types of HNV farming were broadly characterised by researchers and recognised by the larger policy community. HNV farming as a policy concept highlights existing types of farming and farm landscapes that are intrinsically linked to rich biodiversity. HNV farmland is present across European regions and Member States, with a diverse array of types in each. The three key types of HNV farmland in Europe are:

- 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 of a high proportion of European or world populations.

This typology has now been widely adopted, and forms the basic guiding definition for the monitoring of HNV farmland within the EU's rural development framework.

HNV farmland vs. HNV farming

The use of the terms HNV farmland, HNV farming system and HNV farming still causes some confusion concerning their respective differences. This working document follows the differentiation

introduced by a previous working paper of the European Evaluation Network for Rural Development on the application of CMEF indicators (European Commission, 2009. The Application of the High Nature Value Impact Indicator 2007-2013).

HNV farmland refers to farmland characterised by the presence of particular land cover types and patterns (especially semi-natural vegetation and low-intensity crop mosaics) 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.

HNV farming system refers to both the land cover (farmland) and the way it is managed for production by a particular farming system and practices. The term implies that the system as a whole (e.g. at farm or even landscape level) is of high nature value, whereas **HNV farmland** may be limited to only one parcel in an otherwise intensive farming system.

In accordance with Keenleyside et al. (2014) this paper uses the term HNV farming reflecting the overall concept of HNV consisting of a combination of HNV farmland/farming system. Where an explicit differentiation between farmland and farming systems becomes necessary, the terms HNV farmland or HNV farming system will be used.

HNV in the programming period 2007-2013

For the 2007-2013 programming period, the Community Strategic Guidelines for rural development highlighted the preservation and development of HNV farming systems as a priority (Council Decision 2006/144/EC). This focus was reinforced through the introduction of biodiversity as one of the new challenges for the CAP within the "Healthcheck" in 2009 (Council Regulation (EC) No. 73/2009). As a result, Member States have been devoting an increasing amount of effort to identifying HNV areas within their territory and to calculate the HNV farming baseline indicator during the last programming period, using a range of different techniques and approaches. A review of the High Nature Value farming and its financial support under the CAP throughout EU-27 provided an overview of the main HNV farming systems and types as well as the available maps, data sets and reports on HNV farming by Member State. The study showed that a number of gaps still existed in the indicator development and application. For example, several Member States or regions cited no HNV farming indicator (e.g. France) while some cited proxy indicators with limited relevance (e.g. Scotland effectively used all non-urban land), or cited a figure taken from the JRC/EEA report (see Keenleyside et al., 2014).

2 HNV FARMING IN RDPs 2014-2020

While the indicator has been introduced to the Member States since 2005[1], in the current programming period the HNV farming concept has become relevant for the whole CAP with the establishment of the HNV farming context and impact indicator[2], covering both Pillar I and II[3].

More specifically, for Pillar II, Regulation (EU) no. 1305/2013 includes "*Restoring, preserving and enhancing biodiversity, including NATURA 2000 areas, and in areas facing natural or other specific costraints, and HNV farming as well as the state of European landscapes"* as one of its 18 Focus Areas.

HNV farming is included under Priority 4 (Focus Area 4A) of the Rural Development policy, and to this extent the indicator is relevant for answering the related Evaluation Question "*To what extent have RDP interventions supported the restoration, preservation and enhancement of biodiversity including in N2000 areas, ANC and HNV farming and the state of European landscapes?"* which will be answered in the Enhanced Annual Implementation Report (AIR) submitted in 2017 and 2019.

The indicator is relevant also for answering several Common Evaluation Questions, e.g. CEQ no. 26 "*To what extent has the RDP contributed to improving the environment and to achieving the EU Biodiversity strategy target of halting the loss of biodiversity and the degradation of ecosystem services, and to restore them*?" and Common Evaluation Question no. 28 "*To what extent has the RDP contributed to the CAP objective of ensuring sustainable management of natural resources and climate action*?" Both evaluation questions must be answered in the AIR submitted in 2019 and in the ex-post evaluation. This further increases the need for the Member States and regions to set up a consistent method to identify and monitor HNV farming as a basis to evaluate the impacts of the policy on the extent and quality of HNV farming.

The HNV concept was rather new in the last programming period with Member States concerned with understanding the concept and identifying the extent of HNV farming. This experience should now be deepened: Setting up robust baselines for the assessment of both the extent and quality of HNV farming!

[1] EEA Report No 6/2005 and COM(2006)508final

[2] C37 reflect relevant aspects of the general contextual trends in the economy, environment and society that are likely to have an influence on the implementation, achievements and performance of the CAP.
I.09 look at the effect in the longer term, linked to the general objectives of the CAP.

[3] The horizontal regulation (Regulation (EU) No. 1306/2013, Article 110) establishes a common monitoring and evaluation framework with a view to measuring the performance of the CAP. It covers all instruments related to the monitoring and evaluation of CAP measures and in particular direct payments, market measures and rural development measures.

3 MEMBER STATE APPROACHES TO IDENTIFY, MONITOR AND ASSESS HNV FARMING

3.1 HNV farming in the Member States: outcomes of a survey

While setting up their Rural Development Programmes Member States were asked to set the basics for the later assessment of HNV farming. This included the need to specify in the RDP document a quantified value for the HNV context indicator, with indication of the methodology choosen for identifying HNV farming. While a quantified value for CI37 is available for nearly all RDPs, the information provided on the approaches taken to identify, monitor and assess HNV farming are rather poor. In order to complement this picture, the Evaluation Helpdesk has carried out in spring/summer 2016 a survey among responsible RDP Managing Authorities to receive more detailed information. The outcomes of the survey are presented in the following chapters.

3.1.1 Objectives and content of the survey

The main objective of the survey was to take stock of the approaches chosen by Member States to identify, monitor and assess HNV farming (extent & quality) in the period 2014-2020. The survey included:

- Contact information of respondent
- Identification of HNV farming, including quality aspects, changes implemented in comparison to the previous period and quantification of a baseline
- Monitoring of HNV farming including the extent, quality and trends over time
- Assessment of HNV farming and further improvements planned in the future

At the Member State level, the return rate reflects overall a rather good coverage: replies were received from 25 of the 28 Member States. However, out of 112 relevant regional RDPs, a response was missing from 47 RDPs, reflecting a reply rate of 58%. No answers had been received from the RDPs in Belgium-Wallonia, Bulgaria, France[4], Malta, Portugal-Madeira, UK-Northern Ireland, Scotland and some Spanish regions. The level of detail of the answers provided and the state of play in the Member States with regard to monitoring and assessing HNV farming varies substantially. The following sections summarise the information available from the survey – and recapitulated in Annex 5.1 - highlighting differences between the Member States and new developments.

3.1.2 Identification and monitoring of the extent of HNV farming

Approaches for the identification HNV farming

The survey shows diverse approaches for the identification of HNV farming among the Member States, especially regarding types of data used.

The majority of RDPs has followed the HNV farming classification defined by Andersen et al (2003) proposing 3 types of HNV: a) farmland with a high proportion of semi-natural vegetation (type 1), b) farmland with a mosaic and low intensity agriculture and natural and structural elements (type 2), c) farmland supporting rare species of a high proportion of European or world populations (type 3).

Some RDPs have chosen a different interpretation, which however fits into the HNV farming framework defined by the EC, but focusses on different aspects. The new system in Denmark, for instance, features a high level of sophistication and defines HNV farming based on a complex scoring

[4] France has conducted a study for the identification and establishment of baselines. L'agriculture à «haute valeur naturelle» en France métropolitaine. Un indicateur pour le suivi de la biodiversité et l'évaluation de la politique de développement rural (Poux X., Pointereau P.) SOLAGRO, 2014.

principle gathering scores under different criteria. A scoring approach is also present in Finland and Estonia.

Simplified approaches for the identification of HNV farming are chosen by a number of Member States. Czech Republic considers HNV as grasslands which occur within Natura 2000 sites or Latvia defines HNV farming areas, which overlay with grassland habitat types protected under the Habitats directive.

No HNV has been defined by Poland and Croatia.

Most of the RDPs arrive at a spatially explicit mapping as a result of overlaying spatial data and identifying sites where relevant criteria are overlapping. However, regional RDPs in Italy define HNV based on a 10x10 km^2 grid sample, estimating values of criteria chosen within the grid.

A more detailed overview on the HNV farming identification approaches is given in the table provided in the Annex 5.1 of this working document.

Types of data used

Most commonly used types of data for HNV farming identification are Natura 2000 sites related databases (34 cases), CORINE land cover data (10 cases), LPIS (10 cases) abd IACS (9 cases) data[5]. However, some countries stress a lack in the resolution of the available CORINE database, thus future improvements of this database would lead to a considerable increase of the quality of HNV identification.

Trends in HNV areas are monitored either with a static or a more dynamic approach depending on the data used: If HNV identification is largely based on such criteria as the protected area status (e.g. approach used in Lithuania, Latvia) it remains static as boundaries of protected areas do not change over time. While, if in addition to more static data, the approach is considering also criteria such as the actual farming systems and occurance of species (e.g. such criteria are used in Germany, Austria, Spain-Castilla y Leon, Spain-Castilla la Mancha, Denmark), the HNV identification becomes more dynamic (in a temporal sense) and more responsive to the actual changes in the sites.

A dynamic approach for the identification of HNV farming integrates besides static data also information on actual farming systems and species, making the approach more appropriate to dedect trends!

The use of dynamic data is quite widely applied, where data gathering is performed either through special data collection (e.g. Germany) or utilizing existing national environmental monitoring programmes (e.g. Estonia, Czech Republic). Finally, if integration of existing state monitoring programms as a data source in HNV identification and monitoring might decrease evaluation costs, on the other hand, such monitoring programmes might not be able to address some specific needs of HNV assessment.

A more detailed overview on the types of data used is given in the table provided in Annex 5.1 of the working document.

Changes of HNV farming identification approach compared to the 2007-2013 period

No clear tendency with regard to the intentions of the RDPs to perform changes on HNV assessment for the 2014-2020 programming period could be identified through the survey. A significant share of respondents has not listed any plans for changes (either explicitly informed that no changes are foreseen, or did not provide answer to the given question).

[5] Specification of data used in each RDP that responded to the survey is provided in the Annex 5.1 of the working document.

Some RDPs informed about the plans to improve HNV assessment. Denmark, Estonia, Slovakia are introducing a new HNV farming assessment system. Austria, Ireland foresee some methodological improvement, Czech Republic and Romania plan to further develop the assessment approach, which would have more focus on policy targeting. While Lithuania, Slovenia, consider improvements related to more and/or better quality data necessary for the assessment.

Setting the HNV farming baseline

Baselines are missing in several RDPs: Greece, Spain-Castilla La Mancha, Croatia, Latvia, Poland, Luxemburg and a few RDPs in Italy – Emilia Romagna, Friuli Venezia Giulia and Marche.

The most frequent baseline year is 2013. It is, therefore, likely that the baseline has been defined on the basis of the 2007-2013 ex-post evaluation. However, some countries have in their RDPs several HNV baselines in different years. This is due to the administrative structure of the country (e.g. regionalized RDPs in Spain and Italy), due to methodological update of the HNV identification or due to the increase of data quality (e.g. Germany and Sweden).

Table 1. Distribution of the HNV baseline year among Member States*

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
FI									
	IT						IT		
		ES			ES				
			DE				DE		
			EE						
					PT				
						SE		SE	
							AT		
							SI		
							NL		
							CZ		
									DK
									RO

Source: European Evaluation Helpdesk for Rural Development, 2016

Setting a robust baseline (2013) is a fundamental requisite for assessing HNV farming.

3.1.3 Monitoring and assessment of the quality of HNV farming

Monitoring of the extent of HNV farming

A wide range of different data are used for the monitoring of HNV farming reflecting the complexity of HNV definition(s) across the Member States, including agricultural and land use statistics, IACS data and different environmental monitoring data.

Three different approaches in monitoring the extent of HNV farming can be broadly identified from the survey replies: (1) Utilisation of secondary data sources, (2) building on national biodiversity and habitat monitoring programmes and the (3) establishment of specific HNV monitoring programmes[6].

- **Many RDPs rely on secondary data sources collected for other purposes** to monitor the extent of HNV farming. Most frequently used are IACS and LPIS data generated through formal CAP / RDP related monitoring requirements and data from paying agencies (e.g. RDPs in Austria, Belgium-Flanders, Finland, Hungary and Poland).
- **National monitoring programmes of semi-natural grasslands and habitats** are utilised, for example, in the RDPs of Estonia, the Spanish region Madrid, Sweden and Slovakia. However, it is important to note that the replies are not always consistent across the different questions in the survey. While for example no data sources are indicated for the identification of HNV farming, the use of national habitat and biodiversity monitoring programmes is highlighted for monitoring HNV farming.
- **Specific HNV monitoring programmes** have only been established in a few RDPs including the German Länder, Denmark, Italy-Veneto and Romania.

Missing monitoring approaches to identify changes in the extent of HNV farming are suggested by the survey for some RDPs including Spain-Castilla La Mancha, Croatia, Latvia and Portugal-Azores.

Cost effective solutions for monitoring HNV faming shall take into consideration the relevance of the chosen data and information, its appropriateness for the territorial level and foresee regular updates.

Frequency of updates of the monitoring and identification of the extent of HNV farming depends on, and reflects, types of data used as well as the data requirements of advanced mapping tools developed in some Member States (e.g. Denmark).

- **Annual updates** are often reported for RDPs largely using secondary data sources (e.g. Austria and Finland). A few Member States, which have developed advanced mapping and assessment tools, reported annual updates to fully utilise the potential of the advanced tools (e.g. RDPs in Denmark and Estonia).
- **Multiannual updates** have been reported, e.g. through an extrapolation of the field survey to integrate new data of the past 2 years (RDPs in Germany), through specific research studies in

[6] For more information see also Annex 5.1.

the RDP in Lithuania, as well as infrequent updates of specific environmental databases (e.g. 6 years in the case of Natura 2000 data in the case IT-NRN and 12 years in case of biodiversity maps in the RDP in Belgium (Flanders)). The RDP in IT- Basilicata reported a dependency of the collection frequency on the implementation of the compensation measures (12-13) and other agro-environmental measures.

Monitoring of the quality of HNV farming

While the monitoring and assessment of the extent of HNV farming was already subject to evaluation in the previous programming period, **monitoring and assessing changes in the quality of HNV farming** has only moved into the forefront during this programming period. In many cases, RDPs focused only on the identification and definition of HNV farming, trying to quantify the common context indicator to establish a baseline for the assessment of changes in the extent of HNV farming. As a consequence, less information was received in the survey on already existing approaches to monitor and assess changes in the quality of HNV farming. Nevertheless, in some Member States and RDPs, substantial efforts have been put in place to develop advanced approaches and methods to monitor and assess both changes in the extent and quality of HNV farming, which already started in the last programming period as documented by Keenleyside et al. in 2014.

Increased focus on monitoring and assessing the changes in the quality of HNV farming compared to the last programming period.

Indirect and direct monitoring approaches can be used for quality assessments:

Indirect assessments using agricultural land use data in particular reflecting changes to type 1 of HNV farming (low intensity farming features) have been reported from the RDP in Slovenia. Agricultural land use is monitored in the time frame of 2-4 years as a basis to detect changes to the intensity in land use.

A number of RDPs have reported more **direct assessments which integrate biodiversity and habitat data into the monitoring and assessment of HNV quality.** Data on changes in habitats and vegetation composition, which reflect changes in management practices, are used in RDPs in Estonia, Spain-Madrid, Ireland and Romania. The representativeness of the relevant species in terms of ecological quality for HNV permanent grassland, the frequency of occurrence of HNV species, and the conservation status of habitats is examined. Several biophysical factors (altitude, exhibition and soil quality), which influence specific species diversity and variety, are taken into account in the sampling approach and interpretation of the results in the RDP in Romania.

Field inventories and aerial photos of permanent sample plots in all types of terrestrial environments with more in-depth monitoring of flora and fauna species of selected grassland areas are used in the RDP in Sweden to monitor changes in the quality of HNV farming. The data collection includes plants, bumblebees, butterflies, tree layer and grassland maintenance. Both monitoring programmes have a 5-year cycle and are run by the University of Agricultural Science.

Several regional RDPs in Italy report the integration of the **monitoring of flora and fauna species** into the assessment of HNV quality (e.g. Italy-Trento and Italy-Valle d'Aosta). The RDPs in Italy-Basilicata and Italy-Valle d'Aosta in particular highlight the **combination of the farmland bird indicator with the HNV indicator** as a suitable approach to assess quality changes. The need for (additional) monitoring samples of farmland birds on HNV farmland is emphasised. In addition, the RDPs in Italy-Molise and Luxembourg reported the consideration of Natura 2000 monitoring programmes.

The assessment of HNV quality can be based on sampling models.

In the RDP in Slovakia the assessment of the quality of HNV farming builds on **monitoring a statistically representative number of farms and integrates results from other relevant studies and reports**. The monitoring activities cover the state of plant or animal species and assess the status of the sites. Monitoring activities are divided between selected and authorized professional institutions that implement basic (baseline) mapping and identification of various types of HNV (e.g. Daphne - grassland habitat status assessment, BirdLife - assessment of the state of birds in agricultural land, SAV - historical structures of agricultural landscape) and monitoring of Ministry of Environment including data for Natura 2000 areas.

HNV quality monitoring has not been set up in BE-Flanders, ES-Castilla y León, ES-Castilla La Mancha, FI, HR, LV, NL and Portugal-Azores according to the survey replies. The survey results however suggest that **addressing those gaps** is not in all cases a question of missing or developing new montoring approaches to enable quality monitoring. For example, the RDP in the Netherlands reported that the existing monitoring approach to assess changes in the extent of HNV farming could also be used for quality monitoring. In other cases, e.g. RDP of Spain-Castilla y Leon, **studies are underway** to test changes in indicators and quality. The RDP in England reported that existing habitat surveillance work, including that undertaken for agri-environment schemes, will enable assessments of change in the quality of HNVF to be undertaken. The approach will be developed later in the programming period.

Consideration of quality differentiation – overview and examples

The following paragraphs summarise key examples where **RDPs reported approaches to consider quality differentiation** in the assessment of HNV farming[7].

The RDP in Greece reported that the **index calculation** used in the previous programming period will be further refined, in order to incorporate quality factors. But no further information on the quality factors was provided at this time. In the RDP in Italy- Emilia-Romagna a methodological approach for a consistent analysis of Type 1 and Type 2 HNV farming has been developed. The approach is based on the classification of cadastral maps according to a natural value indicator obtained by four different indicators: incidence of seminatural vegetation; ecological diversity; cultivation diversity; incidence of low intensity cultivation. Values stemming from the 4 indicators, preliminarily weighted, were then aggregated for each cadastral map/sheet. The whole methodology is based on soil use data taken from the “Refresh” project (2010-2012) and from monitoring data.

Several RDPs and Member States reported the development and application of mapping tools for the assessment of HNV farming. In the RDP in Austria a mapping tool is used for the identification of quality levels which fulfil a certain threshold to qualify as HNV. **Different quality categories are considered in mapping tools** developed in RDPs in Germany, Denmark and Estonia.

In the RDPs in **Germany** a sampling approach was developed to map HNV farmland which allows the **differentiation of three quality levels**. The method allows the annual estimation of the extent and condition of HNV farmland from 2009 onwards at NUTS-0 and NUTS-1 levels. The method is based on an already existing stratified random sample design, which was originally developed to implement an advanced biodiversity monitoring programme, and is as of late used by the German Common Breeding

[7] For a complete overview see Annex 5.1.

Bird Survey. To make changes in quality of HNV farmland visible, three quality levels of HNV farmland are assessed during field work. Quality levels of grassland, arable, set aside, orchards and vineyards are assessed using plant character taxa. For arable land and vineyards, character species are defined on the national level. Grassland character species are defined on the regional level, resulting in seven different character species lists for Germany due to the fact that species composition in grassland differs between the regions. Landscape elements are assigned to one of the quality levels using structural criteria specific to each type, which are laid down in the field manual.

The RDP in **Denmark** has reported the development of a HNV farming mapping tool on the basis of 10 m^2 plots. **The mapping tool integrates 14 criteria** (indicators) taking into consideration landscape, habitat, land use and species. All 14 criteria are updated on a yearly basis. Only data that are official and have undergone a quality check in the respective data source is included in the map. At present, most of the increase in HNV value is due to more available data with a corresponding increase in the overall HNV score. In the coming years, as an inflow of new data reaches a normal level, it will be possible to measure the quality of HNV areas in Denmark with a **score from 1-13**. The level of score is thus rather detailed, but there is no differentiation of the quality within each of the 14 criteria (indicator). Assigned values for each criteria are yes (1)/no (0).

The use of a **scoring approach** reflecting the share of protected areas with special nature value was also reported in the reply of the **Polish RDP**, but no real identification of HNV farming has been applied at this time.

Finally, according to the decision of the Estonian HNV working group a **grid-based approach** is now used in the RDP in **Estonia**. **20 indicators** taking into account land use management, nature conservation, landscape diversity and inherent natural qualities, are used to quantify the HNV value of a grid cell. These were added together for each 1 km square to give a single score to develop an expert system to define HNV farming areas. In order to finalise the HNV value matrix scores for weights and values within the range of 0-5 were given to each group of indicators and those weights were aggregated to develop the final HNV value for each grid cell.

Quality differentiations can be done through a scoring approach using a number of different criteria and indicators.

Assessment of trends

In addition, the survey asked about previously assessed trends concerning the extent and quality of HNV farming. Only very few replies were received, which at least partly reflects the state of play of the methodological development. Generally, three key points can be derived:

- A decrease in the share of HNV farmland in the total agricultural area from 2008/9 to 2015 was reported in a number of RDPs (e.g. RDPs in Germany, Finland and Slovenia)
- A constant extent of HNV farming was reported by the RDPs in Belgium-Flanders and Romania.
- Future assessment of trends following the establishment of a robust baseline was highlighted for a number of RDPs (e.g. RDPs in Denmark, Greece, Spain-Castilla y León, Ireland, Italy-Valle d'Aosta, Portugal-Mainland and Slovakia.)

Envisaged improvements in the assessment of HNV farming

A number of improvements in the quality assessments planned in the future were highlighted in the survey responses, which are as follows:

- Definition and identification of HNV farming

  - Review and adjustments of method to definitions of HNV farmland and recalculation of baseline levels (e.g. RDP in Sweden).
  - Further development of type 3 HNV farmland (e.g. RDPs in Austria).
  - Improvements of databases (e.g. RDPs in Lithuania and Sweden).
- Monitoring aspects
  - Developing a method to monitor and assess the quality of HNV farming (e.g. RDPs in Spain-Castilla y Leon and England).
  - Setting up of new subgroups for monitoring different types of HNV farming (e.g. RDP in Slovakia).
  - Better utilisation of HNV monitoring tools and sampling approaches for net-impact assessments in RDP evaluations through integration of IACS data and consideration of data needs of robust counterfactuals (e.g. RDPs in Estonia and Germany).
  - Work on HNV farming systems and linking land cover to farms in order to assess impacts (e.g. several regional RDPs in Italy).

3.2 Selected case studies to identify, monitor and assess HNV farming

The survey results have shown that although the assessment of changes in the quality of HNV farming is currently restricted by the availability of environmental monitoring data, a few new approaches and methods are emerging to enable the assessment of HNV quality.

In the following chapter some interesting approaches are highlighted based on the five case studies presented at the Good Practice Workshop organised by the Evaluation Helpdesk for Rural Development in Bonn on the 5 and 6 June 2016. The case studies are compared according to the following criteria.[8]

- The system established for the identification of HNV farming;
- The data used for the identification and assessment of the HNV farming;
- The scoring scheme of HNV farming.

3.2.1 The system established for the identification of HNV farming areas

Identification of HNV farming areas is the first step along the process of monitoring and assessing the related CAP indicator. It is, therefore, important that this estimation is as robust as possible at an appropriate geographic level.

In **Estonia** a National working group was established in 2009 in ARC (Agricultural Research Centre) to define the methodology of identification of HNV farmland. The group included representatives from the Ministry of Rural Affairs, Ministry of the Environment, and their agencies, universities as well as experts of different areas of activity. After consulting with specialists of other countries having developed HNV agriculture solutions for their states (e.g. ES –Navarra, NL) the Estonian HNV working group decided to adopt a grid solution (with cells of 1×1 km) to identify Estonian HNV farming areas. Different parameters for identification of valuable farming (qualitative and quantitative values of characteristics/indicators related to farming intensity, nature values and landscape mosaics) were later applied during the data analysis.

In **Germany**, available data on landscape and habitat structure proved too disparate and incomplete for use in assessing the HNV farmland indicator, failing to cover some important habitat types (e.g. species

[8] The cases presented at the GPW "Preparing the assessment of High Nature Value Farming in RDPs 2014-2020" held in Bonn on the 6-7 June were from Germany, Estonia, Denmark, Spain (Navarra), and Italy (NRN and Veneto). Full descriptions of the case studies can be found in the annex 5.3.

rich arable land or traditionally used orchards) and partly being gathered too infrequently for regular updating of the indicator value. Considering this, the Federal Ministry of Food and Agriculture (BMEL), the Federal Environment Ministry (BMUB) and the Federal States agreed to establish a new, targeted and cost-effective concept for HNV monitoring, which was developed by the Federal Agency for Nature Conservation (BfN) in cooperation with private consultancies. The latter is responsible for data management, conducts a comprehensive quality management and extrapolates the data from the samples to calculate the indicator value on the national and the Federal States level. Incoming data are subject to an exhaustive control procedure and quality evaluation, including checks for topological correctness, completeness, correct assessment of quality levels and completeness of the documentation. Additionally, all mapping results are checked against the latest aerial photographs. Furthermore, control mappings are conducted to assess the quality of the field mapping. Surveyor trainings are undertaken annually to care for harmonized field work and assessment on the national level[9].

In **Denmark**, the HNV mapping was developed by Aarhus University and financed by the Ministry of Environment and Food. The map is based on existing knowledge on biodiversity, and on that basis it points out the most important high value areas in Denmark. The aim is to target means for biodiversity in the most cost effective way, especially rural development support for gazing or cutting of semi natural areas outside Natura 2000. The HNV map consists of 14 parameters, each of them chosen because they indicate a higher level of biodiversity related to a specific area. Moreover, the approach allows for the aggregation of data for the whole country.

In **Navarra** Regional-level indicators were calculated. However, these had a limited scope to provide meaningful information on trends in HNV farming. The most useful indicators are those that tell us the trends affecting distinct HNV farming systems in particular, and their associated practices. Having identified four broad HNV farming systems, the next step to take forward is to investigate and understand the characteristics of these different farming systems, their biodiversity values, and the tendencies affecting them. This analysis will make it possible to devise a set of indicators that will provide meaningful data on trends in farming systems, and that can help to inform the evaluation of rural development policy. In this sense, two additional studies have been carried out at a farming system level: in the Cantabric region (2012) and the Mediterranean mountains of Navarra (2016). Studies at a system level are crucial to understand the link between farming characteristics and biodiversity, and to see more in depth the profile of the farmers that are maintaining the HNV value in the area. It is also useful to design future management schemes. For example, currently a pilot project is underway to maintain the HNV areas of the Mediterranean mountains of Navarra, using a Results Based Payment Scheme approach with 21 participating farmers. In order to identify the areas of interest, a land use map that would satisfy the particularities of the HNV concept was created, defining 21 different types of land uses, mostly related to farming uses, in a 1:5000 scale.

In order to provide a national framework, the **Italian Rural Network**, has provided estimates at the national level based on a common method following the EC Guidance document (EENRD, 2009), pursuing both the farming systems and land cover approach, and supporting the Managing Authorities in building a common understanding of the HNVF concept for its identification. In addition, this work was aimed at providing the Ministry of Agriculture with a consistent estimate of HNVF at the national level (with regional details) in order to overcome the problem arising from the aggregation of the different type of estimates provided by the RDPs. The analysis was based on various sources of territorial data available on a national scale: Data processing by the AGRIT 2010 database of the Ministry of Agriculture; such database was supplied to INEA for the purposes of this study, which shows the

[9] Benzler, A., Fuchs, D. & Hünig, C. (2015): Methodik und erste Ergebnisse des Monitorings der Landwirtschaftsflächen mit hohem Naturwert in Deutschland. Beleg für aktuelle Biodiversitätsverluste in der Agrarlandschaft. Natur und Landschaft 90 (7), 309-316. (*in German with English abstract*)

percentage of the UAA (Utilised Agricultural Area) and some land uses which are considered of interest for HNV farmland; the data refer to the 2725 cells of a grid made of square of size 10x10 km, which covers the entire Italian territory; estimates are derived from an integration of the results of two sampling phases. The first phase of such a work consisted of photo interpretation (on orthophotographs scaled 1:10.000) of sample points distributed across a 500 x 500 m square grid, whereas the second phase consisted of field surveys; Data processing of the CLC vector map, referred to 2000 (EEA2005), used at the highest hierarchical level, as a source of information on the linear development of the borders of natural and semi-natural environments (boundaries of the polygons assigned to Class 3: forests and semi-natural areas); The Natura 2000 database of the Ministry of Environment[10], which reports for all sites - SCIs (Sites of Community Interest) and SPAs (Special Protected Areas) - the geographical coordinates of a centroid point of reference and the list of endangered plant and animal species; bird species, mammals, insects (including lepidopters) and plant species were taken into consideration that Paracchini et al. (2008) listed as Habitat Directive species associated with high nature value farming.

3.2.2 The data used for the identification and assessment of the HNV farming

Data is a key element in the process of identifying and later assessing HNV farming since what is monitored at the RDP level is not always useful for these purposes. Moreover, it is crucial that data should be chosen according, not only to its robustness and availability to be monitored over time, but also to its effectiveness in showing the state of the given HNV area.

In **Estonia**, exclusively national **datasets are used for the identification of High Nature Value farmland**. Estonian Nature Information System (EELIS), Estonian Topographic Database (ETAK), Livestock data from the register of farm animals (retrieved from Estonian Agricultural Registers and Information Board (ARIB) information system, who also acts as Paying Agency for RDP), Utilized Agricultural Area (UAA) and farm characteristics (retrieved from the ARIB register of agricultural support and land parcels (IACS and LPIS data)), Estonian Breeding Bird Atlas, Data base on Semi-Natural Habitats (SNH) and Estonian Digital Soil Map scale 1:10 000 with 109 soil taxonomic units (EDS).

In **Navarra**, different sources of information were intersected, the most relevant being the LPIS data base (1:5000), land use map (1:25000), and annual farmland data bases (where the farmers specify which crop they grow in which plots), which are updated annually. Using data that is frequently updated for all the territory allows to repeat the process whenever needed. In 2016[11] a study on updating of the values for the identification of the HNV areas has been performed, using the same methodology applied in 2010. This study will show the situation found in the field in 2013, and will illustrate the changes that occurred between the initial and current studies (data of 2008 and 2013). Breaking down the information in the different types of HNV farmland (1, 2 and 3) in the different farming systems, and knowing the spatial distribution in the territory, it is possible to gain a general idea of the evolution that the farming areas have gone through in the past years.

In **Veneto** the sample used for the analysis is based on the Farm Accountancy Data Network (FADN). Data on individual holdings are available for the period 2008 to 2013 which covers most of the years of the 2007-2013 RDP programming period. For each year a number of observations variable from 691 to 879 farms was collected and processed. One of the advantages of using the FADN dataset is that it includes information on the intensity of farming that cannot be found in other EU wide datasets. Due to the common framework across the Member States and the yearly update, it can be used for monitoring purposes and comparative analysis at EU level. On the other hand, there are also disadvantages due to the exclusion of economically small farms and “non-professional” farms that generally have an extremely reduced significance in terms of farmland and income. Another data limitation concerns the

[10] ftp://ftp.dpn.minambiente.it/Cartografie/Natura2000
[11] The results will be ready at the end of 2016.

lack of information on the extent of semi-natural features in the farms and, more generally, in terms of land cover.

Finally, in **Denmark** data derive from several sources, among these voluntary reported data (citizen science data) from the web page www.fugleognatur.dk. For mobile species as birds and butterflies, distribution maps drawn up by experts is used to localize the habitat of these species

3.2.3 The scoring scheme of HNV farming

Finally, when it comes to assess the quality of the HNV farming, the choice of a specific approach which is based on statistical variables, rather than one based on more complex and tailor made information, distinguishes two different typologies: the statical approach vs. the dynamic one.

In **Germany** to make changes in quality of HNV farmland visible, three quality levels of HNV farmland are assessed during field work. Quality levels of grassland, arable, set aside, orchards and vineyards are assessed using plant character taxa. For arable land and vineyards, character species are defined on national level. Grassland character species are defined on regional level, resulting in seven different character species lists for Germany due to the fact that species composition in grassland differs between the regions. In all potential HNV plots, character taxa are counted on a standardized transect of 30 m length and 2 m width.

In **Denmark**, starting from the analysis made by Aarhus University, the AgriFish Agency has chosen areas reaching at least 5 points as HNV area (score 5-13). Nearly all of these HNV areas are at the same time protected by Danish legislation as semi natural areas with ban on intensive farming practice, and at the same time score on one or more of the six species based parameters. When applying for support for grazing or cutting in the rural development programme (RDP) the areas with the highest HNV score obtain the highest priority.

In **Estonia**, according to the methodology 20 indicators were calculated across the country only for those grid cells that contained agricultural land. The highest HNV score reached was 75 points, the theoretical possible sum would be 100 points. The shape of the frequencies of the number of points in all 1 km squares corresponded to the normal distribution, and provides confirmation that a well-balanced set of indicators has been chosen. The top 10% are termed Exceptionally High HNV (EHNV), the central 40% Median HNV (MHNV) and the lowest 10% Relatively Low HNV (RLNV). Based on real situation in HNV grid cells this provides possibilities to search deeper and define regional needs and adapt policy accordingly.

According to the **Italian NRN**'s scheme which takes a land cover approach, in order to distinguish different degrees of nature value, the cells interested by the presence of the types of land cover of nature value were assigned scores on the basis of the following characteristics: the percentage of permanent grassland (criterion 1), the density of two landscape structural elements (criterion 2): trees outside forests (in terms of percentage cover) and the borders of natural and semi-natural environments (in terms of linear density measured in m/ha), and, finally, the number of threatened species (as mentioned above) in the sites of the NATURA2000 network which fall within the cells (criterion 3). Using an approach similar to Pointereau's (2007), the units of analysis, i.e. in this case the cells, were assigned scores for each of the three criteria, combining (with a simple sum) the scores obtained for the relative indicators. The summary map obtained, in which the cells containing potential HNV farmland are highlighted, is an overall representation of the biodiversity value and seems to have captured the main peculiarities of rural Italy.

In **Navarra**, it was possible to devise a set of basic indicators of trends in HNV land cover patterns, such as semi-natural farmland and low-intensity mosaics. Additional indicators were selected to provide an indication at regional level of changes in farming systems. For example, the regional number of livestock of native breeds is one indicator, since the shift to more intensive, non-HNV livestock systems is

generally accompanied by a change to non-native breeds. The idea was to produce a set of indicators that can be divided into three categories:

- **Land cover types** that are characteristic of the system and of its biodiversity value, and that may be most vulnerable to change. At a regional level the percentage of HNV land over the total territory in Navarra was of 31.98% in 2008. And at a farming system level, in the case of the Cantabrian mountain livestock system, 49.24% of the farmer's land was of HNV in 2010.
- **Farming practices** that are characteristic of the system and of its biodiversity value, and that may be most vulnerable to change. For example, in Navarra the proportion of native livestock breeds was of 54,97%, and in the case of the Pyrenean mountain livestock system, a relevant practice would be the use of native sheep breeds that practice seasonal transhumance between mountains and lowlands.
- **Target wildlife species** that are characteristic of the system and of its biodiversity value, and that may be most vulnerable to change. For example, the populations of steppe land birds, particularly for the system of the Plains of the Ebro Valley, which was selected by the Type 3 HNVF land.

3.2.4 Summary of case studies

As regards **Denmark's** approach, it is well understood by farmers, since its map and transparent rules increase awareness of the fact that biodiversity matters.

Estonia has a solid methodology based on a variety of information sources and four groups of variables.

The **German** case makes use of statistical samples, an annual resurvey of 25% of the sites allows to make estimates of change on annual basis.

In **Italy**, both data sets offer a partial picture and show that the assessment of the quality of HNV farmland is highly sensitive to the methodologies used.

Finally, **Spain** (Navarra) has introduced several innovations, with an interest in identifying the characteristics of the farming system as well as the land quality. Pilot scheme to target particular habitats is also a relevant innovation, while mapping tools used provide a stepping stone to targeted policy.

Overall, we can note that all cases apply a tailored approach, when CORINNE data appeared inadequate or non-sufficient, either based on accurate statistics, both at European and national level, or on field work (specially for covering existing data gaps). The necessity to better target the identification and monitoring of the extent of HNVF to their needs is in each case tailored with the definition of parameters or additional indicators. Yet, not all the approaches prove to be robust enough to assess also the quality of HNVF.

Some innovations can be observed, for example regarding the involvement of farmers in the assessment of HNV farmingand regarding the awareness raising and understanding of the relevance of biodiversity.

4 CONCLUSIONS

HNV farming in the new programming period

The importance of the concept of HNV farming has increased in the current programming period. Policy impacts on HNV farming now need to be assessed for both pillars of the CAP. The common context and impact indicator HNV farming measures the extent of HNV as a percentage share of UAA farmed to generate High Nature Value. Consideration needs to be given to allow for capturing dynamic processes of changes to HNV extent and quality. While the previous programming period was primarily about learning about the HNV concept and developing a tailored methodology to identify the extent of HNV farming, it is high time to build on this experience and to set up robust baselines for the assessment of the extent and quality of HNV farming.

Recognising the differences in HNV farming between the Member States, HNV farming is the only CAP impact indicator for which there is no common methodology explicitly provided at the EU level. Member States and their regions are required to tailor their approaches of identifying and monitoring HNV farming to the regional context, and make use of the best available data and most cost-efficient data collection methods.

The HNV farming indicator should be based on a solid methodology geared for assessing impact and capturing its dynamic importance, including quality aspects. In this sense the 2007-2013 ex post evaluation can play a crucial role for the establishment of baseline values for the 2014-2020 programming period.

Diverse approaches are used to identify and monitor HNV farming and although the assessment of changes in the quality of HNV farming is currently restricted by the availability of environmental monitoring data, new approaches and methods are emerging to enable the assessment of HNV quality. The case studies highlighted tailored and practice-oriented approaches to assess changes in HNV quality with different levels of differentiation in the quality levels.

Main trends observed in the Member States

Identification of HNV farming

- The survey illustrates a diverse array of approaches to the identification of HNV and the datasets used, which forms **a good know-how and experience pool** for the Member States to look at when planning further improvements.
- The **strategies of data collection** for HNV identification and monitoring include the following approaches: a) special data collection/targeted inventories (e.g. Germany and Austria), b) use of secondary data sources (most of the regions used Natura 2000 databases, IACS, and LPIS), c) integration of national monitoring progammes (e.g. RDPs in Estonia and Czech Republic), d) involvement of volunteers (e.g. Denmark), e) expert judgement (e.g. Greece).
- **The adequateness of different data and information sources to be used** depends both on the methods chosen and the regional and territorial specificities. The survey illustrated that the RDPs have combined several data collection approaches and did not base their assessment on a single database, but rather combined and overlayed different types of datasets.
- Although baselines have already been established in a number of RDPs, the **baseline calculation** remains an ongoing process. But adjustments to methods of defining HNV farming are implemented and (re)calculations of baseline levels are carried out. Results of the ex-post evaluations of the 2007-2013 programming period could enable ongoing calculations/updates of the baseline value.

Monitoring of HNV farming

- **Suitable monitoring approaches** combining biodiversity and habitat data with land use data have been developed to assess trends and changes in the quality of HNV farming. These approaches use, for example, data on habitat and vegetation composition, which reflect changes in management practices.
- Many RDPs have now defined the **criteria and the approach for identifying and assessing HNV farming**. The advance of GIS and smart habitat survey methods has made the assessment considerably easier than in the past. The use of drones and other high tech monitoring devices will allow for more accurate assessments. While the design of the perfect method to map HNV farmland may remain an elusive target, which is inevitably constrained by cost, a great deal can still be learnt and some recommendations can be derived from the experiences to date.

Gaps observed in the Member States

Based on the information provided in the survey, the following gaps have been emerging:

HNV farming has not yet been defined in a small number of Member States (e.g. RDPs in Poland and Croatia)

RDPs have not set up an approach to monitor HNV farming (e.g. RDPs in Spain-Castilla La Mancha, Croatia, Latvia and Portugal-Azores) **and/or have not established a baseline** (e.g. RDPs in Greece, Spain-Castilla La Mancha, Croatia, Latvia, Poland, Luxemburg and a few regional RDPs in Italy – Emilia Romagna, Friuli Venezia Giulia and Marche).

The assessment of changes in the quality of HNV farming is the biggest gap in the assessed approaches. This can be partly explained with the focus on identifying, monitoring and assessing the extent of HNV farmland in the last programming period. According to the survey replies RDPs in BE-Flanders, ES-Castilla y León, ES-Castilla La Mancha, FI, HR, LV, NL and Portugal-Azores have not dealt with monitoring the quality of HNV farming, yet. In few cases, efforts are underway to address those gaps, but more information on how the RDPs plan to address these gaps in the 2014-2020 period is needed. Table 2 synthesizes key gaps, possible steps of how to address the gaps and follow up questions to obtain further information.

Table 2. Overview of main gaps

Gap	Possible key steps to address gap	Key questions
HNV farming not yet defined	Identify key land use, bio-physical and biodiversity aspects which best reflect the specifities of the three HNV types in the RDP region Define suitable indicators and data needs	How will you define/interprete HNV? What data and/or method will you use to identify HNV?
Missing monitoring approaches to identify changes in the extent of HNV farming	Set up suitable data collection strategy and monitoring approach for the selected indicators integrating secondary data sources and existing environmental monitoring programmes	What approach will be used to monitor HNV farming?
Lack of baseline	Create a composite index and / or score for each unit of HNV farming covering the different indicators / aspects included in “your” definition of HNV and calculate a base value (preferably, where still possible, 2013)	What year will be chosen for setting up HNV baseline?
Missing quality assessments	Decide on the most relevant quality factors to be included in the monitoring approach and assessment	How will the existing index calculation be refined and

Gap	Possible key steps to address gap	Key questions
	tool which best reflect the specifities of the three HNV types in the RDP region Allow for an assessment of dynamic changes in land use and biodiversity aspects Consider data needs of applying the assessment tool for policy evaluation	which quality factors will be incorporated? What approach will be chosen for monitoring and assessing the quality of HNV farming? How can the assessment tool be used for policy evaluation?

Source: European Evaluation Helpdesk for Rural Development, 2016

No replies to the HNV survey could be collected from the following RDPs: Belgium-Wallonia, all RDPs of France, Bulgaria, Malta, Portugal –Madeira, UK-Northern Ireland, UK-Scotland, and most of the Spanish RDPs. Hungary provided insufficient information in the survey.

Additional information is therefore needed to clarify how these RDPs are planning to address these issues for the 2014-2020 period.

Recommendations and good practice

The following specific recommendations can be derived taking into account the different levels of the state of play across the RDPs:

Establish proper baselines of HNV farming in RDPs as a precondition for a sound assessment of HNV farming. It is critical that RDPs give the highest priority to establishing a baseline (2013) in order to have a robust basis for future assessments of changes in the extent and quality of HNV farming.

Rely on regular monitoring activities when assessing the changes of extent and quality of HNV farming – this can be achieved through the use of a combination of relevant indicators covering aspects of land use/farming intensity and biodiversity.

Several RDPs in Italy use a combination of HNV indicator and the Farmland Bird indicator to assess changes in the quality.

Combine secondary data sources on land use with environmental monitoring programmes in order to provide a cost-efficient means of covering dynamic developments of the extent and quality of HNV farming.

SE, ES-Madrid, SK and EE use national monitoring programmes of semi-natural grasslands and habitats. A cost effective approach for monitoring exists in DK where data are collected also by volunteers and non profit organisations.

Avoid constraining factors of the future assessment of HNV farming, which are currently, insufficient baselines, lack of data and lack of data access, and uncertainty and different interpretations of the terminology with respect to the definition of HNV farming and HNV farmland. It is expected that the results of the 2007-2013 ex-post evaluation can and will be used to fill data gaps and update baselines. Some of the data issues can be addressed through close collaboration between managing authorities, evaluators and scientific institutions and data access can be improved.

The Italian National Rural Network has developed an exchange among all relevant HNV farming stakeholders in order to build a common understanding on the terminology and the requirements.

Develop robust methods to assess HNV farming suitable to the prevailing bio-physical characteristics and farming systems.

ES-Navarra developed three categories of characteristic indicators: land cover types, farming practices and target wildlife species.

Apply robust methods to assess HNV farming able to gauge dynamic changes rather than the static assessment of national designations and bio-physical elements.

Sweden is using field inventories and aerial photos of permanent plots with in-depth monitoring of flora and fauna species. This allows for a more dynamic assessment of HNV farming.

Strengthen cooperation and exchange between different HNV stakeholders in order to allow for an improved understanding of the concept and a benchmarking of the chosen approaches. Evaluation of HNV farming at RDP level plays a crucial role in informing such an exchange.

5 ANNEXES

5.1 Overview of survey outcomes (October 2016)

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
Austria	AT		3 types of HNV (Andersen 2003)			1			Species surveys/inventories data used	Annually	Threshold for quality level applied as benchmark for qualification as HNV - no further differentiation reported	No specific monitoring programme reported
Belgium	BE - Flanders	National continuous monitoring databases used	3 types of HNV (Andersen 2003)		1	1		1		Annually (land use data) 12 years (biodiversity map)	Up till now quality of HNV farmland is not monitored. A specific assessment framework and an associated monitoring programme has to be developed	Part of agricultural and environmental monitoring programmes
	BE - Wallonia											
Bulgaria	BG											
Cyprus	CY		3 types of HNV (Andersen 2003)	1	1	1	1				Current methodology used based on the three typology described by EU. Improvements are needed for the low intensity farming characteristics (livestock/ha, nitrogen/ha, biocides/ha) in oder to improve methods of measurements	Part of agricultural (policy) monitoring programmes
Czech Republic	CZ	National continuous monitoring databases used	Only grasslands within Natura 2000 sites		1	1	1	1				Part of CMES and biodiversity monitoring programmes

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
Germany	DE - Baden-Württemberg	HNV identification and assessment is based on specially collected data gathered by contracted experts	3 types of HNV (Andersen 2003)	1	1				Special field surveys used for data collection	Every second year an extrapolation is done integrating the new data of the past 2 years	HNV farmland is mapped differentiating 3 quality levels. Differentiation of the individual types of HNV farmland is also possible	Specific HNV surveys are carried out with about a quarter of all squares being resampled every year
	DE - Bayern											
	DE - Berlin + Brandenburg											
	DE - Hessen											
	DE - Mecklenburg-Vorpommern											
	DE - Niedersachsen + Bremen											
	DE - Nordrhein-Westfalen											
	DE - Rheinland-Pfalz											
	DE – Saarland											
	DE – Sachsen											
	DE - Sachsen-Anhalt											
	DE - Schleswig-Holstein											
	DE – Thüringen											

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
Denmark	DK	Use for targeting; involve scoring system; utilizes field data from vollunteers/experts	Special scoring system						No information provided about what databases are used	Annually	The new methodology has made it possible to point out areas with high nature value through a range of parameters which indicate higher biodiversity. Secondly, the HNV areas are each given a score from 1-13 (only scores from 5-13 are seen as HNV areas), and this is used for the targeting of areas.	Data collection for HNV maps
Estonia	EE	Involve scoring system	3 types of HNV (Andersen 2003)	1	1	1	1	1		Annually	Scoring approach (0-5 scale with sub criteria)	With current approach quality of the farmland under HNV can be indirectly monitored via the general monitoring in semi-natural habitats in Natura 2000 area.
Greece	EL	Involvement of experts/NGOs is	Seems HNV	1	1			1	Species inventorie		The index calculation used in the previous	In the last programming period the monitoring was

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
		part of HNV identification process	concept has not been applied yet						s, questionners of experts/NGOs		programming period will be further refined, in order to incorporate quality factors. No information on the quality factors was available at this point in time	done by the Hellenic Ornithological Society.
Spain	ES - Andalucía											
	ES – Aragón											
	ES – Asturias											
	ES – Baleares											
	ES – Canarias											
	ES – Cantabria											
	ES - Castilla y León		No information provided		1		1	1	Special species/habitat mapping datasets		In study	
	ES - Castilla-la Mancha		3 types of HNV (Andersen 2003)		1		1		Rare species/habitats databases		In decision process	
	ES - Cataluña											
	ES – Extremadura											
	ES – Galicia											

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	ES - La Rioja		3 types of HNV (Andersen 2003)				1		Regional agricultural statistics data used			
	ES - Madrid		No information provided	1	1		1				The quality is controlled from changes in the presence of habitats monitored by the Ministry of Agriculture, Food and Environment	
	ES - Murcia											
	ES - Navarra											
	ES - País Vasco											
	ES - Valencia											
	ES-RRN											
Finland	FI - Åland		Own system: scoring on potential to maintain species-rich habitats.			1				Annually		Part of CMES monitoring
	FI - Manner-Suomi											
	FI-Mainland											
France	FR - Alsace											
	FR - Aquitaine											

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	FR - Auvergne											
	FR - Basse-Normandie											
	FR - Bourgogne											
	FR – Bretagne											
	FR – Centre											
	FR - Champagne-Ardenne											
	FR – Corse											
	FR - Franche-Comté											
	FR - Guadeloupe											
	FR – Guyane											
	FR - Haute-Normandie											
	FR - Île de France											
	FR - Languedoc-Roussillon											
	FR – Limousin											
	FR – Lorraine											
	FR – Martinique											

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	FR - Midi-Pyrénées											
	FR - Nord - Pas-de-Calais											
	FR - Pays de la Loire											
	FR – Picardie											
	FR - Poitou-Charentes											
	FR - Provence-Alpes-Côte d'Azur											
	FR – Réunion											
	FR - Rhône-Alpes											
	FR – Hexagonal											
Croatia	HR	Have not applied HNV concept										Monitoring of HNVF has not yet been established therefore this is not applicable.
Hungary	HU	It seems HU uses HNV for targeting of agri-env. measures	No information provided								No information provided	
Ireland	IE		No information provided	1	1						The quality of HNV farmland is monitored through the periodic assessments on the protected habitats/species monitored under the the Birds/Habitats Directives, as the is a strong overlap between Natura and HNV areas	No specific HNV quality monitoring

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
Italy	IT - Abruzzo	10x10 km2 grid sample functional uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,		No specific information on the quality of the farmland under HNV farming monitored	
	IT - Basilicata	10x10 km2 grid sample functional uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,	The data and their collection frequency will depend on the implementation of the compensation measures (12-13) and other agro-environmental measures.	The good level of the indicator CI 37, will indicate the quality of the monitored HNV. Also FBI, contributes to the assessment of the quality of the areas. To monitor the quality of the farmland under HNV farming monitoring data and information resulting from the implementation of agro-environmental measures, compensatory allowances and Natura 2000 have been used.	However, in order to improve the identification, characterization and management of HNV, all relevant planning tools will be considered (eg, RN2000 Management Plans, Landscape Plan) beyond those already in use.
	IT - Calabria	10x10 km2 grid sample functional uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,		The quality of the farmland under HNV monitored is defined by the amount of extensive farming with landscape elements	The responsible for monitoring the Regional section for Monitoring and Evaluation of Calabria Region with the evaluator, which is not still defined
	IT - Campania	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Emilia-Romagna	grid sample functional units estimating value	3 types of HNV (Andersen 2003)	1	1				Agrit 2010, CLC,		A methodological analysis for the consistency of Type 1 and 2 HNV farming	

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
		of the criterias chosen									areas has been ad hoc developed for Emilia Romagna. It is based on the classification of cadastral maps according to a natural value indicator obtained by four different indicators: incidence of seminatural vegetation; ecological diversity; cultivation diversity; incidence of low intensity cultivation. Values stemming from the 4 indicators, preliminarily weighted, were then aggregated for each cadastral map/sheet. The whole methodology is based on soil use data taken from the "Refresh" project (2010-2012) and from 2011 holding dossiers.	
	IT - Friuli-Venezia Giulia	grid sample functional uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Lazio	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	IT - Liguria	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,		HNV farming UAA farmed to generate High Nature Value - Very High : 5 % HNV farming UAA farmed to generate High Nature Value - High: 35 % HNV farming UAA farmed to generate High Nature Value - Moderate: 25 % HNV farming UAA farmed to generate High Nature Value - Low: 15.7 % National Rural Network quality.	A specific and an “ad hoc” evaluation on the HNV farming monitoring will be carry out by Liguria Ricerche Monitoring Working Group according to the instruction provided by RDP Managing Authority.
	IT - Lombardia	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Marche	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,		Analysis of the distribution of the UAA for the different criteria identified 32% of regional UAA occupied by HNV agricultural areas type 2, this gives to the regional agricultural landscape a "mosaic" aspect.	Marche Region used the data published in the document prepared by the Task Force Monitoring and Evaluation of National Rural Network "Rural areas of high nature value - Approach of land cover - Marche" dated February 2014.

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	IT - Molise	No questionnaire provided	10x10 km2 grid sample functional units estimating value of the criterias chosen			1					Information on the overall relationship between agriculture and the natural resources of the area have been acquired through the quantification of the areas as High Nature Value (HNV), defined by the RRN through an approach based on land cover, integrating data (from various sources) relating to certain specific cover classes (fodder, vines, olive trees, orchards and family orchards, etc.), to structural elements of the landscape (trees outside forests, etc.), and information on the species present in the Natura 2000 Network sites. The regional agricultural area AVN have been divided into four "classes of merit: UAA to generate HVN (UAA% of tot.) 50% - Very High (UAA% of tot.) 1 , 5% - Upper (% UAA on tot.) 18.7% - Middle (UAA% of tot.) 25.2% - Lower (% UAA on tot.) 4.7%.	IRPET – National Rural Network

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	IT - Bolzano	grid sample functional uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			The idea is to collect additional information for the evaluation of HNV farmland. To date, the Regional authority with the future evaluation are trying to define a better approach/method for the assessment of HNV at farm level.
	IT - Trento	grid sample functional uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,		Floristic, faunistic and landscape monitoring, also based on the agronomic practices normally used: such as the absence the absence of rupture loads, limitations in the use of mineral fertilizers on lawns and prohibition fertilizing pastures.	
	IT - Piemonte	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Puglia	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Sardegna	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			The idea id to improve with additional monitoring surveys the birth sample with the evaluator ISRE

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	IT - Sicilia	10x10 km2 grid sample functional units estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Toscana	10x10 km2 grid sample uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Umbria	10x10 km2 grid sample uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,			
	IT - Valle d'Aosta	10x10 km2 grid sample uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,		The good quality of the Indicator 37 is linked to agro environmental climate measures. In the last period have been carried out a study on the quality of public goods, important to evaluate the HNV farmland indicator (see attached documents). Moreover, the FBI is correlated to the I37, in fact the additional monitoring samples for farmland births can be one way to integrate the methodology to assess HNV farmland.	To monitor the indicator is sufficient to integrate the information coming from agri-environmental measures, Natura 2000, measuring compensatory allowances. However, the Valle D'Aosta Monitoring and Evaluation groups is carried out an additional survey for the improvement of the methodology to assess the HNV farmland with the collection of additional survey on farmland births. (possible aggregation between FBI and HNV farmland).

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
	IT - Veneto	10x10 km2 grid sample uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,		Considering the distribution by classes: 13.3% of the UAA is low-HNV; 9.8% medium-HNV, 7.6% is – high -HNV and 1.3% very-high-HNV. As for individual types approximately 12.2% belongs to HNV type 1, type 2 13.3% and 6.6% to the type 3.	The Veneto Monitoring and Evaluation group is carried out an additional survey to improve the methodology to assess the HNV farmland with the collection of additional survey on farmland births. (possible aggregation between FBI and HNV farmland)
	IT - NRN	10x10 km2 grid sample uniting estimating value of the criterias chosen	3 types of HNV (Andersen 2003)		1				Agrit 2010, CLC,	Natura 2000 data (mainly 6 years) and farmland birds data (annual)	High and very high (15% of UAA)	
Lithuania	LT	Identification and assessment organized by subcontracted expert assessment	3 types of HNV (Andersen 2003)	1	1	1			Habitats of EU importance mapping inventory	It is plan to carry on special researches on HNV every second year.	Main method of HNV attribution is the use of GIS. We can update current HNV map using GIS and having data from National Paying Agency and others institutions. More problems to get update of qualitative changes in HNV territories. There is need for special researches in this case	Various sources of data exist, but majority of data could be taken from Ministry of Environment, other special researches related with changes of biodiversity.
Luxemburg	LU		3 types of HNV (Andersen 2003)						No information about used data provided in the survey		Taking into consideration the quality assessment of Natura 2000 areas	The Ministry of environment is responsible for the quality assessment of Natura 2000 areas
Latvia	LV	HNV identification methodology is not developed	Grassland habitats protected by EU		1					HNV identification methodology is not developed		

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
			Habitats directive									
Malta	MT											
Netherlands	NL		3 types of HNV (Andersen 2003)		1	1	1		Special farmland related biodiverist y databases		The quality of HNV is not yet monitored, although this would be possible with the method and data used for the monitoring of the area of HNV	
Poland	PL	Have not applied HNV concept	N/A							Have not applied HNV concept	Scoring system used	Based on data from the Corine land cover 2000, the presence of the Natura 2000 areas, important birds areas (IBA), the prime butterfly areas (PBA) and national data on biodiversity the probability of occurrence of agricultural land with high natural value was determined. It was estimated at the level of 23.8% for area of Poland
Portugal	PT - Açores		3 types of HNV (Andersen 2003), but identified only Type 1 and Type 1 HNVs						Informatio n about data used is not provided in the survey			
	PT - Continente		3 types of HNV (Andersen 2003), but identified only Type 1 and						Informatio n about data used is not provided in the survey			

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
			Type 2 HNVs									
	PT - Madeira											

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
Romania	RO		Information in the survey is not suffitient to identify HNV identification approach	1						First assessment done in 2015	For determining the quality of HNV grasslands, in the study conducted in 2015 were used values on: - representativeness of the relevant species in terms of ecological quality for HNV permanent grassland in Romania, - the frequency of occurrence of HNV species, namely their fidelity to the good quality grassland, - the conservation status of habitats. In order to extrapolate data collected from the land to the whole surface of permanent grassland in Romania, it was necessary to divide this land according to relevant environmental factors from a biological perspective concerning the specific abundance. At this phase of data sampling for the purpose of sampling and interpretation of data were evaluated several factors influencing species diversity and variety. Thus, grassland areas were divided into combination classes of altitude, exhibition and	Specific HNV monitoring

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
											soils: - altitude (it is expected to have a higher number of species at medium altitudes, respectively lower at high altitudes); - exhibition (for example, is expected to have higher specific richness on sunny exhibitions at high altitudes compared with shady exhibitions) and, - edaphic factors (wealth is expected to have higher specific abundance for certain types of soils more fertile)	

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
Sweden	SE		3 types of HNV (Andersen 2003), but identified only Type 1 and Type 2 HNVs				1		Special grassland inventory data, national statistics (for Type 2 identification)	Annually	The most striking quality-indication so far is that both bumblebees and butterflies seem to have a positive trend in pastures with AES, even though we get a lot of signals of negative trends for them, on a whole both, nationally and in Europe	Landscape and grassland monitoring programmes
Slovenia	SI		Not clearly stated but seems 3 types of HNV (Andersen 2003)	1			1			Agricultural Land use Monitoring is carried out in the timeframe of 2-4 years	For better results of monitoring it would be sensible to exclude any areas where land use is intensive from HNV areas	Agricultural Land use monitoring programme
Slovakia	SK		3 types of HNV (Andersen 2003)						Survey does not specify datasets used to identify HNVs	It is implemented 2 times during the programming period (between 2018 and 2022)	The current (new) methodology improves the main area of qualitative monitoring trends the extent to which interventions under the measure contributed to the recovery programme maintain or improve biodiversity in the assisted areas of Slovakia	Habitat and biodiversity monitoring programmes

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
UK	UK - England		3 types of HNV (Andersen 2003)						The survey does not specify types of data used for identification of HNVs		At this stage we have not developed formal plans to assess the quality of HNVF. We would anticipate that existing habitat surveillance work, including that undertaken for agri-environment schemes, will enable assessments of change in the quality of HNVF to be undertaken and will develop this later in the programming period. The methodology will establish a baseline extent against which future changes in extent can be reported	
	UK - Northern Ireland											
	UK - Scotland											
	UK Wales		Type 3 methodology (area of farmland supporting rare species or high proportion of European or world						Data collected by Natural Resources Wales for EU reporting against biodiversity legislation			

Country	RDP	Administrative specifics note	HNV approach	Type of data used						Frequency of monitoring	Quality differentiation	Specific HNV monitoring or part of a broader programme
				CORINE	Protected areas (e.g. Natura 2000, IBA)	IACS	LPIS	National monitoring databases	OTHER			
			population).									

Source: Evaluation Helpdesk on survey

5.2 Comparative table on case studies

	Case Study 1 DE	Case Study 2 DK	Case Study 3 EE	Case Study 4 ES Navarra	Case Study 5 IT NRN	Case Study 6 IT Veneto
Identification of HNV areas	3 types according to Andersen	-	3 types according to Andersen	3 types according to Andersen	3 types according to Andersen	3 types according to Andersen
Methodology / tools	Based on 1 km^2 plot Use of Cochran's theory (1997)	Based on 10 m^2 plot Mapping	Based on 1 km^2 plot Grid based approach Mapping Use of statistics	Based on 1 km^2 plot Use of cluster analysis	Based on 10 km^2 plot Use of Pointereau's theory (2007) Use of ortofotographs	Use of multicriteria
Data / sources	Survey Updated every 2nd year	Voluntary monitoring Use of distribution maps Yearly updated	Use of European databases Use of national/local databases	Use of European database Use of national/local database Yearly updated	Use of European database Use of national/local database Survey	Use of FADN Yearly updated
Indicators / parameters	Use of 2 criteria (land cover and ecoregions)	Development of 14 parameters taking into consideration landscape, habitat, land use and species	Development of 20 specific indicators taking into consideration land use, nature conservation, landscape diversity and natural quality	Use of 3 criteria (size, density and diversity of Simpson)	Use of AGRIT methodology considering 3 criteria (grassland, landscape and species)	Development of 9 specific indicators
Strengths	All criteria of current indicator fiche are fulfilled: both extent and condition of HNV farmland from 2009 onwards can be estimated annually on NUTS-0 and NUTS-1 levels Due to regular annual updates, changes in HNV farmland condition can be detected quickly	The HNV map has increased discussion on and awareness of biodiversity value There is a "value for money" argument to show politicians when RDP means are divided between different priorities (e.g. biodiversity, climate, environment, rural life and	bring out variations of HNV farmland and identify more valuable areas update and add new data operationally use aggregated and analysed grid cell information by different stakeholders; combine different data spatially (e.g. nature values & agricultural statistics);	The Type 1, 2, 3 approach is suitable to Navarra A **non-complicated methodology** is preferable to understand and interpret the results Using data that is **updated frequently for all the territory** allows to repeat the process whenever needed	New parameters linked to RDPs interventions Integration of AGRIT survey data with territorial (LPIS) and agronomic data from National Agriculture Information System (SIAN) Linkage of land cover data with farm data/RDPs farms Use of information	Focusing on assessment and on farm characteristics Providing opportunities for a European wide application

	Case Study 1 DE	Case Study 2 DK	Case Study 3 EE	Case Study 4 ES Navarra	Case Study 5 IT NRN	Case Study 6 IT Veneto
	By using standard statistical methods for sampling programmes, confidence levels for estimates and trends can be calculated The keys for mapping HNV farmland can be used on all scales Costs are moderate in comparison with other monitoring programmes (400 to 500 € per sample plot per survey for fieldwork and preliminary data processing)	other investments)	develop monitoring system Based on real situation in HNV grid cells→provides possibilities to search deeper and define regional needs and adapt policy accordingly. Proposal with methodology and calculations has been finalized and given over to MA in spring 2016		available from IACS Progress towards assessing the HNVF Impact indicator	
Criticalities	Type 3 HNV farmland probably under-represented Direct assessment of CAP agri-environment measures at present not possible Regional analyses on a more fine-grained scale than NUTS-1 (Federal states) not possible due to restrictions in sample size	Develop a map that could take into account the lack of knowledge on species on some HNV areas Implement all accessible species data with the sufficient quality Include mobile species, like birds and butterfly's Demarcate which species are not included, e.g. forest and aquatic species Exclude mistakes when	Find the right source of spatial datasets To develop a technical solution for data analysis Not enough background information (UAA versus other land use, not supported agricultural land, spatial information about use of pesticides and fertilizers, etc.) National Topographic Data does not renew fast enough Currently quality of the farmland	In Navarra a final map with a GRADIENT of values from low to high has not been developed Difficult to characterize the **FARMS** that support HNV	Data updating (uncertainty due to financial resources constraints) Possible instability of sample design (size of sample, new parameters, different stratification of sample, etc.) Need of multiple type of data/data sources No links to farms Level of geographical detail of results Land cover estimates available for	Potential access to EU databases (FSS, FADN, IACS/LPIS) with detailed information could facilitate monitoring of sustainability Increasing availability of new and more detailed data (e.g. semi-natural features) BUT they may require additional data collection and processing Difficulties to depict the full range of effects in complex fields of environmental phenomena of

	Case Study 1 DE	Case Study 2 DK	Case Study 3 EE	Case Study 4 ES Navarra	Case Study 5 IT NRN	Case Study 6 IT Veneto
		handling “big data” every year	under HNV can be only indirectly monitored via the general monitoring in semi-natural habitats in Natura 2000 area Good quality spatial information about agricultural and environmental subsidies in UAA land, these changes, can be assessed and monitored but need for additional information		the AGRIT cells derive from sample surveys, not allowing a precise localization of land covers classes	biodiversity loss Challenge of up-scaling from micro level (e.g. georeferencing FADN, how to create representative spatially explicit distribution?)

Source: European Evaluation Helpdesk for Rural Development, Good Practice Workshop on HNV farming, Bonn 5-6 July 2016.

5.3 Overview of the indicators to evaluate HNV FARMING

The table below represents the fiches elaborated by the European Commission, namely DG Agriculture, for the Context Indicator 37 and the Impact Indicator I.09.

Context indicator 37 and Impact Indicator I.09: HNV (High Nature Value) farming

INDICATOR C.37	
INDICATOR NAME	HNV (HIGH NATURE VALUE) FARMING
TYPE OF INDICATOR	ENVIRONMENT
Definition	This indicator is defined as the percentage of Utilised Agricultural Area farmed to generate High Nature Value. High Nature Value (HNV) farming results from a combination of land use and farming systems which are related to high levels of biodiversity or the presence of certain species and habitats. The common definition established inter alia by the EEA and JRC, recognises three categories of farmland as HNV: 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. This indicator is a further development of AEI 23 "High Nature Value Farmland", and the farmland component of the 2007-2013 CMEF Baseline indicator 18 "High Nature Value farmland and forestry". Methodology: For the purposes of this indicator, the common parameter "HNV farming", as defined above, is to be assessed within each Member State and individual RDP area using methods suited to the prevailing bio-physical characteristics and farming systems, and based on the highest quality and most appropriate data available. The Member State authorities are responsible for conducting this assessment and providing the values to the Commission. Methodological guidance for establishing values for this indicator has been provided in "The application of the High Nature Value impact indicator" Evaluation Expert Network (2009) : http://enrd.ec.europa.eu/app_templates/filedownload.cfm?id=6A6B5D2F-ADF1-0210-3AC3-AD86DFF73554 Several Member States raised the issue of comparability and/or aggregation if different methodologies are used. Agreement on the common parameter being measured, and transparency and acceptance of the various methodologies, whilst not ideal, allows for aggregation, since in all areas the land considered to fulfil the criteria for one of the three HNV types is assessed, provided that Member States have selected methodology appropriate to identifying HNV in their biophysical situation. The purpose of this indicator is not to make comparisons between territories on the basis of the extent of HNV land, but rather to consider the trends in its preservation and /or enhancement. It is therefore important that in each territory the same methodology is used for each successive assessment, so that trends are estimated correctly. When more accurate methods are developed, leading to a change in the methodology used, HNV assessments should be recalculated for the baseline year to ensure that the trend can be captured. If this is not possible, then the new methodology should be used alongside the old to allow trends to be assessed.
Unit of measurement	Percentage (%) The absolute area of utilised agricultural area (UAA) in hectares, and of HNV farmland, is also required, to allow for aggregation to Member State/EU level.
Data source	The data sources for estimation of HNV farming are many and varied, and currently depend on the methods selected by the Member State authorities. Analysis relies principally on national/regional data, but also includes use of some EU data sets. Sources include: CORINE and other land cover data, IACS/LPIS, agricultural census

INDICATOR C.37	
INDICATOR NAME	**HNV (HIGH NATURE VALUE) FARMING**
TYPE OF INDICATOR	**ENVIRONMENT**
	data, species and habitat databases, GIS, specific sampling surveys, RDP monitoring data, designations (NATURA, national nature reserves etc.).
References/location of the data	For assessment of HNV farmland national/regional data are required (see above) UAA: EUROSTAT FSS national and regional data: table ef_oluaareg
Data collection level	The indicator should be established at either national, NUTS 1 or NUTS 2 level. Values should be obtained which correspond to RDP territory level. Large Member States may consider it appropriate to have a regional assessment, particularly where there are large regional variations in climate, topography, biodiversity, landscape and/or farming patterns. The level at which the data is available varies with the data source (see description above).
Frequency	Variable. Minimum requirement is 3 times between 2013 and 2022: a baseline assessment at the start of the 2014-2020 period (ideally for 2012 or 2013), an assessment at the end of the period (to coincide with the ex-post evaluation of the RDP territory), and one update during the period (ideally for 2017 or 2018).
Delay	Variable (depends on the data sources used, frequency of surveys/sampling, etc.).
Comments/caveats	Due to the variation in data availability, physical/ecological situation and farming systems and practices across Member States, it is not appropriate to impose a common methodology for the assessment of HNV farming. Use of one single method would restrict the analysis to data available throughout the EU, which would exclude the richest and most relevant data sources, and preclude those Member States which have developed more refined methods from using them, with a consequent reduction in the quality and accuracy of the assessment. A full assessment of HNV farming would consider both extent and quality/condition. The indicator definition proposed here only covers the extent of HNV areas, since in most Member States current methodology is not sufficiently developed to provide reliable indications of the condition of HNV areas. However, Member States are strongly encouraged to continue developing and refining the approaches used so that quality/condition can be incorporated into HNV assessments. Additional information on HNV farming throughout the EU is available in the recently published book “High Nature Value farming in Europe”. The Directorate-General Environment (DG ENV) study on "The High Nature Value farming concept throughout EU 27 and its maturity for financial support under the CAP" (starting October 2012) may also provide further information on assessment methodologies which could be a support to Member States. As for all other indicators, it is necessary to have an estimated value for this indicator for all Member States. Until an appropriate specific method for estimating HNV is identified and used by the Member State authorities, there are two existing sources of data which could be used in the interim to provide a value, although both have considerable limitations and do not give a representative assessment of the extent of HNV. Use of these values is a second-best alternative compared to use of a more accurate and appropriate method. These data sources are mentioned here solely to provide an initial fall-back option in cases where a Member State has not yet made sufficient progress to be able to provide more accurate starting values based on more appropriate and specific data and methods. The two fall-back options are: 1) Estimation of HNV farmland from CORINE land cover data (EEA study) Limitations: • This approach does not take account of farming systems. • Land cover assessments do not always distinguish well between abandoned land with encroaching scrub, and extensive semi-natural grassland with patches of bushes or scattered trees. • The scale used may mean that smaller areas, such as agricultural parcels within wooded areas are missed completely. • The area of agricultural land estimated from CORINE land cover data does not correspond to EUROSTAT's UAA data. • The EEA exercise is not updated regularly, so it does not provide a dynamic picture. 2) Area of UAA contained within designated NATURA 2000 sites. Limitations:

INDICATOR C.37	
INDICATOR NAME	HNV (HIGH NATURE VALUE) FARMING
TYPE OF INDICATOR	ENVIRONMENT
	• This approach does not take account of farming systems. • It is static rather than dynamic. • It underestimates the extent of HNV since it primarily addresses only Type 3 HNV farmland rather than all 3 types.

Source: DG Agriculture and Rural development

6 REFERENCE LIST

Guidance documents

European Commission, 2009. The Application of the High Nature Value Impact Indicator 2007-2013. http://ec.europa.eu/agriculture/rurdev/eval/hnv/guidance_en.pdf

European Commission, 2009. LEITFADEN Die Anwendung des “High Nature Value (HNV)“-Wirkungsindikators. http://ec.europa.eu/agriculture/rurdev/eval/hnv/guidance_de.pdf

European Commission, 2009. Instruction de l’indicateur d’impact « haute valeur naturelle. http://ec.europa.eu/agriculture/rurdev/eval/hnv/guidance_fr.pdf

Monographies

Lomba, A., Alves, P., Jongman, R. H., & McCracken, D. I., 2015. Reconciling nature conservation and traditional farming practices: a spatially explicit framework to assess the extent of High Nature Value farmlands in the European countryside. Ecology and evolution, 5(5), 1031-1044.

Rainer Oppermann, Guy Beaufoy, and Gwyn Jones Ubstadt-Weiher, Germany: Verlag Regionalkultur, 2012. High Nature Value farming in Europe: 35 European Countries— Experiences and Perspectives

Iragui Yoldi, U., Astrain Massa, C., & Beaufoy, G., 2010. Sistemas agrarios y forestales de alto valor natural en Navarra. Identificación y monitorización. Gobierno de Navarra.

Keenleyside, C., Beaufoy, G., Tucker, G., & Jones, G. (2014). High Nature Value farming throughout EU-27 and its financial support under the CAP. Institute for European Environmental Policy.

Andersen, E., Baldock, D., Bennet, H., Beaufoy, G., Bignal, E., Brower, F., Elbersen, B., Eiden, G., Godeschalk, F., Jones, G., McCracken, D.I., Nieuwenhuizen, W., van Eupen, M., Hennekes, S., and Zervas, G., (2003), “Developing a high nature value indicator. Report for the European Environment Agency”, Copenhagen.

Paracchini, M.L., Terres, JM., Petersen, J.E., and Y. Hoogeveen, (2006), Background document on the methodology for mapping High Nature Value farmland in EU27, EU JRC.

Reports

EIP-AGRI Focus Group Sustainable High Nature Value (HNV) farming Final Report January 2016. https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_fg_hnv_farming_final_report_2016_en.pdf

European Evaluation Helpdesk for Rural Development: High Nature Value (HNV) farming: Safeguarding Europe’s Biodiversity (Newsletter No 3 April 2016)

Report from the Commission to the European Parliament and the Council ‘The Mid-Term Review of the EU Biodiversity Strategy to 2020’ European Commission, 2015 https://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-478-EN-F1-1.PDF

European Forum on Nature Conservation and Pastoralism: L'agriculture à Haute Valeur Naturelle: mieux la (re)connaître pour mieux l ’accomopagner. Xavier Poux, Blandine Ramain, 2009. http://www.efncp.org/download/HVN_Fascicule060309.pdf

Institute for European Environmental Policy: Final report for the study on HNV indicators for evaluation, October 2007. http://www.ieep.eu/assets/350/hnv_indicator_report.pdf

Institute for European Environmental Policy: Developing a High Nature Value farming area indicator. Andersen and al. Final report, November 2003. http://www.ieep.eu/assets/646/Developing_HNV_indicator.pdf

Papers

Italian Journal of Agronomy, 2015 (volume 10:676). Article: *Identification and mapping the high nature value farmland by the comparison of a combined and species approaches in Tuscany, Italy* https://www.researchgate.net/publication/281912874_Identification_and_mapping_the_high_nature_value_farmland_by_the_comparison_of_a_combined_and_species_approaches_in_Tu scany_Italy

Article: *Do agri-environmental schemes contribute to high nature value farmland?* A case study in Emilia-Romagna (Italy). http://www.sciencedirect.com/science/article/pii/S1470160X15000187

Elsevier, 2015. Ane Kirstine Brunbjerg, Jesper Bladt, Martin Brink, Jesper Fredshavn, Peter Mikkelsen, Jesper E. Moeslund, Bettina Nygaard, Flemming Skov, Rasmus Ejrnæs. Article: *Development and implementation of a high nature value (HNV) farming indicator for Denmark*. http://www.sciencedirect.com/science/article/pii/S1470160X15005130

Elsevier, 2014. Birgit Aue, Tim Diekötter, Thomas K. Gottschalk, Volkmar Wolters, Stefan Hotes.

Article: *How High Nature Value (HNV) farmland is related to bird diversity in agro-ecosystems – Towards a versatile tool for biodiversity monitoring and conservation planning.* https://www.researchgate.net/publication/262807475_How_High_Nature_Value_HNV_farmland_is_related_to_bird_diversity_in_agro-ecosystems_-_Towards_a_versatile_tool_for_biodiversity_monitoring_and_conservation_planning

Geografisk Tidsskrift-Danish Journal of Geography, 2013 (Volume 113, Issue 2. Special Issue: The landscape as the basis for integrating different levels of management, policy making and other dimensions of the rural). Mara Almeidaa, Carlos Guerraab & Teresa Pinto-Correiaa. pages 97-108

Article: *Unfolding relations between land cover and farm management: high nature value assessment in complex silvo-pastoral systems*. http://www.tandfonline.com/doi/abs/10.1080/00167223.2013.848611?journalCode=rdgs20&

Alterra Wageningen UR, 2012. Anne van Doorn, Berien Elbersen Article: Implementation of High Nature Value farmland in agri-environmental policies. http://library.wur.nl/WebQuery/wurpubs/422739

European Association of Agricultural Economists, 2011 (Zelie Peppiette) Article: The challenge of monitoring environmental priorities: the example of HNV farmland.

http://ageconsearch.umn.edu/bitstream/99586/2/peppiette.pdf

SAC, 2011 (Davy McCracken). Article: Farmland biodiversity and the Common Agricultural Policy (CAP). https://www.google.it/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0ahUKEwiA-t3m_YvNAhXMKiwKHWijCB8QFggyMAI&url=http%3A%2F%2Fwww.sruc.ac.uk%2Fdownload%2Fdownloads%2Fid%2F48%2Ffarmland_biodiversity_and_the_common_agricultural_policy_cap_policy_briefing&usg=AFQjCNEcbaVnCWUm5WJmg4kzHv3Ighuv3Q&sig2=V1l0_mSSUIWMGclwP8cgGg

European Association of Agricultural Economists, 2011 (Trisorio A., Borlizzi A.). Article: Assessing the impact of rural policy on biodiversity: High Nature Value farming in Italy. https://www.researchgate.net/publication/254386508_Assessing_the_impact_of_rural_policy_on_biodiversity_High_Nature_Value_Farming_in_Italy

Other sources

European Commission, 2012. Presentation: Current approaches to monitoring HNV farmland (Zelie Peppiette). http://enrd.ec.europa.eu/enrd-static/app_templates/enrd_assets/pdf/eenrd/1.1.2/1_GP-WS120220_HNV_EC_Peppiette.pdf

European Association of Agricultural Economists, 2011. Presentation: Assessing the impact of Rural Development policy on biodiversity: High Nature Value Farming in Italy (A. Trisorio, A. Borlizzi). http://ageconsearch.umn.edu/bitstream/100042/2/trisorioborlizzi.pdf

AScA, SOLAGRO, 2014. L'agriculture à «haute valeur naturelle » en France métropolitaine. Un indicateur pour le suivi de la biodiversité et l'évaluation de la politique de développement rural (Poux X., Pointereau P.)

European Evaluation Helpdesk
Boulevard Saint-Michel 77-79
B - 1040 BRUSSELS
T: +32 2 737 51 30
Email: info@ruralevaluation.eu
http://enrd.ec.europa.eu