**Revising the JRC/EEA EU-level HNV Farmland methodology**

**Expert workshop to review potential improvements of the JRC/EEA HNV farmland methodology**

12 June 2017 at Environment Agency Austria; Vienna

**Final version of minutes**

**Introduction:**

The expert workshop discussed options for improving the current JRC/EEA approach for estimating the distribution of High Nature Value (HNV) farmland at European level as this approach has been developed ca 12 years ago and new data sets and research results may provide opportunities for improving the JRC/EEA approach. The workshop focused on two aspects in particular:

a) How to use national and case study data sets that are comparable to EU approach for improving the HNV Corine Land Cover (CLC) selection rules per environmental zone or in individual countries.

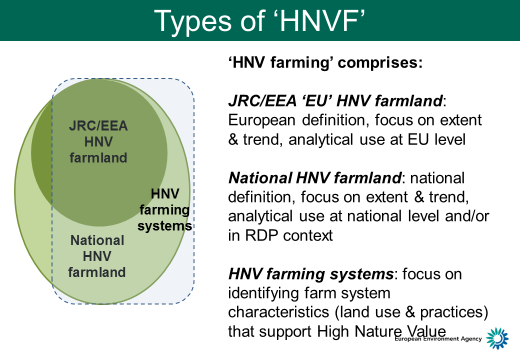
b) Whether spatial EU level data sets related to agricultural land use intensity (e.g. farm structure, N-Balance) could be employed for refining CLC rules for locating EU HNV farmland in a probabilistic approach.

The expert workshop was designed as an opportunity to identify options for the methodological improvement of the current EU-level approach together with a small group of experts from 11 European countries. The workshop agenda and list of participants can be found in annexes 1 and 2, respectively.

The workshop began with an introductory session that reviewed EU level perspectives and the current JRC/EEA methodological approach as well as the work on identifying HNV farmland and farming systems in different countries (Germany, Italy and Romania). All workshop presentations can be found under: <https://projects.eionet.europa.eu/ecosystem-capital-accounting/library/hnv-expert-workshop-_-vienna-12-june-2017>

Jan-Erik Petersen of the European Environment Agency (EEA) explained the context for the discussions at the workshop. It is expected that the EU level approach for identifying HNV farmland will remain mainly based on EU wide data sets, i.e. CLC data and biodiversity data (Natura 2000, Protected Areas (CDDA), PBAs, IBAs). It will probably not be possible to integrate more national level data sets into the EU-level approach (for reasons of resources and comparability). Hence the CLC class selection rules will likely remain the key foundation for identifying the distribution of HNV farmland. However, it is hoped that work at national level and the development of European data sets can help to improve the current JRC/EEA methodological approach. This could come through the integration of additional input data layers (mostly of a European character) or by adjusting the current CLC selection rules with the help of national or European data. Another option is to use or develop spatial data sets that give insights into agricultural land use intensity to mask out certain areas where HNV farmland is unlikely to exist.

One key challenge in the comparison of the current JRC/EEA HNV farmland data set with similar national or European data sets is the need to ensure comparability of the underlying HNV concept and the ecological definition of what constitutes ‘high nature value’ with the original JRC/EEA approach. For example, the use of the ‘HNV farmland’ concept would imply a focus on the spatial delimitation of areas of farmland with a high nature value character, whereas the ‘HNV farming’ concept can be considered to focus on identifying where farming approaches are favourable to high nature value. In addition, national approaches can vary in the ecological threshold they apply for identifying what is ‘high nature value’ as the ecological and farming context varies from country to country. The potential differences and overlaps between the different concepts as well as national and European definitions are set out in Figure 1 below.



**Figure 1: Commonalities and differences between different types of HNV farming**

**– a conceptual comparison**

The presentation by Evelyn Underwood of IEEP illustrated the different functions and interpretations of the HNV farming concept that can be found at EU and national level. The JRC/EEA approach cannot address all the different objectives and focuses on providing a stable mapping approach that provides good comparability across space and time for all of Europe.

**Summary of break out session 1: Review of available national data and opportunities for refining rules for the selection of CLC classes in current JRC/EEA approach**

This breakout session discussed options for using national experience, case studies and data sets to improve the selection of HNV in the different environmental zones of Europe. The session began with a presentation by Environment Agency Austria (UBA Vienna) on the planned approach for the analysis of possibilities for refining CLC rules on basis of national level data from three countries (Austria, Germany and Netherlands). This work comprises three steps:

1) Comparison of methodological approach of national HNV and EU-HNV according to three recognised HNV types and the time-period (actuality) of national reference data

2) Comparative analysis of statistical tables at country level between national and European data sets

3) Comparative analysis of spatially explicit GIS data for HNV farmland (where possible)

With regard to the comparability between national HNV data and the JRC/EEA dataset the following initial conclusions can be drawn for some countries:

* Austria: The designation of HNV farmland Types 1 and 2 is based on the national IACS database displayed on a 1km raster resolution. However, his data set does not comprise alpine pastures and meadows which are registered in a different data base.
* Germany: The estimation of the HNV farming area is done by extrapolation based on in situ mapping on 1,200 sample sites; furthermore, the characteristic species and habitat types that trigger the identification of HNV farming for each sample site are different from the focus on species and habitats in annex 1 of the EU habitats directive that underpins the JRC/EEA approach.
* The HNV farmland dataset from the Netherlands is based on polygons with a differentiation of HVN Types 1, 2 and 3.

Despite the differences in the underpinning data sets some conclusions can be drawn from this first rough comparison:

National HNV farmland in Austria, Germany and Netherlands is also considered to occur in areas that contain the CLC-Class “non-irrigated arable land” (particularly in the environmental zones “Continental” & “Pannonian”) while the EEA/JRC approach does not identify this class as containing HNV farmland in these environmental zones.

For Austria the JRC/EEA assessment shows a very high share of natural grassland compared to the national HNV farmland assessment – this is most likely due to the fact that the Austrian HNV data set does not cover alpine pastures and meadows.

In the Netherlands pastures (CLC Class 2.3.1) are twice as high in the European HNV farmland assessment compared to the national HNV assessment – this may relate to the different reference period or to different ecological HNV selection criteria the two assessments.

In Germany, the European HNV farmland approach uses CLC selection rules that vary according to a landscape type mask that was derived from a German data base – this can lead to abrupt changes in CLC section between different areas that are not found in the German data set. Furthermore, the representation of the CLC class pastures is twice as high in the JRC/EEA HNV farmland assessment compared to national results.

***Key outcomes of break-out discussion and next steps:***

The discussion among participants initially reviewed the first results of the comparison carried out by UBA Vienna (as reflected above). In addition it covered the following points:

* The comparative analysis may be hampered by the fact that the CLC minimum mapping unit is 25 ha, which only allows a rough spatial representation of HNV farmland, as remaining HNV farmland pockets or landscape elements are often much smaller.
* Land outside of UAA (utilised agricultural area) – as the EEA/JRC approach is based on CLC it may identify areas outside official UAA as HNV farmland, which reduces comparability where national approaches take the UAA as reference point and are based on official agricultural data sets, such as IACS.
* Another element that needs to be considered to ensure that methodological approaches are comparable is the ecological definition used in national approaches – the EU level approach sets a rather high ecological threshold (see above) whereas countries may consider a wider range of species and ecosystems to be representative of HNV farmland/farming (for which there can be good reasons); from the countries analysed so far it has not been found that national approaches applied a more narrow definition.
* Another aspect is range. The HNV farmland layer and the definition of HNV farmland are meant to represent the whole of Europe, a large area that contains highly variable types of farmland and ecology etc. Finding a definition that fits the whole range of HHV farmland is demanding and makes it difficult to fully include regional and national specificities.
* The previous points can be linked to the idea of accepting that there can be different types of HNV farmland, representing higher and lower ecological thresholds, with a wider definition adopted in some national approaches (see also Fig 1 for a representation of that idea).
* In this context, one idea discussed was that one could follow a nested approach whereby HNV farmland could consist of a core as defined in the EEA/JRC approach (focus on Habitats Directive annex 1 species and habitats) which could be complemented with a wider umbrella where nature value would be less narrowly defined.
* The participants also reviewed other data sets that could help validate or improve the results of the JRC/EEA approach, in particular for grassland. These include:
  + The LUCAS survey: the possible integration of LUCAS data regarding grassland ecosystems could be checked but is likely to applicable only for future surveys.
  + The COPERNICUS High Resolution Layer for grassland is expected to be finished by the end of 2017 and could be particularly useful for improving the understanding of the spatial distribution of grassland, independent of whether it is inside or outside of official UAA.
  + The results of national work on mapping the distribution of ecosystem types under the EU MAES process or similar initiatives; where available GIS data sets arising from this process could be very useful for checking whether all valuable ecosystem areas are captured by the current JRC/EEA approach.

At the end of this session EEA and JRC participants provided some reflections on the overall context for future work. One key point is that the European HNV farmland layer aims to reflect a harmonized selection of similar top-rated HNV areas in Europe (based on clear ecological criteria). In some cases, it will therefore rather represent a sub-selection of national HNV farmland/farming areas. As the JRC/EEA is principally based on a selection of CLC-classes, the differences of the mapping units between European and national datasets will always result in varying products. Extremely small areas cannot be mapped in European HNV-farmland. In this context it needs to be recognised that the JRC/EEA approach only aims at being representative of the share of HNV farmland per square km; hence this lack of spatial precision does not matter in terms of quality of results. It can reduce comparability with national level results, however.

Although additional national (biodiversity) data have been included in the past on European level their update and time relevance is quite heterogeneous. As they are not available homogenously over all countries their usage needs to be re-considered for future HNV updates and is likely to be very limited. Instead the CLC selection rules based on environmental zones are expected to be further refined to aim for a homogeneous classification in Europe as well as a high compatibility with national HNV datasets (as far as feasible).

Finally, options for acquiring national data sets for comparative analysis were reviewed with participants of the workshop. It was discussed that in addition to Austria, the Czech Republic, and Germany, also Bulgaria, Romania, Croatia, Portugal and Italy would provide either national data on biotope mapping or the identification of HNV farmland/farming areas at national level.

Environment Agency Austria will check any supplied national data according to the three steps set out on page 3 above (as far as appropriate and feasible). Those organisations or researchers who provided the national data for comparison purposes will be informed of the results of the analysis and can provide feedback.

**Summary of break out session 2 on options for using EU-level data sets to bring a land use intensity dimension into the spatial representation of HNV farmland**

This break out session began with a presentation by Maria Luisa Paracchini on developments in European data sets and research projects that may allow to integrate a land use intensity dimension into the spatial representation of HNV farmland. Her view was that upcoming data sets or data treatment will allow improving the consideration of land use intensity substantially.

The main purpose of this approach would be to identify spatial farm intensity data that have a good match with farm management practices that are indicative of the likely presence of farm types supportive of HNV (e.g. gross nutrient balance). The analytical logic is that CLC selection rules could be combined with a spatial mask for farming intensity so that a potential over-selection could be avoided as livestock densities or nutrient use above a certain level make it unlikely that species or habitats of HNV character would be present. This would seem appropriate as the JRC/EEA approach already uses a probability assessment per 1 km grid cell.

The discussion among participants covered the following points:

Developing a methodological approach:

* How to calibrate land use intensity for HNV? Should we develop different masks for high and medium HNV? Should we introduce a gradient? In some areas of high nature value, e.g. for high mountains, we can have a good understanding and data on land use, for other areas we need to rely on proxy data.
* Can we adjust the EEA/JRC estimation of HNV farmland by taking out the very intensive areas in a ‘data cleaning’ exercise?
* There is quite a lot of information in the ecological literature to develop possible thresholds for intensity that are compatible with HNV species and habitats, in particular for grassland.

Reviewing what we know about farming systems and parameters that are relevant to assess their connection to HNV farmland/farming:

* How many places do we still have with high nature value and extensive farming? Alpine pastures, some sheep systems are some of the few examples; hardly any arable systems seem eligible. Do we need two tiers of HNV identification to highlight more the need to protect the pockets? Different quality tiers applied across Europe?
* Precision farming – will achieve lower N levels but pool of species is missing – could this ever be HNV? Need to consider in thresholds that farmers get better with use of inputs over time.
* Knowing the motivations and drivers of farmers’ decision making (CAP payments and beef example) can help to interpret results /maps. However, its application at EU-level would be challenging.

Review of current data foundation:

* Older 2008 data currently used do not reflect changes in fertilizer use in new Member States, e.g. Romania. In 2017 an update of the CAPRI model with new data for 2010 will be ready. It will be interesting to examine if the new 2010 data will already reflect changes in fertilizer use.
* Is there an opportunity to add HNV aspects to FSS (e.g. farming features)? The FSS is already considered expensive, hence Eurostat/others rather aim to reduce not increase the number of questions. Probably only a realistic option at MS level.
* Data on CAP implementation probably difficult to use as, for example, the implementation of EFA rules is not coherent across MS. In addition, data series on policy implementation are only available for the period when certain policy instruments were in place which may not exceed one single CAP implementation period (e.g. 2000 – 2006 or 2007 – 2013).

The following additional points were covered:

Recent studies in Germany suggest that a Natura 2000 designation does not necessarily prevent species loss or agricultural intensification as many economic and social trends are the same inside and outside Natura 2000 areas. This could imply that differentiating CLC selection rules by a Natura 2000 mask (which currently provides for more generous selection for areas inside Natura 2000 in the JRC/EEA approach) would not make sense, so this rule will need to be re-considered.

There was also a short additional presentation by Antonella Trisorio on a second Italian HNV approach. The second Italian approach can identify where different types of HNV farming are located – at regional level.

Overall, it seems very worthwhile to explore many of the options that were discussed under this topic at the workshop. The JRC will aim to integrate these aspects into its research work and will also try to create short-term additional capacity in the form of an academic stagiaire.

**Annex 1: Revising the JRC/EEA EU-level HNV Farmland methodology**

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**Final draft agenda**

Place and date: Environment Agency Austria, Spittelauer Lände 5, 1090 Wien; 12 June 2017

09.00 Welcome and round of introduction (Chair: J-E Petersen)

09.15 Setting the context: European and national approaches

Overview of current EU level JRC/EEA HNV farmland methodology, Maria Luisa Paracchini, JRC

The HNV concept and its analytical applications at EU level; Evelyn Underwood, IEEP

Drawing on national experience for identifying HNV farmland at European scale: Armin Benzler, Bundesamt für Naturschutz (BfN), Germany

Antonella Trisorio, Council for Research on Agricultural Economics (CREA), Italy

Razvan Popa, Fundatia Adept, Romania

10.45 Coffee break

11.00 Breakout sessions on options for improving the EU HNV farmland methodology

Session 1: Presentation by UBA Vienna on review of available national data and opportunities for refining rules on for selection of CLC classes

Plenary discussion on options for refinement of CLC rules per biogeographic region on basis of national level data / case studies - facilitated by UBA Vienna

12.45 Lunch break

14.00 Session 2: Presentation M-L. Paracchini on options for using EU-level data sets to bring a land use intensity dimension into the spatial representation of HNV farmland

Plenary discussion on options for using spatial EU data sets to integrate land use intensity information into EU methodology on HNV farmland – facilitated by JRC/EEA

15.30 Coffee break

16.00 Summary reports from breakout sessions and final discussion in plenary

16.40 Summing up by organisers and next steps

17.00 End of workshop

**Annex 2: List of participants (status of 8 June):**

Participants from EU level organisations:

European Environment Agency: Jan-Erik Petersen & Doris Marquardt

EU Joint Research Centre: Maria Luisa Paracchini

ETC ULS staff (at Environment Agency Austria): Elisabeth Schwaiger, Gebhard Banko, Michael Weiss, Andreas Bartel

ETC BD staff (at University of Nitra): Lubos Halada

European Evaluation helpdesk: Gerald Schwarz

Country experts:

Angela Lomba, University of Porto, [angelalomba@fc.up.pt](mailto:angelalomba@fc.up.pt)

Evelyn Underwood, IEEP, UK, [Eunderwood@ieep.eu](mailto:Eunderwood@ieep.eu)

Sonja Karoglan Todorovic, ECOLOGICA, Croatia, [sonja@ecologica.hr](mailto:sonja@ecologica.hr)

Yanka Kazakova, University of National and World Economy, Sofia, Bulgaria, [yanka.kazakova@gmail.com](mailto:yanka.kazakova@gmail.com)

Razvan Popa, Fundatia Adept, Romania, [razvan@fundatia-adept.org](mailto:razvan@fundatia-adept.org)

Cristi Malos, University of Cluj-Napoca, Romania

Antonella Trisorio, CREA -Centre for Policy and Bioeconomy, Italy, [Antonella.Trisorio@crea.gov.it](mailto:Antonella.Trisorio@crea.gov.it)

Razvan Popa <razvan@fundatia-adept.org

Linda Aune-Lundberg, Norwegian Institute of Bioeconomy Research, [linda.aune-lundberg@nibio.no](mailto:linda.aune-lundberg@nibio.no)

Jaroslav Prazan, VUZE, Czech Republic, [prazan.jaroslav@uzei.cz](mailto:prazan.jaroslav@uzei.cz)

Armin Benzler, Bundesamt für Naturschutz, Germany, [Armin.Benzler@BfN.de](mailto:Armin.Benzler@BfN.de)